

# MECHANICAL ENGINEERING, POST-BACCALAUREATE CERTIFICATE (P.B.C.)

ENME674	Finite Element Methods
<b>Total Credits</b>	
<b>12</b>	

## 12 credits required

All Graduate Certificate in Engineering Programs consist of 4 courses/12 credits. All students are expected to complete a preliminary course plan for their intended degree program. Degree planning worksheets can be found here: <https://mage.umd.edu/degree-planning-sheets> (<https://mage.umd.edu/degree-planning-sheets/>)

Course	Title	Credits
Select 4 courses in either the Energy & Environment or General Mechanical track:		12

### Energy and The Environment:

ENME647	Multiphase Flow and Heat Transfer
ENPM621	Heat Pump and Refrigeration Systems Design Analysis
ENPM622	Energy Conversion I - Stationary Power
ENPM623	Engineering Combustion Emissions for Air Pollution Control
ENPM625	Heating, Ventilation and Air Conditioning of Buildings
ENPM626	Waste and Biomass Energy Conversion
ENPM627	Environmental Risk Analysis
ENPM651	Heat Transfer for Modern Application
ENPM654	Energy Systems Management
ENPM656	Energy Conversion II – Mobile Power
ENPM635	Thermal Systems Design Analysis

OR

ENME635	Energy Systems Analysis
ENPM624	Renewable Energy Applications

OR

ENME701	Sustainable Energy Conversion and the Environment
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### General Mechanical Engineering:

ENME600	Engineering Design Methods
ENME605	Advanced Systems Control
ENME607	Engineering Decision Making and Risk Management
ENME610	Engineering Optimization
ENME631	Advanced Conduction and Radiation Heat Transfer
ENME632	Advanced Convection Heat Transfer
ENME640	Fundamentals of Fluid Mechanics
ENME662	Linear Vibrations
ENME690	Mechanical Fundamentals of Electronic Systems
ENME712	Measurement, Instrumentation and Data Analysis for Thermo-Fluid Processes
ENPM671	Advanced Mechanics of Materials
ENPM654	Energy Systems Management
ENPM652	Applied Finite Element Methods

OR