**Ministry of Higher Education and Scientific Research**

**Supervision and Scientific Evaluation Department**

**Quality Assurance and Academic Accreditation Office**

**Engineering Mechanics-Static Course Description**

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| The template provides a summary of the main course features and expected student learning outcomes. |

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| 1. Educational Institution | Shatt Al-Arab University |
| 2. Department / Center | Department of Laser and Optoelectronics Engineering |
| 3. Course Title /Code | Engineering Mechanics / ATU15021 |
| 4. Lecturer Name | **Amjad Hashim Faisal** |
| 5. Type of Teaching | Attendance |
| 6. Academic Year /Term | Term |
| 7. Total No. of Teaching Hours | 150 |
| 8. Date of Preparing this Course Description | 30/7/2025 |

**1.** **Course Objectives**

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| The student can use the knowledge of Engineering Mechanics (Statics) for analyzing force systems (structures, machines, frames…etc.) , in order to became able to design components and finally the systems as a whole in the next years. |

2. **Course Output, Methodology and Evaluation**

**(A) Cognitive Objectives**

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|  1. Knowing how to calculate rectangular components, moment, couple and resultant. 2. The Student can apply equilibrium equations to find forces - and or - reaction that maintain the state of equilibrium to the structures. 3. Learning the ability to analyze truss structures, using method of joints and method of sections. 4. The student can calculate the forces in frames and machines. |

**(B) Skill Objectives Related to the Program:**

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| The main strategy that will be adopted in delivering this module is to encourage students’ participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials that are interesting to the students. |

**(C) Methods of Teaching and Learning**

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| * Delivering Pre-Prepared Lectures.
* Assigning Homework.
* Facilitating Group Discussions.
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**(D) Methods of Evaluation**

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| * **Oral Tests:** Assessing students’ understanding through verbal responses.
* **Monthly Tests:** Evaluating students’ knowledge and progress on a monthly basis.
* **Daily Quizzes:** Regular quizzes to gauge students’ grasp of material covered each day.
* **Regular Attendance:** Monitoring and evaluating students’ consistent participation in classes.
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**(E)** **Sentimental and Value Objectives**

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| * **Ethical Understanding:** Promoting respect, integrity, and social responsibility.
* **Attitudes and Values:** Fostering positive attitudes towards learning, collaboration, and ethical behavior.
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**(F)** **General and Qualitative Skills (other skills related to the ability of employment and personal development)**

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| * Develop students' leadership skills.
* • Improve students' proficiency in presenting technical information, writing reports, and explaining results.
* • Encourage students to adapt to new technologies and methodologies related to Engineering Mechanics.
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**3.** **Course Structure**

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| **Course Structure**

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| **Week** | **No of Hours** | **Required Learning Output** | **Title of Subject** | **Teaching Method** | **Evaluation** |
| **1** |  | Basic Concepts, Scalars and Vectors, Units Conversion. | Scalars and Vectors | Lectures anddiscussions | Oral testsand questions |
| **2** |  | Two-Dimensional Force Systems-Rectangular Components | Two-Dimensional Force Systems | Lectures anddiscussions | Oral testsand questions |
| **3** |  | Two-Dimensional Force Systems-Moment and Couple | Two-Dimensional Force Systems | Lectures anddiscussions | Oral testsand questions |
| **4** |  | Two-Dimensional Force Systems-Resultant | Two-Dimensional Force Systems | Lectures anddiscussions | Oral testsand questions |
| **5** |  | Three-Dimensional Force systems-Rectangular Components | Three-Dimensional Force systems | Lectures anddiscussions | Oral testsand questions |
| **6** |  | Three-Dimensional Force Systems-Moment and Couple | Three-Dimensional Force systems | Lectures anddiscussions | Oral testsand questions |
| **7** |  | Mid-term Exam. | Mid-term Exam. | Lectures anddiscussions | Oral testsand questions |
| **8** |  | Three-Dimensional Force Systems-Resultant  | Three-Dimensional Force Systems | Lectures anddiscussions | Oral testsand questions |
| **9** |  | Two-Dimensional Equilibrium, F.B.D. , Equilibrium Conditions …etc. | Two-Dimensional Equilibrium | Lectures anddiscussions | Oral testsand questions |
| **10** |  | Three-Dimensional Equilibrium, F.B.D. , Equilibrium Conditions …etc. | Two-Dimensional Equilibrium | Lectures anddiscussions | Oral testsand questions |
| **11** |  | Structures, Plane Trusses, Method Of Joints | Structures | Lectures anddiscussions | = |
| **12** |  | Structures, Plane Trusses, Method Of Sections | Structures | = | = |
| **13** |  | Structures, Space Trusses | Structures | = | = |
| **14** |  | Structures, Frames and Machines | Structures | = | = |
| **15** |  | Review | Review | = | = |

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**5. Learning and Teaching Resources**

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| Textbooks | 1. ENGINEERING MECHANICS – STATICS, MERIAM and KRAIGE, Sixth Edition Advanced calculus, Murray R. Splegel, 1962
2. VECTOR MECHANICS FOR ENGINEER – STATICS, BEER and JOHNSON, Ninth Edition
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**6.** **Course Improvement Plan**

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| * • Updating and expanding the curriculum content to include modern developments and applications related to Engineering Mechanics.
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