VISION
2030
KINGDOM OF SAUDI ARABIA

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

اعتماد

# Course Specifications

| | |
|---|---|
| **Course Title:** | **Abstract algebra (2)** |
| **Course Code:** | **365Math-3** |
| **Program:** | **B.Sc. Mathematics** |
| **Department:** | **Mathematics** |
| **College:** | **Arts and Sciences** |
| **Institution:** | **Najran University** |

## Table of Contents

## A. Course Identification

| 1. **Credit hours:**3 |
|---|

**2. Course type**

a. University ☐ College ☐ Department ☑ Others ☐

b. Required ☑ Elective ☐

**3. Level/year at which this course is offered:** 6/3

**4. Pre-requisites for this course** (if any):**264Math-3**

**5. Co-requisites for this course** (if any):**Non**

## 6. Mode of Instruction (mark all that apply)

| No | Mode of Instruction | Contact Hours | Percentage |
|---|---|---|---|
| 1 | Traditional classroom | 3 | 100% |
| 2 | Blended | --- | --- |
| 3 | E-learning | --- | --- |
| 4 | Correspondence | --- | --- |
| 5 | Other | --- | --- |

## 7. Actual Learning Hours (based on academic semester)

| No | Activity | Learning Hours |
|---|---|---|
| **Contact Hours** | | |
| 1 | Lecture | 45 |
| 2 | Laboratory/Studio | --- |
| 3 | Tutorial | --- |
| 4 | Others (Exams) | 3 |
| | Total | 48 |
| **Other Learning Hours*** | | |
| 1 | Study | 30 |
| 2 | Assignments | 10 |
| 3 | Library | 10 |
| 4 | Projects/Research Essays/Theses | --- |
| 5 | Office hours | 15 |
| | Total | 113 |

*The length of time that a learner takes to complete learning activities that lead to achievement of course learning outcomes, such as study time, homework assignments, projects, preparing presentations, library times

## B. Course Objectives and Learning Outcomes

1. Course Description

This course will cover the foundations of Rings and Fields. The main focus of this course is on Basic concepts and properties of rings, Homomorphism of rings, Ideals, and quotient Rings.

## 2. Course Main Objective

This course aims to give the student the basic concepts and properties of rings and fields.

## 3. Course Learning Outcomes

| | CLOs | AlignedPLOs |
|---|---|---|
| 1 | **Knowledge:** | |
| 1.1 | Define the basis terminology of rings theory | L1 |
| 1.2 | State famous elementary results of rings theory | L2 |
| | | |
| **2** | **Skills :** | |
| 2.1 | Solve a some problems using properties of rings. | L4 |
| 2.2 | Give different examples of Rings and fields | L2 |
| 2.3 | Distinguish the types of rings using rings isomorphism theorems. | L4 |
| | | L5 |
| **3** | **Competence:** | |
| 3.1 | Work as part of a team and independently | L9 |
| 3.2 | Present the main concepts of groups theory to others, both in oral and written form confidently. | L9 |
| | | |

## C. Course Content

| No | List of Topics | Contact Hours |
|---|---|---|
| 1 | Definitions, examples , and basic properties of Rings . | 6 |
| 2 | Integral domains ,Fields ,and division rings | 6 |
| 3 | Sub rings and basic properties | 6 |
| 4 | Rings homomorphism and its fundamental theorems. | 6 |
| 5 | The Characteristic of a ring. | 6 |
| 6 | Ideals , some 0perations on ideals | 3 |
| 7 | Quotient rings and the fundamental theorems of isomorphism | 6 |
| 8 | Polynomials Rings , Roots of polynomials rings over a field . | 6 |
| | **Total** | **45** |

## D. Teaching and Assessment

### 1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

| Code | Course Learning Outcomes | TeachingStrategies | AssessmentMethods |
|---|---|---|---|
| **1.0** | **Knowledge** | | |
| 1.1 | Define the basis terminology of Rings theory | At the beginning of each lecture, some examples will be presented and | Oral Exam Written Exam |
| 1.2 | State famous elementary results of | | Oral Exam |

| Code | Course Learning Outcomes | TeachingStrategies | AssessmentMethods |
|------|--------------------------|--------------------|--------------------|
| | Rings theory | discussed with students to encourage them to discover related concepts and provide definitions | Written Exam |
| ... | --- | --- | --- |
| **2.0** | **Skills** | | |
| 2.1 | Solve some problems using properties of Rings. | Discussion and exercises during lecture time | Quiz Written Exam Homework |
| 2.2 | Give different examples of groups | Discussion and exercises during lecture time | Quiz Written Exam Homework |
| 2.3 | Distinguish the types of Rings using Rings isomorphism theorems. | Discussion and exercises during lecture time | Quiz Written Exam Homework |
| 2.4 | | | |
| **3.0** | **Competence** | | |
| 3.1 | Work as part of a team and independently | Group problems solving during tutorial | Rubrics |
| 3.2 | Present the main concepts of Rings theory to others, both in oral and written form confidently. | Homeworkand discussions in the classes | Oral Exam Rubrics |
| ... | --- | --- | --- |

## 2. Assessment Tasks for Students

| # | Assessment task* | Week Due | Percentage of Total Assessment Score |
|---|------------------|----------|--------------------------------------|
| 1 | Exercises, Homework&Assignments | Open | 10% |
| 2 | Oral Exam | 14th Week | 5% |
| 3 | Quizzes | Open | 5% |
| 4 | Written Test(1) | 7th Week | 15% |
| 5 | Written Test(2) | 13th Week | 15% |
| 6 | Final Exam | End of Semester | 50% |

*Assessment task (i.e., written test, oral test, oral presentation, group project, essay, etc.)

# E. Student Academic Counseling and Support

**Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :**

- Introducing the course syllabus, grading scale and the distribution of marks for the course in the first lecture of the course.

- The office hours for this course are 3 hours/ week.

# F. Learning Resources and Facilities

## 1.Learning Resources

| Required Textbooks | فالح عمران الدوسري،المدخل الى البنى الجبرية ، جامعة ام القرى ، الطبعة M الاولى ١٩٩٩ |
|--------------------|-----------------------------------------------------------------------------------|

| | |
|---|---|
| **Essential References Materials** | ohn B.Fraleigh,A frist Course in Abstract algebra , fourth edition . New York 1989 <br> - W. K. Nicholson, Introduction to Abstract Algebra, PWS-Kent Publishing Boston, 1993 <br> - I. N. Herstein, Topics in Algebra, John Wiley and Sons, 1975 |
| **Electronic Materials** | • Lectures on the Department of Mathematics YouTube Channel. <br> • Other electronic materials available on the internet |
| **Other Learning Materials** | - Non |

## 2. Facilities Required

| Item | Resources |
|---|---|
| **Accommodation** <br> (Classrooms, laboratories, demonstration rooms/labs, etc.) | Classroom with suitable seats |
| **Technology Resources** <br> (AV, data show, Smart Board, software, etc.) | • Datashow <br> • Smart Board <br> • Wi Fi |
| **Other Resources** <br> (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list) | • None |

## G. Course Quality Evaluation

| Evaluation Areas/Issues | Evaluators | Evaluation Methods |
|---|---|---|
| Student course evaluation survey at the end of semester. | Students | Questionnaire (Indirect) |
| Effectiveness of teaching and assessment | Peer Reviewer | Rubrics (Indirect) |
| --- | --- | --- |
| --- | --- | --- |
| --- | --- | --- |
| --- | --- | --- |
| --- | --- | --- |

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes,Quality oflearning resources, etc.)
Evaluators (Students,Faculty, Program Leaders,Peer Reviewer, Others (specify)
Assessment Methods(Direct, Indirect)

## H. Specification Approval Data

| | |
|---|---|
| **Council / Committee** | |
| **Reference No.** | |
| **Date** | |