**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 programme specification. |

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| College of Engineering  University of Baghdad | ***1. Teaching Institution*** |
| Mechanical Engineering Department (MED) | ***2. University Department/Centre*** |
| Mechanics of materials and machines ( ME204)  This course contribute to study mechanics of machines which is deal with the : Velocity and acceleration and forces diagrams in mechanisms , friction applications (brakes and clutches , belts , ropes and chains ), turning moment diagram , flywheel , cams , hooks joint . This course have 6 units and required 3 hours theoretical and 1 hr applicant per week . | ***3. Course title/code & Description*** |
| Mechanical Engineering (ME) | ***4. Program (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 is  composed of 30-week regular  subjects | ***5. Modes of Attendance offered*** |
| 1st & 2nd ***6. Semester/Year*** / Academic Year 2016 – 2017 | ***6. Semester/Year*** |
| 60 hrs. / 2 hrs. per week | ***7. Number of hours tuition (total)*** |
| April – 3 / 2017 | ***8. Date of production/revision of this specification*** |
| ***9. Aims of the Course*** | |
| 1. The Basic Teaching Requirements for the Course of Mechanisms and  Machine Theory in Advanced academic Colleges of Education  2. It contains the results on teaching and scientific research during recent years  3. it aims at cultivating students’ basic design ability and creative ability in design Analytical methods and synthesis of mechanisms are emphasized .  4. new achievements and developments current in mechanism study .  5. It covers the basic knowledge needed in analysis and synthesis of commonly-used mechanisms and the dynamics of mechanism systems  6. T his course gives students an elementary ability to design or improve mechanical devices  7. Enable the student to analyze and design pipes network and pumps  connection.  8.the student can modeling some systems and mechanisms of gear systems , balancing of machines , gyroscopic effect and so on . | |

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| ***10·*** ***Learning Outcomes*** |
| At the end of the coarse , the student will be able to:  a. **the study of relative motion between the various parts of machine**  **b.developed forces which act on them andThe knowledge of this subject is very essential for an engineer in designing the various parts of a machine**  **c. a combination of rigid bodies which are formed and connected**  **together by some means, so that they are moved to perform**  **some functions, such as the crank- connecting rod mechanism of the I.C.engines, steering mechanisms of automobile**  d. **The Theory of Machines and Mechanisms provides the foundation**  **for the study of displacements, velocities, accelerations, and static and**  **dynamic forces required for the proper design of mechanical linkages, cams,**  **and geared systems.**  **g. To develop the ability to systematically design and optimize**  **mechanisms to perform a specified task**.  i.**To increase the ability of students to effectively present written,oral, and graphical solutions to design problems.**  **j.To increase the ability of students to work cooperatively on teams in the development of mechanism designs**  **k. studying the mechanism of joining two part by universal joint that gives 3 D of freedom in rotation as a double joints to know the optimum of power that can be transmitted by these joints** |
| ***11.*** ***Teaching and Learning Methods*** |
| 13. Lectures.  14. Tutorials.  15. Homework and Assignments.  16. Lab. Experiments.  17. Tests and Exams.  18. In-Class Questions and Discussions.  19. Connection between Theory and Application.  20. Field Trips.  21. Extracurricular Activities.  22. Seminars.  23. In- and Out-Class oral conservations.  24. Reports, Presentations, and Posters. |
| ***12. Assessment Methods*** |
| 1. Examinations, Tests, and Quizzes.  2. Extracurricular Activities.  3. Student Engagement during Lectures.  4. Responses Obtained from Students, Questionnaire about  Curriculum and Faculty Member ( Instructor ).  ***13. Grading Policy***  1. Quizzes:  - There will be a ( 20 – 25 ) 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 January 2014 from 9:00 AM - 12:00 PM  in rooms ( M11 + M 6 )  - The final exam will count 70% of the total course grade |

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| ***14. Course Structure*** | | | | | |
| Assessment  Method | Teaching  Method | Unit/Module or  Topic Title | LOs  ( Article  10 ) | Hours | Week |
|  |  | Introduction to the dynamic of machines |  | 2 | 1 |
|  |  | Description to the four bar mechanism |  | 2 | 2 |
|  |  | Velocity diagram for linkage mechanism |  | 2 | 3 |
|  |  | acceleration diagram for linkage mechanism |  | 2 | 4 |
|  |  | Velocity and acceleration diagram for sliding linkage |  | 2 | 5 |
|  |  | Inertia forces effect on the four bar mechanism |  | 2 | 6 |
|  |  | Effect of instentinuose center on inertia forces in links |  | 2 | 7 |
|  |  | Turning moment diagram by graphics |  | 2 | 8 |
|  |  | Turning moment diagram by mathematical equations |  | 2 | 9 |
|  |  | Turning moment diagram by description |  | 2 | 10 |
|  |  | Design of flywheel |  | 2 | 11 |
|  |  | Displacement , velocity , and acceleration for cams of straight flank |  | 2 | 12 |
|  |  | Displacement , velocity , and acceleration for cams of curved flank |  | 2 | 13 |
|  |  | Profile of cams |  | 2 | 14 |
|  |  | Friction of screw jack |  | 2 | 15 |
|  |  | Friction of brakes |  | 2 | 16 |
|  |  | Friction of flat belt |  | 2 | 17 |
|  |  | Friction of v- belt |  | 2 | 18 |
|  |  | Transmitted power through belts |  | 2 | 19 |
|  |  | Initial tension in the belt and max power transmitted |  | 2 | 20 |
|  |  | Friction in pivot bearings |  | 2 | 21 |
|  |  | Frictional power loss in pivot bearing |  | 2 | 22 |
|  |  | Friction in flat clutches |  | 2 | 23 |
|  |  | Multi pair of frictional clutches |  | 2 | 24 |
|  |  | Friction in cone clutches |  | 2 | 25 |
|  |  | Power transmitted in flat clutches under uniform pressure |  | 2 | 26 |
|  |  | Power transmitted in cone clutches under uniform pressure |  | 2 | 27 |
|  |  | Hook joint transmitted torque |  | 2 | 28 |
|  |  | Universal joint in transmitted power |  | 2 | 29 |
|  |  | Double joint for transmitted power |  | 2 | 30 |

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| ***15. Infrastructure*** | | |
| ***Textbook***  “theory of machine ”; by By: R.S. Khurmi and J. K. Gupta Metric Edition, M G.GNW Hill , 2005.  ***References***  1. “Mechanics of Machines: Elementary theory and examples. By: J. Hannah”; 1990  2. “Theory of Machines. : Fundamentals and  Applications”; by Thomas M G. GNW  Hill Higher Education, 2003  3. “Text book for University  Mechanisms and machine theory  Yezhonrhe , Lanzhaohui ,M.R.SMITH  , 2010 | Required reading:  · CORE TEXTS  · COURSE MATERIALS  · OTHER | |
| Laboratory experiments in the ( THEORY of machines Lab ) of the department.  Available websites related to the subject.  Extracurricular activities. | Special requirements (include for example workshops, periodicals, IT software, websites) | |
| Field and scientific visits.  Extra lectures by foreign guest lecturers. | Community-based facilities  (include for example, guest  Lectures , internship , field studies) | |
| ***16. Admissions*** | | |
| ME 204 Courses | | Pre-requisites |
| / | | Minimum number of students |
| 75 | | Maximum number of students |
| ***Instructor:***  **Assist. Prof. Dr. fathi alshamma**  Assist. Professor of applied mechanics /  Fracture mechanics and tribology  Mech. Engr. Dept.  College of Engineering  University of Baghdad  Tel: +00964-7810846720  Email: fathi\_alshamma@yahoo.com | | ***17. Course Instructors*** |

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