هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

T-104
2022

# Course Specification

| | |
|---|---|
| Course Title: | **Mathematics II** |
| Course Code: | **292 Math** |
| Program: | **EPET, MMET, CHET** |
| Department: | **Basic Sciences and Supporting Studies** |
| College: | **College of Applied Industrial Technology-Baish** |
| Institution: | **Jazan University** |
| Version: | **T-104 2022** |
| Last Revision Date: | **3 March 2024** |

# Table of Contents:

## A. General information about the course:

| Course Identification | | | | | |
|---|---|---|---|---|---|
| **1. Credit hours:** | 3 hours | | | | |
| **2. Course type** | | | | | |
| a. | University ☐ | College ☒ | Department☐ | Track☐ | Others☐ |
| b. | Required ☒ | Elective☐ | | | |
| **3. Level/year at which this course is offered:** Fourth level/ Second year | | | | | |
| **4. Course general Description**<br><br>The course is a logical extension of 191 Math. It introduces some advanced algebraic topics such as trigonometric functions, trigonometric identities, and some applications of trigonometry, trigonometric form of complex number, matrices and determinants. The course also introduces the concepts of elementary analytic geometry such as parabola, ellipse and hyperbola.<br><br>The course is introduced through 2 hours theoretical part and 2 hours for tutorial for which students discuss and solve the problems of the lectures. | | | | | |
| **5. Pre-requirements for this course (if any):** 191 MATH | | | | | |
| **6. Co- requirements for this course (if any):** None | | | | | |
| **7. Course Main Objective(s)**<br><br>The main purpose of this course is to build on concepts delivered in 191 MATH and develop the students' understanding of trigonometric concepts, matrices and geometry, and the ability to apply them in solving mathematical problems involved in technical specialty courses. | | | | | |

### 1. Teaching mode (mark all that apply)

| No | Mode of Instruction | Contact Hours | Percentage |
|---|---|---|---|
| 1. | Traditional classroom | 48 | 100 |
| 2. | E-learning | -- | -- |
| 3. | Hybrid<br>• Traditional classroom<br>• E-learning | -- | -- |
| 4. | Distance learning | -- | -- |

## 2. Contact Hours (based on the academic semester)

| No | Activity | Contact Hours |
|---|---|---|
| 1. | Lectures | 24 |
| 2. | Laboratory/Studio | -- |
| 3. | Field | -- |
| 4. | Tutorial | 24 |
| 5. | Others (specify) | -- |
| | Total | 48 |

## B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

| Code | Course Learning Outcomes | Code of CLOs aligned with program | Teaching Strategies | Assessment Methods |
|---|---|---|---|---|
| 1.0 | Knowledge and understanding | | | |
| 1.1 | Demonstrate knowledge of matrices, trigonometry and geometry. | K1 | Lecture, tutorial, active learning | Quiz, exams |
| 1.2 | Identify the different types of matrices and determinants. | K1 | Lecture, tutorial, active learning | Quiz, exams |
| 1.3 | Discuss the elementary notion of analytic geometry. | K1 | Lecture, tutorial, active learning | Quiz, exams |
| 2.0 | Skills | | | |
| 2.1 | Recognize the concepts of trigonometric functions. | S1 | Lecture, tutorial, active learning | Quiz, exams |
| 2.2 | Explain the basic trigonometric identities. | S1 | Lecture, tutorial, active learning | Quiz, exams |
| 3.0 | Values, autonomy, and responsibility | | | |
| 3.1 | Observe the ability to work independently and meet deadlines. | V1 | Active learning | Class activity |

## C. Course Content

| No | List of Topics | Contact Hours |
|---|---|---|
| 1. | Introduction to matrices<br>a. Types of Matrices<br>b. Algebra of matrices<br>c. Matrix products<br>d. Determinants | 10 |

| | | |
|---|---|---|
| 2. | The Trigonometric function<br>a. Units of angle measurement<br>b. Conversion from degree to radian and vice-versa<br>c. Trigonometric ratios<br>d. Right triangle trigonometry<br>e. The law of sines and cosines | 10 |
| 3 | Trigonometric identities<br>a. Basic trigonometric identities, and co-function identities<br>b. The sum and difference identities<br>c. Double-angle, and half-angle identities<br>d. Area of triangle in terms of angle<br>e. The trigonometric form of a complex number | 10 |
| 4 | Concepts of Elementary Analytic Geometry<br>a. Parabolas<br>b. Ellipses<br>c. Hyperbolas | 10 |
| 5 | Revision of theoretical concepts | 8 |
| Total | | 48 |

## D. Students Assessment Activities

| No | Assessment Activities * | Assessment timing (in week no) | Percentage of Total Assessment Score |
|---|---|---|---|
| 1. | Quizzes | All weeks | 20% |
| 2. | Assignments & Class activity | All weeks | 15% |
| 3. | Midterm Exam | Week 6 | 15% |
| 4 | Final Term Exam | As scheduled | 50% |

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.)

## E. Learning Resources and Facilities

### 1. References and Learning Resources

| | |
|---|---|
| Essential References | • Lecture Notes<br>• College Algebra and Trigonometry: R N Aufmann, V C Barker and R D Nation, 7th –ISBN-13: 948-1-4390-4860-3, 2011. |
| Supportive References | Algebra and Trigonometry: Functions and Applications by Paul A Foerster, 5th-ISBN-13:978- 0131657106, 2005. |
| Electronic Materials | Not utilized |

| | |
|---|---|
| Other Learning Materials | Not utilized |

## 2. Required Facilities and equipment

| Items | Resources |
|---|---|
| facilities<br>(Classrooms, laboratories, exhibition rooms, simulation rooms, etc.) | Classrooms should be furnished for 25 students with<br>• White board or smart board<br>• Appropriate Chairs |
| Technology equipment<br>(projector, smart board, software) | • Computer with data show<br>• Calculator |
| Other equipment<br>(depending on the nature of the specialty) | Not utilized |

# F. Assessment of Course Quality

| Assessment Areas/Issues | Assessor | Assessment Methods |
|---|---|---|
| Effectiveness of teaching | Institution | Direct |
| Effectiveness of students assessment | Institution | Direct |
| Quality of learning resources | Institution | Direct |
| The extent to which CLOs have been achieved | Course Coordinator | Direct |
| Other | | |

**Assessor** (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
**Assessment Methods** (Direct, Indirect)

# G. Specification Approval Data

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|---|---|
| COUNCIL /COMMITTEE | |
| REFERENCE NO. | |
| DATE | |