SCHOOL OF ELECTRICAL ENGINEERING

- B.Sc. Electrical Engineering
- MS Electrical Engineering
- MS Engineering Management
- Ph.D Electrical Engineering
- Ph.D Engineering Management

DEPARTMENT OF ELECTRICAL ENGINEERING

About

The electrical engineering department came into existence with the establishment of the Iqra National University Peshawar in 2010. It is one of the largest departments in the university with average number of students being approximately 300, 20% of whom are in the graduate program. The department provides four-year undergraduate programs accredited at LEVEL II (Washington Accord) by Pakistan Engineering Council (PEC) in in the following specializations.

1. Power Systems
2. Communication systems
3. Electronics

EE department offers the graduate programs i.e. Master of Science in Electrical Engineering and PhD in Electrical Engineering with the following specializations.

1. Power and Energy Engineering
2. Communication System Engineering
3. Signal and Image Processing
4. Control Engineering

The graduate programs in engineering management i.e. Masters and PhD in Engineering Management provide a unique blend of engineering and management studies with engineering perspective. The specializations offered are

1. Industrial Management
2. Logistics Management
3. Telecommunication Management
4. Energy Management
5. Software Management

CHAIRMAN'S MESSAGE

Being the Chairman of Electrical Engineering Department at Iqra National University, I welcome you all to this prestigious institution. The department of Electrical Engineering (EE) is one of the major departments of Iqra National University established in 2010. The Department is well reputed, recognized and is accredited by Pakistan Engineering Council. The Department offers undergraduate, graduate and postgraduate programs. The undergraduate program is B.Sc. Electrical Engineering with specialization in Power, Communications and Electronics streams. The graduate programs include PhD/MS in Electrical Engineering (with specialization in Power, Communication and Electronics streams) and PhD/MS in Engineering Management. The postgraduate programs include the Doctorate degrees in Electrical Engineering and Engineering Management.

Students of Electrical Engineering Department are one of the top minds and most hardworking. They are not only the precious assets for their families but are also one the most important human resources of the country. You need to realize your importance and groom up your personality and expertise throughout your life so that you can be a role model and true professional, who has the ability to identify national problems and give proper solutions. Sitting squarely in an Engineering Faculty, the Department of EE is focused on devising innovative and accurate solutions to complex problems, whilst ensuring the optimal solutions; department's excellent infrastructure, highly qualified and extremely professional faculty ensures quality education. The faculty members along with marketing and industrial liaison office ensure a bright future to their students. Thus, we are confident that our students will emerge as an asset not only to this institution and to the organization they belong, but also to the country at large.

For prospective students, although every discipline of engineering has their own significance, but Electrical Engineering is the largest and most diverse technological field in the world. Therefore, an electrical engineer has the opportunities to pursue their careers or advanced studies in any relevant engineering field of electronics, power, computer Engineering, telecommunication etc. Electrical engineers successfully pursue careers not only in practice and applied scientific research, but also in a wide range of non-technical areas such as corporate management, finance, and commerce.

We continue to play a leading role in our discipline and are committed towards creating innovative and effective professional graduate community which would be vibrant and will provide continuous learning. With the hope of hard work and sincere efforts, I wish you all, the best of luck for the future

CHAIRMAN
SCHOOL OF ELECTRICAL ENGINEERING

VISION

The Department of Electrical Engineering will emerge gradually by producing competent engineers and researchers for promising career in industry and academia in order to contribute towards nation building.

MISSION

The mission of the Electrical engineering department is to provide students with a supportive environment which facilitates learning to develop concrete solution for complex engineering problems. Our graduates will have technical competence, solid analytical skills and critical thinking, both theoretically and practically in advance technological and socio-economic environment.

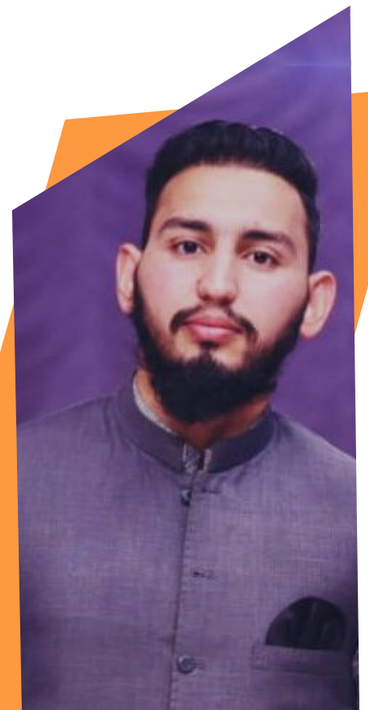
PROGRAM EDUCATION OUTCOMES

- **Cognition:** Possess broader engineering knowledge and tools that can be used in analysis, design and resolution of complex engineering problems.
- **Social Responsibility:** Exhibit social responsibility by possessing moral and ethical values necessary for the betterment of society and environment..
- **Leadership:** Ability to demonstrate soft skills and leadership qualities by maintaining the professional integrity in an organization.
- **Continuous Learning:** Actively involved in the development of engineering skills through professional training, continuous research and self-study.

TESTIMONIAL

Aamir Aman

I am Engr. Muhammad Aamir Aman, a proud alumni of Iqra National University, Peshawar and currently working as a Lecturer and Postgraduate Program Coordinator in the Department of Electrical Engineering at UET Jalozai. I have completed my Bachelor in Electrical Engineering and Masters in Electrical Engineering (Power and Energy Engineering) & PhD from INU. 10 years down the lane it was really a fantastic experience in this University. From the first year till the last, and then in Master's teaching fraternity and management did an exceptional job in grooming me for the corporate life that lies ahead. Apart from all the engineering studies, I also developed several pertinent skills in this institute which will definitely prove its worth in the professional workplace. Big thanks to the faculty of Electrical Engineering and management for providing these opportunities to us. In a nutshell, these 10 years were a perfect concoction of knowledge, growth, humor and emotional intelligence. I would like to thank each and every soul in this institute for shaping us into future warriors.



Muhammad Luqman Hafeez

Currently appointed as a lecturer at a private university & alumni of INU, I feel privileged and lucky to have graduated from the department with a first class degree in electrical engineering. Every class, professor & classmate has contributed to my rich education in the field of Electrical Engineering, not only have I learned valuable skills in field, but I have strengthened my management & marketing skill to brand myself in saturated market of engineers in Pakistan. INU has sparked the fire within me & encouraged me to be shining lights in our troubled world

FACULTY

The department employs competent faculty members qualified to accomplish the mission & goals of INU. Currently, Ph.D. & MS faculty Qualified from local & foreign reputable universities are serving the Electrical Engineering Department. Our staff has set high standard in terms of competence, effectiveness, professional licensure, certification, honors and awards. There is notable continuous excellence in terms of teaching, and other achievements that contribute to effective teaching and student learning.

FACULTY MEMBERS

Prof. Dr. Engr. Jehanzeb Khan
Professor/Associate Dean of faculty
Ph.D Electrical Engineering (communication system),
INU Peshawar

Dr. Engr. Shahid Latif
Assistant Professor
Ph.D Engineering Management,
INU Peshawar

Dr. Engr. Umar Farooq
Assistant Professor
PhD Electrical Engineering
(Power system)

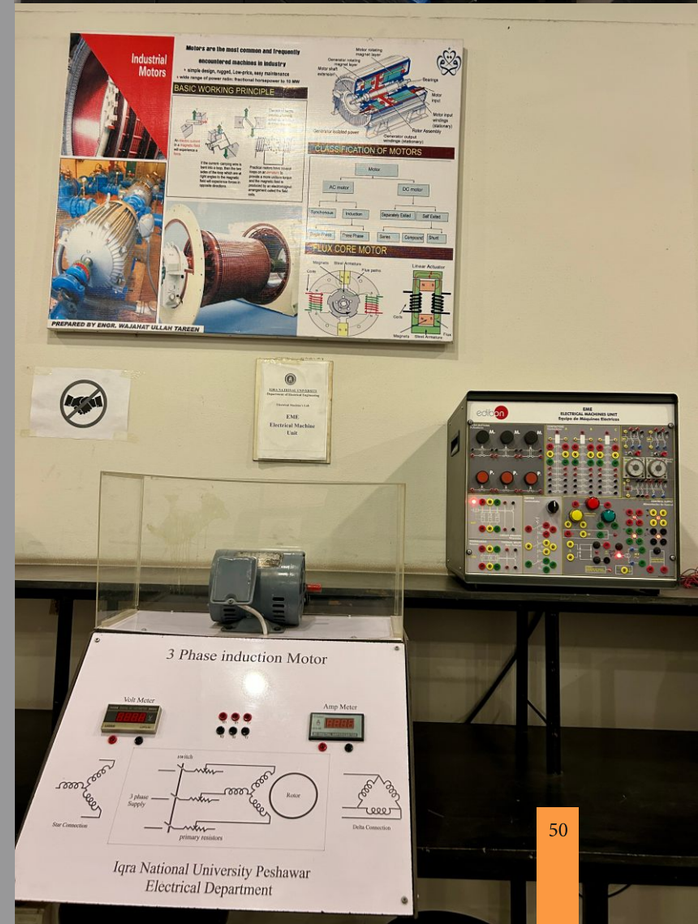
Dr. Engr. Sana Ullah Ahmed
Assistant Professor
Ph.D Electrical Engineering
(power system)

Dr. Engr. Muhammad Waqas
Lecturer
PhD Electrical Engineering (Communication system),
FAST NU

Mr. Himyatullah
Lecturer
MS Mathematics
FAST University

Engr. Khalil Muhammad Khan
Lab Engineer
MS Electrical Engineering

Engr. Rashid Aleem
Lab Engineer
BS Electrical Engineering
Bahria University



BSC ELECTRICAL ENGINEERING

ELIGIBILITY CRITERIA

60% marks in F.Sc (Pre-Engg.) / Equivalent With minimum 1st division.

OR

A levels with physics, Mathematics & Chemistry with minimum grade 2-B & 1-C

OR

At least 60% marks in diploma of Associate Engineering (Electrical)

ADMISSION CRITERIA

Secondary School Certificate 10%
Higher Secondary School Certificate 50%
ETEA, NTS Test, INU Exam 40%

Key Facts

Degree Title:

BSc Electrical Engineering

Duration:

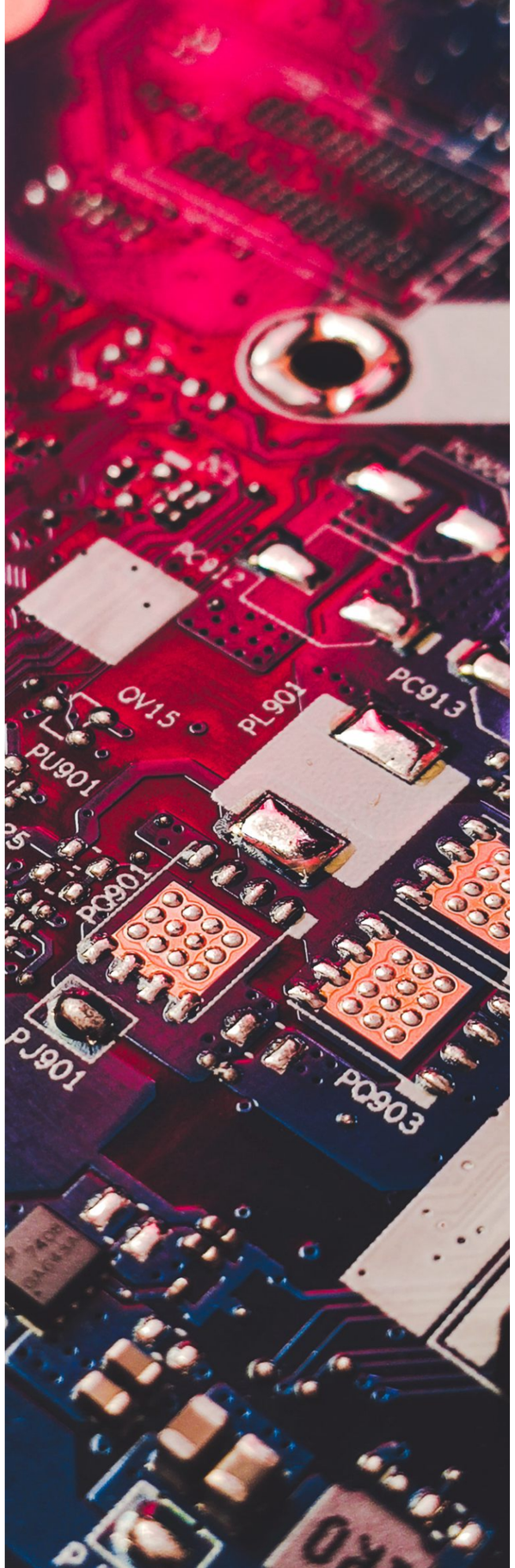
Four (4) years or 8 semesters

Credit Hours:

136 credit hours.

Specialization Streams:

- Electrical Power
- Communication
- Electronic Systems



SCHEME OF STUDIES

Semester 1

Code	Subject Name	Credit Hrs Th	Pract
CSC-101	Introduction To Computing	1	1
GSP-101	Applied Physics	3	1
HUM-101	Islamic Studies	2	0
MEC-101	Workshop Practice	0	1
ENG-101	Functional English	3	0
MTH-102	Calculus & Analytical Geometry	3	0
HUM-102	Pakistan Studies	2	0
GSQ-001	Quran Studies	-	-
	Total	17	

Semester 2

Code	Subject Name	Credit Hrs Th	Pract
EEE-111	Liner Circuit Analysis	3	1
MEC-102	Engineering Drawing	0	1
MTH-101	Linear Algebra	3	0
CSC-102	Programming Fundamentals	2	1
ENG-102	Communication Skills	3	0
MEC-103	Thermodynamics	3	0
	Total	17	

Semester 3

Code	Subject Name	Credit Hrs Th	Pract
CSC-203	Data Structures and Algorithms	3	1
EEE-221	Electronics Device and Circuits	3	1
EEE-261	Digital Logic Design	3	1
MTH-205	Complex Variables & Transforms	3	0
MTH-203	Differential Equations	3	0
	Total	18	

Semester 4

Code	Subject Name	Credit Hrs Th	Pract
EEE-222	Electronics circuit design	3	1
EEE-201	Electromagnetic Field Theory	3	0
EEE-212	Electrical Network Analysis	3	1
EEE-231	Signals and Systems	3	1
ENG-203	Technical Report Writing	3	0
	Total	18	

Semester 5

Code	Subject Name	Credit Hrs Th	Pract
EEE-332	Communication Systems	3	1
EEE-341	Electrical Machines	3	1
EEE-304	Probability Methods in Engineering	3	0
EEE-413	Introduction Embedded Systems	3	1
MTH-305	Numerical Analysis	3	0
	Total	18	

Semester 6

Code	Subject Name	Credit Hrs Th	Pract
EEE-432	Digital Signal Processing	3	1
CDE-421	Machine Learning	3	0
EEE-451	Linear Control System	3	1
EEE-342	Instrumentation and Measurement	3	1
EEE-482	Power Generation	3	0
	Total	18	

Semester 7

Code	Subject Name	Credit Hrs Th	Pract
EEE-333	Computer Communication Networks	3	1
EEE-428	Power Electronics	3	1
EEE-481	Power System Analysis	3	1
EEE-484	Electric Power Transmission	3	1
EEE-454	Wireless & Mobile Communication	3	1
EEE-429	VLSI Design	3	1
HUM-403	Professional Ethics	2	0
EEE-491	Senior Design Project 1	0	3
MGT-301	Entrepreneurship	3	0
	Total	16	

Semester 8

Code	Subject Name	Credit Hrs Th	Pract
MGT-402	Engineering Management	3	0
EEE-458	Data Communication	3	1
EEE-488	Power Distribution & Utilization	3	1
EEE-455	Antenna & Wave Propagation	3	1
EEE-492	Senior Design Project-II	0	3
	Total	14	

MS PROGRAM

MS in Electrical Engineering

ADMISSION CRITERIA

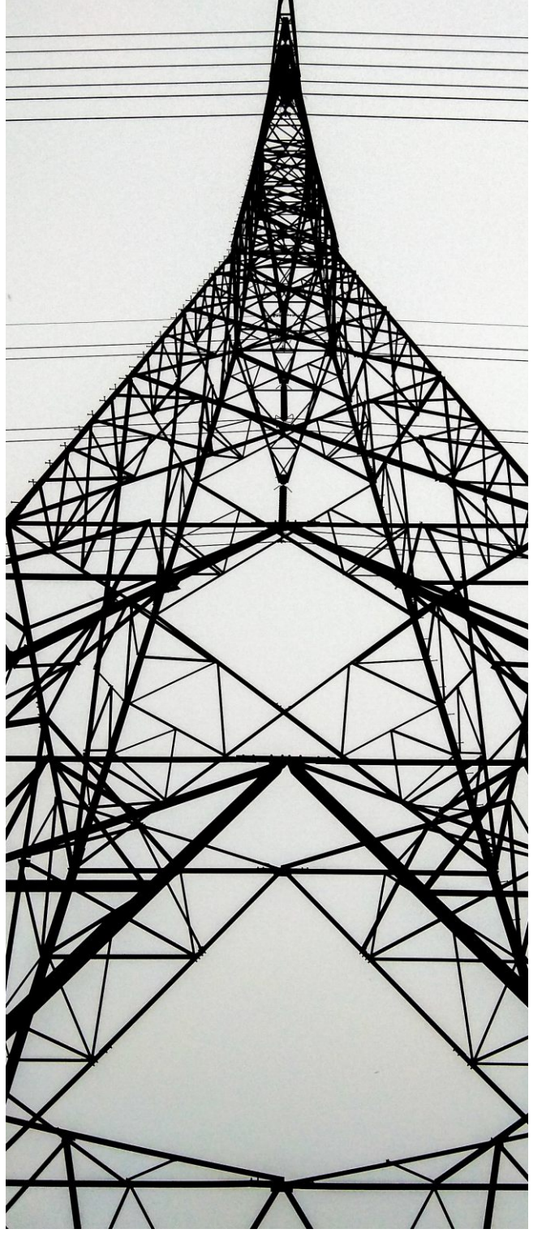
- Minimum 16 years of formal Education.
- BSc/BE Degree in Electrical Engineering, Electronic Engineering, Telecom Engineering and related field.
- Minimum CGPA of 2.0 or equivalent.
- GAT General with minimum 50% cumulative score or University test with 60 % marks.

PROGRAM STRUCTURE

The MS program requirement is 30 credit hours, which includes minimum 24 credit hours of course work and 06 credit hours of thesis involving research work

OFFERED SPECIALIZATIONS

- Communication Systems Engineering
- Power and Energy Engineering
- Signal and Image Processing
- Control Engineering



Duration of Courses and Credit Hours

Type of Course	Required Courses	No. of Courses	Total Credits
Common Courses	Core Courses (To be selected from the specified	3	9
	core courses)		
Electives	Area Elective Courses (To be selected from the Major	4	12
	Area of Specialization)		
	Open/Cross-Area Elective Courses (To be selected from all	1	3
	approved courses other than those included in the core and		
	Area Electives of a specialization chosen by a student).		
Thesis/Plan B Courses			

SCHEME OF STUDIES

Semester 1

Subject Name	Cr. Hours
Core Course-1	3
Core Course-2	3
Area Elective Course-1	3

Semester 2

Subject Name	Cr. Hours
Area Elective Course-2	3
Area Elective Course-3	3
Core Course-3	3

Semester 4

Subject Name	Cr. Hours
MS Thesis	3

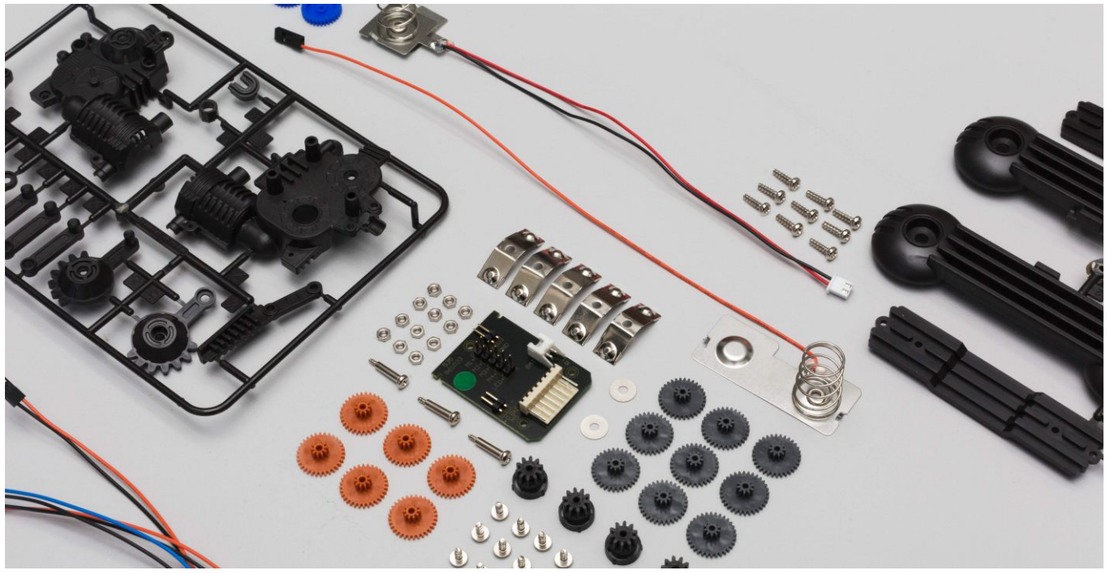
Semester 3

Subject Name	Cr. Hours
Open/Cross Area Course-1	3
Area Elective Course-4	3
MS Thesis	3

CORE COURSES

S.No	Course Code	Course Title	Cr. Hours
01	EEM601	Advanced Engineering Mathematics	3
		(compulsory for all technologies)	
02	EEE501	Research Methodology for Engineers	3
		(Compulsory for all technologies)	
03	ECM501	Analog and Digital Communication	3
04	EPE501	Power Generation and Utilization	3
05	ECL501	Advanced Linear Control Systems	3

Thesis can be replaced with two elective courses, if thesis is not completed in time.



AREA ELECTIVE COURSES

POWER ENGINEERING

S.NO	COURSE CODE	COURSE TITLE
01	EPE502	Power Transmission And Distribution
02	EPE503	Power System Protection
03	EPE504	Power System Analysis
04	EPE505	Renewable Energy Technologies
05	EPE622	Power And Energy Management
06	EPE507	Hydel Power Generation
07	EPE508	Power Converters And Inverters
08	EPE509	Thermal Power Generation
09	EPE510	Power Electronics
10	EPE511	High Voltage Engineering
11	EPE512	Advanced Industrial Electronics
12	EPE621	Energy Forecasting And Modeling
13	EPE506	Power System Dynamics And Stability
14	EPE626	Direct Energy Conversion
15	EPE641	Power System Control
16	EEE701	Probability And Stochastic Processes
17	EPE623	Electricity Resource Planning
18	EPE624	Smart Grid Technologies
19	EPE625	Communication Technologies For Smart Grids
20	EPE741	Advanced Power System Control
21	EPE742	Smart Grid Design And Operation
22	EPE743	High Tension Transmission Lines

COMMUNICATION SYSTEMS ENGINEERING/ COMMUNICATION ELECTRONICS

S.NO	COURSE CODE	COURSE TITLE
01	ECM502	Mobile and Broadband Networks
02	ECM503	Satellite Communication
03	ECM504	Computer Networks- Architecture and Protocols
04	ECM505	Wireless Communication Techniques
05	EEE701	Probability and Stochastic Processes
06	ECM621	Optical Networks
07	ECM622	Digital Communication Networks
08	ECM623	Digital Signal Processing
09	ECM624	Network Security
10	ECM625	Ad Hoc and Sensor Networks
11	ECM626	Advanced Coding Theory I
12	ECM627	TCP/IP Networking
13	ECM628	Wireless Personal Area Networks
14	ECM629	Information Security
15	ECM630	Advanced Computer Networks
16	ECM631	Optoelectronics
17	ECM632	Wireless and Mobile Communication
18	ECM633	Radio Electronics
19	ECM634	Digital & Analog Integrated Circuits
20	ECM741	RF System Design
21	ECM742	Advanced Electromagnetic Theory
22	ECM743	Mobile Services Over IP Networks
23	ECM744	Advanced Antenna Design
24	ECM745	Advanced Digital Communication I
25	ECM746	Multirate Signal Processing
26	ECM747	Advanced Coding Theory II
27	ECM748	Advanced Microwave Engineering
28	ECM749	Advanced Optical Communication

SIGNAL AND IMAGE PROCESSING

S.NO	COURSE CODE	COURSE TITLE
01	ESI501	Radar Signal Processing
02	ESI502	Speech Processing
03	ESI621	Statistical Signal Processing
04	ESI622	System Modeling and Simulation
05	ESI623	Adaptive Signal Processing
06	ESI624	Detection and Estimation Theory
07	ESI625	Pattern Recognition
08	ESI741	Advanced Digital Image Processing
09	ESI742	Digital Signal Processing with FPGAs
10	ESI743	Data Compression and Modeling
11	ESI744	Array Signal Processing

CONTROL ENGINEERING

S.NO	COURSE CODE	COURSE TITLE
01	ECL621	Digital Control Systems
02	ECL622	Linear and Multivariable Processes
03	ECL623	Robust Control Systems
04	ECL624	Optical Control Systems
05	ECL625	Dynamics of Robotics
06	ECL626	Digital Control Theory
07	EEE701	Probability and Stochastic Processes
08	ECL741	Introduction to Chaos Theory
09	ECL742	Adaptive Control System
10	ECL743	Systems Identification
11	ECL744	Non-linear Control Systems
12	ECL745	Stochastic Control
13	ECL746	Fuzzy Control Systems
14	EE699	MS Thesis

MS ENGINEERING MANAGEMENT

ADMISSION REQUIREMENTS

- Minimum 16 years of formal education in Engineering or Engineering Technology or related sciences (Telecom, computer, physics, software, mechatronics, mathematics, Electronics etc.).
- Minimum CGPA of 2.0/4.0 or equivalent.
- NTS GAT General with minimum 50% cumulative score, or 60% marks in university based test.

MS PROGRAM STRUCTURE

The MS program requirement is 30 credit hours, which includes minimum 24 credit hours of course work and 06 credit hours of thesis involving research work.

Duration of Courses and Credit Hours

Type of Course	Required Courses	No. of Courses	Total Credits
Common Courses	Core Courses (To be selected from the specified core courses)	5	15
Open/Electives	Open/Elective Courses (To be selected from all approved courses other than those included in the core chosen by a student.	3	9
Thesis/Plan B Courses			

Semester 1

Subject Name	Cr. Hours
Core Course-1	3
Core Course-2	3
Open/Elective Course-1	3

Semester 2

Subject Name	Cr. Hours
Open/Elective Courses -2	3
Core Course-3	3
Core Course-4	3

Semester 3

Subject Name	Cr. Hours
Core Course-5	3
Open/Elective Courses -3	3
MS Thesis	3

Semester 4

Subject Name	Cr. Hours
MS Thesis	3

Thesis can be replaced with two elective courses if thesis is not completed in time

CORE COURSE

S.No	Course Code	Course Title
01	EEE-501	Research Methodology for Engineers
02	EMG-502	HRM and Organizational Behavior in Engineering Organizations
02	EMG-503	Finance for Engineers
04	EMG-621	Engineering Project Management
05	EMG-602	Econometrics

AREA ELECTIVE COURSES FOR MS EM

TELECOMMUNICATION MANAGEMENT

S.NO	COURSE CODE	COURSE TITLE
01	EMT-501	Telecommunication Marketing
02	EMT-502	Telecommunication Business Process
03	EMT-503	Telecommunication Technology Management
04	EMT-504	Telecommunication Business Management
05	EMT-621	Management of Telecommunication Security Networks
06	EMT-622	Performance and Management of Emerging Mobile Networks
07	EMT-623	Mobile System and Network Optimization Management
08	EMT-624	Telecom Laws and Regulations
09	EMT-625	Emerging Technologies in Telecom Sector
10	EMT-741	Communication Systems Design and Service Integration
11	EMG-605	Management of Technology & Innovation

ENERGY MANAGEMENT

S.NO	COURSE CODE	COURSE TITLE
01	EMP-501	Electricity and Renewable Markets
02	EMP-502	Rules and Regulations in Power Sector
03	EMP-503	Energy Project Management
04	EMP-504	Energy Risk Management
05	EMP-505	Environmental Management
06	EPE-621	Advanced Power System Control
07	EPE-504	Power System Analysis
08	EPE-622	Power and Energy Management
09	EPE-505	Renewable Energy & Technologies
10	EPE-601	Power System Operation
11	EMG-605	Management of Technology & Innovation

SOFTWARE MANAGEMENT

S.NO	COURSE CODE	COURSE TITLE
01	EMS-611	Software Quality Management
02	SEE-711	Software System Quality
03	SEE-718	Contemporary Issues in Database
04	EMS-612	Management Information System
05	EMG-605	Management of Technology & Innovation

MANAGEMENT (OPEN/CROSS-ELECTIVE COURSES)

S.NO	COURSE CODE	COURSE TITLE
01	ASC-714	Contemporary Issues in Management
02	ASC-712	Advanced Operation Research
03	ASC-716	Enterprise Planning and Control
04	ASC-713	Adv. Research Methods, Quantitative and Qualitative
05	ASC-717	Advanced Research Methods
06	ASC-718	Human Resource in Project Management
07	ASC-612	Deterministic Operations Research
08	ASC-613	User Experience Design and Testing
09	ASC-614	Customer-Driven Technical Innovation for Engineers
10	ASC-615	Interactive Product Prototyping for Engineers
11	ASC-616	Product Development for Engineers
12	ASC-617	Statistical Quality Control
13	ASC-618	Reliability Analysis and Risk Assessment
14	ASC-619	Human Factors Engineering
15	ASC-620	Inventory Theory
16	ASC-621	Legal issues for Engineering Managers
17	ASC-622	Operations Management
18	EME-609	Strategic Marketing
19	EME-608	Machine Learning in Finance
20	EM-699	MS Thesis

INDUSTRIAL MANAGEMENT

S.NO	COURSE CODE	COURSE TITLE
01	EMI-501	Production Technologies
02	EMI-502	Cellular Manufacturing
03	EMI-601	Complex Project
04	EMI-601	Advanced Applied Engineering
05	EMI-503	System Engineering
06	EMG-605	Management of Technology & Innovation

LOGISTICS MANAGEMENT

S.NO	COURSE CODE	COURSE TITLE
01	EML-701	Advanced Production Logistics
02	EML-604	Supply Chain Informatics System
03	EML-601	Complex Project
04	EML-603	Digital Logistics
05	EMG-605	Management of Technology & Innovation

PH.D ELECTRICAL ENGINEERING

ADMISSION CRITERIA

- Minimum 18 years of formal Education.
- MSC / MS / MPhil Engineering Degree in relevant discipline from HEC recognized university.
- CGPA of 3 out of 4 or above. Candidate must provide equivalency certificate from HEC in case of any foreign degree.
- GAT Subject test with minimum 60 % cumulative score, or university based test passed with 70% marks.
- Tentative research proposal.

PROGRAM STRUCTURE

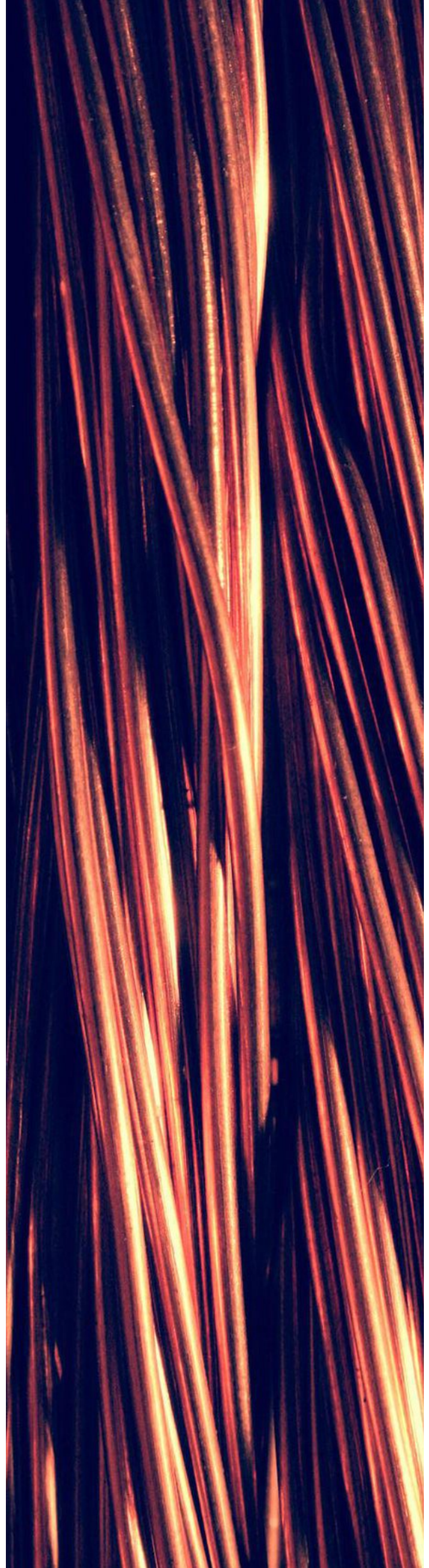
The PhD program requirement is 54 credit hours, which includes minimum 18 credit hours of course work and 36 credit hours of thesis involving research work. Students will be eligible to start their research work officially after qualifying the comprehensive exam. Research proposals shall be evaluated by Graduate Studies Committee before they are forwarded for approval to BASAR (Board of Advanced Study and Research). Student can start his / her research work after proposal approval from Graduate Studies Committee.

PROGRAM DURATION

Minimum duration for PhD program is 3 years. Students will be allowed maximum of 5 (with 1 year special extension with approval of vice chancellor) years to complete their degree

OFFERED SPECIALIZATION

- Communication System Engineering
- Power System Engineering
- Communication Electronics



SCHEME OF STUDIES

Type of Courses	Required Courses	No. of Courses	Total Credits
Area Elective Courses	600 Level Courses	0-1	0-3
	700 Level Courses	2-4	6-12
	800 Level Courses	2-4	6-12

Semester 1	
Subjects/Courses	Credits
Area Elective Course 1	3
Area Elective Course 2	3
Semester 2	
Area Elective Course 3	3
Area Elective Course-4	3
Semester 3	
Area Elective Course-5	3
Area Elective Course-6	3
Semester 4	
COMPREHENSIVE EXAM	
Supervised Research	12
Semester 5	
Supervised Research	12
Semester 6	
Supervised Research	12
Submission of completed thesis for evaluation and defense.	

PH.D IN ENGINEERING MANAGEMENT

ADMISSION REQUIREMENTS

- Minimum 18 years of formal Education.
- MSc/MS/MPhil Engineering, Computer Science and relevant discipline from HEC recognized university with 16 years of formal education in Bachelor of Engineering, Engineering technologies and related sciences (Telecom, computer, physics, software, mechatronics, mathematics, Electronics etc.)
- 70% marks in case of annual system or CGPA of 3 out of 4 or above. Candidate must provide equivalency certificate from HEC in case of any foreign degree.
- GAT Subject with minimum 60% cumulative score, or university based test passed with 70% marks.

PHD PROGRAM STRUCTURE

The PhD program requirement is 54 credit hours, which includes minimum 18 credit hours of course work and 36 credit hours of thesis involving research work. Students will be eligible to start their research work officially after qualifying the comprehensive exam. Research proposals shall be evaluated by Graduate Studies Committee before they are forwarded for approval to BASAR (Board of Advanced Study and Research). Student can start his / her research work after proposal approval from Graduate Studies Committee.

PROGRAM DURATION

Minimum duration for PhD program is 3 years. Students will be allowed maximum of 5 (with 1 year special extension with approval of vice chancellor) years to complete their degree.

COURSE DISTRIBUTION

Type of Course	Required Courses	No. of Courses	Total Credits
Area Elective Courses	600 Level Courses	0-1	0-3
	700 Level Courses	2-4	6-12
	800 Level Courses	2-4	6-12

SCHEME OF STUDIES

Semester 1

Subject Name	Cr. Hours
Area Elective Course 1	3
Area Elective Course 2	3

Semester 2

Subject Name	Cr. Hours
Area Elective Course 3	3
Area Elective Course-4	3

Semester 3

Subject Name	Cr. Hours
Area Elective Course-5	3
Area Elective Course-6	3

Semester 4

Subject Name	Cr. Hours
COMPREHENSIVE EXAM	
Supervised Research	12

Semester 5

Subject Name	Cr. Hours
Supervised Research	12

Semester 6

Subject Name	Cr. Hours
Supervised Research	12

Submission of completed thesis for evaluation and defense.