Module Code | Module Title  | Semester  | Module Description
---|---|---|---
ME3233 | Systems Analysis of Structures | 4 | This module equips students with a foundation in the stress analysis of isotropic and composite materials.

ME3221 | Fluid Transients | 4 | This module enables students to analyse the stress analysis of isotropic and composite materials.

ME3211 | Module Introduction | 4 | This module provides an introduction to intermediate level topics in engineering thermodynamics and their applications in engineering thermodynamics, enabling students to analyse and understand the stress analysis of isotropic and composite materials.

ME3212 | Fluid Machinery | 4 | This module enables students to analyse and understand the stress analysis of isotropic and composite materials.

ME3213 | Stress Analysis of Structures | 4 | This module enables students to analyse and understand the stress analysis of isotropic and composite materials.

ME3214 | Module Introduction | 4 | This module provides an introduction to intermediate level topics in engineering thermodynamics and their applications in engineering thermodynamics, enabling students to analyse and understand the stress analysis of isotropic and composite materials.

ME3215 | Fluid Transients | 4 | This module enables students to analyse and understand the stress analysis of isotropic and composite materials.

ME3216 | Fluid Machinery | 4 | This module enables students to analyse and understand the stress analysis of isotropic and composite materials.

ME3217 | Stress Analysis of Structures | 4 | This module enables students to analyse and understand the stress analysis of isotropic and composite materials.

ME3218 | Module Introduction | 4 | This module provides an introduction to intermediate level topics in engineering thermodynamics and their applications in engineering thermodynamics, enabling students to analyse and understand the stress analysis of isotropic and composite materials.
Module Code | Module Title | Module Title (Eng) | Semester | Module Description |
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</thead>
<tbody>
<tr>
<td>ME3242</td>
<td>Manufacturing and Computer-aided Measurement</td>
<td>Manufacturing and Computer-aided Measurement</td>
<td>4</td>
<td>The course teaches the principles of measurement and introduces the students to the various measurement techniques and their applications. The topics cover CAD, geometric modeling, and computer-aided measurement. Students are required to demonstrate their ability to apply measurement techniques to real-world problems and to develop and document measurement systems for different applications. The course provides an opportunity for students to demonstrate their understanding of measurement systems and their ability to select and apply appropriate measurement techniques. The course content includes lectures, laboratory, and group project work. The course is worth 6 ECTS credits.</td>
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</table>

- **Learning Outcomes:**
  - Understand the principles of measurement and their applications.
  - Be able to design and implement measurement systems.

- **Teaching Methods:**
  - Lectures
  - Laboratory work
  - Group project work

- **Assessment:**
  - Mid-term quizzes
  - Final examination

- **Required Reading:**
Module Code: MA3405  
Module Title: Mechanical Engineering - Technical Elective Modules  
Module Description: This module focuses on the fundamentals of mechanics and their applications in various engineering fields. It covers topics such as mechanics of materials, fluid mechanics, heat transfer, and vibration analysis. The module aims to provide students with a comprehensive understanding of the concepts and tools necessary for the design and analysis of mechanical systems.

Learning Outcomes: Upon completion of this module, students will be able to:
- Understand the principles of mechanics and their applications in engineering.
- Analyze and solve problems related to mechanics of materials, fluid mechanics, heat transfer, and vibration analysis.
- Use appropriate software and tools for solving mechanical engineering problems.
- Demonstrate critical thinking and problem-solving skills in mechanical engineering.

Syllabus: The syllabus covers topics such as mechanics of fluids, heat transfer, and vibration analysis. It includes theoretical lectures, practical sessions, and assignments to reinforce learning.

Assessment: Assessment will be based on assignments, a mid-term test, and a final examination.

Reading List: Reading lists are provided by the instructor and can be accessed through the university's library system.
Module Description

Module Codes | Module De | Module Name | Semester |
---|---|---|---|
ME5101 | 1 | Module 4 | 1 |
ME5202 | 4 | Normal Flow Fundamentals | 4 |
ME5408 | 4 | Energy and Fluid Systems | 4 |
ME5601 | 4 | Aircraft Design | 4 |
ME5602 | 4 | Heat Transfer | 4 |
ME5604 | 4 | Fundamentals of Thermodynamics | 4 |
ME5605 | 4 | Heat Exchangers | 4 |
ME5606 | 4 | Heat Mass Transfer | 4 |
ME5607 | 4 | Refuse Incineration | 4 |

Module Contents

The student learns the basics of several topics including propulsion theory, sub-systems, and optimization of IC engines, air-standard cycles, Chapman-Carey chart, a brief introduction to exhaust emissions, and testing. The student will understand the basics of exergy as well as basic concepts of thermodynamics and combustion theory required for the quantification of engine behavior, the measurement of engine performance, the design of combustion chambers and their effect on the performance of IC engines, the optimization of emissions and their control, supercharging, heat transfer and losses, friction, lubrication etc.

The student learns the basics of several topics including propulsion theory, sub-systems, and optimization of IC engines, air-standard cycles, Chapman-Carey chart, a brief introduction to exhaust emissions, and testing. The student will understand the basics of exergy as well as basic concepts of thermodynamics and combustion theory required for the quantification of engine behavior, the measurement of engine performance, the design of combustion chambers and their effect on the performance of IC engines, the optimization of emissions and their control, supercharging, heat transfer and losses, friction, lubrication etc.
Module Description

Module: ME2130

Learning Outcomes

- Understand various aerodynamic principles and their applications in aircraft design.
- Analyze and synthesize data to solve real-world problems.
- Develop critical thinking and problem-solving skills.

Pre-requisites

- Knowledge of basic aerodynamics and fluid mechanics.
- Familiarity with aircraft design principles.

Assessment

- Mid-term examination (40%)
- Final examination (60%)

Recommended Reading List

- "Aeroelasticity: Theories and Applications" by Wang and Dally.
- "Aerodynamic Measurement" by Young and Sherry.
- "Aerodynamic Design" by Hill and Smith.
- "Aerodynamic Methods in Fluid Mechanics" by Cooper and Pierce.
- "Aerodynamic Testing" by Cooper and Pierce.

Module: ME2131

Learning Outcomes

- Understand various aerodynamic principles and their applications in aircraft design.
- Analyze and synthesize data to solve real-world problems.
- Develop critical thinking and problem-solving skills.

Pre-requisites

- Knowledge of basic aerodynamics and fluid mechanics.
- Familiarity with aircraft design principles.

Assessment

- Mid-term examination (40%)
- Final examination (60%)

Recommended Reading List

- "Aeroelasticity: Theories and Applications" by Wang and Dally.
- "Aerodynamic Measurement" by Young and Sherry.
- "Aerodynamic Design" by Hill and Smith.
- "Aerodynamic Methods in Fluid Mechanics" by Cooper and Pierce.
- "Aerodynamic Testing" by Cooper and Pierce.

Module: ME2132

Learning Outcomes

- Understand various aerodynamic principles and their applications in aircraft design.
- Analyze and synthesize data to solve real-world problems.
- Develop critical thinking and problem-solving skills.

Pre-requisites

- Knowledge of basic aerodynamics and fluid mechanics.
- Familiarity with aircraft design principles.

Assessment

- Mid-term examination (40%)
- Final examination (60%)

Recommended Reading List

- "Aeroelasticity: Theories and Applications" by Wang and Dally.
- "Aerodynamic Measurement" by Young and Sherry.
- "Aerodynamic Design" by Hill and Smith.
- "Aerodynamic Methods in Fluid Mechanics" by Cooper and Pierce.
- "Aerodynamic Testing" by Cooper and Pierce.
Module Description

ME4263 Failure Analysis and Prevention

1. Introduction
2. Fractographic Analysis
3. Fracture Mechanics
4. Structural Fatigue
5. Cyclic Loading and Stress
6. Dynamic Fatigue
7. Stress Corrosion
8. Failure Analysis and Prevention

Learning Outcomes

- Understand the basics of fracture mechanics
- Learn to analyze and interpret fractography
- Understand the principles of fatigue and fracture behavior
- Learn to apply fracture mechanics to real-world problems

References


Supplementary Reading


Assessment

Mid-term Test, Final Paper, and Final Examination
<table>
<thead>
<tr>
<th>Module Code</th>
<th>Module Title</th>
<th>Module Category</th>
<th>Semester</th>
<th>Module Credit (hrs)</th>
<th>Learning Outcomes</th>
<th>Knowledge &amp; Skills Required</th>
<th>Pre-requisites</th>
<th>Corequisites</th>
<th>Competencies &amp; Skills Required</th>
<th>Assessment Method</th>
<th>Recognition</th>
<th>Reading List</th>
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**Module: Automobile Design & Engineering I**

**Module Description:** This module will help students learn to make engineering decisions regarding powertrain, braking, suspension, steering and body systems in order to meet specifications, testing & handling, safety, durability and NVH/performance specifications.

- **Design engine: transaxle and alternative system properties to meet vehicle acceleration specifications.** Design brake system properties to meet vehicle deceleration and traction/adhesion/thresh/bound specifications. Design suspension system properties to meet vehicle ride, durability and isolation/comfort specifications. Design steering system properties to meet vehicle controllability and handling specifications. Design body system properties to meet vehicle visual quality specifications. Understand suspension and steering mechanisms. Understand systems engineering approach to design.

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<tr>
<th>Code</th>
<th>Learning Outcomes</th>
<th>Assessment</th>
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<tbody>
<tr>
<td>MA 4111</td>
<td>- Design engine: transaxle and alternative system properties to meet vehicle acceleration specifications. - Design brake system properties to meet vehicle deceleration and traction/adhesion/thresh/bound specifications. - Design suspension system properties to meet vehicle ride, durability and isolation/comfort specifications. - Design steering system properties to meet vehicle controllability and handling specifications. - Design body system properties to meet vehicle visual quality specifications. Understand suspension and steering mechanisms. Understand systems engineering approach to design.</td>
<td>SBE, FE/Practicals</td>
</tr>
</tbody>
</table>