



University of Bahrain

Deanship of Graduate Studies & Scientific Research



Postgraduate Studies Programs



College of Engineering



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Master of Science in Mechanical Engineering

Program Objectives

1. Address evolving societal needs in an informed, innovative, sustainable and ethical manner.
2. Develop novel engineering technologies to address contemporary technical needs
3. Advance their professional capabilities through continuing learning to propel their career with an aim to be leaders of their respective fields.

Program Intended Learning Outcomes

1. Ability to analyze and solve complex mechanical engineering problems using advanced principles, innovative methods, and modern tools.
2. Ability to design and develop engineering practices while considering global, societal, environmental, and economic factors.
3. Ability to make informed decisions in engineering practice, considering ethical, global, environmental, and societal impacts.
4. Ability to effectively communicate technical/non-technical issues to a wide range of audience.
5. Ability to lead and contribute effectively to diverse, multidisciplinary teams to achieve common goals in engineering projects.
6. Ability to conduct data supported investigations to come up with groundbreaking solutions for contemporary engineering challenges

Required Specialization for Program Admission

- All applicants must provide proof of a valid Bachelor of Science in Mechanical Engineering program or Bachelor of Science in allied disciplines of Mechanical Engineering from the University of Bahrain or any other recognized, accredited institution.

Study Plan

First Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
MENG600	Advanced Numerical Methods for Mechanical Engineers	4	0	4
MENG601	Artificial intelligence for Advanced Mechanical Engineering	4	0	4
MENG602	Research Methods in Engineering	4	0	4

Second Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
MENG6XX	Major Elective I	4	0	4
MENG6XX	Major Elective II	4	0	4
MENG6XX	Major Elective III	4	0	4

Third Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
MENG698	Thesis	0	36	12

Elective Courses

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
MENG611	Contemporary Cooling Technologies	4	0	4
MENG612	Smart Materials and Structures	4	0	4
MENG613	Technologies for Contemporary & Future Manufacturing	4	0	4
MENG614	Computational Fluid Dynamics	4	0	4
MENG615	Classical Continuum Mechanics	4	0	4
MENG616	Advance Thermodynamics	4	0	4
MENG617	Mechanics of Laminated Composites	4	0	4
MENG618	Solar Thermal Technologies	4	0	4
MENG619	Additive Manufacturing	4	0	4
MENG620	Entrepreneurship: Crafting Business Journey	4	0	4
MENG621	Renewable Energy Sources	4	0	4
MENG622	Quality Improvement	4	0	4
MENG623	Reliability and Maintainability	4	0	4
MENG624	Advanced Mechanical Vibration	4	0	4
MENG625	Aerodynamics	4	0	4
MENG626	Applied Heat and Mass Transfer	4	0	4
MENG627	Robotics and Automation	4	0	4
MENG628	Advanced Finite Element Analysis and Design	4	0	4
MENG629	Industry 4.0 for Mechanical Engineers	4	0	4
MENG630	Fracture Mechanics	4	0	4
MENG631	Special Topics	4	0	4

Master of Science in Chemical Engineering

Program Objectives

1. Graduates of the Master of Science program will be equipped to integrate advanced knowledge and skills in Chemical Engineering to pursue successful careers in industry, the public sector, and non-governmental organizations, while contributing to research, technological innovation, and entrepreneurial ventures.
2. The graduates of Master of Science program will be skilled in critically analyzing complex engineering challenges and applying practical, economically efficient, and environmentally sustainable solutions, with the capacity to drive innovation and pursue entrepreneurial opportunities where feasible.
3. The graduates of Master of Science program will be professionals demonstrating strong research, analytical, and innovative abilities, committed to continuous learning and adapting to advancements in Chemical Engineering to address evolving industry needs.

Program Intended Learning Outcomes

1. Demonstrate advanced knowledge and critical understanding of core chemical engineering principles, including reaction engineering, thermodynamics, transport phenomena, as they relate to contemporary industrial and environmental challenges.
2. Apply critical knowledge of chemical engineering to design, analyze, and optimize sustainable processes, addressing complex problems.
3. Critically evaluate contemporary trends and innovations in chemical engineering using professional insight and interdisciplinary approaches.
4. Apply advanced research methodologies and experimental techniques to investigate and solve chemical engineering problems, contributing to innovation and sustainability in industrial and academic contexts.

5. Demonstrate proficiency in written, verbal, and visual communication to effectively present complex chemical engineering concepts and research findings to diverse technical and non-technical audiences.
6. Develop innovative engineering solutions to address global challenges in chemical engineering, incorporating principles of sustainability, ethics, and economic feasibility into practical applications.

Required Specialization for Program Admission

- Bachelor degree in Chemical Engineering.

Study Plan

First Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
CHEN 611	Advanced Transport Phenomena	4	0	4
CHEN 612	Advanced Process Thermodynamics	4	0	4
CHEN 613	Advanced Mathematical Methods for Chemical Engineers	4	0	4

Second Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
CHEN 614	Advanced Chemical Reaction Engineering	4	0	4
CHEN 6xx	Elective Course	4	0	4
CHEN 6xx	Elective Course	4	0	4

Third Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
CHEN 698	MSc Thesis	0	36	12

Elective Courses

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
CHEN 621	Process Safety and Risk Analysis	4	0	4
CHEN 622	Process Measurement and Data Managemen	4	0	4
CHEN 623	Process and Energy Integration	4	0	4
CHEN 624	Water Desalination	4	0	4
CHEN 625	Process Optimization	4	0	4
CHEN 626	Advanced Reservoir Engineering	4	0	4
CHEN 627	Advances in Petroleum Refinery Engineering	4	0	4
CHEN 628	Corrosion Management and Control	4	0	4
CHEN 629	Computer Process Control	4	0	4
CHEN 630	Fuel Cell Science and Engineering	4	0	4
CHEN 631	Environmental Engineering	4	0	4
CHEN 632	Biotechnology Applications in Process Engineering	4	0	4
CHEN 633	Advances in Petrochemical Processing	4	0	4
CHEN 634	Application of Artificial Intelligence in Chemical Engineering	4	0	4
CHEN 635	Special Topics	4	0	4

Master of Science in Civil Engineering

Program Objectives

The graduates of the Master of Science in Civil Engineering Program will be prepared to

1. Master advances in civil engineering fields and equip the graduates with research skills contributing to knowledge.
2. Master the computational and analytical techniques, skills, and modern tools necessary for civil engineering practice in an ethical manner.
3. Earn advanced skills for continuous professional development.
4. Integrate and apply theories and concepts of Engineering body of knowledge to respond to challenges in the engineering professions.
5. Formulate and deliver effective and appropriate verbal and written communications on professional requirements, performance, and outcomes.

Program Intended Learning Outcomes

1. Identify and utilize advanced mathematical, computational, design and/or experimental skills to solve complex problems in civil engineering.
2. Demonstrate technical knowledge and depth in at least one or more civil engineering subject areas and breadth of knowledge in at least one additional area.
3. Demonstrate advanced research skills: Propose, plan, and execute original research idea that target current or future societal challenges related to civil and environmental engineering.
4. Communicate effectively with a range of audiences.
5. Demonstrate ethical and professional behavior.
6. Acquire and apply new the techniques, skills, and modern engineering tools necessary for engineering practice as needed, using appropriate learning strategies.
7. Develop the tools/models/designs to help address global challenges.

Required Specialization for Program Admission

- Bachelor degree in Civil Engineering.

Study Plan

First Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
CENG601	Research Methodology	3	0	3
CENG602	Advanced Numerical Analysis	3	0	3
CENG603	Artificial Intelligence Applications in Civil Engineering	3	0	3

Second Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
CENGXXX	Elective Course from Field of Specialization	3	0	3
CENGXXX	Elective Course from Field of Specialization	3	0	3
CENGXXX	Elective Course from Field of Specialization	3	0	3

Third Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
CENGXXX	Elective Course from Field of Specialization	3	0	3
CENGXXX	Elective Course from Field of Specialization	3	0	3

Fourth Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
CENG699	Masters Thesis	0	36	12

Elective Courses

Structural Engineering Track

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
CENG611	Advanced Mechanics of Materials	3	0	3
CENG612	Plates and Shells	3	0	3
CENG613	Matrix Structural Analysis	3	0	3
CENG614	Finite Element Methods	3	0	3
CENG615	Structural Stability	3	0	3
CENG616	Structural Dynamics	3	0	3
CENG617	Advanced Steel Design	3	0	3
CENG618	Pre-Stressed Concrete	3	0	3
CENG619	Shallow and Deep Foundations	3	0	3
CENG620	Bridge Engineering	3	0	3
CENG621	Advanced Reinforced Concrete Design	3	0	3

Water Resources and Environmental Engineering Track

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
CENG631	Advanced Hydrogeology	3	0	3
CENG632	Desalination and Advanced Wastewater Treatment	3	0	3
CENG633	Rainfall-Runoff Modeling	3	0	3
CENG634	Sludge and Solid Waste Management	3	0	3
CENG635	Sustainable Water Resources Management	3	0	3
CENG636	Environmental Fluid Mechanics	3	0	3
CENG637	Groundwater Contamination and Pollutant Transport	3	0	3
CENG638	Stochastic Water Resources Management	3	0	3
CENG639	Irrigation Engineering for Arid Climates	3	0	3
CENG640	Advanced Environmental Engineering	3	0	3

Transportation Engineering Track

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
CENG620	Bridge Engineering	3	0	3
CENG651	Pavement Design	3	0	3
CENG652	Advanced Traffic Engineering	3	0	3
CENG653	Transportation Planning and Modeling	3	0	3
CENG654	Road Safety Analysis	3	0	3
CENG655	Public Mass Transportation Systems	3	0	3
CENG656	Road Traffic Management	3	0	3

Master of Science in Engineering Management

Program Objectives

1. Manage engineering projects, operations, products, and services in production and service industries.
2. Make informed and scientific decisions.
3. Identify, research, and solve problems related to engineering management.

Program Intended Learning Outcomes

1. Enhance the capabilities to deal with resources available for managing people, money, and projects.
2. Develop advanced analytical and managerial skills and acquire contemporary knowledge in related fields.
3. Develop the ability to integrate technical and managerial skills to improve the performance of the enterprise.
4. Adopt teamwork value and improve its capabilities to work in multidisciplinary teams effectively and communicate technical outcomes professionally.
5. Consider and assess the economic, social, and environmental requirements and needs of the system and its impact on society.
6. Be able to effectively respond to compelling and innovative market demands through advanced learning.

Required Specialization for Program Admission

- All applicants must provide proof of a valid Bachelor's degree in any engineering discipline from the University of Bahrain or any other recognized, accredited institution.

Study Plan

First Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
IEN601	Statistical Data Analysis and Research Methods	4	0	4
IEN602	Operations Management	4	0	4
IEN605	Capital Budgeting	4	0	4

Second Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
IEN611	Quality Improvement	4	0	4
IEN612	Modern Project Management	4	0	4
IEN6XX	Major Elective Course	4	0	4

Third Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
IEN698	Thesis	0	36	12

Elective Course

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
IEN613	Deterministic Operations Research	4	0	4
IEN614	Reliability and Maintainability	4	0	4
IEN615	Product development and System Engineering	4	0	4
IEN616	Human Factors and Ergonomics	4	0	4
IEN617	Supply Chain Management	4	0	4
IEN618	Entrepreneurship: Crafting Business Journey	4	0	4
IEN619	Managerial Accounting	4	0	4
IEN620	Human Resources Management	4	0	4
IEN621	Special Topics	4	0	4

Master of Science in Renewable Energy Engineering

Program Objectives

1. Engage in productive contributions in developing novel solutions for the regional and global renewable energy and clean systems problems, through carrying out fundamental and applied knowledge/research using appropriate design methods and analysis tools.
2. Advance in responsibility, leadership, and principal roles in the development of academic and industrial organizations in the field of renewable engineering, locally and within the region.
3. Engage in ongoing professional development activities by pursuing PhD and/or other advanced postgraduate studies.

Program Intended Learning Outcomes

1. Demonstrate critical knowledge using specialist theories and concepts of Renewable Energy Engineering with energy systems, energy generation, storage, utilization, and its major current issues.
2. Apply critical knowledge of mathematics, chemistry, physics, computing, safety, and engineering to research complex and unpredictable sophisticated problems, including analysis, design, optimization, and control of components, systems, and processes in Renewable Energy Engineering.
3. Critically analyze and evaluate current issues and/or principles in Renewable Energy Engineering using a combination of approaches and professional levels of insight and interpretation.
4. Apply specialized research methodologies, design, analysis and/or experimental investigation of the engineering problems to evaluate and provide solutions within renewable energy systems.
5. Demonstrate proficiency in writing and oral presentation skills to effectively communicate renewable energy system ideas and techniques to a range of specialists.

6. Develop innovative technical solutions to address issues related to renewable energy systems.

Required Specialization for Program Admission

- Bachelor degree in Engineering.

Study Plan

First Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
REE 601	Renewable Energy Systems Fundamentals	4	0	4
EEM 601	Statistical Data Analysis and Research Methods	4	0	4
REE 602	Photovoltaic Energy Systems	4	0	4

Second Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
REE 603	Wind Energy Systems	4	0	4
REE 604	Solar Thermal Energy	4	0	4
REE 605	Special Topics in Renewable Energy Engineering	4	0	4

Third Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
EEM 699	Thesis	0	36	12

Master of Science in Artificial Intelligence Systems

Program Objectives

1. Provide the students with an in-depth knowledge of modern methods of analysis, design, and management of artificial intelligence systems for diverse application fields touching all aspects of modern life.
2. Provide the students with the ability to meet regional and global needs for AI by carrying out fundamental and applied research using appropriate AI design methods and analysis tools.
3. Broaden and enhance the student's skills on efficient problem solving, critical thinking, team working, and professional communication.
4. Develop the students' leadership skills preparing them to play influential roles in society.
5. Enable the students to pursue a Ph.D. degree and other advanced postgraduate studies.

Program Intended Learning Outcomes

1. Demonstrate an advanced understanding of the basic principles of Artificial Intelligence Applications.
2. Demonstrate engineering competency in Artificial Intelligence Applications.
3. Demonstrate competency in undertaking in-depth research, design, analysis or experimental investigation of some engineering problems involving AI use.
4. Demonstrate their ability to communicate engineering ideas and techniques.
5. Demonstrate a mathematical competency above that of an undergraduate engineering student.

Required Specialization for Program Admission

- Bachelor degree in Engineering/ Science/ Computer Science/ Management Information Systems.

Study Plan

First Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
EEM 600	Principles of Artificial Intelligence	4	0	4
EEM 601	Statistical Data Analysis and Research Methods	4	0	4
EEM 602	Internet of Things (IoT)	4	0	4

Second Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
AIE 603	Machine Learning	4	0	4
AIE 604	Deep Learning Applications	4	0	4
AIE 605	Special Topics in Artificial Intelligence	4	0	4

Third Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
EEM 699	Thesis	0	36	12

Master of Architecture

Program Objectives

1. Evaluate complex theoretical, design aspects related to complex theoretical, design aspects related to an issue of the built environment
2. Interpret an architectural theoretical and philosophical position related to a topic related to the built environment to approach the design of the built environment based on advanced research.
3. Interpret detailed technological solutions to resolve significant issues of the built environment.
4. Produce a research in response to a significant issue, collect data, analyze and derive generalizable conclusions.
5. Produce planned design interventions related to a specific specialization to resolve significant issues of the built environment.

Program Intended Learning Outcomes

1. Interpret detailed knowledge related to the specific specialization to research or design.
2. Evaluate creatively architectural problems, comprehensive design investigations to generate innovative solutions informed by theoretical and technical knowledge.
3. Evaluate complex theoretical and philosophical ideas to plan research or to produce planned interventions in the built environment.
4. Produce a design proposal to address significant socio-spatial issues pertaining to the built-environment.
5. Produce comprehensive verbal narratives to communicate research ideas and design proposals for built- environments.
6. Produce comprehensive graphical (digital) narratives to communicate design proposals for built environments.
7. Act responsibly in interactions with the clients, academics, and other professionals

Required Specialization for Program Admission

- Admission to the program would require a bachelor's degree related to architecture, interior architecture, interior design, landscape architecture, architecture engineering, built environment, or any related specialization from the UOB or any other recognized university based on college approval.

Study Plan

First Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
ARCH 610	Architecture Phenomena	3	0	3
ARCH 611	Design & Community	3	0	3
ARCH 612	Research Methods	3	0	3
ARCH 614	Sustainable Built Environments	3	0	3

Second Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
ARCH 620	Pre Thesis	3	0	3
ARCH 622	Professional Practice	3	0	3
ARCH 62X	Elective 1	3	0	3
ARCH 62X	Elective 2	3	0	3

Third Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
ARCH 630	Thesis	0	18	6
ARCH 632	Advanced Technologies in Built Environment	3	0	3

Elective Course

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
ARCH 624	International Architecture and Global Practices	3	0	3
ARCH 625	Experiential Design and Spatial Psychology	3	0	3
ARCH 626	Disaster Resilience and Emergency Architecture	3	0	3
ARCH 627	Architectural Education and Pedagogy	3	0	3
ARCH 628	Heritage and Conservation	3	0	3

Master of Science in Telecommunications and Networks Engineering

Program Objectives

1. Address regional and global telecommunications challenges through advanced research and cutting-edge methodologies. {Contribute to Innovative Solutions}
2. Take on leadership roles in academia and industry to drive progress locally and regionally. {Leadership and Development}
3. Pursue advanced studies and professional development to remain at the forefront of advancements in telecommunications and networks. {Lifelong Learning}

Program Intended Learning Outcomes

1. Acquire an in-depth knowledge of modern telecommunication systems and networks engineering.
2. Demonstrate competency in undertaking in-depth research, design, and practical investigation of problems related to telecommunications and networks.
3. Develop and implement innovative technical solutions to address emerging challenges in TNE.
4. Acquire the ability to clearly and efficiently communicate engineering ideas and techniques.
5. Apply professional ethics and standards while pursuing lifelong learning in telecommunications and networks engineering.

Required Specialization for Program Admission

- Applicants must hold a Bachelor's degree (B.SC) in one of the following fields (or a closely related discipline):
- Electrical and Electronics Engineering
- Communication Engineering
- Computer Engineering
- Information and Communication Technology (ICT)
- Computer Science
- Software Engineering
- Artificial Intelligence
- Cybersecurity
- Data Science or Data Analytics
- Cloud Computing
- Computer Networks
- Information Systems / Informatics
- Communication and Information Technology
- Multimedia Systems Design and Development
- Information System Technology

Study Plan

First Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
EEM 600	Principles of Artificial Intelligence	4	0	4
EEM 601	Statistical Data Analysis and Research Methods	4	0	4
EEM 602	Internet of Things (IoT)	4	0	4

Second Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
TNE 603	Modern Telecommunications systems	4	0	4
TNE 604	Advanced computer Networks	4	0	4
TNE 605	Special topics in Communications	4	0	4

Third Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
EEM 699	Thesis	0	36	12

Master of Science in Sustainable Energy Transition Systems

Program Objectives

1. Engage in productive contributions in developing novel solutions for regional and global energy systems problems through carrying out fundamental and applied knowledge/research using appropriate design methods, digitalization, and analysis tools, to achieve sustainable energy-transition solutions.
2. Advance in responsibility, leadership, and principal roles in developing academic and industrial organizations in the field of engineering, locally and within the region.
3. Engage in ongoing professional development activities by pursuing PhD and/or other advanced postgraduate studies.

Program Intended Learning Outcomes

1. Demonstrate critical Knowledge using specialist theories and concepts of sustainable energy transition systems, policies, economics, energy generation, storage, utilization, and its major current issues.
2. Apply critical Knowledge of science and engineering to research complex problems that include analysis, economic evaluation, design, and optimization to realize sustainable energy transition systems.
3. Critically analyze and evaluate contemporary issues and/or principles in sustainable energy transition systems using a combination of approaches and professional levels of insight and interpretation.
4. Apply specialized research methodologies and/or experimental investigation to address energy-transition-related problems.
5. Demonstrate proficiency in writing and oral presentation skills to effectively communicate energy-transition system ideas and techniques to various specialists.
6. Develop novel engineering solutions to achieve sustainable energy-transition-related problems.

Required Specialization for Program Admission

- Bachelor degree in Engineering/ Science.

Study Plan

First Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
SETS 601	Energy Systems	4	0	4
SETS 602	Carbon Capture, Utilization, and Storage (CCUS)	4	0	4
SETS 603	Corporate Finance, Accounting, and Policy for Energy	4	0	4

Second Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
SETS 604	Advanced Energy Conversion	4	0	4
SETS 605	Digitalization for Energy Systems	4	0	4
SETS 6XX	Elective	4	0	4

Third Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
SETS 699	MSc Thesis	0	0	12

Elective Courses List

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
SETS 606	Biofuels and Biorefineries	4	0	4
SETS 607	Hydrogen Generation and Storage	4	0	4
SETS 608	Special Topics	4	0	4

Master of Science in Power Systems Engineering

Program Objectives

1. Engage in productive contributions in developing novel solutions for the regional and global power systems engineering problems, through carrying out fundamental and applied knowledge/research using appropriate design methods and analysis tools.
2. Advance in responsibility, leadership, and principal roles in the development of academic and industrial organizations in the field of power systems engineering, locally and within the region.
3. Engage in ongoing professional development activities by pursuing PhD and/or other advanced postgraduate studies.

Program Intended Learning Outcomes

1. Demonstrate critical knowledge using specialist theories and concepts of Power Systems Engineering with energy systems, energy generation, storage, utilization, and its major current issues.
2. Apply critical knowledge of mathematics, chemistry, physics, computing, safety, and engineering to research complex and unpredictable sophisticated problems, including analysis, design, optimization, and control of components, systems, and processes in Power Systems Engineering.
3. Critically analyze and evaluate current issues and/or principles in Power Systems Engineering using a combination of approaches and professional levels of insight and interpretation.
4. Apply specialized research methodologies, design, analysis and/or experimental investigation of the engineering problems to evaluate and provide solutions within power systems.
5. Demonstrate proficiency in writing and oral presentation skills to effectively communicate power system ideas and techniques to a range of specialists.
6. Develop innovative technical solutions to address issues related to power systems.

Required Specialization for Program Admission

- Bachelor's degree in Electrical or Electronics Engineering.

Applicants from other academic disciplines may also be considered, though they may be required to complete additional prerequisite/remedial courses, determined by the department on an individual basis..

Study Plan

First Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
REE 601	Renewable Energy Systems Fundamentals	4	0	4
PSE 601	Advanced Power Systems Engineering	4	0	4
PSE 602	Power Electronics Applications in Power Systems	4	0	4

Second Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
PSE 603	Power System Operations and Optimization Techniques	4	0	4
PSE 604	Stability and Control of Electric Power Systems	4	0	4
PSE 605	Special Topics in Power Systems Engineering	4	0	4

Third Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
PSE 699	Thesis	0	36	12

Doctor of Philosophy in Chemical Engineering

Program Objectives

1. Develop comprehensive and discipline-specific knowledge through rigorous research in the field of engineering, contributing to the advancement of discipline.
2. Enhance critical thinking skills and problem-solving abilities to address complex engineering challenges through innovation and research.
3. Foster effective communication and information management skills for diverse contexts within the engineering field.
4. Promote lifelong learning and sustainable development through ongoing research, continuous professional development, and the adoption of responsible engineering practices.
5. Cultivate a strong commitment to academic integrity and professional ethics within the discipline of engineering.

Program Intended Learning Outcomes

1. Demonstrate advanced knowledge and expertise in their specialized field of engineering, reflecting comprehensive understanding and mastery of concepts, theories, and principles.
2. Conduct independent research across multidisciplinary areas within the field of engineering addressing real-world engineering challenges and making original contributions to knowledge.
3. Apply critical thinking skills and evidence-based practices to analyze and solve complex engineering problems, utilizing analytical, reasoning, and research abilities.
4. Communicate effectively in diverse contexts, employing a range of communication skills such as speaking, writing, and presenting to effectively convey complex engineering concepts and research findings.
5. Demonstrate professional ethics and academic integrity within the discipline of engineering.

Required Specialization for Program Admission

- A. Master in Chemical Engineering or a minor specialization closely related to Chemical Engineering discipline or under the broad range of specializations of Chemical Engineering discipline with the consent of the department.
- B. The MSc in multidisciplinary engineering related programs with thesis closely related to Chemical Engineering disciplines as listed above in clause (A) will be accepted as reviewed by the department on “case by case” basis.

Study Plan

First Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
ENGR 701	Advanced Statistics	3	0	3
ENGR 702	Optimization Techniques	3	0	3
ENGR 703	Doctoral Directed Research	3	0	3
ENGR 704	Advanced Numerical Methods	3	0	3

Second Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
ENGR 707	Sustainable Development in Engineering	3	0	3
ENGR 705	Computational Intelligence	3	0	3
ENGR 706	PhD. Pre-Thesis	3	0	3

Third Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
ENGR 708A	PhD. Thesis	0	33	11

Fourth Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
ENGR 708B	PhD. Thesis	0	33	11

Fifth Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
ENGR 708C	PhD. Thesis	0	33	11

Sixth Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
ENGR 708D	PhD. Thesis	0	33	11

Seventh Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
ENGR 708E	PhD. Thesis	0	30	10

Doctor of Philosophy in Electrical Engineering

Program Objectives

1. Develop comprehensive and discipline-specific knowledge through rigorous research in the field of engineering, contributing to the advancement of discipline.
2. Enhance critical thinking skills and problem-solving abilities to address complex engineering challenges through innovation and research.
3. Foster effective communication and information management skills for diverse contexts within the engineering field.
4. Promote lifelong learning and sustainable development through ongoing research, continuous professional development, and the adoption of responsible engineering practices.
5. Cultivate a strong commitment to academic integrity and professional ethics within the discipline of engineering.

Program Intended Learning Outcomes

1. Demonstrate advanced knowledge and expertise in their specialized field of engineering, reflecting comprehensive understanding and mastery of concepts, theories, and principles.
2. Conduct independent research across multidisciplinary areas within the field of engineering addressing real-world engineering challenges and making original contributions to knowledge.
3. Apply critical thinking skills and evidence-based practices to analyze and solve complex engineering problems, utilizing analytical, reasoning, and research abilities.
4. Communicate effectively in diverse contexts, employing a range of communication skills such as speaking, writing, and presenting to effectively convey complex engineering concepts and research findings.
5. Demonstrate professional ethics and academic integrity within the discipline of engineering.

Required Specialization for Program Admission

- A. Master in Electrical Engineering or a minor specialization closely related to Electrical Engineering discipline or under the broad range of specializations of Electrical Engineering discipline with the consent of the department.
- B. The MSc in multidisciplinary engineering related programs with thesis closely related to Electrical Engineering disciplines as listed above in clause (A) will be accepted as reviewed by the department on “case by case” basis.

Study Plan

First Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
ENGR 701	Advanced Statistics	3	0	3
ENGR 702	Optimization Techniques	3	0	3
ENGR 703	Doctoral Directed Research	3	0	3
ENGR 704	Advanced Numerical Methods			

Second Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
ENGR 707	Sustainable Development in Engineering	3	0	3
ENGR 705	Computational Intelligence	3	0	3
ENGR 706	PhD. Pre-Thesis	3	0	3

Third Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
ENGR 708A	PhD. Thesis	0	33	11

Fourth Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
ENGR 708B	PhD. Thesis	0	33	11

Fifth Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
ENGR 708C	PhD. Thesis	0	33	11

Sixth Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
ENGR 708D	PhD. Thesis	0	33	11

Seventh Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
ENGR 708E	PhD. Thesis	0	30	10

Doctor of Philosophy in Civil Engineering

Program Objectives

1. Develop comprehensive and discipline-specific knowledge through rigorous research in the field of engineering, contributing to the advancement of discipline.
2. Enhance critical thinking skills and problem-solving abilities to address complex engineering challenges through innovation and research.
3. Foster effective communication and information management skills for diverse contexts within the engineering field.
4. Promote lifelong learning and sustainable development through ongoing research, continuous professional development, and the adoption of responsible engineering practices.
5. Cultivate a strong commitment to academic integrity and professional ethics within the discipline of engineering.

Program Intended Learning Outcomes

1. Demonstrate advanced knowledge and expertise in their specialized field of engineering, reflecting comprehensive understanding and mastery of concepts, theories, and principles.
2. Conduct independent research across multidisciplinary areas within the field of engineering addressing real-world engineering challenges and making original contributions to knowledge.
3. Apply critical thinking skills and evidence-based practices to analyze and solve complex engineering problems, utilizing analytical, reasoning, and research abilities.
4. Communicate effectively in diverse contexts, employing a range of communication skills such as speaking, writing, and presenting to effectively convey complex engineering concepts and research findings.
5. Demonstrate professional ethics and academic integrity within the discipline of engineering.

Required Specialization for Program Admission

- A. Master in Civil Engineering or a minor specialization closely related to Civil Engineering discipline or under the broad range of specializations of Civil Engineering discipline with the consent of the department.
- B. The MSc in multidisciplinary engineering related programs with thesis closely related to Civil Engineering disciplines as listed above in clause (A) will be accepted as reviewed by the department on “case by case” basis..

Study Plan

First Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
ENGR 701	Advanced Statistics	3	0	3
ENGR 702	Optimization Techniques	3	0	3
ENGR 703	Doctoral Directed Research	3	0	3
ENGR 704	Advanced Numerical Methods	3	0	3

Second Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
ENGR 707	Sustainable Development in Engineering	3	0	3
ENGR 705	Computational Intelligence	3	0	3
ENGR 706	PhD. Pre-Thesis	3	0	3

Third Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
ENGR 708A	PhD. Thesis	0	33	11

Fourth Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
ENGR 708B	PhD. Thesis	0	33	11

Fifth Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
ENGR 708C	PhD. Thesis	0	33	11

Sixth Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
ENGR 708D	PhD. Thesis	0	33	11

Seventh Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
ENGR 708E	PhD. Thesis	0	30	10

Doctor of Philosophy in Architecture

Program Objectives

1. Become accomplished and independent professionals capable of linking architectural knowledge to rigorous and advanced approaches to scholarship.
2. Make original contributions to the current state of discussion of theory and methods in architecture through research, research-based practice and teaching.
3. Become ethical and responsible individuals capable of assuming leadership positions in the profession and the community.

Program Intended Learning Outcomes

1. Demonstrate detailed critical knowledge and understanding about the specific area of research conducted at the forefront of a particular field.
2. Apply highly specialized and expert skills to critique current knowledge to demonstrate creativity and originality in the development and application of new knowledge.
3. Critically synthesize very complex ideas and information to conceptualize original and creative theoretical arguments based on facts and information.
4. Apply a significant range of professional level of skills to communicate research outcomes to peers and others
5. Implement an expert level to design and implement independently, an original and pioneering research activity.

Required Specialization for Program Admission

- Holding a bachelor's and master's degree in architecture or related fields, or within the broad range of disciplines related to the built environment, subject to departmental approval.
- Master's programs with a thesis closely related to the built environment disciplines will be accepted, provided they are reviewed and approved by the department on a case-by-case basis.

Study Plan

First Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
ARCH710	Critical Readings of Theory	3	0	3
ARCH711	Advanced Research Methods	3	0	3
ARCH712	Contemporary Issues	3	0	3

Second Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
ARCH720	Research Seminars	3	0	3
ARCH721	Applied Statistical Techniques	3	0	3
ARCH722	Qualitative Data Analysis	3	0	3

Third Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
ARCH730	Pre-Thesis	3	0	3
ARCH731	Research and Design	3	0	3
ARCH732	Phenomenological & Environment Behaviour Research	3	0	3

Fourth Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
ARCH 740	Thesis- 1	0	0	12

Fifth Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
ARCH 750	Thesis- 2	0	0	12

Sixth Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
ARCH 760	Thesis- 3	0	0	12

Seventh Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
ARCH 770	Final Thesis	0	0	12

Doctor of Philosophy in Engineering Management

Program Objectives

1. Develop comprehensive and discipline-specific knowledge through rigorous research in the field of engineering, contributing to the advancement of discipline.
2. Enhance critical thinking skills and problem-solving abilities to address complex engineering challenges through innovation and research.
3. Foster effective communication and information management skills for diverse contexts within the engineering field.
4. Promote lifelong learning and sustainable development through ongoing research, continuous professional development, and the adoption of responsible engineering practices.
5. Cultivate a strong commitment to academic integrity and professional ethics within the discipline of engineering.

Program Intended Learning Outcomes

1. Demonstrate advanced knowledge and expertise in their specialized field of engineering, reflecting comprehensive understanding and mastery of concepts, theories, and principles.
2. Conduct independent research across multidisciplinary areas within the field of engineering addressing real-world engineering challenges and making original contributions to knowledge.
3. Apply critical thinking skills and evidence-based practices to analyze and solve complex engineering problems, utilizing analytical, reasoning, and research abilities.
4. Communicate effectively in diverse contexts, employing a range of communication skills such as speaking, writing, and presenting to effectively convey complex engineering concepts and research findings.
5. Demonstrate professional ethics and academic integrity within the discipline of engineering.

Required Specialization for Program Admission

- A. The MSc in Engineering Management/Civil/Chemical/Mechanical/Electrical/Electronic Engineering or related fields.
- B. The MSc in multidisciplinary engineering related programs will be accepted as reviewed by the department on “case by case” basis.

Study Plan

First Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
ENGR 701	Advanced Statistics	3	0	3
ENGR 702	Optimization Techniques	3	0	3
ENGR 703	Doctoral Directed Research	3	0	3
ENGR 704	Advanced Numerical Methods	3	0	3

Second Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
ENGR 707	Sustainable Development in Engineering	3	0	3
ENGR 705	Computational Intelligence	3	0	3
ENGR 706	PhD. Pre-Thesis	3	0	3

Third Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
ENGR 708A	PhD. Thesis	0	33	11

Fourth Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
ENGR 708B	PhD. Thesis	0	33	11

Fifth Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
ENGR 708C	PhD. Thesis	0	33	11

Sixth Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
ENGR 708D	PhD. Thesis	0	33	11

Seventh Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
ENGR 708E	PhD. Thesis	0	30	10

Doctor of Philosophy in Mechanical Engineering

Program Objectives

1. Develop comprehensive and discipline-specific knowledge through rigorous research in the field of engineering, contributing to the advancement of discipline.
2. Enhance critical thinking skills and problem-solving abilities to address complex engineering challenges through innovation and research.
3. Foster effective communication and information management skills for diverse contexts within the engineering field.
4. Promote lifelong learning and sustainable development through ongoing research, continuous professional development, and the adoption of responsible engineering practices.
5. Cultivate a strong commitment to academic integrity and professional ethics within the discipline of engineering

Program Intended Learning Outcomes

1. Demonstrate advanced knowledge and expertise in their specialized field of engineering, reflecting comprehensive understanding and mastery of concepts, theories, and principles.
2. Conduct independent research across multidisciplinary areas within the field of engineering addressing real-world engineering challenges and making original contributions to knowledge.
3. Apply critical thinking skills and evidence-based practices to analyze and solve complex engineering problems, utilizing analytical, reasoning, and research abilities.
4. Communicate effectively in diverse contexts, employing a range of communication skills such as speaking, writing, and presenting to effectively convey complex engineering concepts and research findings.
5. Demonstrate professional ethics and academic integrity within the discipline of engineering.

Required Specialization for Program Admission

- A. Master in Mechanical Engineering or a minor specialization closely related to Mechanical Engineering discipline or under the broad range of specializations of Mechanical Engineering discipline with the consent of the department.
- B. The MSc in multidisciplinary engineering related programs with thesis closely related to Mechanical Engineering disciplines as listed above in clause (A) will be accepted as reviewed by the department on “case by case” basis..

Study Plan

First Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
ENGR 701	Advanced Statistics	3	0	3
ENGR 702	Optimization Techniques	3	0	3
ENGR 703	Doctoral Directed Research	3	0	3
ENGR 704	Advanced Numerical Methods	3	0	3

Second Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
ENGR 707	Sustainable Development in Engineering	3	0	3
ENGR 705	Computational Intelligence	3	0	3
ENGR 706	PhD. Pre-Thesis	3	0	3

Third Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
ENGR 708A	PhD. Thesis	0	33	11

Fourth Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
ENGR 708B	PhD. Thesis	0	33	11

Fifth Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
ENGR 708C	PhD. Thesis	0	33	11

Sixth Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
ENGR 708D	PhD. Thesis	0	33	11

Seventh Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
ENGR 708E	PhD. Thesis	0	30	10

Doctor of Philosophy in Electronic Engineering

Program Objectives

1. Develop comprehensive and discipline-specific knowledge through rigorous research in the field of engineering, contributing to the advancement of discipline.
2. Enhance critical thinking skills and problem-solving abilities to address complex engineering challenges through innovation and research.
3. Foster effective communication and information management skills for diverse contexts within the engineering field.
4. Promote lifelong learning and sustainable development through ongoing research, continuous professional development, and the adoption of responsible engineering practices.
5. Cultivate a strong commitment to academic integrity and professional ethics within the discipline of engineering

Program Intended Learning Outcomes

1. Demonstrate advanced knowledge and expertise in their specialized field of engineering, reflecting comprehensive understanding and mastery of concepts, theories, and principles.
2. Conduct independent research across multidisciplinary areas within the field of engineering addressing real-world engineering challenges and making original contributions to knowledge.
3. Apply critical thinking skills and evidence-based practices to analyze and solve complex engineering problems, utilizing analytical, reasoning, and research abilities.
4. Communicate effectively in diverse contexts, employing a range of communication skills such as speaking, writing, and presenting to effectively convey complex engineering concepts and research findings.
5. Demonstrate professional ethics and academic integrity within the discipline of engineering.

Required Specialization for Program Admission

- A. Master in Electronic Engineering or a minor specialization closely related to Electronic Engineering discipline or under the broad range of specializations of Electronic Engineering discipline with the consent of the department.
- B. The MSc in multidisciplinary engineering related programs with thesis closely related to Electronic Engineering disciplines as listed above in clause (A) will be accepted as reviewed by the department on “case by case” basis.

Study Plan

First Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
ENGR 701	Advanced Statistics	3	0	3
ENGR 702	Optimization Techniques	3	0	3
ENGR 703	Doctoral Directed Research	3	0	3
ENGR 704	Advanced Numerical Methods	3	0	3

Second Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
ENGR 707	Sustainable Development in Engineering	3	0	3
ENGR 705	Computational Intelligence	3	0	3
ENGR 706	PhD. Pre-Thesis	3	0	3

Third Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
ENGR 708A	PhD. Thesis	0	33	11

Fourth Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
ENGR 708B	PhD. Thesis	0	33	11

Fifth Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
ENGR 708C	PhD. Thesis	0	33	11

Sixth Semester


Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
ENGR 708D	PhD. Thesis	0	33	11


Seventh Semester

Course Code	Course Title	Course Hours		
		LEC.	PRAC	CRD
ENGR 708E	PhD. Thesis	0	30	10

For more information, please contact the following address:

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