**Faculty of Engineering**
**South Eastern University of Sri Lanka**

Curriculum of the Bachelor of the Science of Engineering Degree Programme

# MECHANICAL ENGINEERING

Faculty of Engineering
South Eastern University of Sri Lanka
Oluvil # 32360
Sri Lanka

## Section I - Curriculum of the First Year Common Core Programme

**SEMESTER - 1**

| No | Subject Code | Subject Title | GPA Credits | NGPA Credits | L (h/w) | P (h/w) | T (h/w) | CA (%) | Final Exam (%) |
|---|---|---|---|---|---|---|---|---|---|
| 1 | CE 13001 | Strength of Materials | 3 C | | 2 | 3/2 | 3/2 | 20 | 80 |
| 2 | CS 13001 | Introduction to Computing | 3 C | | 2 | 3 | | 50 | 50 |
| 3 | EE 13001 | Principles of Electrical Engineering | 3 C | | 2 | 3/2 | 3/2 | 20 | 80 |
| 4 | ID 11001 | English-I | 1 C | | | | 3 | 50 | 50 |
| 5 | ID 13002 | Mathematics- I | 3 C | | 3 | | 1 | 20 | 80 |
| 6 | ME 13001 | Applied Mechanics | 3 C | | 2 | 3/2 | 3/2 | 20 | 80 |
| 7 | ME 12002 | Engineering Drawing | 2 C | | 1 | 3 | | 50 | 50 |
| | | Total | 18 C | | 12 | 10.5 | 8.5 | | |

**SEMESTER - 2**

| No | Subject Code | Subject Title | GPA Credits | NGPA Credits | L (h/w) | P (h/w) | T (h/w) | CA (%) | Final Exam (%) |
|---|---|---|---|---|---|---|---|---|---|
| 1 | EN 23001 | Principles of Electronics | 3 C | | 2 | 3/2 | 3/2 | 20 | 80 |
| 2 | ID 22001 | Engineer in Society | 2 C | | 2 | | 1 | 20 | 80 |
| 3 | ID 21002 | English-II | 1 C | | | | 3 | 50 | 50 |
| 4 | ID 23003 | Mathematics- II | 3 C | | 3 | | 1 | 20 | 80 |
| 5 | ME 23001 | Engineering Materials and Processes | 3 C | | 2 | 3/2 | 3/2 | 50 | 50 |
| 6 | ME 22002 | Presentation of Engineering Information | 2 C | | 1 | 3 | | 50 | 50 |
| 7 | ME 23003 | Thermo Fluids | 3 C | | 2 | 3/2 | 3/2 | 20 | 80 |
| 8 | ID 21004 | Introduction to Sinhala Language | 1 E | | 1 | | | 20 | 80 |
| 9 | ID 21005 | Introduction to Tamil Language | | | 1 | | | 20 | 80 |
| | | Total | 17C+ 1E | | 14 | 7.5 | 9.5 | | |

## Section II-Curriculum of the Mechanical Engineering Field of Specialization

**SEMESTER – 3**

| No. | Subject Code | Subject Title | GPA Credits | NGPA Credits | L (h/w) | P (h/w) | T (h/w) | CA (%) | Final Exam (%) |
|---|---|---|---|---|---|---|---|---|---|
| 01 | ID 32001 | Calculus | 2 C | | 2 | | 1 | 30 | 70 |
| 02 | ID 32002 | Differential Equations | 2 C | | 2 | | 1 | 30 | 70 |
| 03 | ID 32003 | Engineering Economics | 2 C | | 2 | | 1 | 30 | 70 |
| 04 | ID 31004 | Presentation Skills | 1 C | | | | 2 | 50 | 50 |
| 05 | ME 33001 | Fluid Mechanics | 3 C | | 2 | 3/2 | 3/2 | 30 | 70 |
| 06 | ME 33002 | Mechanics of Machines | 3 C | | 2 | 3/2 | 3/2 | 30 | 70 |
| 07 | ME 33003 | Mechanics of Materials | 3 C | | 2 | 3/2 | 3/2 | 30 | 70 |
| 08 | EE 33080 | Electrical Machines | 3 C | | 2 | 3/2 | 3/2 | 30 | 70 |
| 09 | CS 32001 | Computer Programming | 2 C | | 1 | 3 | | 30 | 70 |
| 10 | | Subject from ID Electives (Basket A)* | 1 E | | | | | | |
| | | Total | 21 C + 01 E | | | | | | |

*At least one module shall be taken from Basket A of ID Electives offered in Semesters 3, 5 and 7.

**SEMESTER – 4**

| No. | Subject Code | Subject Title | GPA Credits | NGPA Credits | L (h/w) | P (h/w) | T (h/w) | CA (%) | Final Exam (%) |
|---|---|---|---|---|---|---|---|---|---|
| 01 | ID 42001 | Accounting for Engineers | 2 C | | 2 | | 1/2 | 30 | 70 |
| 02 | ID 42003 | Linear Algebra | 2 C | | 2 | | 1 | 30 | 70 |
| 03 | ID 42004 | Probability & Statistics | 2 C | | 2 | | 1 | 30 | 70 |
| 04 | ID 41005 | Report Writing | 1 C | | | | 2 | 50 | 50 |
| 05 | ME 43001 | Applied Thermodynamics | 3 C | | 2 | 3/2 | 3/2 | 30 | 70 |
| 06 | ME 43002 | Basic Controls & Instrumentation | 3 C | | 2 | 3/2 | 3/2 | 30 | 70 |
| 07 | ME 42003 | Design of Machine Elements | 2 C | | 1 | 3 | | 30 | 70 |
| 08 | ME 43004 | Manufacturing Engineering | 3 C | | 2 | 3 | | 30 | 70 |
| 09 | EN 42080 | Electronics | 2 C | | 2 | | ½ | 30 | 70 |
| 10 | | Subject from ID Electives (Basket B)** | 2 E | | | | | | |
| | | Total | 20 C + 02 E | | | | | | |

**At least one module shall be taken from Basket B of ID Electives offered in Semesters 4, 6 and 8.

| No. | Subject Code | Subject Title | GPA Credits | NGPA Credits | L (h/w) | P (h/w) | T (h/w) | CA (%) | Final Exam (%) |
|---|---|---|---|---|---|---|---|---|---|
| 11 | ID 03001 | Industrial training (Duration 12 weeks) | | 3 C | | | | 100 | -- |
| | | Total | | 3 C | | | | | |

**SEMESTER – 5**

| No. | Subject Code | Subject Title | GPA Credits | NGPA Credits | L (h/w) | P (h/w) | T (h/w) | CA (%) | Final Exam (%) |
|---|---|---|---|---|---|---|---|---|---|
| 01 | ID 52001 | Industrial Management | 2 C | | 2 | | 1/2 | 30 | 70 |
| 02 | ID 52002 | Numerical Methods | 2 C | | 2 | | 1 | 30 | 70 |
| 03 | ID 52003 | Operational Research | 2 C | | 2 | | 1 | 30 | 70 |
| 04 | ME 53001 | Design of Machines | 3 C | | 1 | 3 | 3 | 30 | 70 |
| 05 | ME 53002 | Fluid Machinery | 3 C | | 2 | 3/2 | 3/2 | 30 | 70 |
| 06 | ME 53003 | Heating Ventilation Air-Conditioning and Refrigeration | 3 C | | 2 | 3/2 | 3/2 | 30 | 70 |
| 07 | ME 53004 | Machine Dynamics & Controls | 3 C | | 2 | 3/2 | 3/2 | 30 | 70 |
| 08 | EN 52003 | Industrial Electronics | 2 C | | 2 | | 1 | 30 | 70 |
| 09 | | Subject from ID Electives (Basket A)* | 1 E | | | | | | |
| | | Total | 20 C + 01 E | | | | | | |

*At least one module shall be taken from Basket A of ID Electives offered in Semesters 3, 5 and 7.

**SEMESTER – 6**

| No. | Subject Code | Subject Title | GPA Credits | NGPA Credits | L (h/w) | P (h/w) | T (h/w) | CA (%) | Final Exam (%) |
|---|---|---|---|---|---|---|---|---|---|
| 01 | ID 63001 | Production & Operations Management | 3 C | | 2 | | 3 | 30 | 70 |
| 02 | ME 63001 | Automobile Engineering | 3 C | | 2 | 3 | | 30 | 70 |
| 03 | ME 63002 | Computational Fluid Dynamics | 3 E | | 2 | 3/2 | 3/2 | 30 | 70 |
| 04 | ME 63003 | Computer Integrated Manufacturing | 3 E | | 3 | 3/4 | | 30 | 70 |
| 05 | ME 62004 | Energy Sources | 2 E | | 2 | | 1 | 30 | 70 |
| 06 | ME 63005 | Introduction to Agricultural Engineering | 3 E | | 2 | 3/2 | 3/2 | 30 | 70 |
| 07 | ME 63006 | Mechatronics | 3 E | | 2 | 3/2 | 3/2 | 30 | 70 |
| 08 | | Subject from ID Electives (Basket B)** | 2 E | | | | | | |
| | | Total | 06 C + 16 E | | | | | | |

**At least one module shall be taken from Basket B of ID Electives offered in Semesters 4, 6 and 8.

| No. | Subject Code | Subject Title | GPA Credits | NGPA Credits | L (h/w) | P (h/w) | T (h/w) | CA (%) | Final Exam (%) |
|---|---|---|---|---|---|---|---|---|---|
| 08 | ID 03002 | Industrial Training (Duration 12 weeks) | | 3 C | | | | 100 | -- |
| | | Total | | 3C | | | | | |

**SEMESTER – 7**

| No. | Subject Code | Subject Title | GPA Credits | NGPA Credits | L (h/w) | P (h/w) | T (h/w) | CA (%) | Final Exam (%) |
|---|---|---|---|---|---|---|---|---|---|
| 01 | ID 72001 | Industrial Law | 2 C | | 2 | | 1/2 | 30 | 70 |
| 02 | ID 73002 | Introduction to Mathematical Modelling | 2 E | | 2 | | 1 | 30 | 70 |
| 03 | ME 73001 | Agricultural Plant & Machinery | 3 E | | 2 | 3/2 | 3/2 | 30 | 70 |
| 04 | ME 72002 | Energy Conservation | 2 E | | 1 | 3/2 | 3/2 | 30 | 70 |
| 05 | ME 73003 | Heat & Mass Transfer | 3 E | | 2 | 3/2 | 3/2 | 30 | 70 |
| 06 | ME 72004 | Human Factors Engineering | 2 C | | 2 | | 1 | 30 | 70 |
| 07 | ME 73005 | Renewable Energy Technologies | 3 E | | 2 | 3/2 | 3/2 | 30 | 70 |
| 08 | ME 74099 | Research Project (Part 1) | 4 C | | 8 | | | -- | -- |
| 09 | | Subject from ID Electives (Basket A)* | 1 E | | | | | | |
| | | Total | 08 C + 14 E | | | | | | |

*At least one module shall be taken from Basket A of ID Electives offered in Semesters 3, 5 and 7.

**SEMESTER – 8**

| No. | Subject Code | Subject Title | GPA Credits | NGPA Credits | L (h/w) | P (h/w) | T (h/w) | CA (%) | Final Exam (%) |
|---|---|---|---|---|---|---|---|---|---|
| 01 | ID 82001 | Entrepreneurship & Intellectual Property | 2 C | | 2 | | 1/3 | 30 | 70 |
| 02 | ME 83001 | Building Services Engineering | 3 E | | 2.5 | | 3/2 | 30 | 70 |
| 03 | ME 83002 | Environment & Sustainability | 2 E | | 2 | | 1 | 30 | 70 |
| 04 | ME 83003 | Fluid Power Systems | 3 E | | 2 | 3/2 | 3/2 | 30 | 70 |
| 05 | ME 82004 | Maintenance Management | 2 C | | 2 | | 1 | 30 | 70 |
| 06 | ME 83005 | Postharvest Technology | 3 E | | 2 | 3/2 | 3/2 | 30 | 70 |
| 07 | ME 84099 | Research Project (Part 2) | 4 C | | 8 | | | 100 | - |
| 08 | | Subject from ID Electives (Basket B)** | 2 E | | | | | | |
| | | Total | 08 C + 13 E | | | | | | |

**At least one module shall be taken from Basket B of ID Electives offered in Semesters 4, 6 and 8.

**ID ELECTIVES (Basket A)**[#]

| No | Subject Code | Subject Title | GPA Credits | NGPA Credits | L (h/w) | P (h/w) | T (h/w) | CA (%) | Final Exam (%) |
|---|---|---|---|---|---|---|---|---|---|
| 01 | ID 01001 | Introduction to English Literature | 1E | | 1 | | 1/2 | 30 | 70 |
| 02 | ID 01002 | English Poetry and Short Story | 1E | | 1 | | 1/2 | 30 | 70 |
| 03 | ID 01003 | Classical English Fiction | 1E | | 1 | | 1 | 30 | 70 |

**ID ELECTIVES (Basket B)** [#]

| No | Subject Code | Subject Title | GPA Credits | NGPA Credits | L (h/w) | P (h/w) | T (h/w) | CA (%) | Final Exam (%) |
|---|---|---|---|---|---|---|---|---|---|
| 01 | ID 02011 | Climate Change | 2E | | 2 | | 1/2 | 30 | 70 |
| 02 | ID 02012 | Disaster Management | 2E | | 2 | | 1/2 | 30 | 70 |
| 03 | ID 02013 | Psychology for Life | 2E | | 2 | | 1/2 | 30 | 70 |
| 04 | ID 02014 | Ethnic Cohesion and Peace Building | 2E | | 2 | | 1/2 | 40 | 60 |

[#] Department of Interdisciplinary Studies will announce the modules to be offered in a particular semester based on the availability of resource persons and number of students registering to follow the modules.

## Section III -Credit Requirements for the Mechanical Engineering Field of Specialization

| Programme | Common Core Programme | | Specialization Programme | | | | | | | | Minimum Credits Required |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Semester** | **1** | **2** | **3** | **4** | | **5** | **6** | | **7** | **8** | |
| Common Core Subjects | 14 | 11 | | | Industrial Training | | | Industrial Training | | | 25 |
| ID Core Subjects | 4 | 6 | | | | | | | | | 10 |
| ID Electives | | 2 | | | | | | | | | 1 |
| Specialization Core Subjects | | | 14 | 13 | | 14 | 3 | | 2 | 2 | 48 |
| Specialization Electives | | | - | - | | - | 14^ | | 11^ | 11^ | 20* |
| Specialization Project | | | - | - | | - | - | | 4 | 4 | 8 |
| ID Core Subjects | | | 7 | 7 | | 6 | 3 | | 2 | 2 | 27 |
| ID Electives | | | 3 (Basket A - in Semesters 3/5/7)# + 8 (Basket B - in Semesters 4/6/8 )# 2 (in Semester 7)^ | | | | | | | | 3* |
| Minimum GPA Credit Requirement | 18 | 18 | 21 | 20 | | 20 | 14 | | 12 | 12 | |
| Compulsory Non-GPA Credit Requirement | | | | | 3 | | | 3 | | | 6 |
| Total GPA Credit Requirement | | | | | | | | | | | 144 |
| Total Minimum Credit Requirement | | | | | | | | | | | 150 |

**#** At least one module shall be taken from each basket.

**^** The respective department will announce the modules to be offered in a particular semester based on the availability of resource persons and number of students registering to follow the modules.

***** Minimum 25 credits shall be earned from Specialization Electives and ID Electives. This shall include a group of elective courses adding up to a total of 9 GPA Credits from one of the 3 streams of specialization given below in Thermo Fluids, Energy Technology or Agricultural Engineering.

| **SPECIALIZATION ELECTIVES** | | **CREDITS** |
|---|---|---|
| **Thermo Fluids** | | |
| ME 63002 | Computational Fluid Dynamics | 3 E |
| ME 73003 | Heat & Mass Transfer | 3 E |
| ME 83003 | Fluid Power Systems | 3 E |
| **Energy Technology** | | |
| ME 62004 | Energy Sources | 2 E |
| ME 72002 | Energy Conservation | 2 E |
| ME 73005 | Renewable Energy Technologies | 3 E |
| ME 83002 | Environment & Sustainability | 2 E |
| **Agricultural Engineering** | | |
| ME 63005 | Introduction to Agricultural Engineering | 3 E |
| ME 73001 | Agricultural Plant & Machinery | 3 E |
| ME 83005 | Postharvest Technology | 3 E |
| **Other Subjects** | | |
| ME 63003 | Computer Integrated Manufacturing | 3 E |
| ME 63006 | Mechatronics | 3 E |
| ME 83001 | Building Services Engineering | 3 E |