

**جامعة أم القرى**

**كلية العلوم التطبيقية**

**الماجستير في علم النبات**

## ٤. Learning and Teaching

### ٤/١ Learning Outcomes and Graduate Specifications

#### ٤/١/١ Main tracks or specializations covered by the program:

- (١)- Plant Physiology
- (٢)- Plant Ecology
- (٣)- Plant Taxonomy
- (٤)- Plant Genetics and Molecular Biology
- (٥)- Phycology
- (٦)- Plant Tissue Culture

#### ٤/١/٢ Curriculum Study Plan Table

| Year  | Course Code              | Course Title                     | Required or Elective | * Pre-Requisite Courses | Credit Hours | College or Department |
|---|--------------------------|----------------------------------|----------------------|-------------------------|--------------|-----------------------|
| 1 <sup>st</sup> Year<br>(Semester ١)<br><br>٢<br>Compulsory courses (٨ credit hours)<br>+ ١ Subject specific Elective (٤ credit hours)<br><br>Semester total = ١٢ credit hours  | ٤٠١٢٦١١-٤                | Advanced Molecular Biology       | R                    | N/A                     | ٤            |                       |
|   | ٤٠١٢٦١٢-٤                | Environmental Pollution          | R                    | N/A                     | ٤            |                       |
|   | ٤٠١٢٦٢١-٤                | Advanced Plant Physiology        | E                    | N/A                     | ٤            |                       |
|   | ٤٠١٢٦٢٢-٤                | Advanced Plant Taxonomy          | E                    | N/A                     | ٤            |                       |
|   | ٤٠١٢٦٢٣-٤                | Advanced Phycology               | E                    | N/A                     | ٤            |                       |
|   | ٤٠١٢٦٢٤-٤                | Advanced Plant Genetics          | E                    | N/A                     | ٤            |                       |
| 1 <sup>st</sup> Year<br>(Semester ٢)<br><br>٢<br>Compulsory courses (٦ credit hours)<br>+ ٣ Subject specific Electives (٦ credit hours)<br><br>Semester total = ١٢ credit hours | ٤٠١٢٦٤١-٤                | Phytochemistry                   | E                    | N/A                     | ٤            |                       |
|   | ٤٠١٢٦٤٢-٢                | Research Skills                  | E                    | N/A                     | ٢            |                       |
|   | ٤٠١٢٦٥١-٢                | Algal Toxicology                 | E                    | N/A                     | ٢            |                       |
|   | ٤٠١٢٦٥٢-٢                | Algal Physiology                 | E                    | N/A                     | ٢            |                       |
|   | ٤٠١٢٦٥٣-٢                | Algal Ecology                    | R                    | N/A                     | ٢            |                       |
|   | ٤٠١٢٦٥٤-٢                | Algal Economics                  | R                    | N/A                     | ٢            |                       |
|   | ٤٠١٢٦٥٥-٢                | Plant Enzymology                 | E                    | N/A                     | ٢            |                       |
|   | ٤٠١٢٦٥٦-٢                | Plant Growth Regulators          | E                    | N/A                     | ٢            |                       |
|   | ٤٠١٢٦٥٧-٢                | Stress in Plants                 | E                    | N/A                     | ٢            |                       |
|   | ٤٠١٢٦٥٨-٢                | Adaptation in Plants             | E                    | N/A                     | ٢            |                       |
|   | ٤٠١٢٦٥٩-٢                | Seeds Physiology and Development | E                    | N/A                     | ٢            |                       |
| ٤٠١٢٦٦٠-٢   | Plant Metabolic Pathways | E                                | N/A                  | ٢                       |              |                       |
| ٤٠١٢٦٦١-٢   | Plant Comparative        | E                                | N/A                  | ٢                       |              |                       |

|   |   |   |     |   |  |
|---|---|---|-----|---|--|
|   | Morphology  |   |     |   |  |
| ٤٠١٢٦٦٢-٢   | Plant Comparative Anatomy   | E | N/A | ٢ |  |
| ٤٠١٢٦٦٣-٢   | Plant Molecular Taxonomy  | E | N/A | ٢ |  |
| ٤٠٢٢٦٦٤-٢   | Flora of Saudi Arabia   | E | N/A | ٢ |  |
| ٤٠١٢٦٦٥-٢   | Plant Ecosystems  | E | N/A | ٢ |  |
| ٤٠١٢٦٦٦-٢   | Plant Biodiversity and Conservation                                       | E | N/A | ٢ |  |
| ٤٠١٢٦٦٧-٢   | Plant Geography   | E | N/A | ٢ |  |
| ٤٠١٢٦٦٨-٢   | Palynology  | E | N/A | ٢ |  |
| ٤٠١٢٦٦٩-٢   | Plant Tissue Culture  | E | N/A | ٢ |  |
| ٤٠١٢٦٧٠-٢   | Medicinal and Economic Plants   | E | N/A | ٢ |  |
| ٤٠١٢٦٧١-٢   | Arid Environments   | E | N/A | ٢ |  |
| ٤٠١٢٦٧٢-٢   | Salt Marsh Environments   | E | N/A | ٢ |  |
| ٤٠١٢٦٧٣-٢   | Climate and the Environment   | E | N/A | ٢ |  |
| ٤٠١٢٦٧٤-٢   | Plant Genetic Engineering   | E | N/A | ٢ |  |
| ٤٠١٢٦٧٥-٢   | Transgenic Plants   | E | N/A | ٢ |  |
| ٤٠١٢٦٧٦-٢   | Behavioral Genetics   | E | N/A | ٢ |  |
| ٤٠١٢٦٧٧-٢   | Plant Molecular Biology   | E | N/A | ٢ |  |
| ٤٠١٢٦٧٨-٢   | Plant Molecular Cytogenetics  | E | N/A | ٢ |  |
| ٤٠١٢٦٧٩-٢   | Plant Genomics and Bioinformatics   | E | N/A | ٢ |  |
| ٤٠١٢٦٨٠-٢   | Plant Reproductive Biology and Polyploidy                                 | E | N/A | ٢ |  |
| ٤٠١٢٦٨١-٢   | Plant Developmental Biology   | E | N/A | ٢ |  |
| ٤٠١٢٦٨٢-٢   | Biological Control  | E | N/A | ٢ |  |
| ٤٠١٢٦٨٣-٢   | Plant Symbiosis and Pathology   | E | N/A | ٢ |  |
| ٤٠١٢٦٨٤-٢   | Water Relations in Plants   | E | N/A | ٢ |  |
| ٤٠١٢٦٨٥-٢   | Plant Biodiversity  | E | N/A | ٢ |  |
| ٤٠١٢٦٨٦-٢   | Plant Biotechnology   | E | N/A | ٢ |  |
| ٤٠١٤٦٦٦-٢   | Agricultural Microbiology   | E | N/A | ٢ |  |
| ٤٠١٤٦٦٧-٢   | Microbial Disease of Plants   | E | N/A | ٢ |  |
| <b>٢<sup>nd</sup> Year<br/>(first and second semesters)</b> | <b>٤٠١٢٦٩٩-١٦ / Research Project leading to MSc thesis / Dissertation</b> |   |     |   |  |

## ٤/١/٤. Course Specification:

Kingdom of Saudi Arabia

The National Commission for Academic Accreditation & Assessment

## Course Specifications

Advanced Molecular Biology

٤٠١٢٦١١-٤

## Course Specifications

Institution: **Umm Al-Qura University**

College/Department: **Faculty of Applied Science / Department of Biology**

### A. Course Identification and General Information

١. Course title and code: **٤٠١٢٦١١-٤**

٢. Credit hours: **٢ Credit hours**

٣. Program(s) in which the course is offered.

(If general elective available in many programs indicate this rather than list programs)

**MSc in Botany**

٤. Name of faculty member responsible for the course

**Dr. Mostafa Koutb**

٥. Level/year at which this course is offered

٦. Pre-requisites for this course (if any)

٧. Co-requisites for this course (if any)

٨. Location if not on main campus

٩. Mode of Instruction (mark all that apply)

a. traditional classroom



What percentage?

**١٠٠ %**

|                                     |                  |                      |
|-------------------------------------|------------------|----------------------|
| b. blended (traditional and online) | What percentage? | <input type="text"/> |
| c. e-learning                       | What percentage? | <input type="text"/> |
| d. correspondence                   | What percentage? | <input type="text"/> |
| f. other                            | What percentage? | <input type="text"/> |
| Comments:                           |                  |                      |

## B Objectives

|   |
|---|
| ١. What is the main purpose for this course?  |
| ٢. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field) |

## C. Course Description (Note: General description in the form used in Bulletin or handbook)

|  |
|--|
| Course Description:<br><b>The course structure aims to discuss in details the following items including; isolation of plasmid DNA from bacteria; cloning of a plant gene into a bacterial vector; transformation and selection of recombinant clones; restriction analysis and gel electrophoresis of DNA; DNA sequencing; PCR analysis; Computer analysis of DNA; data bank search; molecular markers and their use in plant breeding; protein electrophoresis and staining; isoelectric focussing of proteins; Blue-native polyacrylamide gel electrophoresis.</b> |
|--|

|                         |              |               |
|-------------------------|--------------|---------------|
| ١. Topics to be Covered |              |               |
| List of Topics          | No. of Weeks | Contact hours |
|                         |              |               |

|  |   |   |
|--|---|---|
| Introduction to molecular biology                          | ١ | ٢ |
| DNA manipulation techniques                                | ٢ | ٤ |
| Vectors  | ١ | ٢ |
| DNA sequencing and computer analysis                       | ١ | ٢ |
| Gene expression and regulation                             | ١ | ٢ |
| Mutations  | ١ | ٢ |
| Epigenetics  | ١ | ٢ |
| Protein electrophoresis, blue native, isoelectric focusing | ١ | ٢ |
| Protein blotting   | ١ | ٢ |
| Protein sequencing   | ١ | ٢ |
| Molecular marker and their use in plant breeding           | ١ | ٢ |
| Recombinant DNA and transgenic organisms                   | ١ | ٢ |

٢. Course components (total contact hours and credits per semester):

|               | Lecture | Tutorial | Laboratory<br>or Studio | Practical | Other: | Total |
|---------------|---------|----------|-------------------------|-----------|--------|-------|
| Contact Hours | ٢٦      |          |                         |           |        | ٢٦    |
| Credit        | ٢       |          |                         |           |        | ٢     |

٣. Additional private study/learning hours expected for students per week.

٤. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

**The students will gain fundamental knowledge of molecular biology: Practical aspects of molecular genetics**

**and protein analysis: Design and execution of experiments in the field of molecular biology.**

**They learn to prepare a detailed protocol of all experiments including a section on materials and methods, a clear presentation of the results and a discussion on the expected and the real outcome of the experiments.**

**Students will gain fundamental knowledge about the structure and function of the genetic material, about the possibility of analysing DNA and about applications of DNA technology as well as basic knowledge of proteins and analytical methods for protein characterization.**

**In this course the students learn the fundamentals of experimental scientific work in the field of molecular biology. Starting with a hypothesis they learn to perform molecular genetic experiments. They evaluate the results of their experiments and test their hypothesis.**

◦. Schedule of Assessment Tasks for Students During the Semester

|   | Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.) | Week Due | Proportion of Total Assessment |
|---|---|----------|--------------------------------|
| ١ | <b>Activities</b>   |          | ٣٠٪                            |
| ٣ | <b>Essays</b>   |          | ٣٠٪                            |
| ٤ | <b>Final written exam</b>   |          | ٤٠٪                            |
| ٥ | <b>TOTAL</b>  |          | ١٠٠٪                           |

D. Student Academic Counseling and Support

١. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

**Academic teaching staff will be available to meet students for consultation and academic advice at their private offices at the times advised.**

**Office hours: ١٠ hours per week; each semester. Time will varies each semester based on academic schedule for each teaching staff.**

E Learning Resources



١. List Required Textbooks

**Alberts, B., Bray, D., Lewis, J., Raff, M., Roberts, K. and Watson, J.D. ١٩٩٤: Molecular Biology of The Cell, ٣rd Edition. Garland, New York, London.**

**Clark, D.P. ٢٠٠٥: Molecular Biology. Elsevier Academic Press, Burlington, London.**

**Sambrook, J., Fritsch, E.F. and Maniatis, T. ٢٠٠١: Molecular cloning: a laboratory manual. ٣rd Edition. Cold Spring Harbor Laboratory Press, Cold Spring Harbor, New York.**

**Simpson, R.J., Adams, P.D. and Golemis, E.A. ٢٠٠٨: Basic Methods in Protein Purification and Analysis: A Laboratory Manual. Cold Spring Harbor Laboratory Press, Cold Spring Harbor, New York.**

٢. List Essential References Materials (Journals, Reports, etc.)

High Impact Journals:

٣. List Recommended Textbooks and Reference Material (Journals, Reports, etc)

٤. List Electronic Materials, Web Sites, Facebook, Twitter, etc.

٥. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)

١. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)

**(١)- Class room is already provided with data show**

**(٢)- The area of class room is suitable concerning the number of enrolled students**

٢. Computing resources (AV, data show, Smart Board, software, etc.)

**(١)- Class rooms are equipped with data show.**

**(٢)- Library is required and connected to the network for students to study materials**

٣. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

#### G Course Evaluation and Improvement Processes

١ Strategies for Obtaining Student Feedback on Effectiveness of Teaching

**(١)- Questionnaires / students opinion survey**

**(٢)- Open discussion in the class room at the end of the lectures or during individual student/staff meeting**

٢ Other Strategies for Evaluation of Teaching by the Instructor or by the Department

**(١)- Revision of student answer papers .**

**(٢)- Analysis the grades of students.**

٣ Processes for Improvement of Teaching

**(١)- Preparing the course as PPT.**

**(٢)- Using scientific movies.**

**(٣)- Coupling the theoretical part with laboratory part**

**(٤)- Periodical revision of course content.**

٤. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution)

**After the agreement of Department and Faculty administrations; it might include:**

**(١)- Random check of students exam papers / assignments by external examiner**

**(٢)- Random check of students exam papers / assignments by internal examiner**

٥ Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

**A departmental review committee will look after the arrangement periodically after taking feedback**

from students and in the light of new development in the subject.

Name of Instructor: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Report Completed: \_\_\_\_\_

Name of Course Instructor \_\_\_\_\_

Program Coordinator: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Received: \_\_\_\_\_

## The National Commission for Academic Accreditation & Assessment

### Course Specifications

#### Environmental Pollution

٤٠١٢٦١٢-٤

## Course Specifications

Institution: **Umm Al-Qura University**

College/Department: **Faculty of Applied Science / Department of Biology**

### A. Course Identification and General Information

١. Course title and code: **Environmental Pollution (٤-٤٠١٢٦١٢)**

٢. Credit hours: **٤ C. H.**

٣. Program(s) in which the course is offered.

(If general elective available in many programs indicate this rather than list programs)

**MSc Biology**

٤. Name of faculty member responsible for the course

**Dr. Hanan E. Osman (heosman@uqu.edu.sa)**

٥. Level/year at which this course is offered

٦. Pre-requisites for this course (if any)

٧. Co-requisites for this course (if any)

٨. Location if not on main campus

٩. Mode of Instruction (mark all that apply)

a. traditional classroom



What percentage?

**١٠٠ %**

b. blended (traditional and online)

What percentage?

c. e-learning

what percentage?

d. correspondence

what percentage?

f. other

what percentage?

Comments:

B Objectives

١. What is the main purpose for this course?

The major objective of the course is to list various kinds of pollution; describe types of pollution, sources, harmful effects on human health and control of air pollution, indoor air pollution, noise pollution; describe water pollution, its causes and control; describe soil pollution, and its causes and control.

٢. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

C. Course Description (Note: General description in the form used in Bulletin or handbook)

Course Description:

This course deals with major problems of pollution of the atmosphere, water, the land surface and the food chain. It covers processes responsible for the occurrence and release of pollutants in the environment, dispersion mechanisms, the hazards associated with different types of pollutant, problems of accumulation of toxic substances, and procedures for the reduction of emissions and remediation of contaminated environments.

| ١. Topics to be Covered  |              |               |
|--|--------------|---------------|
| List of Topics   | No. of Weeks | Contact hours |
| Introduction to Environmental Pollution  | ١            | ٤             |
| Environmental management and pollution control strategies<br>Environmental indicators; Pollution prevention<br>methodologies; methods for waste minimization; types of recycling; recycling of waste material; recovery effort index | ٣            | ١٢            |

|  |          |           |
|--|----------|-----------|
| <p><b>Air pollution and control</b></p> <p><b>Introduction to air pollution and atmospheric diffusion</b></p> <p><b>(Gaussian plume modeling); General ideas in air pollution control: Alternative control measures, Improving dispersion, Building tall stacks, Intermittent control schemes, Relocation of plant, Process change, Use of downstream control device.</b></p> <p><b>Control of particulate Contaminants: Nature of particulate contaminants; Behavior of particles in the atmosphere;</b></p> <p><b>Particulate Control Methods and Devices: Wall collection devices-Gravity settlers, Centrifugal separators, Electrostatic precipitators; Dividing collection devices -surface filters, Depth filters, Scrubbers; Selection of particulate collection device. Control of Gaseous Contaminants: Gaseous control methods and devices-Absorption, Adsorption, Combustion and Condensation. Major air pollutants in Middle East.</b></p> | <p>٤</p> | <p>١٦</p> |
| <p><b>Methods of waste reduction such as volume and strength reduction, segregation, reuse, recycle, neutralization, equalization, proportioning. Fundamentals of urban water supply and sanitation infrastructure. Physical processes: sedimentation, coagulation and flocculation, filtration, sludge dewatering. Chemical processes: disinfection, removal of hardness, fluoride, arsenic, chromium, iron and manganese, removal of Nitrogen and Phosphorus. Biochemical processes: aerobic and anaerobic treatment methods. Low Cost Treatment Technologies: Septic tank; Imhoff tank; Oxidation ponds; Aerobic lagoons.</b></p>   | <p>٤</p> | <p>١٦</p> |



|   |   |    |
|---|---|----|
| <p><b>Soil and control</b></p> <p><b>Soil contamination by chemical pollutants: sources and fate.</b></p> <p><b>Remediation by plants, bioremediation by microorganisms;</b></p> <p><b>contamination by inorganic (including heavy metals) and organic pollutants; factors affecting uptake of contaminants, prevention and elimination of contamination; landfills.</b></p> <p><b>Effects of atmospheric deposition on various types of soils, cation exchange capacity (CEC) of soils</b></p> | ٣ | ١٢ |
| <p><b>Noise pollution</b></p> <p><b>Basics of Sound, Sound Propagation, Directionality,</b></p> <p><b>Noise Control at source, Noise Control along the source-receiver pathway, Noise Control at Receiver, Assessing and Predicting Noise.</b></p>  | ١ | ٤  |

٢. Course components (total contact hours and credits per semester):

|               | Lecture | Tutorial | Laboratory<br>or Studio | Practical | Other: | Total |
|---------------|---------|----------|-------------------------|-----------|--------|-------|
| Contact Hours | ٦٤      |          |                         |           |        | ٦٤    |
| Credit        | ٤       |          |                         |           |        | ٤     |

٣. Additional private study/learning hours expected for students per week.

٤. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

**On completion of this course students will have or be able to:**

- By the end of the course, students will have a broad, integrated understanding of the major problems associated with pollution of the atmosphere, water, the land surface and the food chain.
- Students will be expected to be familiar with and have an understanding of:
- The causes of global warming, ozone depletion, enhanced N and S emissions and urban air pollution;
- Problems of pollution of the food chain by potentially toxic elements and persistent organic pollutions;
- The difference between persistent and biodegradable pesticides and how pesticides residues may be quantified;
- Procedures and prospects for reducing unwanted emissions to the environment and remediation of already polluted systems
- Synthesize primary literature and develop skills in writing based on background review, and writing to provide evidence for a hypothesis/point of view based on literature.
- Explain topics in through oral presentation and interpret through modern lens
- Report on synthesis of newly acquired data with published data
- Develop leadership in discussion of primary literature and in experimental settings.
- Critically evaluate their personal performance both as an individual and within a team

o. Schedule of Assessment Tasks for Students During the Semester

|   | Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.) | Week Due | Proportion of Total Assessment |
|---|---|----------|--------------------------------|
| ١ | <b>Paper presentation (seminar)</b>   |          | ٣٠٪                            |
| ٢ | <b>Short essay</b>  |          | ٢٠٪                            |
| ٣ | <b>Written exam</b>   |          | ٣٠٪                            |
| ٤ | <b>Literature review</b>  |          | ٢٠٪                            |
| ٥ | <b>TOTAL</b>  |          | ١٠٠٪                           |

D. Student Academic Counseling and Support

١. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

**Academic teaching staff will be available to meet individual students for consultation and academic advice at their private offices at the times advised.**

**Office hours: ١٠ hrs per week; each semester. Time will varies each semester based on academic schedule for each teaching staff.**

E Learning Resources

١. List Required Textbooks

- ١) **M.K. Hill. Understanding Environmental Pollution. Cambridge University Press, ٣rd Edition, ٢٠١٠.**
- ٢) **C. Baird and M. Cann. Environmental Chemistry. W.H. Freeman, ٤th Edition, ٢٠٠٨.**
- ٣) **- M.Z. Jacobson. Atmospheric Pollution, History, Science and Regulation. Cambridge University Press, ٢٠٠٢.**
- ٤) **- J. Houghton. Global Warming, the Complete Briefing. Cambridge University Press, ٣rd Edition, ٢٠٠٤.**
- ٥) **A book covering relevant basic chemical concepts:**
- ٦) **C.V.A. Duke and C.D. Williams, Chemistry for Environmental and Earth Sciences. Cambridge University Press, ٢٠٠٨.**

٢. List Essential References Materials (Journals, Reports, etc.)

High Impact Journals:

١. **Atmospheric Environment**
٢. **Environmental Pollution**
٣. **Environmental Management**
٤. **Journal of Air and Water Management Association**
٥. **Journal of the Air Pollution Control Association**

٣. List Recommended Textbooks and Reference Material (Journals, Reports, etc)

٤. List Electronic Materials, Web Sites, Facebook, Twitter, etc.

٥. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

#### F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)

١. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)

**(١)- Class room is already provided with data show**

**(٢)- The area of class room is suitable concerning the number of enrolled students and air conditioned.**

٢. Computing resources (AV, data show, Smart Board, software, etc.)

**(١)- Class rooms are equipped with data show.**

**(٢)- A computer lab is required and connected to the network for students to gather their data and study materials**

٣. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

#### G Course Evaluation and Improvement Processes

١ Strategies for Obtaining Student Feedback on Effectiveness of Teaching

**(١)- Questionnaires / students opinion survey**

**(٢)- Open discussion in the class room at the end of the lectures or during individual student/staff meeting**

٢ Other Strategies for Evaluation of Teaching by the Instructor or by the Department

**١)- Revision of student answer papers / assignments by another staff member.**

**(٢)- Analysis the grades of students.**

٣ Processes for Improvement of Teaching

**(١)- Preparing the course as PPT.**

**(٢)- Using scientific movies.**

**(٣)- Coupling the theoretical part with laboratory part**

**(٤)- Periodical revision of course content.**

٤. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution)

**After the agreement of Department and Faculty administrations; it might include:**

**(١)- Random check of students exam papers / assignments by external examiner**

**(٢)- Random check of students exam papers / assignments by internal examiner**

٥ Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

**A departmental review committee will look after the arrangement periodically after taking feedback from students and in the light of new development in the subject.**

Name of Instructor: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Report Completed: \_\_\_\_\_

Name of Course Instructor \_\_\_\_\_

Program Coordinator: \_\_\_\_\_

Kingdom of Saudi Arabia  
Ministry of Education  
Umm Al-Qura University  
Deanship of Graduate Studies



المملكة العربية السعودية  
وزارة التعليم  
جامعة أم القرى  
عمادة الدراسات العليا

Signature: \_\_\_\_\_

Date Received: \_\_\_\_\_

## Kingdom of Saudi Arabia

### The National Commission for Academic Accreditation & Assessment

#### Course Specifications

#### Advanced Plant Physiology

(٤٠١٢٦٢١-٤)

## Course Specifications

|   |
|---|
| Institution: <b>Umm Al-Qura University</b>                                    |
| College/Department: <b>Faculty of Applied Science / Department of Biology</b> |

### A. Course Identification and General Information

|   |
|---|
| ١. Course title and code: <b>Advanced Plant Physiology: ٤٠١٢٦٢١-٤</b>   |
| ٢. Credit hours: <b>٤ C. H.</b>   |
| ٣. Program(s) in which the course is offered. <b>MSc. Plant Physiology (Botany).</b><br>(If general elective available in many programs indicate this rather than list programs)  |
| ٤. Name of faculty member responsible for the course<br><b>Prof. Dr. Hamed El Sayed Ahmed El Sayed (<a href="mailto:heelsayed@uqu.edu.sa">heelsayed@uqu.edu.sa</a>).</b>  |
| ٥. Level/year at which this course is offered   |
| ٦. Pre-requisites for this course (if any)  |
| ٧. Co-requisites for this course (if any)   |
| ٨. Location if not on main campus.  |
| ٩. Mode of Instruction (mark all that apply)<br><br>a. traditional classroom <input checked="" type="checkbox"/> What percentage? <b>١٠٠ %</b><br><br>b. blended (traditional and online) <input type="checkbox"/> What percentage? <input type="checkbox"/><br><br><input type="checkbox"/> <input type="checkbox"/> |



|                   |                                       |                      |
|-------------------|---------------------------------------|----------------------|
| c. e-learning     | What percentage?                      |                      |
| d. correspondence | <input type="text"/> What percentage? | <input type="text"/> |
| f. other          | <input type="text"/> What percentage? | <input type="text"/> |

## B Objectives

١. What is the main purpose for this course?

Summary of the main learning outcomes for students enrolled in the course:

- Inform the students the rules of the foundations of Plant Physiology to clarify with the mechanics of the link to highlight the unity of functionality within the plant cell as well as to provide the students all the leading space research are transported with offers of Plant Physiology to clarify some details.
- The course aims to give the student an idea of the basics of the various processes within the plant in terms of metabolic activity as well as a brief picture of the chemistry of organic compounds and manufactured within the plant.

٢. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

## C. Course Description (Note: General description in the form used in Bulletin or handbook)

Course Description:

١. Growth and Development, cell structure, Biogenesis and cell expansion. Photochromic and light control of plant development. Stomata movement and morphogenesis. Growth regulators /Hormones, Photosynthesis; Carbon and light reaction. Photosynthetic pathways, Physiological and Ecological considerations. Translocation in the Phloem, Respiration and Lipid metabolism. Water transport through the Xylem. The Cohesion-Tension Theory. Stomata Control. The Transpiration Ratio as a measure of the Relationship between water loss and Carbon Gain. Recent Advances.
٢. Plant metabolism and its regulation, cell and organ structure and function. Current understanding of photosynthesis, respiration, nitrogen fixation, mineral nutrition, water and ion transport in plant cells and tissues, Eco-physiology and responses of plants to the environment.
٣. Recognize the characteristic of the growth and Development, and its relationship with the plant hormone, Physiology of flowering and flowering.

١. Topics to be Covered

| List of Topics | No. of | Contact hours |
|----------------|--------|---------------|
|                | Weeks  |               |
|                |        |               |

|  |   |    |
|--|---|----|
| <ul style="list-style-type: none"> <li>• Introduction</li> <li>• Thermodynamics law, "the first and second"</li> <li>• Definition of Heat content</li> <li>• Definition of Inotropes</li> <li>• Definition of the free energy</li> </ul>   | ١ | ٤  |
| <ul style="list-style-type: none"> <li>• Growth and Development, cell structure, Biogenesis and cell expansion. Photochromic and light control of plant development. Stomata movement and morphogenesis. Growth regulators /Hormones, Photosynthesis; Carbon and light reaction. Photosynthetic pathways, Physiological and Ecological considerations. Translocation in the Phloem, Respiration and Lipid metabolism. Water transport through the Xylem. The Cohesion-Tension Theory. Stomata Control. The Transpiration Ratio as a measure of the Relationship between water loss and Carbon Gain. Recent Advances</li> </ul> | ٤ | ١٦ |
| <ul style="list-style-type: none"> <li>• Plant metabolism and its regulation, cell and organ structure and function. Current understanding of photosynthesis, respiration, nitrogen fixation, mineral nutrition, water and ion transport in plant cells and tissues, Eco-physiology and responses of plants to the environment.</li> </ul>   | ٣ | ١٢ |
| <ul style="list-style-type: none"> <li>• Carbohydrate metabolism</li> <li>• The importance and fat distribution</li> </ul>   | ٢ | ٨  |
| <ul style="list-style-type: none"> <li>• Some biological processes related to sulfur</li> <li>• Sulfur metabolism - the symptoms of sulfur deficiency</li> </ul>   | ١ | ٤  |
| <ul style="list-style-type: none"> <li>• Some organic ingredients in plant study economic value "Vitamins"</li> </ul>  | ٢ | ٨  |
| <ul style="list-style-type: none"> <li>• Recognize the characteristic of the growth and Development, and its relationship with the plant hormone, Physiology of flowering and flowering.</li> </ul>  | ٢ | ٤  |

٢. Course components (total contact hours and credits per semester):

|               | Lecture | Tutorial | Laboratory<br>or Studio | Practical | Other: | Total |
|---------------|---------|----------|-------------------------|-----------|--------|-------|
| Contact Hours | ٦٠      |          |                         |           |        | ٦٠    |
| Credit        | ٤       |          |                         |           |        | ٤     |

٣. Additional private study/learning hours expected for students per week.

(This should be an average: for the semester not a specific requirement in each week):

٤. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

- This course is focused on the physical principles underlying the environmental modification in an enclosed space, and why, in terms of plant environmental physiology and developmental biology, it is necessary. After successful completion of this course students are expected to be able to:
  - summarized the economic and cultural factors and practices that distinguish horticulture from other forms of agriculture;
  - explain the basic physical properties of greenhouses with respect to energy exchange with the external environment and with enclosed objects (eg plants), especially the radiative and latent heat fluxes, and explain the consequences for the ambient temperature in greenhouses;
  - name the basic requirements and properties of rooting substrates and summarized the importance of plant mineral nutrition;
  - describe the properties of black-bodies and explain the consequences this has for radiative energy exchange between plants and their environment;
  - describe the basic principles of plant thermal biology;
  - use the origins and meaning of water potential in plants and their environment, the soil-plant-air continuum, and the flux of water through plants and its control by stomata and atmospheric water vapour concentration;
  - describe the physiological and non-physiological determinants of leaf energy balance and explain their role in the modulation of plant temperature;
  - use the basic principles of photosynthetic energy transduction to explain the control of greenhouse lighting;
  - use knowledge about the physiology of photosynthetic gas exchange ( $\text{CO}_2$  fixation and water evaporation) to explain control of photosynthesis by environmental management of the glasshouse;
  - summarized chlorophyll fluorescence, its physiology, and its application in phytomonitoring;
  - summarized the principles of plant development and flowering and outline practical applications in production control using these principles;
  - summarized the physiology of periodic developmental phenomena in plants and explain how this can be used in control and manipulation in protected systems;
  - explain the consequences of the presence of periodic phenomena in control of production;
  - explain the foundations of vegetative propagation, the role of developmental processes in vegetative propagation and their application in practice;
  - Explain the principles and practice of micro-propagation.
- Teaching strategies to be used to develop that knowledge
    - Present the View topics of study to the students to learn the course content
    - The involvement of the students with questions after the presentation showed to see how learned scientific article

- To give the students a duty to do the same lecturer by themselves for the development of their ability to research and dumping within the same decision, but using modern techniques as a show Power Point.
- Practicals Technique and Hands-on analysis of different plants to develop their capacity to access to different labs.
- The meetings work of scientific for students of each group to view the work done by colleagues and evaluated and that personal development and the ability to make a speech in front of others
- - Training to use the Internet to access scientific sites to assemble the relevant decision is required and the development of the ability to access to the latest findings of science and scientific art.

٥. Schedule of Assessment Tasks for Students During the Semester

|   | Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.) | Week Due | Proportion of Total Assessment |
|---|---|----------|--------------------------------|
| ١ | Activities (Paper presentation, seminar)  |          | ٤٠                             |
| ٢ | Midterm exam  |          | ٢٠                             |
| ٣ | Final written exam  |          | ٤٠                             |
| ٤ | TOTAL   |          | ١٠٠                            |

D. Student Academic Counseling and Support

١. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

- Academic teaching staff will be available to meet individual students for consultation and academic advice at their private offices at the times advised.
- Office hours: ١٠ hrs. per week; each semester. Time will varies each semester based on academic schedule for each teaching staff.

E Learning Resources

|   |
|---|
| <p>١. List Required Textbooks</p> <p>١. Required Text(s):</p> <ul style="list-style-type: none"> <li>Plant Physiology Fifth Edition, Authors: Lincoln Taiz and Eduardo Zeiger, ٧٨٢ pages Publisher : Sinauer Associates, Inc. ٢٠١٠-٠٥-٣١, Language : English, ISBN-١٠ : ٠٨٧٨٩٣٨٦٦٤ ISBN-١٣ : ٩٧٨٠٨٧٨٩٣٨٦٦٧ © Sinauer Associates, Inc. This material cannot be copied, reproduced, manufactured or disseminated in any form without express written permission from the publisher.</li> <li>Atwell (ed.) ٢٠٠١. Plants in Action, MacMillan Publ. Australia. Free available at: <a href="http://plantsinaction.science.uq.edu.au/edition١/">http://plantsinaction.science.uq.edu.au/edition١/</a></li> <li>Dr. Imad Physiology / Imad Eddin descriptive – Dokki. Cairo – Egypt.</li> <li>The vital foundations of Chemistry - Dr. Mohamed Abdel Moneim southpaw-academic library - Cairo - ARE</li> <li>Growth and Organization in Plant, Stewart, FC Adison - Wesley Co. Reading Wareing (١٩٨٧)</li> <li>Plant Physiology process - Abdel Gawad - Hisham, Mohammed Ali Al Wahaibi - publisher - Deanship of Library Affairs, King Saud University - Riyadh (١٤٠٩)</li> <li>General Plant Physiology - Part II - reform, Mohammad Omar, Ali Crescent, Mohammed Hamad Al Wahaibi - King Saud University Press for publishing scientific and presses - Riyadh (٢٠٠٢ m)</li> <li>General Plant - Science Dr. Ahmed Mohammed Mujahid --١٩٨٦ m- Anglo-Egyptian library</li> <li>The basics of the physiology of intentions - Dr. / Mohammed Jamal al-Din Hassouna - House new publications Cairo - J.m.a.</li> <li>Chemistry vital (vital chemistry and synthetic chemistry vital physiological - Ahmed Abdel-Rahman el-Hamalawy)</li> <li>Third Edition - Pen House - Kuwait - ١٩٨٤</li> <li>Plant Physiology year - the second part - the reform of Mohammad Omar - the Hilali - Mohammed Hamad Al Wahaibi - King Saud University Press for publishing scientific and presses – ٢٠٠٢.</li> </ul> |
| <p>٢. Essential References</p> <ul style="list-style-type: none"> <li>Journal of Plant Physiology.</li> <li>Journal of Biochemistry.</li> <li>Journal of Agricultures and Plant Science</li> <li>Journal of Agronomy.</li> <li>Journal of Experimental Botany.</li> <li>Journal of Agricultures and Food Science</li> </ul>   |
| <p>٣- Recommended Books and Reference Material (Journals, Reports, etc) (Attach List)</p>   |
| <p>٤. List Electronic Materials, Web Sites, Facebook, Twitter, etc.</p>   |
| <p>٥. Other learning material such as computer-based programs/CD, professional standards or regulations and software.</p>   |

#### F. Facilities Required

|  |
|--|
| <p>Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)</p>  |
| <p>١. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)</p> <p>(١)- Class room is already provided with data show</p> <p>(٢)- The area of class room is suitable concerning the number of enrolled students</p> |
| <p>٢. Computing resources (AV, data show, Smart Board, software, etc.)</p>   |

(١)- Class rooms are equipped with data show.

(٢)- Library is required and connected to the network for students to study materials.

٣. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

## G Course Evaluation and Improvement Processes

### ١ Strategies for Obtaining Student Feedback on Effectiveness of Teaching

(١)- Questionnaires / students opinion survey

(٢)- Open discussion in the class room at the end of the lectures or during individual student/staff meeting

### ٢ Other Strategies for Evaluation of Teaching by the Instructor or by the Department

(١)- Revision of student answer papers.

(٢)- Analysis the grades of students.

### ٣ Processes for Improvement of Teaching

(١)- Preparing the course as PPT.

(٢)- Using scientific movies.

(٣)- Coupling the theoretical part with laboratory part

(٤)- Periodical revision of course content.

٤. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution)

After the agreement of Department and Faculty administrations; it might include:

(١)- Random check of students exam papers / assignments by external examiner

(٢)- Random check of students exam papers / assignments by internal examiner

◦ Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

A departmental review committee will look after the arrangement periodically after taking feedback from students and in the light of new development in the subject.

Name of Instructor: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Report Completed: \_\_\_\_\_

Name of Course Instructor \_\_\_\_\_

Program Coordinator: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Received: \_\_\_\_\_

**Kingdom of Saudi Arabia**

**The National Commission for Academic Accreditation & Assessment**



## Course Specifications

### Advanced Plant Taxonomy

٤٠١٢٦٢٢

## Course Specifications

Institution: **Umm Al-Qura University**

College/Department: **Faculty of Applied Science / Department of Biology**

### A. Course Identification and General Information

١. Course title and code: **Advanced Plant Taxonomy (٤٠١٢٦٢٢-٤)**

٢. Credit hours: **٤ C. H.**

٣. Program(s) in which the course is offered.

(If general elective available in many programs indicate this rather than list programs)

**MSc Plant Taxonomy**

٤. Name of faculty member responsible for the course

**Dr. Widad Saleem Al-Juhani (wsjuhani@uqu.edu.sa)**

٥. Level/year at which this course is offered

٦. Pre-requisites for this course (if any)

٧. Co-requisites for this course (if any)

٨. Location if not on main campus

٩. Mode of Instruction (mark all that apply)

a. traditional classroom



What percentage?

**١٠٠ %**

b. blended (traditional and online)

What percentage?

c. e-learning

What percentage?

d. correspondence

What percentage?

f. other

What percentage?

Comments:

## B Objectives

١. What is the main purpose for this course?

**The general aims of the course cover to the basic principles of systematics, understanding each of historical background and modern trends in plant classifications. A deep understanding for classification evidences. It targeted to understanding international rules of naming and identification. It aims to shed light on important issues in field of plant taxonomy.**

٢. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

## C. Course Description (Note: General description in the form used in Bulletin or handbook)

Course Description:

**This course will cover the basic principles of taxonomy; importance of taxonomy, the principles of plant taxonomy, tools and methodologies. Discuss the conditions of naming and means of identification, taxonomic evidence; Morphology, Anatomy; Cytology, phylogeny, palynology, embryology, and biochemical systematics. Discuss some important issues in taxonomic such as; construction of the tree life, hybridization, relationships within populations and, species concept.**

١. Topics to be Covered

| List of Topics | No. of Weeks | Contact hours |
|----------------|--------------|---------------|
|----------------|--------------|---------------|

|   |   |   |
|---|---|---|
| <p><b>✚ Introduction:</b></p> <ul style="list-style-type: none"> <li>▪ <b>Definition of taxonomy</b></li> <li>▪ <b>Goals and objectives of systematics</b></li> <li>▪ <b>History and Development of Plant Taxonomy:</b> <ol style="list-style-type: none"> <li>١. <b>Earliest taxonomy</b></li> <li>٢. <b>The Greeks and Romans taxonomists</b></li> <li>٣. <b>The herbalists</b></li> <li>٤. <b>Early taxonomists</b></li> <li>٥. <b>Lenis and his students</b></li> <li>٦. <b>Post-Linnaean taxonomy</b></li> <li>٧. <b>Natural Systems:</b></li> <li>٨. <b>Phylogenetic System</b></li> <li>٩. <b>Phonetic methods</b></li> <li>١٠. <b>Cladistics methods</b></li> </ol> </li> </ul> | ١ | ٤ |
| <p><b>✚ Taxonomic systems</b></p> <ul style="list-style-type: none"> <li>▪ <b>Hierarchical classification</b></li> <li>▪ <b>Predictive classification</b></li> <li>▪ <b>Classification for general and special purposes</b> <ol style="list-style-type: none"> <li>١. <b>Phenetic classification</b></li> <li>٢. <b>Phylogenetic classification</b></li> <li>٣. <b>Cladistics approach</b></li> </ol> </li> <li>▪ <b>Deme expression</b></li> <li>▪ <b>Alpha and omega classification</b></li> </ul>  | ١ | ٤ |

|  |   |    |
|--|---|----|
| <p><b>✚ Plant Identification and naming</b><br/><b>Definition and basic principles</b></p> <p><b>-Naming rules:</b></p> <p><b>International Code Of Botanical Nomenclature(ICBN)</b></p> <p><b>International Code Of Botanical Nomenclature Cultivated Plants(ICNCP)</b></p> <p><b>-Levels of taxa:</b></p> <p><b>Kingdom/ subkingdom/ division/subdivision/class</b><br/><b>/subfamily/family/subfamily/tribe/subtribe/genus/subgenus/section/</b><br/><b>subsection/series/species/subspecies/variety/subvariety/form/subform.</b></p> <p><b>-Means of plant identification</b></p> <ol style="list-style-type: none"> <li>١. Herbarium</li> <li>٢. Botanic garden</li> <li>٣. Personal communication</li> <li>٤. Library</li> <li>٥. Monographs</li> <li>٦. Revision</li> <li>٧. Conspectus</li> <li>٨. Research reports</li> <li>٩. Supporting literatures (international association of plant taxonomy)</li> </ol> <p><b>-Plant identification methods: Keys</b></p> <p><b>-Types of keys :</b></p> <p><b>a-Traditional keys(single access)</b></p> <ol style="list-style-type: none"> <li>١. Dichotomous Key: Numbered</li> <li>٢. Indented keys</li> </ol> <p><b>b-Unconventional identification methods</b></p> <ol style="list-style-type: none"> <li>١. Multi-access keys</li> <li>٢. Keys based in a computer</li> <li>٣. keys based in a smartphones</li> </ol> <p><b>practical: design a Multi-access key using suitable software (Lucid)</b></p> | ٣ | ١٢ |
|--|---|----|

|  |   |    |
|--|---|----|
| <p><b>✚ The evidences of taxonomy</b></p> <ul style="list-style-type: none"> <li>▪ Morphological evidences</li> <li>▪ Anatomical evidences</li> <li>▪ Chemical evidences</li> <li>▪ Cytological evidences</li> <li>▪ Genetical evidences</li> <li>▪ Palynological evidences</li> <li>▪ Embryological evidences</li> <li>▪ Phylogenetic evidences</li> <li>▪ Physiological evidences</li> <li>▪ Ecological evidences</li> <li>▪ Geographical evidences</li> <li>▪ Fossil evidences</li> </ul>   | ٤ | ١٦ |
| <p><b>✚ Phylogenetic classification Systems</b></p> <ul style="list-style-type: none"> <li>▪ Eichler's system</li> <li>▪ Engler's system</li> <li>▪ Bessey's system</li> <li>▪ Wettstein's system</li> <li>▪ Tippo's system</li> <li>▪ Hutchinson's system</li> <li>▪ Takhtajan's system</li> <li>▪ Cronquist's system</li> </ul>  | ٢ | ٨  |
| <p><b>✚ The tree of life theory</b></p> <ul style="list-style-type: none"> <li>▪ The evidence</li> <li>▪ Universal homologies</li> <li>▪ Inferring the structure of the tree of life</li> <li>▪ The three domains</li> <li>▪ Challenges to phylogeny reconstruction</li> <li>▪ Limitation of fossil records</li> <li>▪ The reconstruction</li> <li>▪ Factors limit the effectiveness of both morphological and molecular phylogeny reconstruction</li> <li>▪ The evolution in some angiosperms families</li> </ul> <p>Practical: Critical thinking of phylogenetic paper</p> | ٣ | ١٢ |
| <p><b>✚ Populations issues:</b></p> <ul style="list-style-type: none"> <li>▪ Species concepts</li> <li>▪ Species &amp; speciation</li> <li>▪ Polyploidy</li> <li>▪ Role of hybridization</li> <li>▪ Geographic distribution of species</li> </ul>  | ٢ | ٨  |

٢. Course components (total contact hours and credits per semester):

|  | Lecture | Tutorial | Laboratory | Practical | Other: | Total |
|--|---------|----------|------------|-----------|--------|-------|
|--|---------|----------|------------|-----------|--------|-------|

|         |            |  |           |  |  |    |
|---------|------------|--|-----------|--|--|----|
|         |            |  | or Studio |  |  |    |
| Contact | ٥٦         |  | ٨         |  |  | ٦٤ |
| Hours   | (١٤ weeks) |  | (٢ weeks) |  |  |    |
| Credit  | ٤          |  | ٤         |  |  | ٤  |

٣. Additional private study/learning hours expected for students per week.

٤. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

**On completion of this course students will have or be able to:**

- have a clear understanding of the history of systematics
- understand principles of plant taxonomy
- understand principles of nomenclature
- understanding the source of taxonomic data
- able to interpret, and proper application for taxonomic data
- consideration wisely for use of morphological and molecular characters
- able to describing population structure
- understand the concept of species and speciation
- able to interpret research in current published literature in the field of molecular taxonomy.

٥. Schedule of Assessment Tasks for Students During the Semester

|   | Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.) | Week Due | Proportion of Total Assessment |
|---|---|----------|--------------------------------|
| ١ | <b>Design a key for a family (selective)using the right computer software</b>                   |          | ٢٥ %                           |
| ٤ | <b>Written assignments(family account)</b>  |          | ٢٥%                            |



|   |                     |  |             |
|---|---------------------|--|-------------|
|   | <b>Written Exam</b> |  | <b>٥٠ %</b> |
| ٥ | <b>TOTAL</b>        |  | <b>١٠٠%</b> |

#### D. Student Academic Counseling and Support

١. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

**Academic teaching staff will be available to meet individual students for consultation and academic advice at their private offices at the times advised.**

**Office hours: ١٠ hrs per week; each semester. Time will varies each semester based on academic schedule for each teaching staff.**

#### E Learning Resources

##### ١. List Required Textbooks

(١)- Amal Kumar Mondal (٢٠٠٩) **Advanced Plant Taxonomy. New Central Book Agency Pvt. Ltd, New Delhi.**

(٢)- Judd, W.S., Campbell, C.S., Kellogg, E.A., Stevens, P.F. (٢٠٠٢) **Plant Systematics: A Phylogenetic Approach. ٢nd Edition. Sinauer, Sunderland, MA.**

(٣)- Avise, J.C. (٢٠٠٠) **Phylogeography: The History and Formation of Species. Harvard University Press, Cambridge, MA.**

(٤)- Alssahar, Q. (١٩٩١) **An introduction in plant taxonomy. Arab House for Publishing and Distribution. Cairo, Egypt.**

(٥)-Stuessy, T. (١٩٩٠) **Plant Taxonomy: The Systematic Evaluation of Comparative Data.**

**Columbia University Press. New York.**

**(٦)- Stace C A (١٩٨٩) Plant taxonomy and biosystematics: second edition. The press syndicate of the university of Cambridge, New York.**

**٢. List Essential References Materials (Journals, Reports, etc.)**

**High Impact Journals:**

**(١)- American Journal of Botany (Am J Bot)**

**(٢)- Botanical Journal of the Linnean Society**

**(٣)- Taxon**

**(٤)- AoB PLANTS**

**(٥)- Journal of Systematics and Evolution**

**(٦)- Plant Systematics and Evolution**

**٣. List Recommended Textbooks and Reference Material (Journals, Reports, etc)**

**٤. List Electronic Materials, Web Sites, Facebook, Twitter, etc.**

**١. Other learning material such as computer-based programs/CD, professional standards or regulations and software.**

**Lucid software (<http://www.lucidcentral.com>)**

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)

**١. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)**

**(١)- Class room is already provided with data show**

**(٢)- The area of class room is suitable concerning the number of enrolled students (could**

accommodate up to 50 students) and air conditioned.

٢. Computing resources (AV, data show, Smart Board, software, etc.)

(١)- Class rooms are equipped with data show.

(٢)- A computer lab is required and connected to the network for students to gather their data and study materials

٣. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

(١)- Availability of lucid software packages for students

#### G Course Evaluation and Improvement Processes

١ Strategies for Obtaining Student Feedback on Effectiveness of Teaching

(١)- Questionnaires / students opinion survey

(٢)- Open discussion in the class room at the end of the lectures or during individual student/staff meeting.

٢ Other Strategies for Evaluation of Teaching by the Instructor or by the Department

(١)- Revision of student answer papers / assignments by another staff member.

(٢)- Analysis the grades of students.

٣ Processes for Improvement of Teaching

(١)- Preparing the course as PPT.

(٢)- Using scientific movies.

(٣)- Coupling the theoretical part with laboratory part

(٤)- Periodical revision of course content.

٤. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution)

After the agreement of Department and Faculty administrations; it might include:

(١)- Random check of students exam papers / assignments by external examiner

**(٢)- Random check of students exam papers / assignments by internal examiner**

◦ Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

**A departmental review committee will look after the arrangement periodically after taking feedback from students and in the light of new development in the subject.**

Name of Instructor: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Report Completed: \_\_\_\_\_

Name of Course Instructor \_\_\_\_\_

Program Coordinator: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Received: \_\_\_\_\_

**Kingdom of Saudi Arabia**

**The National Commission for Academic Accreditation & Assessment**

**Course Specifications**

**Advanced Phycology**

٤٠١٢٦٢٣-٤

Kingdom of Saudi Arabia  
Ministry of Education  
Umm Al-Qura University  
Deanship of Graduate Studies



المملكة العربية السعودية  
وزارة التعليم  
جامعة أم القرى  
عمادة الدراسات العليا

## Course Specifications

Institution: **Umm Al-Qura University**

College/Department: **Faculty of Applied Science / Department of Biology**

### A. Course Identification and General Information

١. Course title and code: **Advanced Phycology (٤٠١٢٦٢٣-٤)**

٢. Credit hours: **٤ C. H.**

٣. Program(s) in which the course is offered.

(If general elective available in many programs indicate this rather than list programs)

**MSc in Phycology**

٤. Name of faculty member responsible for the course

**Dr. Hawazin H. Mutawie (hhmutawie@uqu.edu.sa)**

٥. Level/year at which this course is offered

٦. Pre-requisites for this course (if any)

٧. Co-requisites for this course (if any)

٨. Location if not on main campus

٩. Mode of Instruction (mark all that apply)

a. traditional classroom



What percentage?

**١٠٠ %**

b. blended (traditional and online)

What percentage?

c. e-learning

what percentage?

d. correspondence

what percentage?

f. other

what percentage?

Comments:



## B Objectives

١. What is the main purpose for this course?

**The major objective of the course is to learn the taxonomic, morphological and functional diversity of phytoplankton beside collection and culturing of phytoplankton.**

٢. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

## C. Course Description (Note: General description in the form used in Bulletin or handbook)

Course Description:

**The course structure is design to provide an introduction to phytoplankton and their basis of classification and the ecological factors that affect their distribution. The different classes of phytoplankton and the factors affecting their growth beside provide the best environment for culturing phytoplankton and measuring their population and primary productivity.**

١. Topics to be Covered

| List of Topics   | No. of Weeks | Contact hours |
|--|--------------|---------------|
| <b>Introduction to phytoplankton</b>   | ١            | ٤             |
| <b>Learning the diversity of the collecting phytoplankton according to their taxonomy and morphology</b> | ٥            | ٢٠            |
| <b>Environmental conditions that effect algal growth.</b>  | ٣            | ١٢            |
| <b>Make the distribution of phytoplankton.</b>   | ٣            | ١٢            |
| <b>Characterization of different methods of culturing phytoplankton</b>                                  | ٣            | ١٢            |

٢. Course components (total contact hours and credits per semester):

|  | Lecture | Tutorial | Laboratory | Practical | Other: | Total |
|--|---------|----------|------------|-----------|--------|-------|
|  |         |          |            |           |        |       |

|         |    |  |           |  |  |    |
|---------|----|--|-----------|--|--|----|
|         |    |  | or Studio |  |  |    |
| Contact | ٦٠ |  |           |  |  | ٦٠ |
| Hours   |    |  |           |  |  |    |
| Credit  | ٤  |  |           |  |  | ٤  |

٣. Additional private study/learning hours expected for students per week.

٤. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

**On completion of this course students will have or be able to:**

- Understand the diversity of phytoplankton in water, fresh and marine environment.
- Describe the diversity of phytoplankton according to their taxonomy, morphology and environmental conditions.
- Identify and differentiate various phytoplankton from fresh water and marine system.
- Present information clearly in the form of verbal and writing reports.
- Communicate complex ideas and arguments in a clear, concise and effective manner
- Work effectively as an individual or part of a team
- Use conventional and electronic resources to collect, select and organize complex scientific information
- Be able to assimilate and synthesis data from multiple sources
- Demonstrate capacity for self-learning and independent thinking and to utilize problem solving skills
- Demonstrate effective communication skills in the form of student led group presentations.
- Demonstrate skills in working collegiately and effectively with others as a member of a team.
- Set priorities and link these with effective time management
- Critically evaluate their personal performance both as an individual and within a team

٥. Schedule of Assessment Tasks for Students During the Semester

|   | Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.) | Week Due | Proportion of Total Assessment |
|---|---|----------|--------------------------------|
| ١ | Activities  |          | ٣٠٪                            |

|   |                    |  |      |
|---|--------------------|--|------|
| ٣ | Essays             |  | ٣٠٪  |
| ٤ | Final written exam |  | ٤٠٪  |
| ٥ | TOTAL              |  | ١٠٠٪ |

#### D. Student Academic Counseling and Support

١. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

**Academic teaching staff will be available to meet individual students for consultation and academic advice at their private offices at the times advised.**

**Office hours: ١٠ hrs per week; each semester. Time will varies each semester based on academic schedule for each teaching staff.**

#### E Learning Resources

##### ١. List Required Textbooks

(١)- Sambamurty,A. (٢٠١٠) A Textbook of Algae. I.K. International Publishing PVT.limited (ISBN: ٨١٨٨٢٣٧٤٤٤٢).

(٢)- Barsanti L.(٢٠٠٦) Algae. Taylor&Francis group (ISBN: ١٠٠٠٨٤٩٣١٤٦٧٤).

(٣)-Robert A. Andersen (٢٠٠٥) Algal Culturing Techniques. Academic Press. (ISBN: ٠٠١٢٠٠٨٨٤٢٦٧).

(٤)- Hoek C.,Mann D(١٩٩٥) Algae: An Introduction to Phycology. Cambridge University Press (

ISBN: ٠٥٢١٣٠٤١٩٩)

٢. List Essential References Materials (Journals, Reports, etc.)

High Impact Journals:

- **Journal of Applied Phycology.**

- **International Journal of Algae.**

٣. List Recommended Textbooks and Reference Material (Journals, Reports, etc)

٤. List Electronic Materials, Web Sites, Facebook, Twitter, etc.

٥. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

#### F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)

١. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)

(١)- **Class room is already provided with data show**

(٢)- **The area of class room is suitable concerning the number of enrolled students**

٢. Computing resources (AV, data show, Smart Board, software, etc.)

(١)- **Class rooms are equipped with data show.**

(٢)- **Library is required and connected to the network for students to study materials**

٣. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

#### G Course Evaluation and Improvement Processes

١ Strategies for Obtaining Student Feedback on Effectiveness of Teaching

(١)- Questionnaires / students opinion survey

(٢)- Open discussion in the class room at the end of the lectures or during individual student/staff meeting

٢ Other Strategies for Evaluation of Teaching by the Instructor or by the Department

(١)- Revision of student answer papers .

(٢)- Analysis the grades of students.

٣ Processes for Improvement of Teaching

(١)- Preparing the course as PPT.

(٢)- Using scientific movies.

(٣)- Coupling the theoretical part with laboratory part

(٤)- Periodical revision of course content.

٤. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution)

After the agreement of Department and Faculty administrations; it might include:

(١)- Random check of students exam papers / assignments by external examiner

(٢)- Random check of students exam papers / assignments by internal examiner

٥ Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

A departmental review committee will look after the arrangement periodically after taking feedback from students and in the light of new development in the subject.

Name of Instructor: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Report Completed: \_\_\_\_\_

Name of Course Instructor \_\_\_\_\_

Program Coordinator: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Received: \_\_\_\_\_

## Kingdom of Saudi Arabia

### The National Commission for Academic Accreditation & Assessment

#### Course Specifications

#### Advanced Plant Genetics

٤٠١٢٦٢٤-٤

## Course Specifications

|   |
|---|
| Institution: <b>Umm Al-Qura University</b>                                    |
| College/Department: <b>Faculty of Applied Science / Department of Biology</b> |

### A. Course Identification and General Information

|  |
|--|
| ١. Course title and code: <b>Advanced Plant Genetics (٤٠١٢٦٢٤-٤).</b>  |
| ٢. Credit hours: <b>٤ C. H.</b>  |
| ٣. Program(s) in which the course is offered.<br>(If general elective available in many programs indicate this rather than list programs)<br><b>MSc in Botany</b>  |
| ٤. Name of faculty member responsible for the course<br><b>Dr. Doaa ElGhareeb Keshek (dekeshek@uqu.edu.sa)</b>   |
| ٥. Level/year at which this course is offered  |
| ٦. Pre-requisites for this course (if any)   |
| ٧. Co-requisites for this course (if any)  |
| ٨. Location if not on main campus  |
| ٩. Mode of Instruction (mark all that apply)<br><br>a. traditional classroom <input checked="" type="checkbox"/> What percentage? <b>١٠٠ %</b><br><br>b. blended (traditional and online) <input type="text"/> What percentage? <input type="text"/> |

c. e-learning

what percentage?

d. correspondence

what percentage?

f. other

what percentage?

Comments:



## B Objectives

١. What is the main purpose for this course?

**The major objective of the course is Advanced survey of genetics in higher plants including selected topics in transmission genetics, epigenetics, and chromosome biology. Emphasizes development of critical analytical skills**

٢. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

## C. Course Description (Note: General description in the form used in Bulletin or handbook)

Course Description:

**This course will include advanced topics in plant genetics regarding the study of genetic linkage, marker-assisted selection, statistical analysis and interpretation of genetic data, and the study of the inheritance in autotetraploid species.**

## ١. Topics to be Covered

| List of Topics   | No. of Weeks | Contact hours |
|--|--------------|---------------|
| <b>١. Introduction</b><br>- Brief history of plant genetics<br>- Chromosomes, chromatin and life cycle<br>- Review of mendelian genetics | ٢            | ٨             |

|   |   |    |
|---|---|----|
| <p><b>٢. Linkage analysis, molecular markers and recombination</b></p> <ul style="list-style-type: none"> <li>- Markers</li> <li>- Detection and estimation of linkage from testcross and F<sub>2</sub> data</li> <li>- Interval mapping, bulked segregant analysis, near isogenic lines</li> <li>- Mapping with recombinant inbreds</li> <li>- Synteny: orthologous and paralogous genes</li> <li>- Meiotic and somatic recombination</li> </ul> | ٣ | ١٢ |
| <p><b>٣. Mutations</b></p> <ul style="list-style-type: none"> <li>- Spontaneous and induced</li> <li>- McClintock's transposable elements and related transposons</li> <li>- Retrotransposons, T-DNA, and heterologous tagging</li> </ul>   | ٢ | ٨  |
| <p><b>٤. Genetic screens</b></p> <ul style="list-style-type: none"> <li>- Genetic interactions and screens</li> </ul>   | ٢ | ٨  |
| <p><b>٥. Map-based gene isolation</b></p>   | ٢ | ٨  |
| <p><b>٦. Aneuploidy, polyploidy and breeding systems</b></p> <ul style="list-style-type: none"> <li>- Aneuploidy in diploid species, polyploidy</li> <li>- Haploids</li> <li>- Modes of reproduction: vegetative, sexual, apomixis</li> <li>- Sex determination: bisexual, monoecy, dioecy</li> <li>- Fertilization barriers</li> </ul>   | ٢ | ٨  |
| <p><b>٧. Extrachromosomal inheritance</b></p> <ul style="list-style-type: none"> <li>- Organelle genetics</li> <li>- Transmission</li> <li>- Recombination</li> <li>- Nuclear cytoplasmic interactions</li> <li>- Cytoplasmic male sterility &amp; hybrid production</li> </ul>   | ٢ | ٨  |

٢. Course components (total contact hours and credits per semester):

|               | Lecture | Tutorial | Laboratory<br>or Studio | Practical | Other: | Total |
|---------------|---------|----------|-------------------------|-----------|--------|-------|
| Contact Hours | ٦٠      |          |                         |           |        | ٦٠    |
| Credit        | ٤       |          |                         |           |        | ٤     |

٣. Additional private study/learning hours expected for students per week.

٤. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

**On completion of this course students will have or be able to:**

١: Familiarity with the main experimental approaches used in transmission genetics studies, including genetic mapping, designing and analyzing mutant screens, and using genetic linkage to clone genes.

٢: Understanding how chromosome and chromatin structures affect their functions.

٣: Familiarity with the mechanisms and consequences of genetic recombination.

٤: Familiarity with main concepts of epigenetics.

٥: Understanding how plant genomes are shaped by polyploidization, selection, and transposons.

٦: Understanding how genetic approaches can be used to study biochemical and developmental pathways in plants.

٧: Appreciation how knowledge of genetic mechanisms evolves in the face of new evidence.

٨: Familiarity with contemporary literature in the areas of plant genetics covered in the class.

٩: Ability to formulate genetic hypotheses.

| ٥. Schedule of Assessment Tasks for Students During the Semester |   |          |                                |
|--|---|----------|--------------------------------|
|  | Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.) | Week Due | Proportion of Total Assessment |
| ١  | <b>Activities</b>   |          | ٣٠٪                            |
| ٣  | <b>Essays</b>   |          | ٣٠٪                            |
| ٤  | <b>Final written exam</b>   |          | ٤٠٪                            |
| ٥  | <b>TOTAL</b>  |          | ١٠٠٪                           |

#### D. Student Academic Counseling and Support

١. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

**Academic teaching staff will be available to meet individual students for consultation and academic advice at their private offices at the times advised.**

**Office hours: ١٠ hrs per week; each semester. Time will varies each semester based on academic schedule for each teaching staff.**

#### E Learning Resources

١. List Required Textbooks

**(١)- Principles of Plant Genetics and Breeding ٢nd Edition (٢٠١٢) Copyright © ٢٠١٢ John**

**Wiley & Sons, Ltd Author(s): George Acquah. Published Online: ١٦ AUG ٢٠١٢**

**(٢)- Genetic Engineering of Crop Plants Edited by:G. W. Lycett and D. Grierson(١٩٨٩).**

**(٣) Advances in Molecular Genetics of Plant-Microbe Interactions by Daniels, M.J. (et al.) (Eds.) (١٩٩٤)**

**(٤)- Advances in New Technology for Targeted Modification of Plant Genomes (٢٠١٥).**

**Editors: Zhang, Feng, Puchta, Holger, Thomson, James G. (Eds.)**

٢. List Essential References Materials (Journals, Reports, etc.)

High Impact Journals:

- **Plant Genetics and Genomics**

– **Journal of Plant Genetics and Genomics: Crops and Models**

- **Developments in Plant Genetics and Breeding**

٣. List Recommended Textbooks and Reference Material (Journals, Reports, etc)

٤. List Electronic Materials, Web Sites, Facebook, Twitter, etc.

٥. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)

١. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)

**(١)- Class room is already provided with data show**

**(٢)- The area of class room is suitable concerning the number of enrolled students**

٢. Computing resources (AV, data show, Smart Board, software, etc.)

**(١)- Class rooms are equipped with data show.**

**(٢)- Library is required and connected to the network for students to study materials**

٣. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

**G Course Evaluation and Improvement Processes**

**١ Strategies for Obtaining Student Feedback on Effectiveness of Teaching**

**(١)- Questionnaires / students opinion survey**

**(٢)- Open discussion in the class room at the end of the lectures or during individual student/staff meeting**

**٢ Other Strategies for Evaluation of Teaching by the Instructor or by the Department**

**(١)- Revision of student answer papers .**

**(٢)- Analysis the grades of students.**

**٣ Processes for Improvement of Teaching**

**(١)- Preparing the course as PPT.**

**(٢)- Using scientific movies.**

**(٣)- Coupling the theoretical part with laboratory part**

**(٤)- Periodical revision of course content.**

**٤. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution)**

**After the agreement of Department and Faculty administrations; it might include:**

**(١)- Random check of students exam papers / assignments by external examiner**

**(٢)- Random check of students exam papers / assignments by internal examiner**

◦ Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

**A departmental review committee will look after the arrangement periodically after taking feedback from students and in the light of new development in the subject.**

Name of Instructor: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Report Completed: \_\_\_\_\_

Name of Course Instructor \_\_\_\_\_

Program Coordinator: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Received: \_\_\_\_\_

## The National Commission for Academic Accreditation & Assessment

### Course Specifications

#### Phytochemistry

٤٠١٢٦٤١-٤



## Course Specifications

Institution: **Umm Al-Qura University**

College/Department: **Faculty of Applied Science / Department of Biology**

### A. Course Identification and General Information

١. Course title and code: **Phytochemistry (٤٠١٢٦٤١-٤)**

٢. Credit hours: **٤ C. H.**

٣. Program(s) in which the course is offered.

(If general elective available in many programs indicate this rather than list programs)

**MSc Botany**

٤. Name of faculty member responsible for the course

**Dr.Fatimah Mohammad Alshehrei**

٥. Level/year at which this course is offered

٦. Pre-requisites for this course (if any)

٧. Co-requisites for this course (if any)

٨. Location if not on main campus

٩. Mode of Instruction (mark all that apply)

a. traditional classroom



What percentage?

**١٠٠٠ %**

b. blended (traditional and online)

What percentage?

c. e-learning

What percentage?

d. correspondence

What percentage?

f. other

What percentage?

Comments:

## B Objectives

١. What is the main purpose for this course?

The course aims to provide students with the necessary skills for separation of the active constituents obtained from natural sources (Carbohydrates, classification and examples , alkaloids: examples on some alkaloidal compounds of various classes- plant phenolics: examples( flavonoids and coumarins), biosynthesis – glycosides – Terpenes study: classification, Chemistry of terpenes, biosynthesis- Steroids study: classification, examples on some Steroid compound ) , in addition to the different methods of separation (chromatography) and then identify these active ingredients either in pure form of a mixture- as well as the different methods ( TLC, HPLC, GC-MS).

٢. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

## C. Course Description (Note: General description in the form used in Bulletin or handbook)

Course Description:

**Introduction and definition of natural products resulting from secondary metabolites- Isolation and separation- Terpenes study: classification, Chemistry of terpenes, biosynthesis- Steroids study: classification, examples on some Steroid compounds, biological importance, biosynthesis- Alkaloids: Isolation from plants, classification, examples on some alkaloidal compounds of various classes- plant phenolics: examples( flavonoids and coumarins), biosynthesis.**

١. Topics to be Covered

| List of Topics   | No. of Weeks | Contact hours |
|--|--------------|---------------|
| <b>Introduction to Phytochemistry</b>  | ١            | ٤             |
| <b>Carbohydrates ( classification of carbohydrates, monosaccharide, disaccharide, oligo sachcharid, starch....</b> | ٢            | ٨             |

|  |   |    |
|--|---|----|
| Alkaloids: Isolation from plants, classification, examples on some alkaloidal compounds of various classes- plant phenolics: examples( flavonoids and coumarins), biosynthesis.  | ٢ | ٨  |
| Terpenes study: classification, Chemistry of terpenes, biosynthesis-   | ١ | ٤  |
| Steroids study: classification, examples on some Steroid compounds, biological importance, biosynthesis-   | ١ | ٤  |
| -Introduction to glycosides<br>- Simple phenolic glycosides  | ٢ | ٨  |
| Resins – tannins- essential oils- pigments.  | ٢ | ٨  |
| <b>Practical :</b><br>-Introduction to chromatography<br>-Adsorption and column chromatography<br>-Paper chromatography<br>-Thin layer chromatography<br>-Gas chromatography (GC)<br>-High performance liquid chromatography (HPLC)<br>- Gas Chromatography mass spectrum. | ٥ | ٢٠ |

٢. Course components (total contact hours and credits per semester):

|               | Lecture | Tutorial | Laboratory<br>or Studio | Practical | Other: | Total |
|---------------|---------|----------|-------------------------|-----------|--------|-------|
| Contact Hours | ٦٤      |          |                         | ٢٠        |        | ٦٤    |
| Credit        | ٤       |          |                         | ٤         |        | ٤     |

٣. Additional private study/learning hours expected for students per week.

٤. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

The student after completing the course, should be able to:

- ١- Acquire the principle of phytochemistry.
- ٢- Define the physicochemical properties of natural products.
- ٣- Illustrate, how to separate, identify and estimate the different active chemical constituents (carbohydrate - alkaloids – glycosides and other natural products) of the plants.
- ٤- Acquire good knowledge about the uses of the different active constituents (essential oils – carbohydrates – resins – tannins) of the plants.
- ٥- Demonstrate effective communication skills in the form of student led group presentations.
- ٦- Demonstrate skills in working collegiately and effectively with others as a member of a team.

٥. Schedule of Assessment Tasks for Students During the Semester

|   | Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.) | Week Due | Proportion of Total Assessment |
|---|---|----------|--------------------------------|
| ١ | Paper presentation (seminar)  |          | ٣٠٪                            |
| ٢ | Short essay   |          | ٢٠٪                            |
| ٣ | Short written exam  |          | ١٠٪                            |
| ٤ | Long literature review  |          | ٤٠٪                            |

|   |              |  |      |
|---|--------------|--|------|
| o | <b>TOTAL</b> |  | ١٠٠٪ |
|---|--------------|--|------|

#### D. Student Academic Counseling and Support

١. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

**Academic teaching staff will be available to meet individual students for consultation and academic advice at their private offices at the times advised.**

**Office hours: ١٠ hrs per week; each semester. Time will varies each semester based on academic schedule for each teaching staff.**

#### E Learning Resources

١. List Required Textbooks:

١- **"The alkaloids: Chemistry and Biology" (٢٠٠٢) Volume ٥٩ by Cordell**

**G.A., Elsevier, New York.**

٢- **"Column Chromatography, Gas Chromatography and Liquid**

**Chromatography" (١٩٨٨) ١st ed. by: Karaway M.S., Pharmacognosy**

**Dept., Faculty of Pharmacy, Cairo University.**

٣- **"The Systemic Identification of Flavonoids" (١٩٧٠) by Mabry T.J.,**

**Markham K.R. & Thomas M.B., Springer-Verlag, Berlin–Heidelberg–New York**

٤- **"Textbook of Pharmacognosy and Phytochemistry" (٢٠٠٩) by Jarald E.E. and Jarald S. E., CBS Publishers & Distributors, New Delhi**

٢. List Essential References Materials (Journals, Reports, etc.)

**Different web sites related to the subject including:**

١- <http://www.ansci.cornell.edu/plants/medicinal/>

٢- <http://www.botanical.com>

|  |
|--|
| ٣. List Recommended Textbooks and Reference Material (Journals, Reports, etc)                                      |
| ٤. List Electronic Materials, Web Sites, Facebook, Twitter, etc.   |
| ٥. Other learning material such as computer-based programs/CD, professional standards or regulations and software. |

#### F. Facilities Required

|   |
|---|
| Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)  |
| ١. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)<br><b>(١)- Class room is already provided with data show</b><br><b>(٢)- The area of class room is suitable concerning the number of enrolled students (could accommodate up to ١٠٠ students) and air conditioned.</b> |
| ٢. Computing resources (AV, data show, Smart Board, software, etc.)<br><b>(١)- Class rooms are equipped with data show.</b><br><b>(٢)- A computer lab is required and connected to the network for students to gather their data and study materials</b>  |
| ٣. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)   |

#### G Course Evaluation and Improvement Processes

|   |
|---|
| ١ Strategies for Obtaining Student Feedback on Effectiveness of Teaching<br><b>(١) - Questionnaires / students opinion survey</b><br><b>(٢) - Open discussion in the class room at the end of the lectures or during individual student/staff meeting</b> |
|---|

٢ Other Strategies for Evaluation of Teaching by the Instructor or by the Department

(١)- Revision of student answer papers / assignments by another staff member.

(٢)- Analysis the grades of students.

٣ Processes for Improvement of Teaching

(١)- Preparing the course as PPT.

(٢)- Using scientific movies.

(٣)- Coupling the theoretical part with laboratory part

(٤)- Periodical revision of course content.

٤. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution)

**After the agreement of Department and Faculty administrations; it might include:**

(١)- Random check of students exam papers / assignments by external examiner

(٢)- Random check of students exam papers / assignments by internal examiner

٥ Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

**A departmental review committee will look after the arrangement periodically after taking feedback from students and in the light of new development in the subject.**

Name of Instructor: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Report Completed: \_\_\_\_\_

Name of Course Instructor \_\_\_\_\_

Program Coordinator: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Received: \_\_\_\_\_



## Kingdom of Saudi Arabia

### The National Commission for Academic Accreditation & Assessment

## Course Specifications

### Research Skills

٤٠١٢٦٤٢-٢

## Course Specifications

|   |      |
|---|------|
| Institution: <b>Umm Al-Qura University</b>                                    | Date |
| College/Department: <b>Faculty of Applied Science / Department of Biology</b> |      |

### A. Course Identification and General Information

|  |
|--|
| ١. Course title and code: <b>Research Skills (٤٠١٢٦٤٢-٢)</b>   |
| ٢. Credit hours: <b>٢ C. H.</b>  |
| ٣. Program(s) in which the course is offered.<br>(If general elective available in many programs indicate this rather than list programs)<br><b>MSc Biology</b>  |
| ٤. Name of faculty member responsible for the course<br><b>Dr. Hanan Osman (heosman@uqu.edu.sa)</b>  |
| ٥. Level/year at which this course is offered: <b>First year / Second semester</b>   |
| ٦. Pre-requisites for this course (if any)   |
| ٧. Co-requisites for this course (if any)  |
| ٨. Location if not on main campus  |
| ٩. Mode of Instruction (mark all that apply)<br><br>a. traditional classroom <input checked="" type="checkbox"/> What percentage? <b>١٠٠ %</b><br><br>b. blended (traditional and online) <input type="text"/> What percentage? <input type="text"/> |

c. e-learning

what percentage?

d. correspondence

what percentage?

f. other

what percentage?

Comments:

## B Objectives

١. What is the main purpose for this course?

- The objective of this course is to introduce research skills, working ethics and statistical methods to the student.
- Working exposure on various techniques and identifying research problem and presentation on the problem will be provided.
- Activities like seminar presentation, poster presentation, research topic presentation, review of literature on allotted topic.
- To provide students with the interdisciplinary practical skills and knowledge of computational and statistical biosciences to prepare them for challenging careers in academic research.
- To prepare and guide MSc participants in performing an original piece of research within the specialist area in which they wish to pursue their career.

٢. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

**This course requires the use of IT, particularly statistical software packages like SPSS**

## C. Course Description (Note: General description in the form used in Bulletin or handbook)

Course Description:

**This course aims to help studying identifying and developing the basic skills required for research, and handling biological research data for statistical analysis. The topics ranged from identifying the appropriate research topic, up to choosing the appropriate practical methodology to reach the objectives of the research. Providing the students with tips and strategies for searching the appropriate reading materials as well as choosing the appropriate statistical tests for presenting their research data in a correct and attractive manner.**

١. Topics to be Covered

| List of Topics   | No. of Weeks | Contact hours |
|--|--------------|---------------|
| <b>Introduction to research methodology and skills development</b> | ٢            | ٦             |
| <b>Techniques: Principle and applications</b>                      | ٢            | ٦             |

|   |   |    |
|---|---|----|
| <b>Presentation of Research work by poster presentation</b>   | ٢ | ٦  |
| <b>Biostatistics: Statistical tests, the choice of appropriate tests; handling data; interpretation of statistical analysis</b> | ٧ | ٢١ |
| <b>Seminar lectures on selected topic; Current trends in biology</b>  | ٣ | ٩  |
| <b>Plant Ecology</b>  |   |    |
| <b>Plant physiology</b>   |   |    |
| <b>Plant Taxonomy</b>   |   |    |
| <b>Phycology</b>  |   |    |
| <b>Plant Genetic</b>  |   |    |

٢. Course components (total contact hours and credits per semester):

|               | Lecture      | Tutorial | Laboratory<br>or Studio | Practical | Other:      | Total |
|---------------|--------------|----------|-------------------------|-----------|-------------|-------|
| Contact Hours | ١٨ (٦ weeks) |          | ٢١ (٧ weeks)            |           | ٩ (٣ weeks) | ٤٨    |
| Credit        | ٣            |          | ٣                       |           | ٣           | ٣     |

٣. Additional private study/learning hours expected for students per week.

٤. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

**On completion of this course students will have or be able to:**

- **Understand the importance of various basic techniques in developing research data.**
- **To explain the concept and, protocol, advantages and limitation of various research techniques.**
- **An introduction to the research methodology.**
- **Biostatistics: various statistical methods, how to be used and its interpretation**
- **Identify and differentiate types of research techniques and tools used.**
- **Present information clearly in the form of verbal reports/ seminar or poster presentation.**

- **Communicate complex ideas and arguments in a clear, concise and effective manner.**
- **Work effectively as an individual or part of a team**
- **Use conventional and electronic resources to collect, select and organize complex scientific information**
- **Be able to assimilate and synthesis data from multiple sources**
- **Demonstrate capacity for self-learning and independent thinking and to utilize problem solving skills**
- **Demonstrate effective communication skills in the form of student led group presentations.**
- **Demonstrate skills in working collegiately and effectively with others as a member of a team.**
- **Set priorities and link these with effective time management**
- **Critically evaluate their personal performance both as an individual and within a team**

|   | Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.) | Proportion of Total Assessment |
|---|---|--------------------------------|
| ١ | <b>Written exam</b>   | ٣٠                             |
| ٢ | <b>Draft preparation of research plan</b>   | ١٠                             |
| ٣ | <b>Draft preparation of research proposal</b>   | ٢٠                             |
| ٤ | <b>Preparation of Power Point presentation for research seminar</b>                             | ١٠                             |
| ٥ | <b>Presentation skills (seminar) (two seminars)</b>   | ٣٠                             |

#### D. Student Academic Counseling and Support

١. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

**Academic teaching staff will be available to meet individual students for consultation and academic advice at their private offices at the times advised.**

**Office hours: ١٠ hrs per week; each semester. Time will varies each semester based on academic schedule for each teaching staff.**

## E Learning Resources

### ١. List Required Textbooks

(١)- **Badke W. (٢٠١٤) Research Strategy: Finding Your Way Through the Information Fog ٥<sup>th</sup> edition. iUniverse Publishing. (ISBN: ١٤٩١٧٢٢٣٣٩).**

(٢)- **Booth W. C., Colomb G. G., Williams J. M., Bizup J., FitzGerald W. T. (٢٠١٦) The Craft of Research ٤<sup>th</sup> edition. University of Chicago Press. (ISBN: ٠٢٢٦٢٣٩٧٣X).**

(٣)- **Gilbert F., McGregor P., Barnard C. (٢٠١١) Asking Questions in Biology: A Guide to Hypothesis Testing, Experimental Design and Presentation in Practical Work and Research Projects ٤<sup>th</sup> edition. Pearson Education. (ISBN: ٠٢٧٣٧٣٤٦٨٧).**

(٤)- **Ennos R. (٢٠١٢) Statistical and Data Handling Skills in Biology ٣<sup>rd</sup> edition. Trans-Atlantic Publication Inc. (ISBN: ٠٢٧٣٧٢٩٤٩٧)**

(٥)- **Fowler J., Cohen L., Jarvis P. (١٩٩٨) Practical Statistics for Field Biology. John Wiley & Sons. (ISBN: ٠٤٧١٩٨٢٩٦٢).**

٢. List Essential References Materials (Journals, Reports, etc.)

٣. List Recommended Textbooks and Reference Material (Journals, Reports, etc)

٤. List Electronic Materials, Web Sites, Facebook, Twitter, etc.

٥. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

## F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats

|  |
|--|
| in classrooms and laboratories, extent of computer access etc.)  |
| <p>١. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)</p> <p><b>(١)- Class room is already provided with data show</b></p> <p><b>(٢)- The area of class room is suitable concerning the number of enrolled students (could accommodate up to ١٠٠ students) and air conditioned.</b></p> |
| <p>٢. Computing resources (AV, data show, Smart Board, software, etc.)</p> <p><b>(١)- Class rooms are equipped with data show.</b></p> <p><b>(٢)- A computer lab is required and connected to the network for students to gather their data and study materials</b></p>  |
| <p>٣. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)</p> <p><b>(١)- Availability of statistical software packages for students</b></p>   |

#### G Course Evaluation and Improvement Processes

|  |
|--|
| <p>١ Strategies for Obtaining Student Feedback on Effectiveness of Teaching</p> <p><b>(١)- Questionnaires / students opinion survey</b></p> <p><b>(٢)- Open discussion in the class room at the end of the lectures or during individual student/staff meeting</b></p>     |
| <p>٢ Other Strategies for Evaluation of Teaching by the Instructor or by the Department</p> <p><b>(١)- Revision of student answer papers / assignments by another staff member.</b></p> <p><b>(٢)- Analysis the grades of students.</b></p>                                |
| <p>٣ Processes for Improvement of Teaching</p> <p><b>(١)- Preparing the course as PPT.</b></p> <p><b>(٢)- Using scientific movies.</b></p> <p><b>(٣)- Coupling the theoretical part with laboratory part</b></p> <p><b>(٤)- Periodical revision of course content.</b></p> |



٤. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution)

**After the agreement of Department and Faculty administrations; it might include:**

**(١)- Random check of students exam papers / assignments by external examiner**

**(٢)- Random check of students exam papers / assignments by internal examiner**

◦ Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

**A departmental review committee will look after the arrangement periodically after taking feedback from students and in the light of new development in the subject.**

Name of Instructor: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Report Completed: \_\_\_\_\_

Name of Course Instructor \_\_\_\_\_

Program Coordinator: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Received: \_\_\_\_\_

## Kingdom of Saudi Arabia

### The National Commission for Academic Accreditation & Assessment

## Course Specifications

### Algal Toxicology

٤٠١٢٦٥١-٢

## Course Specifications

Institution: **Umm Al-Qura University**

College/Department: **Faculty of Applied Science / Department of Biology**

### A. Course Identification and General Information

١. Course title and code: **Algal Toxicology (٤٠١٢٦٥١-٢)**

٢. Credit hours: **٢ C. H.**

٣. Program(s) in which the course is offered.

(If general elective available in many programs indicate this rather than list programs)

**MSc in Phycology**

٤. Name of faculty member responsible for the course

**Dr. Hawazin H. Mutawie (hhmutawie@uqu.edu.sa)**

٥. Level/year at which this course is offered

٦. Pre-requisites for this course (if any)

٧. Co-requisites for this course (if any)

٨. Location if not on main campus

٩. Mode of Instruction (mark all that apply)

a. traditional classroom



What percentage?

**١٠٠ %**

b. blended (traditional and online)

What percentage?

c. e-learning

what percentage?

d. correspondence

what percentage?

f. other

what percentage?

Comments:

## B Objectives

١. What is the main purpose for this course?

The major objective of the course is to study the different toxins that produced by algae, their chemical structure and their effect on human, animals and other creatures in the environment.

٢. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

## C. Course Description (Note: General description in the form used in Bulletin or handbook)

Course Description:

The course structure is design to provide an introduction to the toxins of algae and the factors that enhancing their growth to produce toxins. The most important prokaryotes and eukaryotes algae that found in the world and involve in producing toxins beside study the chemical structures of these toxins and their effect on human, animals and all organisms around their environment. The last part of the course concentrate on the different ways of controlling their growth.

١. Topics to be Covered

| List of Topics  | No. of Weeks | Contact hours |
|---|--------------|---------------|
| Introduction to toxins of algae   | ١            | ٢             |
| Factors that affect the growth of these algae   | ٢            | ٤             |
| The most important prokaryotes that produce toxins and chemical structure of these toxins | ٣            | ٦             |
| The most important eukaryotes that produce toxins and chemical structure of these toxins  | ٣            | ٦             |
| The effect of algae that produce toxins on human, animals and environment                 | ٣            | ٦             |
| Study the different ways of predicting their toxins                                       | ١            | ٢             |

|   |   |   |
|---|---|---|
| Different ways of controlling the growth of algae that produce toxins | ٢ | ٤ |
|---|---|---|

٢. Course components (total contact hours and credits per semester):

|               | Lecture | Tutorial | Laboratory<br>or Studio | Practical | Other: | Total |
|---------------|---------|----------|-------------------------|-----------|--------|-------|
| Contact Hours | ٣٠      |          |                         |           |        | ٣٠    |
| Credit        | ٢       |          |                         |           |        | ٢     |

٣. Additional private study/learning hours expected for students per week.

٤. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

**On completion of this course students will have or be able to:**

- Understand the different types of algae that produce toxins .
- Environmental conditions that enhance the growth of these algae.
- Identify and differentiate types of toxins from fresh water and marine system.
- Understand the chemical structures of the different types of toxins.
- Be aware of the different ways of predicting algal toxins and controlling the growth of these algae.
- Work effectively as an individual or part of a team
- Use conventional and electronic resources to collect, select and organize complex scientific information
- Demonstrate capacity for self-learning and independent thinking and to utilize problem solving skills
- Demonstrate skills in working collegiately and effectively with others as a member of a team.
- Set priorities and link these with effective time management
- Critically evaluate their personal performance both as an individual and within a team

٥. Schedule of Assessment Tasks for Students During the Semester

| Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.) | Week Due | Proportion of Total Assessment |
|---|----------|--------------------------------|
|---|----------|--------------------------------|

|   |                    |  |      |
|---|--------------------|--|------|
| ١ | Activities         |  | ٣٠٪  |
| ٣ | Essays             |  | ٣٠٪  |
| ٤ | Final written exam |  | ٤٠٪  |
| ٥ | TOTAL              |  | ١٠٠٪ |

#### D. Student Academic Counseling and Support

١. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

**Academic teaching staff will be available to meet individual students for consultation and academic advice at their private offices at the times advised.**

**Office hours: ١٠ hrs per week; each semester. Time will varies each semester based on academic schedule for each teaching staff.**

#### E Learning Resources

١. List Required Textbooks

(١)- Gian Paolo Rossini (٢٠١٤) Toxins and Biologically Active Compound from Microalgae. Taylor& francis group (ISBN: ١٣:٩٧٨١٤٨٢٢١٠٦٨٢).

(٢)- Solomon Kadis, Alex Cieagler, Samuel J. Ajl.(٢٠١٣) Microbial Toxins ( Algae anf Fungal Toxins) Academic Press (ISBN:٩٧٨١٤٨٣٢٥٩٤٨٢).

(٣)-Wayne W. Carmichael (١٩٨١) **Algal Toxins and Health**. Plenium Press. (ISBN: ١٣:٩٧٨١٤٦١٣٣٢٦٩٥).

٢. List Essential References Materials (Journals, Reports, etc.)

High Impact Journals:

- **Journal of Algal Toxins.**
- **Harmful Algae Journal.**
- **Biomedical and Pharmacology Journal.**
- **Journal of Oceanography and Marine Research.**

٣. List Recommended Textbooks and Reference Material (Journals, Reports, etc)

٤. List Electronic Materials, Web Sites, Facebook, Twitter, etc.

٥. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

#### F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)

١. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)

(١)- **Class room is already provided with data show**

(٢)- **The area of class room is suitable concerning the number of enrolled students**

٢. Computing resources (AV, data show, Smart Board, software, etc.)

(١)- **Class rooms are equipped with data show.**

(٢)- **Library is required and connected to the network for students to study materials**



٣. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

## G Course Evaluation and Improvement Processes

١ Strategies for Obtaining Student Feedback on Effectiveness of Teaching

(١)- Questionnaires / students opinion survey

(٢)- Open discussion in the class room at the end of the lectures or during individual student/staff meeting

٢ Other Strategies for Evaluation of Teaching by the Instructor or by the Department

(١)- Revision of student answer papers .

(٢)- Analysis the grades of students.

٣ Processes for Improvement of Teaching

(١)- Preparing the course as PPT.

(٢)- Using scientific movies.

(٣)- Coupling the theoretical part with laboratory part

(٤)- Periodical revision of course content.

٤. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution)

After the agreement of Department and Faculty administrations; it might include:

(١)- Random check of students exam papers / assignments by external examiner

(٢)- Random check of students exam papers / assignments by internal examiner

٥ Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

A departmental review committee will look after the arrangement periodically after taking feedback from students and in the light of new development in the subject.

Name of Instructor: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Report Completed: \_\_\_\_\_

Name of Course Instructor \_\_\_\_\_

Program Coordinator: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Received: \_\_\_\_\_

## The National Commission for Academic Accreditation & Assessment

### Course Specifications

#### Algal Physiology

٤٠١٢٦٥٢-٢

## Course Specifications

Institution: **Umm Al-Qura University**

College/Department: **Faculty of Applied Science / Department of Biology**

### A. Course Identification and General Information

|  |
|--|
| ١. Course title and code: <b>Physiology of Algae (٤٠١٢٦٥٢-٢)</b>   |
| ٢. Credit hours: <b>٢ C. H.</b>  |
| ٣. Program(s) in which the course is offered.<br>(If general elective available in many programs indicate this rather than list programs)<br><b>MSc in Phycology</b> |
| ٤. Name of faculty member responsible for the course<br><b>Dr. Hawazin H. Mutawie(hhmutawie@uqu.edu.sa)</b>  |
| ٥. Level/year at which this course is offered  |
| ٦. Pre-requisites for this course (if any)   |
| ٧. Co-requisites for this course (if any)  |
| ٨. Location if not on main campus  |
| ٩. Mode of Instruction (mark all that apply)   |
| a. traditional classroom <input checked="" type="checkbox"/> What percentage? <b>١٠٠%</b>  |
| b. blended (traditional and online) <input type="checkbox"/> What percentage? <input type="text"/>   |
| c. e-learning <input type="checkbox"/> what percentage? <input type="text"/>   |
| d. correspondence <input type="checkbox"/> what percentage? <input type="text"/>   |

f. other

what percentage?

Comments:

## B Objectives

١. What is the main purpose for this course?

The major objective of the course is to detect the essential facts, concepts, principles of physiology of algae and study the mechanisms of their growth, reproduction and utilizing inorganic nutrients that effect algal metabolism.

٢. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

## C. Course Description (Note: General description in the form used in Bulletin or handbook)

### Course Description:

The course structure is design to provide the students with physiological aspects of algae and learn the environmental factors that control the growth levels, photosynthesis and carbon fixation process beside expose to the different techniques for isolation, purification and algal cultivation.

### ١. Topics to be Covered

| List of Topics  | No. of Weeks | Contact hours |
|---|--------------|---------------|
| Introduction to physiology of algae                         | ١            | ٢             |
| Conditions for algal growth.                                | ١            | ٢             |
| Growth dynamics and biological aspects for algal culturing. | ٢            | ٤             |
| Chemical composition of algal cell wall                     | ١            | ٢             |
| Photosynthesis and carbon fixation pathway                  | ٢            | ٤             |
| Respiration in algae  | ١            | ٢             |
| Inorganic nutrients and their role in algal metabolism      | ٢            | ٤             |
| Mechanisms of growth and reproduction                       | ١            | ٢             |
| Diversity of algal pigments and light harvesting            | ٢            | ٤             |

|                                |   |   |
|--------------------------------|---|---|
| Hormones and algal development | ٢ | ٤ |
|--------------------------------|---|---|

٢. Course components (total contact hours and credits per semester):

|               | Lecture | Tutorial | Laboratory<br>or Studio | Practical | Other: | Total |
|---------------|---------|----------|-------------------------|-----------|--------|-------|
| Contact Hours | ٣٠      |          |                         |           |        | ٣٠    |
| Credit        | ٢       |          |                         |           |        | ٢     |

٣. Additional private study/learning hours expected for students per week.

٤. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

On completion of this course students will have or be able to:

- Describe the algal growth dynamics.
- Explain photosynthesis and carbon fixation process in algae.
- Learn the composition of cell wall in algal groups and the role of inorganic nutrients on algal metabolism.
- Define polarity, apical dominance, hormones and their role in growth and reproduction.
- Summarize the respiration process in algae.
- Make reports on the distribution of algae in relation to their pigments and other algal physiological reports and classify various algal products.
- Present information clearly in the form of verbal and writing reports.
- Communicate complex ideas and arguments in a clear, concise and effective manner
- Work effectively as an individual or part of a team
- Use conventional and electronic resources to collect, select and organize complex scientific information
- Demonstrate effective communication skills in the form of student led group presentations.
- Demonstrate skills in working collegiately and effectively with others as a member of a team.
- Critically evaluate their personal performance both as an individual and within a team

| ٥. Schedule of Assessment Tasks for Students During the Semester |   |          |                                |
|--|---|----------|--------------------------------|
|  | Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.) | Week Due | Proportion of Total Assessment |
| ١  | Activities  |          | ٤٠٪                            |
| ٣  | Midterm exam  |          | ٢٠٪                            |
| ٤  | Final written exam  |          | ٤٠٪                            |
| ٥  | TOTAL   |          | ١٠٠٪                           |

#### D. Student Academic Counseling and Support

١. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

Academic teaching staff will be available to meet individual students for consultation and academic advice at their private offices at the times advised.

Office hours: ١٠ hrs per week; each semester. Time will varies each semester based on academic schedule for each teaching staff.

#### E Learning Resources

١. List Required Textbooks



(١)- Michael Borowitzka, John Beardell, John Raven (٢٠١٦) The physiology of Microalgae. Springer International Publishing. (ISBN: ٣٣١٩٢٤٩٤٣٦)

(٢)- Laura Barsanti and Paolo Gualtieri (٢٠١٤) Algae: Anatomy, Biochemistry, Biotechnology. CRC Press. (ISBN: ٩٧٨١٤٣٩٨٦٧٣٢٧).

(٣)-Christopher Lobban and Paul Harrison (٢٠١٠) Seaweed Ecology and Physiology. Cambridge University Press.(ISBN: ١٣-٩٧٨٠٠٥٢١٤٠٣٣٤٤)

(٤)- Hoek C.,Mann D(١٩٩٥) Algae: An Introduction to Phycology. Cambridge University Press ( ISBN:٠٠٥٢١٣٠٤١٩٩)

#### ٢. List Essential References Materials (Journals, Reports, etc.)

High Impact Journals:

- Journal of Applied Phycology.
- Journal of Plant Physiology.
- Algal Biotechnology Journal.
- Journal of Phycology.

#### ٣. List Recommended Textbooks and Reference Material (Journals, Reports, etc)

#### ٤. List Electronic Materials, Web Sites, Facebook, Twitter, etc.

٥. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

#### F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)

١. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)

(١)- Class room is already provided with data show

(٢)- The area of class room is suitable concerning the number of enrolled students

٢. Computing resources (AV, data show, Smart Board, software, etc.)

(١)- Class rooms are equipped with data show.

(٢)- Library is required and connected to the network for students to study materials.

٣. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

#### G Course Evaluation and Improvement Processes

١ Strategies for Obtaining Student Feedback on Effectiveness of Teaching

(١)- Questionnaires / students opinion survey

(٢)- Open discussion in the class room at the end of the lectures or during individual student/staff meeting

٢ Other Strategies for Evaluation of Teaching by the Instructor or by the Department

(١)- Revision of student answer papers .

(٢)- Analysis the grades of students.

٣ Processes for Improvement of Teaching

(١)- Preparing the course as PPT.

(٢)- Using scientific movies.

(٣)- Coupling the theoretical part with laboratory part

(٤)- Periodical revision of course content.

٤. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution)

After the agreement of Department and Faculty administrations; it might include:

(١)- Random check of students exam papers / assignments by external examiner

(٢)- Random check of students exam papers / assignments by internal examiner

◦ Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

A departmental review committee will look after the arrangement periodically after taking feedback from students and in the light of new development in the subject.

Name of Instructor: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Report Completed: \_\_\_\_\_

Name of Course Instructor \_\_\_\_\_

Program Coordinator: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Received: \_\_\_\_\_

## Kingdom of Saudi Arabia

### The National Commission for Academic Accreditation & Assessment

#### Course Specifications

##### Algal Ecology

٤٠١٢٦٥٣-٢

## Course Specifications

Institution: **Umm Al-Qura University**

College/Department: **Faculty of Applied Science / Department of Biology**

### A. Course Identification and General Information

١. Course title and code: **Ecology of Algae (٤٠١٢٦٥٣-٢)**

٢. Credit hours: **٢ C. H.**

٣. Program(s) in which the course is offered.

(If general elective available in many programs indicate this rather than list programs)

**MSc in Phycology**

٤. Name of faculty member responsible for the course

**Dr. Hawazin H. Mutawie (hhmutawie@uqu.edu.sa)**

٥. Level/year at which this course is offered

٦. Pre-requisites for this course (if any)

٧. Co-requisites for this course (if any)

٨. Location if not on main campus

٩. Mode of Instruction (mark all that apply)

a. traditional classroom



What percentage?

**١٠٠ %**

b. blended (traditional and online)

What percentage?

c. e-learning

what percentage?

d. correspondence

what percentage?

f. other

what percentage?

Comments:

## B Objectives

١. What is the main purpose for this course?

**The major objective of the course is to study the ecological role of algae in different aquatic ecosystems beside study the environmental factors that affect algal growth and distribution.**

٢. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

## C. Course Description (Note: General description in the form used in Bulletin or handbook)

Course Description:

**The course structure is design to describe the ecological factors (light, temperature, salinity, water motion, tides and other) that affect algal growth and their distribution.**

١. Topics to be Covered

| List of Topics  | No. of Weeks | Contact hours |
|---|--------------|---------------|
| <b>Introduction to algal ecology in fresh and marine ecosystems</b>   | ١            | ٢             |
| <b>The growth and distribution of algae controlled by physical, chemical and biological properties of the environment</b> | ٦            | ١٢            |
| <b>Studying the Flora of Algae in fresh and marine environment</b>  | ٣            | ٦             |
| <b>The effect low and high tide on growth of Algae</b>  | ٢            | ٤             |
| <b>Study the relationship between the environmental changes and evolution of algae.</b>                                   | ٣            | ٦             |

٢. Course components (total contact hours and credits per semester):

|               | Lecture | Tutorial | Laboratory<br>or Studio | Practical | Other: | Total |
|---------------|---------|----------|-------------------------|-----------|--------|-------|
| Contact Hours | ٣٠      |          |                         |           |        | ٣٠    |
| Credit        | ٢       |          |                         |           |        | ٢     |

٣. Additional private study/learning hours expected for students per week.

٤. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

**On completion of this course students will have or be able to:**

- Describe the basic concepts of algal ecology and how to apply to different aquatic environments.
- study the relationship between the environmental changes and evolution of algae.
- Present information clearly in the form of verbal and writing reports.
- Communicate complex ideas and arguments in a clear, concise and effective manner
- Work effectively as an individual or part of a team
- Use conventional and electronic resources to collect, select and organize complex scientific information
- Be able to assimilate and synthesis data from multiple sources
- Demonstrate capacity for self-learning and independent thinking and to utilize problem solving skills
- Demonstrate effective communication skills in the form of student led group presentations.
- Demonstrate skills in working collegiately and effectively with others as a member of a team.
- Set priorities and link these with effective time management
- Critically evaluate their personal performance both as an individual and within a team

٥. Schedule of Assessment Tasks for Students During the Semester

|   | Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.) | Week Due | Proportion of Total Assessment |
|---|---|----------|--------------------------------|
| ١ | <b>Activities</b>   |          | ٣٠٪                            |



|   |                    |  |      |
|---|--------------------|--|------|
| ٣ | Essays             |  | ٣٠٪  |
| ٤ | Final written exam |  | ٤٠٪  |
| ٥ | TOTAL              |  | ١٠٠٪ |

#### D. Student Academic Counseling and Support

١. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

**Academic teaching staff will be available to meet individual students for consultation and academic advice at their private offices at the times advised.**

**Office hours: ١٠ hrs per week; each semester. Time will varies each semester based on academic schedule for each teaching staff.**

#### E Learning Resources

١. List Required Textbooks

(١)- Charles D. Amsler (٢٠٠٧). Algal Chemical Ecology. Springer Science & business media. ISBN( ٣٥٤٠٧٤١٨١)

(٢)- James B. Mc Clintock, Bill J. Baker (٢٠٠١) Marine chemical Ecology. CRC Press. (ISBN: ١٠:٠٨٤٩٣١٤٦٧٤).

(٣)- Christopher S. Lobban, Paul J. Harrison (١٩٩٤) Seaweed Ecology & physiology. Cambridge Univ. Press (ISBN: ٠٥٢١٤٠٨٩٧٠).

|   |
|---|
|   |
| ٢. List Essential References Materials (Journals, Reports, etc.)<br>High Impact Journals:<br><br>- <b>Journal of Ecology.</b><br><br>- <b>International Journal of Algae.</b><br><br>- <b>Journal of Ecology and Environmental.</b> |
| ٣. List Recommended Textbooks and Reference Material (Journals, Reports, etc)   |
| ٤. List Electronic Materials, Web Sites, Facebook, Twitter, etc.  |
| ٥. Other learning material such as computer-based programs/CD, professional standards or regulations and software.  |

#### F. Facilities Required

|   |
|---|
| Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)  |
| ١. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)<br><br>(١)- <b>Class room is already provided with data show</b><br><br>(٢)- <b>The area of class room is suitable concerning the number of enrolled students</b> |
| ٢. Computing resources (AV, data show, Smart Board, software, etc.)<br><br>(١)- <b>Class rooms are equipped with data show.</b><br><br>(٢)- <b>Library is required and connected to the network for students to study materials</b>           |
| ٣. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)   |

G Course Evaluation and Improvement Processes

|  |
|--|
| <p>١ Strategies for Obtaining Student Feedback on Effectiveness of Teaching</p> <p>(١)- Questionnaires / students opinion survey</p> <p>(٢)- Open discussion in the class room at the end of the lectures or during individual student/staff meeting</p>   |
| <p>٢ Other Strategies for Evaluation of Teaching by the Instructor or by the Department</p> <p>(١)- Revision of student answer papers .</p> <p>(٢)- Analysis the grades of students.</p>   |
| <p>٣ Processes for Improvement of Teaching</p> <p>(١)- Preparing the course as PPT.</p> <p>(٢)- Using scientific movies.</p> <p>(٣)- Coupling the theoretical part with laboratory part</p> <p>(٤)- Periodical revision of course content.</p>   |
| <p>٤. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution)</p> <p>After the agreement of Department and Faculty administrations; it might include:</p> <p>(١)- Random check of students exam papers / assignments by external examiner</p> <p>(٢)- Random check of students exam papers / assignments by internal examiner</p> |
| <p>٥ Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.</p> <p>A departmental review committee will look after the arrangement periodically after taking feedback from students and in the light of new development in the subject.</p>  |

Name of Instructor: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Report Completed: \_\_\_\_\_

Name of Course Instructor \_\_\_\_\_

Program Coordinator: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Received: \_\_\_\_\_

## Kingdom of Saudi Arabia

### The National Commission for Academic Accreditation & Assessment

## Course Specifications

### Algal Economics

٤٠١٢٦٥٤-٢

## Course Specifications

Institution: **Umm Al-Qura University**

College/Department: **Faculty of Applied Science / Department of Biology**

### A. Course Identification and General Information

١. Course title and code: **Algal Economics (٤٠١٢٦٥٤-٢)**

٢. Credit hours: **٢ C. H.**

٣. Program(s) in which the course is offered.

(If general elective available in many programs indicate this rather than list programs)

**MSc in Phycology**

٤. Name of faculty member responsible for the course

**Dr. Hawazin H. Mutawie (hhmutawie@uqu.edu.sa)**

٥. Level/year at which this course is offered

٦. Pre-requisites for this course (if any)

٧. Co-requisites for this course (if any)

٨. Location if not on main campus

٩. Mode of Instruction (mark all that apply)

a. traditional classroom



What percentage?

**١٠٠ %**

b. blended (traditional and online)

What percentage?

c. e-learning

what percentage?

d. correspondence

what percentage?

f. other

what percentage?

Comments:

## B Objectives

١. What is the main purpose for this course?

**The major objective of the course is to highlight the economic importance of algae that has been used in industrial utilization, Medical and agricultural purposes and other fields.**

٢. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

## C. Course Description (Note: General description in the form used in Bulletin or handbook)

Course Description:

**The course structure is design to describe the different areas that have been used algae.**

١. Topics to be Covered

| List of Topics   | No. of Weeks | Contact hours |
|--|--------------|---------------|
| <b>Introduction to economics of algae in fresh and marine ecosystems</b> | ١            | ٢             |
| <b>Algae , the link of food chain and the its useful in fish culture</b> | ١            | ٢             |
| <b>Algae uses in agriculture</b>   | ١            | ٢             |
| <b>Using algae in medicine since Earliest Chinese</b>                    | ٣            | ٦             |
| <b>Using algae in sewage treatment</b>                                   | ١            | ٢             |
| <b>Algae and petrolum&amp;gas</b>  | ٢            | ٤             |
| <b>Industrial utilization of Algae</b>                                   | ٦            | ١٢            |

٢. Course components (total contact hours and credits per semester):

|  | Lecture | Tutorial | Laboratory | Practical | Other: | Total |
|--|---------|----------|------------|-----------|--------|-------|
|  |         |          |            |           |        |       |



|         |    |  |           |  |  |    |
|---------|----|--|-----------|--|--|----|
|         |    |  | or Studio |  |  |    |
| Contact | ٣٠ |  |           |  |  | ٣٠ |
| Hours   |    |  |           |  |  |    |
| Credit  | ٢  |  |           |  |  | ٢  |

٣. Additional private study/learning hours expected for students per week.

٤. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

**On completion of this course students will have or be able to:**

- Describe the economics of algae in freshwater and marine environments.
- Study the benefit of algae in fish culture as a food chain
- Study the different areas of using algae, in industry, medical puposes.
- Provide the students with the resent researches on algae.
- Present information clearly in the form of verbal and writing reports.
- Communicate complex ideas and arguments in a clear, concise and effective manner
- Work effectively as an individual or part of a team
- Use conventional and electronic resources to collect, select and organize complex scientific information
- Be able to assimilate and synthesis data from multiple sources
- Demonstrate capacity for self-learning and independent thinking and to utilize problem solving skills
- Demonstrate effective communication skills in the form of student led group presentations.
- Demonstrate skills in working collegiately and effectively with others as a member of a team.
- Set priorities and link these with effective time management
- Critically evaluate their personal performance both as an individual and within a team

٥. Schedule of Assessment Tasks for Students During the Semester

|   | Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.) | Week Due | Proportion of Total Assessment |
|---|---|----------|--------------------------------|
| ١ | <b>Activities</b>   |          | ٣٠٪                            |

|   |                    |  |      |
|---|--------------------|--|------|
| ٣ | Essays             |  | ٣٠٪  |
| ٤ | Final written exam |  | ٤٠٪  |
| ٥ | TOTAL              |  | ١٠٠٪ |

#### D. Student Academic Counseling and Support

١. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

**Academic teaching staff will be available to meet individual students for consultation and academic advice at their private offices at the times advised.**

**Office hours: ١٠ hrs per week; each semester. Time will varies each semester based on academic schedule for each teaching staff.**

#### E Learning Resources

١. List Required Textbooks

(١)- Dinabandhu Sahoo and Joseph Seckbach (٢٠١٥). Springer( ISBN ٩٧٨-٩٤-٠١٧-٧٣٢١-٨)

(٢)-Sambamurty A.V.S. (٢٠٠٥). IK. International Pvt.Ltd New Delhi (ISBN ٨١-٨٨٢٣٧-٤٤-٢)

٢. List Essential References Materials (Journals, Reports, etc.)

High Impact Journals.:

- International Journal of Algae.

|  |
|--|
|  |
| ٣. List Recommended Textbooks and Reference Material (Journals, Reports, etc)                                      |
| ٤. List Electronic Materials, Web Sites, Facebook, Twitter, etc.   |
| ٥. Other learning material such as computer-based programs/CD, professional standards or regulations and software. |

#### F. Facilities Required

|   |
|---|
| Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)  |
| ١. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)<br><b>(١)- Class room is already provided with data show</b><br><b>(٢)- The area of class room is suitable concerning the number of enrolled students</b> |
| ٢. Computing resources (AV, data show, Smart Board, software, etc.)<br><b>(١)- Class rooms are equipped with data show.</b><br><b>(٢)- Library is required and connected to the network for students to study materials</b>           |
| ٣. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)   |

#### G Course Evaluation and Improvement Processes

|   |
|---|
| ١ Strategies for Obtaining Student Feedback on Effectiveness of Teaching<br><b>(١)- Questionnaires / students opinion survey</b><br><b>(٢)- Open discussion in the class room at the end of the lectures or during individual student/staff</b> |
|---|

|  |
|--|
| meeting  |
| ٢ Other Strategies for Evaluation of Teaching by the Instructor or by the Department<br><b>(١)- Revision of student answer papers .</b><br><b>(٢)- Analysis the grades of students.</b>  |
| ٣ Processes for Improvement of Teaching<br><b>(١)- Preparing the course as PPT.</b><br><b>(٢)- Using scientific movies.</b><br><b>(٣)- Coupling the theoretical part with laboratory part</b><br><b>(٤)- Periodical revision of course content.</b>  |
| ٤. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution)<br><b>After the agreement of Department and Faculty administrations; it might include:</b><br><b>(١)- Random check of students exam papers / assignments by external examiner</b><br><b>(٢)- Random check of students exam papers / assignments by internal examiner</b> |
| ٥ Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.<br><b>A departmental review committee will look after the arrangement periodically after taking feedback from students and in the light of new development in the subject.</b>  |

Name of Instructor: Dr. Hawazin Hamed Mutawie

\_\_\_\_\_

Signature: \_\_\_\_\_ Date Report Completed: \_\_\_\_\_

Name of Course Instructor \_\_\_\_\_

Program Coordinator: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Received: \_\_\_\_\_

## Kingdom of Saudi Arabia

### The National Commission for Academic Accreditation & Assessment

#### Course Specifications

#### Plant Enzymology

(٤٠١٢٦٥٥ – ٢)

## Course Specifications

|   |
|---|
| Institution: <b>Umm Al-Qura University</b>                                    |
| College/Department: <b>Faculty of Applied Science / Department of Biology</b> |

### A. Course Identification and General Information

|   |
|---|
| ١. Course title and code: <b>Plant Enzymology ٤٠١٢٦٥٥ - ٢</b>   |
| ٢. Credit hours: <b>٢ C. H.</b>   |
| ٣. Program(s) in which the course is offered. <b>MSc. Plant Physiology (Botany).</b><br>(If general elective available in many programs indicate this rather than list programs)  |
| ٤. Name of faculty member responsible for the course<br><b>Prof. Dr. Hamed El Sayed Ahmed El Sayed (<a href="mailto:heelsayed@uqu.edu.sa">heelsayed@uqu.edu.sa</a>).</b>  |
| ٥. Level/year at which this course is offered   |
| ٦. Pre-requisites for this course (if any)  |
| ٧. Co-requisites for this course (if any)   |
| ٨. Location if not on main campus.  |
| ٩. Mode of Instruction (mark all that apply)<br><br>a. traditional classroom <input checked="" type="checkbox"/> What percentage? <b>١٠٠ %</b><br><br>b. blended (traditional and online) <input type="checkbox"/> What percentage? <input type="text"/><br><br><input type="checkbox"/> <input type="text"/> |

|                   |                                       |                      |
|-------------------|---------------------------------------|----------------------|
| c. e-learning     | What percentage?                      |                      |
| d. correspondence | <input type="text"/> What percentage? | <input type="text"/> |
| f. other          | <input type="text"/> What percentage? | <input type="text"/> |

## B Objectives

١. What is the main purpose for this course?

Summary of the main learning outcomes for students enrolled in the course:

The objectives of this course are to:

- Introduce students to various theoretical and practical aspects of enzymology; and
- Stimulates their interest in learning the structure, function and kinetics of enzyme and their role as catalyst and regulator of cell metabolism.
- Serve as foundation for more advanced enzymology courses.

٢. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

Plant enzymes - Composition and nature of the work of plant enzymes - Methods of extraction and estimation of various enzymes - Economic importance to determine the different enzyme groups

## C. Course Description (Note: General description in the form used in Bulletin or handbook)

Course Description:

This course is an introductory and the first course in enzymology designed specifically for students in biochemistry. The course will cover a wide range of subjects such as vitamins and coenzyme, classification of enzyme, mechanism and kinetics of enzyme catalyzed reaction. The final part will deal with the production, extraction, purification, characterisation and application of enzymes.

The study of enzymatic properties will enable a biotechnologist to plan his experiments on biodegradation and bioremediation to be applicable on bioconversion; softening of basal jute stem cuttings or softening of hides of sacrificed animals, bioremediation etc.

١. Topics to be Covered

| List of Topics | No. of Weeks | Contact hours |
|----------------|--------------|---------------|
|                |              |               |



|   |   |   |
|---|---|---|
| • - Three-dimensional structure of enzyme, active site, cofactors, activators, prosthetic groups, coenzymes, enzyme-substrate complex, energy of activation   | ٢ | ٤ |
| • - Factors affecting rate of enzyme reaction, regulations of enzyme reaction   | ١ | ٢ |
| • - Basic aspects of chemical kinetics, molecular interpretation of rate constants  | ١ | ٢ |
| • - Activation free energies, enthalpies and entropies, kinetics of enzyme-catalyzed reaction; significance of Km and Vm values   | ١ | ٢ |
| • - Allosteric sites, homotropic effects, cooperativity, heterotropic effects, allosteric effect  | ١ | ٢ |
| • - Enzyme inhibition- kinetics of competitive non-competitive and uncompetitive inhibition; partially competitive inhibitors   | ٢ | ٤ |
| • - Enzyme immobilization: different methods of immobilization, advantages and disadvantages of immobilization; applications of immobilized enzymes in industry   | ٢ | ٤ |
| • - Enzyme technology in industries: biological detergent, baby food, brewery industry, baking industry, fruit juice, dairy industry, starch industry, rubber industry, paper industry, photographic industry; applications of enzymes in bio-conversion and biotransformation.             | ٢ | ٤ |
| • - Enzymes as biosensors, enzyme technology in biodegradation of industrial toxic pollution: role of lignocellulosic enzymes in removing industrial toxic pollution  | ٢ | ٤ |
| • - Purification and characterization of an enzyme: (١) gel-filtration - determination of molecular weight (size exclusion chromatography) (٢) affinity chromatography (ion-exchange chromatography). (٣) gel electrophoresis.  | ٢ | ٤ |
| • - Assaying different enzymes: laccase, cellulase, pectinase, xylanase, a-amylase, test for presence of enzymes in different plant materials, applications of enzymes in industries (visit to different industries to observe the applications), applications of enzymes in biodegradation | ١ | ٢ |
| • Antioxidants (Enzymatic and Non Enzymatic)<br>• The Mode of Action of Antioxidants.   | ١ | ٢ |

٢. Course components (total contact hours and credits per semester):

|         | Lecture | Tutorial | Laboratory<br>or Studio | Practical | Other: | Total |
|---------|---------|----------|-------------------------|-----------|--------|-------|
| Contact | ٣٦      |          |                         |           |        | ٣٦    |

|        |   |  |  |  |  |   |
|--------|---|--|--|--|--|---|
| Hours  |   |  |  |  |  |   |
| Credit | ٢ |  |  |  |  | ٢ |

٣. Additional private study/learning hours expected for students per week.

(This should be an average: for the semester not a specific requirement in each week):

٤. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

Upon successful completion of this course, the student will learn: (Knowledge based)

- the major classes of enzyme and their functions in the cell;
- role of co-enzyme cofactor in enzyme catalyzed reaction;
- Differentiate between equilibrium and steady state kinetics and analyzed simple kinetic data and estimate important parameter (Km, Vmax, Kcat etc);
- to define and describe the properties of enzymes in and regulates biochemical pathways (inhibition, allosterism);

٥. Schedule of Assessment Tasks for Students During the Semester

|   | Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.) | Week Due | Proportion of Total Assessment |
|---|---|----------|--------------------------------|
| ١ | Activities (Paper presentation, seminar)  |          | ٤٠                             |
| ٢ | Midterm exam  |          | ٢٠                             |
| ٣ | Final written exam  |          | ٤٠                             |
| ٤ | TOTAL   |          | ١٠٠                            |

D. Student Academic Counseling and Support

١. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

- Academic teaching staff will be available to meet individual students for consultation and academic advice at their private offices at the times advised.
- Office hours: ١٠ hrs per week; each semester. Time will varies each semester based on academic schedule for each teaching staff.

## E Learning Resources

### ٢. List Required Textbooks

#### ١. Required Text(s):

١. Enzymes: Biochemistry, Biotechnology, Clinical Chemistry, Trevor Palmer and L. Philip, ٢٠٠٧
٢. Handbook of Enzyme Biotechnology, A. Wiseman, ١٩٩٥
٣. Microbial Enzymes and Biotransformations (Methods in Biotechnology), Jose Luis Barredo, ٢٠٠٥
٤. Industrial Enzymes: Structure, Function and Applications, Julio Polaina and Andrew P. MacCabe, ٢٠٠٧
٥. Immobilization of Enzymes and Cells (Methods in Biotechnology), Gordon F. Bickerstaff, ١٩٩٧
٦. Biotechnology Processing Steps for Enzyme Manufacturing, R. C. Tripathi, ٢٠٠٧
٧. Microbial Enzymes and Biotechnology, W.M. Fogarty and C.T. Kelly, ١٩٩٠
٨. Applications of Enzyme Biotechnology, Jeffery W. and Thomas O. Baldwin, ٢٠٠٤
٩. Biocatalysts and Enzyme Technology, Klaus Buchholz, Volker Kasche and Uwe Theo Bornscheuer, ٢٠٠٥
١٠. White Biotechnology, R. Ulbeer, D. Sell and P. Baiakeds, ٢٠٠٧

#### ٢. Essential References

- Journal of Plant Physiology.
- Journal of Biochemistry.
- Journal of Agricultures and Plant Science
- Journal of Agronomy.
- Journal of Experimental Botany.
- Journal of Agricultures and Food Science

٣- Recommended Books and Reference Material (Journals, Reports, etc) (Attach List)

٤. List Electronic Materials, Web Sites, Facebook, Twitter, etc.

◦. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

#### F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)

١. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)

(١)- Class room is already provided with data show

(٢)- The area of class room is suitable concerning the number of enrolled students

٢. Computing resources (AV, data show, Smart Board, software, etc.)

(١)- Class rooms are equipped with data show.

(٢)- Library is required and connected to the network for students to study materials.

٣. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

#### G Course Evaluation and Improvement Processes

١ Strategies for Obtaining Student Feedback on Effectiveness of Teaching

(١)- Questionnaires / students opinion survey

(٢)- Open discussion in the class room at the end of the lectures or during individual student/staff meeting

٢ Other Strategies for Evaluation of Teaching by the Instructor or by the Department

(١)- Revision of student answer papers .

(٢)- Analysis the grades of students.

٣ Processes for Improvement of Teaching

(١)- Preparing the course as PPT.

(٢)- Using scientific movies.

(٣)- Coupling the theoretical part with laboratory part

(٤)- Periodical revision of course content.

٤. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution)

After the agreement of Department and Faculty administrations; it might include:

(١)- Random check of students exam papers / assignments by external examiner

(٢)- Random check of students exam papers / assignments by internal examiner

◦ Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

A departmental review committee will look after the arrangement periodically after taking feedback from students and in the light of new development in the subject.

Name of Instructor: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Report Completed: \_\_\_\_\_

Name of Course Instructor \_\_\_\_\_

Program Coordinator: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Received: \_\_\_\_\_

**Kingdom of Saudi Arabia**

**The National Commission for Academic Accreditation & Assessment**

**Course Specifications**

**Plant Growth Regulators**

**(٢ - ٤٠١٢٦٥٦)**

## Course Specifications

|  |
|--|
| Institution: <a href="#">Umm Al-Qura University</a>                                    |
| College/Department: <a href="#">Faculty of Applied Science / Department of Biology</a> |

### A. Course Identification and General Information

|  |
|--|
| ١. Course title and code: <a href="#">Plant Growth Regulators</a> ٤٠١٢٦٥٦ - ٢  |
| ٢. Credit hours: ٢ C. H.   |
| ٣. Program(s) in which the course is offered. <a href="#">MSc. Plant Physiology (Botany)</a> .<br>(If general elective available in many programs indicate this rather than list programs) |
| ٤. Name of faculty member responsible for the course<br><a href="#">Prof. Dr. Hamed El Sayed Ahmed El Sayed (heelsayed@uqu.edu.sa)</a> .   |
| ٥. Level/year at which this course is offered  |
| ٦. Pre-requisites for this course (if any)   |
| ٧. Co-requisites for this course (if any)  |
| ٨. Location if not on main campus.   |
| ٩. Mode of Instruction (mark all that apply)   |
| a. traditional classroom <input checked="" type="checkbox"/> What percentage? ١٠٠ %  |
| b. blended (traditional and online) <input type="checkbox"/> What percentage? <input type="checkbox"/>   |
| <input type="checkbox"/> <input type="checkbox"/>  |

|                   |                                       |                      |
|-------------------|---------------------------------------|----------------------|
| c. e-learning     | What percentage?                      |                      |
| d. correspondence | <input type="text"/> What percentage? | <input type="text"/> |
| f. other          | <input type="text"/> What percentage? | <input type="text"/> |



## B Objectives

### ١. What is the main purpose for this course?

Summary of the main learning outcomes for students enrolled in the course:

The goal of the course is to familiarize students with the theoretical basis on practical application of plant growth regulators in fruit production according to the latest findings. Knowledge could be further used in practice and scientific research.

Activity of Hormones Inside the plant in terms of metabolic activity as well as a brief picture of the chemistry of organic compounds and manufactured within the plant.

٢. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

## C. Course Description (Note: General description in the form used in Bulletin or handbook)

Course Description:

Classification of plant growth regulators. Theoretical basis on application of plant growth regulators in the production of planting material. Theoretical basis on application of plant growth regulators in establishing the training system. Theoretical basis on application of plant growth regulators for chemical thinning. Theoretical basis on application of plant growth regulators to prevent fruit drop. Theoretical basis on application of plant growth regulators in improving quality of fruit. Theoretical basis on application of plant growth regulators for storage of fruit.

Practical classes

Other methods of teaching, Students research work. Determination of the moment of application, rates and doses of chemicals. Factors affecting the activity of the plant growth regulators.

### ١. Topics to be Covered

| List of Topics  | No. of Weeks | Contact hours |
|---|--------------|---------------|
| Introduction to bioenergy   | ١            | ٢             |
| The Identifications and Determination of the Development  |              |               |
| The Growth Curve  |              |               |
| Classification of plant growth regulators.  | ١            | ٢             |
| Theoretical basis on application of plant growth regulators in the production of planting material. | ١            | ٢             |

|  |   |   |
|--|---|---|
| Theoretical basis on application of plant growth regulators in establishing the training system.   | ١ | ٢ |
| Theoretical basis on application of plant growth regulators for chemical thinning.   | ١ | ٢ |
| Theoretical basis on application of plant growth regulators to prevent fruit drop.   | ١ | ٢ |
| Theoretical basis on application of plant growth regulators in improving quality of fruit.   | ١ | ٢ |
| Theoretical basis on application of plant growth regulators for storage of fruit   | ١ | ٢ |
| ١. Identification of plant hormones and their relationship with activities vital<br>٢. Auxine composition and transmission and mechanism of action<br>٣. Gibberellins composition and transmission and mechanism of action   | ٢ | ٤ |
| ٤. Cytokines composition and transmission and mechanism of action<br>٥. Ethylene composition, transmission and mechanism of action<br>٦. Natural and industrial abscisic acid composition, transmission and action of mechanism.                                     | ٢ | ٤ |
| ٧. Effects of plant hormones activated on morphological and physiological<br>٨. Effects of plant hormones inhibitory on morphological and physiological<br>٩. Applications of plant hormones in agriculture<br>١٠. Impact of environmental factors on plant hormones | ٢ | ٤ |
| Practical classes  | ١ | ٢ |
| ١. Other methods of teaching, Students research work.  |   |   |
| ٢. Determination of the moment of application, rates and doses of chemicals.   | ١ | ٢ |
| ٣. Factors affecting the activity of the plant growth regulators   | ١ | ٢ |

٢. Course components (total contact hours and credits per semester):

|               | Lecture | Tutorial | Laboratory<br>or Studio | Practical | Other: | Total |
|---------------|---------|----------|-------------------------|-----------|--------|-------|
| Contact Hours | ٣٤      |          |                         | ٦         |        | ٣٤    |
| Credit        | ٢       |          |                         | ٢         |        | ٢     |

٣. Additional private study/learning hours expected for students per week.

(This should be an average: for the semester not a specific requirement in each week):

The study rate increase ٤ hours to search through the Internet to access the sites according to reach the student has done extensive research in the specialty materials.

#### ٤. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

Students will be able to apply plant growth regulators in the production of planting material with the aim of obtaining fruit trees with feathers, as well as to form a selected shape of the crown, to regulate the yield of fruits of excellent quality by knowing all factors that influence the effect of the chemicals

- A brief summary of the knowledge or skill the course is intended to develop;
- A description of the teaching strategies to be used in the course to develop that knowledge or skill;
- The methods of student assessment to be used in the course to evaluate learning outcomes in the domain concerned.

#### ٥. Schedule of Assessment Tasks for Students During the Semester

|   | Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.) | Week Due | Proportion of Total Assessment |
|---|---|----------|--------------------------------|
| ١ | Activities (Paper presentation, seminar)  |          | ٤٠                             |
| ٢ | Midterm exam  |          | ٢٠                             |
| ٣ | Final written exam  |          | ٤٠                             |
| ٤ | TOTAL   |          | ١٠٠                            |

#### D. Student Academic Counseling and Support

١. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

- Academic teaching staff will be available to meet individual students for consultation and academic advice at their private offices at the times advised.
- Office hours: ١٠ hrs. per week; each semester. Time will varies each semester based on academic schedule for each teaching staff.

#### E Learning Resources

##### ٢. List Required Textbooks

Required Text(s):

١. Magazin N, Keserović Z, Milić B, Dorić M, Gošić J. Berba i čuvanje plodova jabuke iz integralne proizvodnje. Poljoprivredni fakultet, Novi Sad, ٢٠١٣
٢. Milić B, Keserović Z, Dorić M, Magazin N, Gošić J. Primena regulatora rasta biljaka u voćarskoj proizvodnji. Poljoprivredni fakultet, Novi Sad, ٢٠١٣
٣. Keserović, Z., Vračević (Milić), B., Magazin, N., Kurjakov, A. Priručnik za proređivanje plodova jabuke. Poljoprivredni fakultet, Novi Sad, ٢٠٠٩
٤. Ferre D.C., Warrington I.J. Apples: Botany, Production and Uses. Willingford, Oxfordshire, UK, CABI

Publishing: √√

٥. Srivastava, M.,L. (٢٠٠٢): Plant growth and development. Academic Press
٦. Camefort H. & Paniel J. ١٩٦٢ Morphology et Anatomie des Vegetaux Vasculaires ٣٧١ pp.
٧. Hall.D.O. &Rao. K.K. ١٩٩٤. Photosynthesis. ٥e edition ٢٢ pp.
٨. Heller. R ١٩٨٥. Physiologie Vegetale. ٣e Edition.
  - ١-Nutrition ٢٤٥pp
  - ٢-Developpement ٢١٥pp.
٩. ٨- William Hopkins ١٩٩٨. Introduction to plant physiology. ٥٢٨ pp ٢nd Edition
١٠. Plant Hormones T. K. Davies ١٩٩٥

#### ٢. Essential References

- Journal of Enzymology.
- Journal of Plant Physiology.
- Journal of Biochemistry.
- Journal of Agricultures and Plant Science
- Journal of Agronomy.
- Journal of Experimental Botany.
- Journal of Agricultures and Food Science

#### ٣- Recommended Books and Reference Material (Journals, Reports, etc) (Attach List)

#### ٤. List Electronic Materials, Web Sites, Facebook, Twitter, etc.

٥. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

#### F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)

#### ١. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)

(١)- Class room is already provided with data show

(٢)- The area of class room is suitable concerning the number of enrolled students

#### ٢. Computing resources (AV, data show, Smart Board, software, etc.)

(١)- Class rooms are equipped with data show.

(٢)- Library is required and connected to the network for students to study materials.

#### ٣. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

#### G Course Evaluation and Improvement Processes

#### ١ Strategies for Obtaining Student Feedback on Effectiveness of Teaching

(١)- Questionnaires / students opinion survey

(٢)- Open discussion in the class room at the end of the lectures or during individual student/staff

|   |
|---|
| meeting   |
| ٢ Other Strategies for Evaluation of Teaching by the Instructor or by the Department<br><br>(١)- Revision of student answer papers .<br><br>(٢)- Analysis the grades of students.   |
| ٣ Processes for Improvement of Teaching<br><br>(١)- Preparing the course as PPT.<br><br>(٢)- Using scientific movies.<br><br>(٣)- Coupling the theoretical part with laboratory part<br><br>(٤)- Periodical revision of course content.   |
| ٤. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution)<br><br>After the agreement of Department and Faculty administrations; it might include:<br><br>(١)- Random check of students exam papers / assignments by external examiner<br><br>(٢)- Random check of students exam papers / assignments by internal examiner |
| ٥ Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.<br><br>A departmental review committee will look after the arrangement periodically after taking feedback from students and in the light of new development in the subject.  |

Name of Instructor: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Report Completed: \_\_\_\_\_

Name of Course Instructor \_\_\_\_\_

Program Coordinator: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Received: \_\_\_\_\_

## Kingdom of Saudi Arabia

### The National Commission for Academic Accreditation & Assessment

#### Course Specifications

Stress in Plants

٤٠١٢٦٥٧-٢

## Course Specifications

Institution: **Umm Al-Qura University**

College/Department: **Faculty of Applied Science / Department of Biology**

### A. Course Identification and General Information

١. Course title and code: **٤٠١٢٦٥٧-٢**

٢. Credit hours: **٢ Credit hours**

٣. Program(s) in which the course is offered.

(If general elective available in many programs indicate this rather than list programs)

**MSc in Botany**

٤. Name of faculty member responsible for the course

**Dr. Mostafa Koutb**

٥. Level/year at which this course is offered

٦. Pre-requisites for this course (if any)

٧. Co-requisites for this course (if any)

٨. Location if not on main campus

٩. Mode of Instruction (mark all that apply)

a. traditional classroom



What percentage?

**١٠٠ %**

b. blended (traditional and online)

What percentage?

c. e-learning

what percentage?

d. correspondence

what percentage?

f. other

what percentage?

Comments:



## B Objectives

|   |
|---|
| ١. What is the main purpose for this course?  |
| ٢. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field) |

## C. Course Description (Note: General description in the form used in Bulletin or handbook)

|   |
|---|
| Course Description:<br><b>The course structure aims to discuss in details the environmental stresses like extreme temperature, drought, salt, heavy metal, wounding and pathogens. Metabolic shunts during stresses will be discussed. The overcoming and tolerance mechanisms will be covered.</b> |
|---|

| ١. Topics to be Covered               |              |               |
|---------------------------------------|--------------|---------------|
| List of Topics                        | No. of Weeks | Contact hours |
| <b>Introduction</b>                   | ١            | ٢             |
| <b>Light stress in plant</b>          | ١            | ٢             |
| <b>Draught stress in plant</b>        | ١            | ٢             |
| <b>Temperature stress in plant</b>    | ١            | ٢             |
| <b>Could and freezing stress</b>      | ١            | ٢             |
| <b>Salt stress</b>                    | ١            | ٢             |
| <b>Heavy metal</b>                    | ١            | ٢             |
| <b>Wounding and grazing in plants</b> | ١            | ٢             |
| <b>Biotic stress in plant</b>         | ١            | ٢             |
| <b>Metabolic shunts under stress</b>  | ٢            | ٤             |
| <b>Tolerance mechanisms</b>           | ٢            | ٤             |

٢. Course components (total contact hours and credits per semester):

|               | Lecture | Tutorial | Laboratory<br>or Studio | Practical | Other: | Total |
|---------------|---------|----------|-------------------------|-----------|--------|-------|
| Contact Hours | ٢٦      |          |                         |           |        | ٢٦    |
| Credit        | ٢       |          |                         |           |        | ٢     |

٣. Additional private study/learning hours expected for students per week.

٤. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

**This course will provide deep understanding of various physiological, molecular, and biochemical mechanisms plants use to respond to environmental stresses like extreme temperature, drought, salt, and pathogens. The basic physical and**

**physiological principles will be covered in combination with recent research progress in these fields.**

**In this module the students are expected to (١) learn the major principles of plant stressed physiology and the crucial processes behind it**

**(٢) gain understanding on the interaction between plants and the environment (٣) become familiar with basic methodologies employed in these fields (٤) develop the skills to read**

**relevant literature, to follow research seminars in these fields and to critically assess the presented information.**

| o. Schedule of Assessment Tasks for Students During the Semester |   |          |                                |
|--|---|----------|--------------------------------|
|  | Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.) | Week Due | Proportion of Total Assessment |
| ١  | <b>Activities</b>   |          | ٣٠٪                            |
| ٣  | <b>Essays</b>   |          | ٣٠٪                            |
| ٤  | <b>Final written exam</b>   |          | ٤٠٪                            |
| ٥  | <b>TOTAL</b>  |          | ١٠٠٪                           |

D. Student Academic Counseling and Support

١. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

**Academic teaching staff will be available to meet students for consultation and academic advice at their private offices at the times advised.**

**Office hours: ١٠ hours per week; each semester. Time will varies each semester based on academic schedule for each teaching staff.**

E Learning Resources

١. List Required Textbooks

- ١) Taiz and Zeiger ٢٠١٠. **Plant Physiology. ٥th Edition. Sinauer Associates, Inc. Sunderland, MA**
- ٢) Buchanan, Grussem, and Jones. ٢٠٠٠. **Biochemistry and Molecular Biology of Plants. Wiley-Blackwell-ASPB, Rockville, MD,**

٢. List Essential References Materials (Journals, Reports, etc.)

High Impact Journals:

٣. List Recommended Textbooks and Reference Material (Journals, Reports, etc)

|  |
|--|
|  |
| ٤. List Electronic Materials, Web Sites, Facebook, Twitter, etc.   |
| ٥. Other learning material such as computer-based programs/CD, professional standards or regulations and software. |

#### F. Facilities Required

|   |
|---|
| Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)  |
| ١. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)<br><b>(١)- Class room is already provided with data show</b><br><b>(٢)- The area of class room is suitable concerning the number of enrolled students</b> |
| ٢. Computing resources (AV, data show, Smart Board, software, etc.)<br><b>(١)- Class rooms are equipped with data show.</b><br><b>(٢)- Library is required and connected to the network for students to study materials</b>           |
| ٣. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)   |

#### G Course Evaluation and Improvement Processes

|   |
|---|
| ١ Strategies for Obtaining Student Feedback on Effectiveness of Teaching<br><b>(١)- Questionnaires / students opinion survey</b><br><b>(٢)- Open discussion in the class room at the end of the lectures or during individual student/staff meeting</b> |
| ٢ Other Strategies for Evaluation of Teaching by the Instructor or by the Department<br><b>(١)- Revision of student answer papers .</b>   |

**(٢)- Analysis the grades of students.**

٣ Processes for Improvement of Teaching

**(١)- Preparing the course as PPT.**

**(٢)- Using scientific movies.**

**(٣)- Coupling the theoretical part with laboratory part**

**(٤)- Periodical revision of course content.**

٤. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution)

**After the agreement of Department and Faculty administrations; it might include:**

**(١)- Random check of students exam papers / assignments by external examiner**

**(٢)- Random check of students exam papers / assignments by internal examiner**

◦ Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

**A departmental review committee will look after the arrangement periodically after taking feedback from students and in the light of new development in the subject.**

Name of Instructor: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Report Completed: \_\_\_\_\_

Name of Course Instructor \_\_\_\_\_

Program Coordinator: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Received: \_\_\_\_\_

## Kingdom of Saudi Arabia

### The National Commission for Academic Accreditation & Assessment

#### Course Specifications

#### Adaptation in Plants

(٤٠١٢٦٥٨-٢)

## Course Specifications

|   |
|---|
| Institution: <b>Umm Al-Qura University</b>                                    |
| College/Department: <b>Faculty of Applied Science / Department of Biology</b> |

### A. Course Identification and General Information

|  |
|--|
| ١. Course title and code: <b>Adaptation in Plants (٤٠١٢٦٥٨ -٢)</b>   |
| ٢. Credit hours: <b>٢ C. H.</b>  |
| ٣. Program(s) in which the course is offered. <b>MSc. Plant Physiology (Botany).</b><br>(If general elective available in many programs indicate this rather than list programs) |
| ٤. Name of faculty member responsible for the course<br><b>Prof. Dr. Hamed El Sayed Ahmed El Sayed (<a href="mailto:heelsayed@uqu.edu.sa">heelsayed@uqu.edu.sa</a>).</b>         |
| ٥. Level/year at which this course is offered  |
| ٦. Pre-requisites for this course (if any)   |
| ٧. Co-requisites for this course (if any)  |
| ٨. Location if not on main campus.   |
| ٩. Mode of Instruction (mark all that apply)   |
| a. traditional classroom <input checked="" type="checkbox"/> What percentage? <b>١٠٠ %</b>   |
| b. blended (traditional and online) <input type="checkbox"/> What percentage? <input type="text"/>   |
| <input type="checkbox"/> <input type="text"/>  |

|                   |                                       |                      |
|-------------------|---------------------------------------|----------------------|
| c. e-learning     | What percentage?                      |                      |
| d. correspondence | <input type="text"/> What percentage? | <input type="text"/> |
| f. other          | <input type="text"/> What percentage? | <input type="text"/> |



## B Objectives

### ١. What is the main purpose for this course?

Summary of the main learning outcomes for students enrolled in the course:

- Give the students' knowledge of the definition of "Adaptation" in terms of a biotic Stress.
- The course aims to give the students an idea of the basics of practical and theoretical study of the techniques of plant stress and stages of development inside the plant under different a biotic stress in terms of metabolic activity as well as a brief picture of the chemistry of organic compounds and manufactured within the plant.

٢. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

## C. Course Description (Note: General description in the form used in Bulletin or handbook)

Course Description:

Global change is a topic of great concern but what does it really mean for plants and plant communities? Change includes increasing temperatures, decreasing rainfall, rising atmospheric carbon dioxide levels, degrading soils, excess of nutrients, salt, heavy metals or man-made chemicals. Change can mean altered presence of herbivores, pests and pathogens, or competition with aggressive weeds. To manage plants and their communities in a changing world, it is instrumental to understand how plants adapt to change. In this course, you will investigate how plants fare in ecosystems, currently and in the future. You will explore the processes that govern plant communities. Collaborating with government scientists and using an advanced web-interface to provide information, you will gain first-hand experience with field visits and data collection for hypothesis-driven research in south-east Queensland. Participants choose on-demand lectures and discussions and partake in small group activities to gain the skills essential for plant and ecosystem science sought after by employers and foundation for postgraduate studies.

Course participants gain insights of plant adaptations, locally and globally, relevant for students interested in plant biology, ecology and conservation, environmental science, agriculture and biotechnology. You will develop knowledge of the adaptations that allow plants to function in natural and in human-made systems including degraded and mine sites. This knowledge is necessary to evaluate vulnerability and resilience of plants to future climates and altered environments. Understanding plant adaptations is instrumental for decision making, management and selection of plants for future natural ecosystems and bioproduction systems and is at the core of biodiversity protection, carbon sequestration and climate change abatement.

### ١. Topics to be Covered

| List of Topics                                     | No. of Weeks | Contact hours |
|--|--------------|---------------|
| ١. Introduction about the definition of adaptation | ١            | ٢             |

|  |   |   |
|--|---|---|
| ٢. Give the students' knowledge of with the definition of "Accumulation" in terms of a biotic Stress | ٢ | ٤ |
| ٣. The factors effect changes of climatic on plant.  | ٢ | ٤ |
| ٤. Methods of plant organ transplants culture under different a biotic stress                        | ٢ | ٤ |
| ٥. Methods of pollution under stress.  | ١ | ٢ |
| ٦. Isolation and cultivation methods of plant protoplast cells under different a biotic stress       | ١ | ٢ |
| ٧. The economic importance of the applications of plant tissue culture under a biotic stress.        | ١ | ٢ |
| ٨. Applications has been studied by seminars   | ٢ | ٤ |
| ٩. Practical Methods for different stress  | ٤ | ٨ |

|  |         |          |                         |           |        |       |
|--|---------|----------|-------------------------|-----------|--------|-------|
| ٢. Course components (total contact hours and credits per semester): |         |          |                         |           |        |       |
|  | Lecture | Tutorial | Laboratory<br>or Studio | Practical | Other: | Total |
| Contact<br>Hours   | ٢٨      |          |                         | ٨         |        | ٣٦    |
| Credit   | ٢       |          |                         | ٤         |        | ٢     |

٣. Additional private study/learning hours expected for students per week.

(This should be an average: for the semester not a specific requirement in each week):  
The study rate increase ٤ hours to search through the Internet to access the sites according to reach the student has done extensive research in the specialty materials.

|  |
|--|
| ٤. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy   |
| ١. A brief summary of the knowledge or skill the course is intended to develop;                                      |
| ٢. A description of the teaching strategies to be used in the course to develop that knowledge or skill;             |
| ٣. The methods of student assessment to be used in the course to evaluate learning outcomes in the domain concerned. |
| (i) Description of the skills to be developed in this domain.  |
| ١. The ability to use the Web in search of the latest findings of modern science                                     |
| ٢. The ability to use computers in research writing and presentation using power point                               |

|  |
|--|
| <p>٣. The use of computers in the provision of research and scientific reports required</p> <p>٤. The use of modern techniques in scientific research</p> <p>٥. The ability to research information required analysis.</p>   |
| <p>(ii) Teaching strategies to be used to develop these skills</p> <p>١. To give students individual and collective duties and activities and reports and presented through the use of Microsoft Office</p> <p>٢. View summaries of scientific material to the students using the programs Power point</p> <p>٣. To urge the students to visit the library to take advantage of modern scientific research</p> <p>٤. - Make a table for the students scientific debate</p> |

| ٥. Schedule of Assessment Tasks for Students During the Semester |   |          |                                |
|--|---|----------|--------------------------------|
|  | Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.) | Week Due | Proportion of Total Assessment |
| ١  | Activities (Paper presentation, seminar)  |          | ٤٠                             |
| ٢  | Midterm exam  |          | ٢٠                             |
| ٣  | Final written exam  |          | ٤٠                             |
| ٤  | TOTAL   |          | ١٠٠                            |

#### D. Student Academic Counseling and Support

|   |
|---|
| <p>١. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)</p> <ul style="list-style-type: none"> <li>Academic teaching staff will be available to meet individual students for consultation and academic advice at their private offices at the times advised.</li> <li>Office hours: ١٠ hrs. per week; each semester. Time will varies each semester based on academic schedule for each teaching staff.</li> </ul> |
|---|

#### E Learning Resources

|  |
|--|
| <p>٤. List Required Textbooks</p> <p>١. Required Text(s):</p>  |
| <p>١. Handbook of Plant Cell Culture Techniques and breeding. Ed. Evans, Sharp, Ammirato and Yamada. Macmillan, New York, ١٩٨٣.</p> <p>٢. Plant Tissue Culture : Methods and Application in Agriculture. Ed. Travor A. Thorpe. Academic Press, ١٩٨١.</p> <p>٣. Growth and Organization in Plant , Stewart, F.C. Adison - Wesley Co. Reading Wareing (١٩٨٧)</p> <p>٤. Plant Propagation by tissue culture: Handbook and directory of commercial laboratories. Ed. George, E. F. and Sherrington, P. D. Exegetics Limited, ١٩٨٤.</p> |
| <p>Plant Propagation by tissue culture: Handbook and directory of commercial laboratories. Ed. George, E. F. and Sherrington, P. D. Exegetics Limited, ١٩٨٤.</p>   |
| <p>٢. Essential References</p> <ul style="list-style-type: none"> <li>• Journal of Plant Physiology.</li> <li>• Journal of Biochemistry.</li> <li>• Journal of Agricultures and Plant Science</li> <li>• Journal of Plant Metabolism.</li> <li>• Journal of Experimental Plant Physiology</li> <li>• Journal of Agriculture and Food Science</li> </ul>  |
| <p>٣- Recommended Books and Reference Material (Journals, Reports, etc) (Attach List)</p>  |
| <p>٤. List Electronic Materials, Web Sites, Facebook, Twitter, etc.</p>  |
| <p>٥. Other learning material such as computer-based programs/CD, professional standards or regulations and software.</p>  |

#### F. Facilities Required

|  |
|--|
| <p>Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)</p>  |
| <p>١. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)</p> <p>(١)- Class room is already provided with data show</p> <p>(٢)- The area of class room is suitable concerning the number of enrolled students</p> |
| <p>٢. Computing resources (AV, data show, Smart Board, software, etc.)</p> <p>(١)- Class rooms are equipped with data show.</p> <p>(٢)- Library is required and connected to the network for students to study materials.</p>          |
| <p>٣. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)</p>   |

#### G Course Evaluation and Improvement Processes

١ Strategies for Obtaining Student Feedback on Effectiveness of Teaching

(١)- Questionnaires / students opinion survey

(٢)- Open discussion in the class room at the end of the lectures or during individual student/staff meeting

٢ Other Strategies for Evaluation of Teaching by the Instructor or by the Department

(١)- Revision of student answer papers.

(٢)- Analysis the grades of students.

٣ Processes for Improvement of Teaching

(١)- Preparing the course as PPT.

(٢)- Using scientific movies.

(٣)- Coupling the theoretical part with laboratory part

(٤)- Periodical revision of course content.

٤. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution)

After the agreement of Department and Faculty administrations; it might include:

(١)- Random check of students exam papers / assignments by external examiner

(٢)- Random check of students exam papers / assignments by internal examiner

٥ Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

A departmental review committee will look after the arrangement periodically after taking feedback from students and in the light of new development in the subject.

Name of Instructor: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Report Completed: \_\_\_\_\_

Name of Course Instructor \_\_\_\_\_

Program Coordinator: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Received: \_\_\_\_\_

## Kingdom of Saudi Arabia

### The National Commission for Academic Accreditation & Assessment

#### Course Specifications

##### Seeds Physiology and Development

٤٠١٢٦٥٩-٢

## Course Specifications

Institution: **Umm Al-Qura University**

College/Department: **Faculty of Applied Science / Department of Biology**

### A. Course Identification and General Information

١. Course title and code: **٤٠١٢٦٥٩-٢**

٢. Credit hours: **٢ Credit hours**

٣. Program(s) in which the course is offered.

(If general elective available in many programs indicate this rather than list programs)

**MSc in Botany**

٤. Name of faculty member responsible for the course

**Dr. Mostafa Koutb**

٥. Level/year at which this course is offered

٦. Pre-requisites for this course (if any)

٧. Co-requisites for this course (if any)

٨. Location if not on main campus

٩. Mode of Instruction (mark all that apply)

a. traditional classroom



What percentage?

**١٠٠ %**

b. blended (traditional and online)

What percentage?

c. e-learning

what percentage?

d. correspondence

what percentage?

f. other

what percentage?

Comments:



## B Objectives

|   |
|---|
| ١. What is the main purpose for this course?  |
| ٢. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field) |

## C. Course Description (Note: General description in the form used in Bulletin or handbook)

|   |
|---|
| <p>Course Description:</p> <p><b>The course structure aims to discuss in details the following items including; Seed development in plant ; Seed morphology of monocots and Dicots<br/>Seed anatomy; Seed distribution; Seed germination and metabolic changes<br/>Factors affecting germination ;Dormancy in seeds<br/>Methods for breaking dormancy; Pre and post harvest factors affecting on seed</b></p> |
|---|

| ١. Topics to be Covered                               |              |               |
|---|--------------|---------------|
| List of Topics  | No. of Weeks | Contact hours |
| <b>Introduction</b>                                   | ١            | ٢             |
| <b>Seed development in plant</b>                      | ٢            | ٢             |
| <b>Seed morphology of monocots and Dicots</b>         | ١            | ٢             |
| <b>Seed anatomy</b>                                   | ١            | ٢             |
| <b>Seed distribution</b>                              | ١            | ٢             |
| <b>Seed germination and metabolic changes</b>         | ٢            | ٤             |
| <b>Factors affecting germination</b>                  | ٢            | ٤             |
| <b>Dormancy in seeds</b>                              | ١            | ٢             |
| <b>Methods for breaking dormancy</b>                  | ١            | ٢             |
| <b>Pre and post harvest factors affecting on seed</b> | ١            | ٢             |

٢. Course components (total contact hours and credits per semester):

|                  | Lecture | Tutorial | Laboratory<br>or Studio | Practical | Other: | Total |
|------------------|---------|----------|-------------------------|-----------|--------|-------|
| Contact<br>Hours | ٢٦      |          |                         |           |        | ٢٦    |
| Credit           | ٢       |          |                         |           |        | ٢     |

٣. Additional private study/learning hours expected for students per week.

٤. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

**This course will provide an understanding of the unique features of seeds in various plant groups. In this module the students are expected to (١) learn the major principles seed physiology and the crucial processes behind it**

**(٢) gain understanding on the germination process and factors affecting plants and the environment**

**(٣) gain understanding on seed dormancy and method for breaking this dormancy**

**(٣) become familiar with basic methodologies employed in these fields (٤) develop the skills to read relevant literature, to follow research seminars in these fields and to critically assess the presented information.**

| o. Schedule of Assessment Tasks for Students During the Semester |   |          |                                |
|--|---|----------|--------------------------------|
|  | Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.) | Week Due | Proportion of Total Assessment |
| ١  | <b>Activities</b>   |          | ٣٠٪                            |
| ٣  | <b>Essays</b>   |          | ٣٠٪                            |
| ٤  | <b>Final written exam</b>   |          | ٤٠٪                            |
| ٥  | <b>TOTAL</b>  |          | ١٠٠٪                           |

D. Student Academic Counseling and Support

١. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

**Academic teaching staff will be available to meet students for consultation and academic advice at their private offices at the times advised.**

**Office hours: ١٠ hours per week; each semester. Time will varies each semester based on academic schedule for each teaching staff.**

E Learning Resources

١. List Required Textbooks

- ١) Taiz and Zeiger ٢٠١٠. **Plant Physiology. ٥th Edition. Sinauer Associates, Inc. Sunderland, MA**
- ٢) Buchanan, Gruissem, and Jones. ٢٠٠٠. **Biochemistry and Molecular Biology of Plants. Wiley-Blackwell-ASPB, Rockville, MD,**

٢. List Essential References Materials (Journals, Reports, etc.)

High Impact Journals:

٣. List Recommended Textbooks and Reference Material (Journals, Reports, etc)

|  |
|--|
|  |
| ٤. List Electronic Materials, Web Sites, Facebook, Twitter, etc.   |
| ٥. Other learning material such as computer-based programs/CD, professional standards or regulations and software. |

#### F. Facilities Required

|   |
|---|
| Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)  |
| ١. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)<br><b>(١)- Class room is already provided with data show</b><br><b>(٢)- The area of class room is suitable concerning the number of enrolled students</b> |
| ٢. Computing resources (AV, data show, Smart Board, software, etc.)<br><b>(١)- Class rooms are equipped with data show.</b><br><b>(٢)- Library is required and connected to the network for students to study materials</b>           |
| ٣. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)   |

#### G Course Evaluation and Improvement Processes

|   |
|---|
| ١ Strategies for Obtaining Student Feedback on Effectiveness of Teaching<br><b>(١)- Questionnaires / students opinion survey</b><br><b>(٢)- Open discussion in the class room at the end of the lectures or during individual student/staff meeting</b> |
| ٢ Other Strategies for Evaluation of Teaching by the Instructor or by the Department<br><b>(١)- Revision of student answer papers .</b>   |

**(٢)- Analysis the grades of students.**

٣ Processes for Improvement of Teaching

**(١)- Preparing the course as PPT.**

**(٢)- Using scientific movies.**

**(٣)- Coupling the theoretical part with laboratory part**

**(٤)- Periodical revision of course content.**

٤. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution)

**After the agreement of Department and Faculty administrations; it might include:**

**(١)- Random check of students exam papers / assignments by external examiner**

**(٢)- Random check of students exam papers / assignments by internal examiner**

◦ Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

**A departmental review committee will look after the arrangement periodically after taking feedback from students and in the light of new development in the subject.**

Name of Instructor: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Report Completed: \_\_\_\_\_

Name of Course Instructor \_\_\_\_\_

Program Coordinator: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Received: \_\_\_\_\_

## Kingdom of Saudi Arabia

### The National Commission for Academic Accreditation & Assessment

## Course Specifications

### Water Relations in Plants

(٤٠١٢٦٨٤-٢)

## Course Specifications

|  |
|--|
| Institution: <a href="#">Umm Al-Qura University</a>                                    |
| College/Department: <a href="#">Faculty of Applied Science / Department of Biology</a> |

### A. Course Identification and General Information

|  |
|--|
| ١. Course title and code: <a href="#">Water Relations in Plants</a> (٤٠١٢٦٨٤-٢)  |
| ٢. Credit hours: <b>٢ C. H.</b>  |
| ٣. Program(s) in which the course is offered. <a href="#">MSc. Plant Physiology (Botany)</a> .<br>(If general elective available in many programs indicate this rather than list programs)   |
| ٤. Name of faculty member responsible for the course<br><a href="#">Prof. Dr. Hamed El Sayed Ahmed El Sayed (heelsayed@uqu.edu.sa)</a> .   |
| ٥. Level/year at which this course is offered  |
| ٦. Pre-requisites for this course (if any)   |
| ٧. Co-requisites for this course (if any)  |
| ٨. Location if not on main campus.   |
| ٩. Mode of Instruction (mark all that apply)<br><br>a. traditional classroom <input checked="" type="checkbox"/> What percentage? <a href="#">100 %</a><br><input type="text"/> <input type="text"/><br>b. blended (traditional and online) <input type="checkbox"/> What percentage?<br><input type="text"/> <input type="text"/> |

|                   |                                       |                      |
|-------------------|---------------------------------------|----------------------|
| c. e-learning     | What percentage?                      |                      |
| d. correspondence | <input type="text"/> What percentage? | <input type="text"/> |
| f. other          | <input type="text"/> What percentage? | <input type="text"/> |



## B Objectives

### ١. What is the main purpose for this course?

Summary of the main learning outcomes for students enrolled in the course:

- The course analyses the fundamental background of water transport, considering the soil, the plant and the atmosphere as a single continuum. Water flow within this system is described in terms of water potential for both stationary and non-stationary conditions. Special attention is paid to the physiological mechanisms of flow regulation and to the occurrence of drought resistance in plants. Determination and calculation of transpiration is also discussed for individual plants. The practical training aims at the manipulation of instrumentation used in plant-water studies, such as the pressure bomb, the thermocouple psychrometer, the diffusion porometer, and sap flow equipment.

٢. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

## C. Course Description (Note: General description in the form used in Bulletin or handbook)

Course Description:

Course Description & Objectives:

This course will cover the physical and chemical properties of water, physiological effects of these properties on plants, water uptake and distribution in plants, mineral uptake and nutrition by plants.

Final competences

- Knowledge about the physiological and physical principles involved in water transport within the continuum soil-plant-atmosphere.
- Insight about plant characteristics leading to drought resistance and economic water use (water use efficiency).
- Knowledge about water consumption by single plants and plant communities (crops and natural vegetation).
- Knowledge about instrumentation used to measure plant-water status and water consumption

### ١. Topics to be Covered

| List of Topics   | No. of Weeks | Contact hours |
|--|--------------|---------------|
| ١. Introduction of water contents in plant and soil.<br>Identify Water properties. | ١            | ٢             |
| ١. Plant-water relations   | ١            | ٢             |
| ١.١. The role of water in plant functioning  | ١            | ٢             |
| ١.٢. Water content, water potential and components                                 | ١            | ٢             |

|   |   |   |
|---|---|---|
| ١,٣. Water relations of cells and osmotic adjustment  | ١ | ٢ |
| ١,٤. Water movement through plants and cavitation   | ١ | ٢ |
| ١,٥. Water in leaves, water loss from leaves and stomatal conductance   | ١ | ٢ |
| ١,٦. Water use efficiency   | ١ | ٢ |
| ١,٧. Adaptations to drought   | ١ | ٢ |
| ١,٨. Winter water relations and freezing tolerance  | ١ | ٢ |
| ١,٩. Salt tolerance   | ١ | ٢ |
| ٢. Instrumentation, sensors and practical training<br>٢,١. Pressure bomb<br>٢,٢. Thermocouple psychrometer<br>٢,٣. Diffusion-porometer<br>٢,٤. Stomatal characteristics (replica method)<br>٢,٥. Sap flow sensors | ١ | ٢ |
| ٣. Plant water absorption – transpiration.<br>Water movement in plant from soil.  | ١ | ٢ |
| ٣,١. Water stresses of the plant - the concept of desertification - the concept of desert from the point of view of the environment.  | ١ | ٢ |
| ٣,٢. The desert patterns in the world and the desert and the climatic characteristics of the hot desert - the attributes that God provided the desert plants to tolerance their hard conditions.                  | ١ | ٢ |

| ٢. Course components (total contact hours and credits per semester): |         |          |                         |           |        |       |
|--|---------|----------|-------------------------|-----------|--------|-------|
|  | Lecture | Tutorial | Laboratory<br>or Studio | Practical | Other: | Total |
| Contact Hours  | ٣٠      |          |                         |           |        | ٣٠    |
| Credit   | ٢       |          |                         |           |        | ٢     |

٣. Additional private study/learning hours expected for students per week.

(This should be an average: for the semester not a specific requirement in each week):

The study rate increase ٤ hours to search through the Internet to access the sites according to reach the student has done extensive research in the specialty materials.

#### ٤. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

At the end of the course, the student should be able to:

١. explain how the physical and chemical properties of water affect the physiological status of plants,
٢. Describe the effects of environmental factors on the dynamics of water uptake by plants and plant communities.
٣. A brief summary of the knowledge or skill the course is intended to develop;
٤. A description of the teaching strategies to be used in the course to develop that knowledge or skill;
٥. The methods of student assessment to be used in the course to evaluate learning outcomes in the domain concerned.

(i) Description of the skills to be developed in this domain.

٦. The ability to use the Web in search of the latest findings of modern science
٧. The ability to use computers in research writing and presentation using power point
٨. The use of computers in the provision of research and scientific reports required
٩. The use of modern techniques in scientific research
١٠. The ability to research information required analysis.

(ii) Teaching strategies to be used to develop these skills

٥. To give students individual and collective duties and activities and reports and presented through the use of Microsoft Office
٦. View summaries of scientific material to the students using the programs Power point
٧. To urge the students to visit the library to take advantage of modern scientific research
٨. - Make a table for the students scientific debate

#### ٥. Schedule of Assessment Tasks for Students During the Semester

|   | Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.) | Week Due | Proportion of Total Assessment |
|---|---|----------|--------------------------------|
| ١ | Activities (Paper presentation, seminar)  |          | ٤٠                             |
| ٢ | Midterm exam  |          | ٢٠                             |
| ٣ | Final written exam  |          | ٤٠                             |
| ٤ | TOTAL   |          | ١٠٠                            |

#### D. Student Academic Counseling and Support

١. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

- Academic teaching staff will be available to meet individual students for consultation and academic advice at their private offices at the times advised.
- Office hours: ١٠ hrs. per week; each semester. Time will varies each semester based on academic schedule for each teaching staff.

## E Learning Resources

|  |
|--|
| ١. List Required Textbooks   |
| ١. Required Text(s):   |
| ١. Plant Physiological Ecology (eds. H. Lambers, F. Stuart Chapin III, Thijs L. Pons), Springer, ١٩٩٨, ٥٤٠ pp  |
| ٢. Plant Physiological Ecology (eds. H. Lambers, F. Stuart Chapin III, Thijs L. Pons), Springer, ١٩٩٨, ٥٤٠ pp  |
| ٣. Biochemistry & Molecular Biology of Plants, Bob B. Buchanan, ٢٠٠٠   |
| ٤. Hopkins W.H. (١٩٩١): Introduction to plant physiology. Mc. Graw Hill, USA - - Knox L, Ladiges B, Evans D. and Saint A (٢٠٠١): Biology, ٢nd. Ed.   |
| ٥. Plant Biotechnology: Perspectives and Prospects, P. C. Trivedi, ٢٠٠٦  |
| ٦. Principles and Practices in Plant Science, P. D. Walton, ١٩٨٨   |
| ٧. Biotechnology: Theory and Techniques: Plant Biotechnology, Animal Cell Culture, Immunobiotechnology (Vol I), Jack G Chirikjian (Ed.), ١٩٩٥  |
| ٨. -Hussain, A (٢٠٠٩). Fundamentals of plant physiology – ١ st . Edition (approved by the department)  |
| ٩. Handbook of Plant Cell Culture Techniques and breeding. Ed. Evans, Sharp, Ammirato and Yamada. Macmillan, New York, ١٩٨٣.   |
| ١٠. Growth and Organization in Plant , Stewart, F.C. Adison - Wesley Co. Reading Wareing (١٩٨٧)  |
| ١١. Plant Propagation by tissue culture: Handbook and directory of commercial laboratories. Ed. George, E. F. and Sherrington, P. D. Exegetics Limited, ١٩٨٤.  |
| ١٢. Plant Propagation by tissue culture: Handbook and directory of commercial laboratories. Ed. George, E. F. and Sherrington, P. D. Exegetics Limited, ١٩٨٤.  |
| ٢. Essential References  |
| Different Journals and web sites related to the subject including:   |
| <ul style="list-style-type: none"> <li>• Journal of Plant Physiology.</li> <li>• Journal of Agriculture and Food Science.</li> <li>• Journal of Molecular Biology</li> <li>• Journal of Biochemistry.</li> <li>• Biology Pages <a href="https://lms.kku.edu.sa/webapps/portal/frameset.jsp">https://lms.kku.edu.sa/webapps/portal/frameset.jsp</a> -Websites on the internet that are relevant to the topics of the course - Elsevier -Science Direct.</li> <li>• Journal of Agricultures and Plant Science</li> <li>• <a href="http://www.ansci.cornell.edu/plants/medicinal/">http://www.ansci.cornell.edu/plants/medicinal/</a></li> <li>• <a href="http://www.botanical.com">http://www.botanical.com</a></li> </ul> |
| ٣- Recommended Books and Reference Material (Journals, Reports, etc) (Attach List)   |
| ٤. List Electronic Materials, Web Sites, Facebook, Twitter, etc.   |
| ٥. Other learning material such as computer-based programs/CD, professional standards or regulations and software.   |

#### F. Facilities Required

|   |
|---|
| Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)  |
| ١. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)<br><br>(١)- Class room is already provided with data show.<br><br>(٢)- The area of class room is suitable concerning the number of enrolled students. |
| ٢. Computing resources (AV, data show, Smart Board, software, etc.)<br><br>(١)- Class rooms are equipped with data show.<br><br>(٢)- Library is required and connected to the network for students to study materials.            |
| ٣. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)   |

#### G Course Evaluation and Improvement Processes

|   |
|---|
| ١ Strategies for Obtaining Student Feedback on Effectiveness of Teaching<br><br>(١)- Questionnaires / students opinion survey<br><br>(٢)- Open discussion in the class room at the end of the lectures or during individual student/staff meeting   |
| ٢ Other Strategies for Evaluation of Teaching by the Instructor or by the Department<br><br>(١)- Revision of student answer papers.<br><br>(٢)- Analysis the grades of students.  |
| ٣ Processes for Improvement of Teaching<br><br>(١)- Preparing the course as PPT.<br><br>(٢)- Using scientific movies.<br><br>(٣)- Coupling the theoretical part with laboratory part.<br><br>(٤)- Periodical revision of course content.  |
| ٤. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution)<br><br>After the agreement of Department and Faculty administrations; it might include: |

(١)- Random check of students exam papers / assignments by external examiner

(٢)- Random check of students exam papers / assignments by internal examiner

◦ Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

A departmental review committee will look after the arrangement periodically after taking feedback from students and in the light of new development in the subject.

Name of Instructor: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Report Completed: \_\_\_\_\_

Name of Course Instructor \_\_\_\_\_

Program Coordinator: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Received: \_\_\_\_\_

## Kingdom of Saudi Arabia

### The National Commission for Academic Accreditation & Assessment

#### Course Specifications

#### Comparative Plant Morphology

٤٠١٢٦٦١-٢

#### Course Specifications

Institution: **Umm Al-Qura University**

College/Department: **Faculty of Applied Science / Department of Biology**

#### A. Course Identification and General Information

١. Course title and code: **Comparative Plant Morphology ٤٠١٢٦٦١-٢**

٢. Credit hours: **٢ Credit hours**

٣. Program(s) in which the course is offered.

(If general elective available in many programs indicate this rather than list programs)

**MSc in plant taxonomy**

٤. Name of faculty member responsible for the course

**Prof. Dr. Kadry Abdel Khalik (knabdelkhalik@uqu.edu.sa)**

٥. Level/year at which this course is offered

٦. Pre-requisites for this course (if any)

٧. Co-requisites for this course (if any)

٨. Location if not on main campus

٩. Mode of Instruction (mark all that apply)

a. traditional classroom



What percentage?

**١٠٠٪**

b. blended (traditional and online)

What percentage?



|                   |                                       |                      |
|-------------------|---------------------------------------|----------------------|
| c. e-learning     | What percentage?                      |                      |
| d. correspondence | <input type="text"/> What percentage? | <input type="text"/> |
| f. other          | <input type="text"/> What percentage? | <input type="text"/> |
| Comments:         |                                       |                      |

## B Objectives

|  |
|--|
| ١. What is the main purpose for this course?<br><br>The objective of the course is Evolution of vegetative and reproductive morphology of land plants is examined. Morphology of Vascular Plants, is to develop within students a recognition and appreciation for the role of plant structure in modification and adaptation of form involved in the evolution of the vascular seed plants. |
| ٢. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)  |

## C. Course Description (Note: General description in the form used in Bulletin or handbook)

|  |
|--|
| Course Description:<br><br>This course contracts with Angiosperms: Overview and Origin, Comparative Morphology of Stems, leaves, roots, flowers, seeds and pollen grains |
|--|

|                         |
|-------------------------|
| ١. Topics to be Covered |
|-------------------------|

| List of Topics                                   | No. of Weeks | Contact hours |
|--|--------------|---------------|
| Introduction of comparative plant morphology     | ١            | ٢             |
| Angiosperms: Overview and Origin                 | ١            | ٢             |
| Comparative Morphology of Stems                  | ١            | ٢             |
| Comparative Morphology of Leaves                 | ٢            | ٤             |
| Stem and Leaves modifications                    | ١            | ٢             |
| Comparative Morphology of Root                   | ١            | ٢             |
| Reproductive Morphology: The Flower              | ١            | ٢             |
| Reproductive Morphology: Sexual Reproduction     | ١            | ٢             |
| Comparative Morphology of seeds                  | ١            | ٢             |
| Comparative Morphology of pollen grains          | ١            | ٢             |
| Whole Plant Modifications, Origin of Angiosperms | ١            | ٢             |
| Types of morphological characters                | ١            | ٢             |
| Keys based on morphological characters           | ١            | ٢             |

٢. Course components (total contact hours and credits per semester):

|               | Lecture | Tutorial | Laboratory<br>or Studio | Practical | Other: | Total |
|---------------|---------|----------|-------------------------|-----------|--------|-------|
| Contact Hours |         |          |                         |           |        | ٢٨    |
| Credit        |         |          |                         |           |        | ٢     |

٣. Additional private study/learning hours expected for students per week.

٤. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

١. Morphology of the stem, leaves, roots, flower, seeds and pollen grains are the most effective tools we have to reconstruct the taxonomy based on them.
٢. Taxonomist can identify many plants that were present in the past by morphology only.
٣. Structure of seeds and pollen grains
٤. Stem and Leaves modifications
٥. To develop within students a recognition and appreciation for the role of plant structure in modification and adaptation of form involved in the evolution of the vascular seed plants.

٥. Schedule of Assessment Tasks for Students During the Semester

|   | Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.) | Week Due | Proportion of Total Assessment |
|---|---|----------|--------------------------------|
| ١ | <b>Activities</b>   |          | ٣٠٪                            |
| ٣ | <b>Essays</b>   |          | ٣٠٪                            |
| ٤ | <b>Final written exam</b>   |          | ٤٠٪                            |
| ٥ | <b>TOTAL</b>  |          | ١٠٠٪                           |

#### D. Student Academic Counseling and Support

١. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

**Academic teaching staff will be available to meet students for consultation and academic**

**advice at their private offices at the times advised.**

**Office hours: ١٠ hrs per week; each semester. Time will varies each semester based on academic schedule for each teaching staff.**

## E Learning Resources

### ١. List Required Textbooks

- Gifford, E.M., Jr. and A.S. Foster, A.S. ١٩٨٩. Morphology and Evolution of Vascular Plants. ٣rd ed. W.H. Freeman and Co., New York, ٦٢٦ pp The first edition (١٩٥٩) and second edition (١٩٧٤) were published as Foster and Gifford. Best currently available book, but paleobotany sections need to be augmented.
- Bell, A.D. and A. Bryan. ٢٠٠٨. Plant Form. An Illustrated Guide to Flowering Plant Morphology. Timber Press, Portland, ٤٣٢ pp • Richly illustrated, but morphological thinking is abbreviated in this text.\* • <http://books.google.com/books?id=SM٣khPHXhKEC&dq=isbn:٠٨٨١٩٢٨٥٠X>
- Bierhorst, D.W. ١٩٧١. Morphology of Vascular Plants. McMillan, New York. ٥٥٩ pp • Densely written, but copiously illustrated text. Many photomicrographs are unavailable elsewhere. Excellent coverage of ferns; lighter on other groups.
- Esau, K. ١٩٧٧. Anatomy of Seed Plants. ٢nd ed. John Wiley and Sons. New York. ٥٥٠ pp • Classic anatomical overview of the internal organization of angiosperms and gymnosperms. Revisions by other authors have not improved it.

### ٢. List Essential References Materials (Journals, Reports, etc.)

High Impact Journals:

١. Journal of plant morphology
٢. American journal of plant taxonomy
٣. Comparative morphology journal

### ٣. List Recommended Textbooks and Reference Material (Journals, Reports, etc)

### ٤. List Electronic Materials, Web Sites, Facebook, Twitter, etc.

<http://mpb.ou.edu/pbio٥٢٦٤/>

<http://mpb.ou.edu/pbio٥٢٦٤/>

[http://catalog.usd.edu/preview\\_course\\_nopop.php?catoid=٢٤&coid=٦٠٠٨٧](http://catalog.usd.edu/preview_course_nopop.php?catoid=٢٤&coid=٦٠٠٨٧)

◦. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

**Comparative plant morphology ppt**

#### F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)

١. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)

**(١)- Class room is already provided with data show**

**(٢)- The area of class room is suitable concerning the number of enrolled students**

٢. Computing resources (AV, data show, Smart Board, software, etc.)

**(١)- Class rooms are equipped with data show.**

**(٢)- Library is required and connected to the network for students to study materials**

٣. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

#### G Course Evaluation and Improvement Processes

١ Strategies for Obtaining Student Feedback on Effectiveness of Teaching

**(١)- Questionnaires / students opinion survey**

**(٢)- Open discussion in the class room at the end of the lectures or during individual student/staff meeting**

٢ Other Strategies for Evaluation of Teaching by the Instructor or by the Department

**(١)- Revision of student answer papers .**

**(٢)- Analysis the grades of students.**

٣ Processes for Improvement of Teaching

(١)- Preparing the course as PPT.

(٢)- Using scientific movies.

(٣)- Coupling the theoretical part with laboratory part

(٤)- Periodical revision of course content.

٤. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution)

**After the agreement of Department and Faculty administrations; it might include:**

(١)- Random check of students exam papers / assignments by external examiner

(٢)- Random check of students exam papers / assignments by internal examiner

◦ Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

**A departmental review committee will look after the arrangement periodically after taking feedback from students and in the light of new development in the subject.**

Name of Instructor: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Report Completed: \_\_\_\_\_

Name of Course Instructor \_\_\_\_\_

Program Coordinator: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Received: \_\_\_\_\_

## The National Commission for Academic Accreditation & Assessment

### Course Specifications

#### Plant Comparative Anatomy

٢-٤٠١٢٦٦٢

## Course Specifications

Institution: **Umm Al-Qura University**

College/Department: **Faculty of Applied Science / Department of Biology**

### A. Course Identification and General Information

١. Course title and code: **٢-٤٠١٢٦٦٢**

٢. Credit hours: **٢ Credit hours**

٣. Program(s) in which the course is offered.

(If general elective available in many programs indicate this rather than list programs)

**MSc in Biology**

٤. Name of faculty member responsible for the course

**Prof. Dr. Momen M. Zareh**

٥. Level/year at which this course is offered

٦. Pre-requisites for this course (if any)

٧. Co-requisites for this course (if any)

٨. Location if not on main campus

٩. Mode of Instruction (mark all that apply)

a. traditional classroom



What percentage? **١٠٠ %**

b. blended (traditional and online)

What percentage?



c. e-learning

what percentage?

d. correspondence

what percentage?

f. other

what percentage?

Comments:

## B Objectives

١. What is the main purpose for this course?

**The major objective of the course is to learn and discuss the comparative anatomy between several groups, families and genera including: stems, roots, leaves, flower parts, fruits and seeds.**

٢. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

## C. Course Description (Note: General description in the form used in Bulletin or handbook)

Course Description:

**The course structure aims to discuss in details the comparative anatomy between several groups according to its stems, roots, leaves, flowers, fruits and seeds.**

**This course will also discuss the principal anatomical features of some large families of flowering plants namely:**

١. **Anatomical features of different flower organs of Compositae.**
٢. **Important anatomical features used to differentiate between the groups of Compositae and Leguminosae.**
٣. **Comparative anatomy between different embryo types of flowering plants.**
٤. **Comparative anatomy between fruit types of some genera.**

## ١. Topics to be Covered

| List of Topics  | No. of Weeks | Contact hours |
|---|--------------|---------------|
| <b>Introduction</b>   | ١            | ٢             |
| <b>Comparative anatomy of flower in common families and genera</b>  | ٤            | ٨             |
| <b>Comparative anatomy of leaves and stems of different groups</b>  | ٣            | ٦             |
| <b>Comparative anatomy of fruits and seeds in different groups,</b> | ٣            | ٦             |

**Comparative wood anatomy in some different groups.**

٢

٤

٢. Course components (total contact hours and credits per semester):

|               | Lecture | Tutorial | Laboratory<br>or Studio | Practical | Other: | Total |
|---------------|---------|----------|-------------------------|-----------|--------|-------|
| Contact Hours | ٢٦      |          |                         |           |        | ٢٦    |
| Credit        | ٢       |          |                         |           |        | ٢     |

٣. Additional private study/learning hours expected for students per week.

٤. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

**On completion of this course students will be able to:**

**Understand the important features used to differentiate between the confused taxa.**

**Describe the anatomical structure of any organ of flower such as sepals, petals, stamens and pistils.**

**Identify some flowering plants based on their anatomical features.**

**Understand how to use comparative anatomy for separating some confused taxa.**

**Present information clearly in the form of verbal and writing reports.**

**Communicate complex ideas and arguments in a clear, concise and effective manner**

**Work effectively as an individual or a team member.**

**Use conventional and electronic resources to collect, select and organize scientific information.**

**Be able to assimilate and synthesis data from multiple sources.**

**Demonstrate capacity for self-learning and independent thinking and to utilize problem solving skills**

**Demonstrate effective communication skills in the form of student led group presentations.**

**Demonstrate skills in working collegiately and effectively with others as a member of a team.**

o. Schedule of Assessment Tasks for Students During the Semester

|   | Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.) | Week Due | Proportion of Total Assessment |
|---|---|----------|--------------------------------|
| ١ | <b>Activities</b>   |          | ٣٠٪                            |
| ٣ | <b>Essays</b>   |          | ٣٠٪                            |
| ٤ | <b>Final written exam</b>   |          | ٤٠٪                            |
| ٥ | <b>TOTAL</b>  |          | ١٠٠٪                           |

D. Student Academic Counseling and Support

١. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

**Academic teaching staff will be available to meet students for consultation and academic advice at their private offices at the times advised.**

**Office hours: ١٠ hours per week; each semester. Time will varies each semester based on academic schedule for each teaching staff.**

E Learning Resources

١. List Required Textbooks

**Carlquist, Sherwin John, ١٩٦٥. Comparative plant anatomy; a guide to taxonomic and evolutionary**

**application of anatomical data in angiosperms**

**William C. Dickison ٢٠٠٠. Integrative Plant Anatomy**

٢. List Essential References Materials (Journals, Reports, etc.)

High Impact Journals:

**Botanical Journal of the Linnean Society.**

**Oecologia**

٣. List Recommended Textbooks and Reference Material (Journals, Reports, etc)

٤. List Electronic Materials, Web Sites, Facebook, Twitter, etc.

**International Journal of Biodiversity and Conservation © ٢٠٠٢-٢٠١٧ Academic Journals**

٥. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)

١. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)

**(١)- Class room is already provided with data show**

**(٢)- The area of class room is suitable concerning the number of enrolled students**

٢. Computing resources (AV, data show, Smart Board, software, etc.)

**(١)- Class rooms are equipped with data show.**

**(٢)- Library is required and connected to the network for students to study materials**

٣. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

G Course Evaluation and Improvement Processes

|   |
|---|
| <p>١ Strategies for Obtaining Student Feedback on Effectiveness of Teaching</p> <p><b>(١)- Questionnaires / students opinion survey</b></p> <p><b>(٢)- Open discussion in the class room at the end of the lectures or during individual student/staff meeting</b></p>  |
| <p>٢ Other Strategies for Evaluation of Teaching by the Instructor or by the Department</p> <p><b>(١)- Revision of student answer papers .</b></p> <p><b>(٢)- Analysis the grades of students.</b></p>  |
| <p>٣ Processes for Improvement of Teaching</p> <p><b>(١)- Preparing the course as PPT.</b></p> <p><b>(٢)- Using scientific movies.</b></p> <p><b>(٣)- Coupling the theoretical part with laboratory part</b></p> <p><b>(٤)- Periodical revision of course content.</b></p>  |
| <p>٤. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution)</p> <p><b>After the agreement of Department and Faculty administrations; it might include:</b></p> <p><b>(١)- Random check of students exam papers / assignments by external examiner</b></p> <p><b>(٢)- Random check of students exam papers / assignments by internal examiner</b></p> |
| <p>٥ Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.</p> <p><b>A departmental review committee will look after the arrangement periodically after taking feedback from students and in the light of new development in the subject.</b></p>  |

Name of Instructor: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Report Completed: \_\_\_\_\_

Name of Course Instructor \_\_\_\_\_

Program Coordinator: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Received: \_\_\_\_\_

## Kingdom of Saudi Arabia

### The National Commission for Academic Accreditation & Assessment

#### Course Specifications

#### Plant Molecular Taxonomy

٤٠١٢٦٦٣٢



## Course Specifications

|   |
|---|
| Institution: <b>Umm Al-Qura University</b>                                    |
| College/Department: <b>Faculty of Applied Science / Department of Biology</b> |

### A. Course Identification and General Information

|  |
|--|
| ١. Course title and code: <b>Plant Molecular Taxonomy (٤٠١٢٦٦٣-٢)</b>  |
| ٢. Credit hours: <b>٢ C. H.</b>  |
| ٣. Program(s) in which the course is offered.<br>(If general elective available in many programs indicate this rather than list programs)<br><b>MSc Plant Taxonomy</b>   |
| ٤. Name of faculty member responsible for the course<br><b>Dr. Widad Saleem Al-Juhani (wsjuhani@uqu.edu.sa)</b>  |
| ٥. Level/year at which this course is offered  |
| ٦. Pre-requisites for this course (if any)   |
| ٧. Co-requisites for this course (if any)  |
| ٨. Location if not on main campus  |
| ٩. Mode of Instruction (mark all that apply)<br><br>a. traditional classroom <input checked="" type="checkbox"/> What percentage? <b>١٠٠ %</b><br><br>b. blended (traditional and online) <input type="text"/> What percentage? <input type="text"/> |

c. e-learning

what percentage?

d. correspondence

what percentage?

f. other

what percentage?

Comments:

## B Objectives

١. What is the main purpose for this course?

The general aims of the course cover to the basic principles of molecular systematics, understanding to theories and methodologies of phylogenetic systematics. This course is addresses the use of phylogenetic methods for the analysis of biological sequences data, and an examination of the methodologies used to address specific phylogenetic questions with molecular data.

٢. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

## C. Course Description (Note: General description in the form used in Bulletin or handbook)

Course Description:

This course will cover the basic principles of molecular systematics, importance of molecular taxonomy. Using molecular markers for identification and understanding of relationships between plant species. It focus on using phylogenetic methods for the analysis of sequence data of plant species. It focuses on building, interpreting and evaluating the evolutionary trees and interpreting relationships between plant species in phylogenetic tree.

١. Topics to be Covered

| List of Topics   | No. of Weeks | Contact hours |
|--|--------------|---------------|
| <p><b>✚ Introduction</b><br/>An overview to molecular systematics; historical perspective, importance of plant taxonomy for identification, description of plant diversity, explanation of organisms' evolution in world, current challenges and perspectives.</p> | ١            | ٢             |
| <p><b>✚ Molecular markers</b><br/>-Different molecular markers used for identification and population study: RAPDs, ISSRs, AFLPs, microsatellites, SNPs.<br/><br/>-Practical; Population analysis methods; e.g., clustering, using AMOVA analysis.</p>             | ١            | ٢             |

|   |            |   |
|---|------------|---|
| <p><b>Phylogeny and Systematics</b></p> <p><b>Read and understand phylogenetic tree</b></p> <p>-Definition of Phylogenetic trees</p> <p>-Taxa and groups on trees</p> <ul style="list-style-type: none"> <li>▪ <b>Components of a phylogenetic tree;</b> <ul style="list-style-type: none"> <li>-Taxa, nodes, root nodes, branches, root</li> <li>-Rotting phylogenetic trees; vertical vs. horizontal tree</li> </ul> </li> <li>-Rotating branches in trees; branches rotation test</li> <li>▪ <b>Groupings in trees;</b> <ul style="list-style-type: none"> <li>-The most recent common ancestors (MRCA), monophyletic group, paraphyletic group, polyphyletic groups.</li> <li>-Relatedness, out-group, in-group, sister, polytomies.</li> </ul> </li> <li>▪ <b>Chacter and characters states;</b> <ul style="list-style-type: none"> <li>-Chacter trait, chacter state, characters polarization, characters primitive, derived.</li> <li>-Mappin chacters onto a tree, homologous characters, character traits and state changes.</li> <li>-Synapomorphies, synapomorphy a derived traits, symplesiomorphy shared primitive traits, homology, homoplasies and analogy.</li> </ul> </li> </ul> <p>• <b>Practical: Examples of trees.</b></p> | ٣          | ٦ |
| <p><b>Constructing and evaluating the phylogenetic tree</b></p> <ul style="list-style-type: none"> <li>▪ <b>Sampling:</b><br/>Targeted taxa and outgroups</li> <li>▪ <b>Primers</b><br/>Availability of primers and best genomic regions for phylogenetic analysis</li> <li>▪ <b>Sequencing</b><br/>Genomic database: GenBank (NCBI), EMBL, Blast</li> </ul> <p>• <b>Practical: uploaded sequences from GenBank.</b></p> <ul style="list-style-type: none"> <li>▪ <b>Alignment</b><br/>-Basic and mean concept of alignments, maximum match in alignments, pairwise and progress alignments.<br/>-Point mutations: Transition – Transversion – Indels</li> </ul> <p>• <b>Practical: multiple sequence alignment using ClustalX, Mega or Bioedit.</b></p> <p>-Manual Alignment.</p>  | Const<br>٤ | ٨ |

|   |   |    |
|---|---|----|
| <p>❖ <b>Choosing methods of analysis and Estimating the tree</b></p> <p>١. Distance methods; UPGMA and neighbor joining NJ.</p> <p>٢. Phylogenetic inference;</p> <p>-General concept, unrooted trees, parsimony inference, rooting a tree, parsimony informative.</p> <p>-Character conflict, assumptions, likelihood method (ML).</p> <p>-Chose the best Models. Bayesian inference (BI).</p> <p>• <b>Practical: using available packages of phylogenetic software: PAUP, Modeltest, MrModeltest, MrBayes, Winclada, RaxML</b></p> <p>❖ <b>Evaluating and using the tree;</b><br/>Chose the best and accurate tree;</p> <p>-Consensus, bootstrap, posterior probabilities.</p> <p>-Dating and optimization.</p> <p>• <b>Practical; using suitable software's; PAUP, Winclada, MrBayes, RaxML, r<sup>^</sup>s, BayesTraits</b></p> | ٥ | ١٠ |
| <p>❖ <b>Course project</b></p> <p>❖ <b>Presentation and discussion;</b><br/>Students taking this course will complete a molecular phylogenetic analysis addressing an issue of interest to them (own data), or data from the literature for issue in molecular phylogenetic analysis, with a written report on this project.</p>  | ١ | ٢  |

٢. Course components (total contact hours and credits per semester):

|               | Lecture         | Tutorial | Laboratory<br>or Studio | Practical | Other:         | Total |
|---------------|-----------------|----------|-------------------------|-----------|----------------|-------|
| Contact Hours | ١٤<br>(٧ weeks) |          | ١٤<br>(٧ weeks)         |           | ٤<br>(٢ weeks) | ٣٢    |
| Credit        | ٢               |          | ٢                       |           | ٢              | ٢     |

٣. Additional private study/learning hours expected for students per week.

٤. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and

Teaching Strategy

**On completion of this course students will have or be able to:**

- have a clear understanding of the history of molecular taxonomy
- be able to understand concept of phylogenetic tree correctly
- be able to reading and describe evolutionary trees
- be able to using phylogenetic trees to understand relationships between plants
- be able to evaluate results of a phylogenetic analysis
- be able to interpret research in current published literature in the field of molecular taxonomy.

◦. Schedule of Assessment Tasks for Students During the Semester

|   | Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.)                                  | Week Due       | Proportion of Total Assessment |
|---|--|----------------|--------------------------------|
| ١ | <b>Tree Puzzles</b>  | <b>Week ٦</b>  | <b>١٠ %</b>                    |
| ٢ | <b>Written Exam</b>  | <b>Week ١٠</b> | <b>٤٠ %</b>                    |
| ٣ | <b>Critical thinking of phylogenetic paper</b>   | <b>Week ١٤</b> | <b>١٠ %</b>                    |
| ٤ | <b>Course project presentation and written report</b><br><b>All analyses and the submitted final report, should be own work.</b> | <b>Week ١٦</b> | <b>٤٠ %</b>                    |
| ٥ | <b>TOTAL</b>   |                | <b>١٠٠ %</b>                   |

D. Student Academic Counseling and Support

١. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

**Academic teaching staff will be available to meet individual students for consultation and academic advice at their private offices at the times advised.**

**Office hours: ١٠ hrs per week; each semester. Time will varies each semester based on academic schedule for each teaching staff.**

E Learning Resources

١. List Required Textbooks

(١)- Soltis, Pamela, Doyle, J.J.(٢٠١٧) Molecular Systematics of Plants II: DNA Sequencing (v. ٢).  
Published by Springer

(٢)- Pascale Besse (٢٠١٤) Molecular plant taxonomy: methods and protocols. Humana Press, New York.

(٣)- Amal Kumar Mondal (٢٠٠٩) Advanced Plant Taxonomy. New Central Book Agency Pvt. Ltd, New Delhi.

(٤)- Hillis, D. M., C. Moritz, and B.K. Mable (١٩٩٦) Molecular Systematics. Second Edition. Sinauer Associates, Sunderland, Mass.

(٥)- Hollingsworth, P.M., R.M. Bateman and R. Gornall (١٩٩٩) Molecular Systematics and Plant Evolution. Taylor & Francis, London.

٢. List Essential References Materials (Journals, Reports, etc.)

**High Impact Journals:**

(١)- American Journal of Botany (Am J Bot)

(٢)- **Botanical Journal of the Linnean Society**

(٣)- **Taxon**

(٤)- **AoB PLANTS**

(٥)- **Journal of Systematics and Evolution**

(٦)- **Plant Systematics and Evolution**

٣. **List Recommended Textbooks and Reference Material (Journals, Reports, etc)**

٤. **List Electronic Materials, Web Sites, Facebook, Twitter, etc.**

(١)- <https://www.ncbi.nlm.nih.gov>

(٢)- <https://www.ebi.ac.uk/>

(٣)- <https://blast.ncbi.nlm.nih.gov/Blast.cgi>

(٤)- <http://www.clustal.org/clustal/>

٥. **Other learning material such as computer-based programs/CD, professional standards or regulations and software.**

**Mega, Bioedit, PAUP, Winclada, Modeltest, MrModeltest, MrBayes, RaxML, r<sup>As</sup>, BayesTraits, FigTree. AMOVA, PowerMarke.**

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)

١. **Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)**

(١)- **Class room is already provided with data show**

(٢)- **The area of class room is suitable concerning the number of enrolled students (could accommodate up to ٥٠ students) and air conditioned.**

٢. **Computing resources (AV, data show, Smart Board, software, etc.)**

(١)- **Class rooms are equipped with data show.**

(٢)- **A computer lab is required and connected to the network for students to gather their data and**



**study materials**

٣. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

**(١)- Availability of phylogenetic software packages for students**

G Course Evaluation and Improvement Processes

١ Strategies for Obtaining Student Feedback on Effectiveness of Teaching

**(١)- Questionnaires / students opinion survey**

**(٢)- Open discussion in the class room at the end of the lectures or during individual student/staff meeting**

٢ Other Strategies for Evaluation of Teaching by the Instructor or by the Department

**١)- Revision of student answer papers / assignments by another staff member.**

**(٢)- Analysis the grades of students.**

٣ Processes for Improvement of Teaching

**(١)- Preparing the course as PPT.**

**(٢)- Using scientific movies.**

**(٣)- Coupling the theoretical part with laboratory part**

**(٤)- Periodical revision of course content.**

٤. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution)

**After the agreement of Department and Faculty administrations; it might include:**

**(١)- Random check of students exam papers / assignments by external examiner**

**(٢)- Random check of students exam papers / assignments by internal examiner**

◦ Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

**A departmental review committee will look after the arrangement periodically after taking feedback from students and in the light of new development in the subject.**

Name of Instructor: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Report Completed: \_\_\_\_\_

Name of Course Instructor \_\_\_\_\_

Program Coordinator: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Received: \_\_\_\_\_

## Kingdom of Saudi Arabia

## The National Commission for Academic Accreditation & Assessment

### Course Specifications

#### Flora of Saudi Arabia

٢-٤٠٢٢٦٦٤

Kingdom of Saudi Arabia  
Ministry of Education  
Umm Al-Qura University  
Deanship of Graduate Studies



المملكة العربية السعودية  
وزارة التعليم  
جامعة أم القرى  
عمادة الدراسات العليا

## Course Specifications

Institution: **Umm Al-Qura University**

College/Department: **Faculty of Applied Science / Department of Biology**

### A. Course Identification and General Information

١. Course title and code: **٢-٤٠٢٢٦٦٤**

٢. Credit hours: **٢ Credit hours**

٣. Program(s) in which the course is offered.

(If general elective available in many programs indicate this rather than list programs)

**MSc in Biology**

٤. Name of faculty member responsible for the course

**Prof. Dr. Momen M. Zareh**

٥. Level/year at which this course is offered

٦. Pre-requisites for this course (if any)

٧. Co-requisites for this course (if any)

٨. Location if not on main campus

٩. Mode of Instruction (mark all that apply)

a. traditional classroom



What percentage?

**١٠٠ %**

b. blended (traditional and online)

What percentage?

c. e-learning

what percentage?

d. correspondence

what percentage?

f. other

what percentage?

Comments:

## B Objectives

١. What is the main purpose for this course?

**The major objective of the course is to learn and discuss the different floristic regions in Saudi Arabia and the important natural and cultivated plants growing in each region including: Tahama region, Sarawat Mountains, Deserts and Gulf regions.**

٢. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

## C. Course Description (Note: General description in the form used in Bulletin or handbook)

Course Description:

**The course structure aims to discuss in details the important natural and cultivated plants growing in Saudi Arabia .**

**This course will also discuss the principal floristic regions in Saudi Arabia and the important plants growing in each region namely:**

- ١. Phyto-geographical regions in Saudi Arabia (Tahama, Sarawat, Deserts and Gulf)**
- ٢. Important natural plants growing in each region .**
- ٣. Identification of wild plants, classification and nomenclature.**
- ٤. Herbarium and plant conservation.**
- ٥. Important plants that cultivated in Saudi Arabia (Street trees, Fruits, Vegetables, ornamental and medicinal plants).**

## ١. Topics to be Covered

| List of Topics  | No. of Weeks | Contact hours |
|---|--------------|---------------|
| <b>Historical brief.</b>  | ١            | ٢             |
| <b>Phyto-geographical regions of the world and Saudi Arabia</b> | ١            | ٢             |
| <b>Meteorological data of Saudi Arabia plants</b>               | ١            | ٢             |
| <b>Different life forms of Saudi Arabia plants</b>              | ١            | ٢             |
| <b>Important plants growing in Sahara and Sudanian regions</b>  | ١            | ٢             |

|  |   |   |
|--|---|---|
| Important plants growing in Tahama and Sarawat mountains | ١ | ٢ |
| Important plants growing in deserts and Gulf regions     | ١ | ٢ |
| Identification, classification and nomenclature          | ١ | ٢ |
| Herbarium and plant conservation                         | ١ | ٢ |
| Street and fruit trees                                   | ١ | ٢ |
| Vegetables and dying plants                              | ١ | ٢ |
| Ornamental and medicinal plants                          | ٢ | ٤ |

٢. Course components (total contact hours and credits per semester):

|               | Lecture | Tutorial | Laboratory<br>or Studio | Practical | Other: | Total |
|---------------|---------|----------|-------------------------|-----------|--------|-------|
| Contact Hours | ٢٦      |          |                         |           |        | ٢٦    |
| Credit        | ٢       |          |                         |           |        | ٢     |

٣. Additional private study/learning hours expected for students per week.

٤. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

**On completion of this course students will be able to:**

**Understand the different phyto-geographical regions of the world and Saudi Arabia.**

**Describe the important natural plants growing in Tahama, Sarawat, Deserts and Gulf regions.**

**Identify the important plants growing in Makkah and neighboring regions.**

**Understand the important street trees, fruits, vegetables, dyes, ornamentals and medicinal plants cultivated in Saudi Arabia.**

**Present information clearly in the form of verbal and writing reports.**

**Communicate complex ideas and arguments in a clear, concise and effective manner**

**Work effectively as an individual or a team member.**

**Use conventional and electronic resources to collect, select and organize scientific information.**

**Be able to assimilate and synthesis data from multiple sources.**

**Demonstrate capacity for self-learning and independent thinking and to utilize problem solving skills**

**Demonstrate effective communication skills in the form of student led group presentations.**

**Demonstrate skills in working collegiately and effectively with others as a member of a team.**

o. Schedule of Assessment Tasks for Students During the Semester

|   | Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.) | Week Due | Proportion of Total Assessment |
|---|---|----------|--------------------------------|
| ١ | <b>Activities</b>   |          | ٣٠٪                            |
| ٣ | <b>Essays</b>   |          | ٣٠٪                            |
| ٤ | <b>Final written exam</b>   |          | ٤٠٪                            |
| ٥ | <b>TOTAL</b>  |          | ١٠٠٪                           |

D. Student Academic Counseling and Support

١. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

**Academic teaching staff will be available to meet students for consultation and academic advice at their private offices at the times advised.**

**Office hours: ١٠ hours per week; each semester. Time will varies each semester based on academic schedule for each teaching staff.**



## E Learning Resources

### ١. List Required Textbooks

**Shaukat A Chaudhary. ٢٠٠١. Flora of the Kingdom of Saudi Arabia series, Volume ١-٣.**

**Mrs. Sheila Collenette. ١٩٩٨. Wildflowers of Saudi Arabia**

### ٢. List Essential References Materials (Journals, Reports, etc.)

High Impact Journals:

**Botanical Journal of the Linnean Society.**

### ٣. List Recommended Textbooks and Reference Material (Journals, Reports, etc)

### ٤. List Electronic Materials, Web Sites, Facebook, Twitter, etc.

**International Journal of Biodiversity and Conservation** © ٢٠٠٢-٢٠١٧ Academic Journals

٥. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

## F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)

### ١. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)

**(١)- Class room is already provided with data show**

**(٢)- The area of class room is suitable concerning the number of enrolled students**

### ٢. Computing resources (AV, data show, Smart Board, software, etc.)

**(١)- Class rooms are equipped with data show.**

**(٢)- Library is required and connected to the network for students to study materials**

### ٣. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or

attach list)

## G Course Evaluation and Improvement Processes

### ١ Strategies for Obtaining Student Feedback on Effectiveness of Teaching

(١)- Questionnaires / students opinion survey

(٢)- Open discussion in the class room at the end of the lectures or during individual student/staff meeting

### ٢ Other Strategies for Evaluation of Teaching by the Instructor or by the Department

(١)- Revision of student answer papers .

(٢)- Analysis the grades of students.

### ٣ Processes for Improvement of Teaching

(١)- Preparing the course as PPT.

(٢)- Using scientific movies.

(٣)- Coupling the theoretical part with laboratory part

(٤)- Periodical revision of course content.

٤. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution)

**After the agreement of Department and Faculty administrations; it might include:**

(١)- Random check of students exam papers / assignments by external examiner

(٢)- Random check of students exam papers / assignments by internal examiner

٥ Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

**A departmental review committee will look after the arrangement periodically after taking feedback from students and in the light of new development in the subject.**

Name of Instructor: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Report Completed: \_\_\_\_\_

Name of Course Instructor \_\_\_\_\_

Program Coordinator: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Received: \_\_\_\_\_

## Kingdom of Saudi Arabia

### The National Commission for Academic Accreditation & Assessment

#### Course Specifications

##### Plant Ecosystem

٢٤٠١٢-٢٦٥

## Course Specifications

Institution: **Umm Al-Qura University**

College/Department: **Faculty of Applied Science / Department of Biology**

### A. Course Identification and General Information

١. Course title and code: **Plant Ecosystem (٤٠١٢٦٦٥-٢)**

٢. Credit hours: **٢ C. H.**

٣. Program(s) in which the course is offered.

(If general elective available in many programs indicate this rather than list programs)

**MSc Biology**

٤. Name of faculty member responsible for the course

**Dr. Hanan E. Osman (heosman@uqu.edu.sa)**

٥. Level/year at which this course is offered

٦. Pre-requisites for this course (if any)

٧. Co-requisites for this course (if any)

٨. Location if not on main campus

٩. Mode of Instruction (mark all that apply)

a. traditional classroom



What percentage?

**١٠٠ %**

b. blended (traditional and online)

What percentage?

c. e-learning

what percentage?

d. correspondence

what percentage?

f. other

what percentage?

Comments:

## B Objectives

١. What is the main purpose for this course?

- **Teach the basic principles and concepts of ecosystem ecology**
- **Introduce current uncertainties and controversies in ecosystem ecology**
- **Increase awareness of human-induced global changes and how they are affecting ecosystem processes**
- **Increase awareness of human dependency on ecosystem processes**
- **Apply understanding of ecosystem ecology to environmental problem solving**

٢. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

## C. Course Description (Note: General description in the form used in Bulletin or handbook)

Course Description:

**This course will explore the basic principles that govern structure and function across all ecosystems. We will begin by examining the exchange of energy and materials between ecosystems and the atmosphere, focusing much of our attention on ecosystem carbon cycling and nutrient constraints over the carbon cycle. We will examine transfers of energy from primary producers to higher trophic levels and how herbivory and disturbances such as fire affect carbon and nutrient cycling. We will examine how elevated atmospheric CO<sub>2</sub>, changing climate, increased atmospheric nitrogen deposition, biological invasions, and losses of biodiversity alter ecosystem processes. We will also discuss human dependence on ecosystems and how our activities are altering systems at local, regional, and global scales**

١. Topics to be Covered

| List of Topics   | No. of Weeks | Contact hours |
|--|--------------|---------------|
| Introduction to Ecosystem Ecology; Geology and Climate | ١            | ٢             |
| Ecosystem energy balance and water cycling             | ٢            | ٤             |
| Carbon cycling: productivity                           | ١            | ٢             |

|  |   |   |
|--|---|---|
| Carbon cycling: decomposition and soil organic matter dynamics | ١ | ٢ |
| Carbon cycling: net ecosystem carbon dynamics                  | ١ | ٢ |
| Biome Projects   | ١ | ٢ |
| Nutrient cycling: plant uptake and use                         | ١ | ٢ |
| Nutrient cycling: nitrogen dynamics                            | ١ | ٢ |
| Nutrient cycling: nitrogen versus phosphorus                   | ١ | ٢ |
| Diversity and ecosystem processes                              | ٢ | ٤ |
| Trophic dynamics   | ١ | ٢ |
| Global biogeochemical cycles and the carbon-climate connection | ١ | ٢ |
| Reactive nitrogen in the biosphere                             | ١ | ٢ |

٢. Course components (total contact hours and credits per semester):

|                  | Lecture | Tutorial | Laboratory<br>or Studio | Practical | Other: | Total |
|------------------|---------|----------|-------------------------|-----------|--------|-------|
| Contact<br>Hours | ٣٦      |          |                         |           |        | ٣٦    |
| Credit           | ٢       |          |                         |           |        |       |

٣. Additional private study/learning hours expected for students per week.

٤. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

On completion of this course students will have or be able to:

- Explain how water, energy and carbon flow through the organisms, ecosystems and how nutrients are recycled over time.
- Describe how the species composition in a terrestrial ecosystem varies over time and affect the stability and



properties and different 'states' of the system. Skills and Ability

- Be able to perform laboratory work where e.g. species composition, chemical parameters or other biological factors are analysed during a small project.
- Write and present the results from a small project in the style of a scientific report, following the writing traditions for the chosen field, including the use of references which should be downloaded from a suitable database.
- Synthesize primary literature and develop skills in writing based on background review, and writing to provide evidence for a hypothesis/point of view based on literature.
- Explain topics in through oral presentation and interpret through modern lens
- Report on synthesis of newly acquired data with published data
- Develop leadership in discussion of primary literature and in experimental settings.
- Critically evaluate their personal performance both as an individual and within a team

◦. Schedule of Assessment Tasks for Students During the Semester

|   | Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.) | Week Due | Proportion of Total Assessment |
|---|---|----------|--------------------------------|
| ١ | <b>Paper presentation (seminar)</b>   |          | ٣٠٪                            |
| ٢ | <b>Short essay</b>  |          | ٢٠٪                            |
| ٣ | <b>Written exam</b>   |          | ٣٠٪                            |
| ٤ | <b>Literature review</b>  |          | ٢٠٪                            |
| ٥ | <b>TOTAL</b>  |          | ١٠٠٪                           |

D. Student Academic Counseling and Support

١. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

**Academic teaching staff will be available to meet individual students for consultation and academic advice at their private offices at the times advised.**

**Office hours: ١٠ hrs per week; each semester. Time will varies each semester based on academic schedule for each teaching staff.**

E Learning Resources

١. List Required Textbooks

- ٧) Begon M.Harper J.L. and Townsend C. R. (١٩٩٠). Ecology: Individual, Populations and Communities. Blackwell Scientific Publisher.
- ٨) Hanson H. C. and Churchill E. D. (١٩٦٣). Plant Communities. Reinhold.
- ٩) White J. (١٩٨٥). Studies on plant demography. Academic Press.
- ١٠) Whittaker R. H. (١٩٧٥). Communities and Ecosystems. McMillan.

٢. List Essential References Materials (Journals, Reports, etc.)

High Impact Journals:

- (١)- Agriculture, Ecosystems and Environment
- (٢)- Annual Review of Ecology, Evolution, and Systematics
- (٣)- Journal of Ecology
- (٤)- Applied Soil Ecology
- (٥)- Journal of Applied Plant Ecology

٣. List Recommended Textbooks and Reference Material (Journals, Reports, etc)

٤. List Electronic Materials, Web Sites, Facebook, Twitter, etc.

٥. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

#### F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)

١. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)

**(١)- Class room is already provided with data show**

**(٢)- The area of class room is suitable concerning the number of enrolled students and air conditioned.**

٢. Computing resources (AV, data show, Smart Board, software, etc.)

**(١)- Class rooms are equipped with data show.**

**(٢)- A computer lab is required and connected to the network for students to gather their data and study materials**

٣. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

#### G Course Evaluation and Improvement Processes

١ Strategies for Obtaining Student Feedback on Effectiveness of Teaching

**(١)- Questionnaires / students opinion survey**

**(٢)- Open discussion in the class room at the end of the lectures or during individual student/staff meeting**

٢ Other Strategies for Evaluation of Teaching by the Instructor or by the Department

**١)- Revision of student answer papers / assignments by another staff member.**

**(٢)- Analysis the grades of students.**

٣ Processes for Improvement of Teaching

**(١)- Preparing the course as PPT.**

**(٢)- Using scientific movies.**

**(٣)- Coupling the theoretical part with laboratory part**

**(٤)- Periodical revision of course content.**

٤. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution)

**After the agreement of Department and Faculty administrations; it might include:**

**(١)- Random check of students exam papers / assignments by external examiner**

**(٢)- Random check of students exam papers / assignments by internal examiner**

◦ Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

**A departmental review committee will look after the arrangement periodically after taking feedback from students and in the light of new development in the subject.**

Name of Instructor: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Report Completed: \_\_\_\_\_

Name of Course Instructor \_\_\_\_\_

Program Coordinator: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Received: \_\_\_\_\_

Kingdom of Saudi Arabia  
Ministry of Education  
Umm Al-Qura University  
Deanship of Graduate Studies



المملكة العربية السعودية  
وزارة التعليم  
جامعة أم القرى  
عمادة الدراسات العليا

Kingdom of Saudi Arabia

## The National Commission for Academic Accreditation & Assessment

### Course Specifications

#### Biodiversity and Wild Plant Conservation

٤٠١٢٥٩٦-٢

## Course Specifications

Institution: **Umm Al-Qura University**

College/Department: **Faculty of Applied Science / Department of Biology**

### A. Course Identification and General Information

١. Course title and code: **Biodiversity and Wild Plant Conservation (٤٠١٢٥٩٦-٢)**

٢. Credit hours: **٢ C. H.**

٣. Program(s) in which the course is offered.

(If general elective available in many programs indicate this rather than list programs)

**MSc Biology**

٤. Name of faculty member responsible for the course

**Dr. Hanan E. Osman (heosman@uqu.edu.sa)**

٥. Level/year at which this course is offered

٦. Pre-requisites for this course (if any)

٧. Co-requisites for this course (if any)

٨. Location if not on main campus

٩. Mode of Instruction (mark all that apply)

a. traditional classroom



What percentage?

**١٠٠ %**

b. blended (traditional and online)

What percentage?

c. e-learning

what percentage?

d. correspondence

what percentage?

f. other

what percentage?

Comments:



## B Objectives

١. What is the main purpose for this course?

**Plant ecology is a dynamic and rapidly changing field of study. A key component of the academic training of ecologists is understanding recent empirical and theoretical developments in plant ecology and the methods and lines of inquiry that led to these developments. Working ecologists must be capable of synthesizing new results from research in light of existing knowledge. This course will examine three major topics in plant ecology in depth through a mixture of lecture, discussion, and readings from the primary and secondary literature. The synthesis of research results, taught through the application of meta-analysis to a specific problem, will be a key element of this course**

٢. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

## C. Course Description (Note: General description in the form used in Bulletin or handbook)

Course Description:

**The students in this course will be learned the principles and theories relating to the conservation of biological diversity. The course will focus on the following topics: patterns and processes creating biological diversity; estimates of extinction rates; consequences of diversity losses; approaches to conserving diversity, including large-scale conservation planning; conservation biology tools, such as population viability analyses and conservation triage; and causes of diversity loss including habitat loss, invasive species, and climate change.**

١. Topics to be Covered

| List of Topics  | No. of Weeks | Contact hours |
|---|--------------|---------------|
| <b>Introduction to Biodiversity</b>   | ١            | ٢             |
| <b>- Biodiversity – Concept and definition Scope and Constraints of Biodiversity Science, Composition and Scales of Biodiversity: Genetic Diversity, Species/Organismal Diversity, Ecological/Ecosystem Diversity, Landscape/Pattern Diversity, Agrobiodiversity, Bicultural Diversity and Urban Biodiversity</b> | ٣            | ٦             |

|  |   |    |
|--|---|----|
| <b>Causes of Biodiversity Origin of Species /Speciation: History of the Earth and Biodiversity patterns through Geological times; Current Centers of Biodiversity</b>  | ٢ | ٤  |
| <b>Values of Biodiversity Instrumental/Utilitarian value and their categories, Direct use value; Indirect/ Non-consumptive use value, Introduction to Ecological Economics; Monetizing the value of Biodiversity; Intrinsic Value; Ethical and aesthetic values, Anthropocentrism, Biocentrism, Ecocentrism and Religions; Intellectual Value; Deep Ecology</b>  | ٤ | ٨  |
| <b>Threats to Biodiversity</b><br><br><b>Habitat Destruction, Fragmentation, Transformation, Degradation and Loss: Causes, Patterns</b><br><br><b>and consequences on the Biodiversity of Major Land and Aquatic Systems</b><br><br><b>Invasive Species: their introduction pathways, biological impacts of invasive species on</b><br><br><b>terrestrial and aquatic systems</b><br><br><b>Pollution: Impacts of Pesticide pollution, Water pollution and Air Pollution on biodiversity</b><br><br><b>Overexploitation: Impacts of Exploitation on Target and Non-target Terrestrial and Aquatic</b><br><br><b>species and Ecosystems</b><br><br><b>Extinction: Types of Extinctions, Processes responsible for Species Extinction, Current and</b><br><br><b>Future Extinction Rates, IUCN Threatened Categories, Sixth Extinction/Biological Crisis</b> | ٥ | ١٠ |

٢. Course components (total contact hours and credits per semester):

|         | Lecture | Tutorial | Laboratory<br>or Studio | Practical | Other: | Total |
|---------|---------|----------|-------------------------|-----------|--------|-------|
| Contact | ٣٠      |          |                         |           |        | ٣٠    |

|        |   |  |  |  |  |   |
|--------|---|--|--|--|--|---|
| Hours  |   |  |  |  |  |   |
| Credit | ٢ |  |  |  |  | ٢ |

٣. Additional private study/learning hours expected for students per week.

٤. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

**On completion of this course students will have or be able to:**

- understanding of basic conservation biology issues, including where the field has been and where it is going;
- understanding of the ecological principles upon which conservation decisions are made, and be able to cite examples of their use; and
- Demonstrate an appreciation for, and some understanding of, the social, political, and economic factors that affect conservation.
- synthesize primary literature and develop skills in writing based on background review, and writing to provide evidence for a hypothesis/point of view based on literature.
- explain topics in through oral presentation and interpret through modern lens
- report on synthesis of newly acquired data with published data
- develop leadership in discussion of primary literature and in experimental settings.
- **Critically evaluate their personal performance both as an individual and within a team**

٥. Schedule of Assessment Tasks for Students During the Semester

|   | Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.) | Week Due | Proportion of Total Assessment |
|---|---|----------|--------------------------------|
| ١ | <b>Paper presentation (seminar)</b>   |          | ٣٠٪                            |
| ٢ | <b>Short essay</b>  |          | ٢٠٪                            |

|   |                               |  |      |
|---|-------------------------------|--|------|
|   |                               |  |      |
| ٣ | <b>Short written exam</b>     |  | ١٠٪  |
| ٤ | <b>Long literature review</b> |  | ٤٠٪  |
| ٥ | <b>TOTAL</b>                  |  | ١٠٠٪ |

#### D. Student Academic Counseling and Support

١. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

**Academic teaching staff will be available to meet individual students for consultation and academic advice at their private offices at the times advised.**

**Office hours: ١٠ hrs per week; each semester. Time will varies each semester based on academic schedule for each teaching staff.**

#### E Learning Resources

١. List Required Textbooks

- **Groom, M. J., Meffe, G. R. and C. R. Carroll. ٢٠٠٦. Principles of Conservation Biology. Sinauer Associates, Inc., USA.**
- **Krishnamurthy, K. V. ٢٠٠٣. Textbook of Biodiversity. Science Publication.**
- **Primack, R. ٢٠٠٦. Essentials of Conservation Biology. Sinauer Associates, Inc., USA.**
- **Hambler, C. ٢٠٠٤. Conservation. Cambridge University Press.**
- **Van Dyke, F. ٢٠٠٨. Conservation Biology Foundations, Concepts, Applications ٢ nd Edition, Springer**

٢. List Essential References Materials (Journals, Reports, etc.)

High Impact Journals:

- **Journal of Biodiversity & Endangered Species**
- **Journal of Biodiversity Management & Forestry**

- **Asian Journal of Plant Science & Research**

٢. List Recommended Textbooks and Reference Material (Journals, Reports, etc)

٤. List Electronic Materials, Web Sites, Facebook, Twitter, etc.

٥. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

#### F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)

١. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)

**(١)- Class room is already provided with data show**

**(٢)- The area of class room is suitable concerning the number of enrolled students and air conditioned.**

٢. Computing resources (AV, data show, Smart Board, software, etc.)

**(١)- Class rooms are equipped with data show.**

**(٢)- A computer lab is required and connected to the network for students to gather their data and study materials**

٣. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

#### G Course Evaluation and Improvement Processes

١ Strategies for Obtaining Student Feedback on Effectiveness of Teaching

(١)- Questionnaires / students opinion survey

(٢)- Open discussion in the class room at the end of the lectures or during individual student/staff meeting

٢ Other Strategies for Evaluation of Teaching by the Instructor or by the Department

١)- Revision of student answer papers / assignments by another staff member.

(٢)- Analysis the grades of students.

٣ Processes for Improvement of Teaching

(١)- Preparing the course as PPT.

(٢)- Using scientific movies.

(٣)- Coupling the theoretical part with laboratory part

(٤)- Periodical revision of course content.

٤. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution)

**After the agreement of Department and Faculty administrations; it might include:**

(١)- Random check of students exam papers / assignments by external examiner

(٢)- Random check of students exam papers / assignments by internal examiner

٥ Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

**A departmental review committee will look after the arrangement periodically after taking feedback from students and in the light of new development in the subject.**

Name of Instructor: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Report Completed: \_\_\_\_\_

Name of Course Instructor \_\_\_\_\_

Program Coordinator: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Received: \_\_\_\_\_

## Kingdom of Saudi Arabia

### The National Commission for Academic Accreditation & Assessment

## Course Specifications

### Plant Geography

٢-٤٠١٢٦٦٧

## Course Specifications

Institution: **Umm Al-Qura University**

College/Department: **Faculty of Applied Science / Department of Biology**

### A. Course Identification and General Information

١. Course title and code: **٢-٤٠١٢٦٦٧**

٢. Credit hours: **٢ Credit hours**

٣. Program(s) in which the course is offered.

(If general elective available in many programs indicate this rather than list programs)

**MSc in Biology**

٤. Name of faculty member responsible for the course

**Prof. Dr. Momen M. Zareh**

٥. Level/year at which this course is offered

٦. Pre-requisites for this course (if any)

٧. Co-requisites for this course (if any)

٨. Location if not on main campus

٩. Mode of Instruction (mark all that apply)

a. traditional classroom



What percentage?

**١٠٠ %**

b. blended (traditional and online)

What percentage?



c. e-learning

what percentage?

d. correspondence

what percentage?

f. other

what percentage?

Comments:

## B Objectives

١. What is the main purpose for this course?

**The major objective of the course is to learn and discuss the different geographical regions in Saudi Arabia, the important phytochoria in South west Asia and analysis the limiting factors .**

٢. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

## C. Course Description (Note: General description in the form used in Bulletin or handbook)

Course Description:

**The course structure aims to discuss in details the Geographical distribution of plants in Saudi Arabia, phytochoria and types of international ranges .**

**This course will also discuss the principal phytogeographical regions in Saudi Arabia and the important factors affecting growing of plants in each region namely:**

- ١. Geographical distribution of plants**
- ٢. Phytochoria in South west Asia.**
- ٣. Phyto-geographical territories of Saudia Arabia.**
- ٤. Analysis of limiting factors.**
- ٥. Types of international ranges**
- ٦. Relic and Endemic areas**

## ١. Topics to be Covered

| List of Topics   | No. of Weeks | Contact hours |
|--|--------------|---------------|
| <b>Introduction to Geography</b>   | ١            | ٢             |
| <b>Geographical distribution of plants</b>   | ٢            | ٤             |
| <b>Phytochoria in South west Asia</b>  | ٢            | ٤             |
| <b>Phyto-geographical territories of Saudia Arabia</b>                                   | ٢            | ٤             |
| <b>Analysis of limiting factors, occurrence of present biomes and plant interactions</b> | ٢            | ٤             |

|  |   |   |
|--|---|---|
| Dispersal of plants, agents and barriers | ٢ | ٤ |
| Types of international ranges            | ١ | ٢ |
| Relic and Endemic areas                  | ١ | ٢ |

٢. Course components (total contact hours and credits per semester):

|                  | Lecture | Tutorial | Laboratory<br>or Studio | Practical | Other: | Total |
|------------------|---------|----------|-------------------------|-----------|--------|-------|
| Contact<br>Hours | ٢٦      |          |                         |           |        | ٢٦    |
| Credit           | ٢       |          |                         |           |        | ٢     |

٣. Additional private study/learning hours expected for students per week.

٤. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

**On completion of this course students will be able to:**

**Understand the different phyto-geographical regions of the world and Saudi Arabia.**

**Describe the important phytochoria in South west Asia.**

**Identify the important limiting factors, occurrence of present biomes and plant interactions.**

**Understand the important types of international ranges and relic areas.**

**Present information clearly in the form of verbal and writing reports.**

**Communicate complex ideas and arguments in a clear, concise and effective manner**

**Work effectively as an individual or a team member.**

**Use conventional and electronic resources to collect, select and organize scientific information.**

**Be able to assimilate and synthesis data from multiple sources.**

**Demonstrate capacity for self-learning and independent thinking and to utilize problem solving skills**

**Demonstrate effective communication skills in the form of student led group presentations.**

**Demonstrate skills in working collegiately and effectively with others as a member of a team.**

o. Schedule of Assessment Tasks for Students During the Semester

|   | Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.) | Week Due | Proportion of Total Assessment |
|---|---|----------|--------------------------------|
| ١ | <b>Activities</b>   |          | ٣٠٪                            |
| ٣ | <b>Essays</b>   |          | ٣٠٪                            |
| ٤ | <b>Final written exam</b>   |          | ٤٠٪                            |
| ٥ | <b>TOTAL</b>  |          | ١٠٠٪                           |

D. Student Academic Counseling and Support

١. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

**Academic teaching staff will be available to meet students for consultation and academic advice at their private offices at the times advised.**

**Office hours: ١٠ hours per week; each semester. Time will varies each semester based on academic schedule for each teaching staff.**

E Learning Resources

|  |
|--|
| ١. List Required Textbooks<br><br><b>Peter R. Dallman, ١٩٩٨. Plant Life in the World's Mediterranean Climates: California, Chile, South Africa, Australia, and the Mediterranean Basin by.</b>   |
| ٢. List Essential References Materials (Journals, Reports, etc.)<br><br>High Impact Journals:<br><br><b>Peel, M. C. and Finlayson, B. L. and McMahon, T. A. (٢٠٠٧). "<u>Updated world map of the Köppen-Geiger climate classification</u>". <i>Hydrol. Earth Syst. Sci.</i> ١١: ١٦٣٣-١٦٤٤.</b> |
| ٣. List Recommended Textbooks and Reference Material (Journals, Reports, etc)  |
| ٤. List Electronic Materials, Web Sites, Facebook, Twitter, etc.<br><br><b>International Journal of Biodiversity and Conservation © ٢٠٠٢-٢٠١٧ Academic Journals</b>  |
| ٥. Other learning material such as computer-based programs/CD, professional standards or regulations and software.   |

#### F. Facilities Required

|   |
|---|
| Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)  |
| ١. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)<br><br><b>(١)- Class room is already provided with data show</b><br><br><b>(٢)- The area of class room is suitable concerning the number of enrolled students</b> |
| ٢. Computing resources (AV, data show, Smart Board, software, etc.)<br><br><b>(١)- Class rooms are equipped with data show.</b><br><br><b>(٢)- Library is required and connected to the network for students to study materials</b>           |
| ٣. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)   |

G Course Evaluation and Improvement Processes

|  |
|--|
| <p>١ Strategies for Obtaining Student Feedback on Effectiveness of Teaching</p> <p>(١)- Questionnaires / students opinion survey</p> <p>(٢)- Open discussion in the class room at the end of the lectures or during individual student/staff meeting</p>   |
| <p>٢ Other Strategies for Evaluation of Teaching by the Instructor or by the Department</p> <p>(١)- Revision of student answer papers .</p> <p>(٢)- Analysis the grades of students.</p>   |
| <p>٣ Processes for Improvement of Teaching</p> <p>(١)- Preparing the course as PPT.</p> <p>(٢)- Using scientific movies.</p> <p>(٣)- Coupling the theoretical part with laboratory part</p> <p>(٤)- Periodical revision of course content.</p>   |
| <p>٤. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution)</p> <p>After the agreement of Department and Faculty administrations; it might include:</p> <p>(١)- Random check of students exam papers / assignments by external examiner</p> <p>(٢)- Random check of students exam papers / assignments by internal examiner</p> |
| <p>٥ Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.</p> <p>A departmental review committee will look after the arrangement periodically after taking feedback from students and in the light of new development in the subject.</p>  |

Name of Instructor: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Report Completed: \_\_\_\_\_

Name of Course Instructor \_\_\_\_\_

Program Coordinator: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Received: \_\_\_\_\_

## Kingdom of Saudi Arabia

### The National Commission for Academic Accreditation & Assessment

#### Course Specifications

##### Palynology

٤٠١٢٦٦٨-٢



## Course Specifications

Institution: **Umm Al-Qura University**

College/Department: **Faculty of Applied Science / Department of Biology**

### A. Course Identification and General Information

١. Course title and code: **Palynology ٤٠١٢٦٦٨-٢**

٢. Credit hours: **٢ Credit hours**

٣. Program(s) in which the course is offered.

(If general elective available in many programs indicate this rather than list programs)

**MSc in plant taxonomy**

٤. Name of faculty member responsible for the course

**Prof. Dr. Kadry Abdel Khalik (knabdelkhalik@uqu.edu.sa)**

٥. Level/year at which this course is offered

٦. Pre-requisites for this course (if any)

٧. Co-requisites for this course (if any)

٨. Location if not on main campus

٩. Mode of Instruction (mark all that apply)

a. traditional classroom



What percentage?

**١٠٠٪**

b. blended (traditional and online)

What percentage?

c. e-learning

what percentage?

d. correspondence

what percentage?

f. other

what percentage?

Comments:

## B Objectives

١. What is the main purpose for this course?

**The objective of the course is to discuss the basics of pollen grains, the methodology of pollen extraction, structure and to know the applications of pollen grains in plant taxonomy.**

٢. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

## C. Course Description (Note: General description in the form used in Bulletin or handbook)

Course Description:

**This course contracts with pollen and spores of modern plants that are used as references for the identification of the fossilized and non-fossilized ones using the shape and structures of pollen grains and spores. The course covers taxonomy, application of fossil pollen in dating sediments, assessment of maturity and quality of source rocks and the use of pollen/spores in tracing the origin of oil/petroleum is emphasized**

## ١. Topics to be Covered

| List of Topics   | No. of Weeks | Contact hours |
|--|--------------|---------------|
| Introduction of pollen grains  | ١            | ٢             |
| Pollen and spore morphology  | ١            | ٢             |
| Pollen morphology: Characteristics, shapes, textures and structures of pollen grains | ٢            | ٤             |
| Preparation of pollen material from herbarium or fresh materials                     | ١            | ٢             |
| Spores and pollen morphology in relation to plant taxonomy                           | ١            | ٢             |

|  |   |   |
|--|---|---|
| Pollen use in dating: Appearance and evolution of plants. The importance of fossil pollen in dating. | ٢ | ٤ |
| Pollen use in source rock maturity and oil/gas provenance assessment                                 | ١ | ٢ |
| Microfossils other than pollen and spores  | ١ | ٢ |
| How we used the pollen grains in plant taxonomy  | ١ | ٢ |
| Glossary of pollen grains  | ٢ | ٤ |
| Reconstruction a key based on the pollen morphology  | ١ | ٢ |

٢. Course components (total contact hours and credits per semester):

|               | Lecture | Tutorial | Laboratory<br>or Studio | Practical | Other: | Total |
|---------------|---------|----------|-------------------------|-----------|--------|-------|
| Contact Hours |         |          |                         |           |        | ٢٨    |
| Credit        |         |          |                         |           |        | ٢     |

٣. Additional private study/learning hours expected for students per week.

٤. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

١. Palynology, the study of pollen grains, is one of the most effective tools we have to reconstruct past environment. Because exines, the hard outer shells of pollen grains, of different species are unique (illustrated at left) and can survive in favorable conditions for thousands of years.

٢. Palynologists can identify many plants that were present in the past.

٣. Working with this information, archaeologists can then discover more about how humans in the past interacted with their environment.

٤. On a large scale, palynology can identify broad environmental trends. Pollen grains are the tiny male reproductive bodies of flowering plants.

٥. structure of pollen grains

٦. Pollen and spore morphology and identification

٧. What is the different types of pollen grains that evolved different species?.

٥. Schedule of Assessment Tasks for Students During the Semester

|   | Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.) | Week Due | Proportion of Total Assessment |
|---|---|----------|--------------------------------|
| ١ | <b>Activities</b>   |          | ٣٠٪                            |
| ٣ | <b>Essays</b>   |          | ٣٠٪                            |
| ٤ | <b>Final written exam</b>   |          | ٤٠٪                            |
| ٥ | <b>TOTAL</b>  |          | ١٠٠٪                           |

#### D. Student Academic Counseling and Support

١. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

**Academic teaching staff will be available to meet students for consultation and academic advice at their private offices at the times advised.**

**Office hours: ١٠ hrs per week; each semester. Time will varies each semester based on academic schedule for each teaching staff.**

#### E Learning Resources

#### ١. List Required Textbooks

- **FAEGRI K. and IVERSEN J. (١٩٧٥): Textbook of Pollen analysis. Copenhagen: Munksgaard.**
- **BONNEFILLE, R. and RIOLLET G. (١٩٨٠): Pollens des savanes d'Afrique orientale. Paris: Centre National de la Recherche Scientifique (CNRS) Editions**
- **READING, H.G., (١٩٧٨). Sedimentary Environments: Processes, Facies and Stratigraphy. Blackwell Science.**
- **TYSON, R.V. (١٩٩٥). Sedimentary Organic Matter, Organic and Palynofacies. Chapman and Hall.**
- **PEMBERTON S. GEORGE (١٩٩٢), Applications of Ichnology to Petroleum Exploration: A Core Workshop (S E P M Core Workshop) (Paperback), Sepm Society for Sedimentary.**
- **AGASHE, S.N. (٢٠٠٨): Pollen and Spores: Applications With Special Emphasis on Aerobiology and Allergy, Science Pub Inc**
- **TRAVERSE, A. (٢٠٠٧): Paleopalynology. Kluwer Academic Pub**
- **WALKER, M. (٢٠٠٥): Entomology And Palynology: Evidence from the Natural World**

#### ٢. List Essential References Materials (Journals, Reports, etc.)

High Impact Journals:

١. **Journal of paly botany and palynology**
٢. **Grana**
٣. **American journal of plan t taxonomy**

#### ٣. List Recommended Textbooks and Reference Material (Journals, Reports, etc)

#### ٤. List Electronic Materials, Web Sites, Facebook, Twitter, etc.

[http://www.mhhe.com/biosci/esp/٢٠٠١\\_gbio/folder\\_structure/di/m٦/s١٠/glossary/pollen\\_grain.htm](http://www.mhhe.com/biosci/esp/٢٠٠١_gbio/folder_structure/di/m٦/s١٠/glossary/pollen_grain.htm)

<http://www.sciencedirect.com/science/article/pii/S٠٣٤٦٦٦٧٠٦٠٠١٢٩١>

٥. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

**pollen grain morphology ppt**

#### F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)

١. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)

**(١)- Class room is already provided with data show**

**(٢)- The area of class room is suitable concerning the number of enrolled students**

٢. Computing resources (AV, data show, Smart Board, software, etc.)

**(١)- Class rooms are equipped with data show.**

**(٢)- Library is required and connected to the network for students to study materials**

٣. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

## G Course Evaluation and Improvement Processes

١ Strategies for Obtaining Student Feedback on Effectiveness of Teaching

**(١)- Questionnaires / students opinion survey**

**(٢)- Open discussion in the class room at the end of the lectures or during individual student/staff meeting**

٢ Other Strategies for Evaluation of Teaching by the Instructor or by the Department

**(١)- Revision of student answer papers .**

**(٢)- Analysis the grades of students.**

٣ Processes for Improvement of Teaching

**(١)- Preparing the course as PPT.**

**(٢)- Using scientific movies.**

**(٣)- Coupling the theoretical part with laboratory part**

**(٤)- Periodical revision of course content.**

٤. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution)

**After the agreement of Department and Faculty administrations; it might include:**

**(١)- Random check of students exam papers / assignments by external examiner**

**(٢)- Random check of students exam papers / assignments by internal examiner**

◦ Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

**A departmental review committee will look after the arrangement periodically after taking feedback from students and in the light of new development in the subject.**

Name of Instructor: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Report Completed: \_\_\_\_\_

Name of Course Instructor \_\_\_\_\_

Program Coordinator: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Received: \_\_\_\_\_



## The National Commission for Academic Accreditation & Assessment

### Course Specifications

### Plant Tissue Culture

(٢ - ٤٠١٢٦٦٩)

## Course Specifications

|  |
|--|
| Institution: <a href="#">Umm Al-Qura University</a>                                    |
| College/Department: <a href="#">Faculty of Applied Science / Department of Biology</a> |

### A. Course Identification and General Information

|  |
|--|
| ١. Course title and code: <a href="#">Plant Tissue Culture</a> ٤٠١٢٦٦٩ - ٢   |
| ٢. Credit hours: ٢ C. H.   |
| ٣. Program(s) in which the course is offered. <a href="#">MSc. Plant Physiology (Botany)</a> .<br>(If general elective available in many programs indicate this rather than list programs)   |
| ٤. Name of faculty member responsible for the course<br><a href="#">Prof. Dr. Hamed El Sayed Ahmed El Sayed (heelsayed@uqu.edu.sa)</a> .   |
| ٥. Level/year at which this course is offered  |
| ٦. Pre-requisites for this course (if any)   |
| ٧. Co-requisites for this course (if any)  |
| ٨. Location if not on main campus.   |
| ٩. Mode of Instruction (mark all that apply)<br><br>a. traditional classroom <input checked="" type="checkbox"/> What percentage? ١٠٠ %<br><br>b. blended (traditional and online) <input type="checkbox"/> What percentage? <input type="text"/><br><br><input type="checkbox"/> <input type="text"/> |

|                   |                                       |                      |
|-------------------|---------------------------------------|----------------------|
| c. e-learning     | What percentage?                      |                      |
| d. correspondence | <input type="text"/> What percentage? | <input type="text"/> |
| f. other          | <input type="text"/> What percentage? | <input type="text"/> |

## B Objectives

### ١. What is the main purpose for this course?

Summary of the main learning outcomes for students enrolled in the course:

- Give the students' knowledge of with the definition of "plant tissue culture" in terms of techniques and applications.
- The course aims to give the students an idea of the basics of practical and theoretical study of the techniques of plant tissue and stages of cultivation revealed economic and objectives of these techniques.

Inside the plant in terms of metabolic activity as well as a brief picture of the chemistry of organic compounds and manufactured within the plant.

٢. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

## C. Course Description (Note: General description in the form used in Bulletin or handbook)

Course Description:

This course is designed for students wanting to learn about plant tissue culture. Grading is based on the exams, oral presentation and laboratory work. Plant tissue culture is the science of growing plant cells, tissues or organs isolated from the mother plant, on artificial media. It includes techniques and methods used to research into many botanical disciplines and has several practical objectives.

- Introduction To Plant Tissue Culture
- Identify Appropriate Plant Tissue Sources
- Isolated And Sterilized Then Grown In Appropriate Circumstances
- Methods Of Plant Organ Transplants
- Methods For Preparation Of Cell Commentator Farms
- Isolation And Cultivation Methods Of Plant Protoplast Cells
- The Ways Of Integrate the Protoplast Somatic Cells.
- The Importance Economic For the Applications of Plant Tissue Culture Science.

### ١. Topics to be Covered

| List of Topics                                  | No. of Weeks | Contact hours |
|---|--------------|---------------|
| ١٠. Introduction and course description         | ١            | ٢             |
| ١١. Plant Tissue Culture Procedure - Background |              |               |

|  |   |   |
|--|---|---|
| ١٢. Internet Resources for Plant Tissue Culture                                  | ٢ | ٤ |
| ١٣. Identify appropriate plant tissue sources                                    |   |   |
| ١٤. Micropropagation: Uses and Methods   |   |   |
| ١٥. Plant Tissue Culture Systems   |   |   |
| ١٦. Plant Tissue Culture Laboratory  | ٣ | ٦ |
| ١٧. Plant Growth and Development; Growth Regulators and Media                    |   |   |
| ١٨. Isolated and sterilized then grown in appropriate circumstances              |   |   |
| ١٩. Methods of plant organ transplants culture.                                  | ٢ | ٤ |
| ٢٠. Methods for preparation of cell suspensions                                  | ١ | ٢ |
| ٢١. Isolation and cultivation methods of plant protoplast cells                  | ١ | ٢ |
| ٢٢. The Methods for integrate and cultivated protoplast in somatic cells         | ١ | ٢ |
| ٢٣. The economic importance of the applications of plant tissue culture science. | ١ | ٢ |
| ٢٤. Applications has been studied by seminars                                    | ٢ | ٤ |
| ٢٥. Practical Methods for chloroplast isolation                                  | ٢ | ٦ |

٢. Course components (total contact hours and credits per semester):

|               | Lecture | Tutorial | Laboratory<br>or Studio | Practical | Other: | Total |
|---------------|---------|----------|-------------------------|-----------|--------|-------|
| Contact Hours | ٣٢      |          |                         |           |        | ٣٢    |
| Credit        | ٢       |          |                         |           |        | ٢     |

٣. Additional private study/learning hours expected for students per week.

(This should be an average: for the semester not a specific requirement in each week):

The study rate increase ٤ hours to search through the Internet to access the sites according to reach the student has done extensive research in the specialty materials.

٤. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

At the end of the course, you should be able to: disinfect and place into culture suitable explants

capable of being cultured and multiplied, make culture medium from reagent grade chemicals and stock solutions, routinely transfer cultures without contamination, and analyze the usefulness of information available from the scientific literature that deals with plant tissue culture.

٤. A brief summary of the knowledge or skill the course is intended to develop.
٥. A description of the teaching strategies to be used in the course to develop that knowledge or skill.
٦. The methods of student assessment to be used in the course to evaluate learning outcomes in the domain concerned.

(i) Description of the skills to be developed in this domain.

١١. The ability to use the Web in search of the latest findings of modern science
١٢. The ability to use computers in research writing and presentation using power point
١٣. The use of computers in the provision of research and scientific reports required
١٤. The use of modern techniques in scientific research
١٥. The ability to research information required analysis.

(ii) Teaching strategies to be used to develop these skills

٩. To give students individual and collective duties and activities and reports and presented through the use of Microsoft Office
١٠. View summaries of scientific material to the students using the programs Power point
١١. To urge the students to visit the library to take advantage of modern scientific research
١٢. - Make a table for the students scientific debate

٥. Schedule of Assessment Tasks for Students During the Semester

|   | Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.) | Week Due | Proportion of Total Assessment |
|---|---|----------|--------------------------------|
| ١ | Activities (Paper presentation, seminar)  |          | ٤٠                             |
| ٢ | Midterm exam  |          | ٢٠                             |
| ٣ | Final written exam  |          | ٤٠                             |
| ٤ | TOTAL   |          | ١٠٠                            |

D. Student Academic Counseling and Support

١. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each

week)

- Academic teaching staff will be available to meet individual students for consultation and academic advice at their private offices at the times advised.
- Office hours: ١٠ hrs per week; each semester. Time will varies each semester based on academic schedule for each teaching staff.

## E Learning Resources

### ٥. List Required Textbooks

#### ١. Required Text(s):

There is an excellent book specifically about plant tissue culture that has been published recently:

٥. Plant Propagation by Tissue Culture (٢٠٠٨). Online Resource:

٦. <http://www.springerlink.com/content/n٥tm٣٠/?p=b٩٣c٥ea٧cf٠٩٤٧٥٨ba٣٤٠e٣٢٩c٦dfa٩١&pi=١>

This is a useful reference book you might want to have.

Other Useful References:

٧. Plant Cell and Tissue Culture –A Tool in Biotechnology (٢٠٠٩). Online Resource:

٨. <http://www.springerlink.com/content/x٥٧٠٣٥/?p=b٩٣c٥ea٧cf٠٩٤٧٥٨ba٣٤٠e٣٢٩c٦dfa٩١&pi=٢>

٩. Plant Tissue Culture Engineering: (٢٠٠٦). Online Resource:

١٠. <http://www.springerlink.com/content/p٣p٤٤٨/?p=b٩٣c٥ea٧cf٠٩٤٧٥٨ba٣٤٠e٣٢٩c٦dfa٩١&pi=٤>

١١. Plant Cell and Tissue Culture (١٩٩٠). Online Resource:

١٢. <http://www.springerlink.com/content/w٨٨٥٠٧/?p=b٩٣c٥ea٧cf٠٩٤٧٥٨ba٣٤٠e٣٢٩c٦dfa٩١&pi=٣>

١٣. Handbook of Plant Cell Culture Techniques and breeding. Ed. Evans, Sharp, Ammirato and Yamada. Macmillan, New York, ١٩٨٣.

١٤. Plant Tissue Culture: Methods and Application in Agriculture. Ed. Travor A. Thorpe. Academic Press, ١٩٨١.

١٥. Growth and Organization in Plant , Stewart, F.C. Adison - Wesley Co. Reading Wareing (١٩٨٧)

١٦. Plant Propagation by tissue culture: Handbook and directory of commercial laboratories. Ed. George, E. F. and Sherrington, P. D. Exegetics Limited, ١٩٨٤.

١٧. Plant Propagation by tissue culture: Handbook and directory of commercial laboratories. Ed. George, E. F. and Sherrington, P. D. Exegetics Limited, ١٩٨٤.

#### ٢. Essential References

- Journal of Plant Physiology.
- Journal of Biochemistry.
- Journal of Agricultures and Plant Science
- Journal of Agronomy.
- Journal of Experimental Botany.
- Journal of Agricultures and Food Science

#### ٣- Recommended Books and Reference Material (Journals, Reports, etc) (Attach List)

#### ٤. List Electronic Materials, Web Sites, Facebook, Twitter, etc.

٥. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

#### F. Facilities Required

|   |
|---|
| Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)  |
| ١. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)<br><br>(١)- Class room is already provided with data show<br><br>(٢)- The area of class room is suitable concerning the number of enrolled students |
| ٢. Computing resources (AV, data show, Smart Board, software, etc.)<br><br>(١)- Class rooms are equipped with data show.<br><br>(٢)- Library is required and connected to the network for students to study materials.          |
| ٣. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)   |

#### G Course Evaluation and Improvement Processes

|   |
|---|
| ١ Strategies for Obtaining Student Feedback on Effectiveness of Teaching<br><br>(١)- Questionnaires / students opinion survey<br><br>(٢)- Open discussion in the class room at the end of the lectures or during individual student/staff meeting |
| ٢ Other Strategies for Evaluation of Teaching by the Instructor or by the Department<br><br>(١)- Revision of student answer papers.<br><br>(٢)- Analysis the grades of students.  |
| ٣ Processes for Improvement of Teaching<br><br>(١)- Preparing the course as PPT.<br><br>(٢)- Using scientific movies.<br><br>(٣)- Coupling the theoretical part with laboratory part<br><br>(٤)- Periodical revision of course content.           |



٤. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution)

After the agreement of Department and Faculty administrations; it might include:

(١)- Random check of students exam papers / assignments by external examiner

(٢)- Random check of students exam papers / assignments by internal examiner

◦ Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

A departmental review committee will look after the arrangement periodically after taking feedback from students and in the light of new development in the subject.

Name of Instructor: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Report Completed: \_\_\_\_\_

Name of Course Instructor \_\_\_\_\_

Program Coordinator: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Received: \_\_\_\_\_

## Kingdom of Saudi Arabia

### The National Commission for Academic Accreditation & Assessment

#### Course Specifications

##### Medicinal and Economic plants advance

٤٠١٢٦٧٠-٢

## Course Specifications

Institution: **Umm Al-Qura University**

College/Department: **Faculty of Applied Science / Department of Biology**

### A. Course Identification and General Information

١. Course title and code: **Medicinal and Economic plants advance (٤٠١٢٦٧٠-٢)**

٢. Credit hours: **٢ C. H.**

٣. Program(s) in which the course is offered.

(If general elective available in many programs indicate this rather than list programs)

**MSc in Botany**

٤. Name of faculty member responsible for the course

**Dr. Doaa ElGhareeb Keshek (dekeshek@uqu.edu.sa)**

٥. Level/year at which this course is offered

٦. Pre-requisites for this course (if any)

٧. Co-requisites for this course (if any)

٨. Location if not on main campus

٩. Mode of Instruction (mark all that apply)

a. traditional classroom



What percentage?

**١٠٠ %**

b. blended (traditional and online)

What percentage?

c. e-learning

what percentage?

d. correspondence

what percentage?

f. other

what percentage?

Comments:

## B Objectives

١. What is the main purpose for this course?

**The course is designed to develop students to understanding about the economic and ethno botanical aspects of plant resource utilization; medicinal properties of the various plant groups**

٢. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

## C. Course Description (Note: General description in the form used in Bulletin or handbook)

Course Description:

- This course explains the importance of plants and their role in human biological and cultural development.
- It gives an opportunity for students to learn the impact of plants on society for their use as a major food source, as medicine, and in the industrial and recreational world.
- Additionally, it explains the role of plants in ecosystem conservation and sustainability.

## ١. Topics to be Covered

| List of Topics   | No. of Weeks | Contact hours |
|--|--------------|---------------|
| ١. Introduction<br>-History and development of medicinal plants  | ١            | ٢             |
| ٢ - Medicinal plant chemistry<br>- Selected medicinal plants and active products<br>- Secretion in plants<br>- Ethnobotany and Ethnomedicine | ٢            | ٤             |
| ٣-Herbs and spices   | ١            | ٢             |
| ٤-Aromatherapy   | ١            | ٢             |

|   |   |   |
|---|---|---|
| ٥ - Poisons and psychoactive drugs from plants<br>- Insecticides from plants  | ٢ | ٤ |
| ٦ - Wood and wood products  | ١ | ٢ |
| ٧. Fibers, dyes, inks and tannins<br>- Classification, origin and use of plant fibers<br>- Sisal, Flax, Jute, Cotton, Ramie | ٢ | ٤ |
| ٨. Stimulating Beverages<br>Coffee, tea, chocolate, mate, kola, guarana   | ٢ | ٤ |
| ٧. Spices, herbs and perfumes<br>- History of spice trade<br>- Distribution of spices in the world<br>- Essential oils      | ٢ | ٤ |
| ٨. Plant – Based BioFuels   | ١ | ٢ |

|  |         |          |                         |           |        |       |
|--|---------|----------|-------------------------|-----------|--------|-------|
| ٢. Course components (total contact hours and credits per semester): |         |          |                         |           |        |       |
|  | Lecture | Tutorial | Laboratory<br>or Studio | Practical | Other: | Total |
| Contact<br>Hours   | ٣٠      |          |                         |           |        | ٣٠    |
| Credit   | ٢       |          |                         |           |        | ٢     |

٣. Additional private study/learning hours expected for students per week.

٤. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

**On completion of this course students will have or be able to:**

- **Be able to relate the principles of Economic Botany to other disciplines in biology.**
- **Be able to relate useful plants to the affairs of mankind.**
- **Be able to relate useful plants to the local and world economy.**

◦. Schedule of Assessment Tasks for Students During the Semester

|   | Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.) | Week Due | Proportion of Total Assessment |
|---|---|----------|--------------------------------|
| ١ | <b>Activities</b>   |          | ٣٠٪                            |
| ٣ | <b>Essays</b>   |          | ٣٠٪                            |
| ٤ | <b>Final written exam</b>   |          | ٤٠٪                            |
| ٥ | <b>TOTAL</b>  |          | ١٠٠٪                           |

#### D. Student Academic Counseling and Support

١. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

**Academic teaching staff will be available to meet individual students for consultation and academic advice at their private offices at the times advised.**

**Office hours: ١٠ hrs per week; each semester. Time will varies each semester based on academic schedule for each teaching staff.**

## E Learning Resources

### ١. List Required Textbooks

- ❑ **Barnes, J., Anderson, L. A. and Phillipson, J. D.: “Herbal medicines”  
Pharmaceutical Press, 3rd ed., ٢٠٠٧.**
- ❑ **Egyptian Pharmacopoeia, English Text, (4th Ed.), Egyptian Government,  
<http://www.egypt.gov.eg/arabic/default.asp>, ٢٠٠٥.**
- ❑ **J. Bruneton: “Pharmacognosy, Phytochemistry, Medicinal Plants” Lavoisier  
Publishing, Intercept ٢nd ed., ٢٠٠٨.**
- ❑ **Walter Hepworth Lewis, Medical Botany: Plants Affecting Human Health ٢nd  
Ed, John Wiley & Sons, New Jersey, ٢٠٠٣.**

### ٢. List Essential References Materials (Journals, Reports, etc.)

High Impact Journals:

- **Journal of Ethnopharmacology**
- **Phytochemistry**
- **Economic Botany**

### ٣. List Recommended Textbooks and Reference Material (Journals, Reports, etc)

### ٤. List Electronic Materials, Web Sites, Facebook, Twitter, etc.

٥. Other learning material such as computer-based programs/CD, professional standards or regulations and software.



F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)

١. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)

(١)- Class room is already provided with data show

(٢)- The area of class room is suitable concerning the number of enrolled students

٢. Computing resources (AV, data show, Smart Board, software, etc.)

(١)- Class rooms are equipped with data show.

(٢)- Library is required and connected to the network for students to study materials

٣. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

G Course Evaluation and Improvement Processes

١ Strategies for Obtaining Student Feedback on Effectiveness of Teaching

(١)- Questionnaires / students opinion survey

(٢)- Open discussion in the class room at the end of the lectures or during individual student/staff meeting

٢ Other Strategies for Evaluation of Teaching by the Instructor or by the Department

(١)- Revision of student answer papers .

(٢)- Analysis the grades of students.

٣ Processes for Improvement of Teaching

(١)- Preparing the course as PPT.

(٢)- Using scientific movies.

(٣)- Coupling the theoretical part with laboratory part

(٤)- Periodical revision of course content.

٤. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution)

After the agreement of Department and Faculty administrations; it might include:

(١)- Random check of students exam papers / assignments by external examiner

(٢)- Random check of students exam papers / assignments by internal examiner

◦ Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

A departmental review committee will look after the arrangement periodically after taking feedback from students and in the light of new development in the subject.

Name of Instructor: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Report Completed: \_\_\_\_\_

Name of Course Instructor \_\_\_\_\_

Program Coordinator: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Received: \_\_\_\_\_

## Kingdom of Saudi Arabia

### The National Commission for Academic Accreditation & Assessment

## Course Specifications

### Arid Environments

٤٠١٢٦٧١-٢

## Course Specifications

Institution: **Umm Al-Qura University**

College/Department: **Faculty of Applied Science / Department of Biology**

### A. Course Identification and General Information

١. Course title and code: **Arid Environment (٤٠١٢٦٧١-٢)**

٢. Credit hours: **٢ C. H.**

٣. Program(s) in which the course is offered.

(If general elective available in many programs indicate this rather than list programs)

**MSc Biology**

٤. Name of faculty member responsible for the course

**Dr. Hanan E. Osman (heosman@uqu.edu.sa)**

٥. Level/year at which this course is offered

٦. Pre-requisites for this course (if any)

٧. Co-requisites for this course (if any)

٨. Location if not on main campus

٩. Mode of Instruction (mark all that apply)

a. traditional classroom



What percentage? **١٠٠ %**

b. blended (traditional and online)

What percentage?

c. e-learning

what percentage?

d. correspondence

what percentage?

f. other

what percentage?

Comments:

## B Objectives

١. What is the main purpose for this course?

**Arid lands contribute much to our unique biodiversity. We examine the formation of global arid lands, the evolutionary history of the flora, adaptations of plants to arid environments, the major arid lands ecosystems and conservation of biodiversity.**

٢. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

C. Course Description (Note: General description in the form used in Bulletin or handbook)

Course Description:

**Life in Arid Lands recognizes that the majority of Middle East land surface is desert or semiarid tussock grassland and shrub communities, about a third of Earth's landscapes are deserts. It capitalizes on expertise in plant biology to provide students with a unique opportunity to learn about life in the arid lands. The course combines a fundamental understanding of the adaptations of flora to life in the desert. The course demonstrate the causes of aridity, climate of arid land, soil properties vegetation**

١. Topics to be Covered

| List of Topics   | No. of Weeks | Contact hours |
|--|--------------|---------------|
| <b>١. Meaning of aridity and causes of aridity</b>   | ١            | ٢             |
| <b>٢. Arid zone climate</b><br>-Rainfall<br>-Temperature<br>-Atmospheric humidity<br>-Wind | ٣            | ٦             |
| <b>٣. Arid zone soils and importance of soil properties</b>                                | ١            | ٢             |
| <b>٤. Arid zone vegetation</b>   | ٢            | ٤             |
| <b>٥. Classification of vegetation</b>   | ٢            | ٤             |

|   |   |   |
|---|---|---|
| ٦- The role of water and the hydrologic cycle in drylands                                       | ١ | ٢ |
| ٧- The ecosystems and biota of dry landscapes   | ٢ | ٤ |
| ٨- The human histories, occupation, and land use of some of the world's most important deserts. | ٢ | ٤ |
| ٩-Physiological and Morphological changes in plant due to water deficiency                      | ٢ | ٤ |

٢. Course components (total contact hours and credits per semester):

|               | Lecture | Tutorial | Laboratory<br>or Studio | Practical | Other: | Total |
|---------------|---------|----------|-------------------------|-----------|--------|-------|
| Contact Hours | ٣٢      |          |                         |           |        | ٣٢    |
| Credit        | ٢       |          |                         |           |        | ٢     |

٣. Additional private study/learning hours expected for students per week.

٤. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

**On completion of this course students will have or be able to:**

- Understand ecosystem functioning and organismal ecology and evolution in arid lands
- Be familiar with methodologies for sampling plant taxa
- Develop skills for designing, implementing and communicating research projects, including planning the sampling regime, data collection methods, and graphical presentation of results
- Be able to express critical thinking on scientific ideas through academic discussion
- Synthesize primary literature and develop skills in writing based on background review, and writing to provide evidence for a hypothesis/point of view based on literature.
- Explain topics in through oral presentation and interpret through modern lens
- Report on synthesis of newly acquired data with published data
- Develop leadership in discussion of primary literature and in experimental settings.
- Critically evaluate their personal performance both as an individual and within a team

| ٥. Schedule of Assessment Tasks for Students During the Semester |   |          |                                |
|--|---|----------|--------------------------------|
|  | Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.) | Week Due | Proportion of Total Assessment |
| ١  | <b>Paper presentation (seminar)</b>   |          | ٣٠٪                            |
| ٢  | <b>Short essay</b>  |          | ٢٠٪                            |
| ٣  | <b>Written exam</b>   |          | ٣٠٪                            |
| ٤  | <b>Literature review</b>  |          | ٢٠٪                            |
| ٥  | <b>TOTAL</b>  |          | ١٠٠٪                           |

#### D. Student Academic Counseling and Support

١. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

**Academic teaching staff will be available to meet individual students for consultation and academic advice at their private offices at the times advised.**

**Office hours: ١ hrs per week; each semester. Time will varies each semester based on academic schedule for each teaching staff.**

#### E Learning Resources

١. List Required Textbooks



|   |
|---|
| <ul style="list-style-type: none"><li>• <b>Ward, D. (٢٠٠٨). The Biology of Deserts. (Oxford University Press, London)</b></li><li>• <b>Whitford, W.G. (٢٠٠٢). Ecology of Desert Systems. (Academic Press, New York)</b></li></ul>   |
| ٢. List Essential References Materials (Journals, Reports, etc.)<br><br>High Impact Journals:<br><br><ul style="list-style-type: none"><li>١- <b>Journal of Arid Environment</b></li><li>٢- <b>Plant Ecology</b></li><li>٣- <b>Perspectives in Ecology and Conservation</b></li></ul> |
| ٣. List Recommended Textbooks and Reference Material (Journals, Reports, etc)   |
| ٤. List Electronic Materials, Web Sites, Facebook, Twitter, etc.  |
| ٥. Other learning material such as computer-based programs/CD, professional standards or regulations and software.  |

#### F. Facilities Required

|   |
|---|
| Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)  |
| ١. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)<br><br><ul style="list-style-type: none"><li>- <b>Class room is already provided with data show</b></li><li>- <b>The area of class room is suitable concerning the number of enrolled students and air conditioned.</b></li></ul> |
| ٢. Computing resources (AV, data show, Smart Board, software, etc.)<br><br><ul style="list-style-type: none"><li>- <b>Class rooms are equipped with data show and smart board.</b></li></ul>  |
| ٣. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)   |

#### G Course Evaluation and Improvement Processes

١ Strategies for Obtaining Student Feedback on Effectiveness of Teaching

١- Questionnaires / students opinion survey

٢- Open discussion in the class room at the end of the lectures or during individual student/staff meeting

٢ Other Strategies for Evaluation of Teaching by the Instructor or by the Department

١- Revision of student answer papers / assignments by another staff member.

٢- Analysis the grades of students.

٣ Processes for Improvement of Teaching

١- Preparing the course as PPT.

٢- Using scientific movies.

٣- Periodical revision of course content.

٤. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution)

**After the agreement of Department and Faculty administrations; it might include:**

١- Random check of students exam papers / assignments by external examiner

٢- Random check of students exam papers / assignments by internal examiner

٥ Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

**A departmental review committee will look after the arrangement periodically after taking feedback from students and in the light of new development in the subject.**

Name of Instructor: \_\_\_\_\_ Dr. Hanan E. Osman

Signature: \_\_\_\_\_ Date Report Completed: \_\_\_\_\_

Name of Course Instructor \_\_\_\_\_

Program Coordinator: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Received: \_\_\_\_\_

## Kingdom of Saudi Arabia

### The National Commission for Academic Accreditation & Assessment

## Course Specifications

### Salt Marsh Environments

٤٠١٢٦٧٢-٢

## Course Specifications

Institution: **Umm Al-Qura University**

College/Department: **Faculty of Applied Science / Department of Biology**

### A. Course Identification and General Information

١. Course title and code: **Salt Marshes Environments (٤٠١٢٦٧٢-٢)**

٢. Credit hours: **٢ C. H.**

٣. Program(s) in which the course is offered.

(If general elective available in many programs indicate this rather than list programs)

**MSc Biology**

٤. Name of faculty member responsible for the course

**Dr. Hanan E. Osman (heosman@uqu.edu.sa)**

٥. Level/year at which this course is offered

٦. Pre-requisites for this course (if any)

٧. Co-requisites for this course (if any)

٨. Location if not on main campus

٩. Mode of Instruction (mark all that apply)

a. traditional classroom



What percentage?

**١٠٠ %**

b. blended (traditional and online)

What percentage?

c. e-learning

what percentage?

d. correspondence

what percentage?

f. other

what percentage?

Comments:

## B Objectives

### ١. What is the main purpose for this course?

The course covers the recognition and identification of the higher plants of salt marsh and saline habitats and the zonation of salt marsh vegetation. Participants will be able to explore the value of salt marshes as well as the factors affecting salt marshes change.

٢. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

## C. Course Description (Note: General description in the form used in Bulletin or handbook)

### Course Description:

This course provides a broad multi-disciplinary overview of the topic of salt marshes environment, morphology, types and the value of salt marshes. Factors affecting the salt marshes change. The human influences of salt marshes will be studied and the economic benefit of salt marshes.

| ١. Topics to be Covered  |              |               |
|--|--------------|---------------|
| List of Topics   | No. of Weeks | Contact hours |
| ١. Introduction to salt marshes environment                              | ١            | ٢             |
| ٢. Morphology and types of salt marshes                                  | ٢            | ٢             |
| ٣- Value of saltmarsh  | ٢            | ٢             |
| ٤-Survey of saltmarsh  | ١            | ٢             |
| ٥-Factors leading to saltmarshes change                                  | ٣            | ٦             |
| ٦-Physical and ecological processes: Change in saltmarsh extent and form | ٢            | ٤             |
| ٧-Human influences on saltmarsh management                               | ٣            | ٦             |
| ٧-The economic benefits of saltmarsh                                     | ٢            | ٤             |

|                                   |   |   |
|-----------------------------------|---|---|
| ٨- Saltmarsh management           | ٢ | ٤ |
| ٩-Saltmarsh management techniques | ٢ | ٤ |

٢. Course components (total contact hours and credits per semester):

|               | Lecture | Tutorial | Laboratory<br>or Studio | Practical | Other: | Total |
|---------------|---------|----------|-------------------------|-----------|--------|-------|
| Contact Hours | ٣٢      |          |                         |           |        | ٣٢    |
| Credit        | ٢       |          |                         |           |        | ٢     |

٣. Additional private study/learning hours expected for students per week.

٤. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

**On completion of this course students will have or be able to:**

- Understand the morphology and value of salt marshes.
- Know factors affecting change of salt marshes.
- Demonstrate human influences on saltmarsh management
- Demonstrate the economic benefits of saltmarsh
- Synthesize primary literature and develop skills in writing based on background review, and writing to provide evidence for a hypothesis/point of view based on literature.
- Explain topics in through oral presentation and interpret through modern lens
- Report on synthesis of newly acquired data with published data
- Develop leadership in discussion of primary literature and in experimental settings.
- Critically evaluate their personal performance both as an individual and within a team

٥. Schedule of Assessment Tasks for Students During the Semester

|   | Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.) | Week Due | Proportion of Total Assessment |
|---|---|----------|--------------------------------|
| ١ | <b>Paper presentation (seminar)</b>   |          | ٣٠٪                            |
| ٢ | <b>Short essay</b>  |          | ٢٠٪                            |
| ٣ | <b>Written exam</b>   |          | ٣٠٪                            |
| ٤ | <b>Literature review</b>  |          | ٢٠٪                            |
| ٥ | <b>TOTAL</b>  |          | ١٠٠٪                           |

#### D. Student Academic Counseling and Support

١. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

**Academic teaching staff will be available to meet individual students for consultation and academic advice at their private offices at the times advised.**

**Office hours: ٦ hrs per week; each semester. Time will varies each semester based on academic schedule for each teaching staff.**

#### E Learning Resources

١. List Required Textbooks

**Van Rijn, L. (١٩٩٨). Principles of Coastal Morphology. Aqua Publications. IPCC (٢٠٠٧). Adam, P. (١٩٩٠). Saltmarsh Ecology . Cambridge University Press, Cambridge.**



Adam, P. (٢٠٠٠). Morecambe Bay saltmarshes: ٢٥ years of change. In: Sherwood, B.R.,

• Gardiner, B.G. & Harris, T. British Saltmarshes . Forrest Text, Cardigan ٨١-١٠٧.  
CEH (٢٠٠٢). Managed realignment at Tollesbury and Saltram, Final Report. CEH Project

• C٠٠٣٥٦.

٢. List Essential References Materials (Journals, Reports, etc.)

High Impact Journals:

١. **Wetlands**

٢. **Plant Ecology**

٣. **Journal of Coastal Research**

٣. List Recommended Textbooks and Reference Material (Journals, Reports, etc)

٤. List Electronic Materials, Web Sites, Facebook, Twitter, etc.

٥. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

#### F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)

١. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)

- **Class room is already provided with data show**

- **The area of class room is suitable concerning the number of enrolled students and air conditioned.**

٢. Computing resources (AV, data show, Smart Board, software, etc.)

- **Class rooms are equipped with data show and smart board.**

٣. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

#### G Course Evaluation and Improvement Processes

١ Strategies for Obtaining Student Feedback on Effectiveness of Teaching

١- Questionnaires / students opinion survey

٢- Open discussion in the class room at the end of the lectures or during individual student/staff meeting

٢ Other Strategies for Evaluation of Teaching by the Instructor or by the Department

١- Revision of student answer papers / assignments by another staff member.

٢- Analysis the grades of students.

٣ Processes for Improvement of Teaching

١- Preparing the course as PPT.

٢- Using scientific movies.

٣- Periodical revision of course content.

٤. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution)

**After the agreement of Department and Faculty administrations; it might include:**

١- Random check of students exam papers / assignments by external examiner

٢- Random check of students exam papers / assignments by internal examiner

٥ Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

**A departmental review committee will look after the arrangement periodically after taking feedback from students and in the light of new development in the subject.**

Name of Instructor: \_\_\_\_\_ Dr. Hanan E. Osman

Signature: \_\_\_\_\_ Date Report Completed: \_\_\_\_\_

Name of Course Instructor \_\_\_\_\_

Program Coordinator: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Received: \_\_\_\_\_

## Kingdom of Saudi Arabia

### The National Commission for Academic Accreditation & Assessment

## Course Specifications

### Climate and the Environment

٤٠١٢٦٧٣-٢

## Course Specifications

Institution: **Umm Al-Qura University**

College/Department: **Faculty of Applied Science / Department of Biology**

### A. Course Identification and General Information

١. Course title and code: **Climate and the Environment (٤٠١٢٦٧٣-٢)**

٢. Credit hours: **٢ C. H.**

٣. Program(s) in which the course is offered.

(If general elective available in many programs indicate this rather than list programs)

**MSc Biology**

٤. Name of faculty member responsible for the course

**Dr. Hanan E. Osman (heosman@uqu.edu.sa)**

٥. Level/year at which this course is offered

٦. Pre-requisites for this course (if any)

٧. Co-requisites for this course (if any)

٨. Location if not on main campus

٩. Mode of Instruction (mark all that apply)

a. traditional classroom



What percentage?

**١٠٠ %**

b. blended (traditional and online)

What percentage?

c. e-learning

what percentage?

d. correspondence

what percentage?

f. other

what percentage?

Comments:

## B Objectives

١. What is the main purpose for this course?

The primary aim of this course is to introduce the major environmental processes and how human activities impact to the environment. The course begin with an introduction to the principles of sustainability and how we interact with our environment. Also, the course discuss Earth's atmosphere functions and its composition, Earth's global energy balance, the role of climate processes, and how human activity has impacted them. Topics will include the greenhouse effect, the loss of the ozone layer, acid precipitation, urban heat islands, and global climate change. The discussion on global atmospheric and oceanic circulation will be an opportunity to examine how remote areas can still be impacted by human activities occurring far away. Finally, we will examine the role of ecosystems and how they function. Topics will include the impact of biodiversity loss on ecosystems, soil erosion, water pollution and eutrophication, solid waste disposal, sewage treatment, the management of hazardous chemicals and the path to a sustainable future for the global human population.

٢. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

C. Course Description (Note: General description in the form used in Bulletin or handbook)

Course Description:

This course provides a broad multi-disciplinary overview of the topic of anthropogenic climate change with emphasis on the processes of climate change itself and of its impacts on carbon cycling, the abiotic environment, the biosphere and the human environment. Biosphere impacts are treated at all levels of plant/animal biology: physiology, populations and species, structure and functioning of ecosystems. Attention is given to the various methods of climate-change research and the associated uncertainty in climate-change prognoses, and to strategies of adaptation and mitigation.

١. Topics to be Covered

| List of Topics                    | No. of Weeks | Contact hours |
|-----------------------------------|--------------|---------------|
| ١. Introduction to climate change | ١            | ٢             |

|   |   |   |
|---|---|---|
| ٢. Aspects of general climatology relevant to climate change; temperature structure of the atmosphere, atmospheric circulation, diverse feedbacks.          | ١ | ٢ |
| ٣. The greenhouse effect: physics and chemistry of natural and anthropogenic, greenhouse gases, and their historical trends.                                | ١ | ٢ |
| ٤. The carbon cycle: main carbon reservoirs and fluxes, fossil fuels and energy, human perturbation of the carbon cycle.                                    | ١ | ٢ |
| ٥. Air pollution and global dimming   | ١ | ٢ |
| ٦. Impacts of global warming on the cryosphere.   | ١ | ٢ |
| ٧. Hydrological processes relevant to climate change, and impacts of global warming on the hydrological cycle.  | ٢ | ٤ |
| ٨. Plant ecophysiology and climate-change effects on C <sup>3</sup> /C <sup>4</sup> competition.  | ١ | ٢ |
| ٩. Role of ecosystems/vegetation in the global carbon cycle.  | ١ | ٢ |
| ١٠. Impacts of global warming on the biosphere: species distributions, phenology, habitat loss, exotic/invasive species and diseases, evolutionary aspects. | ٢ | ٤ |
| ١١. Climate change and biological conservation.   | ٢ | ٤ |
| ١٢. Impacts on the human environment with emphasis on global food security  | ٢ | ٤ |

|  |         |          |                         |           |        |       |
|--|---------|----------|-------------------------|-----------|--------|-------|
| ٢. Course components (total contact hours and credits per semester): |         |          |                         |           |        |       |
|  | Lecture | Tutorial | Laboratory<br>or Studio | Practical | Other: | Total |
| Contact Hours  | ٣٢      |          |                         |           |        | ٣٢    |
| Credit   | ٢       |          |                         |           |        | ٢     |

٣. Additional private study/learning hours expected for students per week.

٤. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

**On completion of this course students will have or be able to:**

- **Understand the impacts of global warming on the biosphere.**
- **Know something of the way various human activities are increasing emissions of the natural greenhouse gases.**
- **Demonstrate advanced knowledge of the causes of recent (natural and anthropogenic) climate change in relation to long-term climate history, of all relevant aspects of the carbon cycle, and of the effect of climate change on the abiotic earth environment, the biosphere (fysiology, species distributions, ecosystems) and the human environment.**
- **Demonstrate an awareness of the difficulties involved in the detection of any unusual global warming.**
- **Synthesize primary literature and develop skills in writing based on background review, and writing to provide evidence for a hypothesis/point of view based on literature.**
- **Explain topics in through oral presentation and interpret through modern lens**
- **Report on synthesis of newly acquired data with published data**
- **Develop leadership in discussion of primary literature and in experimental settings.**
- **Critically evaluate their personal performance both as an individual and within a team**

٥. Schedule of Assessment Tasks for Students During the Semester

|   | Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.) | Week Due | Proportion of Total Assessment |
|---|---|----------|--------------------------------|
| ١ | <b>Paper presentation (seminar)</b>   |          | ٣٠٪                            |
| ٢ | <b>Short essay</b>  |          | ٢٠٪                            |
| ٣ | <b>Written exam</b>   |          | ٣٠٪                            |



|   |                          |  |      |
|---|--------------------------|--|------|
| ٤ | <b>Literature review</b> |  | ٢٠٪  |
| ٥ | <b>TOTAL</b>             |  | ١٠٠٪ |

#### D. Student Academic Counseling and Support

١. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

**Academic teaching staff will be available to meet individual students for consultation and academic advice at their private offices at the times advised.**

**Office hours: ٦ hrs per week; each semester. Time will varies each semester based on academic schedule for each teaching staff.**

#### E Learning Resources

١. List Required Textbooks

- **English handbook ‘Global warming: understanding the forecast’ by David Archer.**
- **IPCC (٢٠٠٧). ٤th Assessment Report on Climate Change: summary for policymakers. Neil Roberts (١٩٩٨). The Holocene: an environmental history, ٢nd Ed. Blackwell (ISBN ٠-٦٣١-١٨٦٣٨-٧).**

٢. List Essential References Materials (Journals, Reports, etc.)

High Impact Journals:

١. **Nature Climate Change**
٢. **Global Change Biology**
٣. **Annual Review of Environment and Resources**
٤. **Global Biogeochemical Cycles**

٣. List Recommended Textbooks and Reference Material (Journals, Reports, etc)

|  |
|--|
|  |
| ٤. List Electronic Materials, Web Sites, Facebook, Twitter, etc.   |
| ٥. Other learning material such as computer-based programs/CD, professional standards or regulations and software. |

#### F. Facilities Required

|  |
|--|
| Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)   |
| ١. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)<br><b>- Class room is already provided with data show</b><br><b>- The area of class room is suitable concerning the number of enrolled students and air conditioned.</b> |
| ٢. Computing resources (AV, data show, Smart Board, software, etc.)<br><b>- Class rooms are equipped with data show and smart board.</b>   |
| ٣. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)  |

#### G Course Evaluation and Improvement Processes

|   |
|---|
| ١ Strategies for Obtaining Student Feedback on Effectiveness of Teaching<br><b>١- Questionnaires / students opinion survey</b><br><b>٢- Open discussion in the class room at the end of the lectures or during individual student/staff meeting</b> |
| ٢ Other Strategies for Evaluation of Teaching by the Instructor or by the Department<br><b>١- Revision of student answer papers / assignments by another staff member.</b>  |

**٢- Analysis the grades of students.**

٣ Processes for Improvement of Teaching

**١- Preparing the course as PPT.**

**٢- Using scientific movies.**

**٣- Periodical revision of course content.**

٤. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution)

**After the agreement of Department and Faculty administrations; it might include:**

**١- Random check of students exam papers / assignments by external examiner**

**٢- Random check of students exam papers / assignments by internal examiner**

٥ Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

**A departmental review committee will look after the arrangement periodically after taking feedback from students and in the light of new development in the subject.**

Name of Instructor: \_\_\_\_\_ Dr. Hanan E. Osman

Signature: \_\_\_\_\_ Date Report Completed: \_\_\_\_\_

Name of Course Instructor \_\_\_\_\_

Program Coordinator: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Received: \_\_\_\_\_

**Kingdom of Saudi Arabia**

**The National Commission for Academic Accreditation & Assessment**

**Course Specifications**

**Genetic engineering**

(٢-٤٠١٢٦٧٤)

## Course Specifications

|   |
|---|
| Institution: <b>Umm Al-Qura University</b>                                    |
| College/Department: <b>Faculty of Applied Science / Department of Biology</b> |

### A. Course Identification and General Information

|   |
|---|
| ١. Course title and code: <b>Genetic engineering ٢-٤٠١٢٦٧٤</b>  |
| ٢. Credit hours: <b>٢ Credit hours</b>  |
| ٣. Program(s) in which the course is offered.<br>(If general elective available in many programs indicate this rather than list programs)<br><b>MSc in Botany</b> |
| ٤. Name of faculty member responsible for the course<br><b>Dr. Nora Al Aboud (nmaboud@uqu.edu.sa)</b>   |
| ٥. Level/year at which this course is offered   |
| ٦. Pre-requisites for this course (if any)  |
| ٧. Co-requisites for this course (if any)   |
| ٨. Location if not on main campus   |
| ٩. Mode of Instruction (mark all that apply)<br><br>a. traditional classroom <input checked="" type="checkbox"/> What percentage? <b>١٠٠ %</b>                    |

b. blended (traditional and online)

What percentage?

c. e-learning

What percentage?

d. correspondence

What percentage?

f. other

What percentage?

Comments:

## B Objectives

١. What is the main purpose for this course?

**The objective of the course is to discuss the basics of genetic engineering, the methodology of gene manipulation and to know the applications of genetic engineering in different fields.**

٢. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

## C. Course Description (Note: General description in the form used in Bulletin or handbook)

Course Description:

**The course structure is design to provide an introduction on the basics of genetic engineering, discussing molecular biology and how to work with nucleic acids. The course will discuss the different techniques used in genetic engineering and the role of restriction enzymes. The methodology of gene manipulation including: cloning strategies, host cells, vectors, the polymerase chain reaction, selection, screening, analysis of recombinants and bioinformatics will be covered. The course will discuss the various applications of genetic engineering.**

١. Topics to be Covered

| List of Topics                              | No. of Weeks | Contact hours |
|---|--------------|---------------|
| <b>Introduction to genetic engineering</b>  | ١            | ٢             |
| <b>Basics of molecular biology</b>          | ١            | ٢             |
| <b>Working with nucleic acids</b>           | ١            | ٢             |
| <b>Role of restriction enzymes.</b>         | ١            | ٢             |
| <b>The methodology of gene manipulation</b> | ١            | ٢             |
| <b>Host cells and vectors</b>               | ١            | ٢             |

|  |   |   |
|--|---|---|
| Cloning strategies                                     | ١ | ٢ |
| The polymerase chain reaction                          | ١ | ٢ |
| Selection, screening, analysis of recombinants         | ١ | ٢ |
| Bioinformatics   | ١ | ٢ |
| Genetic engineering in action                          | ١ | ٢ |
| Understanding genes, genomes and other ones            | ١ | ٢ |
| Genetic engineering and biotechnology                  | ١ | ٢ |
| Medical and forensic applications of gene manipulation | ١ | ٢ |
| Transgenic plants and animals                          |   |   |

٢. Course components (total contact hours and credits per semester):

|               | Lecture | Tutorial | Laboratory<br>or Studio | Practical | Other: | Total |
|---------------|---------|----------|-------------------------|-----------|--------|-------|
| Contact Hours | ٢٨      |          |                         |           |        | ٢٨    |
| Credit        | ٢       |          |                         |           |        | ٢     |

٣. Additional private study/learning hours expected for students per week.

٤. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

**On completion of this course students will be able to:**

- Understand the nature of genetic materials, genes and genomes.
- Describe the requirements to work with nucleic acids.
- Identify restriction enzymes and their functions.
- Discuss the different techniques used in genetic engineering



- Understand methodology of gene manipulation.
- Identify Host cells and vectors.
- Describe cloning strategies.
- Understand The polymerase chain reaction
- Discuss Selection, screening, analysis of recombinants.
- Understand Bioinformatics.
- Discuss the different applications of genetic engineering.
- Present information clearly in the form of verbal and writing reports.
- Communicate complex ideas and arguments in a clear, concise and effective manner
- Work effectively as an individual or a team member.
- Use conventional and electronic resources to collect, select and organize scientific information
- Be able to assimilate and synthesis data from multiple sources
- Demonstrate capacity for self-learning and independent thinking and to utilize problem solving skills
- Demonstrate effective communication skills in the form of student led group presentations.
- Demonstrate skills in working collegiately and effectively with others as a member of a team.
- Set priorities and link these with effective time management
- Critically evaluate their personal performance both as an individual and within a team

◦. Schedule of Assessment Tasks for Students During the Semester

|   | Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.) | Week Due | Proportion of Total Assessment |
|---|---|----------|--------------------------------|
| ١ | Activities  |          | ٣٠٪                            |
| ٣ | Essays  |          | ٣٠٪                            |
| ٤ | Final written exam  |          | ٤٠٪                            |
| ◦ | TOTAL   |          | ١٠٠٪                           |

D. Student Academic Counseling and Support

١. Arrangements for availability of faculty and teaching staff for individual student consultations

and academic advice. (include amount of time teaching staff are expected to be available each week)

**Academic teaching staff will be available to meet students for consultation and academic advice at their private offices at the times advised.**

**Office hours: ١٠ hrs. per week; each semester. Time will varies each semester based on academic schedule for each teaching staff.**

#### E Learning Resources

##### ١. List Required Textbooks

-T.A BROWN. (٢٠١٠) **GENE CLONING AND DNA ANALYSIS An Introduction**, ٦ed. Wiley-Blackwell. ISBN: ٩٧٨١٤٠٥١٨١٧٣٠

- Christopher Howe. (٢٠٠٧) **Gene Cloning and Manipulation**, ٢ed. Cambridge University Press. ISBN-١٢ ٩٧٨-٠-٥٢١-٨١٧٩٣-٦

- Desmond S. T. Nicholl . (٢٠٠٨) **An Introduction to Genetic Engineering**, ٢ed. Cambridge University Press. ISBN-١٣ ٩٧٨-٠-٥٢١-٨٥٠٠٦-٣

##### ٢. List Essential References Materials (Journals, Reports, etc.)

High Impact Journals:

- **Journal of Genetic Engineering and Biotechnology**

- **Biotechnology and Genetic Engineering Reviews**

##### ٣. List Recommended Textbooks and Reference Material (Journals, Reports, etc)

٤. List Electronic Materials, Web Sites, Facebook, Twitter, etc.

**Teaching materials of genetic engineering on [www.youtube.com](http://www.youtube.com)**

◦. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

**PPT-files and movies for teaching genetic engineering**

#### F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)

١. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)

**(١)- Class room is already provided with data show**

**(٢)- The area of class room is suitable concerning the number of enrolled students**

٢. Computing resources (AV, data show, Smart Board, software, etc.)

**(١)- Class rooms are equipped with data show.**

**(٢)- Library is required and connected to the network for students to study materials**

٣. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

#### G Course Evaluation and Improvement Processes

١ Strategies for Obtaining Student Feedback on Effectiveness of Teaching

**(١)- Questionnaires / students opinion survey**

**(٢)- Open discussion in the class room at the end of the lectures or during individual student/staff meeting**

٢ Other Strategies for Evaluation of Teaching by the Instructor or by the Department

**(١)- Revision of student answer papers .**

**(٢)- Analysis the grades of students.**

٣ Processes for Improvement of Teaching

**(١)- Preparing the course as PPT.**

**(٢)- Using scientific movies.**

**(٣)- Coupling the theoretical part with laboratory part**

**(٤)- Periodical revision of course content.**

٤. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution)

**After the agreement of Department and Faculty administrations; it might include:**

**(١)- Random check of students exam papers / assignments by external examiner**

**(٢)- Random check of students exam papers / assignments by internal examiner**

◦ Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

**A departmental review committee will look after the arrangement periodically after taking feedback from students and in the light of new development in the subject.**

Name of Instructor: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Report Completed: \_\_\_\_\_

Name of Course Instructor \_\_\_\_\_

Program Coordinator: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Received: \_\_\_\_\_

## Kingdom of Saudi Arabia

### The National Commission for Academic Accreditation & Assessment

#### Course Specifications

##### Transgenic Plants

٤٠١٢٦٧٥-٢

## Course Specifications

|   |
|---|
| Institution: <b>Umm Al-Qura University</b>                                    |
| College/Department: <b>Faculty of Applied Science / Department of Biology</b> |

### A. Course Identification and General Information

|  |
|--|
| ١. Course title and code: <b>Transgenic Plants (٤٠١٢٦٧٥-٢)</b>   |
| ٢. Credit hours: <b>٢ C. H.</b>  |
| ٣. Program(s) in which the course is offered.<br>(If general elective available in many programs indicate this rather than list programs)<br><b>MSc in Botany</b>  |
| ٤. Name of faculty member responsible for the course<br><b>Dr. Doaa EL-Ghareeb Keshek (dekeshek@uqu.edu.sa)</b>  |
| ٥. Level/year at which this course is offered  |
| ٦. Pre-requisites for this course (if any)   |
| ٧. Co-requisites for this course (if any)  |
| ٨. Location if not on main campus  |
| ٩. Mode of Instruction (mark all that apply)<br><br>a. traditional classroom <input checked="" type="checkbox"/> What percentage? <b>١٠٠ %</b><br><br>b. blended (traditional and online) <input type="checkbox"/> What percentage? <input type="checkbox"/> |

c. e-learning

what percentage?

d. correspondence

what percentage?

f. other

what percentage?

Comments:

## B Objectives

١. What is the main purpose for this course?

١. **Introduction to plant tissue culture as a tool for crop improvement and generation of clonal populations of elite plant genotypes.**

٢. **Development of plant transformation vectors specifically designed to facilitate transfer**

**of improved/unique genetic traits to plants, and to provide knowledge on diverse genetic transformation technologies available for the production of transgenic plants in crop improvement programs.**

٣. **Familiarization with regulations related to the development, field testing and commercial release of transgenic crop.**

٤. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

## C. Course Description (Note: General description in the form used in Bulletin or handbook)

Course Description:

**The broad objective of the present core course is to define the purview of plant biotechnology with respect to crop improvement. In this respect, students will be acquainted with application of principles and techniques of plant tissue culture and transgenic technology. While in tissue culture, the focus shall be on media composition and preparation, methods of in vitro regeneration, applications and limitations, with respect to genetic transformation, aspects of cloning, DNA delivery, detection, characterization and expression of transformants and gene silencing etc would be covered. Global status of GMOs, various case studies illustrating the application of biotechnology in developing crop varieties that are resistant to various biotic and abiotic stresses, enhancing nutritional quality, improved post-harvest qualities, and aspects related to commercial release of transgenic crops would also be dealt in detail.**



| ١. Topics to be Covered |              |               |
|-------------------------|--------------|---------------|
| List of Topics          | No. of Weeks | Contact hours |
|                         |              |               |

|  |   |    |
|--|---|----|
| <p>١- Principles of Plant Tissue Culture</p> <ul style="list-style-type: none"> <li>• History/background of plant tissue culture</li> <li>• Set up of a tissue culture laboratory</li> <li>• Medium constituents (macro- and microelements, hormones, other growth regulators) and preparation</li> <li>• Micropropagation <ul style="list-style-type: none"> <li>- Culture Initiation</li> <li>- Shoot multiplication</li> <li>- Rooting</li> <li>- Hardening (acclimatization)</li> <li>- Common problems</li> </ul> </li> <li>• Somatic Embryogenesis</li> <li>• Organogenesis</li> <li>• Clonal fidelity of tissue cultured plants</li> <li>• Effect of physical environment</li> <li>• Applications of plant tissue culture <ul style="list-style-type: none"> <li>- Anther, pollen and ovary culture for production of haploid plants and homozygous lines</li> <li>- Production of Triploids</li> <li>- Embryo culture and embryo rescue</li> <li>- Protoplast isolation, culture and fusion; selection of hybrid cells and regeneration of hybrid plants</li> <li>- Production of secondary metabolites</li> <li>- in situ conservation and cryopreservation</li> <li>- Production of virus-free plants (virus indexing and elimination)</li> <li>- Synthetic seeds</li> </ul> </li> </ul> | ٥ | ١٠ |
|--|---|----|

|   |         |          |                         |           |        |       |
|---|---------|----------|-------------------------|-----------|--------|-------|
| <p>٢- Introduction to transgenic technology</p> <ul style="list-style-type: none"> <li>• Conventional breeding versus Transgenesis</li> <li>• Introduction to <i>Agrobacterium tumefaciens</i> and <i>A. rhizogene</i></li> <li>• Features of Ti and Ri Plasmids and their use as vectors, Binary and cointegrate vectors,</li> <li>• Cloning strategies</li> <li>• Methods of DNA delivery <ul style="list-style-type: none"> <li>- <i>Agrobacterium</i> mediated transformation</li> <li>- Direct DNA transfer to plants (particle gun, electroporation, Silicon carbide fibres, PEG mediated, in-planta)</li> </ul> </li> <li>• Chloroplast Transformation</li> <li>• DNA viruses as Expression vectors (Cauliflower mosaic virus, Gemini virus, Tobacco mosaic virus, Potato X virus)</li> <li>• Detection, characterization and expression of transformants (Genetic markers, reporter genes, transgene stability and gene silencing)</li> </ul> | ٥       | ١٠       |                         |           |        |       |
| <p>٣- Transgenic Technology for Crop Improvement</p> <ul style="list-style-type: none"> <li>• GM technology for : <ul style="list-style-type: none"> <li>- Conferring resistance to biotic stresses (pests, viruses, fungi)</li> <li>- Abiotic stresses (tolerance to salt, cold, drought)</li> <li>- Herbicide resistance</li> <li>- Increasing shelf life of fruits and flowers</li> <li>- Enhancing the nutritional quality (pro-vitamin A)</li> <li>- Metabolic engineering and industrial products (plant secondary metabolites, alkaloids, industrial enzymes, therapeutic proteins, antibodies, edible vaccines)</li> </ul> </li> <li>• Aspects related to commercial release of transgenic crops</li> </ul>   | ٥       | ١٠       |                         |           |        |       |
| <p>٢. Course components (total contact hours and credits per semester): ٣٠ hours per semester</p>   |         |          |                         |           |        |       |
|   | Lecture | Tutorial | Laboratory<br>or Studio | Practical | Other: | Total |
| Contact<br>Hours  | ٣٠      |          |                         |           |        | ٣٠    |
| Credit  | ٢       |          |                         |           |        | ٢     |

٣. Additional private study/learning hours expected for students per week.

٤. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

**On completion of this course students will have or be able to:**

١. An understanding of plant tissue culture techniques that can be employed for the production of superior quality plants.
٢. Ability to rationalize and develop strategies for incorporating novel traits in plants through genetic engineering.
٣. Appreciation of health and environmental concerns and understanding of regulations related to commercial release of transgenic crops.

٥. Schedule of Assessment Tasks for Students During the Semester

|   | Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.) | Week Due | Proportion of Total Assessment |
|---|---|----------|--------------------------------|
| ١ | <b>Activities</b>   |          | ٣٠٪                            |
| ٣ | <b>Essays</b>   |          | ٣٠٪                            |
| ٤ | <b>Final written exam</b>   |          | ٤٠٪                            |
| ٥ | <b>TOTAL</b>  |          | ١٠٠٪                           |

#### D. Student Academic Counseling and Support

١. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

**Academic teaching staff will be available to meet individual students for consultation and academic advice at their private offices at the times advised.**

**Office hours: ١٠ hrs per week; each semester. Time will varies each semester based on academic schedule for each teaching staff.**

#### E Learning Resources

##### ١. List Required Textbooks

١. George E. F., Hall A H, and De Klerk G J (٢٠٠٨) Plant propagation by tissue culture. Springer. ٥٠١ p.
٢. Bhojwani SS and Razdan M K (١٩٩٦) Plant Tissue Culture : Theory and Practice. Elsevier. ٧٦٧ p

##### ٢. List Essential References Materials (Journals, Reports, etc.)

High Impact Journals:

١- Herman, Edwin B., (Ed.) (٢٠٠٩) Genetic modification of plants: methods and applications ٢٠٠٥-٢٠٠٩, USA: Agritech Consultants. ١٥٣p.

٢. Herman, Edwin B., (Ed.) (٢٠٠٧) Microbial contaminants in plant tissue culture, Vol. III : ٢٠٠٣ – ٢٠٠٧. Agritech Consultants, Inc. Shrub Oak. ١١٠p

٣. Neumann, K H, Kumar, A, Imani, J (٢٠٠٩) Plant Cell and Tissue Culture – A tool in biotechnology : Basics and applications. ٣٣٣p

٤. Halford, Nigel G. (Ed.) (٢٠٠٦) Plant Biotechnology: Current and Future Applications of genetically modified crops. John Wiley and Sons Ltd. ٣٠٣ p

٥. Chrispeels MJ; Sadava DE (٢٠٠٣) Plant, Genes and Crop Biotechnology. Jones and Bartlett Publishers, Inc

|  |
|--|
|  |
| ٣. List Recommended Textbooks and Reference Material (Journals, Reports, etc)                                      |
| ٤. List Electronic Materials, Web Sites, Facebook, Twitter, etc.   |
| ٥. Other learning material such as computer-based programs/CD, professional standards or regulations and software. |

#### F. Facilities Required

|   |
|---|
| Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)  |
| ١. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)<br><br><b>(١)- Class room is already provided with data show</b><br><b>(٢)- The area of class room is suitable concerning the number of enrolled students</b> |
| ٢. Computing resources (AV, data show, Smart Board, software, etc.)<br><br><b>(١)- Class rooms are equipped with data show.</b><br><b>(٢)- Library is required and connected to the network for students to study materials</b>           |
| ٣. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)   |

#### G Course Evaluation and Improvement Processes

|   |
|---|
| ١ Strategies for Obtaining Student Feedback on Effectiveness of Teaching<br><br><b>(١)- Questionnaires / students opinion survey</b><br><b>(٢)- Open discussion in the class room at the end of the lectures or during individual student/staff meeting</b> |
| ٢ Other Strategies for Evaluation of Teaching by the Instructor or by the Department  |

(١)- Revision of student answer papers .

(٢)- Analysis the grades of students.

٣ Processes for Improvement of Teaching

(١)- Preparing the course as PPT.

(٢)- Using scientific movies.

(٣)- Coupling the theoretical part with laboratory part

(٤)- Periodical revision of course content.

٤. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution)

After the agreement of Department and Faculty administrations; it might include:

(١)- Random check of students exam papers / assignments by external examiner

(٢)- Random check of students exam papers / assignments by internal examiner

◦ Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

A departmental review committee will look after the arrangement periodically after taking feedback from students and in the light of new development in the subject.

Name of Instructor: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Report Completed: \_\_\_\_\_

Name of Course Instructor \_\_\_\_\_

Program Coordinator:

Signature: \_\_\_\_\_ Date Received: \_\_\_\_\_

## Kingdom of Saudi Arabia

### The National Commission for Academic Accreditation & Assessment

#### Course Specifications

##### Behavioral Genetics

٤٠١٢٦٧٦-٢



## Course Specifications

Institution: **Umm Al-Qura University**

College/Department: **Faculty of Applied Science / Department of Biology**

### A. Course Identification and General Information

١. Course title and code: **Behavioral Genetics (٤٠١٢٦٧٦ -٢)**

٢. Credit hours: **٢ C. H.**

٣. Program(s) in which the course is offered.

(If general elective available in many programs indicate this rather than list programs)

**MSc in Botany**

٤. Name of faculty member responsible for the course

**Dr. Doaa ElGhareeb Keshek (dekeshek@uqu.edu.sa)**

٥. Level/year at which this course is offered

٦. Pre-requisites for this course (if any)

٧. Co-requisites for this course (if any)

٨. Location if not on main campus

٩. Mode of Instruction (mark all that apply)

a. traditional classroom



What percentage?

**١٠٠ %**

b. blended (traditional and online)

What percentage?

c. e-learning

what percentage?

d. correspondence

what percentage?

f. other

what percentage?

Comments:

## B Objectives

١. What is the main purpose for this course?

The course aims at introducing basic theories and concepts in human genetics as well as basic methods in behavioral genetics. Following the course, students will be able to identify key theoretical issues in the genetics of human behavior, to critically examine empirical data on the genetic aspects of various human traits, and to discuss behavioral genetics from an evolutionary perspective.

٢. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

## C. Course Description (Note: General description in the form used in Bulletin or handbook)

Course Description:

١. Provide students with an introduction to, and overview of the field of behavior genetics.
٢. Introduce students to the basic principles of Mendelian, population and quantitative genetics, as necessary for study of neuro-behavioral phenotypes/characters/traits.
٣. Familiarize students with foundation information on hereditary mechanisms and processes relevant for the nervous system and behavior.
٤. Provide an overview of the major ways in which modern molecular biology is revolutionizing our approaches to questions in the interface between genetics and the neuro-behavioral sciences.
٥. Examine the methods and findings specific to the analysis of both nonhuman and human behavior.
٦. Develop information literacy skills to research and read the primary scientific literature on Behavior Genetics, using the PubMed search capability, and UA Library electronic article access.
٧. Review some of the societal and ethical implications of the results of behavioral genetic studies.

## ١. Topics to be Covered

The course will be divided into ٢ sections covering genetics individual differences and evolutionary psychology.

| List of Topics | No. of | Contact hours |
|----------------|--------|---------------|
|                | Weeks  |               |
|                |        |               |

|   |   |    |
|---|---|----|
| <p><b><u>Part ١: Genetics</u></b></p> <p>This section of the course will introduce the student to the science of genetics. Topics include molecular genetics, Mendelian genetics, metabolic disorders, chromosomal disorders, linkage and association designs, and the genetics of complex disorders. The goal of this section is to appreciate the numerous ways and mechanisms in which genes can influence behavior and social influences can influence gene expression.</p>   | ٥ | ١٠ |
| <p><b><u>Part ٢: Individual Differences</u></b></p> <p>Why are some people shy while other people are very outgoing? Why do some people do well at school while others struggle just to pass? This section of the course examines the roles that genes play in creating individual differences among us humans.</p> <p>Topics include overviews of the twin and adoption designs, the genetics of personality, the genetics of cognitive ability, and the genetics of psychopathology. This part will also cover genetic influences on brain function and the role of epigenetics for human behavior.</p> | ٥ | ١٠ |
| <p><b><u>Part ٣: Evolution and Evolutionary Psychology</u></b></p> <p>This section of the course examines behavior from the perspective of evolution.</p> <p>Topics include population genetics and the principles of evolution, biological constraints on behavior, human behavioral adaptations, and mate preferences. The major goal of this section is to appreciate how millions of years of mammalian and primate evolution contributes to many different aspects of our behavior today.</p>  | ٥ | ١٠ |

٢. Course components (total contact hours and credits per semester):

|                  | Lecture | Tutorial | Laboratory<br>or Studio | Practical | Other: | Total |
|------------------|---------|----------|-------------------------|-----------|--------|-------|
| Contact<br>Hours | ٣٠      |          |                         |           |        | ٣٠    |
| Credit           | ٢       |          |                         |           |        | ٢     |

٣. Additional private study/learning hours expected for students per week.

٤. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

**On completion of this course students will have or be able to:**

At the end of this course students should have a clearer understanding of the contribution that genetics make to individual differences in behavior. They will be in a better position to evaluate the evidence for or against genetic or environmental influences. Achieving these objectives will give students an appreciation of the interrelationships of biological and cultural determinants of behavior.

٥. Schedule of Assessment Tasks for Students During the Semester

|   | Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.) | Week Due | Proportion of Total Assessment |
|---|---|----------|--------------------------------|
| ١ | <b>Activities</b>   |          | ٣٠٪                            |
| ٣ | <b>Essays</b>   |          | ٣٠٪                            |

|   |                           |  |      |
|---|---------------------------|--|------|
|   |                           |  |      |
| ٤ | <b>Final written exam</b> |  | ٤٠٪  |
| ٥ | <b>TOTAL</b>              |  | ١٠٠٪ |

#### D. Student Academic Counseling and Support

١. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

**Academic teaching staff will be available to meet individual students for consultation and academic advice at their private offices at the times advised.**

**Office hours: ١٠ hrs per week; each semester. Time will varies each semester based on academic schedule for each teaching staff.**

#### E Learning Resources

##### ١. List Required Textbooks

١- Behavior genetics (٤th Edition, ٢٠٠٣) by Robert Plomin, John C. DeFries, Gerald E. McClearn, and Peter McGuffin. New York: Worth Publishers.

٢- Plomin, DeFries, Knopik, & Neiderhiser (٢٠١٣). Behavioral Genetics (٦th Ed.).

##### ٢. List Essential References Materials (Journals, Reports, etc.)

High Impact Journals:

- A. Weiss, J. E. King, & R. M. Enns (٢٠٠٢). Subjective well-being is heritable and genetically correlated with dominance in chimpanzees (Pan troglodytes). J. of Personality and Social Psychology, ٨٣(٥), ١١٤١-١١٤٩.

- L. A. Fairbanks, T. K. Newman, J. N. Bailey, M. J. Jorgensen, S. E. Breidenthal, R. A. Ophoff, A. G. Comuzzie, L. J. Martin, & J. Rogers. (٢٠٠٤). Genetic contributions to social impulsivity and aggressiveness in vervet monkeys. *Biological Psychiatry*, ٥٥(٦), ٦٤٢-٦٤٧.
- S. D. Gosling, V. S. Y. Kwan, O. P. John (٢٠٠٣). Dog's got personality: A cross-species comparative approach to personality judgments in dogs and humans. *J. of Personality and Social Psychology*, ٨٥(٦), ١١٦١-١١٦٩.
- D. L. Sinn, N. A. Perrin, J. A. Mather, & R. C. Anderson (٢٠٠١). Early temperamental traits in an octopus (*Octopus bimaculoides*). *J. of Comparative Psychology*, ١١٥(٤), ٣٥١-٣٦٤.

٢. List Recommended Textbooks and Reference Material (Journals, Reports, etc)

٤. List Electronic Materials, Web Sites, Facebook, Twitter, etc.

٥. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

#### F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)

١. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)

(١)- Class room is already provided with data show

(٢)- The area of class room is suitable concerning the number of enrolled students

٢. Computing resources (AV, data show, Smart Board, software, etc.)

(١)- Class rooms are equipped with data show.

(٢)- Library is required and connected to the network for students to study materials

٣. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

G Course Evaluation and Improvement Processes

|  |
|--|
| <p>١ Strategies for Obtaining Student Feedback on Effectiveness of Teaching</p> <p>(١)- Questionnaires / students opinion survey</p> <p>(٢)- Open discussion in the class room at the end of the lectures or during individual student/staff meeting</p>   |
| <p>٢ Other Strategies for Evaluation of Teaching by the Instructor or by the Department</p> <p>(١)- Revision of student answer papers .</p> <p>(٢)- Analysis the grades of students.</p>   |
| <p>٣ Processes for Improvement of Teaching</p> <p>(١)- Preparing the course as PPT.</p> <p>(٢)- Using scientific movies.</p> <p>(٣)- Coupling the theoretical part with laboratory part</p> <p>(٤)- Periodical revision of course content.</p>   |
| <p>٤. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution)</p> <p>After the agreement of Department and Faculty administrations; it might include:</p> <p>(١)- Random check of students exam papers / assignments by external examiner</p> <p>(٢)- Random check of students exam papers / assignments by internal examiner</p> |
| <p>٥ Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.</p> <p>A departmental review committee will look after the arrangement periodically after taking feedback from students and in the light of new development in the subject.</p>  |

Name of Instructor: \_\_\_\_\_



Signature: \_\_\_\_\_ Date Report Completed: \_\_\_\_\_

Name of Course Instructor \_\_\_\_\_

Program Coordinator: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Received: \_\_\_\_\_

## Kingdom of Saudi Arabia

### The National Commission for Academic Accreditation & Assessment

## Course Specifications

### Plant molecular biology

٢-٤٠١٢٦٧٧

## Course Specifications

Institution: **Umm Al-Qura University**

College/Department: **Faculty of Applied Science / Department of Biology**

### A. Course Identification and General Information

١. Course title and code: **Plant molecular biology ٤٠١٢٦٧٧ - ٢**

٢. Credit hours: **٢ Credit hours**

٣. Program(s) in which the course is offered.

(If general elective available in many programs indicate this rather than list programs)

**MSc in Biology**

٤. Name of faculty member responsible for the course

**Dr. Nora Al Aboud (nmaboud@uqu.edu.sa)**

٥. Level/year at which this course is offered

٦. Pre-requisites for this course (if any)

٧. Co-requisites for this course (if any)

٨. Location if not on main campus

٩. Mode of Instruction (mark all that apply)

a. traditional classroom



What percentage?

**١٠٠ %**

b. blended (traditional and online)

What percentage?

c. e-learning

what percentage?

d. correspondence

what percentage?

f. other

what percentage?

Comments:

## B Objectives

١. What is the main purpose for this course?

**The major objective of the course is to learn and discuss the biologically important functional groups and the principal types of biological molecules including: carbohydrates, lipids, proteins and nucleic acids.**

٢. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

## C. Course Description (Note: General description in the form used in Bulletin or handbook)

Course Description:

**The course structure aims to discuss in details the biologically important functional groups e.g. hydroxyl, amino, ester, carboxyl, phosphate, methyl and hydrogen.**

**This course will also discuss the principal types of biological molecules namely:**

- ١. Carbohydrates types including: monosaccharide, disaccharides, polysaccharides (homopolysaccharides and heteropolysaccharides)**
- ٢. Lipids types: true fats (triglycerides), waxes, phospholipids and steroids.**  
-Difference between saponifiables and non-saponifiable lipids.
- ٣. Proteins: the levels of protein structure and function.**  
-Establishment of secondary, tertiary and quaternary structure conjugated proteins.
- ٤. Nucleic acids: composition and structure of the nucleic acids.**  
-Replication of DNA.  
-Types of cellular RNA.

١. Topics to be Covered

| List of Topics                                  | No. of Weeks | Contact hours |
|---|--------------|---------------|
| <b>Introduction to molecular biology</b>        | ١            | ٢             |
| <b>Biologically important functional groups</b> | ١            | ٢             |

|                                      |   |   |
|--------------------------------------|---|---|
| <b>Types of biological molecules</b> | ١ | ٢ |
| <b>Carbohydrates</b>                 | ٢ | ٤ |
| <b>Lipids</b>                        | ٢ | ٤ |
| <b>Proteins</b>                      | ٢ | ٤ |
| <b>Nucleic acids</b>                 | ٢ | ٤ |

٢. Course components (total contact hours and credits per semester):

|               | Lecture | Tutorial | Laboratory<br>or Studio | Practical | Other: | Total |
|---------------|---------|----------|-------------------------|-----------|--------|-------|
| Contact Hours | ٢٢      |          |                         |           |        | ٢٢    |
| Credit        | ٢       |          |                         |           |        | ٢     |

٣. Additional private study/learning hours expected for students per week.

٤. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

**On completion of this course students will be able to:**

**Identify the biologically important functional groups e.g. hydroxyl, amino, ester, carboxyl etc.**

**Describe the structure of biologically important functional groups.**

**Identify and classify the principal types of biological molecules.**

**Describe, classify carbohydrates types including: monosaccharide, disaccharides, polysaccharides.**

**Differentiate between homopolysaccharides and heteropolysaccharides.**

**Identify and classify lipids types.**

**Describe true fats(triglycerides), waxes, phospholipids and steroids.**

- Differentiate between saponifiables and non-saponifiable lipids.**
- Understand the levels of protein structure and function.**
- Describe establishment of secondary, tertiary and quaternary structure conjugated proteins.**
- Understand the composition and structure of the nucleic acids.**
- Differentiate between DNA and RNA.**
- Understand and describe replication of DNA.**
- Identify types of cellular RNA.**
- Present information clearly in the form of verbal and writing reports.**
- Communicate complex ideas and arguments in a clear, concise and effective manner**
- Work effectively as an individual or a team member.**
- Use conventional and electronic resources to collect, select and organize scientific information.**
- Be able to assimilate and synthesis data from multiple sources.**
- Demonstrate capacity for self-learning and independent thinking and to utilize problem solving skills**
- Demonstrate effective communication skills in the form of student led group presentations.**
- Demonstrate skills in working collegiately and effectively with others as a member of a team.**

◦. Schedule of Assessment Tasks for Students During the Semester

|   | Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.) | Week Due | Proportion of Total Assessment |
|---|---|----------|--------------------------------|
| ١ | <b>Activities</b>   |          | ٣٠٪                            |

|   |                           |  |      |
|---|---------------------------|--|------|
| ٣ | <b>Essays</b>             |  | ٣٠٪  |
| ٤ | <b>Final written exam</b> |  | ٤٠٪  |
| ٥ | <b>TOTAL</b>              |  | ١٠٠٪ |

#### D. Student Academic Counseling and Support

١. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

**Academic teaching staff will be available to meet students for consultation and academic advice at their private offices at the times advised.**

**Office hours: ١٠ hours per week; each semester. Time will varies each semester based on academic schedule for each teaching staff.**

#### E Learning Resources

١. List Required Textbooks

**Phillip Sheeler, Donald E. Bianchi. ٢٠٠٩. Cell and Molecular Biology, ٣ed. Wiley india Pvt. Ltd. English ISBN-١٠: ٨١٢٦٥٢١٠٥٨ ISBN-١٣: ٩٧٨-٨١٢٦٥٢١٠٥٠.**

٢. List Essential References Materials (Journals, Reports, etc.)

High Impact Journals:

**Journal of molecular biology.**

٣. List Recommended Textbooks and Reference Material (Journals, Reports, etc)



٤. List Electronic Materials, Web Sites, Facebook, Twitter, etc.

**Teaching materials of molecular biology on [www.youtube.com](http://www.youtube.com)**

٥. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

**PPT-files and movies for teaching molecular biology**

#### F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)

١. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)

**(١)- Class room is already provided with data show**

**(٢)- The area of class room is suitable concerning the number of enrolled students**

٢. Computing resources (AV, data show, Smart Board, software, etc.)

**(١)- Class rooms are equipped with data show.**

**(٢)- Library is required and connected to the network for students to study materials**

٣. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

#### G Course Evaluation and Improvement Processes

١ Strategies for Obtaining Student Feedback on Effectiveness of Teaching

**(١)- Questionnaires / students opinion survey**

**(٢)- Open discussion in the class room at the end of the lectures or during individual student/staff meeting**

٢ Other Strategies for Evaluation of Teaching by the Instructor or by the Department

**(١)- Revision of student answer papers .**

**(٢)- Analysis the grades of students.**

٣ Processes for Improvement of Teaching

**(١)- Preparing the course as PPT.**

**(٢)- Using scientific movies.**

**(٣)- Coupling the theoretical part with laboratory part**

**(٤)- Periodical revision of course content.**

٤. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution)

**After the agreement of Department and Faculty administrations; it might include:**

**(١)- Random check of students exam papers / assignments by external examiner**

**(٢)- Random check of students exam papers / assignments by internal examiner**

◦ Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

**A departmental review committee will look after the arrangement periodically after taking feedback from students and in the light of new development in the subject.**

Name of Instructor: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Report Completed: \_\_\_\_\_

Name of Course Instructor \_\_\_\_\_

Program Coordinator: \_\_\_\_\_

Kingdom of Saudi Arabia  
Ministry of Education  
Umm Al-Qura University  
Deanship of Graduate Studies



المملكة العربية السعودية  
وزارة التعليم  
جامعة أم القرى  
عمادة الدراسات العليا

Signature: \_\_\_\_\_

Date Received: \_\_\_\_\_

**Kingdom of Saudi Arabia**

**The National Commission for Academic Accreditation & Assessment**

**Course Specifications**

**Plant Genomics and Bioinformatics**

٤٠١٢٦٧٩-٢

## Course Specifications

|   |
|---|
| Institution: <b>Umm Al-Qura University</b>                                    |
| College/Department: <b>Faculty of Applied Science / Department of Biology</b> |

### A. Course Identification and General Information

|  |
|--|
| ١. Course title and code: <b>Plant Genomics and Bioinformatics (٤٠١٢٦٧٩-٢)</b>   |
| ٢. Credit hours: <b>٢ C. H.</b>  |
| ٣. Program(s) in which the course is offered.<br>(If general elective available in many programs indicate this rather than list programs)<br><b>MSc in Botany</b>  |
| ٤. Name of faculty member responsible for the course<br><b>Dr. Doaa EL-Ghareeb Keshek (dekeshek@uqu.edu.sa)</b>  |
| ٥. Level/year at which this course is offered  |
| ٦. Pre-requisites for this course (if any)   |
| ٧. Co-requisites for this course (if any)  |
| ٨. Location if not on main campus  |
| ٩. Mode of Instruction (mark all that apply)<br><br>a. traditional classroom <input checked="" type="checkbox"/> What percentage? <b>١٠٠ %</b><br><br>b. blended (traditional and online) <input type="text"/> What percentage? <input type="text"/> |

c. e-learning

what percentage?

d. correspondence

what percentage?

f. other

what percentage?

Comments:

## B Objectives

١. What is the main purpose for this course?

☑ **To increase the awareness of the students to the importance of Bioinformatics as a rapidly growing field of biotechnology.**

☑ **To understand the different computer methods used to analyze the huge amount of information that is being gathered about human gene sequences and genetic diseases.**

☑ **To emphasize upon the integration of basic and applied research in human, plant and microorganism gene mapping and molecular cloning.**

٢. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

## C. Course Description (Note: General description in the form used in Bulletin or handbook)

Course Description:

☑ **Know the mapping of the human genome.**

☑ **Locating of different genes.**

☑ **Recognize the characteristics of animal, plant and microorganism genome and**

☑ **Understand the structure of proteins and simulate protein interactions.**

☑ **Correlate between DNA sequencing and certain traits.**

١. Topics to be Covered

| List of Topics                                       | No. of Weeks | Contact hours |
|--|--------------|---------------|
| ١- Introduction: Aim and branches of Bioinformatics, | ١            | ٢             |
| ٢- Application of Bioinformatics                     | ١            | ٢             |

|   |   |   |
|---|---|---|
| ٣- Role of internet and www in bioinformatics,  | ١ | ٢ |
| ٤- Forms of biological information, Types of Nucleotide Sequence: Genomic DNA, Complementary DNA (cDNA), Recombinant DNA (rDNA), Expressed sequence tags (ESTs), Genomic survey sequences (GSSs).   | ١ | ٢ |
| ٥- Bioinformatics Resources: NCBI, EBI, ExPASy, RCSB, DDBJ: The knowledge of databases and bioinformatics tools available at these resources. Open access bibliographic resources and literature<br><br>databases: PubMed, BioMed Central, Public Library of Sciences (PloS), CiteXplore.   | ٢ | ٤ |
| ٦- Sequence databases: Nucleic acid sequence databases: GenBank, EMBL, DDBJ; Protein sequence databases: Uniprot-KB: SWISS-PROT, TrEMBL, UniParc; Structure Databases: PDB, NDB,<br><br>PubChem, ChemBank   | ١ | ٢ |
| ٧- Sequence file formats: Various file formats for bio-molecular sequences: GenBank, FASTA, GCG, MSF etc. Protein and nucleic acid properties: Various tools at the ExPASy server, GCG utilities and EMBOSS, Computation of various parameters.   | ٢ | ٤ |
| ٨- Sequence Analysis: Basic concepts of sequence similarity, identity and homology, definitions of homologues, orthologues, paralogues and xenologues; Scoring matrices: basic concept of a<br><br>scoring matrix, Matrices for nucleic acid and proteins sequences, PAM and BLOSUM series, matrix derivation methods and principles.                           | ٢ | ٤ |
| ٩- Sequence alignment: Measurement of sequence similarity; Similarity and homology. Pairwise sequence alignment: Basic concepts of sequence alignment, Needleman and Wunsch, Smith and Waterman algorithms for pairwise alignments, gap penalties, use of pairwise alignments for analysis of Nucleic acid and protein sequences and interpretation of results. | ٢ | ٤ |
| ١٠- Bioinformatics, databases and their applications, Drug design and delivery  | ١ | ٢ |
| ١١- Protein structure prediction- Secondary structure prediction, fold-recognition, threading, homology modeling.   | ١ | ٢ |



٢. Course components (total contact hours and credits per semester): ٣٠ hours per semester

|               | Lecture | Tutorial | Laboratory<br>or Studio | Practical | Other: | Total |
|---------------|---------|----------|-------------------------|-----------|--------|-------|
| Contact Hours | ٣٠      |          |                         |           |        | ٣٠    |
| Credit        | ٢       |          |                         |           |        | ٢     |

٣. Additional private study/learning hours expected for students per week.

٤. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

**On completion of this course students will have or be able to:**

- ١- Relating genes to traits.
- ٢- Predicting three-dimensional protein structures.
- ٣- Basics of developing and designing new medicines by setting new therapeutic targets.
- ٤- Thorough understanding of molecular cloning and restriction mapping.
- ٥- Know their way around the human genetic map.
- ٦- Perform complete DNA sequencing and computational analysis.
- ٧- Identify the different structures of DNA, RNA, and chromatin.
- ٨ - Use data base and biological software

| ٥. Schedule of Assessment Tasks for Students During the Semester |   |          |                                |
|--|---|----------|--------------------------------|
|  | Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.) | Week Due | Proportion of Total Assessment |
| ١  | <b>Activities</b>   |          | ٣٠٪                            |
| ٣  | <b>Essays</b>   |          | ٣٠٪                            |
| ٤  | <b>Final written exam</b>   |          | ٤٠٪                            |
| ٥  | <b>TOTAL</b>  |          | ١٠٠٪                           |

#### D. Student Academic Counseling and Support

١. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

**Academic teaching staff will be available to meet individual students for consultation and academic advice at their private offices at the times advised.**

**Office hours: ١٠ hrs per week; each semester. Time will varies each semester based on academic schedule for each teaching staff.**

#### E Learning Resources

١. List Required Textbooks

| ISBN Number | Author         | Title  | Publisher     |
|-------------|----------------|--|---------------|
| ٠٢٦٢١٠١٠٦٨  | Neil C. Jones, | An Introduction to Bioinformatics Algorithms | The MIT Press |

|  |                                   |   |                               |
|--|-----------------------------------|---|-------------------------------|
|  | Pavel A. Pevzner                  | (Computational Molecular Biology), latest edition   |                               |
| ٠٣٨٧٤٠٠٨٢٦   | Warren J. Ewens,<br>Gregory Grant | Statistical Methods in Bioinformatics : An<br>Introduction (Statistics for Biology and Health),<br>latest edition | Springer; ٢nd<br>edition      |
| ٠١٩٩٢٥١٩٦٧   | Arthur M. Lesk                    | Introduction to Bioinformatics, latest edition  | Oxford<br>University<br>Press |
| ٢. List Essential References Materials (Journals, Reports, etc.)   |                                   |   |                               |
| High Impact Journals:  |                                   |   |                               |
| <a href="http://bioinformatics.ubc.ca/resources/links_directory/">bioinformatics.ubc.ca/resources/links_directory/</a><br><a href="http://waksman.rutgers.edu/driscoll/biocomputing.html">waksman.rutgers.edu/driscoll/biocomputing.html</a>                                 |                                   |   |                               |
| ٣. List Recommended Textbooks and Reference Material (Journals, Reports, etc)  |                                   |   |                               |
| ٤. List Electronic Materials, Web Sites, Facebook, Twitter, etc.   |                                   |   |                               |
| <a href="http://www.ii.uib.no/~inge/list.html">www.ii.uib.no/~inge/list.html</a><br><a href="http://www.cbs.dtu.dk/biolinks/">www.cbs.dtu.dk/biolinks/</a><br><a href="http://www.mcb.mcgill.ca/~pdlee/bioinformatics.html">www.mcb.mcgill.ca/~pdlee/bioinformatics.html</a> |                                   |   |                               |
| ٥. Other learning material such as computer-based programs/CD, professional standards or regulations and software.   |                                   |   |                               |

#### F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)

|  |
|--|
| <p>١. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)</p> <p>(١)- Class room is already provided with data show</p> <p>(٢)- The area of class room is suitable concerning the number of enrolled students</p> |
| <p>٢. Computing resources (AV, data show, Smart Board, software, etc.)</p> <p>(١)- Class rooms are equipped with data show.</p> <p>(٢)- Library is required and connected to the network for students to study materials</p>           |
| <p>٣. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)</p>   |

#### G Course Evaluation and Improvement Processes

|  |
|--|
| <p>١ Strategies for Obtaining Student Feedback on Effectiveness of Teaching</p> <p>(١)- Questionnaires / students opinion survey</p> <p>(٢)- Open discussion in the class room at the end of the lectures or during individual student/staff meeting</p>   |
| <p>٢ Other Strategies for Evaluation of Teaching by the Instructor or by the Department</p> <p>(١)- Revision of student answer papers .</p> <p>(٢)- Analysis the grades of students.</p>   |
| <p>٣ Processes for Improvement of Teaching</p> <p>(١)- Preparing the course as PPT.</p> <p>(٢)- Using scientific movies.</p> <p>(٣)- Coupling the theoretical part with laboratory part</p> <p>(٤)- Periodical revision of course content.</p>   |
| <p>٤. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution)</p> <p>After the agreement of Department and Faculty administrations; it might include:</p> |

(١)- Random check of students exam papers / assignments by external examiner

(٢)- Random check of students exam papers / assignments by internal examiner

◦ Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

**A departmental review committee will look after the arrangement periodically after taking feedback from students and in the light of new development in the subject.**

Name of Instructor: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Report Completed: \_\_\_\_\_

Name of Course Instructor \_\_\_\_\_

Program Coordinator: **Dr/ Doaa EL-Ghareeb Keshek**

Signature: \_\_\_\_\_ Date Received: \_\_\_\_\_

## Kingdom of Saudi Arabia

### The National Commission for Academic Accreditation & Assessment

## Course Specifications

### Plant reproductive Biology and Polyploidy

٤٠١٢٦٨٠-٢

## Course Specifications

Institution: **Umm Al-Qura University**

College/Department: **Faculty of Applied Science / Department of Biology**

### A. Course Identification and General Information

١. Course title and code: **Plant reproductive Biology and Polyploidy(٤٠١٢٦٨٠-٢)**

٢. Credit hours: **٢ C. H.**

٣. Program(s) in which the course is offered.

(If general elective available in many programs indicate this rather than list programs)

**MSc Botany**

٤. Name of faculty member responsible for the course

**Dr.Maha Yakzan AL-Jabri**

٥. Level/year at which this course is offered

٦. Pre-requisites for this course (if any)

٧. Co-requisites for this course (if any)

٨. Location if not on main campus

٩. Mode of Instruction (mark all that apply)

a. traditional classroom



What percentage?

**١٠٠ %**

b. blended (traditional and online)

What percentage?

c. e-learning

What percentage?

d. correspondence

What percentage?

f. other

What percentage?

Comments:



## B Objectives

١. What is the main purpose for this course?

**The course help students to understand:**

- **Plant Reproduction and development,**
- **Types of pollination and define double fertilization**
- **The breeding strategies**
- **The types of polyploidy including the evolutionary history of important polyploid crop plants.**
- **Genomic imprinting**

٢. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

## C. Course Description (Note: General description in the form used in Bulletin or handbook)

Course Description:

**Genetic processes underlying variations in plant reproductive biology and polyploidy, and utilization of these characteristics in plant breeding.**

١. Topics to be Covered

| List of Topics                                | No. of Weeks | Contact hours |
|---|--------------|---------------|
| <b>Introduction to Plant Reproduction</b>     | ١            | ٢             |
| <b>Reproductive Development and Structure</b> | ٢            | ٤             |
| <b>Pollination and Fertilization</b>          | ٢            | ٤             |
| <b>Asexual Reproduction</b>                   | ١            | ٢             |
| <b>Plant Breeding</b>                         | ٢            | ٤             |
| <b>Hybridization in crop plants</b>           | ٢            | ٤             |

|   |   |   |
|---|---|---|
| <b>Polyploidy</b>   | ٢ | ٤ |
| • Types of polyploid  |   |   |
| <b>Genetic and breeding complexity with polyploid crop plants</b> | ٢ | ٤ |
| <b>Genomic imprinting in plants</b>                               | ٢ | ٤ |

٢. Course components (total contact hours and credits per semester):

|                  | Lecture | Tutorial | Laboratory<br>or Studio | Practical | Other: | Total |
|------------------|---------|----------|-------------------------|-----------|--------|-------|
| Contact<br>Hours | ٣٢      |          |                         |           |        | ٣٢    |
| Credit           | ٢       |          |                         |           |        | ٢     |

٣. Additional private study/learning hours expected for students per week.

٤. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

**The student after completing the course, should be able to:**

- ١- **Understand the principle of Plant Reproduction.**
- ٢- **Describe the reproductive structures of a plant.**
- ٣- **Compare and contrast male and female gametophytes and explain how they form in angiosperms.**
- ٤- **Describe the components of a complete flower.**
- ٥- **Define the double fertilization.**
- ٦- **Describe the process that leads to the development of a seed**
- ٧- **Understand the breeding types and strategies**
- ٨- **Acquire good knowledge about polyploidy**
- ٩- **Understand the genomic imprinting**
- ١٠- **Demonstrate effective communication skills in the form of student led group presentations.**

| ٥. Schedule of Assessment Tasks for Students During the Semester |   |          |                                |
|--|---|----------|--------------------------------|
|  | Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.) | Week Due | Proportion of Total Assessment |
| ١  | <b>Paper presentation (seminar)</b>   |          | ٣٠٪                            |
| ٢  | <b>Short essay</b>  |          | ٢٠٪                            |
| ٣  | <b>Short written exam</b>   |          | ١٠٪                            |
| ٤  | <b>Long literature review</b>   |          | ٤٠٪                            |
| ٥  | <b>TOTAL</b>  |          | ١٠٠٪                           |

#### D. Student Academic Counseling and Support

١. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

**Academic teaching staff will be available to meet individual students for consultation and academic advice at their private offices at the times advised.**

**Office hours: ١٠ hrs per week; each semester. Time will varies each semester based on academic schedule for each teaching staff.**

#### E Learning Resources

٢. List Required Textbooks:

١- kar, D & Halder , S (٢٠١٠). **Plant breeding biometry biotechnology.** (٢nd ed.). London: New Central Book Agency .

٢- gangulee, H, Das , K & Dutta, C (٢٠١١). **College Botany: ١.** ( ٦th Revised edition ed.). London: New Central Book Agency.

٣. List Essential References Materials (Journals, Reports, etc.)

• **Journals**

١- **Olivier Garnier, Sylvia Laouellé-Duprat & Charles Spillane (٢٠٠٨) Genomic imprinting in plants, Epigenetics, ٣:١, ١٤-٢٠, DOI: ١٠.٤١٦١/epi.٣.١.٥٥٥٤**

٢- **Regulation and Flexibility of Genomic Imprinting during Seed Development Michael T. Raissig, Célia Baroux, Ueli Grossniklaus The Plant Cell Jan ٢٠١١, ٢٣ (١) ١٦-٢٦; DOI:**

١٠,١١٠٥/tpc.١١٠,٠٨١٠١٨

• **Different web sites related to the subject including:**

- ١- <https://courses.lumenlearning.com/biology2xmaster/chapter/introduction-to-plant-reproduction/>
- ٢- <http://vle.du.ac.in/mod/resource/view.php?id=١٢٤٦٣>

٣. List Recommended Textbooks and Reference Material (Journals, Reports, etc)

٤. List Electronic Materials, Web Sites, Facebook, Twitter, etc.

٥. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)

١. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)

(١)- **Class room is already provided with data show**

(٢)- **The area of class room is suitable concerning the number of enrolled students (could accommodate up to ١٠٠ students) and air conditioned.**

٢. Computing resources (AV, data show, Smart Board, software, etc.)

(١)- **Class rooms are equipped with data show.**

(٢)- **A computer lab is required and connected to the network for students to gather their data and study materials**

٣. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

G Course Evaluation and Improvement Processes

|  |
|--|
| <p>١ Strategies for Obtaining Student Feedback on Effectiveness of Teaching</p> <p>(١) - Questionnaires / students opinion survey</p> <p>(٢) - Open discussion in the class room at the end of the lectures or during individual student/staff meeting</p>   |
| <p>٢ Other Strategies for Evaluation of Teaching by the Instructor or by the Department</p> <p>(١)- Revision of student answer papers / assignments by another staff member.</p> <p>(٢)- Analysis the grades of students.</p>  |
| <p>٣ Processes for Improvement of Teaching</p> <p>(١)- Preparing the course as PPT.</p> <p>(٢)- Using scientific movies.</p> <p>(٣)- Periodical revision of course content.</p>  |
| <p>٤. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution)</p> <p>After the agreement of Department and Faculty administrations; it might include:</p> <p>(١)- Random check of students exam papers / assignments by external examiner</p> <p>(٢)- Random check of students exam papers / assignments by internal examiner</p> |
| <p>٥ Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.</p> <p>A departmental review committee will look after the arrangement periodically after taking feedback from students and in the light of new development in the subject.</p>  |

Name of Instructor: **Dr. Maha Yakzan AL-Jabri**

Signature: **Maha**

Date Report Completed: **٢٤-١٢-٢٠١٧**

Name of Course Instructor \_\_\_\_\_

Program Coordinator: \_\_\_\_\_

Signature: \_\_\_\_\_

Date Received: \_\_\_\_\_

## Kingdom of Saudi Arabia

### The National Commission for Academic Accreditation & Assessment

#### Course Specifications

##### Plant developmental biology

٤٠١٢٦٨١-٢

## Course Specifications

|   |
|---|
| Institution: <b>Umm Al-Qura University</b>                                    |
| College/Department: <b>Faculty of Applied Science / Department of Biology</b> |

### A. Course Identification and General Information

|  |
|--|
| ١. Course title and code: <b>Plant developmental biology (٤٠١٢٦٨١-٢)</b>   |
| ٢. Credit hours: <b>٢ C. H.</b>  |
| ٣. Program(s) in which the course is offered.<br>(If general elective available in many programs indicate this rather than list programs)<br><b>MSc Botany</b>   |
| ٤. Name of faculty member responsible for the course<br><b>Dr.Maha Yakzan AL-Jabri</b>   |
| ٥. Level/year at which this course is offered  |
| ٦. Pre-requisites for this course (if any)<br><b>-٤٠١٢٦٨٠-٢ Plant reproductive Biology and Polyploidy</b><br><b>-Students should have a thorough knowledge of plant anatomy and morphology.</b><br><b>Furthermore, a basic knowledge of plant development, molecular biology and genetics is required.</b> |
| ٧. Co-requisites for this course (if any)  |
| ٨. Location if not on main campus  |
| ٩. Mode of Instruction (mark all that apply)<br><br>a. traditional classroom <input checked="" type="checkbox"/> What percentage? <b>١٠٠ %</b>   |



b. blended (traditional and online)

What percentage?

c. e-learning

What percentage?

d. correspondence

What percentage?

f. other

What percentage?

Comments:

## B Objectives

١. What is the main purpose for this course?

**The course help students to:**

- **Achieve a complete understanding of developmental aspects of the entire plant life cycle.**
- **Become familiar with the complexity of developmental processes**
- **Understand the importance of interdisciplinary a necessity to answer developmental research questions.**

٢. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

## C. Course Description (Note: General description in the form used in Bulletin or handbook)

Course Description:

**This course is an introduction to Plant Developmental Biology. It offers a dynamic approach to the study of plant structure and development by integrating recent advances in Genetics and Molecular Biology.**

١. Topics to be Covered

| List of Topics                                 | No. of Weeks | Contact hours |
|--|--------------|---------------|
| <b>Overview of Plant Developmental Biology</b> | ٢            | ٤             |
| <b>Model Plant Systems</b>                     |              |               |
| <b>Generation of Developmental Mutants</b>     | ٢            | ٤             |
| <b>Regulation of Gene Expression</b>           |              |               |
| <b>Seed Development</b>                        | ٢            | ٤             |
| <b>Embryo Development</b>                      | ٢            | ٤             |
| <b>Seedling Development</b>                    | ٢            | ٤             |

|  |   |   |
|--|---|---|
| <b>Vegetative Architecture</b>                               | ٢ | ٤ |
| <b>Flower Development</b>                                    | ٢ | ٤ |
| <b>Secondary growth: Vascular Tissues (Xylem and Phloem)</b> | ٢ | ٤ |
| <b>Programmed Cell Death</b>                                 |   |   |

٢. Course components (total contact hours and credits per semester):

|                  | Lecture | Tutorial | Laboratory<br>or Studio | Practical | Other: | Total |
|------------------|---------|----------|-------------------------|-----------|--------|-------|
| Contact<br>Hours | ٣٢      |          |                         |           |        | ٣٢    |
| Credit           | ٢       |          |                         |           |        | ٢     |

٣. Additional private study/learning hours expected for students per week.

٤. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

**The student after completing the course, should be able to describe:**

١. **The internal structures of the various plant organs,**
٢. **How the organs are formed,**
٣. **The genes involved in organ formation**
٤. **The mechanism behind the transition from vegetative to reproductive development,**
٥. **The interplay between genes and environment**
٦. **Demonstrate effective communication skills in the form of student led group presentations.**

٥. Schedule of Assessment Tasks for Students During the Semester

|   | Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.) | Week Due | Proportion of Total Assessment |
|---|---|----------|--------------------------------|
| ١ | <b>Paper presentation (seminar)</b>   |          | ٣٠٪                            |
| ٢ | <b>Short essay</b>  |          | ٢٠٪                            |
| ٣ | <b>Short written exam</b>   |          | ١٠٪                            |
| ٤ | <b>Long literature review</b>   |          | ٤٠٪                            |
| ٥ | <b>TOTAL</b>  |          | ١٠٠٪                           |

#### D. Student Academic Counseling and Support

١. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

**Academic teaching staff will be available to meet individual students for consultation and academic advice at their private offices at the times advised.**

**Office hours: ١٠ hrs per week; each semester. Time will varies each semester based on academic schedule for each teaching staff.**

#### E Learning Resources

١. List Required Textbooks:

١. **Howell, S.H. ١٩٩٨. Molecular Genetics of Plant Development. Cambridge University Press, NY.**

٢. **Peter H. Raven & Evert, Ray Franklin & Eichhorn, Susan E ٢٠٠٥, Biology of plants, ٧th ed, New York, NY W.H. Freeman**

٣. **Leyser, O., & Day, S. (٢٠٠٩). Mechanisms in plant development. John Wiley & Sons. Chicago**

٤. List Essential References Materials (Journals, Reports, etc.)

• **Journals**

١. **Prunet, N. and Meyerowitz, E.M., ٢٠١٦. Genetics and plant development. Comptes rendus biologiques, ٣٣٩(٧), pp.٢٤٠٠-٢٤٤٦. Vancouver Prunet N, Meyerowitz EM. Genetics and plant development**

|   |
|---|
| <ul style="list-style-type: none"><li>• <b>Different web sites related to the subject including:</b><ol style="list-style-type: none"><li>١. <a href="http://www.esf.edu/efb/faculty/documents/EFB%20Syllabus.pdf">http://www.esf.edu/efb/faculty/documents/EFB%20Syllabus.pdf</a></li><li>٢. <a href="http://biology.kenyon.edu/courses/biol114/Chap12/Chapter_12A.html">http://biology.kenyon.edu/courses/biol114/Chap12/Chapter_12A.html</a></li></ol></li></ul> |
| ٣. List Recommended Textbooks and Reference Material (Journals, Reports, etc)   |
| ٤. List Electronic Materials, Web Sites, Facebook, Twitter, etc.  |
| ٥. Other learning material such as computer-based programs/CD, professional standards or regulations and software.  |

#### F. Facilities Required

|  |
|--|
| Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)   |
| <ol style="list-style-type: none"><li>١. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)<br/><b>(١)- Class room is already provided with data show</b><br/><b>(٢)- The area of classroom is suitable concerning the number of enrolled students (could accommodate up to ١٠٠ students) and air-conditioned.</b></li></ol> |
| <ol style="list-style-type: none"><li>٢. Computing resources (AV, data show, Smart Board, software, etc.)<br/><b>(١)- Classrooms are equipped with data show.</b><br/><b>(٢)- A computer lab is required and connected to the network for students to gather their data and study materials</b></li></ol>  |
| <ol style="list-style-type: none"><li>٣. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)</li></ol>  |

#### G Course Evaluation and Improvement Processes

١ Strategies for Obtaining Student Feedback on Effectiveness of Teaching

(١) - Questionnaires / students opinion survey

(٢) - Open discussion in the class room at the end of the lectures or during individual student/staff meeting

٢ Other Strategies for Evaluation of Teaching by the Instructor or by the Department

(١)- Revision of student answer papers / assignments by another staff member.

(٢)- Analysis the grades of students.

٣ Processes for Improvement of Teaching

(١)- Preparing the course as PPT.

(٢)- Using scientific movies.

(٣)- Periodical revision of course content.

٤. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution)

**After the agreement of Department and Faculty administrations; it might include:**

(١)- Random check of students exam papers / assignments by external examiner

(٢)- Random check of students exam papers / assignments by internal examiner

٥ Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

**A departmental review committee will look after the arrangement periodically after taking feedback from students and in the light of new development in the subject.**

Name of Instructor: **Dr. Maha Yakzan AL-Jabri**

Signature: **Maha**

Date Report Completed: **٢٤-١٢-٢٠١٧**

Name of Course Instructor \_\_\_\_\_

Program Coordinator: \_\_\_\_\_

Signature: \_\_\_\_\_

Date Received: \_\_\_\_\_

## Kingdom of Saudi Arabia

### The National Commission for Academic Accreditation & Assessment

#### Course Specifications

#### Biological Control

٤٠١٢٦٨٢-٢



## Course Specifications

|   |
|---|
| Institution: <b>Umm Al-Qura University</b>                                    |
| College/Department: <b>Faculty of Applied Science / Department of Biology</b> |

### A. Course Identification and General Information

|  |
|--|
| ١. Course title and code: <b>Biological Control (٤٠١٢٦٨٢-٢).</b>   |
| ٢. Credit hours: <b>٢ C. H.</b>  |
| ٣. Program(s) in which the course is offered.<br>(If general elective available in many programs indicate this rather than list programs)<br><b>MSc in Botany</b>  |
| ٤. Name of faculty member responsible for the course<br><b>Dr. Doaa ElGhareeb Keshek (dekeshek@uqu.edu.sa)</b>   |
| ٥. Level/year at which this course is offered  |
| ٦. Pre-requisites for this course (if any)   |
| ٧. Co-requisites for this course (if any)  |
| ٨. Location if not on main campus  |
| ٩. Mode of Instruction (mark all that apply)<br><br>a. traditional classroom <input checked="" type="checkbox"/> What percentage? <b>١٠٠ %</b><br><br>b. blended (traditional and online) <input type="text"/> What percentage? <input type="text"/> |

c. e-learning

what percentage?

d. correspondence

what percentage?

f. other

what percentage?

Comments:

## B Objectives

١. What is the main purpose for this course?

**The overall course objective is to familiarize students with the principles and practices of using natural enemies and antagonists to manage the abundance of pests (invertebrates, pathogens, and weeds) and reduce economic losses.**

٢. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

## C. Course Description (Note: General description in the form used in Bulletin or handbook)

Course Description:

**The ecological principles and applied practices of modern biological control of insects, weeds and plant pathogens; including the history, scope, strengths and weaknesses, scientific basis of biological control, the biology of entomophagous insects, insect pathogens, microbial control, biological control methods, population ecology as it relates to biological control, biological control in integrated pest management, techniques and protocols in implementation of control programs and related topics.**

## ١. Topics to be Covered

| List of Topics   | No. of Weeks | Contact hours |
|--|--------------|---------------|
| <b>١. Introduction</b><br>- Introduction<br>- Definitions and history of biological control.<br>- Biology and diversity of natural enemies of insects and weeds. | ٢            | ٤             |

|  |   |   |
|--|---|---|
| ٢. Natural enemies of insects and mites                    | ٣ | ٦ |
| ٢,١. Entomophagous   |   |   |
| ٢,١,١. Predators   |   |   |
| ٢,١,٢. Parasitoids   |   |   |
| ٢,٢. Entomopathogens                                       |   |   |
| ٢,٢,١. Fungi   |   |   |
| ٢,٢,٢. Bacteria  |   |   |
| ٢,٢,٣. Viruses   |   |   |
| ٢,٢,٤. Nematodes   |   |   |
| ٣. Categories of biological control                        | ٣ | ٦ |
| ٣,١. Natural Biological Control                            |   |   |
| ٣,٢. Applied Biological Control                            |   |   |
| ٣,٢,١. Classical Biological Control                        |   |   |
| ٣,٢,٢. Augmentative Biological Control                     |   |   |
| ٣,٢,٣. Conservation of Natural Enemies                     |   |   |
| ٤. Biological Control Successes and Failures               | ٢ | ٤ |
| - Biological Control and Pesticides                        |   |   |
| - Nematodes  |   |   |
| ٥- Registration of microbial pesticides.                   | ١ | ٢ |
| - Transgenic crops.  |   |   |
| ٦- Soil microbes and induced plant defenses against pests. | ٢ | ٤ |
| - Integrated pest management (IPM) and biological control. |   |   |
| ٧- Endophytes as biological control agents.                | ٢ | ٤ |
| - Tritrophic interactions and biological control.          |   |   |

| ٢. Course components (total contact hours and credits per semester): |         |          |            |           |        |       |
|--|---------|----------|------------|-----------|--------|-------|
|  | Lecture | Tutorial | Laboratory | Practical | Other: | Total |
|  |         |          |            |           |        |       |

|         |    |  |           |  |  |    |
|---------|----|--|-----------|--|--|----|
|         |    |  | or Studio |  |  |    |
| Contact | ٣٠ |  |           |  |  | ٣٠ |
| Hours   |    |  |           |  |  |    |
| Credit  | ٢  |  |           |  |  | ٢  |

٣. Additional private study/learning hours expected for students per week.

٤. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

**On completion of this course students will have or be able to:**

- Explain the history, theory, practice and science of biological control.
- To state the commercial and environmental advantages of using biological control.
- To express the ecological, physiological and biochemical processes involved in biological control.
- To identify the various strategies for applying biological control agents
- To recognize the environment under which each strategy will be most effective.
- To recognize the biological and ecological limitations of biological control.
- To identify some of the more common natural enemies and pathogens that can be used for controlling invertebrate pests and weeds.
- To identify some of the common antagonists used for controlling plant pathogens
- To state the general processes by which biological control agents are discovered, developed and commercialized, in addition to the economic and regulatory factors that affect commercialization.
- Evaluate scientific studies and concepts related to biological control.
- Asses the current and future roles of biological control within context of agricultural and natural ecosystem.
- Apply ecological principles of biological control and methods used in biological control of plant pests by parasitoids, predators, pathogens and entomopathogenic nematodes to manage

**pest problems.**

- **Design and implement projects involving biological control agents and methods.**
- **Communicate their work effectively using the formats commonly employed in scientific oral presentations and writings.**
- **Show sources of information about biological control and those who practice it.**
- **Teach the relevant aspects of the laws that govern the practice of biological control**

◦. Schedule of Assessment Tasks for Students During the Semester

|   | Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.) | Week Due | Proportion of Total Assessment |
|---|---|----------|--------------------------------|
| ١ | <b>Activities</b>   |          | ٣٠٪                            |
| ٣ | <b>Essays</b>   |          | ٣٠٪                            |
| ٤ | <b>Final written exam</b>   |          | ٤٠٪                            |
| ٥ | <b>TOTAL</b>  |          | ١٠٠٪                           |

D. Student Academic Counseling and Support

١. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

**Academic teaching staff will be available to meet individual students for consultation and academic advice at their private offices at the times advised.**

**Office hours: ١٠ hrs per week; each semester. Time will varies each semester based on academic schedule for each teaching staff.**

E Learning Resources

١. List Required Textbooks

(١)- **Bellows, T. S., and T. W. Fisher (eds.). ١٩٩٩. Handbook of biological control. Academic Press, San Diego, California, USA. Available as online book from OSU library.**

(٢)- **Hajek A. E (٢٠٠٤). Natural Enemies. Cambridge University Press.**

٣ - **Flint M. L. and. Driestadt S. H. (١٩٩٨). Natural Enemies Handbook: The illustrated guide to biological pest control. University of California Division of Agriculture and Natural Resources.**

٤- **TROPICAL BIOLOGY AND CONSERVATION MANAGEMENT – Vol. III - Biological Control of Insect Pests In The Tropics - M. V. Sampaio, V. H. P. Bueno, L. C. P. Silveira and A. M. Auad**

٢. List Essential References Materials (Journals, Reports, etc.)

High Impact Journals:

- **Biological Control**

– **Annual review of entomology**

- **Frontiers in Plant Science**

٣. List Recommended Textbooks and Reference Material (Journals, Reports, etc)

|  |
|--|
|  |
| ٤. List Electronic Materials, Web Sites, Facebook, Twitter, etc.   |
| ٥. Other learning material such as computer-based programs/CD, professional standards or regulations and software. |

#### F. Facilities Required

|   |
|---|
| Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)  |
| ١. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)<br><b>(١)- Class room is already provided with data show</b><br><b>(٢)- The area of class room is suitable concerning the number of enrolled students</b> |
| ٢. Computing resources (AV, data show, Smart Board, software, etc.)<br><b>(١)- Class rooms are equipped with data show.</b><br><b>(٢)- Library is required and connected to the network for students to study materials</b>           |
| ٣. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)   |

#### G Course Evaluation and Improvement Processes

|   |
|---|
| ١ Strategies for Obtaining Student Feedback on Effectiveness of Teaching<br><b>(١)- Questionnaires / students opinion survey</b><br><b>(٢)- Open discussion in the class room at the end of the lectures or during individual student/staff meeting</b> |
| ٢ Other Strategies for Evaluation of Teaching by the Instructor or by the Department<br><b>(١)- Revision of student answer papers .</b>   |



(٢)- Analysis the grades of students.

٣ Processes for Improvement of Teaching

(١)- Preparing the course as PPT.

(٢)- Using scientific movies.

(٣)- Coupling the theoretical part with laboratory part

(٤)- Periodical revision of course content.

٤. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution)

**After the agreement of Department and Faculty administrations; it might include:**

(١)- Random check of students exam papers / assignments by external examiner

(٢)- Random check of students exam papers / assignments by internal examiner

◦ Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

**A departmental review committee will look after the arrangement periodically after taking feedback from students and in the light of new development in the subject.**

Name of Instructor: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Report Completed: \_\_\_\_\_

Name of Course Instructor \_\_\_\_\_

Program Coordinator: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Received: \_\_\_\_\_

## Kingdom of Saudi Arabia

### The National Commission for Academic Accreditation & Assessment

#### Course Specifications

##### Plant symbiosis and pathology

٤٠١٢٦٨٣-٢

## Course Specifications

Institution: **Umm Al-Qura University**

College/Department: **Faculty of Applied Science / Department of Biology**

### A. Course Identification and General Information

١. Course title and code: **Plant symbiosis and pathology (٤٠١٢٦٨٣-٢)**

٢. Credit hours: **٢ C. H.**

٣. Program(s) in which the course is offered.

(If general elective available in many programs indicate this rather than list programs)

**MSc in Botany**

٤. Name of faculty member responsible for the course

**Dr.Majdah ALTuwaijri**

٥. Level/year at which this course is offered

٦. Pre-requisites for this course (if any)

٧. Co-requisites for this course (if any)

٨. Location if not on main campus

٩. Mode of Instruction (mark all that apply)

a. traditional classroom



What percentage?

**١٠٠ %**

b. blended (traditional and online)

What percentage?

c. e-learning

what percentage?

d. correspondence

what percentage?

f. other

what percentage?

Comments:

## B Objectives

١. What is the main purpose for this course?

To understand the ecological context in which plants grow and interact with one another, other organisms and their physical surroundings in natural and cultivated environments. Thereby to develop a balanced, all-round perspective of plant health and disease that can inform practical approaches to environmental and crop management.

٢. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

## C. Course Description (Note: General description in the form used in Bulletin or handbook)

Course Description:

The co-evolutionary molecular battle between microbial pathogens and plants has game-like properties whose rules are emerging from recent genomic, biochemical, and cell biological advances. This course explores the molecular pieces and collective behaviors of pathogen virulence and plant immune systems, similarities between interaction mechanisms in plant and animal pathosystems, and the application of this knowledge to sustainable agriculture. The course emphasizes the development of professional skills, such as the management of scientific literature, creative design and critical evaluation of research, communication of complex scientific concepts to diverse audiences, and discussion of environmental issues associated with transgene-based disease management strategies.

## ١. Topics to be Covered

| List of Topics | No. of Weeks | Contact hours |
|----------------|--------------|---------------|
|                |              |               |

|   |   |   |
|---|---|---|
| <p><b>١. Introduction</b></p> <ul style="list-style-type: none"> <li>- “What is a healthy plant?</li> <li>– Concepts of Plant Health and Disease”</li> </ul> <p>(i) Through what mechanisms and processes do plants thrive or decline in the presence of other organisms in natural and cultivated environments?</p> <p>(ii) How do these mechanisms and processes affect ecological function and our practical approaches to environmental and crop management?</p> <ul style="list-style-type: none"> <li>- Pathogen attack: How pathogens attach and enter plants through natural openings</li> <li>- Microorganisms habitat and their role in biogeochemical cycles and succession pattern</li> <li>- Terrestrial Environment: Soil microflora. Aquatic Environment: Stratification &amp; Microflora of Freshwater &amp; Marine habitats .</li> <li>- Atmosphere: Stratification of the Atmosphere, Aeromicroflora, Dispersal of Microbes .</li> <li>- Extreme Habitats: Extremophiles: Microbes thriving at high &amp; low temperatures, pH, high hydrostatic &amp; osmotic pressures, salinity, &amp; low nutrient levels.</li> </ul> | ٢ | ٤ |
| <p><b>٢- Microbe–Microbe Interactions</b></p> <ul style="list-style-type: none"> <li>- Mutualism, Synergism, Commensalism, Competition, Amensalism, Parasitism, Predation, Biocontrol agents</li> <li>- Microbe–Plant Interactions: Roots, Aerial Plant surfaces, Biological Nitrogen fixation (symbiotic/nonsymbiotic-biofertilizers)</li> <li>- Microbe–Animal Interactions : Role of Microbes in Ruminants, Nematophagus fungi, Luminescent bacteria as symbiont</li> </ul>  | ٢ | ٤ |

|   |   |   |
|---|---|---|
| <p>٣-Microbial Pathogenicity : Virulence factors of pathogens: enzymes, toxins (host specific and non specific) growth regulators, virulence factors in viruses (replicase, coat protein, silencing suppressors) in disease development.</p> <ul style="list-style-type: none"> <li>- Effects of pathogens on host physiological processes (photosynthesis, respiration, cell membrane permeability, translocation of water and nutrients, plant growth and reproduction).</li> <li>- Genetics of Plant Diseases : Concept of resistance (R) gene and avirulence (avr) gene; Gene for gene hypothesis, types of plant resistance: true resistance– horizontal &amp; vertical, apparent resistance.</li> </ul> | ٢ | ٤ |
| <p>٤- How pathogens directly penetrate through the epidermis</p> <ul style="list-style-type: none"> <li>- How necrotrophs use pectic enzymes to kill and macerate plant tissues?</li> <li>- How necrotrophic fungi use host-selective toxins and effector proteins to defeat plants?</li> <li>- The story of crown gall: nature’s genetic engineer</li> <li>- Repertoires of bacterial cytoplasmic effector proteins and their delivery via the T<sub>3</sub>SS</li> <li>- Repertoires of fungal and oomycete cytoplasmic effector proteins and their delivery</li> <li>- How bacteria use small-molecule toxins to promote disease?</li> </ul>   | ٢ | ٤ |
| <p>٥. Modes of Interaction between Plants and other Organisms as complex systems</p> <ul style="list-style-type: none"> <li>- location of the interactions</li> <li>- Duration of the interaction</li> <li>- Outcomes of interaction in terms of costs and benefits to plant and other organism</li> <li>- Mechanistic basis of interaction outcomes</li> <li>- Nutritional mode</li> </ul>   | ٢ | ٤ |

|  |   |   |
|--|---|---|
| <p>٦. Epiphytes and Endophytes</p> <ul style="list-style-type: none"> <li>- Living on plant surfaces: Epiphytes</li> <li>- Leaf – inhabiting communities – the ‘phylloplane/phyllosphere’ Microflora</li> <li>- Bark –surface – inhabiting communities</li> <li>- Living within plant interiors - Endophytes</li> </ul>  | ١ | ٢ |
| <p>٧. Patterns and processes of decay in trees</p> <ul style="list-style-type: none"> <li>- Five basic scenarios leading to the establishment of decay – causing fungi in the wood of trees</li> <li>١. Colonization of Heartwood: Heartrot</li> <li>٢. Colonization of Exposed Sapwood: Unspecialized Opportunism</li> <li>٣. Colonization of Intact Sapwood in ‘Stressed’ Trees or Parts of Trees: Specialized Opportunism</li> <li>٤. Colonization of Dead Standing Trunks and Attached Branches: Desiccation-Tolerance</li> <li>٥. Fugally-Induced Dysfunction: Active Pathogenesis</li> </ul> | ١ | ٢ |
| <p>٨. Mycorrhizas</p> <ul style="list-style-type: none"> <li>- Types of mycorrhizal associations and their natural distribution pattern</li> <li>- Means of arrival and establishment of ectomycorrhizal fungi at host roots, and their ecological consequences</li> <li>I. Ectomycorrhizas (sheathing mycorrhizas)</li> <li>II. Arbuscular Mycorrhizas</li> <li>III. Ericaceous mycorrhizas</li> </ul>  | ١ | ٢ |



|  |   |   |
|--|---|---|
| <p>٩. Parasitic plants</p> <ul style="list-style-type: none"> <li>- Monotropoid mycorrhizas</li> <li>- Orchidaceous mycorrhizas</li> <li>- Parasitic , hemiparasitic and carnivorous plants - Hemiparasitic Plants</li> <li>- Loranthaceae – Mistletoes</li> <li>- Scrophulariaceae</li> <li>- Total Parasites</li> <li>- Orobanchaceae</li> <li>- Balanophoraceae</li> <li>- Rafflesiaceae</li> </ul>   | ١ | ٢ |
| <p>١٠- Important diseases caused by fungi</p> <p>White rust of crucifers – <u>Albugo candida</u> - Downy mildew of onion – <u>Peronospora destructor</u> - Late blight of potato – <u>Phytophthora infestans</u> - Powdery mildew of wheat – <u>Erysiphe graminis</u></p> <p>Ergot of rye – <u>Claviceps purpurea</u> - Black stem rust of wheat – <u>Puccinia graminis tritici</u> - Loose smut of wheat – <u>Ustilago nuda</u></p> <p>Wilt of tomato – <u>Fusarium oxysporum f.sp. lycopersici</u> - Red rot of sugarcane – <u>Colletotrichum falcatum</u> - Early blight of potato – <u>Alternaria solani</u></p> <ul style="list-style-type: none"> <li>- Important diseases caused by phytopathogenic bacteria<br/>Angular leaf spot of cotton, bacterial leaf blight of rice, crown galls, bacterial</li> <li>- Cankers of citrus</li> <li>- Important diseases caused by phytoplasmas</li> <li>- Aster yellow, citrus stubborn</li> <li>- Important diseases caused by viruses</li> <li>- Papaya ring spot, tomato yellow leaf curl, banana bunchy top, rice tungro</li> <li>- Important diseases caused by viroids</li> <li>- Potato spindle tuber, coconut cadang cadang</li> </ul> | ١ |   |

|  |         |          |            |           |        |       |
|--|---------|----------|------------|-----------|--------|-------|
| ٢. Course components (total contact hours and credits per semester): |         |          |            |           |        |       |
|  | Lecture | Tutorial | Laboratory | Practical | Other: | Total |

|         |    |  |           |  |  |    |
|---------|----|--|-----------|--|--|----|
|         |    |  | or Studio |  |  |    |
| Contact | ٣٠ |  |           |  |  | ٣٠ |
| Hours   |    |  |           |  |  |    |
| Credit  | ٢  |  |           |  |  | ٢  |

٣. Additional private study/learning hours expected for students per week.

٤. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

On completion of this course students will have or be able to:

- ١- Gain a deeper knowledge of host-pathogen interactions at the molecular to organismal level, with emphasis on several model pathosystems and phenomena whose elucidation will have the most power in explaining disease.
٢. Gain an understanding of the virulence mechanisms and pathogenic lifestyles of necrotrophic and biotrophic plant pathogens and of the defenses of plants against these pathogens.
٣. Understand research tools and their limitations and how technology and knowledge have grown together in the history of our discipline.
٤. Use knowledge of molecular interactions to understand the basis for current disease controls and identify potential new targets for control.
٥. Understand of the nature and importance of immunity mechanisms in plant biology.
٦. Learn through the example of complex pathosystems the growing importance of systems biology.
٧. Develop expert learning skills through literature management, practice in formulating hypotheses and models, proposal writing, and other activities.
٨. Learn to critically evaluate research papers.
٩. Improve skills for oral and written communication of scientific ideas to diverse audiences.

| ٥. Schedule of Assessment Tasks for Students During the Semester |   |          |                                |
|--|---|----------|--------------------------------|
|  | Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.) | Week Due | Proportion of Total Assessment |
| ١  | <b>Activities</b>   |          | ٣٠٪                            |
| ٣  | <b>Essays</b>   |          | ٣٠٪                            |
| ٤  | <b>Final written exam</b>   |          | ٤٠٪                            |
| ٥  | <b>TOTAL</b>  |          | ١٠٠٪                           |

#### D. Student Academic Counseling and Support

١. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

**Academic teaching staff will be available to meet individual students for consultation and academic advice at their private offices at the times advised.**

Office hours: 10 hrs per week; each semester. Time will varies each semester based on academic schedule for each teaching staff.

## E Learning Resources

### 1. List Required Textbooks

- 1- Atlas RM and Bartha R. (2000). Microbial Ecology: Fundamentals & Applications. 4th edition. Benjamin/Cummings Science Publishing, USA.
- 2- Atlas RM. (1989). Microbiology: Fundamentals and Applications. 2nd Edition, MacMillan Publishing Company, New York.
- 3- Madigan MT, Martinko JM and Parker J. (2009). Brock Biology of Microorganisms. 12th edition. Pearson/ Benjamin Cummings
- 4- Agrios GN. (2006). Plant Pathology. 9th edition. Academic press, San Diego,
- 5- Lucas JA. (1998). Plant Pathology and Plant Pathogens. 3rd edition. Blackwell Science, Oxford.
- 6- Mehrotra RS. (1994). Plant Pathology. Tata McGraw-Hill Limited

### 2. List Essential References Materials (Journals, Reports, etc.)

High Impact Journals:

- [Journal of Applied Microbiology](#)

- [Journal of International Journal of Horticulture & Agriculture](#)

- [Asian Journal of Plant Science & Research](#)

### 3. List Recommended Textbooks and Reference Material (Journals, Reports, etc)

### 4. List Electronic Materials, Web Sites, Facebook, Twitter, etc.

5. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

#### F. Facilities Required

|  |
|--|
| Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)   |
| <p>١. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)</p> <p>(١)- Class room is already provided with data show</p> <p>(٢)- The area of class room is suitable concerning the number of enrolled students</p> |
| <p>٢. Computing resources (AV, data show, Smart Board, software, etc.)</p> <p>(١)- Class rooms are equipped with data show.</p> <p>(٢)- Library is required and connected to the network for students to study materials</p>           |
| <p>٣. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)</p>   |

#### G Course Evaluation and Improvement Processes

|  |
|--|
| <p>١ Strategies for Obtaining Student Feedback on Effectiveness of Teaching</p> <p>(١)- Questionnaires / students opinion survey</p> <p>(٢)- Open discussion in the class room at the end of the lectures or during individual student/staff meeting</p> |
| <p>٢ Other Strategies for Evaluation of Teaching by the Instructor or by the Department</p> <p>(١)- Revision of student answer papers .</p> <p>(٢)- Analysis the grades of students.</p>   |
| <p>٣ Processes for Improvement of Teaching</p> <p>(١)- Preparing the course as PPT.</p> <p>(٢)- Using scientific movies.</p> <p>(٣)- Coupling the theoretical part with laboratory part</p>  |

**(٤)- Periodical revision of course content.**

٤. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution)

**After the agreement of Department and Faculty administrations; it might include:**

**(١)- Random check of students exam papers / assignments by external examiner**

**(٢)- Random check of students exam papers / assignments by internal examiner**

◦ Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

**A departmental review committee will look after the arrangement periodically after taking feedback from students and in the light of new development in the subject.**

Name of Instructor: \_\_Majdah

ALTuwaijri\_\_\_\_\_

Signature: \_\_\_\_\_

Date Report Completed: \_٢٢/١١/٢٠١٧\_\_\_\_\_

Name of Course Instructor \_\_\_\_\_

Program Coordinator: \_\_\_\_\_

Signature: \_\_\_\_\_

Date Received: \_\_\_\_\_

## Kingdom of Saudi Arabia

### The National Commission for Academic Accreditation & Assessment

## Course Specifications

### Water Relations in Plants

(٤٠١٢٦٨٤-٢)

## Course Specifications

|   |
|---|
| Institution: <b>Umm Al-Qura University</b>                                    |
| College/Department: <b>Faculty of Applied Science / Department of Biology</b> |

### A. Course Identification and General Information

|   |
|---|
| ١. Course title and code: <b>Water Relations in Plants (٤٠١٢٦٨٤-٢)</b>  |
| ٢. Credit hours: <b>٢ C. H.</b>   |
| ٣. Program(s) in which the course is offered. <b>MSc. Plant Physiology (Botany).</b><br>(If general elective available in many programs indicate this rather than list programs)  |
| ٤. Name of faculty member responsible for the course<br><b>Prof. Dr. Hamed El Sayed Ahmed El Sayed (<a href="mailto:heelsayed@uqu.edu.sa">heelsayed@uqu.edu.sa</a>).</b>  |
| ٥. Level/year at which this course is offered   |
| ٦. Pre-requisites for this course (if any)  |
| ٧. Co-requisites for this course (if any)   |
| ٨. Location if not on main campus.  |
| ٩. Mode of Instruction (mark all that apply)<br><br>a. traditional classroom <input checked="" type="checkbox"/> What percentage? <b>١٠٠ %</b><br><br>b. blended (traditional and online) <input type="checkbox"/> What percentage? <input type="text"/><br><br><input type="checkbox"/> <input type="text"/> |



|                   |                                       |                      |
|-------------------|---------------------------------------|----------------------|
| c. e-learning     | What percentage?                      |                      |
| d. correspondence | <input type="text"/> What percentage? | <input type="text"/> |
| f. other          | <input type="text"/> What percentage? | <input type="text"/> |

## B Objectives

١. What is the main purpose for this course?

**Summary of the main learning outcomes for students enrolled in the course:**

- Give the students' knowledge of with the definition of "Water Relations in Plants" in terms of techniques and applications.
- The course aims to give the students an idea of the: Water properties - plant water absorption - transpiration - water movement - water stress of the plant - the concept of desertification - the concept of desert from the point of view of the environment - the desert patterns in the world and the desert and the climatic characteristics of the hot desert - the attributes that God provided the desert plants to tolerance their hard conditions - As an environmental problem - water relations in plants - mineral nutrition - growth and development - stress of physiology - transport of food - biological construction and respiration - theory of morphology - members reveal and form - discussion of experimental studies such as water content, relative turgidity, Succulence, dry matter contents - factors affecting the processes of formation

٢. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

## C. Course Description (Note: General description in the form used in Bulletin or handbook)

Course Description:

- Introduction of water contents in plant and soil.
- Identify Water properties.
- Plant water absorption – transpiration.
- Water movement in plant from soil.
- Water stresses of the plant - the concept of desertification - the concept of desert from the point of view of the environment.
- The desert patterns in the world and the desert and the climatic characteristics of the hot desert - the attributes that God provided the desert plants to tolerance their hard conditions.
- As an environmental problem - water relations in plants.
- Mineral nutrition.
- Growth and development.
- Stress of physiology - transport of food - biological construction and respiration - theory of morphology - members reveal and form.
- Discussion of experimental studies such as water content, relative turgidity, Succulence, dry matter contents - factors affecting the processes of formation
- Development, growth and Differentiation.
- Determination of Growth Parameters under water stress.

• **Definition and function of plant hormone under water stress.**

| ١. Topics to be Covered  |              |               |
|--|--------------|---------------|
| List of Topics   | No. of Weeks | Contact hours |
| ٥. <b>Introduction of water contents in plant and soil.</b>  | ١            | ٢             |
| ٦. <b>Identify Water properties.</b>   | ١            | ٢             |
| ٧. <b>Plant water absorption – transpiration.</b>  | ١            | ٢             |
| ٨. <b>Water movement in plant from soil.</b>   | ١            | ٢             |
| ٩. <b>Water stresses of the plant - the concept of desertification - the concept of desert from the point of view of the environment.</b>  | ١            | ٢             |
| ١٠. <b>The desert patterns in the world and the desert and the climatic characteristics of the hot desert - the attributes that God provided the desert plants to tolerance their hard conditions.</b> | ١            | ٢             |
| ١١. <b>As an environmental problem - water relations in plants.</b>  | ١            | ٢             |
| ١٢. <b>Mineral nutrition.</b>  | ١            | ٢             |
| ١٣. <b>Growth and development.</b>   | ١            | ٢             |
| ١٤. <b>Stress of physiology - transport of food - biological construction and respiration - theory of morphology - members reveal and form.</b>  | ١            | ٢             |
| ١٥. <b>discussion of experimental studies such as water content, relative turgidity, Succulence, dry matter contents - factors affecting the processes of formation</b>                                | ١            | ٢             |
| ١٦. <b>Development and growth and Differentiation</b>  |              |               |
| ١٧. <b>Determination of Growth Parameters under water stress.</b>  |              |               |
| ١٨. <b>Definition and function of plant hormone under water stress.</b>  |              |               |

٢. Course components (total contact hours and credits per semester):

|  | Lecture | Tutorial | Laboratory<br>or Studio | Practical | Other: | Total |
|--|---------|----------|-------------------------|-----------|--------|-------|
|  |         |          |                         |           |        |       |

|         |    |  |  |  |  |    |
|---------|----|--|--|--|--|----|
| Contact | ٢٨ |  |  |  |  | ٢٨ |
| Hours   |    |  |  |  |  |    |
| Credit  | ٢  |  |  |  |  | ٢  |

٣. Additional private study/learning hours expected for students per week.

(This should be an average: for the semester not a specific requirement in each week):

**The study rate increase ٤ hours to search through the Internet to access the sites according to reach the student has done extensive research in the specialty materials.**

٤. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

- ٧. **A brief summary of the knowledge or skill the course is intended to develop;**
- ٨. **A description of the teaching strategies to be used in the course to develop that knowledge or skill;**
- ٩. **The methods of student assessment to be used in the course to evaluate learning outcomes in the domain concerned.**

(i) **Description of the skills to be developed in this domain.**

- ١٦. **The ability to use the Web in search of the latest findings of modern science**
- ١٧. **The ability to use computers in research writing and presentation using power point**
- ١٨. **The use of computers in the provision of research and scientific reports required**
- ١٩. **The use of modern techniques in scientific research**
- ٢٠. **The ability to research information required analysis.**

(ii) **Teaching strategies to be used to develop these skills**

- ١٣. **To give students individual and collective duties and activities and reports and presented through the use of Microsoft Office**
- ١٤. **View summaries of scientific material to the students using the programs Power point**
- ١٥. **To urge the students to visit the library to take advantage of modern scientific research**
- ١٦. **- Make a table for the students scientific debate**

| o. Schedule of Assessment Tasks for Students During the Semester |   |          |                                |
|--|---|----------|--------------------------------|
|  | Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.) | Week Due | Proportion of Total Assessment |
| ١  | <b>Activities (Paper presentation, seminar)</b>   |          | ٤٠                             |
| ٢  | <b>Midterm exam</b>   |          | ٢٠                             |
| ٣  | <b>Final written exam</b>   |          | ٤٠                             |
| ٤  | <b>TOTAL</b>  |          | ١٠٠                            |

#### D. Student Academic Counseling and Support

١. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

- **Academic teaching staff will be available to meet individual students for consultation and academic advice at their private offices at the times advised.**
- **Office hours: ١٠ hrs. per week; each semester. Time will varies each semester based on academic schedule for each teaching staff.**

#### E Learning Resources

|   |
|---|
| ٦. List Required Textbooks  |
| ١. Required Text(s):  |
| <p>١٨. <b>Handbook of Plant Cell Culture Techniques and breeding.</b> Ed. Evans, Sharp, Ammirato and Yamada. Macmillan, New York, ١٩٨٣.</p> <p>١٩. <b>Plant Tissue Culture: Methods and Application in Agriculture.</b> Ed. Travor A. Thorpe. Academic Press, ١٩٨١.</p> <p>٢٠. <b>Growth and Organization in Plant</b> , Stewart, F.C. Adison - Wesley Co. Reading Wareing (١٩٨٧)</p> <p>٢١. <b>Plant Propagation by tissue culture: Handbook and directory of commercial laboratories.</b> Ed. George, E. F. and Sherrington, P. D. Exegetics Limited, ١٩٨٤.</p> |
| Plant Propagation by tissue culture: Handbook and directory of commercial laboratories. Ed. George, E. F. and Sherrington, P. D. Exegetics Limited, ١٩٨٤.   |
| ٢. Essential References   |
| <b>Different Journals and web sites related to the subject including:</b>   |
| <ul style="list-style-type: none"> <li>• <b>Journal of Plant Physiology.</b></li> <li>• <b>Journal of Agriculture and Food Science.</b></li> <li>• <b>Journal of Molecular Biology</b></li> </ul>   |

|  |
|--|
| <ul style="list-style-type: none"><li>• <b>Journal of Biochemistry.</b></li><li>• <b>Journal of Agricultures and Plant Science</b></li><li>• <b><a href="http://www.ansci.cornell.edu/plants/medicinal/">http://www.ansci.cornell.edu/plants/medicinal/</a></b></li><li>• <b><a href="http://www.botanical.com">http://www.botanical.com</a></b></li></ul> |
| ٣- Recommended Books and Reference Material (Journals, Reports, etc) (Attach List)   |
| ٤. List Electronic Materials, Web Sites, Facebook, Twitter, etc.   |
| ٥. Other learning material such as computer-based programs/CD, professional standards or regulations and software.   |

#### F. Facilities Required

|   |
|---|
| Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)  |
| ١. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)<br><br><b>(١)- Class room is already provided with data show.</b><br><br><b>(٢)- The area of class room is suitable concerning the number of enrolled students.</b> |
| ٢. Computing resources (AV, data show, Smart Board, software, etc.)<br><br><b>(١)- Class rooms are equipped with data show.</b><br><br><b>(٢)- Library is required and connected to the network for students to study materials.</b>            |
| ٣. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)   |

#### G Course Evaluation and Improvement Processes

|   |
|---|
| ١ Strategies for Obtaining Student Feedback on Effectiveness of Teaching<br><br><b>(١)- Questionnaires / students opinion survey</b><br><br><b>(٢)- Open discussion in the class room at the end of the lectures or during individual student/staff meeting</b> |
| ٢ Other Strategies for Evaluation of Teaching by the Instructor or by the Department<br><br><b>(١)- Revision of student answer papers.</b><br><br><b>(٢)- Analysis the grades of students.</b>  |

٣ Processes for Improvement of Teaching

- (١)- Preparing the course as PPT.
- (٢)- Using scientific movies.
- (٣)- Coupling the theoretical part with laboratory part.
- (٤)- Periodical revision of course content.

٤. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution)

**After the agreement of Department and Faculty administrations; it might include:**

- (١)- Random check of students exam papers / assignments by external examiner
- (٢)- Random check of students exam papers / assignments by internal examiner

◦ Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

**A departmental review committee will look after the arrangement periodically after taking feedback from students and in the light of new development in the subject.**

Name of Instructor: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Report Completed: \_\_\_\_\_

Name of Course Instructor \_\_\_\_\_

Program Coordinator: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Received: \_\_\_\_\_

## Kingdom of Saudi Arabia

### The National Commission for Academic Accreditation & Assessment

## Course Specifications

### Plant Biodiversity

٤٠١٢٦٨٥-٢



## Course Specifications

Institution: **Umm Al-Qura University**

College/Department: **Faculty of Applied Science / Department of Biology**

### A. Course Identification and General Information

١. Course title and code: **Plant Biodiversity (٤٠١٢٦٨٥-٢)**

٢. Credit hours: **٢ C. H.**

٣. Program(s) in which the course is offered.

(If general elective available in many programs indicate this rather than list programs)

**MSc Biology**

٤. Name of faculty member responsible for the course

**Dr. Hanan E. Osman (heosman@uqu.edu.sa)**

٥. Level/year at which this course is offered

٦. Pre-requisites for this course (if any)

٧. Co-requisites for this course (if any)

٨. Location if not on main campus

٩. Mode of Instruction (mark all that apply)

a. traditional classroom



What percentage?

**١٠٠ %**

b. blended (traditional and online)

What percentage?

c. e-learning

what percentage?

d. correspondence

what percentage?

f. other

what percentage?

Comments:

## B Objectives

١. What is the main purpose for this course?

**Plant ecology is a dynamic and rapidly changing field of study. A key component of the academic training of ecologists is understanding recent empirical and theoretical developments in plant ecology and the methods and lines of inquiry that led to these developments. Working ecologists must be capable of synthesizing new results from research in light of existing knowledge. This course will examine three major topics in plant ecology in depth through a mixture of lecture, discussion, and readings from the primary and secondary literature. The synthesis of research results, taught through the application of meta-analysis to a specific problem, will be a key element of this course**

٢. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

## C. Course Description (Note: General description in the form used in Bulletin or handbook)

Course Description:

**The students in this course will be learned the principles and theories relating to the conservation of biological diversity. The course will focus on the following topics: patterns and processes creating biological diversity; estimates of extinction rates; consequences of diversity losses; approaches to conserving diversity, including large-scale conservation planning; conservation biology tools, such as population viability analyses and conservation triage; and causes of diversity loss including habitat loss, invasive species, and climate change.**

١. Topics to be Covered

| List of Topics  | No. of Weeks | Contact hours |
|---|--------------|---------------|
| <b>Introduction to Biodiversity</b>   | ١            | ٢             |
| <b>- Biodiversity – Concept and definition Scope and Constraints of Biodiversity Science, Composition and Scales of Biodiversity: Genetic Diversity, Species/Organismal Diversity, Ecological/Ecosystem Diversity, Landscape/Pattern Diversity, Agrobiodiversity, Bicultural Diversity and Urban Biodiversity</b> | ٣            | ٦             |

|  |   |    |
|--|---|----|
| <b>Causes of Biodiversity Origin of Species /Speciation: History of the Earth and Biodiversity patterns through Geological times; Current Centers of Biodiversity</b>  | ٢ | ٤  |
| <b>Values of Biodiversity Instrumental/Utilitarian value and their categories, Direct use value; Indirect/ Non-consumptive use value, Introduction to Ecological Economics; Monetizing the value of Biodiversity; Intrinsic Value; Ethical and aesthetic values, Anthropocentrism, Biocentrism, Ecocentrism and Religions; Intellectual Value; Deep Ecology</b>  | ٤ | ٨  |
| <b>Threats to Biodiversity</b><br><br><b>Habitat Destruction, Fragmentation, Transformation, Degradation and Loss: Causes, Patterns</b><br><br><b>and consequences on the Biodiversity of Major Land and Aquatic Systems</b><br><br><b>Invasive Species: their introduction pathways, biological impacts of invasive species on</b><br><br><b>terrestrial and aquatic systems</b><br><br><b>Pollution: Impacts of Pesticide pollution, Water pollution and Air Pollution on biodiversity</b><br><br><b>Overexploitation: Impacts of Exploitation on Target and Non-target Terrestrial and Aquatic</b><br><br><b>species and Ecosystems</b><br><br><b>Extinction: Types of Extinctions, Processes responsible for Species Extinction, Current and</b><br><br><b>Future Extinction Rates, IUCN Threatened Categories, Sixth Extinction/Biological Crisis</b> | ٥ | ١٠ |

٢. Course components (total contact hours and credits per semester):

|         | Lecture | Tutorial | Laboratory<br>or Studio | Practical | Other: | Total |
|---------|---------|----------|-------------------------|-----------|--------|-------|
| Contact | ٣٠      |          |                         |           |        | ٣٠    |

|        |   |  |  |  |  |   |
|--------|---|--|--|--|--|---|
| Hours  |   |  |  |  |  |   |
| Credit | ٢ |  |  |  |  | ٢ |

٣. Additional private study/learning hours expected for students per week.

٤. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

**On completion of this course students will have or be able to:**

- understanding of basic conservation biology issues, including where the field has been and where it is going;
- understanding of the ecological principles upon which conservation decisions are made, and be able to cite examples of their use; and
- Demonstrate an appreciation for, and some understanding of, the social, political, and economic factors that affect conservation.
- synthesize primary literature and develop skills in writing based on background review, and writing to provide evidence for a hypothesis/point of view based on literature.
- explain topics in through oral presentation and interpret through modern lens
- report on synthesis of newly acquired data with published data
- develop leadership in discussion of primary literature and in experimental settings.
- **Critically evaluate their personal performance both as an individual and within a team**

٥. Schedule of Assessment Tasks for Students During the Semester

|   | Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.) | Week Due | Proportion of Total Assessment |
|---|---|----------|--------------------------------|
| ١ | <b>Paper presentation (seminar)</b>   |          | ٣٠٪                            |
| ٢ | <b>Short essay</b>  |          | ٢٠٪                            |

|   |                               |  |      |
|---|-------------------------------|--|------|
|   |                               |  |      |
| ٣ | <b>Short written exam</b>     |  | ١٠٪  |
| ٤ | <b>Long literature review</b> |  | ٤٠٪  |
| ٥ | <b>TOTAL</b>                  |  | ١٠٠٪ |

#### D. Student Academic Counseling and Support

١. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

**Academic teaching staff will be available to meet individual students for consultation and academic advice at their private offices at the times advised.**

**Office hours: ١٠ hrs per week; each semester. Time will varies each semester based on academic schedule for each teaching staff.**

#### E Learning Resources

١. List Required Textbooks

- **Groom, M. J., Meffe, G. R. and C. R. Carroll. ٢٠٠٦. Principles of Conservation Biology. Sinauer Associates, Inc., USA.**
- **Krishnamurthy, K. V. ٢٠٠٣. Textbook of Biodiversity. Science Publication.**
- **Primack, R. ٢٠٠٦. Essentials of Conservation Biology. Sinauer Associates, Inc., USA.**
- **Hambler, C. ٢٠٠٤. Conservation. Cambridge University Press.**
- **Van Dyke, F. ٢٠٠٨. Conservation Biology Foundations, Concepts, Applications ٢ nd Edition, Springer**

٢. List Essential References Materials (Journals, Reports, etc.)

High Impact Journals:

- **Journal of Biodiversity & Endangered Species**
- **Journal of Biodiversity Management & Forestry**

- **Asian Journal of Plant Science & Research**

٢. List Recommended Textbooks and Reference Material (Journals, Reports, etc)

٤. List Electronic Materials, Web Sites, Facebook, Twitter, etc.

٥. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

#### F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)

١. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)

**(١)- Class room is already provided with data show**

**(٢)- The area of class room is suitable concerning the number of enrolled students and air conditioned.**

٢. Computing resources (AV, data show, Smart Board, software, etc.)

**(١)- Class rooms are equipped with data show.**

**(٢)- A computer lab is required and connected to the network for students to gather their data and study materials**

٣. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

#### G Course Evaluation and Improvement Processes

١ Strategies for Obtaining Student Feedback on Effectiveness of Teaching

(١)- Questionnaires / students opinion survey

(٢)- Open discussion in the class room at the end of the lectures or during individual student/staff meeting

٢ Other Strategies for Evaluation of Teaching by the Instructor or by the Department

١)- Revision of student answer papers / assignments by another staff member.

(٢)- Analysis the grades of students.

٣ Processes for Improvement of Teaching

(١)- Preparing the course as PPT.

(٢)- Using scientific movies.

(٣)- Coupling the theoretical part with laboratory part

(٤)- Periodical revision of course content.

٤. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution)

**After the agreement of Department and Faculty administrations; it might include:**

(١)- Random check of students exam papers / assignments by external examiner

(٢)- Random check of students exam papers / assignments by internal examiner

٥ Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

**A departmental review committee will look after the arrangement periodically after taking feedback from students and in the light of new development in the subject.**

Name of Instructor: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Report Completed: \_\_\_\_\_

Name of Course Instructor \_\_\_\_\_

Program Coordinator: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Received: \_\_\_\_\_



## Kingdom of Saudi Arabia

### The National Commission for Academic Accreditation & Assessment

## Course Specifications

### Plant Biotechnology

٤٠١٢٦٨٦-٢

## Course Specifications

Institution: **Umm Al-Qura University**

College/Department: **Faculty of Applied Science / Department of Biology**

### A. Course Identification and General Information

١. Course title and code: **Plant Biotechnology (٤٠١٢٦٨٦-٢)**

٢. Credit hours: **٢ C. H.**

٣. Program(s) in which the course is offered.

(If general elective available in many programs indicate this rather than list programs)

**MSc in Botany**

٤. Name of faculty member responsible for the course

**Dr. Doaa ElGhareeb Keshek (dekeshek@uqu.edu.sa)**

٥. Level/year at which this course is offered

٦. Pre-requisites for this course (if any)

٧. Co-requisites for this course (if any)

٨. Location if not on main campus

٩. Mode of Instruction (mark all that apply)

a. traditional classroom



What percentage?

**١٠٠ %**

b. blended (traditional and online)

What percentage?

c. e-learning

what percentage?

d. correspondence

what percentage?

f. other

what percentage?

Comments:

## B Objectives

### ١. What is the main purpose for this course?

The subject covers basic scientific knowledge and its application in biotechnology. Basic molecular biology & practical applications, contemporary applications of biotechnology will be discussed to provide tools and basic knowledge in order to understand biotechnology.

٢. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

## C. Course Description (Note: General description in the form used in Bulletin or handbook)

### Course Description:

This course covers the principles and key concepts of plant biotechnology and its applications.. The significances of biotechnology in agriculture and food production, and the emerging importance of plant biotechnology in molecular farming for the production of high-value proteins.

### ١. Topics to be Covered

| List of Topics   | No. of Weeks | Contact hours |
|--|--------------|---------------|
| ١. Introductory history, scope and application of plant biotechnology  | ١            | ٢             |
| ٢- Genetic improvements in agriculture.<br>-Transgenic crops in global food production.  | ١            | ٢             |
| ٣- Recombinant DNA technology particularly in molecular cloning.<br>The topics include restriction enzymes, cloning process, detection of recombinant clone, genomic library and cDNA library. | ١            | ٢             |
| ٤- Tools in plant genetic engineering: promoters and marker genes.   | ١            | ٢             |
| ٥- Techniques in plant gene transfer: Agrobacterium-mediated transformation, biolistics and microinjection.  | ١            | ٢             |

|   |   |   |
|---|---|---|
| ٦- Gene silencing in plants. Genetic manipulation of commercially useful biosynthetic pathways in crops.<br><br>- Extending shelf-life of fruits.<br>- Prevention of enzymatic browning of potato tubers.<br>- Genetically-engineered biofortified foods: provitamin A-enriched rice, omega-٣-enriched soy and high-anthocyanin tomatoes.                 | ١ | ٢ |
| ٧- The advantage and disadvantages of methods and mechanism of DNA integration into plant genome.   | ١ | ٢ |
| ٨- Biotechnology in plant pest and disease management:<br><br>-Producing crops resistant to phyto-pathogens and pests.<br><br>-Short-interfering RNAs in gene silencing to defend against plant viruses.<br><br>-Protecting crops in the field using the Bt toxin.<br><br>-Pest-resistant genetically-transformed seeds using the alpha-amylase inhibitor | ٢ | ٤ |
| ٩- Herbicide-resistant crops.   | ١ | ٢ |
| ١٠. Bioinsecticides, biopesticides and biofertilizers   | ١ | ٢ |
| ١١- Plants as bioreactors for molecular farming: transgenic and transplastomic plants for producing recombinant biopharmaceutical proteins.   | ١ | ٢ |
| ١٢- Genetically-modified crops and food products: regulation, testing and labelling.  | ١ | ٢ |
| ١٣-The various examples of genetically modified (GM) organisms.<br>The basic concepts of antisense and its application in GM plant<br><br>- The benefit of Green technology.<br><br>-The benefit, risk and issues emerge in genetically modified plant.   | ٢ | ٤ |

|  |         |          |                         |           |        |       |
|--|---------|----------|-------------------------|-----------|--------|-------|
| ٢. Course components (total contact hours and credits per semester): |         |          |                         |           |        |       |
|  | Lecture | Tutorial | Laboratory<br>or Studio | Practical | Other: | Total |

|         |    |  |  |  |  |    |
|---------|----|--|--|--|--|----|
| Contact | ٣٠ |  |  |  |  | ٣٠ |
| Hours   |    |  |  |  |  |    |
| Credit  | ٢  |  |  |  |  | ٢  |

٣. Additional private study/learning hours expected for students per week.

٤. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

**On completion of this course students will have or be able to:**

**Be able to relate the principles of Economic Botany to other disciplines in biology.**

**Be able to relate useful plants to the affairs of mankind.**

**Be able to relate useful plants to the local and world economy.**

٥. Schedule of Assessment Tasks for Students During the Semester

|   | Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.) | Week Due | Proportion of Total Assessment |
|---|---|----------|--------------------------------|
| ١ | <b>Activities</b>   |          | ٣٠٪                            |
| ٣ | <b>Essays</b>   |          | ٣٠٪                            |
| ٤ | <b>Final written exam</b>   |          | ٤٠٪                            |
| ٥ | <b>TOTAL</b>  |          | ١٠٠٪                           |

D. Student Academic Counseling and Support

١. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

**Academic teaching staff will be available to meet individual students for consultation and academic advice at their private offices at the times advised.**

**Office hours: ١٠ hrs per week; each semester. Time will varies each semester based on academic schedule for each teaching staff.**

E Learning Resources

١. List Required Textbooks

(١) - ١. **Adrian S, Nigel WS, Mark RF (٢٠٠٨). Plant Biotechnology: The genetic manipulation of Plants, Oxford University Press.**

(٢) ٢. **Buchanan B, Gruissem G and Jones R (٢٠٠٠) Biochemistry and Molecular Biology of Plants, American Society of Plant Physiologists, USA.**

٣- **Butenko RG (٢٠٠٠) Plant Cell Culture, University Press of Pacific.**

٤. **Davies PJ (٢٠٠٤) Plant Hormones, Kluwer Academic Publishers, Netherlands.**

٥. **Halford N (٢٠٠٦) Plant Biotechnology - Current and future applications of genetically modified crops, John Wiley and Sons, England.**

٦. **Wickens GE (٢٠٠٤) Economic Botany: Principles and Practices, Springer, ISBN ٩٧٨-٠-٧٩٢٣-٦٧٨١-٩.**

٢. List Essential References Materials (Journals, Reports, etc.)

High Impact Journals:

- **Plant Genetics and Genomics**

**– Journal of Plant Genetics and Genomics: Crops and Models**

**- Developments in Plant Genetics and Breeding**

٣. List Recommended Textbooks and Reference Material (Journals, Reports, etc)

٤. List Electronic Materials, Web Sites, Facebook, Twitter, etc.

٥. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)

١. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)

(١)- Class room is already provided with data show

(٢)- The area of class room is suitable concerning the number of enrolled students

٢. Computing resources (AV, data show, Smart Board, software, etc.)

(١)- Class rooms are equipped with data show.

(٢)- Library is required and connected to the network for students to study materials

٣. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

G Course Evaluation and Improvement Processes

١ Strategies for Obtaining Student Feedback on Effectiveness of Teaching



(١)- Questionnaires / students opinion survey

(٢)- Open discussion in the class room at the end of the lectures or during individual student/staff meeting

٢ Other Strategies for Evaluation of Teaching by the Instructor or by the Department

(١)- Revision of student answer papers .

(٢)- Analysis the grades of students.

٣ Processes for Improvement of Teaching

(١)- Preparing the course as PPT.

(٢)- Using scientific movies.

(٣)- Coupling the theoretical part with laboratory part

(٤)- Periodical revision of course content.

٤. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution)

After the agreement of Department and Faculty administrations; it might include:

(١)- Random check of students exam papers / assignments by external examiner

(٢)- Random check of students exam papers / assignments by internal examiner

٥ Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

A departmental review committee will look after the arrangement periodically after taking feedback from students and in the light of new development in the subject.

Name of Instructor: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Report Completed: \_\_\_\_\_

Name of Course Instructor \_\_\_\_\_

Program Coordinator: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Received: \_\_\_\_\_

A. Course Identification and General Information

|  |                                     |                                       |
|--|-------------------------------------|---------------------------------------|
| ١. Course title and code: Microbial Diseases of Plants (٢٠١٤٦٦٧-٢)   |                                     |                                       |
| ٢. Credit hours ٢ credit hours   |                                     |                                       |
| ٣. Program(s) in which the course is offered.<br>(If general elective available in many programs indicate this rather than list programs)<br><b>MSc Microbiology</b> |                                     |                                       |
| ٤. Name of faculty member responsible for the course<br><b>Various</b>   |                                     |                                       |
| ٥. Level/year at which this course is offered  |                                     |                                       |
| ٦. Pre-requisites for this course (if any)   |                                     |                                       |
| ٧. Co-requisites for this course (if any)  |                                     |                                       |
| ٨. Location if not on main campus  |                                     |                                       |
| ٩. Mode of Instruction (mark all that apply)   |                                     |                                       |
| a. traditional classroom   | <input checked="" type="checkbox"/> | What percentage? ١٠٠ %                |
| b. blended (traditional and online)  | <input type="checkbox"/>            | What percentage? <input type="text"/> |
| c. e-learning  | <input type="checkbox"/>            | What percentage? <input type="text"/> |
| d. correspondence  | <input type="checkbox"/>            | What percentage? <input type="text"/> |
| f. other   | <input type="checkbox"/>            | What percentage? <input type="text"/> |

## B Objectives

|   |
|---|
| <p>١. What is the main purpose for this course?</p> <p><b>The course is aimed to provide comprehensive knowledge of the main groups of pathogens that cause plant disease (fungi, viruses, and bacteria) their pathogenesis and spread and how they are identified and managed. Course also includes pathogen –plant interaction and defense mechanism of plants.</b></p> |
| <p>٢. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)</p>  |

## C. Course Description (Note: General description in the form used in Bulletin or handbook)

### Course Description:

**The course is designed to provide improved advanced understanding of phytopathogens and their interaction with host in disease development. Introduction to the main groups of pathogens that cause plant disease, symptoms based identification of causative agents, major fungal, bacterial phytoplasma and viruses as phytopathogens. General characteristics and symptoms, detection isolation and characterization of fungal and bacterial pathogens. Role of environmental factors in plant diseases. The phenomenon of infection, epidemiology, role of virulence factors and toxins in pathogenesis. Defense mechanism in plants molecular basis of plant-pathogen interaction. How they spread and affect plants and how they are identified and managed.**

|                         |              |               |
|-------------------------|--------------|---------------|
| ١. Topics to be Covered |              |               |
| List of Topics          | No. of Weeks | Contact hours |
|                         |              |               |

|  |         |          |                         |           |        |       |
|--|---------|----------|-------------------------|-----------|--------|-------|
| <b>History, causes, symptoms and principle of plant pathology.</b>             | ١       | ٢        |                         |           |        |       |
| <b>The phenomenon of infection</b>   | ١       | ٢        |                         |           |        |       |
| <b>Bacterial diseases of plants: causative agents, symptoms, pathogenicity</b> | ٢       | ٤        |                         |           |        |       |
| <b>Phytoplasma as plant pathogens</b>  | ١       | ٢        |                         |           |        |       |
| <b>Fungal diseases: Causative agents, symptoms, pathogenicity</b>              | ٣       | ٦        |                         |           |        |       |
| <b>Virulence factors and role of various toxins in plant diseases</b>          | ١       | ٢        |                         |           |        |       |
| <b>Defense mechanism in plants and role of plant secondary metabolites</b>     | ٢       | ٤        |                         |           |        |       |
| <b>Plant diseases caused by viruses: General characteristics and symptoms</b>  | ٢       | ٤        |                         |           |        |       |
| <b>Detection and characterization of plant pathogenic bacteria.</b>            | ١       | ٢        |                         |           |        |       |
| <b>Detection and characterization of plant pathogenic fungi.</b>               | ١       | ٢        |                         |           |        |       |
| <b>Role of environmental factors in plant diseases</b>                         | ١       | ٢        |                         |           |        |       |
| <b>Plant diseases: control measures and strategies</b>                         | ١       | ٢        |                         |           |        |       |
| <b>٢. Course components (total contact hours and credits per semester):</b>    |         |          |                         |           |        |       |
|  | Lecture | Tutorial | Laboratory<br>or Studio | Practical | Other: | Total |
| Contact<br>Hours   | ٢       |          |                         |           |        | ٣٢    |
| Credit   | ٢       |          |                         |           |        | ٢     |

٣. Additional private study/learning hours expected for students per week.

٤. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

**On completion of this course students will have or be able to:**

- Familiar with the various groups of plant pathogens, their impact on agriculture and the importance of plant disease and the science of Plant Pathology.
- Understand the diversity of symptoms produced by phytopathogens and viruses on plant.
- Enhance understanding on the current scenario plant diseases.
- Explain the mechanism of pathogenesis by different phytopathogens.
- Isolate and characterize phytopathogenic fungi and bacteria.
- Understand the plant defence biovchemical mechanism.
- Demonstrate capacity for self-learning and independent thinking and to utilize problem solving skills.
- Demonstrate skills in working collegiately and effectively with others as a member of a team under field condition.

◦. Schedule of Assessment Tasks for Students During the Semester

|   | Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.) | Week Due | Proportion of Total Assessment |
|---|---|----------|--------------------------------|
| ١ | <b>Paper presentation (seminar)</b>   |          | ٣٠٪                            |
| ٢ | <b>Short essay</b>  |          | ٢٠٪                            |
| ٣ | <b>Short written exam</b>   |          | ١٠٪                            |
| ٤ | <b>Long literature review</b>   |          | ٤٠٪                            |
| ◦ | <b>TOTAL</b>  |          | ١٠٠٪                           |

#### D. Student Academic Counseling and Support

١. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

**Academic teaching staff will be available to meet individual students for consultation and academic advice at their private offices at the times advised.**

**Office hours: ١٠ hrs per week; each semester. Time will varies each semester based on academic schedule for each teaching staff.**

#### E Learning Resources

١. List Required Textbooks

Recommended Books

(١)- Agrios G. (٢٠٠٥) **Plant Pathology ٥th Edition. Academic Press. (ISBN: ٩٧٨٠١٢٠٤٤٥٦٥٣)**

(٢)- **Schumann G. L., D'Arcy C. J. (٢٠١٠) Essential Plant Pathology ٢<sup>nd</sup> edition. American Phytopathological Society Press. (ISBN: ٩٧٨٠٠٨٩٠٥٤٠٣٨١٠٨)**

(٣)- **Singh R. S. (٢٠٠٩) Plant Diseases. Oxford and IBH Publishing Co. New Delhi. (ISBN: ٨١٢٠٤١٧٤٦١).**

(٤)- **Singh R. S. (٢٠١٠) Introduction to Principles of Plant Pathology ٤<sup>th</sup> Edition. Oxford and IBH Publishing Co. New Delhi. (ISBN ١٠: ٨١٢٠٤١٥٥١٥).**

٢. List Essential References Materials (Journals, Reports, etc.)

**High Impact Journals:**

**(١)- Plant Diseases (American Phytopathological Society)**

**(٢)- Journal of Plant Disease and Protection ٩Springer**

**(٣)- Plant Pathology (Wiley-Blackwell)**

**(٤)- Molecular Plant Pathology (Wiley-Blackwell)**

**٣. List Recommended Textbooks and Reference Material (Journals, Reports, etc)**

**٤. List Electronic Materials, Web Sites, Facebook, Twitter, etc.**

**٥. Other learning material such as computer-based programs/CD, professional standards or regulations and software.**

**F. Facilities Required**

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)

**١. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)**

**(١)- Class room is already provided with data show**

**(٢)- The area of class room is suitable concerning the number of enrolled students (could accommodate up to ١٠٠ students) and air conditioned.**

**٢. Computing resources (AV, data show, Smart Board, software, etc.)**

**(١)- Class rooms are equipped with data show.**

**(٢)- A computer lab is required and connected to the network for students to gather their data and study materials**

**٣. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)**

## G Course Evaluation and Improvement Processes

|   |
|---|
| <p>١ Strategies for Obtaining Student Feedback on Effectiveness of Teaching</p> <p>(١)- Questionnaires / students opinion survey</p> <p>(٢)- Open discussion in the class room at the end of the lectures or during individual student/staff meeting</p>  |
| <p>٢ Other Strategies for Evaluation of Teaching by the Instructor or by the Department</p> <p>(١)- Revision of student answer papers / assignments by another staff member.</p> <p>(٢)- Analysis the grades of students.</p>   |
| <p>٣ Processes for Improvement of Teaching</p> <p>(١)- Preparing the course as PPT.</p> <p>(٢)- Using scientific movies.</p> <p>(٣)- Coupling the theoretical part with laboratory part</p> <p>(٤)- Periodical revision of course content.</p>  |
| <p>٤. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution)</p> <p><b>After the agreement of Department and Faculty administrations; it might include:</b></p> <p>(١)- Random check of students exam papers / assignments by external examiner</p> <p>(٢)- Random check of students exam papers / assignments by internal examiner</p> |
| <p>◦ Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.</p> <p><b>A departmental review committee will look after the arrangement periodically after taking feedback from students and in the light of new development in the subject.</b></p>  |

Name of Instructor: \_\_\_\_\_



Signature: \_\_\_\_\_ Date Report Completed: \_\_\_\_\_

Name of Course Instructor \_\_\_\_\_

Program Coordinator: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Received: \_\_\_\_\_

#### A. Course Identification and General Information

1. Course title and code: Agricultural Microbiology (٤٠١٤٦٦٦-٢)

٢. Credit hours: ٢ C. H.

٣. Program(s) in which the course is offered.

(If general elective available in many programs indicate this rather than list programs)

**MSc Microbiology**

٤. Name of faculty member responsible for the course

**Prof. Khaled Elbanna (kabana@uqu.edu.sa)**

٥. Level/year at which this course is offered

٦. Pre-requisites for this course (if any)

٧. Co-requisites for this course (if any)

٨. Location if not on main campus

٩. Mode of Instruction (mark all that apply)

a. traditional classroom



What percentage? ١٠٠ %



b. blended (traditional and online)

What percentage?



c. e-learning

What percentage?



d. correspondence

What percentage?



f. other

What percentage?

B Objectives

١. What is the main purpose for this course?

**The major objective of the course is to introduce the strong understanding on plant–microbe interaction below and above the ground and its impact on plant health and crop productivity.**

٢. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

C. Course Description (Note: General description in the form used in Bulletin or handbook)

Course Description:

**The course is designed to cover various important aspects of agricultural microbiology with main emphasis on plant–microbe interaction and its application in sustainable agriculture. The student will get better understanding on the role of various beneficial rhizobacteria in providing plant nutrient like nitrogen, phosphorus and plant growth regulators. Study on symbiotic plant root–fungi interaction and role of root exudates and biological control agents will further enrich the knowledge and skill for practical agricultural utility.**

١. Topics to be Covered

| List of Topics  | No. of Weeks | Contact hours |
|---|--------------|---------------|
| <b>Introduction to Agricultural Microbiology: The soil-plant-microorganism system</b>   | ١            | ٢             |
| <b>The rhizosphere environment</b>  | ١            | ٢             |
| <b>Organic compound released by plants</b>  | ١            | ٢             |
| <b>Plant-growth promoting bacteria</b>  | ١            | ٢             |
| <b>Beneficial root-microbial interactions: Biological dinitrogen fixation; Free living dinitrogen fixation; associative dinitrogen fixation</b> | ٢            | ٤             |
| <b>The legume-rhizobia symbiosis</b>  | ٢            | ٤             |

|   |   |   |
|---|---|---|
| <b>Mycorrhizal association</b>  | ٢ | ٤ |
| <b>Pathogenic microbes in agriculture: Fungal pathogens; Bacterial pathogens; viral pathogens</b> | ٣ | ٦ |
| <b>Soil suppressiveness of plant pathogens</b>  | ٢ | ٤ |
| <b>Biological pesticides for control of seed and soil-borne plant pathogens</b>                   | ١ | ٢ |

٢. Course components (total contact hours and credits per semester):

|               | Lecture | Tutorial | Laboratory<br>or Studio | Practical | Other: | Total |
|---------------|---------|----------|-------------------------|-----------|--------|-------|
| Contact Hours | ٣٢      |          |                         |           |        | ٣٢    |
| Credit        | ٢       |          |                         |           |        | ٢     |

٣. Additional private study/learning hours expected for students per week.

٤. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

On completion of this course students will have or be able to:

- Understand the mechanisms plant-microbe interaction.
- Explain the role of various factors and plant root exudates in promoting plant-microbe interaction.
- Demonstrate the mechanisms of plant growth promotion by rhizobacteria and mycorrhizal fungi.
- An introduction to application of PGPR, and biocontrol agents in crop productivity.
- Present information clearly in the form of verbal reports
- Communicate complex ideas and arguments in a clear, concise and effective manner
- Work effectively as an individual or part of a team

- Use conventional and electronic resources to collect, select and organize complex scientific information
- Be able to assimilate and synthesis data from multiple sources
- Demonstrate capacity for self-learning and independent thinking and to utilize problem solving skills
- Demonstrate effective communication skills in the form of student led group presentations.
- Demonstrate skills in working collegiately and effectively with others as a member of a team.
- Set priorities and link these with effective time management
- Critically evaluate their personal performance both as an individual and within a team

٥. Schedule of Assessment Tasks for Students During the Semester

|   | Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.) | Week Due | Proportion of Total Assessment |
|---|---|----------|--------------------------------|
| ١ | <b>Paper presentation (seminar)</b>   |          | ٣٠٪                            |
| ٢ | <b>Short essay</b>  |          | ٢٠٪                            |
| ٣ | <b>Short written exam</b>   |          | ١٠٪                            |
| ٤ | <b>Long literature review</b>   |          | ٤٠٪                            |
| ٥ | <b>TOTAL</b>  |          | ١٠٠٪                           |

D. Student Academic Counseling and Support

١. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week).

**Academic teaching staff will be available to meet individual students for consultation and academic advice at their private offices at the times advised.**

**Office hours: ١٠ hrs per week; each semester. Time will varies each semester based on academic schedule for each teaching staff.**

## E Learning Resources

### ١. List Required Textbooks

- (١)- Maier R. M. et al. (٢٠١٤) *Environmental Microbiology* ٣<sup>rd</sup> edition. Academic Press. (ISBN: ٠١٢-٣٩٤-٦٢٦٣).
- (٢)- van Elsas J. D. et al. (٢٠٠٦) *Modern Soil Microbiology* ٢<sup>nd</sup> edition. CRC Press. (ISBN: ٠٨٢-٤٧٢-٧٤٩٥).
- (٣)- Paul E. A. (٢٠١٤) *Soil Microbiology, Ecology and Biochemistry* ٤<sup>th</sup> edition. Academic Press. (ISBN: ٠١٢٤١٥٩٥٥٩).
- (٤)- Tate R. L. (٢٠١٢) *Soil Microbiology* ٢<sup>nd</sup> edition. John Wiley & Sons. (ISBN: ٨١٢٦٥٣٩٧٨٨).
- (٥)- Vallabhaneni S. (٢٠١٢) *Soil Microbiology: A Laboratory Manual, Protocols and Techniques*. Lab Lambert Academic Publishing. (ISBN: ٣٦٥٩١٩٥٧٨٢).

### ٢. List Essential References Materials (Journals, Reports, etc.)

#### High Impact Journals:

- (١)- *Symbiosis* (Springer)
- (٢)- *Journal of Agricultural Science and Technology* (National Center for Scientific Research)
- (٣)- *Journal of Agricultural of Safety and Health* (American Society of Agricultural Engineers)
- (٤)- *Frontiers in Microbiology* (Open Access)
- (٥)- *Applied and Environmental Microbiology* (ASM)
- (٦)- *Environmental Microbiology* (Wiley-Blackwell)
- (٧)- *Microbial Ecology* (Springer)

### ٣. List Recommended Textbooks and Reference Material (Journals, Reports, etc)

٤. List Electronic Materials, Web Sites, Facebook, Twitter, etc.

٥. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

#### F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)

١. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)

(١)- Class room is already provided with data show

(٢)- The area of class room is suitable concerning the number of enrolled students (could accommodate up to ١٠٠ students) and air conditioned.

٢. Computing resources (AV, data show, Smart Board, software, etc.)

(١)- Class rooms are equipped with data show.

(٢)- A computer lab is required and connected to the network for students to gather their data and study materials

٣. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list) .

#### G Course Evaluation and Improvement Processes

١ Strategies for Obtaining Student Feedback on Effectiveness of Teaching

(١)- Questionnaires / students opinion survey

(٢)- Open discussion in the class room at the end of the lectures or during individual student/staff meeting

٢ Other Strategies for Evaluation of Teaching by the Instructor or by the Department

**(١)- Revision of student answer papers / assignments by another staff member.**

**(٢)- Analysis the grades of students.**

٣ Processes for Improvement of Teaching

**(١)- Preparing the course as PPT.**

**(٢)- Using scientific movies.**

**(٣)- Coupling the theoretical part with laboratory part**

**(٤)- Periodical revision of course content.**

٤. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution)

**After the agreement of Department and Faculty administrations; it might include:**

**(١)- Random check of students exam papers / assignments by external examiner**

**(٢)- Random check of students exam papers / assignments by internal examiner**

◦ Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

**A departmental review committee will look after the arrangement periodically after taking feedback from students and in the light of new development in the subject.**

Name of Instructor: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Report Completed: \_\_\_\_\_

Name of Course Instructor \_\_\_\_\_

Program Coordinator: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Received: \_\_\_\_\_



Kingdom of Saudi Arabia  
Ministry of Education  
Umm Al-Qura University  
Deanship of Graduate Studies



المملكة العربية السعودية  
وزارة التعليم  
جامعة أم القرى  
عمادة الدراسات العليا