



Post Graduate Programs

Prospectus
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Dr. M. Kamran Liaqat Bhatti
Director Postgraduate Programmes

Post Graduate Studies Program

The Institute started the Post Graduate Studies Program in the year 2016. The program has been asserting very encouraging responses from aspirants since its inception. All the MS programs at the Institute are running with prior approval from the Higher Education Commission (HEC) of Pakistan, and IET is only maintaining all the requirements of HEC to keep the program's validity at all times. The Program aims to educate and train next-generation science and engineering professionals. It provides students with an intellectual stimulus for advanced study courses. The Institute emphasizes creative thinking, problem-solving, and research findings for academics and industrial applications. The Institute specially designs curriculums to enable graduates to become adept in developing and applying research techniques and in interpreting information via data collection derived from research.



Dr. Naeem Aslam
Coordinator MS CS



Dr. Syed Safdar Raza
Coordinator MS EPE



Dr. Maham Hussain
Coordinator MS CHE



Engr. Dr. Zulkarnain Abbas
Coordinator MS MECH



Ms. Raisham Hayee
Coordinator MBA



Dr. Syed Adnan Raheel Shah
Coordinator MS Civil

MS Chemical Engineering

Introduction:

Chemical Engineering involves and comprehends design and maintenance of chemical plants and brings out capabilities of chemical processes for transforming raw materials into valuables. This includes union of knowledge from applied chemistry and engineering for the production of useful products. This branch of engineering is versatile discipline comprehending areas from biotechnology and nanotechnology to mineral processing. It covers various areas in mineral based industries, petrochemical plants, pharmaceuticals, synthetic fibers and petroleum refining plans etc. Because of industrial expansion and scarcity of resources, the scope of chemical engineering is stretched out. The institute is envisioned to furnish human asset thereof which may be demanded for exertion of creating synthetic replacement for limited natural materials and resources. Overall chemical engineers make very important contributions to make life easy for everyone.

After serving the southern Punjab region for more than two decades through undergraduate program in Chemical Engineering and enjoying continued alumni's and employer's satisfaction, department of Chemical Engineering at the institute commenced postgraduate engineering program in Chemical Engineering in 2016. The program was long awaited and its need was manifested by a large inflow of applicants all over the country. The program aims at producing professionals with postgraduate qualification equipped to work in design, operation, academics and research in Chemical Engineering and allied fields.

Objectives:

Objectives of the MS (Chemical Engineering) program offered at the institute are to:

- amalgamate key science and engineering principles to address the technological challenges of the process industry.
- disseminate advanced engineering concepts and skills in addition to improving students' communication skills to enable them to work in versatile industrial and professional environment

- prepare professionals for rapidly changing technological environments with the core knowledge central to multidisciplinary careers.
- instill strong sense of humanistic values and professionalism in students such that they can conduct ethically and knowledgeably regarding technological impact in societal issues
- enable graduates to assume leader positions in defining the social, intellectual, business and technical dimensions of the professional organizations they belong to
- enable graduates to continue their life-long learning process and participate in graduate education to remain as effective professionals in the work place of the future.

Outcomes:

Graduates with MS (Chemical Engineering) degree from the Institute are desired to possess:

- An ability to apply knowledge of mathematics, science and engineering to design and conduct experiments and to analyze and interpret data to solve engineering problems.
- An ability to design components, systems and processes to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
- The necessary ability to understand the impact of engineering solutions in a global, economic, environmental, societal context with professional and ethical responsibility.
- An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.
- Potential to enter in both private and public sectors as chemical engineers and to pursue further education.

Research Facilities:

Coal Research Center
Advanced Separation Lab
Advanced Reaction Engineering's Lab
Simulation Lab

MASTER OF CHEMICAL ENGINEERING CURRICULUM

SEMESTER-1			SEMESTER-2		
Code	Course Title	Credit Hrs.	Code	Course Title	Credit Hrs.
ChE-501	Advance Engineering Mathematics	3+0	ChE-503	Advance Transport Phenomena	3+0
ChE-502	Advance Separation Process	3+1	ChE-504	Advance Chemical Reaction Engineering	3+1
	Specialization-1	2+0		Specialization-2	2+0
	Total Credits	09		Total Credits	09

SEMESTER-3			SEMESTER-4		
Code	Course Title	Credit Hrs.	Code	Course Title	Credit Hrs.
	Specialization-3	2+1		Research Thesis	06
	Specialization-4	2+1			
	Total Credits	06		Total Credits	06

Approved Specialization Courses offered for MS Chemical Engineering

Ch.E-505	Advance Chemical Reaction Design	2+1
Ch.E-506	Numerical methods in chemical engineering	2+1
Ch.E-507	advanced fluid mechanics	2
Ch.E-508	advanced heat transfer	2+1
Ch.E-509	advanced mass transfer	2+1
Ch.E-510	process dynamic & control	2
Ch.E-511	advance particle dynamics	2
Ch.E-512	process design and optimization	2
Ch.E-513	project management	2
Ch.E-514	advance environmental engineering	2+1
Ch.E-515	advance biochemical engineering	2
Ch.E-516	advance process modeling & simulation	2+1
Ch.E-517	advance energy engineering	2
Ch.E-518	process safety and loss prevention	2
Ch.E-519	advanced computer aided design	2+1
Ch.E-520	advance d polymer engineering	2
Ch.E-521	research methodology	2
Ch.E-522	coal preparation and beneficiation	2+1
Ch.E-523	coal gasification	2+1
Ch.E-524	advanced coal power systems	2+1

MS Electrical Power Engineering

Introduction

NFC Institute of Engineering and Technology is offering bachelor degree in Electronics and Electrical Engineering since 2001 and has attained excellent feedback from alumni and industry. With this maturity and keeping in view the lack of opportunities for higher degree in Electrical Engineering in southern Punjab, the institute became the second institute in southern Punjab and the only public sector degree awarding institute in Multan to offer MS Electrical Engineering in year 2016. By taking care of the increasing requirement of electrical engineering industry, the institute offers Master of Science (MS) in Electrical Engineering with specialization in Electrical Power Engineering. A lot of research in areas like renewable energy and efficient utilization of available electrical energy has made this field active worldwide and Pakistan is of no exception.

Objective

The objective of the program is to produce postgraduate professionals with knowledge and skills to find optimal and efficient solutions to real world electrical engineering problems. Graduates are prepared for technically demanding careers in the field of electrical power engineering and for further higher education within the country and abroad. MS Electrical Engineering at the institute is a research based degree motivating students to develop an in-depth knowledge and opportunity to practice handling real world problems in various related areas such as power system analysis and design, power system protection, analysis and design of renewable energy sources and efficient utilization of electrical engineering systems using modeling and simulation techniques. Students are offered ample choices for selection of postgraduate courses related to their background, interest and area of prospective research.

CURRICULUM

CORE COURSES

CODE	TITLE
EE-501	Power Generation & Plant Operation
EE-502	Power Transmission & Distribution
EE-503	Renewable Energy
EE-504	Modeling & Simulation

Area Elective Courses

CODE	TITLE
EE 505	Advanced Engineering Mathematics
EE 506	Stochastic Processes
EE 507	Power System Analysis
EE 508	Power System Operation and Control
EE 509	Power Electronics
EE 510	High voltage Engineering
EE 511	Power System Planning
EE 512	DC and Flexible AC Transmission
EE 513	Electric Power Quality
EE 514	Generation of sustainable energy system
EE 515	Power System Protection
EE 516	Power System dynamics
EE 517	Power Engineering project management
EE 518	Power System Reliability
EE 519	Power System Stability and Control
EE 520	Advanced Linear Systems
EE 521	Illumination Engineering
EE 522	Power and Energy Economic Policy
EE 523	Energy and Environment
EE 524	Research Methods
EE 525	Combined Cycle Power and Energy Systems
EE 550	MS Thesis

Note:

- Each course has three credit of theory and MS thesis has 6 credit.
- Core courses are compulsory and four courses from area elective courses should be taken to fulfill requirement of 24 credit of course work.
- From third semester MS thesis is offer which is research work base.

Scheme of Study

For the award of degree, candidates will either need to complete 30 credit hours of course work or 24 credit hours of course work along with 6 credit hours for research work/thesis. The candidates are encouraged to submit one paper for National/Inter-national Conference/Journal/Magazine to award 6 credit hours of thesis.

The distribution of 24 credit hours of course work is as under:

	Required Courses	Courses	Sub-Total Credits
Core Courses	To be selected from the core subjects of relevant specialization	4	12
Electives	Area Elective Course (From Open electives or cross area i.e. from all the approved courses other than those included in core and major area Electives; it may be a special subject course)	4	12
	Thesis/02 Elective Courses		06
	Total Credits:		30

MASTER OF ELECTRICAL ENGINEERING CURRICULUM

SEMESTER-1			SEMESTER-2		
Code	Course Title	Credit Hrs.	Code	Course Title	Credit Hrs.
EE-	Core Course-I	3+0	EE-	Core Course-III	3+0
EE-	Core Course-II	3+0	EE-	Core Course-IV	3+0
EE-	Elective Course-I	3+0	EE-	Elective Course-II	3+0
	Total Credits	09		Total Credits	09

SEMESTER-3			SEMESTER-4		
Code	Course Title	Credit Hrs.	Code	Course Title	Credit Hrs.
EE-	Elective Course-III	3+0	EE-	Thesis/Two Elective Courses	6+0
EE-	Elective Course-IV	3+0			
	Total Credits	06		Total Credits	06

MS Mechanical Engineering

Mission

The mission of the MS program in Mechanical Engineering is to impart knowledge in the art and science of mechanical engineering through a comprehensive and advanced curriculum that produces specialized mechanical engineers of high ethics and skill, fully prepared for entry into industry, government, graduate school and private enterprise. The program curriculum major discipline of mechanical engineering with introduction to advanced mathematics and use of computers in engineering. The program is expected to enable the students to research, design, develop, test, evaluate and implement engineering solutions to problems that are of a complexity encountered in professional practice.

Objective

The most important purpose of the MS program at NFC Institute of Engineering & Technology is to train engineers for professional practice in the field of major discipline of mechanical engineering. This program is surely going to develop autonomy, impart knowledge as well as the capacity for progressing professional growth. The graduate program of Mechanical engineering will identify, formulate and solve mechanical design engineering problems.

Scope

In today's fast developing technology, growing industrialization and modernization, "Mechanical

Engineering" holds a prominent place. Within the wide boundaries of the engineering profession, there are thousands of challenging activities in areas such as research, development, design, manufacture and operation of products and services. Students can tailor courses to suit them with specialist modules that allow them a deeper understanding of particular areas of engineering that interest them. The wide spectrum of courses enables student creativity not only results in a more exciting and engaging learning experience, it also prepares students fully for the practical demands of the post-graduate studies and workplace.

Note: Program will be start subject to award of NOC from HEC.



MASTER OF MECHANICAL ENGINEERING CURRICULUM

SEMESTER-1			SEMESTER-2		
Code	Course Title	Credit Hrs.	Code	Course Title	Credit Hrs.
ME-	Core Course-I	3+0	ME-	Core Course-III	3+0
ME-	Core Course-II	3+0	ME-	Core Course-IV	3+0
ME-	Elective-I	3+0	ME-	Elective-II	3+0
	Total Credits	09		Total Credits	09

SEMESTER-3			SEMESTER-4		
Code	Course Title	Credit Hrs.	Code	Course Title	Credit Hrs.
ME-	Elective Course-III	3+0	ME-	Thesis/Two Elective Courses	6+0
ME-	Elective Course-IV	3+0			
	Total Credits	06		Total Credits	06

List of Core Courses

Sr. #	Course Code	Course Title	Credit Hours
1.	MTH-601	Advanced Numerical Analysis	3 (3+0)
2.	ME-602	Advanced Manufacturing Processes	3 (3+0)
3.	ME-603	Advanced Heat Transfer	3 (3+0)
4.	ME-604	Advanced Stress Analysis	3 (3+0)
5.	ME-699	Thesis	6 (0+6)

List of Elective Courses

Sr. #	Course Code	Course Title	Credit Hours
1.	ME-611	Computational Fluid Dynamics	3 (3+0)
2.	ME-612	Advanced Fluid Mechanics	3 (3+0)
3.	ME-613	Advanced Thermodynamics	3 (3+0)
4.	ME-614	Advanced Turbomachinery	3 (3+0)
5.	ME-615	System Dynamics and Control	3 (3+0)
6.	ME-616	Continuum Mechanics	3 (3+0)
7.	ME-617	Fracture Mechanics	3 (3+0)
8.	ME-618	Advanced Solid Mechanics	3 (3+0)
9.	ME-619	Design Optimization & Analysis Techniques	3 (3+0)
10.	ME-620	Combustion and Environment	3 (3+0)
11.	ME-621	Renewable Energy Systems	3 (3+0)
12.	ME-622	Project Management	3 (3+0)

Masters of Business Administration

Introduction:

Considering the growing need of skilled human resources in the field of business management at local and national level NFC- Institute of Engineering and Technology, Multan offers **MBA 2 year regular** Programme at Department of Business Administration. This programme will cater the needs of students to develop the comprehensive knowledge in various disciplines of the business such as Entrepreneurship, Marketing, Finance, Research and Human Resource Management. Moreover, this programme will enable the students to build and maintain balance between the targets of economic success and social & environmental responsibility.

With this vision, MBA program is planned to achieve excellence in local and national marketplace by producing knowledgeable graduates capable to work as future executive in different organizations.

The programme is open to the students having 16 years Business education backgrounds including, BBA, BBA-IT, BBA (Banking & Finance), or commerce, etc. This degree programme promises the graduates with higher level of employability as management professionals by helping them to nurture their potentials.

The goal of the department is to prepare students for a successful management career. Since its inception, the department has endeavored to give its students an education to enables them to face any challenge in their professional life.

The course structure basically focuses on detailed study of Business Administration involving different aspects of the business functions and operations. It endows students with the latest business knowledge to meet the ever changing requirements of the firms.

Aims and Objectives:

MBA programme at Department of Business Administration NFC-IET Multan aims at developing a

student's intellectual ability, personality and managerial skills through an appropriate blending of business and general education. The MBA curriculum provides students with a comprehensive management education of globally recognized best practices with flexibility of adaptation to indigenous entrepreneurial and societal context.

The course aims at explaining the business environment in which the public and private sectors operate mainly. It helps students to develop decision making ability in real time business situations. It also focuses on developing operational and analytical skills in students to tackle business problems in different sectors. The students are required to choose a specialization of their interest, which further facilitate them to develop management skills in a particular sector. After MBA programme student should be able to

- Communicate effectively.
- Identify, analyze, formulate, and solve business problems using appropriate methodologies and tools.
- Have knowledge of the functional areas of organizations.

Admission Eligibility:

The programme is open to the students having 16 years Business education backgrounds including, BBA, BBA-IT, BBA (Banking & Finance), or commerce, etc with minimum 2.50/4.00 CGPA or 60% marks. Candidate must appear in Institute Admission Test or NTS-GAT (Gen) and secure at least 50% marks. Candidates will appear in an interview for the purpose of final selection.



MASTER OF BUSINESS ADMINISTRATION CURRICULUM

SEMESTER-1			SEMESTER-2		
Code	Course Title	Credit Hrs.	Code	Course Title	Credit Hrs.
MBA-	Core Course-1	3	MBA-	Core Course-6	3
MBA-	Core Course-2	3	MBA-	Core Course-7	3
MBA-	Core Course-3	3	MBA-	Core Course-8	3
MBA-	Core Course-4	3	MBA-	Core Course-9	3
MBA-	Core Course-5	3	MBA-	Core Course-10	3
Total Credits		15	Total Credits		15

SEMESTER-3			SEMESTER-4		
Code	Course Title	Credit Hrs.	Code	Course Title	Credit Hrs.
MBA-	Core Course-11	3	MBA-	Core Course-14	3
MBA-	Core Course-12	3	MBA-	Elective-3	3
MBA-	Core Course-13	3	MBA-	Elective-4	3
MBA-	Elective-1	3	MBA-	Research Thesis/Project/ General Elective Two Courses	6
MBA-	Elective-2	3	Total Credits		15
Total Credits		15	Total Credits		15

Specialization/Elective Courses

CORE COURSES		
Code	Course Title	Credit Hrs.
MBA-601	Mathematical & Statistical Applications for Business	3
MBA-602	Business Economics	3
MBA-603	Strategic Management	3
MBA-604	Advance Financial Accounting	3
MBA-605	Corporate Governance	3
MBA-606	Strategic Finance	3
MBA-607	Financial Reporting & Analysis	3
MBA-608	Strategic Marketing	3
MBA-609	Strategic Human Resource Management	3
MBA-610	Advanced Research Methods	3
MBA-611	Global Marketing	3
MBA-612	Analysis of Pakistan Industries	3
MBA-613	Banking Operation	3
MBA-614	Ethics and Corporate Social Responsibility	3
MBA-615	Consumer Behavior	3

GENERAL ELECTIVE COURSES		
Code	Course Title	Credit Hrs.
GE-701	Research Thesis/Project	3
GE-702	Knowledge Management	3
GE-703	Change Management	3
GE-704	Entrepreneurship and Innovation Management	3

Note: Business Electives & Core shall be offered subject to the availability of faculty.

Marketing specialization		
Code	Course Title	Credit Hrs.
MKT-706	Seminar in Marketing	3
MKT-707	Integrated Marketing Communication	3
MKT-708	Sales Management	3
MKT-709	Internet Marketing	3
MKT-710	Retail Marketing	3
MKT-711	Tourism and Hospitality Marketing	3
MKT-712	Strategic Brand Management	3
MKT-713	Topics in Consumer Behavior	3

Human Resource Management Specialization		
Code	Course Title	Credit Hrs.
HR-721	Advance Topics in Compensation Management	3
HR-722	Conflict and Negotiation Management	3
HR-723	Art of Leadership and Motivation	3
HR-724	Managing Employee Relations	3
HR-725	Seminar in Management	3
HR-726	HRM in Public Sector of Pakistan	3

Finance Specialization		
Code	Course Title	Credit Hrs.
FNC-731	Financial Risk Management	3
FNC-732	Investment Analysis and Portfolio Management	3
FNC-733	Central Banking and Regulations	3
FNC-734	Treasury & Insurance Management	3
FNC-735	Financial Markets and Institutions	3
FNC-736	Islamic Banking & Finance	3
FNC-737	International Finance	3

MBA PROGRAMME FOR NON-BUSINESS UNDERGRADUATES

(Weekend Programme)

Introduction:

This MBA 2 years programme at Department of Business Administration has been developed to impart business education to candidates with non-business 16 years education at undergraduate level. This programme will cater the needs of students to develop the comprehensive knowledge in various disciplines of the business such as Entrepreneurship, Marketing, Finance, Research and Human Resource Management. Moreover, this programme will enable the students to build and maintain balance between the targets of economic success and the limitations of increasing social and environmental responsibility.

Aims and Objectives:

MBA program at Department of Business Administration NFC-IET Multan aims at developing a student's intellectual ability, executive personality and managerial skills through an appropriate blending of business and general education. The MBA curriculum provides students with a

comprehensive management education of globally recognized best practices with flexibility of adaptation to indigenous entrepreneurial and societal context.

Admission Eligibility:

The programme is open to the students having 16 years of education with minimum 2.50/4.00 CGPA or 60% marks. Candidate must appear in Institute Admission Test or NTS-GAT (Gen) and secure at least 50% marks. Candidates will appear in an interview for the purpose of final selection.



MBA PROGRAMME FOR NON-BUSINESS UNDERGRADUATES

SEMESTER-1			SEMESTER-2		
Code	Course Title	Credit Hrs.	Code	Course Title	Credit Hrs.
MBA-	Core Course-1	3	MBA-	Core Course-6	3
MBA-	Core Course-2	3	MBA-	Core Course-7	3
MBA-	Core Course-3	3	MBA-	Core Course-8	3
MBA-	Core Course-4	3	MBA-	Core Course-9	3
MBA-	Core Course-5	3	MBA-	Core Course-10	3
Total Credits		15	Total Credits		15

SEMESTER-3			SEMESTER-4		
Code	Course Title	Credit Hrs.	Code	Course Title	Credit Hrs.
MBA-	Core Course-11	3	MBA-	Core Course-14	3
MBA-	Core Course-12	3	MBA-	Elective-3	3
MBA-	Core Course-13	3	MBA-	Elective-4	3
MBA-	Elective-1	3	MBA-	Research Thesis/Project/ General Elective Two Courses	6
MBA-	Elective-2	3	Total Credits		15
Total Credits		15	Total Credits		15

Specialization/Elective Courses

CORE COURSES		
Code	Course Title	Credit Hrs.
MBA-501	Business Math & Statistics	3
MBA-502	Business Communication	3
MBA-503	Principles of Management	3
MBA-504	Fundamental of Financial Accounting	3
MBA-505	Principles of Marketing	3
MBA-506	Business Finance	3
MBA-507	Management Information System	3
MBA-508	Marketing Management	3
MBA-509	Human Resource Management	3
MBA-510	Managerial Economics	3
MBA-511	Business Research Methods	3
MBA-512	Financial Management	3
MBA-513	Organizational Behavior	3
MBA-514	Strategic Management	3
MBA-515	Business Law	3
MBA-516	Entrepreneurship	3
MBA-517	Operation Management	3
MBA-518	Theory and Practice of Management	3

GENERAL ELECTIVE COURSES		
Code	Course Title	Credit Hrs.
GE-701	Research Thesis/Project	3
GE-702	Knowledge Management	3
GE-703	Total Quality Management	3
GE-704	Project Management	3
GE-705	Contemporary Issues in Management	3

Note: Business Electives & Core shall be offered subject to the availability of faculty.

Marketing specialization		
Code	Course Title	Credit Hrs.
MKT-706	Seminar in Marketing	3
MKT-707	Integrated Marketing Communication	3
MKT-708	Sales Management	3
MKT-709	Internet Marketing	3
MKT-710	Retail Marketing	3
MKT-711	Tourism and Hospitality Marketing	3
MKT-712	Strategic Brand Management	3
MKT-713	Topics in Consumer Behavior	3

Human Resource Management Specialization		
Code	Course Title	Credit Hrs.
HR-721	Advance Topics in Compensation Management	3
HR-722	Conflict and Negotiation Management	3
HR-723	Art of Leadership and Motivation	3
HR-724	Managing Employee Relations	3
HR-725	Seminar in Management	3
HR-726	HRM in Public Sector of Pakistan	3

Finance Specialization		
Code	Course Title	Credit Hrs.
FNC-731	Financial Risk Management	3
FNC-732	Investment Analysis and Portfolio Management	3
FNC-733	Central Banking and Regulations	3
FNC-734	Treasury & Insurance Management	3
FNC-735	Financial Markets and Institutions	3
FNC-736	Islamic Banking & Finance	3
FNC-737	International Finance	3

MS Computer Science

Introduction:

Department of Computer Science at NFC-Institute of Engineering & Technology is dedicated to train and produce graduates possessing comprehensive knowledge in various areas of the field. With this vision, the undergraduate program in computer science was launched in 2008 and has achieved excellent acceptance of graduates in the local and international markets. We have been on the move for the last many years. To further enhance the knowledge and skills of students and to fill the gap of higher education in the field in the Southern Punjab region, the Department of Computer Science at the institute commenced the MS program in Computer Science in 2017. This degree program is aimed to improve theoretical and in-depth knowledge, enabling students to add productive research contributions in the emerging area of computer science. The expected outcome is well-rounded computer scientists ready to fulfill the demand for the industry, research, and academics in the country and abroad.

Program Objectives:

Objectives of the postgraduate program are to:

- enlighten students with advanced theoretical and practical computer science knowledge
- impart research skills in students
- enable students to add useful research contributions in the field of Software Engineering, Bioinformatics, Telecommunication, Data Science, Cloud Computing, Scientific Visualization, and computer vision.
- fill the requirement of trained computer science professionals in the relevant industry within the country & abroad
- produce professionals with knowledge of emerging subfields like bioinformatics (a newer field with a lot of room for research directly related to serving humanity), computer vision and computer networks, etc.

Scope:

Information Technology (IT) field has the potential to

play a major role in boosting Pakistan's economy as practiced by other Asian countries.

Computer science graduates start their professional careers just after the completion of their bachelor's degrees. However, after serving 2-3 years in the industry, most of them want a higher degree to take their career to the next higher level. In order to enter in the field of academia, MS, and Ph.D. in the relevant field are required. A limited number of universities in Pakistan offer accredited postgraduate degrees in computer science which is far less than the demand. The institute aims to fill this gap by commencing MS (Computer Science) program in 2017.

This program is ideally designed for students who want to broaden and enhance their knowledge in the field of computer science. Today, with the rapidly increasing market demand, students are found interested in the field of computer science and the requirement is well satisfied by the MS (CS) program offered by the institute. The program aims to dispense necessary and important skills to the students, useful for constructing reliable and advanced software systems.

MS (CS) graduates are very well accepted in the field of computer science both within the country & abroad.

Career Options:

There are many career options available for MS (CS). The degree is specifically designed to sharpen student's skills according to market requirements and to prepare them for a competitive future. Research is considered to be the most important and advanced career option in the field of CS. Moreover, numerous job opportunities available for the students who complete their degree within the time & with honor. Some employment opportunities are as follows:

- Computer and Information Researchers
- Computer and Information Scientists
- Computer Programmers
- Computer Engineers
- Computer Supports Specialist

- Computer Analysts
- Database Administrator
- Computer System Administrators
- Data Communication Analysts

Eligibility:

- 16-year of education, i.e., BS in Computer Science/ BS in Information Technology/ Bachelor of Computer Science (Hons)/ Master of Computer Science/ Master of Information Technology/ M.Sc. (Computer Science) from a recognized institution. However, candidates having Computer Engineering/ Bachelor of Science in Software Engineering/ Bachelor of Engineering in Information Technology/ Bachelor

of Engineering (Computer & Information System)/B.Sc. Computer System Engineering (16-year education) from a recognized institution are also eligible but have to qualify a deficiency course(s).

- Candidate must have at least CGPA 2.50 out of 4 or first division
- The candidate is required to pass the entry test conducted by the institute/GAT (with minimum 50% marks).

MS COMPUTER SCIENCE CURRICULUM

SEMESTER-1				SEMESTER-2			
Code	Category	Course Title	Credit Hrs.	Code	Category	Course Title	Credit Hrs.
CS-5XX	CS Core	Core Course-I	3	CS-5XX	CS Core	Core Course-IV	3
CS-5XX	CS Core	Core Course-II	3	CS-5XX	CS Elective	Elective-I	3
CS-5XX	CS Core	Core Course-III	3	CS-503	CS Elective	Research Methodology	3
Total Credits			09	Total Credits			09

SEMESTER-3				SEMESTER-4			
Code	Category	Course Title	Credit Hrs.	Code	Category	Course Title	Credit Hrs.
CS-5XX	CS Elective	Elective-II	3	CS-601	Thesis	Thesis-II	6
CS-5XX	CS Elective	Elective-III	3				
Total Credits			06	Total Credits			06

Core Courses for MS Computer Science

At least four courses must be taken from the following:

Code	Course Title	Code	Course Title
CS-501	Theory of Automata-II	CS-532	Advanced Operating Systems
CS-502	Advanced Analysis of Algorithms	CS-534	Theory of Programming Languages
CS-531	Advanced Computer Architecture		

Credit Hours Distribution

Category or Area	Credit Hours
CS Core	12
CS Electives	12
Thesis	6
Total Credit Hours	30

List of Elective Course

Computer Graphics and Image Processing

Sr. No.	Course Code	Title	Credit Hrs.
1	CS-504	Advanced Computer Graphics	3
2	CS-505	Visualization in Medicine	3
3	CS-506	Advanced Image Processing	3
4	CS-507	Computer Vision	3

Artificial Intelligence & Intelligent System

Sr. No.	Course Code	Title	Credit Hrs.
1	CS-524	Artificial Intelligence	3
2	CS-525	Artificial Neural Networks	3
3	CS-526	Robotics	3
4	CS-527	Machine Learning	3

Software Engineering

Sr. No.	Course Code	Title	Credit Hrs.
1	CS-508	Advanced Software Engineering	3
2	CS-509	Software Quality Assurance	3
3	CS-510	Requirements Engineering	3
4	CS-511	Software Project Management	3

System Engineering

Sr. No.	Course Code	Title	Credit Hrs.
1	CS-528	Digital Signal Processing	3
2	CS-529	Control Systems and Robotics	3
3	CS-530	Parallel and Distributed System	3
4	CS-533	Real Time Operating Systems	3

Database

Sr. No.	Course Code	Title	Credit Hrs.
1	CS-512	Advanced Database Systems	3
2	CS-513	Advanced Data Mining	3
3	CS-514	Data Warehousing	3
4	CS-515	Distributed Database	3
5	CS-516	Multimedia Databases	3

Programming Languages

Sr. No.	Course Code	Title	Credit Hrs.
1	CS-535	Advanced Compiler Design-I	3
2	CS-536	Advanced Compiler Design-II	3

Bioinformatics

Sr. No.	Course Code	Title	Credit Hrs.
1	CS-517	Advanced Bioinformatics	3
2	CS-518	Computational Genomics	3
3	CS-519	Computational Proteomics	3
4	CS-520	Computational Drug Design	3

Data Science

Sr. No.	Course Code	Title	Credit Hrs.
1	CS-537	Tools and Techniques in Data Science	2+1
2	CS-538	Big Data Analytics	3
3	CS-539	Distributed Data Processing	3
4	CS-540	Natural Language Processing	3

Computer Networks

Sr. No.	Course Code	Title	Credit Hrs.
1	CS-521	Advanced Computer Networks	3
2	CS-522	Network Security	3
3	CS-523	Network Performance Evaluation	3
4	CS-541	Securing the Internet of Things	3

MS Civil Engineering

Mission

Our mission is to educate, inspire and mentor the young graduate students within the civil engineering domain by providing a progressive research-based education and environment to prepare them to meet the challenges of the 21st century in a sustainable global economy. The program will positively impact and improve the civil engineering profession and society by providing highly qualified and skilled professionals who possess depth in their chosen focus area and are able to develop innovative solutions by using relevant engineering approaches and practice.

Objective

The primary objective of the MS program is to identify, assess, and impart essential knowledge, tools, and skills necessary to enhance the professional qualifications in a particular domain and to develop the leadership and entrepreneurship skills of civil engineers. For this purpose, the program will offer high quality postgraduate civil engineering education and maintain its curriculum, which is consistent with the present and future needs of the civil engineering profession serving in a complex technological society.

Scope

The profession of "Civil Engineering" deals with the design, construction, and maintenance of physical structures, including roads, bridges, buildings, dams, railways, and airports. Within the multiple disciplines of the civil engineering profession, there are still open challenges which seek attention of civil engineers for the most innovative and sustainable solutions for the complex technical problems of our society. The program is tailored to provide students with multi-disciplinary courses in their particular areas of interest and research. The wide spectrum of courses provides students an opportunity to learn and excel their knowledge in their chosen focus area as well as to commence applied research and entrepreneurship for the socio-economic betterment of the society, especially the south-Punjab region, in the form of innovative, affordable and sustainable materials, products, ideas and solutions. The program is designed to prepare graduates for professional practice or further study in the field of expertise. NFC-IET is offering MS degree program with subjects related to

following domains: Structural Engineering, Construction Engineering & Management, Geotechnical Engineering, Transportation Engineering, Environmental Engineering and Water Resource & Irrigation Engineering.

Link With Sustainable Development Goals (SDGs)

Civil engineering plays a significant role in achieving several Sustainable Development Goals (SDGs) outlined by the United Nations. Here are some key links between civil engineering and the SDGs:

SDG 9: Industry, Innovation, and Infrastructure: Civil engineering is directly linked to this goal as it involves the planning, design, construction, and maintenance of infrastructure such as buildings, roads, bridges, water supply systems, and transportation networks. Developing sustainable and resilient infrastructure is essential for economic growth, innovation, and improving quality of life.

SDG 11: Sustainable Cities and Communities: Civil engineers contribute to the development of sustainable urban infrastructure, including transportation systems, green buildings, and resilient city planning. They focus on creating inclusive, safe, and resilient cities that provide access to basic services, efficient transportation, and sustainable housing.

SDG 6: Clean Water and Sanitation: Civil engineers play a crucial role in designing and implementing water supply and sanitation systems. They contribute to the development of sustainable water management practices, wastewater treatment facilities, and



infrastructure to ensure access to safe drinking water and improved sanitation for all.

SDG 7: Affordable and Clean Energy: Civil engineering is involved in the design and construction of renewable energy infrastructure such as solar and wind power systems, hydroelectric plants, and geothermal energy systems. Civil engineers work towards developing energy-efficient buildings, transportation systems, and smart grid networks to promote clean and affordable energy sources.

SDG 13: Climate Action: Civil engineering plays a vital role in addressing climate change by developing infrastructure and technologies that reduce greenhouse gas emissions, enhance energy efficiency, and promote sustainable practices. Civil engineers contribute to climate adaptation strategies, such as coastal protection, flood management, and sustainable drainage systems.

SDG 15: Life on Land: Civil engineering helps in the conservation and sustainable management of natural resources, including land and forests. Civil engineers contribute to projects related to land reclamation, soil stabilization, and sustainable land development practices, aiming to minimize environmental degradation and protect biodiversity.

SDG 17: Partnerships for the Goals: Achieving the SDGs requires collaboration and partnerships between various stakeholders. Civil engineers often work in multidisciplinary teams, collaborating with governments, communities, NGOs, and the private sector to plan, design, and implement infrastructure projects that align with sustainable development objectives.

Civil engineering is an essential field for sustainable development, as it encompasses the design, construction, and management of infrastructure systems that directly impact communities and the environment. By integrating sustainability principles into engineering practices and considering the social, economic, and environmental aspects of projects, civil engineers can contribute significantly to the achievement of the SDGs.

Admission Eligibility

Candidates having passed a degree of B.Sc. Engineering of duration of 8-10 semesters/124-140 Credit Hours courses securing a minimum of CGPA 2.5 on a scale of 4.0 or 60% marks are eligible to get admission in the MS Civil Engineering program. The applicant is also required to pass an entry test as per

HEC criteria arranged by the institute on a specified date or GAT(NTS) by or any other examination specified by HEC for admission to the postgraduate program.

Degree Requirements

There are two options (Subject to approval by committee) available for completion of MS degree:

Option 1: Thesis

- 24 Credit Hours course work (8 courses of 3 Cr. Hrs.)
- 06 Credit Hours Thesis
- Total 30 Credits

Option 2: Non-Thesis

- 30 Credit Hours course work (10 courses of 3 Cr. Hrs. each)

MS CIVIL ENGINEERING CURRICULUM

SEMESTER-1			SEMESTER-2		
Code	Course Title	Credit Hrs.	Code	Course Title	Credit Hrs.
CE-	Elective Course-I	3+0	CE-	Elective Course-II	3+0
CE-	Core Course-I	3+0	CE-	Core Course-III	3+0
CE-	Core Course-II	3+0	CE-	Core Course-IV	3+0
Total Credits		09	Total Credits		09

SEMESTER-3			SEMESTER-4		
Code	Course Title	Credit Hrs.	Code	Course Title	Credit Hrs.
CE-	Elective Course-III	3+0	CE-	Thesis/Elective Course-VI	6+0
CE-	Elective Course-IV	3+0			
CE-	Thesis/Elective Course-V	3+0			
Total Credits		06			Total Credits

Note:

- Each course has three credits of theory and MS thesis has 6 credits.
- Four core courses are compulsory and four courses from electives should be taken to fulfill requirement of 24 credit of course work. (Electives will be offered based on availability of relevant specialization faculty).
- Four courses and thesis domain will define the specialization/major of degree. In case of course work only, 6 courses will define the specialization/major.
- From third semester, MS thesis is offered and will be evaluated in 4th semester.

Core Courses for MS Civil Engineering

Code	Course Title	Code	Course Title
CE-5101	Advanced Structural Materials	CE-5401	Advanced Geotechnical Design
CE-5201	Construction Engg. & Management	CE-5501	Design of Hydraulic Structures
CE-5301	Transportation Planning & Engg.	CE-5000	Research Thesis

List of Specialization/Elective Courses

CODE	Courses	Cr. Hr	CODE	Courses	Cr. Hr
Structural Engineering			Transportation Engineering		
CE 5101	Advanced Structural Analysis	3(3-0)	CE 5301	Traffic Engineering and Management	3(3-0)
CE 5102	Advanced Reinforced Concrete	3(3-0)	CE 5302	Geometric Design and Highway Safety	3(3-0)
CE 5103	Advanced Concrete Technology	3(3-0)	CE 5303	Pavement Analysis and Design	3(3-0)
CE 5104	Design of Masonry Structures	3(3-0)	CE 5304	Airport Planning and Design	3(3-0)
CE 5105	Prestressed Concrete	3(3-0)	CE 5305	Railway Engineering and Design	3(3-0)
CE 5106	Advanced Steel Structures	3(3-0)	CE 5306	Pavement Evaluation and Rehabilitation	3(3-0)
CE 5107	Non-Linear Structural Analysis	3(3-0)	CE 5307	Planning for Traffic Safety and Injury Prevention	3(3-0)
CE 5108	Finite Element Method	3(3-0)	CE 5308	Pavement Management Systems	3(3-0)
CE 5109	Reliability Based Structural Design	3(3-0)	CE 5309	Highway Construction Materials & Equipment	3(3-0)
CE 5110	Advanced Mechanics of Solids	3(3-0)	CE 5310	Harbor and Dock Engineering	3(3-0)
CE 5111	Fiber Reinforced Composites	3(3-0)	CE 5115	Bridge and Tunnel Engineering	3(3-0)
CE 5112	Structural Fire Engineering	3(3-0)	CE 5312	Asphalt Mix Design and Construction	3(3-0)
CE 5113	Structural Optimization	3(3-0)	CE 5313	Airport Management & Safety	3(3-0)
CE 5501	Design of Hydraulic Structures	3(3-0)	CE 5314	Statistics for Transportation Engineering	3(3-0)
CE 5115	Bridge and Tunnel Engineering	3(3-0)	CE 5315	Application of RS & GIS	3(3-0)
CE 5116	Design of Special Structures	3(3-0)	CE 5316	Transportation Infrastructure Asset Management	3(3-0)
CE 5117	Theory of Plates and Shells	3(3-0)	CE 5317	Advance Unmanned Transportation Systems	3(3-0)
CE 5118	Stability of Structures	3(3-0)	CE 5318	Urban Transport System Evaluation	3(3-0)
CE 5119	Structural Dynamics	3(3-0)	CE 5319	Public Transportation system	3(3-0)

CE 5120	Repair, Maintenance and Strengthening of Structures	3(3-0)	CE 5320	Traffic Management Analysis	3(3-0)
CE 5233	Research Methods & Statistics for Civil Engineering	3(3-0)	CE 5233	Research Methods & Statistics for Civil Engineering	3(3-0)
CE 5122	Building Engineering	3(3-0)	CE 5322	Geotechnical Aspects of Highways	3(3-0)
CE 5123	Durability of Concrete Structures	3(3-0)	CE 5323	Traffic Flow Theory	3(3-0)
CE 5124	Design of Tall Structures	3(3-0)	CE 5324	Intelligent Transportation System (ITS)	3(3-0)
CE 5125	Serviceability of Concrete Structures	3(3-0)	CE 5325	Transportation Economics	3(3-0)
CE 5126	Earthquake Engineering and Seismic Design of Structures	3(3-0)	CE 5326	Waterways Transportation	3(3-0)
CE 5127	Sustainable Development and Construction	3(3-0)	CE 5132	Environmental Impact Assessment	3(3-0)
CE 5128	Computational Modeling of Materials and Structures	3(3-0)	CE 5129	Application of 3D Printing in Civil Engineering	3(3-0)
CE 5129	Application of 3D Printing in Civil Engineering	3(3-0)	CE 5329	Transportation Data Management and Analysis	3(3-0)
CE 5130	Fracture Mechanics	3(3-0)	CE 5330	Infrastructure Systems Management	3(3-0)
CE 5227	Occupational Health and Safety in Construction	3(3-0)	CE 5331	Autonomous and Electric Transportation System	3(3-0)
CE 5132	Environmental Impact Assessment	3(3-0)	CE 5332	Data Science for Mobility	3(3-0)
CE 5133	Application of Artificial Intelligence in Civil Engineering	3(3-0)	CE 5127	Sustainable Development and Construction	3(3-0)
CE 5231	Advanced Bidding and Estimation	3(3-0)	CE 5334	Railway Planning and Management	3(3-0)
CE 5232	Construction Failure Analysis	3(3-0)	CE 5232	Construction Failure Analysis	3(3-0)

List of Specialization/Elective Courses

CODE	Courses	Cr.Hr	CODE	Courses	Cr.Hr
Construction Engineering & Management			Geotechnical Engineering		
CE 5201	Construction Project Administration	3(3-0)	CE 5401	Advanced Soil Mechanics	3(3-0)
CE 5202	Construction Planning, Scheduling and Control	3(3-0)	CE 5402	Foundation Engineering	3(3-0)
CE 5203	Safety Management in Construction	3(3-0)	CE 5403	Deep Foundations	3(3-0)
CE 5204	Contract Management	3(3-0)	CE 5404	Dam Engineering	3(3-0)
CE 5205	Cost Engineering and Control	3(3-0)	CE 5405	Geotechnical Investigation	3(3-0)
CE 5206	Economic Decision Analysis in Construction	3(3-0)	CE 5406	Soil Improvement Techniques	3(3-0)
CE 5207	Leadership in Construction Management	3(3-0)	CE 5407	Rock Engineering	3(3-0)
CE 5208	Construction Equipment Management	3(3-0)	CE 5408	Environmental Geo-techniques	3(3-0)
CE 5209	Engineering Economics and Value Engineering in Construction	3(3-0)	CE 5409	Soil Dynamics	3(3-0)
CE 5210	Human Resource Management in Construction Industry	3(3-0)	CE 5115	Bridge and Tunnel Engineering	3(3-0)
CE 5211	Supply Chain Management in Construction Industry	3(3-0)	CE 5411	Soil Erosion & Watershed Management	3(3-0)
CE 5212	Decision Making and Risk Management in Construction	3(3-0)	CE 5412	Ground Water Engineering	3(3-0)
CE 5213	Construction Operations and Development of Technologies	3(3-0)	CE 5413	Engineering Properties of Soil	3(3-0)
CE 5214	Entrepreneurship in Construction Industry	3(3-0)	CE 5414	Earth Reinforcement	3(3-0)
CE 5215	Construction Claim Management	3(3-0)	CE 5415	Earth Retaining Structures	3(3-0)
CE 5216	Construction Project Management	3(3-0)	CE 5303	Pavement Analysis and Design	3(3-0)
CE 5217	Public Infrastructure Management	3(3-0)	CE 5417	Soil Structure Interaction	3(3-0)
CE 5218	Planning and Management of Housing	3(3-0)	CE 5418	Slope Stability	3(3-0)
CE 5219	Energy Management in Buildings	3(3-0)	CE 5322	Geotechnical Aspects of Highways	3(3-0)
CE 5127	Sustainable Development and Construction	3(3-0)	CE 5420	Design and Construction of Earthen Dam	3(3-0)
CE 5132	Environmental Impact Assessment	3(3-0)	CE 5421	Rock Mechanics	3(3-0)
CE 5514	Water Resources Economics, Planning & Management	3(3-0)	CE 5422	Geo Environmental Engineering	3(3-0)
CE 5214	Entrepreneurship in Construction Industry	3(3-0)	CE 5414	Earth Reinforcement	3(3-0)
CE 5215	Construction Claim Management	3(3-0)	CE 5415	Earth Retaining Structures	3(3-0)
CE 5216	Construction Project Management	3(3-0)	CE 5303	Pavement Analysis and Design	3(3-0)
CE 5217	Public Infrastructure Management	3(3-0)	CE 5417	Soil Structure Interaction	3(3-0)
CE 5218	Planning and Management of Housing	3(3-0)	CE 5418	Slope Stability	3(3-0)
CE 5219	Energy Management in Buildings	3(3-0)	CE 5322	Geotechnical Aspects of Highways	3(3-0)
CE 5127	Sustainable Development and Construction	3(3-0)	CE 5420	Design and Construction of Earthen Dam	3(3-0)
CE 5132	Environmental Impact Assessment	3(3-0)	CE 5421	Rock Mechanics	3(3-0)
CE 5514	Water Resources Economics, Planning & Management	3(3-0)	CE 5422	Geo Environmental Engineering	3(3-0)
CE 5223	Policies, Planning and Strategies for Disaster Management	3(3-0)	CE 5233	Research Methods & Statistics for Civil Engineering	3(3-0)
CE 5224	Hazards and Disaster Management	3(3-0)	CE 5224	Hazards and Disaster Management	3(3-0)
CE 5225	Vulnerability Analysis and Hazard Mitigation	3(3-0)	CE 5425	Principles of Environmental Engineering	3(3-0)
CE 5226	Real Estate Management	3(3-0)	CE 5522	Water Supply and Sewer System Design	3(3-0)

CE 5227	Occupational Health and Safety in Construction	3(3-0)	CE 5427	Municipal Solid Waste Principles and Management	3(3-0)
CE 5228	Total Quality Management (TQM)	3(3-0)	CE 5428	Physico-Chemical Water Treatment Processes	3(3-0)
CE 5229	Project Evaluation and Feasibility Analysis	3(3-0)	CE 5429	Green Engineering Technologies	3(3-0)
CE 5230	Project Management Framework and Tools	3(3-0)	CE 5430	Air Pollution Control Engineering	3(3-0)
CE 5231	Advanced Bidding and Estimation	3(3-0)	CE 5132	Environmental Impact Assessment	3(3-0)
CE 5232	Construction Failure Analysis	3(3-0)	CE 5126	Earthquake Engineering and Seismic Design of Structures	3(3-0)
CE 5233	Research Methods & Statistics for Civil Engineering	3(3-0)	CE 5232	Construction Failure Analysis	3(3-0)
CE 5234	Building Information Modeling for Construction Management	3(3-0)	CE 5127	Sustainable Development and Construction	3(3-0)
CE 5235	Revit for Construction & Contractors	3(3-0)	CE 5534	Membrane Technology for Water and Wastewater Treatment	3(3-0)

CODE	Courses	Cr.Hr
Water Resource & Irrigation Engineering		
CE 5501	Advanced Fluvial Hydraulics	3(3-0)
CE 5502	Hydropower Engineering	3(3-0)
CE 5503	Irrigation Engineering & Practices	3(3-0)
CE 5504	Applied Hydrology	3(3-0)
CE 5505	Sediment Transport	3(3-0)
CE 5506	Advanced Fluid Mechanics	3(3-0)
CE 5507	Drainage Engineering	3(3-0)
CE 5508	Computer Aided Design of Hydraulic Structures	3(3-0)
CE 5509	River Engineering and Flood Management	3(3-0)
CE 5510	Application of RS & GIS	3(3-0)
CE 5511	Soil Erosion & watershed Management	3(3-0)
CE 5512	Hydrological Systems Modeling	3(3-0)
CE 5513	Water Resources Economics, Planning & Management	3(3-0)
CE 5514	Ground Water Engineering	3(3-0)
CE 5515	Advanced Open Channel Hydraulics	3(3-0)
CE 5516	Computational Hydraulics	3(3-0)
CE 5517	Hydrodynamics	3(3-0)
CE 5518	River Flood Modelling	3(3-0)
CE 5519	Urban Flood Management	3(3-0)
CE 5520	Urban Flood Management	3(3-0)
CE 5404	Dam Engineering	3(3-0)
CE 5522	Water Supply and Sewer System Design	3(3-0)
CE 5523	Irrigation System Design and Management	3(3-0)
CE 5524	Data Driven Modelling & Real Time Control of Water Systems	3(3-0)
CE 5132	Environmental Impact Assessment	3(3-0)
CE 5420	Design and Construction of Earthen Dam	3(3-0)
CE 5115	Bridge and Tunnel Engineering	3(3-0)
CE 5528	River Basin Modelling	3(3-0)
CE 5529	Climate Change and Hydrological Cycle	3(3-0)
CE 5530	Water Law and Policy	3(3-0)
CE 5233	Research Methods & Statistics for Civil Engineering	3(3-0)
CE 5232	Construction Failure Analysis	3(3-0)
CE 5127	Sustainable Development and Construction	3(3-0)
CE 5534	Membrane Technology for Water & Wastewater Treatment	3(3-0)
CE 5224	Hazards and Disaster Management	3(3-0)

MS Engineering Rules and Regulations

1 General

There are two regular semesters (i.e. spring and fall) and one optional summer semester in each academic year.

- Duration of spring and fall semesters is 18 weeks each including midterm and end term examinations.
- Summer semester is nine weeks long including midterm and end term examinations.

1.1 Eligibility for Admissions

Candidates who have passed an undergraduate (16 years or equivalent) degree in the relevant area by securing a minimum 60% marks or a CGPA of 2.5 on a scale of 4.0 are eligible for admission. Other scales are converted accordingly. The applicant is also required to pass an entry test arranged by the institute on a specified date or NTS Graduate Assessment Test (GAT) by securing 50% marks or any other examination specified by HEC/PEC for admission to postgraduate program.

1.2 Age Limit

There is no age limit for admission in post graduate Program.

1.3 Maximum Time Limit

- Duration of MS Program is 2 years (minimum) and 4 years (maximum), where the duration is counted from the date of candidate's registration.

1.4 Application Process

- Applications on prescribed form along with first semester/ quarter dues (bank draft/ page order/ bank chalan) in favor of the treasurer, NFC IET and required documents complete in all respects should be submitted to the convener, admission committee, NFC IET on or before the due date
- The admission of foreign qualified students is made on the assessment made by HEC/ BASR on the basis of candidate's academic records and English proficiency. BASR may also ask the candidate to appear for a test and/ or interview.
- Incomplete applications are not

entertained.

1.5 Test and Interview

A written test is conducted by the concerned department on the proposed date followed by the interviews of short listed candidates. For admission, a candidate must qualify both the test and the interview.

1.6 Determination of Merit

Admissions are granted strictly on merit and the following criterion is followed to determine the merit:

BSc (16 years degree)	40%
FSc (or equivalent)	10%
Matriculation	10%
Written Test	30%
Interview	10%

1.7 Pre-Requisite Courses

On identification of a deficiency in the courses an applicant studied at undergraduate level, he/she may be directed by the BASR to pass a certain number of pre-requisite under-graduate courses before taking any post-graduate course.

1.8 Displaying List of Successful Candidates

List of successful candidates is displayed in the concerned department with the approval of the head and the same is forwarded to the Registrar office for the registration of newly admitted candidates. No student is admitted after 15 days of the commencement of first semester.

1.9 Migration

Students migrating from other universities/ institutes are not entertained.

1.10 No Objection Certificate (NOC)

A No Objection Certificate (NOC) is required from the students who have completed their B.Sc. (undergraduate) from other universities/ institutes. In addition, all admitted students are required to submit an affidavit stating that neither he/ she is not enrolled in any graduate program in Pakistan or abroad nor will do so until the completion of the degree.

1.11 Credit Hours Requirements

To earn MS Engineering degree, a candidate must complete 30 credits with a mandatory 24 credits course work and a 6 credits thesis.

1.12 Contact Hours

Following table describes how 1 credit is translated into contact hours for theory, practical and thesis:

Credit	Contact hours per week	
	Theory	Practical
1	1	3

2 Teaching and Examination

- 75% attendance is mandatory in each course
- Inability to pass a course on the basis of low attendance is treated as failure in that course and the student has to repeat if it is a core course. Otherwise, he/ she can take an alternate course. This, however, doesn't apply on courses withdrawn within allowed course of time
- A student can register a maximum of 4 courses in a semester

2.1 Course Outline and Syllabi

- Course are offered by the concerned department at the start of each semester along with a description of each course containing the information regarding course code, time, day, credits, nature (core or allied) and teacher etc.
- Course details are provided by the teacher containing objective, contents and the schedule of assignments, quizzes and term paper
- Courses are offered by the department keeping in view the availability of teachers and other academic and administrative aspects
- Outline of courses are revised by BASR from time to time on the recommendation of Board of Studies/ syndicate.

2.2 Examination

Performance of a student is measured through a system of continuous testing spread over the entire period of studies.

Besides midterm and end term examinations, there are a number of quizzes, presentations and assignments. Student's performance in all these class activities contributes towards his/ her grade. To register for midterm and end term examinations, a student must fulfill the following conditions:

- The student is enrolled in the department, has paid all the necessary dues and has fulfilled all other conditions laid down from time to time

The student has not been debarred for examination under any other rule or regulation

- The student has applied to the controller of examination on a prescribed proforma through concerned head.

Following fee schedule applies:

* Before deadline	Normal fee
* At most six days before midterm	Late fee
* At most 2 days before midterm	Double fee

- No application is entertained after the time limits mentioned above.

Teacher of the subject conducts both midterm and end term examinations and evaluates each student based on his/ her performance. The grades assigned by the teacher are final and can not be challenged at any forum. The scripts of all examinations, except those of end term, are shown to students for their review and feedback. Finally, the scripts are submitted to the controller of examinations within 15 days of the examination. The award lists, however, are forwarded to the controller of examinations within four weeks of the end term examination. Midterm exam is conducted in 9th week of class work and the end term is after 16th week. Following weight is assigned to midterm, end term and sessionals unless and until the departmental examination committee approves any other scheme:

Midterm Exam	30%
Endterm Exam	50%
Sessional Marks	20%

2.3 Award of Letter Grades

- Concerned teacher assigns letter grades to the comprehensive scores in consultation with the head according to the prescribed guidelines
- Comprehensive award list along with letter grades are displayed in the department.

Discrepancies are resolved within 3 days

- Comprehensive award list is sent to the controller of exams with ten days of the end term examination through the head. A copy of the same is retained by the teacher and the head.
- Teacher and the concerned head are responsible for the correctness of the comprehensive award list sent to the controller of examinations.
- Grade point (GP), Grade Point Average (GPA) and Cumulative Grade Point Average (CGPA) are calculated by the controller of examinations at the end of each semester.
- Letter grade i.e. Grade Point (GP) in a subject is allocated as per the following criterion:

Grade	A+	A	B+	B	B-	C+	C	F	W	WF	I
Grade Point (GP)	4	3.7	3.3	3	2.7	2.3	≤2	0	-	-	-

- Grade Point Average (GPA) of a student in semester S_k is calculated as follows:

$$GPA_{S_k} = \frac{\sum_{s \in S_k} GP_s \times CH_s}{\sum_{s \in S_k} CH_s}$$

where s is a subject offered in semester S_k and $1 < k < 4$

- Cumulative Grade Point Average (CGPA) of a student at the end of semester S_k is calculated as follows:

$$CGPA_{S_k} = \frac{\sum_{s \in S_1, \dots, S_k} GP_s \times CH_s}{\sum_{s \in S_1, \dots, S_k} CH_s}$$

where s is a subject offered in semester S_k and $1 < k < 4$

- For students less than 20, in numbers, there GPA will be calculated by Ready Reckoner Table by absolute grading.
- A student failing to maintain a GPA of 2.0 at the end of first semester is put on probation.
- A student has the option to repeat a subject in order to improve his/ her CGPA. In that case, the new grade (higher or lower) replaces the previous grades.
- A minimum 2.0 CGPA, with no F grade, is required for the award of degree
- Scripts of both midterm and end term examinations are stored with the controller of examination for two years and then are wasted
- A list of registered students is forwarded to the controller of examination within 15 days of the commencement of each semester
- To pass a course, a student must obtain at least 2.0 GP on a scale of 4
- A departmental exam committee, constituted by the vice chancellor for a period of three year,

looks into all matters related to examinations. Decisions taken by the committee are final.

2.4 Duration of Examinations

Duration of examinations for all courses is as follows:

Mid Term	1.5 hours
End Term	2.5 hours

2.5 Home Assignments and Term Papers

Each course carries at least:

- Three home assignments at least one per 5 weeks or One term paper or
- Three quizzes, at least 5 weeks apart

2.6 Evaluation and Time Frame for Theory

- Before end term examination, teacher prepares and displays the interim award list (IAL) according to the depend rules.
- Teacher marks the end term examination scripts and submits comprehensive award list (CAL) to the controller of examinations within stipulated time frame.
- Teacher schedules additional assessment instrument such as assignments, quizzes, presentations, seminars, group discussion, field study and reports etc which carries 20 percent weightage of each subject.

2.7 Evaluation and Time Frame for Practical

- Teacher keeps all his/ her students informed regarding their performance in each class activity
- At the end of each semester and before the end term exam, teacher prepares the displays IAL
- Teacher submits CAL to the controller examinations within stipulated course of time
- For each experiment, jury presentation, design report, project or assignment are considered independent assessment instruments. Relative weight of each these assessment types is determined by the teacher.

2.8 Question Paper

- Questions papers is set by the concerned teacher.
- Teacher is solely responsible for maintaining confidentiality of the question paper.

2.9 Reference Material

Teacher should announce before hand all the books, handouts and/ or other material that students can refer to during the examination.

2.10 Schedule

Controller examinations announces the schedule of midterm and end term examinations one week before the start of examination. The same is done in consultation with concerned head/ coordinator.

2.11 Conduct of Examination

- Concerned teacher conducts the examination as superintendent.
- Concerned head deposes staff such as deputy superintendent and invigilator.
- Superintendent ensures the following:
- All answer sheets are signed by the superintendent/ deputy superintendent.
- Answer sheets are issued to the invigilator 10 minutes before the start of examination and retrieved at the end of the examination
- A report regarding absent students is forwarded to the concerned head
- Invigilator staff performs the following duties:
- Students taking the examination are identified through their institutional identity cards and roll number slips
- Students are warned against the use of unfair means
- Mobile phones and all other items not allowed during the examination are removed
- No student joins after 30 minutes of commencement of the examination.
- Student found using unfair means or assisting other students can no longer continue. All such cases are taken the departmental examination committee whose decision is final.

2.12 Withdrawing Subjects

- This option is available to the students studying in regular semesters only i.e. Spring and Fall Applications for withdrawal can be launched latest by the fourth week of the commencement of semester

- Withdrawn subjects appear with a letter grade 'W'
- Subjects repeated after withdrawal are awarded grade 'R'
- Throughout the span of the degree, a student can withdraw a maximum 6 credits

2.13 Forced Withdrawal

A student ineligible to continue due to low attendance or due to any other legal implication is awarded 'WF' grade. He /she, on successful repetition, are awarded 'R' grade.

2.14 Incomplete Grade

- Students are awarded 'I' grade in unfinished subjects
- If a student with 'I' grade does not improve it in one calendar year, the same is automatically converted to 'F' grade

2.15 Repeating Subjects

- In case of failure, a students has to earn a passing grade in that subject within stipulated time if it is a core course
- In case of an elective subject, a student may take some other elective subject
- A student failing a core course has to wait until it is offered again
- The department offers courses as per the availability of teachers and other legal implications

2.16 Dropping Students

A student is dropped if he/ she:

- fails to register two courses in first semester
- fails to register for two consecutive semesters All such cases are taken to BASR whose decision is final.

2.17 Deferring Studies

- A fresh student taking admission in first semester can't apply for deferment
- Deferment doesn't affect maximum allowed time for the completion of degree
- Student seeking deferment needs to apply at least 5 days prior to the final

examination. Controller of examination notifies deferment in consultation with concerned head.

doesn't absolve students of their responsibilities and is never treated as an excuse

2.18 Registering Subjects and Payment of Fee

- A student can register only those subjects offered by the department
- Registration roll in each subject is finalized and dispatched to the controller of examination within fifteen days of the commencement of each semester
- Students need to pay dues twice a year until the completion of degree. These are in addition to the dues of summer semesters (if applicable).
- Deferment seeking students have to pay full dues for the period of deferment

A student carrying outstanding dues for a period of six months are automatically dropped. He/ she can, however, apply to the vice chancellor to be reinstated after paying all outstanding dues. Decision taken by the vice chancellor in all such cases is final.

2.19 Re-admission Policy

- Dropped students can apply for re-admission but the maximum degree completion period is counted from the date of registration
- A student once dismissed due to disciplinary violation is never re-admitted

2.20 Special Provisions

- For situations not addressed by the set rules and regulations, decision of BASR is final
- Interpretation of set rules and regulations done by the authorized officers/ committees is final
- The institute reserves the right to change rules, regulations, fee structure and contents of courses without any prior notice
- No student is allowed to be simultaneously enrolled in any university within the country or abroad except exchange students
- Ignorance of set rules and regulations

3 Thesis/ Dissertation

- In addition to the regular course work, a student needs to submit a dissertation/ thesis. Each candidate is assigned a supervisor for his/ her research work. The supervisor must hold a PhD degree in respective discipline. However, an MS qualified teacher can act as a co-supervisor, if required.
- Title of research and name of supervisor is approved by BASR on the recommendation of concerned head
- A student can take thesis after passing four courses. However, he/ she can apply for thesis evaluation only after completing his/ her course work.
- A student needs to submit 4 hard copies of his/ her thesis for evaluation. A copy of the thesis after evaluation is returned to the student
- If a candidate is recommended to revise his/ her thesis, he/ she must submit the revised thesis for re-evaluation within six months

3.1 Thesis Evaluation

- Thesis report being submitted for evaluation must contain plagiarism report
- Thesis report is evaluated by both internal and external examiners. Supervisor acts as internal examiner and the external examiner is appointed by the vice chancellor on the recommendation of BASR
- External examiner is picked by the vice chancellor from a list of three proposed examiners submitted by the concerned department
- Final report on thesis and viva voce examination is submitted by the examiners on a prescribed proforma
- In case of difference of opinion, a third examiner is appointed by the vice chancellor on the recommendation of BASR
- Theses are evaluated strictly in accordance with the set rules and regulations

3.2 Changing Supervisor

Due to valid reasons and after having written consent of present supervisor, a student

may change his/ her supervisor with the approval of Board of Studies (BoS) of the department. After that, he/ she has to get himself/ herself registered a fresh with new research proposal/ synopsis prepared in consultation with the new supervisor. However, the candidate can continue his/her previous work in consultation with the new and old supervisors.

4 Awarding Degree

A student is awarded MS Engineering degree if he/she has:

- CGPA 2.0 on a scale of 4
 - No 'F' grade in any subject
 - Completed the credit hours requirements
 - Completed thesis as per requirements
 - At least one research paper submitted to an HEC recognized journal
- Students eligible for the award of degree are required to submit a degree requirements completion form to their concerned head for onward submission on to the controller of examinations.

Glossary of Terms

- Academic Year' means the span containing consecutive fall, summer (optional) and spring semesters
- BASR' means Board of Advanced Studies and Research
- BoS' means Board of Studies
- CAL' means Comprehensive Award List
- Competent Authority' means the vice chancellor of the institute
- Controller of Examinations' means the controller of examinations of the institute
- External Examiner' means a person holding higher qualification in the relevant discipline and is appointed by the competent authority for an examination. Neither a teacher of the institute nor any visiting teacher teaching at the institute can act as external examiner
- Faculty' means the concerned faculty of the institute
- HEC' means Higher Education Commission of Pakistan

Head' means then head of the concerned department

- IAL' means Interim Award List
- Institute' means NFC Institute of Engineering and Technology, Multan, Pakistan
- Internal Examiner' means a teacher appointed by BASR to teach a subject
- Neutral Examiner' means a person holding higher qualification in the relevant discipline

and has not taught the subject for which he/ she is being appointed as a neutral examiner in that very semester. He/ she is generally chosen from the faculty of the concerned department

NFC IET' means National Fertilizer Corporation, Institute of Engineering and Technology, Multan, Pakistan

- PEC' means Pakistan Engineering Council
- Pro Vice Chancellor' means the pro vice chancellor of the institute
- Student' means a bonafide postgraduate student enrolled in concerned department
- Subject' means prescribed course of study
- Treasure' means the treasurer of the institute
- Vice Chancellor' means the vice chancellor of the institute



Certificate Distribution of Orientation classes



Faculty & Participants of Orientation classes

**DETAIL FEE FOR MS PROGRAMS
(CHEMICAL ENGINEERING, ELECTRICAL ENGINEERING,
MECHANICAL ENGINEERING & COMPUTER SCIENCE)
FOR ADMISSION OF SESSION 2023**

Description	1st Semester	After Admission	2nd Semester	3rd Semester	4th Semester	Total
	At the time of Admission					
Admission	15,000.00	-				15,000.00
Processing Fee	2,000.00	-				2,000.00
Registration Fee	1,500.00	-				1,500.00
Cauton Money	5,000.00	-				5,000.00
Library Security	5,000.00	-				5,000.00
Tuition Fee	45,000.00	-	45,000.00	30,000.00	30,000.00	150,000.00
Utilities	3,000.00	-	-	3,000.00	-	6,000.00
Internet Charges	1,000.00	-	-	1,000.00	-	2,000.00
Students Societies FEE	1,000.00	-	-	1,000.00	-	2,000.00
Students Function	1,500.00	-	-	-	-	1,500.00
Alumni Contribution	500.00	-	-	-	-	500.00
Sports Fee	500.00	-	-	500.00	-	1,000.00
Magazine Fee	250.00	-	-	250.00	-	500.00
Total	81,250.00	-	45,000.00	35,750.00	30,000.00	192,000.00
Examination Fee	-	2,000.00	2,000.00	2,000.00	-	6,000.00
Thesis Evaluation Fee	-		-	-	10,000.00	10,000.00
Grand Total						208,000.00

**DETAIL FEE FOR MBA PROGRAM FOR
ADMISSION OF SESSION 2023**

Description	1st Semester	After Admission	2nd Semester	3rd Semester	4th Semester	Total
	At the time of Admission					
Admission	15,000.00	-				15,000.00
Processing Fee	2,000.00	-				2,000.00
Registration Fee	1,500.00	-				1,500.00
Cauton Money	5,000.00	-				5,000.00
Library Security	5,000.00	-				5,000.00
Tuition Fee	30,000.00	-	30,000.00	30,000.00	30,000.00	120,000.00
Utilities	3,000.00	-	-	3,000.00	-	6,000.00
Internet Charges	1,000.00	-	-	1,000.00	-	2,000.00
Students Societies FEE	1,000.00	-	-	1,000.00	-	2,000.00
Students Function	1,500.00	-	-	-	-	1,500.00
Alumni Contribution	500.00	-	-	-	-	500.00
Sports Fee	500.00	-	-	500.00	-	1,000.00
Magazine Fee	250.00	-	-	250.00	-	500.00
Total	66,250.00	-	30,000.00	35,750.00	30,000.00	162,000.00
Examination Fee	-	2,000.00	2,000.00	2,000.00	-	6,000.00
Thesis Evaluation Fee	-		-	-	10,000.00	10,000.00
Grand Total						178,000.00

Note:

From 5th Semester and onward Rs.10,000/- per semester will be charged as Semester Registration Fee. Students opting course work instead of thesis in sixth semester pay additional fee for these courses.

Admission Schedule for MS Program

(a)	Last date for Receipt of Application Form with dues	31.08.2023
(b)	Entry Test	08.09.2023
©	Interview	20.09.2023 to 21.09.2023
(d)	Display of Merit List	28.09.2023
(e)	Commencement of Class Work	06.10.2023

Hostel Charges for MS Students

Hostel Fee for one year allotment will be 22,250/- PKR as mentioned below:

(a)	Room Rent (per resident per year)	Rs. 14,400
(b)	Electricity charges (per resident per year)	Rs. 4,800
(C)	Housekeeping Charges (per resident per year)	Rs. 1,700
(d)	Maintenance/Breakage	Rs. 250
(e)	Security	Rs. 700
(f)	Hostel Resident Card	Rs. 100
(g)	Generator Fuel Charges	Rs. 300

Total:	Rs. 22,250
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CHECK LIST OF

Documents to be attached with the Application Form

1. Attested photocopy of Matric/Equivalent Certificate ☐
2. Attested photocopy of F.Sc./Equivalent Certificate. ☐
3. Attested photocopy of B.Sc./Equivalent Certificate. ☐
4. Recent Passport Size Photograph (3 Nos.) with your name and Form No. on the back of photo. ☐
5. Medical Certificate from a Registered Medical Practitioner declaring the Candidate Fit (physically & mentally) for the course. ☐
6. Attested photocopy of Hafiz-e-Quran Certificate ☐
7. **NOC from employer/organization in case of any employment.** ☐
8. Attested copy of Entry Test Result ☐
9. Attested copy of PEC Registration (applicable only for Engineer) ☐
10. Attested copy of GAT(General)/(Subject) ☐
11. Original Migration Certificate ☐
12. Undertaking on Stamp Paper of worth Rs.50/- ☐
13. Two Academic Reference Letters ☐

IET PICTORIAL



IET PICTORIAL

