

Master of Science in Mechanical Engineering

Non-Thesis Option

Course Structure

| Program Structure | Required/ Elective | No. of courses | Credit Hours | Percentage |
|----------------------------|-----------------------|-------------------|-----------------|-------------|
| Institution Requirements | | | | |
| College Requirements | | | | |
| Program Requirements | 4 | 4 | 12 | 40% |
| | 5 | 5 | 15 | 50% |
| Project | 1 | 1 | 3 | 10% |
| Field Training/ Internship | NA | | | |
| Residency year | NA | | | |
| Others | | | | |
| Total | | 10 | 30 | 100% |

Course Plan

| Level | Course Code | Course Title | Required or Elective | Pre-Requisite | Credit Hours | Theory | Lab | Type of requirements (Institution, College, or Program) |
|---------|-------------|-------------------------------------------|----------------------|---------------|--------------|--------|-----|---------------------------------------------------------|
| Level 1 | 7101-ME-3 | Advanced Numerical Methods in Engineering | Required | NA | 3 | 3 | | Program |
| | 7102-ME-3 | Advanced Applied Mechanics | Required | NA | 3 | 3 | | Program |
| | 7103-ME-3 | Properties of Advanced Materials | Required | NA | 3 | 3 | | Program |
| Level 2 | 7106-ME-3 | Advanced Heat Transfer | Required | NA | 3 | 3 | | Program |
| | 71XX-ME-3 | Elective-1 (List-1) | Elective | NA | 3 | 3 | | Program |
| | 71XX-ME-3 | Elective-2 (List-2) | Elective | NA | 3 | 3 | | Program |
| Level 3 | 71XX-ME-3 | Elective-3 (List-3) | Elective | NA | 3 | 3 | | Program |
| | 71XX-ME-3 | Elective-4 (list 4) | Required | NA | 3 | 3 | | Program |



| Level | Course Code | Course Title | Required or Elective | Pre-Requisite | Credit Hours | Theory | Lab | Type of requirements (Institution, College, or Program) |
|---------|-------------|---------------------|----------------------|---------------|--------------|--------|-----|---------------------------------------------------------|
| Level 4 | 71XX-ME-3 | Elective 5 (list 4) | Elective | NA | 3 | 3 | | Program |
| | 7185-ME-3 | Project | Elective | NA | 3 | 3 | | Program |
| | | | | | | | | |

Elective courses

| List | Course Code | Course Title | Required or Elective | Pre-Requisite | Credit Hours |
|--------|-------------|---------------------------------------|----------------------|---------------|--------------|
| List-1 | 7105-ME-3 | Computational Fluid Dynamics | Elective | NA | 3 |
| | 7104-ME-3 | Finite Elements Method | Elective | NA | 3 |
| | 7107-ME-3 | Advanced Thermodynamics | Elective | NA | 3 |
| | 7108-ME-3 | Advanced Combustion | Elective | NA | 3 |
| | 7109-ME-3 | Renewable Energy | Elective | NA | 3 |
| | 7110-ME-3 | Advanced Mechanical Vibrations | Elective | NA | 3 |
| List-2 | 7111-ME-3 | Material characterization and testing | Elective | NA | 3 |
| | 7112-ME-3 | Fatigue and Failure Analysis | Elective | NA | 3 |
| | 7113-ME-3 | Nanotechnology | Elective | NA | 3 |
| | 7114-ME-3 | Compressible flow | Elective | NA | 3 |
| | 7115-ME-3 | Materials Selection | Elective | NA | 3 |
| | 7116-ME-3 | Heat Treatment of Metals and alloys | Elective | NA | 3 |
| List-3 | 7117-ME-3 | Design of Composite Materials | Elective | NA | 3 |
| | 7118-ME-3 | Analysis of Mechanical Systems | Elective | NA | 3 |
| | 7119-ME-3 | Solar Energy | Elective | NA | 3 |
| | 7120-ME-3 | Advanced Fluid Mechanics | Elective | NA | 3 |
| | 7121-ME-3 | Convective heat transfer | Elective | NA | 3 |
| | 7122-ME-3 | Manufacturing System Design | Elective | NA | 3 |
| List-4 | 7123-ME-3 | Tribology | Elective | NA | 3 |
| | 7124-ME-3 | Feedback Control Design and Analysis | Elective | NA | 3 |
| | 7125-ME-3 | Energy Efficiency | Elective | NA | 3 |

| List | Course Code | Course Title | Required or Elective | Pre-Requisite | Credit Hours |
|------|-------------|--------------------------------------------|----------------------|---------------|--------------|
| | 7126-ME-3 | Desalination | Elective | NA | 3 |
| | 7127-ME-3 | Nuclear Energy | Elective | NA | 3 |
| | 7128-ME-3 | Principles of Management for Engineers | Elective | NA | 3 |
| | 7129-ME-3 | Robotics and Automation | Elective | NA | 3 |
| | 7130-ME-3 | Artificial Intelligence & Machine Learning | Elective | NA | 3 |
| | 7131-ME-3 | Special topics | Elective | NA | 3 |
| | 7132-ME-3 | Advanced Manufacturing Science | Elective | NA | 3 |
| | 7601-CE-3 | Environmental Impact and Risk Assessment | Elective | NA | 3 |
| | 7202-EE-3 | Power System Operation and Control | Elective | NA | 3 |