**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 programme specification. |

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| College of Engineering  University of Baghdad | 1. Teaching Institution |
| Chemical Engineering Department | 2. University Department/Centre |
| Mathematics/CHE 111 | 3. Course title/code |
| Chemical Engineering Department | 4. Programme(s) to which it contributes |
| Annual system. There is only one mode of delivery, which is a "Day Program". The academic year is composed of 26- week regular subjects. 3-hour each week. | 5. Modes of Attendance offered |
| Year (1st and 2nd semesters)2017\2018 | 6. Semester/Year |
| 78 hrs./ 3hrs. per week | 7. Number of hours tuition (total) |
| 7-10-2017 | 8. Date of production/revision of this specification |
| 9. Aims of the Course | |
| 1. To master algebraic topics introduced in precalculus and trigonometry. 2. To understand limits and investigate some of their basic properties. 3. To understand the basic relationship between tangent lines, rates of change, and the derivative. 4. To master the techniques of differentiation. 5. To become familiar with the standard applications of the derivative in physics, engineering, biology, chemistry, and economics. 6. To become familiar with parts of the theoretical framework that are appropriate at this level. 7. To understand the integral and its relation to the derivative. 8. To master techniques of integration for simple integrals and their application. 9. To understand numerical solution of the first of partial differential equations. | |

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| 10· Learning Outcomes, Teaching ,Learning and Assessment Methode |
| 1. Knowledge and Understanding: By the end of the course the student should be able to   A1- Work in groups and solving different problems.  A2- Understand professional social and ethical responsibilities  A3- Communicate effectively |
| B. Subject-specific skills  B1.Know the importance of mathematics in most of the chemical engineering problems.  B2.Understand the differentiation concepts  B3.Select appropriate technique for intended problem  B4. Identify formulate and solve chemical engineering problems |
| Teaching and Learning Methods |
| 1. lectures 2. Tutorials 3. Homework 4. Tests and exams 5. In class questions and discussions |
| Assessment methods |
| 1. Examinations, tests and quizzes. 2. Homework's. 3. Student engagement during lectures. |

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| 11. Course Structure | | | | | |
| Assessment Method | Teaching  Method | Unit/Module or Topic Title | ILOs | Hours | Week |
| 1-3 | 1-5 | Precalculus Review | A1-A2-A3-B1-B2-B4 | 4  2 theo.  1 tut. | 1 |
| 1-3 | 1-5 | Precalculus Review | A1-A2-A3-B1-B2-B4 | 4  2 theo.  1 tut. | 2 |
| 1-3 | 1-5 | Transcendental Functions | A1-A2-A3-B1-B2-B4 | 4  2 theo.  1 tut. | 3 |
| 1-3 | 1-5 | Transcendental Functions | A1-A2-A3-B1-B2-B4 | 4  2 theo.  1 tut. | 4 |
| 1-3 | 1-5 | Transcendental Functions | A1-A2-A3-B1-B2-B4 | 4  2 theo.  1 tut. | 5 |
| 1-3 | 1-5 | Trigonometric functions | A1-A2-A3-B1-B2-B4 | 4  2 theo.  1 tut. | 6 |
| 1-3 | 1-5 | Trigonometric functions | A1-A2-A3-B1-B2-B4 | 4  2 theo.  1 tut. | 7 |
| 1-3 | 1-5 | Trigonometric functions | A1-A2-A3-B1-B2-B4 | 4  2 theo.  1 tut. | 8 |
| 1-3 | 1-5 | Trigonometric functions | A1-A2-A3-B1-B2-B4 | 4  2 theo.  1 tut. | 9 |
| 1-3 | 1-5 | Limits and Continuity | A1-A2-A3-B1-B2-B4 | 4  2 theo.  1 tut. | 10 |
| 1-3 | 1-5 | Limits and Continuity | A1-A2-A3-B1-B2-B4 | 4  2 theo.  1 tut. | 11 |
| 1-3 | 1-5 | Limits and Continuity | A1-A2-A3-B1-B2-B4 | 4  2 theo.  1 tut. | 12 |
| 1-3 | 1-5 | Derivatives | A1-A2-A3-B1-B2-B4-B3 | 4  2 theo.  1 tut. | 13 |
| 1-3 | 1-5 | Derivatives | A1-A2-A3-B1-B2-B4-B3 | 4  2 theo.  1 tut. | 14 |
| 1-3 | 1-5 | Derivatives | A1-A2-A3-B1-B2-B4-B3 | 4  2 theo.  1 tut. | 15 |
| 1-3 | 1-5 | Derivatives | A1-A2-A3-B1-B2-B4-B3 | 4  2 theo.  1 tut. | 16 |
| 1-3 | 1-5 | Integration | A1-A2-A3-B1-B2-B4 | 4  2 theo.  1 tut. | 17 |
| 1-3 | 1-5 | Integration | A1-A2-A3-B1-B2-B4 | 4  2 theo.  1 tut. | 18 |
| 1-3 | 1-5 | Integration | A1-A2-A3-B1-B2-B4 | 4  2 theo.  1 tut. | 19 |
| 1-3 | 1-5 | Integration | A1-A2-A3-B1-B2-B4 | 4  2 theo.  1 tut. | 20 |
| 1-3 | 1-5 | Integration | A1-A2-A3-B1-B2-B4 | 4  2 theo.  1 tut. | 21 |
| 1-3 | 1-5 | Application of derivatives and integration | A1-A2-A3-B1-B2-B4 | 4  2 theo.  1 tut. | 22 |
| 1-3 | 1-5 | Application of derivatives and integration | A1-A2-A3-B1-B2-B4 | 4  2 theo.  1 tut. | 23 |
| 1-3 | 1-5 | Application of derivatives and integration | A1-A2-A3-B1-B2-B4 | 4  2 theo.  1 tut. | 24 |
| 1-3 | 1-5 | First order differential equation | A1-A2-A3-B1-B2-B4 | 4  2 theo.  1 tut. | 25 |
| 1-3 | 1-5 | First order differential equation | A1-A2-A3-B1-B2-B4 | 4  2 theo.  1 tut. | 26 |

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| 12. Infrastructure | |
| Text books  Thomas' Calculus 12th Edition, 2010.  References:  Mathematical methods for science student,G.stephenson ,New Art printer co.,1999  Schaum's Outlines Advanced Calculus, 2nd Edition, Robert C. Wrede.2000.  Others  Notebook prepared by the instructor of the coarse | Required reading:  · CORE TEXTS  · COURSE MATERIALS  · OTHER |
| 1. Available websites related to the subject. 2. Excel or similar software for the solution of lengthy problems. | Special requirements (include for example workshops, periodicals, IT software, websites) |
| 1. Field and scientific visits. 2. Extra lectures by foreign guest lecturers. | Community-based facilities  (include for example, guest  Lectures , internship , field studies) |

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| 13. Admissions | |
| CE111 | Pre-requisites |
|  | Minimum number of students |
| 60 | Maximum number of students |

Assit. Prof. Maha Hadi Alhassani

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