



Department of Industrial &
Manufacturing Engineering,
NED University of Engineering
& Technology

Offers

MASTER DEGREE PROGRAMME

"Transform Knowledge into Impact..."

QUALITY MANAGEMENT

WEEKDAYS (Monday - Friday)

MASTER OF ENGINEERING
MANAGEMENT
(MEM)

ADMISSIONS
OPEN

CONTACT US

Dr. Ali Zulqarnain
(M. Engg. /MEM Coordinator)

Queries Assistance by Mr. Danish Khalil
(Executive Master's Programme)

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VISION



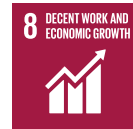
To be the Leader in the field of Industrial and Manufacturing Engineering, to produce High Quality Leaders and Managers for the industry.

MISSION



Aims to be the leading entity in the relevant field by High Quality Research, Education and Innovation to produce competent Human Resource, Capable of Performing Complex Task in an Environment Friendly and Socio-economic manner.

UN SDGS FOR THE BETTER PLANET



ABOUT THE DEPARTMENT



The Department was initially started under the auspices of Mechanical Engineering Department in October 1999 and started as a separate Department in October 2000 with the name of Industrial & Manufacturing Engineering Department (IMD).

The Department is offering Master of Engineering (by course work) with the Specializations in Manufacturing Engineering and Engineering Management. The Engineering Management program further offers choices of Specialization in (IM) Industrial Management (Weekdays & Weekend Programmes), Quality Management (QM), and Supply Chain Management (SCM). The Department of Industrial & Manufacturing Engineering has highly qualified and experienced regular and visiting faculty members.

"When you're out of Quality, you're out of Business"
(Philip Crosby)

ABOUT THE PROGRAMME

AN INTRODUCTION

PROGRAMME MISSION

The mission of the programme is to create Technical and Managerial Expertise for Manufacturing and Service sectors, and Impart the Knowledge of Operations and Projects for Analysis, Design and Evaluation of Socio-technical Systems in the industry.

Quality is always an integral part of all products and services. The aim of Quality Management in Engineering is to produce skilled Quality Professionals enabled to understand, plan, and execute the Leadership/Managerial/Operational challenges for Strategic Quality Planning, Quality Control & Assurance, and Quality Improvement to cater the local and global QM requirements in the recent and modern era. The QM Programme will acquaint the participants with Strategic Quality Principles, Industry Best Practices, Quality Tools and Techniques, ultimately leading in compliance with SDGs and to the Operational Excellence.



Quality Professionals' competency shortfalls are intended to be filled by the QM Programme. With an emphasis on enhancing Leadership/Managerial insight, improving Strategic Thinking/Design/Communication/Analytical/Operational/Tactical abilities, and cultivating Scientific Quality Management Competencies. the QM Programme attempts to produce QM professionals. Moreover, they acquire the skills necessary for 4th Industrial Revolution (I4.0) and take career to new dimensions in the continually evolving field of QM.

MEASURABLE PROGRAMME EDUCATIONAL OBJECTIVES (PEOS)

1. To develop necessary and advanced analytical, technical and research skills in the field of Engineering Management to fulfil the higher goals and needs of industry, academia and research.
2. To inculcate situational assessment and innovation for solving technical problems.
3. To develop an appetite for research and development in diversified fields of industrial engineering for progress of respective employer, and eventually the nation.
4. To develop skills for better work management and creative self-expression, disseminating knowledge and inculcating leadership.
5. To facilitate networking between the students to understand peers' technical issues, instil critical thinking and brainstorming, comprehend organizational systems to arrive at the solutions to socio-technical problems.
6. To develop university-industry collaboration through students who join graduate programme from different industries.



MEASURABLE PROGRAMME LEARNING OUTCOMES (PLOS)

- a) Development of engineering expertise in product design, tools and environment to fulfil industrial requirements.
- b) Application of knowledge based on analysis, synthesis and control of industrial and manufacturing operations employing statistical, calculus-based methods, simulation and information technology.
- c) Development of effective communication skills and meaningful contributions in graduate students while working in interdisciplinary teams with the understanding of economic, social and ethical impacts of decisions.
- d) Development of abilities to apply knowledge of applied sciences, management, computer-based technologies and principles of Industrial and Manufacturing Engineering.
- e) Development of abilities to identify and formulate problems and apply engineering science to technical problem solving.
- f) Understanding of social systems in operations management.
- g) Instilling skills to prepare financial analyses of projects, operations and firms.
- i) Inculcating ability to prepare technical reports, oral communication skills and knowledge of environmental issues in relation to technology.

"It is most important that the Top Management be Quality-minded"
(Joseph M. Juran)

KEY BENEFITS

- **Development of Quality-mind Leadership:** through Critical Thinking, Analytical, Problem-solving and Engineering Management Principles around Quality Management on Scientific Principles and Practices.
- **Strategic Design & Operational Solutions:** Complex Engineering Management problems that meet the specified needs of QM with appropriate consideration for Public Health and Safety, Cultural, Societal, and Environmental considerations.
- **Standardization:** Meeting requirements of a competitive market.
- **Modern Trends of QM:** Helping individuals and organizations to adapt to changing Customer Expectations, Emerging Technologies, and Evolving Industry Standards
- **QM Global Perspective:** To address the Challenges and Opportunities presented by the interconnected and diverse nature of the Global Business Environment.
- **Digital Quality Transformation:** Equips individuals with the Knowledge and Skills needed to navigate the evolving landscape of QM in the era of Advanced Technologies.
- **UN SDGs & QM Solutions:** It helps to understand the broader implications of decisions, fostering a Holistic Approach to business that considers Long-term Sustainability and Societal Well-being.
- **Performance Excellence:** This knowledge is valuable for individual's future careers and contributes to building a Mindset that fosters Innovation, Productivity, and Success.
- **Research Skills:** By Incorporating Research Skills in QM, individuals could contribute to the Advancement and Sustainability of Quality Practices within Organizations towards Operational Excellence.
- **Any many more.....**



SALIENT FEATURES

- Programme is Recognized by HEC (NOC acquired).
 - Specialized Ph.D. Faculty / Industry Experts are engaged.
 - Case Study based Teaching.
 - Real-industry Scenario discussion.
 - Seminars/Guest Speakers by Field Experts.
 - Students are representing from Middle to Top Management.
 - Networking.
 - Guidelines for International Certifications.
 - Digital Library Facilities.
- Bachelor Degree in Industrial & Manufacturing Engineering / Biomedical Engineering or Allied Disciplines.
 - Open Enrollment through NED Academy: Enterprise Engineers who are committed to developing their QM competencies.

WHO SHOULD ATTEND

INTERNAL

A FEW FACULTY & EXPERTISE



PROF. DR. MUHAMMAD TUFAIL
OPERATIONS MANAGEMENT



PROF. DR. SYED AMIR IOBAL
ENGINEERING & MANAGEMENT



DR. MAQSOOD AHMED KHAN
CAD/CAM, AUTOMATION & ENGG. MCG.



DR. MUHAMMAD WASIF
MFG. INDUSTRY 4.0 & PROJ/SUPPLY C



DR. ANIS FATIMA
MFG. & SUSTAINABILITY




DR. ALI ZULQARNAIN
QUALITY MGM./ENGG. & QUALITY



DR. ASIM ZAHEER
ERGONOMICS & IND'L ENGG.



DR. AQEEL AHMED
MFG. & ENGG. MGM.




PROF. DR. ING. MUSHAHID HUSSAIN
ENGG. & PRODUCT DEVELOPMENT



PROF. DR. ALI RZA JAFRI
AUTOMATION & ROBOTICS



DR. HAIDER ALI
RESEARCH METHODS & MACHINE LEARNING



MR. SAJEER UDDIN
ACCOUTS & FINANCE



- As Visiting Faculty, Industry Experts are also engaged in the Programme.

"Quality is to give the Customers what they want"
(Sam Walton, founder of Walmart)

PROGRAMME OVERVIEW

ADMISSION PROCEDURE

Programme Length

2.5 YEARS

Semester

05 Semesters
Per Semester: 06 Months

Total Courses

10, (OR) 08 with Thesis

Total Credit Hours

30

Courses/Semester

02

Class Schedule

02 Days, 6:00 - 9:00pm

01

APPLICATION FORMS

Application Forms are available at university website under "Postgraduate Admission" and to be submitted in the concerned department.

ELIGIBILITY CRITERIA

Bachelor's Degree in Industrial & Manufacturing Engineering / Biomedical Engineering or Allied disciplines, 1st Division (Annual System) or at least with CGPA 2.40 / 4.0 (Semester System), Professional Bachelors Degree must be accredited by Pakistan Engineering Council (PEC) / Higher Education Commission (HEC).

03

PRE-ENTRY TEST

It will be held in concerned department.

INTERVIEW

Optional as per need.

05

FINAL LIST OF CANDIDATES

Display on departmental website and Notice Board.

CLASS COMMENCEMENT

Display on departmental website and Notice Board.

06

COURSE PLAN

COMPULSORY

(Per Course 3 Credit Hours)

- EM-501 Organisational Systems
- EM-502 Accounting and Financial Management
- EM-503 Strategic Planning & Decision Making
- EM-504 Project Management Framework & Tools
- EM-505 Operations Research



COMMON ELECTIVES

(Per Course 3 Credit Hours)

- EM-511 Total Quality Management:
- EM-512 Project Evaluation and Feasibility Analysis:
- EM-513 Research Methods in Engineering Management

ELECTIVES

(Per Course 3 Credit Hours, except mentioned)

- IM-506 Business Process Reengineering
- IM-511 Statistical Quality Control
- IM-512 Reliability Engineering
- IM-513 Six Sigma Methodologies
- IM-514 Quality Planning & Management
- IM-515 Agile & Lean Manufacturing
- IM-516 Design and Analysis of Experiments
- IM-517 Advanced Quality Engineering
- ME-586 Health Safety & Environment
- SE-512 Research Methodology (0 Credit Hr)
- IM-5002 Thesis (6 Credit Hrs)



*"Put your Customers 1st, The Employee 2nd,
and the Stakeholders 3rd"*
(Jack Ma)

FEE STRUCTURE

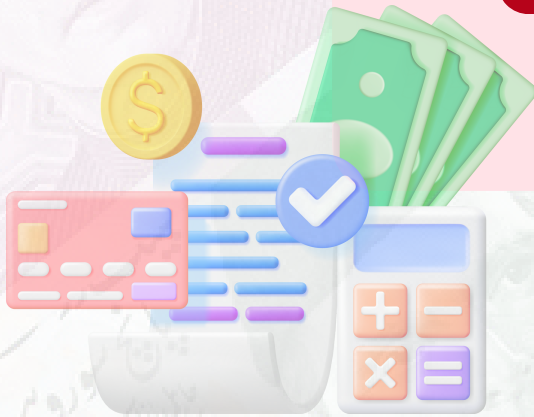
Fee Payable at the time of admission to the Programme

Admission / Re-admission Fee

(Enrolment fee (along with form fee)

Security Deposit

Documents Verification Fee



Fee Payable in each semester

Tuition & Examination Fee per Course

Library Fee

Registration Fee/Semester

Internet Fee

Late Fee, if applicable

Equivalence Fee, if applicable

University Endowment Fund

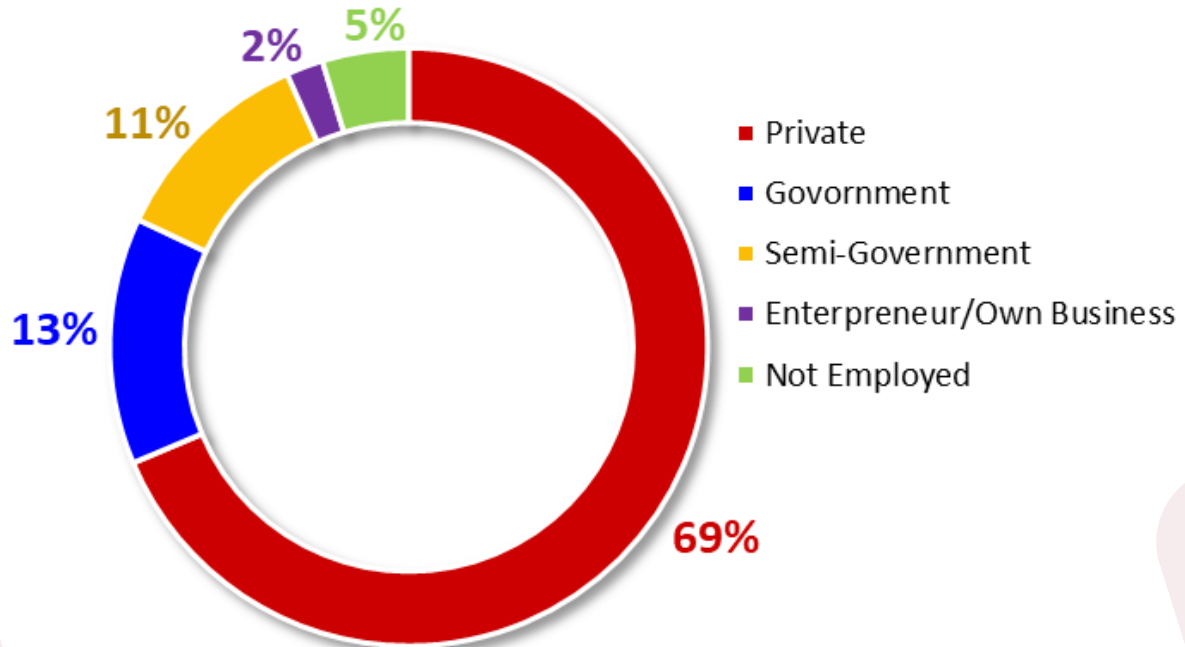
I-Grade Examinations Fee, if applicable



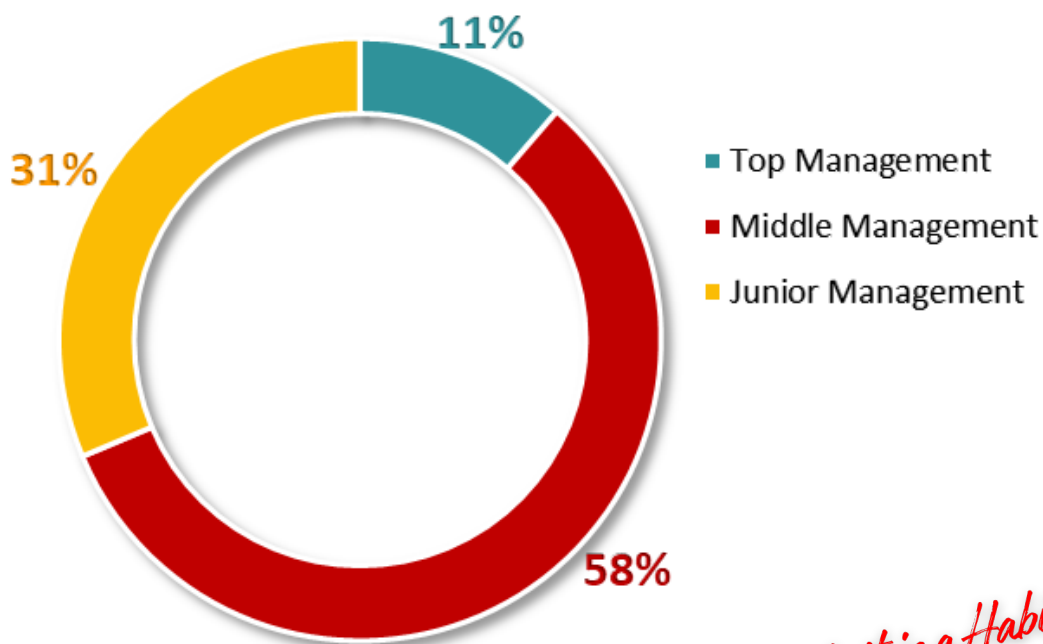
ACADEMIC CALENDER
Availabe at University
Website

ALUMNI / STUDENTS STATISTICS

Alumni/Students representation by Organisation



Alumni/Students representation by Level of Management

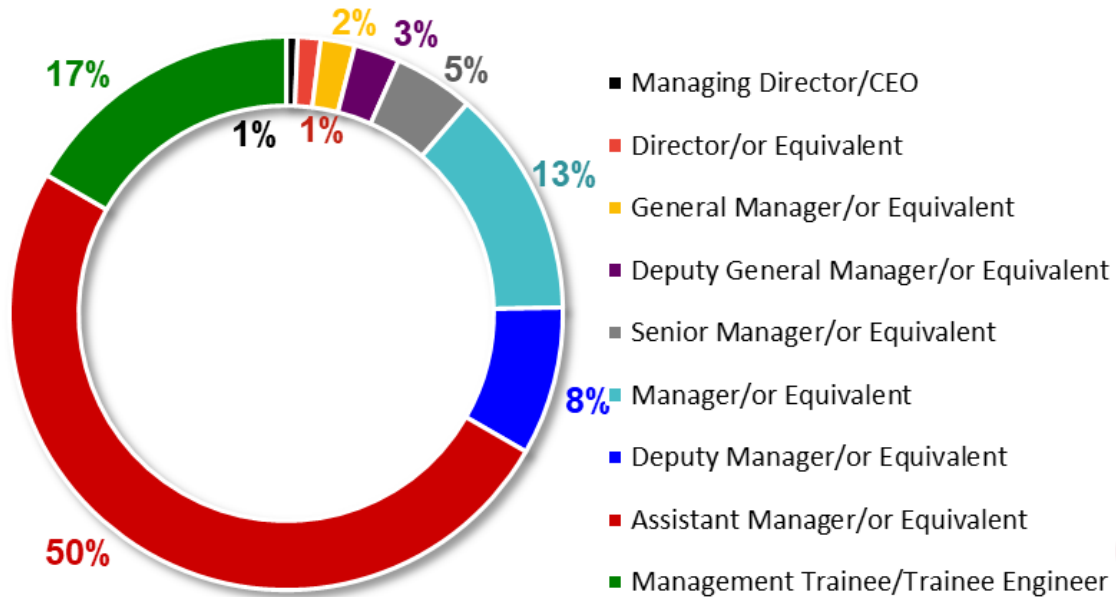


"Quality is not an Act, it is a Habit"
(Aristotle)

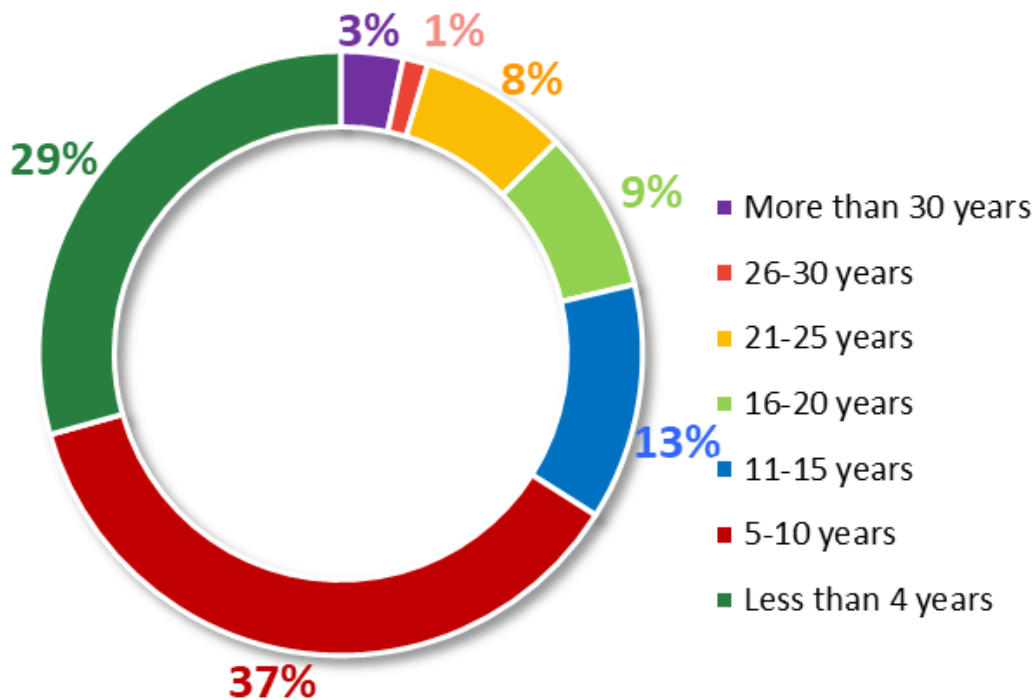
* Statistics is based on the Sampled Data from 1st batch to present

ALUMNI STATISTICS

Alumni/Students representation by Designation



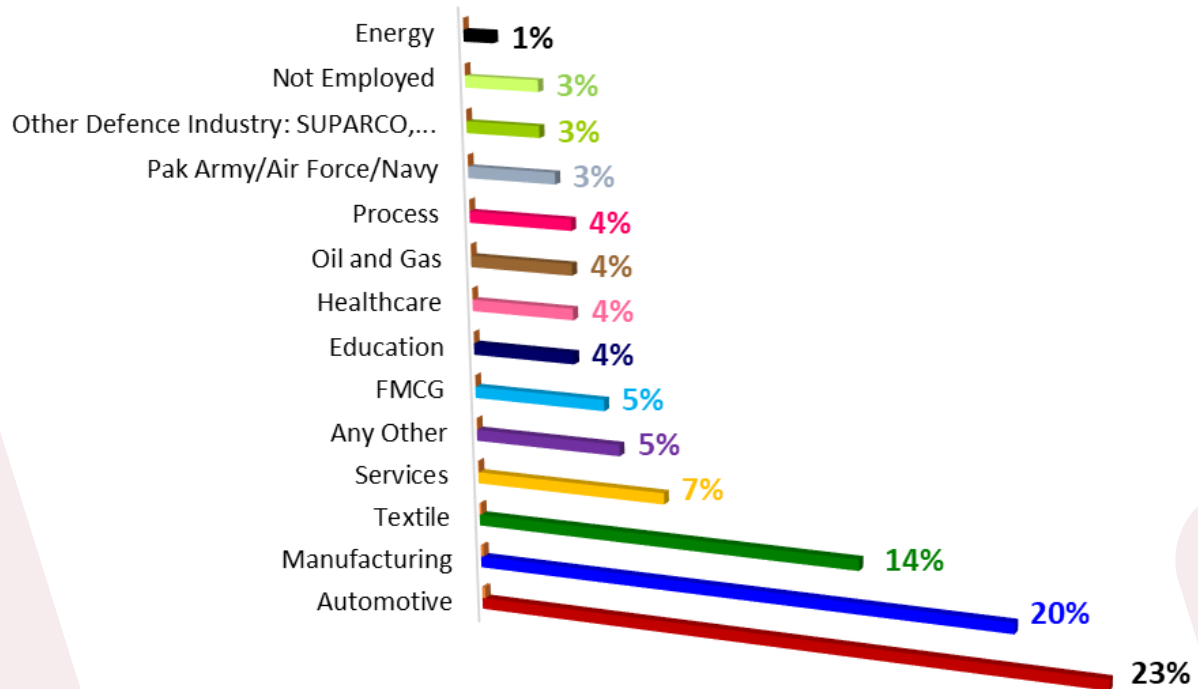
Alumni/Students representation by Field Experience



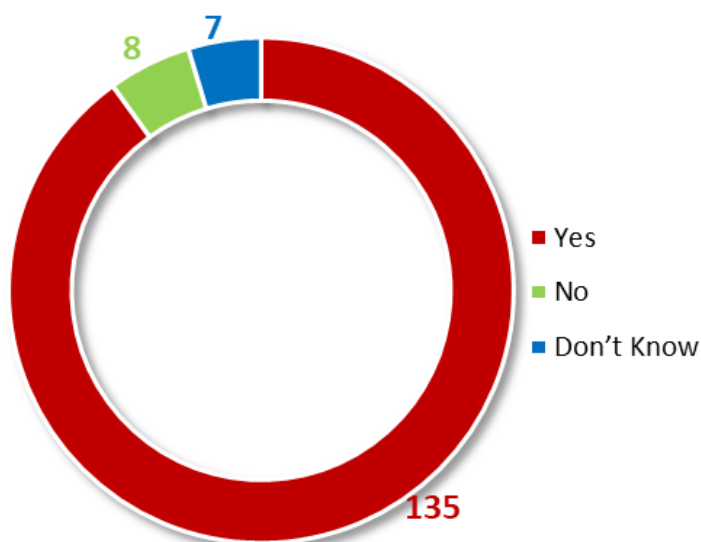
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ALUMNI STATISTICS

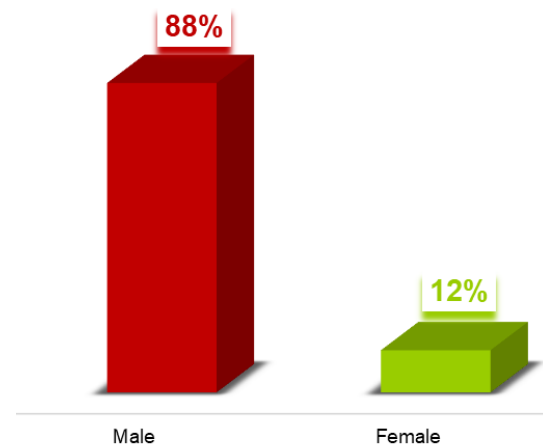
Alumni/Students representation by Types of Organisation



Alumni/Students representation by Recommendation for IMD Master Degree Prog.



Male/Female Ratio



"Quality is everyone's responsibility"
(W. Edwards Deming)

* Statistics is based on the Sampled Data from 1st batch to present

TESTIMONIALS

” **KASHIF RAHIM** *General Manager Indus Motor Company Limited*

Enrolling in the industrial and management master's degree program, it was an immensely rewarding experience. The rigorous curriculum not only provided a profound understanding of industrial processes but also equipped me with advanced management skills crucial for today's dynamic business landscape. The faculty, and experts in their respective fields, fostered an environment of intellectual curiosity and encouraged practical application of theoretical concepts. Overall, this master's program has been instrumental in shaping my holistic understanding of industrial processes and management practices, providing a solid foundation for a successful and fulfilling career in the field.

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” **KHAN ASIF KAMAL** *Dy. General Manager - AEWL*

I'm thinking of making a career boost and the NED University Master Degree Programme helps. NED University of Engineering & Technology is one of the oldest and most prestigious engineering institutions in Pakistan. It gives the skills and knowledge to design, develop, implement, and improve Manufacturing Systems and processes in the industry. Not only but also to have the ability to apply ethical and professional standards. The faculty are knowledgeable and supportive. I am very satisfied with M. Engg. Programme and I think it is worth the investment.

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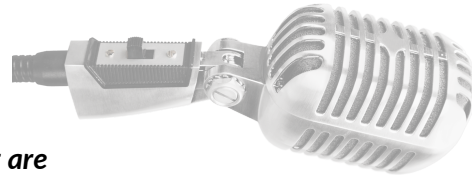
” **ZUBAIR AHMED** *Manager Tecno Pack Industries*

I completed my master's degree program and I can confidently say that it was one of the best decisions of my life because after completion I was promoted to a manager position and also assigned the role of Management Representative for the organization. The program offered me a comprehensive and rigorous curriculum that covered both theoretical and practical aspects of the field. The faculty members were highly qualified and experienced, and they always encouraged me to explore new ideas and challenge myself. The program also provided me with ample opportunities to work on real-world projects, collaborate with industry partners, and network with peers and mentors. I learned a lot from the program and I feel well-prepared for my future career. I would highly recommend this program to anyone who wants to pursue a master's degree in Quality Management who is working in any automotive or manufacturing organization

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GUEST SPEAKER SESSIONS

Few of them latest are



SESSION ON GUEST SPEAKER
 TOPIC: "RESEARCH METHODS IN ENGINEERING MANAGEMENT"
 By Dr. Haider Anwar, Associate Professor, Mechanical Engng. Department
 DATE: Sunday 24th December 2023
 TIME: 10:00 AM - 11:30 AM
 ORGANISED BY: Department of Industrial & Manufacturing Engineering, Faculty of Engineering, NED University of Engineering & Technology

SESSION ON GUEST SPEAKER
 TOPIC: "PRODUCT & VALUE CREATION"
 By Syed Haseeb Hassan, Sales Manager - FM Chemicals Infrastructure, ABIB E-mobility GmbH, Germany
 DATE: Tuesday 19th December 2023
 TIME: 7:00 PM - 8:00 PM
 ORGANISED BY: Prof. Dr. Ing. Mushtaqul Hassan Hashim in coordination with The Department of Industrial & Manufacturing Engineering, Faculty of Engineering, NED University of Engineering & Technology

SESSION ON GUEST SPEAKER
 TOPIC: "HEALTHY & ENVIRONMENT SAFETY"
 By Mr. Khurshand Iqbal, SITE Director, GlaxoSmithKline
 DATE: Tuesday 19th December 2023
 TIME: 7:00 PM - 8:30 PM
 ORGANISED BY: Department of Industrial & Manufacturing Engineering, Faculty of Engineering, NED University of Engineering & Technology

SESSION ON GUEST SPEAKER Webinar
 TOPIC: "DIGITALIZATION AND SUPPLY CHAIN MANAGEMENT: BENEFITS, CHALLENGES AND OPPORTUNITIES"
 By Dr. Sharfuddin Ahmed Khan, Assistant Professor, University of Regina, Canada
 DATE: Friday 29th December 2023
 TIME: 8:00 PM - 9:00 PM
 ORGANISED BY: Department of Industrial & Manufacturing Engineering, Faculty of Engineering, NED University of Engineering & Technology

SESSION ON GUEST SPEAKER
 TOPIC: "STRATEGIC PLANNING & DECISION MAKING"
 By Syed Saad Anwar, Head of Business Development, Luckly Water Corporation
 DATE: Friday 22nd December 2023
 TIME: 7:00 PM - 8:30 PM
 ORGANISED BY: Department of Industrial & Manufacturing Engineering, Faculty of Engineering, NED University of Engineering & Technology

SESSION ON GUEST SPEAKER
 TOPIC: "LEAN MANUFACTURING & IMPLEMENTATION CHALLENGES"
 By Muhammad Azam, Senior Manager, Operational Excellence, Fawcett 288/88, 19415
 DATE: Friday 22nd December 2023
 TIME: 7:00 PM - 8:30 PM
 ORGANISED BY: Department of Industrial & Manufacturing Engineering, Faculty of Engineering, NED University of Engineering & Technology

SESSION ON GUEST SPEAKER
 TOPIC: "LOGISTICS MANAGEMENT"
 By Mr. Ahmed Saad Qureshi, Manager Outsourcing, HBI
 DATE: Wednesday 20th December 2023
 TIME: 7:00 PM - 8:30 PM
 ORGANISED BY: Department of Industrial & Manufacturing Engineering, Faculty of Engineering, NED University of Engineering & Technology

SESSION ON GUEST SPEAKER
 TOPIC: "MAINTENANCE MANAGEMENT"
 By Taha Bin Mehmood, Principal Engineer - Solution Engineer, Octopus Digital
 DATE: Wednesday 20th December 2023
 TIME: 6:30 PM - 8:00 PM
 ORGANISED BY: Department of Industrial & Manufacturing Engineering, Faculty of Engineering, NED University of Engineering & Technology

SESSION ON GUEST SPEAKER
 TOPIC: "THE IMPORTANCE OF MARKETING FOR ENGINEERS!"
 By Mr. Hassan Ahmed Memon, Manager, Strategy and Plan, EasyPosit - Telecom, MICTO, FIDA
 DATE: Thursday 24th December 2023
 TIME: 7:00 PM - 8:30 PM
 ORGANISED BY: Mr. Yasir Ali Mehmood in coordination with The Department of Industrial & Manufacturing Engineering, Faculty of Engineering, NED University of Engineering & Technology

SESSION ON GUEST SPEAKER
 TOPIC: "SUPPLY CHAIN MANAGEMENT"
 By Syed Muhammad Osama Iqbal, Executive Manager Planning, Hiral Foods Limit
 DATE: Sunday 24th December 2023
 TIME: 3:00 PM - 4:30 PM
 ORGANISED BY: Department of Industrial & Manufacturing Engineering, Faculty of Engineering, NED University of Engineering & Technology

SESSION ON GUEST SPEAKER Webinar
 TOPIC: "PROJECT MANAGEMENT"
 By Abdullah Ansari, Operational Technology Manager, Pfizer, Australia
 DATE: Thursday 28th December 2023
 TIME: 7:30 PM - 9:00 PM
 ORGANISED BY: Department of Industrial & Manufacturing Engineering, Faculty of Engineering, NED University of Engineering & Technology

SESSION ON GUEST SPEAKER
 TOPIC: "INCOME TAX PRINCIPLES & PRACTICES"
 By Mr. Nisar Ahmed Soomro
 DATE: 9th December 2023
 TIME: 6:30 - 09:00 PM
 ORGANISED BY: Mr. Saqar Uddin in coordination with the Department of Industrial & Manufacturing Engineering, Faculty of Engineering, NED University of Engineering & Technology

SESSION ON GUEST SPEAKER Webinar
 TOPIC: "DEVELOPMENT OF A QUALITY PAPER AND HOW TO PUBLISH IN TOP JOURNAL"
 By Dr. Sharfuddin Ahmed Khan, Assistant Professor, University of Regina, Canada
 DATE: Saturday 23rd December 2023
 TIME: 8:00 PM - 9:00 PM
 ORGANISED BY: Department of Industrial & Manufacturing Engineering, Faculty of Engineering, NED University of Engineering & Technology

"I believe the leader's ultimate job is to spread hope"
 (Bob Galvin, former CEO of Motorola)

CONTENTS OF COURSES

COMPULSORY:

EM 501 Organizational Systems: Definitions of management; Evolution of management thought, classical, quantitative and behavioral schools; interactions between organizations and their environments. The planning process; strategic and tactical planning, developing planning premises, nature of managerial decision making, quantitative aids, management by objectives. Organizational structures; behavior of the individual, work group, and organization; coordination and spans of control, the informal organization; authority delegation and decentralization, groups and committees, managing organizational change and conflict. Motivation, performance and satisfaction; building a high-performance team; leadership, interpersonal and organizational communication, staffing and personal function. The control process; budgetary and non-budgetary methods of control; team performance measurement and improvement strategies. Use of management information systems.

EM 502 Accounting and Financial Management: Foundations of finance with applications in corporate finance and investment management. Major financial decisions made by corporate managers and investors with focus on process valuation. Criteria for investment decisions, valuation of financial assets and liabilities, relationships between risks and return, market efficiency, and the valuation of derivative securities. Major corporate financial instruments including debt, equity and convertible securities. Analysis and projection of financial statements, cost elements in pricing, cost control and design of accounting systems.

EM 503 Strategic Planning and Decision Making: Critical issues in shaping the competitive strategy for engineering-driven companies in a turbulent business environment; corporate mission; key result areas and situational analysis including strengths, weaknesses, opportunities and threats; identifying planning assumptions, critical issues, setting objectives, formulating strategy. Managing technology as a strategic resource of the firm; understanding of the process, roles and rewards of technological innovation; integrating the strategic relationship of technology with strategic planning, marketing, finance, engineering and manufacturing; government, societal and international issues; issues pertaining to cultural diversity and ethical concerns. Subjective, judgmental and expert decisions; conflict resolution in strategic decisions involving technological alternatives; hierarchical decision modeling; individual and aggregate decisions; decision discrepancies and evaluation of group disagreements.

EM 504 Project Management Framework and Tools: Role of projects in organization's competitive strategy; Standard methodologies for managing projects; Project life cycle; Design-implementation interface; Estimating: preliminary and detailed; Contractual risk allocation; Scheduling: PBS; WBS; Integration of scope, time, resource and cost dimensions of a project; Evaluation of labor, material, equipment, and subcontract resources; Scheduling techniques including CPM/ PERT, GERT, critical chain; Solving real-world project schedules; Monte Carlo simulation; Cost budgeting; Cost baseline; Cash flow analysis; Earned value analysis; Cost control; Proposal presentation; Application of software for project management (MS Project, Primavera Project Planner-P3).

EM 505 Operations Research: Deterministic Modeling; Linear programming; The Simplex method; Multiple objective linear optimization; Duality and sensitivity analysis; Post optimality analysis from the viewpoint of technology management; Transportation, transshipment, and assignment problems; Problem formulation; Goal programming; Network analysis; Dynamic programming; Integer programming and nonlinear programming. Probabilistic modeling: Markov chains; Queuing theory and applications; Inventory theory; Forecasting; Design analysis and simulation; Pareto optimality and tradeoff curves.

"Quality is never an accident; it is always the result of high intention, sincere effort, intelligent direction and skillful execution; it represents the wise choice of many alternatives."
(William A. Foster)

CONTENTS OF COURSES

COMMON ELECTIVES:

EM 511 Total Quality Management: Critical principles and procedures of quality management in a competitive global environment; contemporary definitions of quality; construction quality; Product quality; Process quality; Quality economics; Quality philosophies; Planning, organizing and controlling for quality; Human resource strategies; QA and QC tools.

EM 512 Project Evaluation and Feasibility Analysis: Evaluation of engineering projects from the engineering management perspective; Techniques for capital investment for decision-making; Time value of money and the concept of equivalence; Present worth, annual and rate of return analysis; Multiple alternatives; Replacement criteria; Tax considerations; Breakeven sensitivity analysis; Project evaluations under uncertainty; Risk sharing; Capital budgeting; Cost of capital depreciation; Multicriteria decisions. Project feasibility analysis; Organizational impacts; societal impacts; Environmental impacts.

EM 513 Research Methods in Engineering Management: Research methods in engineering and technology management; Statistical techniques including proper selection; Use and interpretation of parametric and non-parametric tests along with factor and discriminate analysis; Design of experiments and model misspecification; Simulation in engineering and management research and practice.

ELECTIVES:

IM 506 Business Process Reengineering: Fundamentals of process management; importance of process decisions and process choices; strategic process decisions for manufacturing and service environments. Costs, quality, and timeliness as the primary attributes of value; creation of value through strategies and processes. Process improvement tools and frameworks; process maps, value stream mapping, service blueprinting, reengineering, Poka-Yoke, lean systems and six-sigma. Simulation and modeling of discrete event systems and processes; random numbers generation, Monte-Carlo simulation, and probability distributions for discrete event processes. Implementing BPR methodology; initiating organizational change; building the reengineering organization; identifying BPR opportunities, understanding existing processes, reengineering processes, blueprinting new business systems, performing transformation.

IM 511 Statistical Quality Control: Review of Probability & Statistics, Probability Distributions, Hypothesis Testing (One-Tail and Two-Tail Tests), Sampling Distributions, Quality Control & Assurance, Causes of Variation, Control Charts (for attributes and variables), EWMA Chart and CUSUM Chart, Metrology & Gauging, Gauge Capability Analysis, Gauge Repeatability and Reproducibility, Process Capability Indices, Acceptance Sampling (for attributes and variables).

IM 512 Reliability Engineering: Fundamentals of Reliability Engineering, failure modes & effects analysis, failure distributions, complete & censored data, reliability estimation using normal, exponential, Weibull and other distributions, reliability metrics, Monte Carlo simulation, goodness of fit tests, bogey life test, sample size determination, accelerated life testing, stress-strength relationship, maximum likelihood estimation.

CONTENTS OF COURSES

IM 513 Six Sigma Methodologies: Introduction to Six Sigma, Internal & External Customers, DMAIC (Define, Measure, Analyze, Improve, Control) cycle, Six Sigma goals and metrics, Six Sigma training, Six Sigma teams, green; black and master black belt, design for six sigma, DMADV (Define, Measure, Analyze, Design, Verify), case studies.

IM 514 Quality Planning & Management: Introduction to Quality Management Systems, design of QMS, quality tools and their application in management, total quality management, product and service quality, process quality, quality philosophies, quality planning; improvement and control, quality function deployment, determination of vendor quality level.

IM 515 Agile and Lean Manufacturing: Introduction to Lean Manufacturing, value concept, lean objectives & tools, origins of lean systems, group technology, 5S, single minute exchange of dies, total productive maintenance, Kaizen, Just-In-Time Manufacturing Systems, Push & Pull Manufacturing Systems, Poka-Yoke, Toyota production system, introduction to agile manufacturing, research projects in agile manufacturing, design of market-responsive supply and distributions manufacturing systems.

IM 516 Design and Analysis of Experiments: Introduction, controllable and uncontrollable factors, single factor experiment, ANOVA, regression model, comparison tests, contrasts, randomized block design, latin square design, two-level and three-level full factorial experiments, blocking, confounding, two-level and three-level fractional factorial designs, experiments with random factors, response surface methodologies.

IM 517 Advanced Quality Engineering: Product and Process Design Optimization using Taguchi Methods; fractional factorial designs using orthogonal arrays and linear graphs; statistical tolerances, robust design and signal to noise ratio; process optimization using response surface methodology, TRIZ (Theory of inventive problem solving).

ME-586 Health, Safety and Environment: Safety management, OSHA protection program, management systems, equipment safety, fire protection and life safety, combustion and flammability, process and system safety, system reliability, material handling, operations safety, construction safety, chemical hazard assessment, material safety datasheets, exposure limits, hazard communication, personal protective equipment, industrial ventilation, radiation safety, sound and hearing conservation. Types of pollution and prevention, Air emissions modeling, air sampling methods, waste treatment (physical, chemical, biological thermal types) and disposal technologies, wastewater and water treatment, water quality standards, water discharge limitations and standards, pretreatment regulations, storage and containment.

SE-512 Research Methodology (0 Credit Hr)

IM-5002 Thesis (6 Credit Hrs)

"There is one rule for the industrialist and that is: make the best quality of goods possible, at the lowest cost possible, paying the highest wages possible."
(Henry Ford)