College of Engineering and Architecture
Graduate Program

MASTER OF ENGINEERING PROGRAM (MEP)
Effective SY 2020-2021

Areas of Specialization:

- Civil Engineering (MEP-CE)
- Electrical Engineering (MEP-EE)
- Electronics Engineering (MEP-ECE)
- Mechanical Engineering (MEP-ME)

A. CORE COURSES (9 units)

Course	Course Description	Credit Units
MEP 501	Applied Optimization and Linear Models	3
MEP 502	Computational Methods for Electric Power Systems	3
MEP 502a	Computational Methods for Engineers	3
MEP 503	Mathematical Modelling and Applications	3
MEP 504	Advanced Engineering Math 1	3
MEP 505	Advanced Engineering Math 2	3
MEP 506	Advanced Numerical Methods	3
MEP 507	Computer Programming for Engineers	3
		3

B. MAJOR COURSES (21 units)

Civil Engineering

Course	Course Description	Credit Units
Structural Engineering		
MEC 511	Structural Dynamics	3
MEC 512	Advanced Concrete Technology	3
MEC 513	Finite Element Methods in Engineering	3
MEC 514	Wind and Earthquake Engineering	3
MEC 515	Experimental Methods in Structural Engineering	3
MEC 516	Advanced Steel Structures	3
MEC 517	Advanced Concrete Structures	3
MEC 518	Advanced Topics in Bridge Engineering	3
MEC 518	Selected Topic: Repair and Maintenance	3
MEC 519	Structural Engineering Analysis	3
MEC 520	Computer Methods of Structural Analysis (Computer Programming)	3

Water Engineering and Management

MEC 530	Watershed Hydrology	3
MEC 531	Water Resources Systems	3
MEC 532	Concepts in Water Modelling	3
MEC 533	Water Supply and Sanitation	3
MEC 534	River Engineering and Modelling	3
MEC 535	Planning and Development of Hydropower	3
MEC 536	Coastal Zone Management	3
MEC 537	Groundwater Development and Management	3
MEC 538	Land and Water Conservation and Management	3
MEC 539	Integrated Water Resources Management	3
MEC 540	Modelling of Water Resources Systems	3

Construction Management

MEC 551	Infrastructure System Analysis and Management	3
MEC 552	Legal and Contractual Risk Management	3
MEC 553	Occupational Safety & Health Management in Construction Projects	3
MEC 554	Quality Management in Construction	3
MEC 555	Applied Project Management in Public Infrastructure	3
MEC 556	Advanced Construction and Field Techniques	3

Geotechnical Engineering

MEC 561	Foundation Engineering and Design	3
MEC 562	Ground Improvement Techniques	3
MEC 563	Soil Dynamics and Earthquake Engineering	3

Electrical Engineering

Course	Course Description	Credit Units
MEP 511	Renewable Energy Resources	3
MEP 522	Energy Demand Analysis & Forecasting	3
MEP 530	Power Transmission and Distribution Systems	3
MEP 520	Economics of Electricity Markets & Planning	3
MEP 531	Power Systems Operation & Control	3
MEP 513	Solar Energy	3
MES 750	Optimization of Power Systems	3
MES 519	Economics of Energy Projects	3
MEP 550	Special Study	3
MES 520	Energy Price Theory	3
MES 521	Electric Power System Economics	3
MES 522	Energy Management Buildings	3
MES 523	Industrial and Power Electronics	3
MES 524	Electromagnetics	3
MES 525	Embedded Systems	3
MES 526	Robotics	3
MES 527	Signal Processing	3
MES 528	Demand-Side Management	3
MES 529	Power Systems Dynamic and Stability Organization and Finance of Power Utility	3

MES 531	Optimization and Al Applications in Power Systems	3
MES 532	Organization and Finance of a Power Utility	3
MES 533	Energy-Economic Modelling and Policy Analysis	3
MES 534	Biomass Conversion	3
MES 535	Solar Design Method and Application	3
MEP 550	Special Study	6

Electronics Engineering

Course	Course Description	Credit Units
MEP 570	Solid State Electronics and Semiconductor Devices	3
MEP 571	Theory of Microelectronics	3
MEP 572	Design of Microelectronics (Analog, Digital and RF) Circuits	3
MEP 573	Design Concept of Assistive Device and Technology	3
MEP 574	Advanced Statistics	3
MEP 575	Digital Signal Processing	3
MEP 576	Embedded Systems	3
MEP 577	Digital Image Processing	3
MEP 578	Special Topic in MEP-ECE	3
		3

Mechanical Engineering

Course	Course Description	Credit Units
MEM 511	Combustion and Mass Transfers	3
MEM 512	Thermal Systems	3
MEM 513	Heat and Mass Transfers	3
MEM 514	Foundations of Solid Mechanics	3
MEM 515	Finite Element Analysis for Mech. and Aero Design	3
MEM 516	Mechanics of Composite Structures	3
MEM 517	Elasticity, Plasticity and Fracture	3
MEM 518	Gas Dynamics	3
MEM 519	Advanced Heat Conduction	3
MEM 520	Advanced Heat Convection	3
MEM 521	Advanced Heat Radiation	3
MEM 522	Two-phase Flow and Heat Transfer	3
MEM 523	Advanced Thermodynamics	3
MEM 524	Energy Conversion Systems	3
MEM 525	Advanced Refrigeration	3
MEM 526	Advanced Air Conditioning and Ventilation	3
MEM 527	Lubrication Theory and Design	3
MEM 528	Solar Thermal Energy Systems and Design	3
MEM 528	Refrigeration and Air conditioning Design	3
MEM 529	Economic Decisions in Industrial Management	3
MEM 530	Mechatronics	3
MEM 531	Machine Learning	3
MEM 532	Thermal Science Applications in Power Engineering	3

C. GRADUATE ELECTIVES (6 units)

Course	Course Description	Credit Units
MEP 551	Industrial Ecology	3
MEP 552	Solid and Hazardous Waste Management	3
MEP 553	Environmental Sustainability and Economics	3
MEP 556	Energy, Environment and Climate Change: Issues and Strategies	3
MEP 558	Environmental Economics	3
MEP 560a	Rational Use of Energy in Buildings	3
MEP 562	Community and Climate Adaptation	3
MEP 563	Land Use and Climate Change	3
MEP 564	Clean Development Mechanism: Principles and Practices	3
MEP 565	Climate Change and Adaptation in Water Sector	3
MEP 566	Climate Change and Sustainable Development Workshop	3
MEP 567	Development and Evaluation of Energy Projects	3
MEP 568	Energy Resources and Technologies	3
MEP 569	Power Sector Management under Deregulation	3
MEP 570	Environmental Policy and Management of Energy Systems	3
MEP 571	Clean Coal Technologies and Carbon Capture and Sequestration	3
MEP 572	Climate Prediction and Early Warning System Community and Climate Adaptation	3

D. THESIS (12 units)

Civil Engineering

Course	Course Description	Credit Units
MEC 601	Thesis 1	6
MEC 602	Thesis 2	6

Electrical Engineering

Course	Course Description	Credit Units
MEP 560	Thesis	12

Electronics Engineering

Course	Course Description	Credit Units
MEP 701	Thesis 1	6
MEP 702	Thesis 2	6

Mechanical Engineering

Course	Course Description	Credit Units
MEM 601	Thesis 1	6
MEM 602	Thesis 2	6

SUMMARY OF UNITS	
Core Courses	9 units
Major Courses	21 units
Graduate Electives	6 units
Thesis	12 units
TOTAL	**48 units**

Notes:

1. *Major courses taken in excess of the required 21 units can be applied in lieu of electives.*
2. *Maximum of 6 units of elective courses credited towards the degree.*
3. *Electives taken in excess of 6 units cannot be applied to cover any deficiency in core and major courses.*

Updated BOR Resolution No. 30, s.2020