

4/1/4. Course Specification:

COURSE SPECIFICATIONS

Form

Course Title: Galois Theory

Course Code: **4046409-4**

Course Specifications

Institution:Umm Al-Qura University	Date: November 2018
College/Department :	

A. Course Identification and General Information

1. Course title and code: Galois Theory 4046409-4			
2. Credit hours :4 Hours			
3. Program(s) in which the course is offered. (If general elective available in many programs indicate this rather than list programs) Master in mathematics			
4. Name of faculty member responsible for the course Prof. Falih Al dosary			
5. Level/year at which this course is offered: level 3			
6. Pre-requisites for this course (if any): Linear Algebra, Groups and Rings			
7. Co-requisites for this course (if any):			
8. Location if not on main campus:Al-Abdia Campus & Alzaher			
9. Mode of Instruction (mark all that apply):			
a. traditional classroom	<input checked="" type="checkbox"/>	What percentage?	<input type="text" value="100"/>
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"/>
Comments:			

B Objectives

1. What is the main purpose for this course?
Aims: The course will discuss the problem of solutions of polynomial equations both in explicit terms and in terms of abstract algebraic structures. The course demonstrates the tools of abstract algebra (linear algebra, group theory, rings and ideals) .
2. 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)
 - 1) Encouraging students to collect problems from web based reference material and supervise classroom discussions.
 - 2) Update references used in teaching process.

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

Course Description:

1. Topics to be Covered		
List of Topics	No. of Weeks	Contact hours
Polynomial rings. Irreducible polynomials	2	4
Field extensions. Algebraic and transcendental elements. Simple extensions. Degree of an extension. Splitting fields. Algebraic closure.	3	12
Impossibility of some geometric constructions	2	8
Fixed fields and Galois groups. Splitting fields and normal extensions. Separable extensions.	2	8
The fundamental theorem of Galois theory.	2	8
Solutions of polynomials by radicals. Insolubility of the general quintic.	2	8
Finite fields. Transcendental elements and algebraic independence. Applications. The fundamental theorem of algebra.	2	8

2. Course components (total contact hours and credits per semester):							
		Lecture	Tutorial	Laboratory/ Studio	Practical	Other: (self-Study)	Total
Contact Hours	Planned	60	-	-	-	0	60
	Actual						
Credit	Planned						
	Actual	4					4

3. Additional private study/learning hours expected for students per week.
Four hours weekly for homework and revision.

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

On the table below are the five NQF Learning Domains, numbered in the left column.

First, insert the suitable and measurable course learning outcomes required in the appropriate learning domains (see suggestions below the table). **Second**, insert supporting teaching strategies that fit and align with the assessment methods and intended learning outcomes. **Third**, insert appropriate assessment methods that accurately measure and evaluate the learning outcome. Each course learning outcomes, assessment method, and teaching strategy ought to reasonably fit and flow together as an integrated learning and teaching process. (Courses are not required to include learning outcomes from each domain.)

Code #	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
1.0	Knowledge: After successful completion of the course, the student should be able to		
1.1	Know the basic facts about polynomial rings and some of its applications	Lectures Tutorials Discussion Problem Solving	Exams Home work.
2.0	Cognitive Skills		
2.1	<ol style="list-style-type: none"> 1) Planning rigorous proofs of different propositions and assertions in this context. 2) Apply basic theorems for Hilbert spaces. 3) Investigate particular examples to which the theories under concern can be applied. 4) Use lecture notes and other texts to solve challenging problems. 	Lectures	Periodic written and oral tests. Discussion. Observation.
3.0	Interpersonal Skills & Responsibility		
3.1	<ol style="list-style-type: none"> 1) Punctual attendance of classes is required. 2) Students should demonstrate their sense of responsibility for learning by completing both reading and writing assignments in due time. 		

	3) Students learn to manage their time. 4) Students should act responsibly and ethically in carrying.		
4.0	Communication, Information Technology, Numerical		
4.1	1) Ability to communicate in written and in oral. 2) Ability to write reports in English Ability to explain each step in the problem solving process. 3) Ability to apply course concepts to mathematical problem solving model. 4) Ability to use information technology in communication and research projects. Interact with life problems using different methods of thinking and problem solving.	Lectures tutorials brain storming	Periodic written and oral tests. Discussion. Observation.
5.0	Psychomotor		
5.1	Not Applicable		
5.2			

5. Schedule of Assessment Tasks for Students During the Semester			
	Assessment task (i.e., essay, test, quizzes, group project, examination, speech, oral presentation, etc.)	Week Due	Proportion of Total Assessment
1	Midterm 1	5th week	20 %
2	Midterm 2	10th week	20%
4	Homework + reports + Quizzes	During the semester	20%
5	Final exam	End of semester	40 %

D. Student Academic Counseling and Support

1. 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)

1- Office hours per week in the lecturer schedule (4 hours per week).

2- Contact with students by e-mail, SMS, and e-learning facilities.

E Learning Resources

1. List Required Textbooks

1. D. J. H. Garling, A Course in Galois Theory, Cambridge University Press, 1986.
2. Ian Stewart, Galois Theory, 3rd ed. Chapman & Hall, 2003.
3. Emil Artin, Galois Theory, New ed. Dover, 1998.
4. Postnikov, M. M. (2004). Foundations of Galois Theory. Dover

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

1)

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

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

Microsoft Word, Latex

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.)

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

Classroom with capacity of 30-students.

- Library.

2. Technology resources (AV, data show, Smart Board, software, etc.)

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

None

G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching:

- Student feedback through electronic survey organized by the deanship of registration and

acceptance.

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

- Evaluation of the teachers by internal & external faculty members .
- Visiting to the classrooms.
- Mutual visits between colleagues and giving advices to each other after each lecture

3 Processes for Improvement of Teaching

- Analysis of student course evaluation and feedback
- Peer evaluation and feedback
- Review of course portfolios
- Workshops on pedagogical methods

4. Processes for Verifying Standards of Student Achievement (eg. 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)

- Analysis of course assessments by other reviewers on a periodic basis.

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

- Material and learning outcomes are periodically reviewed internally and externally .
- Comparing course content and teaching methodologies with similar courses offered at other departments and universities.
- Studying the outcomes of the students' evaluations of the course and use it to improve teaching strategies.

Name of Course Instructor: Prof. Falih A. Aldosray

Signature: Falih A. Aldosray _____ Date Specification Completed: _____

Program Coordinator: _____

Signature: _____ Date Received: _____