ME2103 Mechanical Engineering I

Module Description

This module introduces the student to the various standards of techniques of geometric sketching, prepare engineering drawings, and apply them to design and output requirements. Students are expected to use advanced CAD software to prepare 2D and 3D models and to make design decisions and final drawings. This module provides students with the necessary tools and knowledge to produce 2D and 3D models using a computer-aided design (CAD) system.

Learning Outcomes

By the end of this module, students will be able to:

1. Understand the principles of 2D and 3D modeling.
2. Create and modify engineering drawings using CAD software.
3. Apply engineering drawing standards and conventions.
4. Interpret engineering drawings and drawings.
5. Use CAD software to create and modify engineering drawings.

Prerequisites

None

Assessment

5E 5N 5F

Theoretical examination on design and composition.

Textbooks

- None

Assignments

None

References

None

NUS Mechanical Engineering - Core Modules

ME2103

Credits [MC] 3

Semester 2

Module Title Mechanics I

Learning Objectives

1. Understand the principles of 2D and 3D modeling.
2. Create and modify engineering drawings using CAD software.
3. Apply engineering drawing standards and conventions.
4. Interpret engineering drawings and drawings.
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Syllabus

- Module Title Mechanics I
- Credits [MC] 3
- Semester 2
- Module Title Mechanics I
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- 1. Understand the principles of 2D and 3D modeling.
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Theoretical examination on design and composition.

Syllabus

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ME2103

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Assessment

5E 5N 5F

Theoretical examination on design and composition.
Modular Systems Design

ME3105
5
T & A
This module covers a project which is either (a) an industrial sponsored project or (b) a project proposed by the students. Students will be exposed to the working of heat dynamics, the engineering design process, report writing, oral presentation and project management.

ME3106
5
T & A
This module covers a project which is either (a) an industrial sponsored project or (b) a project proposed by the students. Students will be exposed to the working of heat dynamics, the engineering design process, report writing, oral presentation and project management.

ME3112
3
T & A
This course covers the fundamentals of machines: kinematics and kinetics. The topics of rigid body dynamics and vibration will be covered, including the theoretical development and practical application to mechanisms and machinery. The student's nature of dynamics will be applied for each instance and the interpretation of the results obtained will be highlighted.

ME3162
4
Lab
This course covers the key concepts related to the fabrication of heat transfer components/subsystems and principles of heat exchangers. It develops the student understanding in applying these heat transfer concepts/principles to evaluate and solve practical engineering problems involving heat transfer processes. Topics include introduction to heat transfer, steady state heat conduction, transient heat conduction, lumped conduction and convection, internal and external flow, natural convection forced convection and International System of Units (SI) units. The student will be able to calculate the overall rate of heat exchange and the basic calculation of overall heat transfer surface.

ME3122
4
Lab
This course covers the key concepts related to the fabrication of heat transfer components/subsystems and principles of heat exchangers. It develops the student understanding in applying these heat transfer concepts/principles to evaluate and solve practical engineering problems involving heat transfer processes. Topics include introduction to heat transfer, steady state heat conduction, transient heat conduction, lumped conduction and convection, internal and external flow, natural convection forced convection and International System of Units (SI) units. The student will be able to calculate the overall rate of heat exchange and the basic calculation of overall heat transfer surface.

ME3146
4
T & A
This course covers the key concepts related to the fabrication of heat transfer components/subsystems and principles of heat exchangers. It develops the student understanding in applying these heat transfer concepts/principles to evaluate and solve practical engineering problems involving heat transfer processes. Topics include introduction to heat transfer, steady state heat conduction, transient heat conduction, lumped conduction and convection, internal and external flow, natural convection forced convection and International System of Units (SI) units. The student will be able to calculate the overall rate of heat exchange and the basic calculation of overall heat transfer surface.

ME3156
4
T & A
This course covers the key concepts related to the fabrication of heat transfer components/subsystems and principles of heat exchangers. It develops the student understanding in applying these heat transfer concepts/principles to evaluate and solve practical engineering problems involving heat transfer processes. Topics include introduction to heat transfer, steady state heat conduction, transient heat conduction, lumped conduction and convection, internal and external flow, natural convection forced convection and International System of Units (SI) units. The student will be able to calculate the overall rate of heat exchange and the basic calculation of overall heat transfer surface.
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<td>ME4101</td>
<td>Dissertation</td>
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<td>1&amp;2</td>
<td>The module consists mainly of an individual research project carried out under the supervision of one or more faculty members. It introduces students to the basic methodology of research in the context of a problem of current research interest. The module is normally taken over two consecutive semesters and is a core requirement of the B.Eng. (Mech) program.</td>
<td>Undertake research projects in a methodological manner including literature search, formulation of problems, conducting experiments, and analysis. Think critically and acquire independent research skills that are vital for life-long learning. Communicate effectively through technical report writing on the achievements of the final year project. Achieve confidence in communication skills through various project oral presentations.</td>
<td>50%</td>
<td>Nil</td>
<td>Nil</td>
<td>NA</td>
<td>100% based on technical contributions, work attitude, project achievements, reporting writing and oral project presentations etc. Assessment carried out by a department examiner and supervisor(s).</td>
<td>Dependent on project title/area.</td>
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