**TEMPLATE FOR COURSE SPECIFICATION**

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| HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW |

 **COURSE SPECIFICATION**

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| This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programmed specification. |

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| College of Engineering  University of Baghdad | ***1. Teaching Institution*** |
| Mechanical Engineering Department (MED) | ***2. University Department/Centre*** |
| Mathematics II / GE 201Mathematics II is a required course for all engineering students. This course presents a new coordinates system which is the polar coordinates system. This course develops the students’ knowledge about vectors which are represented in three dimensions and its components are function. This course also develops the students’ knowledge about differentiation and integration by differentiating the function of several variables and integration with double and triple integral. In this course, the student able to solve first and second order of ordinary differential equations. Also, he/she can test the infinite series if it converges or diverges. The course is taught through 4 hrs. per week. | ***3. Course title/code & Description*** |
| Mechanical Engineering ( ME ) | ***4. Programmed(s) to which it Contributes*** |
| Annual System; There is only one mode of delivery, which is a “Day Program”. The students are full time students, and on campus. They attend full day program in face-to-face mode. The academic year iscomposed of 30-week regular subjects. | ***5. Modes of Attendance offered*** |
| 1st & 2nd / Academic Year 2018 – 2019 | ***6. Semester/Year*** |
| 120 hrs. / 4 hrs. per week | ***7. Number of hours tuition (total)*** |
| 1 May 2019 | ***8. Date of production/revision of this specification***  |
| ***9. Aims of the Course*** |
| This course presents a new coordinates system which is the polar coordinates system. This course develops the students’ knowledge about vectors which are represented in three dimensions and its components are function. This course also develops the students’ knowledge about differentiation and integration by differentiating the function of several variables and integration with double and triple integral. In this course, the student able to solve first and second order of ordinary differential equations. Also, he/she can test the infinite series if it converges or diverges. The course is taught through 4 hrs. per week. |

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| ***10·*** ***Learning Outcomes***  |
| 1. Able to use polar coordinates system.
2. Develop the knowledge about vectors.
3. Understand the fundamentals of functions of several variables.
4. Able to solve all the types of first and second order ordinary differential equations.
5. Able to evaluate the double and triple integral.
6. Analyze how the infinite series converges or diverges.
7. Develop the knowledge about complex numbers.
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|  ***11.*** ***Teaching and Learning Methods*** |
| 1. Lectures.
2. Tutorials.
3. Homework and Assignments.
4. Tests and Exams.
5. In-Class Questions and Discussions.
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|  ***12. Assessment Methods***  |
| 1. Homework. Assignment questions are provided so that students will have the opportunity to use the information provided in the lectures and textbooks and to test their degree of understanding of the discussed topics.
2. Quizzes. Topics discussed during the period shall be included in the quiz. This enables the students to develop self-confidence, accuracy and readiness for the major exams.
3. Major Exams. There will be two (2) major exams, i.e. midterm and final. All exams will be in-class, closed-book, and closed-notes.
4. Problem Sets (Exercises). Working on assigned problems is one way to gain detailed understanding of the topic and prepares the students to pass the examinations. There will be regular problem sets to be solved and to be submitted before the schedule of every major exam. While the students are encouraged to discuss the problem sets with their classmates, they must do the exercises on their own. Copying someone else’s work is unacceptable.

***13. Grading Policy***1. Quizzes: There will be (16 – 20) closed books and notes quizzes during the academic year. The quizzes will count 20% of the total course grade.
2. Tests, 2-3 Nos. and will count 10% of the total course grade.
3. Extracurricular Activities, this is optional and will count extra marks (1 – 5 %) for the student, depending on the type of activity.
4. Final Exam: The final exam will be comprehensive, closed books and notes, and will take place on June 2019 from 9:00 AM - 12:00 PM in rooms (M12 + M13). The final exam will count 70% of the total course grade
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| ***14. Course Structure*** |
| Assessment Method | TeachingMethod | Unit/Module or Topic Title | LOs( Article 10 ) | Hours | Week |
| 1-4 of Article (12) | 1-5 of Article (11) | Polar Coordinates | 1 | 43 the.1 tut. | 1 |
| 1-4 of Article (12) | 1-5 of Article (11) | Polar Coordinates | 1 | 4 | 2 |
| 1-4 of Article (12) | 1-5 of Article (11) | Polar Coordinates | 1 | 3 the. | 3 |
| 1-4 of Article (12) | 1-5 of Article (11) | Polar Coordinates | 1 | 1 tut. | 4 |
| 1-4 of Article (12) | 1-5 of Article (11) | Vectors | 2 | 4 | 5 |
| 1-4 of Article (12) | 1-5 of Article (11) | Vectors | 2 | 3 the. | 6 |
| 1-4 of Article (12) | 1-5 of Article (11) | Planes | 2 | 1 tut. | 7 |
| 1-4 of Article (12) | 1-5 of Article (11) | Planes | 2 | 4 | 8 |
| 1-4 of Article (12) | 1-5 of Article (11) | Vector Valued Functions | 3 | 3 the. | 9 |
| 1-4 of Article (12) | 1-5 of Article (11) | Vector Valued Functions | 3 | 1 tut. | 10 |
| 1-4 of Article (12) | 1-5 of Article (11) | Vector Valued Functions | 3 | 4 | 11 |
| 1-4 of Article (12) | 1-5 of Article (11) | Vector Valued Functions | 3 | 3 the. | 12 |
| 1-4 of Article (12) | 1-5 of Article (11) | Functions of Several Variables | 3 | 1 tut. | 13 |
| 1-4 of Article (12) | 1-5 of Article (11) | Functions of Several Variables | 3 | 4 | 14 |
| 1-4 of Article (12) | 1-5 of Article (11) | Functions of Several Variables | 3 | 3 the. | 15 |
| 1-4 of Article (12) | 1-5 of Article (11) | Ordinary Differential Equations | 4 | 1 tut. | 16 |
| 1-4 of Article (12) | 1-5 of Article (11) | Ordinary Differential Equations | 4 | 4 | 17 |
| 1-4 of Article (12) | 1-5 of Article (11) | Ordinary Differential Equations | 4 | 3 the. | 18 |
| 1-4 of Article (12) | 1-5 of Article (11) | Ordinary Differential Equations | 4 | 1 tut. | 19 |
| 1-4 of Article (12) | 1-5 of Article (11) | Ordinary Differential Equations | 4 | 4 | 20 |
| 1-4 of Article (12) | 1-5 of Article (11) | Double Integral | 5 | 3 the. | 21 |
| 1-4 of Article (12) | 1-5 of Article (11) | Double Integral | 5 | 1 tut. | 22 |
| 1-4 of Article (12) | 1-5 of Article (11) | Triple Integral | 5 | 4 | 23 |
| 1-4 of Article (12) | 1-5 of Article (11) | Triple Integral | 5 | 3 the. | 24 |
| 1-4 of Article (12) | 1-5 of Article (11) | Infinite Series | 6 | 1 tut. | 25 |
| 1-4 of Article (12) | 1-5 of Article (11) | Infinite Series | 6 | 4 | 26 |
| 1-4 of Article (12) | 1-5 of Article (11) | Infinite Series | 6 | 3 the. | 27 |
| 1-4 of Article (12) | 1-5 of Article (11) | Complex Functions | 7 | 1 tut. | 28 |
| 1-4 of Article (12) | 1-5 of Article (11) | Complex Functions | 7 | 4 | 29 |
| 1-4 of Article (12) | 1-5 of Article (11) | Complex Functions | 7 | 3 the. | 30 |

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| ***15. Infrastructure*** |
| ***References***1. “*Thomas Calculus*” G. Thomas, M. Weir, et al., 11th edition, 2004.
2. “*Calculus II*”; by Paul Dawkins, 2007.
3. *“Advanced Calculus*”; by Robert Wrede, and Murray R. Spiegel, Second Edition, McGraw-Hill Companies, 2002.

***Others***1. Notebook prepared by the instructor of the course.
2. Collection of sheets of solved and unsolved problems and Exams questions.
 | Required reading:· CORE TEXTS· COURSE MATERIALS· OTHER |
| Available websites related to the subject. | Special requirements (include for example workshops, periodicals, IT software, websites) |
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 | Community-based facilities(include for example, guestLectures , internship , field studies) |
| ***16. Admissions*** |
| GE101 | Pre-requisites |
|  | Minimum number of students |
| 66 | Maximum number of students |
| ***Instructor:*****Dr. Raed G. Saihood** Lecturer of Mechanical Engineering / thermos-fluid Mech. Engr. Dept.College of EngineeringUniversity of BaghdadTel: +00964-7702591913Email: raedmme81@gmail.com | ***17. Course Instructors*** |

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