**Kingdom of Saudi Arabia**

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

**T5. COURSE REPORT**

**(CR)**

A separate Course Report (CR) should be submitted for every course and for each section or campus location where the course is taught, even if the course is taught by the same person. Each CR is to be completed by the course instructor at the end of each course and given to the program coordinator

A combined, comprehensive CR should be prepared by the course coordinator and the separate location reports are to be attached.

**Course Report**

For guidance on the completion of this template refer to the NCAAA handbooks.

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| Institution College of Applied Sciences Date of CR |
| College/ Department of Mathematics |

A Course Identification and General Information

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| 1. Course title Real Analysi 2 Code # 4043103-3 Section # Math | | | | | | |
| 2. Name of course instructor Location | | | | | | |
| 3. Year and semester to which this report applies. The sixth level | | | | | | |
| 4. Number of students starting the course? Students completing the course? | | | | | | |
| 5. Course components (actual total contact hours and credits per semester): | | | | | | |
|  | Lecture | Tutorial | Laboratory/  Studio | Practical | Other: | Total |
| Contact  Hours | 3 |  |  |  |  | 3 |
| Credit | 3 |  |  |  |  | 3 |

B- Course Delivery

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| --- | --- | --- | --- |
| 1. Coverage of Planned Program | | | |
| Topics Covered | Planned Contact Hours | Actual Contact Hours | Reason for Variations if there is a difference of more than 25% of the hours planned |
| Real numbers:  Limits, continuity, Uniform continuity.  Differentiability and Examples.  Rules of Differentiability and Problems. | 5 |  |  |
| Riemann Integration and Examples.  Fundamental theorem of Calculus | 5 |  |  |
| Real Sequences:  Sequences and Series of functions.  Power Series. | 5 |  |  |

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| 2. Consequences of Non Coverage of Topics  For any topics where the topic was not taught or practically delivered, comment on how significant you believe the lack of coverage is for the course learning outcomes or for later courses in the program. Suggest possible compensating action. | | |
| Topics (if any) not Fully Covered | Effected Learning Outcomes | Possible Compensating Action |
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3. Course learning outcome assessment.

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|  | **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. The first three chapters are devoted to the theory of Limits and Sequences. 2. Continuity and Differentiability of functions is the central theme of the next five chapters. Chapter 4 summarizes the basic theorems of real analysis. Chapter 5 is an account of the Riemann Integration. Chapter 6, The theory of sequences and series of real functions and power series. 3. The fundamental theorem of calculus is the subject matter of Chapter 7. 4. Write solutions to problems and proofs of theorems that meet rigorous standards | Lectures  Tutorials  Discussion  Problem Solving | Exams  Home work. |
| **2.0** | **Cognitive Skills** | | |
| 2.1 | * Solve problems on the Limits, Continuity and Differentiability. * Summarize the algebraic properties of limits, continuity and differentiability. * Apply the concepts of the theory of real analysis to the fundamental examples: constant function, polynomial function, rational function, absolute function, trigonometric function and n-th root functions, etc. * Introduce the implicit differentiability and applications.   Solve problems on Riemann integrations and sequences and series of functions. | Homework consisting in solving selected exercises.  Encourage and develop self -education | Homework include problems, solution of which requires scientific thinking, and applications of essential theorems and results of the course  Oral and written tests.  Research projects. |
| **3.0** | **Interpersonal Skills & Responsibility** | | |
| 3.1 | 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. Accustom students to take responsibility of self –learning 5. Students should act responsibly and ethically in carrying | Discussion. Explanation. Guidance and supervision of the group  Assignments for research projects. | Home work.  Reports.  Quizzes.  Discussion |
| **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. 5. 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** | | |
| Not applicable | | | |

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|  | List course learning outcomes | List methods of assessment for each LO | Summary analysis of assessment results for each LO |
| 1.1 | Mathematical logic and set theory. Real analysis of the real line | Home work. |  |
| 1.2 | Be able to deal with different metric spaces and with some types of points such as interior, isolated, boundary and accumulation points in the real line |  |
| 2.1 | Be Familiar with the concepts of open and closed sets | Exams  Quizzes.  Homework.  Discussion |  |
| 2.2 | Understand the concepts of connectedness and compactness |  |
| 3.1 | Study the continuity and the Uniform continuity of functions between metric spaces. |  |
| 3.2 | Be familiar with the Baire category theorem and its applications |  |

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| Summarize any actions you recommend for improving teaching strategies as a result of evaluations in table 3 above.   * There are many Web sites related to real analysis, which is important to get some lectures and exercises and examples. Such as, for http://en.wikipedia.org/wiki * Reconsider the exercises on a regular basis to add new exercises, which helps the student to understand the concepts under study. |

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| 4. Effectiveness of Planned Teaching Strategies for Intended Learning Outcomes set out in the Course Specification. (Refer to planned teaching strategies in Course Specification and description of Domains of Learning Outcomes in the National Qualifications Framework)  • The student must be able to deal with real numbers and to distinguish between the types of points (internal, isolated, accumulation, boundary point).  • The student understand the concept of open and closed sets.  • The student must have a background about connect and compact sets.  • The student must be able to compute the limit of functions.  • The student must understand the notion of continuity and compute limits of continuous functions.  • The student must know some applications about Baire theorem | | | |
| List Teaching Methods set out in Course Specification | Were They  Effective? | | Difficulties Experienced (if any) in Using the Strategy and Suggested Action to Deal with Those Difficulties. |
| No | Yes |
| At the beginning of the study of each subject are presented and discussed some examples with the students to motivate them to derive the definition of the concepts under study. |  |  |  |
| In the beginning of the lecture we discuss with student which has been studied in the previous lecture in order to communicate with the current lecture. |  |  |  |
| Encourage students to give examples and participate in the proofs of the results. |  |  |  |
| Remind students some of what has been studied in others courses in relation with this course. |  |  |  |
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**Note:** In order to analyze the assessment of student achievement for each course learning outcome, student performance results can be measured and assessed using a KPI, a rubric, or some grading system that aligns student work, exam scores, or other demonstration of successful learning.

C. Results

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| 1. Distribution of Grades   |  |  |  |  | | --- | --- | --- | --- | | Letter  Grade | Number of  Students | Student  Percentage | Analysis of Distribution of Grades | | A |  |  |  | | B |  |  |  | | C |  |  |  | | D |  |  |  | | F |  |  |  | | Denied  Entry |  |  |  | | In Progress |  |  |  | | Incomplete |  |  |  | | Pass |  |  |  | | Fail |  |  |  | | Withdrawn |  |  |  | |
| 2. Analyze special factors (if any) affecting the results |

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| 3. Variations from planned student assessment processes (if any) (see Course Specifications). | |
| a. Variations (if any) from planned assessment schedule (see Course Specifications) | |
| Variation | Reason |
|  |  |
|  |  |
|  |  |
| b. Variations (if any) from planned assessment processes in Domains of Learning (see Course Specifications) | |
| Variation | Reason |
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| 4.Student Grade Achievement Verification (eg. cross-check of grade validity by independent evaluator). | |
| Method(s) of Verification | Conclusion |
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D Resources and Facilities

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| 1. Difficulties in access to resources or facilities (if any) | 2. Consequences of any difficulties experienced for student learning in the course. |

E. Administrative Issues

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| 1 Organizational or administrative difficulties encountered (if any) | 2. Consequences of any difficulties experienced for student learning in the course. |

F Course Evaluation

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| 1 Student evaluation of the course (Attach summary of survey results) |
| a. List the most important recommendations for improvement and strengths  Many learning problems for students |
| b. Response of instructor or course team to this evaluation |
| 2. Other Evaluation (eg. by head of department, peer observations, accreditation review, other stakeholders) |
| a. List the most important recommendations for improvement and strengths |
| b. Response of instructor or course team to this evaluation |

G Planning for Improvement

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| 1. Progress on actions proposed for improving the course in previous course reports (if any). | | | |
| Actions recommended  from the most recent course report(s) | Actions Taken | Action Results | Action Analysis |
| a. |  |  |  |
| b. |  |  |  |
| c. |  |  |  |
| d. |  |  |  |

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| 2. List what other actions have been taken to improve the course (based on previous CR, surveys, independent opinion, or course evaluation). |

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| 3. Action Plan for Next Semester/Year | | | | |
| Actions Recommended for Further Improvement | Intended Action Points  (should be measurable) | Start  Date | Completion  Date | Person Responsible |
| a. |  |  |  |  |
| b. |  |  |  |  |
| c. |  |  |  |  |
| d. |  |  |  |  |
| e. |  |  |  |  |

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

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

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

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