**TEMPLATE FOR COURSE SPECIFICATION**

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| HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW |

**COURSE SPECIFICATION**

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| College of Engineering  University of Baghdad | ***1. Teaching Institution*** |
| Mechanical Engineering Department (MED) | ***2. University Department/Centre*** |
| Mathematics /1 | ***3. Course title/code & Description*** |
| Mechanical Engineering ( ME ) | ***4. Programme(s) to which it Contributes*** |
|  | ***5. Modes of Attendance offered*** |
| Year | ***6. Semester/Year*** |
| 120 hours | ***7. Number of hours tuition (total)*** |
| October 2018 | ***8. Date of production/revision of this specification*** |
| ***9. Aims of the Course*** | |
| The general learning objective of this course is for students to develop a firm understanding of the basic principles describing the mathematics methods, and at the same time become generally proficient in applying these principles to practical engineering problems | |

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| ***10·*** ***Learning Outcomes*** |
| At the end of the class, the student will be able to:   1. Learn how to sketch all functions (Simple, trigonometric, inverse …. etc.) 2. How to find domain and range. 3. How to find differentiability, Application of derivatives. 4. How to find integration for all functions, How to apply methods of integration, Application of a definite integral, Numerical integration, Hyperbolic Functions (Integrals, Derivative, and sketch of all functions) . 5. Using Determinants and Matrices in mathematical solutions. 6. Using Complex Numbers. |
| ***11.*** ***Teaching and Learning Methods*** |
| 1. Instructing the theoretical part of the subjects. 2. Solve Examples of each subject. 3. Practice the students in solving part of homework questions. |
| ***12. Assessment Methods*** |
| 1. Quizzes 2. First semester Exam 3. 2.Second semester exam 4. Final Exam   ***13. Grading Policy***   1. 10 Marks for quizzes, Homework's and class participation 2. 10 Marks for 1st semester exam 3. 10 Marks for second semester exam 4. 60 Marks for Final exam. |

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| ***14. Course Structure*** | | | | | |
| Assessment Method | Teaching  Method | Unit/Module or Topic Title | LOs  ( Article 10 ) | Hours | Week |
| Quizes and homeworks | Sharing knowledge and demonstration | Determinants(Simultaneous Linear-Equations. |  | 4 | 1 |
| Quizes and home works | Sharing knowledge and demonstration | Matrices(Inverse matrix method… |  | 4 | 2 |
| Quizzes and home works | Sharing knowledge and demonstration | Limits, Right &Left. |  | 4 | 3 |
| Quizzes and home works | Sharing knowledge and demonstration | Continuity. |  | 4 | 4 |
| Quizzes and homeworks | Sharing knowledge and demonstration | Differentiability and Diff…. |  | 4 | 5 |
| Quizes and homeworks | Sharing knowledge and demonstration | diff. at x=a ; Left & right Diff. |  | 4 | 6 |
| Quizes and homeworks | Sharing knowledge and demonstration | Trigonometric fun… |  | 4 | 7 |
| Quizes and homeworks | Sharing knowledge and demonstration | Equation of A Straight Line. |  | 4 | 8 |
| Quizes and homeworks | Sharing knowledge and demonstration | Application of the Derivative.. |  | 4 | 9 |
| Quizes and homeworks | Sharing knowledge and demonstration | L’ Hospital Rule. |  | 4 | 10 |
| Quizes and homeworks | Sharing knowledge and demonstration | Inverse Trigonometric fun. |  | 4 | 11 |
| Quizes and homeworks | Sharing knowledge and demonstration | Integration , Formula. |  | 4 | 12 |
| Quizes and homeworks | Sharing knowledge and demonstration | Integral Trigonometric fun… |  | 4 | 13 |
| Quizes and homeworks | Sharing knowledge and demonstration | Integral Logarithmic Functions. |  | 4 | 14 |
| Quizes and homeworks | Sharing knowledge and demonstration | Hyperbolic Functions. |  | 4 | 15 |
| Quizes and homeworks | Sharing knowledge and demonstration | Integral & Derivative , Expon. |  | 4 | 16 |
| Quizes and homeworks | Sharing knowledge and demonstration | Methods of Integration / Trigonometric substitutions. |  | 4 | 17 |
| Quizes and homeworks | Sharing knowledge and demonstration | Completing the squares. |  | 4 | 18 |
| Quizes and homeworks | Sharing knowledge and demonstration | Integration by parts Partial. |  | 4 | 19 |
| Quizes and homeworks | Sharing knowledge and demonstration | Fractions Integrals involve Sin(nx), Cos(mx) m ≠ n. |  | 4 | 20 |
| Quizes and homeworks | Sharing knowledge and demonstration | The assumption Z= tan(x/2). |  | 4 | 21 |
| Quizes and homeworks | Sharing knowledge and demonstration | Numerical Integration. |  | 4 | 22 |
| Quizes and homeworks | Sharing knowledge and demonstration | Application of a definite integral Area. |  | 4 | 23 |
| Quizes and homeworks | Sharing knowledge and demonstration | Application of a definite integral between two curves |  | 4 | 24 |
| Quizes and homeworks | Sharing knowledge and demonstration | Application of a definite integral Area under a curve |  | 4 | 25 |
| Quizes and homeworks | Sharing knowledge and demonstration | Application of a definite integral Volume |  | 4 | 26 |
| Quizes and homeworks | Sharing knowledge and demonstration | Integral Arc Length |  | 4 | 27 |
| Quizes and homeworks | Sharing knowledge and demonstration | Integral Surface area of rotation |  | 4 | 28 |
| Quizes and homeworks | Sharing knowledge and demonstration | Complex Numbers |  | 4 | 29 |
| Quizes and homeworks | Sharing knowledge and demonstration | Domain & Rang |  | 4 | 30 |

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| ***15. Infrastructure*** | | |
| ***Textbook***  . 1- Mathematics -Saad Al-Jumaily    * ***References***  1. Thomas’ Calculus ,7th Edition   ***Others***  [www.zweigmedia.com/](http://www.zweigmedia.com/)  **-** [www.gigapediA.org](http://www.gigapediA.org) | Required reading:  · CORE TEXTS  · COURSE MATERIALS  · OTHER | |
| * . | Special requirements (include for example workshops, periodicals, IT software, websites) | |
| * . | Community-based facilities  (include for example, guest  Lectures , internship , field studies) | |
| ***16. Admissions*** | | |
|  | | Pre-requisites |
| 22 | | Minimum number of students |
| 32 | | Maximum number of students |
| ***Instructor:***   1. Assistance Prof Khawla abdul Hussein   ***Teaching Assistant:*** | | ***17. Course Instructors*** |

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