

## Courses Description

**College:** Engineering

**Department:** Industrial Engineering

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**Couse ID:** 403711      **Description:** Safety and Environment

**Full Course Description:** Health and safety requirements under working conditions, natural laws and applied regulations in plant design and operations, short-term and long-term planning requirements, and case studies.

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**Couse ID:** 403731      **Description:** Economy and Costing in Maintenance

**Full Course Description:** Costing and economics of projects, economical evaluation of projects, methodologies of efficient management of maintenance activities, capital analysis, decision analysis under risk, and case studies.

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**Couse ID:** 403732      **Description:** Introduction to Maintenance mangement

**Full Course Description:** Introduction to maintenance, total production, different maintenance strategies, evaluation of major methodologies of maintenance program development, planning and analysis, examples in decision making activities, and case studies

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**Couse ID:** 403733      **Description:** Project Design and Analysis

**Full Course Description:** Project analysis and evaluation of different maintenance plans, networks and graph theory, advanced cost analysis in maintenance planning, simulation procedures and evaluation software packages, project implementation techniques, lack of resources, and case studies.

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**Couse ID:** 403741      **Description:** Reliability and Availability Assessment

**Full Course Description:** Principles of reliability, probability, statistics, decision theory, applications in probability and statistics, work-plan-based maintenance and availability, work data analysis, quantum theories, determination of typical risks and optimal maintenance routes in industry.

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**Couse ID:** 403742      **Description:** Advanced Applications in Simulathon

**Full Course Description:** Application of simulation to complex systems including material handling systems, real time scheduling, high speed/high volume production, modern manufacturing techniques, health care services, logistics, concurrent use of simulation and other analysis techniques, use of experimental design, output analysis and validation techniques, simulation of maintenance systems and strategies, and case studies.

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**Couse ID:** 403743      **Description:** Statistical Design of Experiments

**Full Course Description:** Introduction to design of experiments and data analysis, statistical theories for designing experiments and data analysis, basic evaluation techniques, comprehensive vision towards product quality and function-ability, and case studies.

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**Couse ID:** 403751      **Description:** Non -destructive testing

**Full Course Description:**

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**Couse ID:** 403752      **Description:** Structure and Properties of Materials

**Full Course Description:** Classification of materials, crystalline structure, X-ray diffraction, neutrons diffraction, electrons diffraction, imperfections, elastic and plastic properties of solids, thermal properties, electrical properties, optical properties, magnetic properties.

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**Couse ID:** 403753      **Description:** Material Characterization

**Full Course Description:** Introduction to experimental techniques in material characterization that includes optical and electron microscopes (transmission, scanning electron microscope), spectrometric characterization of materials (ultraviolet, infra red, nuclear magnetic resonance, thermal analysis techniques (TA), Differential Scanning Calorimetry (DSC).

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**Couse ID:** 403754      **Description:** Advanced Materials

**Full Course Description:** Low density structural materials, bio materials, ceramics superconductor, solar cells, conductive polymers, special alloys for aircraft and space applications, piezoelectric materials, optical fibres, liquid crystals, ultra mechanical modulus fibres.

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**Couse ID:** 403755      **Description:** Metallurgy in NDE

**Full Course Description:** Solidification structures for cast and welded materials, phase transformations during solidification, defects and properties of solidified structures (cast and welded), solid-state phase transformation (diffusional and non-diffusioanl), calculation and measurement of phase volume fractions for X-ray Diffraction (XRD) and other NDT, determination of residual stresses.

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**Couse ID:** 403761      **Description:** Mechanical/Electrical Condition Monitoring

**Full Course Description:** Development of skills for situation evaluation, mechanical and electrical condition-monitoring methodologies, data analysis in mechanical and electrical condition monitoring, and case studies.

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**Couse ID:** 403762      **Description:** Computer Systems in Mangement and Maintenance

**Full Course Description:** Computer system design process, programming process, project team structure, issues in project management, contracting procedure, cost estimation models, system measurement, configuration management, reverse engineering, integrated project support environments (IPSEs).

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**Couse ID:** 403763      **Description:** Control of Machine Vibrations

**Full Course Description:** Basic vibration, single and multi-degrees of freedom systems, rotary machines vibration, unbalance and misalignment, vibration measurement, vibration isolation, nature and propagation of sound, acoustical analysis, machine noise control.

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**Couse ID:** 403793      **Description:** Research Project

**Full Course Description:** The course outlines the techniques used in conducting a minor research project or survey. To pass the student must submit a report not less than (10.0000) words.

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**Couse ID:** 403795      **Description:** Special Topics in Management

**Full Course Description:** The department offers a number of specialised and up-to-date subjects related to maintenance management.

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**Couse ID:** 403799      **Description:** Thesis

**Full Course Description:** The student must submit a research project proposal before the end of the third semester with the supervisor approval. The student must conduct a research and follow up the data acquisition, analysis and writing a thesis under the supervision of one of the college of engineering academic staff and defend his research outcomes to an examination committee assigned for this purpose. The committee decision will determine if the student passes the thesis exam.

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**Couse ID:** 2403798      **Description:** Comprehensive Exam

**Full Course Description:**

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**Couse ID:** 3403799      **Description:** Thesis

**Full Course Description:**

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**Couse ID:** 6403799      **Description:** Thesis

**Full Course Description:**

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**Couse ID:** 9403799      **Description:** Thesis

**Full Course Description:**

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**Couse ID:** 170403721      **Description:** Methods of Research in Crises and Disasters Management

**Full Course Description:** This course provides the opportunity for students to explore research that relate to crises management and technical processes using various research techniques students undertake an in-depth review and critical investigation using qualitative and quantitative analysis students will be exposed to various tools and techniques appropriate to applied research and will develop a research design based on an instructor approved topic , the research design may be used as a foundation for thesis project

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**Couse ID:** 170403723      **Description:** Analysis and Decision Making

**Full Course Description:** In this course, students will learn how to apply systematic decision-making processes in order to reduce risk and choose the best course of action. This course reveals the steps necessary to making decisions that are strategically aligned with business objectives and provides problem –solving tools to address a range of challenges that every leader encounters.

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**Couse ID:** 170403725      **Description:** National Security/ Policies and Strategies

**Full Course Description:** The course is designed to focus on the concept of the state and provides a comprehensive analysis of the instruments of national power and discuss the standards that determine its vital interest , the determination of national objectives that seeking to achieve and explaining the strategic frame work that interact through these instruments. This course will also focus on the national security environment , the strategic theory and formulation and national security policymaking. Also Overview of potential terrorist attack vectors on government-owned and private sector assets most directly tied to environmental health and safety. Homeland security requirements for environmental infrastructure, water supplies, energy sources, nuclear waste, and other programs vulnerable to targeting. Courses of action designed to prevent attacks.

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**Couse ID:** 170403727      **Description:** Strategic Management of Crises & Disasters

**Full Course Description:** Complex and multifaceted crises can overwhelm the ability of a government to mange events and to deal effectively with the adverse consequences associated with the crisis, the issue of maintaining a state of continuous equilibrium and match between an organization and its external environment is considered a critical condition for the survivability of the Organization and the sustainability of its competitiveness. In addition, the manner in which the organizations able to deal with the sources of change and crises surrounding it in the external environment determines its success or failure. Thus, this course aims at discussing the best tools and techniques that can be used to build a resilient country capable of dealing with its prevailing strategic environment and techniques that can be used to enable organizations to deal with changing reality affecting them. This course is designed to acquaint the national level and how to best utilize instruments of national power to face the challenges that the prevailing strategic environment presents

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**Couse ID:** 170403729      **Description:** Systems, Projects and Programs Management

**Full Course Description:** Public resources are limited, and decisions regarding how to use these scarce public resources must be informed by an understanding of how well public programs and policies produce their desired outcomes. However, measuring causal effects can be a challenge. This course is designed to provide a broad – yet rigorous – overview of the tools available to evaluate the causal effects of public programs and policies. These tools and methods include randomized control experiments and quasi-experiments, such as difference-in-difference, regression discontinuity, and instrumental variables. Students in this course will become familiar with the concepts, methods, and applications of evaluation. In the class is focused on teaching methods and tools for planning and managing complex product and system development projects. so that the class can focus on the preparation, planning, monitoring and adaptation of programs and projects. □  
Also The course covers key components of project management including project integration, project scope management, project time and cost management, quality management, human resource considerations, communications, risk management, and procurement management.□

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**Couse ID:** 170403731      **Description:** Strategic Planning in Crises and Disaster Management

**Full Course Description:** Strategic planning is an important leadership and management tool, especially in an era of uncertainty sound strategic plan will help any organization thrive in dynamic environment s and adapt as environment change , this course will provide understanding of which strategic planning is all about , why its important, how is it done , who should do it and why so many organizations struggle to do it , it introduces students to the concepts , varied procedures and tools used in organizational strategic planning , it addresses fundamentals of strategic alignment of people ,resources and processes to the business vision ,mission and purpose of organization, this course is structured around comprehensive case studies and accompanying ,exercises and discussions , students will be placed in planners seat and will be asked to apply what they have learned to lead an organization in a case study to success

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**Couse ID:** 170403733      **Description:** National Risk Assessment Methodology

**Full Course Description:** This course aims to provide methodology tools for supporting government policy analysis regarding the mitigation of future risks relevant at the national or sub-national level. This course will suggest the way in which a risk scenario can be developed, the impact of an incident can be assessed and what aspects to take into account, the likelihood of an incident can be assessed and what aspects to take into account, the likelihood of an incident can be assessed and how a risk diagram can be drawn and interpreted.□

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**Couse ID:** 170403735      **Description:** Organizational Theory

**Full Course Description:** This course is designed to hone student understanding of basic and fundamental concepts of organizational change, organizational effectiveness, and theories of effective change implementation, organizational redesign, organizational transformation, birth, growth decline and death and identify the role of strategic renewal in propelling change□

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**Couse ID:** 170403737      **Description:** Management of Change

**Full Course Description:** This course is designed to develop student understanding of basic and fundamental concepts of organizational change, organizational effectiveness, theories of effective change implementation, organizational redesign, organizational transformations; birth, growth, decline, and death and Identify the role of strategic renewal in propelling change.

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**Couse ID:** 170403741      **Description:** Media & Communication in Crises and Disasters Management

**Full Course Description:** This course addresses the basic elements of crisis communication, procedures for developing a crisis communication plan, and strategies for reacting to crises when they occur. Professionals are trained to deal with the media in less than optimal situations learn how to develop plans for different critical audiences, and research the most effective strategies for communicating the organizational message during a crisis. The course examines various types of crisis that can occur in organizations.

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**Couse ID:** 170403743      **Description:** Information and Communication Technology in Crises and Disasters Management

**Full Course Description:** This course describes how strategies and state-of-the-art ICT have could be applied to serve as a vehicle to advance crises management approaches decisions and practices. This course provides both a conceptual and practical guidance to crises management while also identifying and developing effective and efficient approaches, mechanism, and systems using emerging technologies to support an effective operation and identify applicable theories and practices in order to mitigate, prepare for, respond to and recover from various foreseen and/or unforeseen crises.

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**Couse ID:** 170403751      **Description:** Environmental Disasters Management

**Full Course Description:** This course examines different approaches to the study of environmental hazards and disaster management, pre-event mitigation, disaster risk reduction and disaster relief along with the development of technical and interpersonal skills. It will enable students to critically assess the effectiveness of the implementation of existing techniques in order to evaluate good practice and apply it to new situations. The course will ensure a sound working knowledge and experience with GIS and spatial information, extensively used by many planning authorities, and will develop valuable skills in the acquisition and processing of spatial datasets with a wide variety of disaster management applications, along with the ability to visualize and depict spatial information. Students will develop interpersonal including the assessment of priorities, allocation of resources and co-ordination of activities

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**Couse ID:** 170403763      **Description:** Special Topic (To Be Decided by the Individual Instructor)

**Full Course Description:** This course provides students with in-depth insights into key concepts, theoretical perspectives, essential skills and abilities, and critical thinking and problem solving skills necessary for effective crisis management on the national and international levels. Topics will include (but not limited to) national security issues, policies, strategies, and defense and other government related issues introduced by prominent and renowned figures and experts from inside and outside the country.

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**Couse ID:** 170403799      **Description:** Thises

**Full Course Description:** The student is required to submit and succeed in a thesis of 9 credit hours on a subject related to crisis and disaster management.

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**Couse ID:** 170407741      **Description:** Media & Communication in Crises and Disasters Management

**Full Course Description:** This course addresses the basic elements of crisis communication, procedures for developing a crisis communication plan, and strategies for reacting to crises when they occur. Professionals are trained to deal with the media in less than optimal situations learn how to develop plans for different critical audiences, and research the most effective strategies for communicating the organizational message during a crisis. The course examines various types of crisis that can occur in organizations.