Republic of Iraq

Ministry of Higher Education & Scientific Research

Supervision and Scientific Evaluation Directorate

Quality Assurance and Academic Accreditation

InternationalAccreditation Dept.

Academic Program Specification FormFor The Academic Year 2017-2018

Universitiy: Baghdad

College : Engineering

Number Of Departments In The College : 12 Twelve

Date Of Form Completion : April – 3 / 2018

Dean ’s Name

Date : / 4 / 2018

Signature

Dean ’s Assistant For Scientific Affairs

Date : / / 2018

Signature

The College Quality Assurance And University Performance Manager

Date : / / 2018

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Quality Assurance And University Performance Manager

Date : / / 2018

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**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 anddemonstrate 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*** |
| **Fluid Mechanics /II –ME302**  **Turbomachinery**, in [mechanical engineering](http://en.wikipedia.org/wiki/Mechanical_engineering), describes [machines](http://en.wikipedia.org/wiki/Machine) that transfer [energy](http://en.wikipedia.org/wiki/Energy) between a [rotor](http://en.wikipedia.org/wiki/Rotor_(turbine)) and a [fluid](http://en.wikipedia.org/wiki/Fluid), including both [turbines](http://en.wikipedia.org/wiki/Turbines) and [compressors](http://en.wikipedia.org/wiki/Gas_compressor). While a turbine transfers energy from a fluid to a rotor, a compressor transfers energy from a rotor to a fluid. The two types of machines are governed by the same basic relationships including [Newton's second Law of Motion](http://en.wikipedia.org/wiki/Newton%27s_Laws_of_Motion) and [Euler's energy equation](http://en.wikipedia.org/wiki/Euler_equations) for [compressible fluids](http://en.wikipedia.org/wiki/Compressible_fluid). [Centrifugal pumps](http://en.wikipedia.org/wiki/Centrifugal_pump) are also turbomachines that transfer energy from a rotor to a fluid, usually a liquid, while turbines and compressors usually work with a gas.  **Content**  Topics covered in this subject include: Introduction And General Principles, Similarity Laws, Centrifugal Pumps, Impulse Turbines, Reaction Turbines, Axial Flow Compressors, Centrifugal Compressors, Gas Turbines. The course istaught through 2hrs per week. | ***3. Course title/code& Description*** |
| Mechanical Engineering ( ME ) | ***4. Programme(s) to which itContributes*** |
| 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.  Each graduating student has to successfully complete 163 credits. Each subject credit is one 50-minute lecture a week or 3 hours of lab a week. There is *no* on-line subject which may be used as supplementary material for the class room instruction. | ***5. Modes of Attendance offered*** |
| 1st& 2nd/ Academic Year 2017 – 2018 | ***6. Semester/Year*** |
| 180 hrs. / 6 hrs. per week | ***7. Number of hours tuition (total)*** |
| April – 3 / 2018 | ***8. Date of production/revision of this specification*** |
| ***9. Aims of the Course*** | |
| 1. Introduce basic definitions and introductory concepts of turbomachines. 2. Introducethe description of turbomachines classified.  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | 1. Derive the continuity, momentum, momentum of momentum and energy equations in a form suitable for the study of turbomachines.  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | 1. Determine the efficiency of compression and expansion flow processes.  |  |  |  |  |  | | --- | --- | --- | --- | --- | | 1. Perform a similarity analysis between a laboratory tested model and a full scale turbomachine( turbine, pump). 2. Introduce the description of centrifugal pumps.  |  |  |  | | --- | --- | --- | | 1. Understand the classification of centrifugal pumps. 2. Draw velocity diagram of a centrifugal pump. 3. Drive head of a centrifugal pump.  |  |  | | --- | --- | | 1. Understand the classification of different types of impulse turbine (pelton wheel) and reaction turbine  |  | | --- | | 1. Draw velocity diagram of a turbine (impulse and reaction). 2. Predict the performance of a turbine stage. 3. Determine stage losses and efficiency. 4. Predict the performance of a multistage turbine. 5. Understand and determine the head on impulse turbine and reaction turbine. | | |  1. Effect of cavitation on pump, impulse turbine and reaction turbine. 2. Centrifugal and axial flow compressors operation for operators.  |  | | --- | | 1. Understand the classification of different types of axial compressor and and centrifugal compressors. 2. Draw velocity diagram of a compressor. 3. Predict the performance of a compressor. | | | | | |

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| ***10·Learning Outcomes*** |
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| ***11.Teaching and Learning Methods*** |
| * Lectures. * Tutorials. * Homework and Assignments. * Tests and Exams. * In-Class Questions and Discussions. * Connection between Theory and Application. * In- and Out-Class oral conservations. |
| ***12. Assessment Methods***  1. Examinations, Tests, and Quizzes  2. Student Engagement during Lectures. |
| ***13. Grading Policy*** |

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| ***14. Course Structure*** | | | | | |
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| ***15. Infrastructure*** | | |
|  | Required reading:  · CORE TEXTS  · COURSE MATERIALS  · OTHER | |
|  | Special requirements (include forexample workshops, periodicals,IT software, websites) | |
|  | Community-based facilities  (include for example, guest  Lectures , internship,field studies) | |
| ***16. Admissions*** | | |
|  | | Pre-requisites |
|  | | Minimum number of students |
|  | | Maximum number of students |
| Lecturer Rawad Luay | | ***17. Course Instructors*** |

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