# Course Description Form

| 1. Course Name: |
|---|
| Mathematics 1 |

| 2. Course Code: |
|---|
| MATH104 |

| 3. Semester / Year: |
|---|
| Autumn semester / 2023-2024- First stage |

| 4. Description Preparation Date: |
|---|
| 1/2/2024 |

| 5. Available Attendance Forms: |
|---|
| Attendance |

| 6. Number of Credit Hours (Total) / Number of Units (Total): |
|---|
| 30 practical hours/2 units |

| 7. Course administrator's name (mention all, if more than one name) |
|---|
| Name: Mustafa Nadhim Salim |
| mustafa.nadhim@uomosul.edu.iq |

## 8. Course Objectives

-Recognize the ideas behind different mathematical equations, the associated conditions, and the methods for solving them.
-Gaining expertise in addressing partial derivatives in mathematical situations.
-Giving the learner the opportunity to learn about mathematics in general and how it's used in various experiments
-Giving the learner the ability to comprehend mathematics, apply it to situations, and follow the right procedures
-Equipping the learner with the knowledge and abilities to handle diverse mathematical topics and applications.
-Giving the student the ability to tackle challenging issues and a range of applications in diverse domains
-Improving the student's proficiency using contemporary mathematical techniques.
-Improving the student's proficiency with mathematics on websites for academic communication and the Internet.
-Improving the student's capacity for discussion and conversation.

## 9. Teaching and Learning Strategies

- Scientific lectures, brainstorming, self-learning
- Giving exercises and solutions to the exercises to students in various areas of general mathematics
- Assigning students to prepare reports on various mathematics topics
- Giving an assignment on the topic at the end of each lecture to solve mathematical problems

## 10. Course Structure

| Week | Hours | Required Learning Outcomes | Unit or subject name | Learning method | Evaluation method |
|---|---|---|---|---|---|
| 1 | 2 practical | a1 :The student should be able to know and understand groups of numbers and divide groups on a number line | numbers in mathematics | Lectures, giving exercises and solutions to exercises to students, daily exams, homework | Quizzes, Homework, Discussion and solving exercises within the lecture, student interaction |
| 2 | 2 practical | b1 :The student should be able to know and understand | Groups in mathematics | Lectures, giving exercises and solutions to | Quizzes, Homework, Discussion and |

| | | | | Lectures, giving exercises and solutions to exercises to students, daily exams, homework | solving exercises within the lecture, student interaction |
|---|---|---|---|---|---|
| | | groups and operations on groups | | | |
| 3 | 2 practical | c1 :The student should be able to know and understand the basic the fundamental matrix definitions and theorems. | Matrices, operations on matrices, orthogonal matrix | Lectures, giving exercises and solutions to exercises to students, daily exams, homework | Quizzes, Homework, Discussion and solving exercises within the lecture, student interaction |
| 4 | 2 practical | c1 :The student should be able to know and understand the basic the fundamental matrix definitions and theorems. | Square, diagonal, rectangular matrix. | Lectures, giving exercises and solutions to exercises to students, daily exams, homework | Quizzes, Homework, Discussion and solving exercises within the lecture, student interaction |
| 5 | 2 practical | c1 :The student should be able to know and understand the basic the fundamental matrix definitions and theorems. | Conjugate matrix, inverse matrix. | Lectures, giving exercises and solutions to exercises to students, daily exams, homework | Quizzes, Homework, Discussion and solving exercises within the lecture, student interaction |
| 6 | 2 practical | c1 :The student should be able to know and understand the basic theorems and definitions related to determinants | Determinants, defined from the first, second, third, and fourth order. | Lectures, giving exercises and solutions to exercises to students, daily exams, homework | Quizzes, Homework, Discussion and solving exercises within the lecture, student interaction |
| 7 | 2 practical | a2 :The student should be able to know and understand the basic theorems and definitions related to determinants | Cramer's rule. | Lectures, giving exercises and solutions to exercises to students, daily exams, homework | Quizzes, Homework, Discussion and solving exercises within the lecture, student interaction, |
| 8 | 2 practical | c2 :The student should be able to know and understand the basic theorems and definitions related to derivatives | Derivatives, laws of derivatives. | Lectures, giving exercises and solutions to exercises to students, daily exams, homework | Quizzes, Homework, Discussion and solving exercises within the lecture, student interaction, |
| 9 | 2 practical | a3 :The student should be able to know and understand the basic theorems and definitions related to trigonometric functions | Trigonometric functions | Lectures, giving exercises and solutions to exercises to students, daily exams, homework | Quizzes, Homework, Discussion and solving exercises within the lecture, student interaction |
| 10 | 2 practical | a3 :The student should be able to know and understand the basic theorems and definitions related to exponential functions | Exponential functions. | Lectures | Quizzes, Homework, Discussion and solving exercises within the lecture, student interaction |

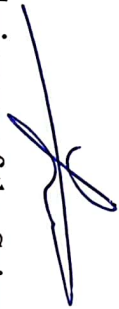| 11 | 2 practical | a3 :The student should be able to know and understand the basic theorems and definitions related to logarithmic functions | Logarithmic functions. | Lectures, giving exercises and solutions to exercises to students, daily exams, homework | Quizzes, Homework, Discussion and solving exercises within the lecture, student interaction |
|---|---|---|---|---|---|
| 12 | 2 practical | b2 :The student should be able to know and understand the basic theorems and definitions related to integration and the laws of integration. | Integration, laws of integration. | Lectures, giving exercises and solutions to exercises to students, daily exams, homework | Quizzes, Homework, Discussion and solving exercises within the lecture, student interaction |
| 13 | 2 practical | b2 :The student should be able to know and understand the basic theorems and definitions related to the integration of trigonometric functions | Integration of trigonometric functions. | Lectures, giving exercises and solutions to exercises to students, daily exams, homework | Quizzes, Homework, Discussion and solving exercises within the lecture, student interaction |
| 14 | 2 practical | b2 :The student should be able to know and understand the basic theorems and definitions related to the integration of exponential functions | Integration of exponential functions. | Lectures, giving exercises and solutions to exercises to students, daily exams, homework | Quizzes, Homework, Discussion and solving exercises within the lecture, student interaction |
| 15 | 2 practical | b2 :The student should be able to know and understand the basic theorems and definitions related to the integration of logarithmic functions | Integration of logarithmic functions. | Lectures, giving exercises and solutions to exercises to students, daily exams, homework | Quizzes, Homework, Discussion and solving exercises within the lecture, student interaction |

## 11.Course Evaluation

| Week | | Grade |
|---|---|---|
| 3 | Quiz | %1 |
| 5 | Quiz | %1 |
| 6 | First Semester Exam | %15 |
| 7 | Quiz | %1 |
| 9 | Quiz | %1 |
| 11 | Quiz | %1 |
| 14 | Second Semester Exam | %15 |
| 1-15 | Assignments | %4 |
| 1-15 | Attendance | %1 |
| Pursuit Score | | %40 |
| Final Exam | | %60 |
| Final Grade | | %100 |

## 12.Learning and Teaching Resources

| Required textbooks (curricular books, if any) | Mathematics for Machine Learning author M. P. |
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| Main references (sources) | Deisenroth, A. A. Faisal and C. S. Ong |
|---|---|
| Recommended books and references (scientific journals, reports...) | Mathematical Handbook of Formulas and Table |
| | 1300 Math Formulas |
| Electronic References, Websites | https://mathblog.com/mathematics-books/ |

Chairman of the Scientific
Committee

Head of the plant protection department

Subject teacher
Mustafa Nadhim Salim