

Courses Description

College: Engineering
Department: Mechanical Engineering

Couse ID: 402549	Description: Computer Aided Design
Full Course Description: a	
Couse ID: 402551	Description: HVAC
Full Course Description: a	
Couse ID: 402552	Description: Building Services
Full Course Description: a	
Couse ID: 402553	Description: Refrigeration Systems
Full Course Description: a	
Couse ID: 402554	Description: Design of Thermal Systems
Full Course Description: a	
Couse ID: 402561	Description: Internal Combustion Engines
Full Course Description: a	
Couse ID: 402562	Description: Energy Conservation
Full Course Description: a	
Couse ID: 402564	Description: Renewable Energy
Full Course Description: a	
Couse ID: 402571	Description: Special Topics in Mechanical Engineering
Full Course Description: a	
Couse ID: 402599	Description: Practical Training
Full Course Description: a	
Couse ID: 2402303	Description: Engineering Numerical Methods
Full Course Description: a	
Couse ID: 2402313	Description: Fluid Mechanics Lab.
Full Course Description: a	
Couse ID: 2402450	Description: Mechanical and Electrical Systems for Architectural Students
Full Course Description: a	
Couse ID: 4402212	Description: Strength of Materials Lab.
Full Course Description:	
Couse ID: 4402223	Description: Thermodynamics Lab.
Full Course Description:	
Couse ID: 4402313	Description: Fluid Mrchanics Lab.
Full Course Description:	
Couse ID: 4402322	Description: Heat Transfer Lab.
Full Course Description:	
Couse ID: 4402323	Description: HVAC
Full Course Description:	
Couse ID: 4402332	Description: Energy Conservation
Full Course Description:	

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College: Engineering

Department: Mechanical Engineering

Couse ID: 4402343 **Description:** Machine Design (2)

Full Course Description:

Couse ID: 4402352 **Description:** Building Survaces

Full Course Description:

Couse ID: 4402415 **Description:** Process Control Systems

Full Course Description:

Couse ID: 4402443 **Description:** Finite Element Methods

Full Course Description:

Couse ID: 4402495 **Description:** Special Topics

Full Course Description:

Couse ID: 110402231 **Description:** Dynamics

Full Course Description: Kinematics of particles, rectilinear and curvilinear motion in various coordinate systems, kinetics of particles, Newton's laws, central force motion, work-energy equation, principle of impulse and momentum, impact, conservation of energy and momentum, kinematics of rigid bodies, relative velocity and acceleration, instantaneous center, plane kinetics of rigid.

Couse ID: 110402310 **Description:** Fluid Mechanics (1)

Full Course Description: Flow classification, fluid properties, viscosity, vapor pressure, fluid statics, pressure measurements, buoyancy, fluids in motion, continuity equation, pressure gradient in fluid flow, Bernolli's, momentum and energy equations, dimensional analysis and similitude, and flow in conduits.□

Couse ID: 110402313 **Description:** Fluid Mechanics Lab

Full Course Description: Experimental methods and measurements: fluid properties, orifice and jet flow, Bernoulli's theorem-flow through a venture tube, impact of water jet, losses in pipes and fittings, comparative fluid measurements, hydrostatic pressure, flow visualizations and turbulent pipe flow, performance of pumps.

Couse ID: 110402434 **Description:** Control Systems

Full Course Description: a

Couse ID: 110402448 **Description:** Dynamics of Machinery

Full Course Description: a

Couse ID: 110402450 **Description:** Mechanical and Electrical Systems for Architectural Students

Full Course Description: 1

Couse ID: 110402481 **Description:** Thermofluids

Full Course Description: 1

Couse ID: 110402482 **Description:** Thermofluids Lab.

Full Course Description: 1

Couse ID: 110402514 **Description:** Fluid Mechanics (2)

Full Course Description: a

Couse ID: 110402527 **Description:** Heat Transfer (2)

Full Course Description:
a

Courses Description

College: Engineering

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Couse ID: 110402531 **Description:** Finite Elements Methods for Machine Design

Full Course Description: Introduction to approximate solution methods for problems in elasticity; the RITZ method; interpolation; weighted residual methods; applications of the finite element method; isoparametric finite elements; displacement-based bending elements in solid and structural mechanics; programming the finite element method; advanced topics in finite element analysis.

Couse ID: 110402535 **Description:** Vibration and Control Lab

Full Course Description: a

Couse ID: 110402538 **Description:** Introduction to Nondestructive Testing Techniques

Full Course Description: Overview of nondestructive testing, Overview of manufacturing processes, Introduction to welding technology, Defectology, Liquid Penetrant Testing (technique, methods, equipment, interpretation and evaluation of indications, standards and practices), Magnetic Particles Testing (principles, magnetization and demagnetization methods, equipment, evaluation techniques, standards and practices), Ultrasonic Testing (principles of acoustics and ultrasonics, methods and applications, equipment and probes, calibration, interpretation and evaluation, standards and practices), Radiographic Testing (principles, methods, equipment, safety, image interpretation, standards and practices).

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Full Course Description: a

Couse ID: 110402599 **Description:** Practical Training

Full Course Description: a

Couse ID: 150402599 **Description:** Practical Training

Full Course Description: A

Couse ID: 2004021599 **Description:** Practical Training

Full Course Description: Getting a bachelor's degree in Mechanical Engineering requires practical training for a period of eight (8) weeks in any private or public organizations inside or outside Jordan that work in the area of Mechanical Engineering and had been approved by the department of Mechanical Engineering and the Faculty of Engineering.

Courses Description

College: Engineering

Department: Mechanical Engineering

Couse ID: 2104021230 **Description:** Strength of Materials (1)

Full Course Description: Types of loads, structures and supports, axial stress and strain, normal and bending moment diagrams, torsion, bending of beams, compound stresses, combined stresses, shearing stress and strain, Mohr's circle of stress and strain, thin walled pressure vessels, deflection of simple beams, buckling of columns.

Couse ID: 2104021241 **Description:** Mechanical Drawing

Full Course Description: Mechanical engineering drawing conventions and abbreviations, types of sectional views, development of surfaces, using CAD software to make solid modeling and understand the philosophy of three-dimensional modeling. Construct sectional and auxiliary views working with intersections of planes and surfaces and understand the steps necessary to produce production drawings from a three dimensional model. Develop and understand acceptable dimensioning and tolerance practices used in production. Assembly, modeling of mechanisms using CAD software, the involute curve, drafting a gear, drawing screws and nuts according to different threading types, fasteners and springs.

Couse ID: 2104021321 **Description:** Thermodynamics (1)

Full Course Description: Thermodynamics properties; states, processes and cycles; closed and open systems; work and heat, ideal and real gases; conservation of mass; 1st and 2nd laws of thermodynamics; entropy; exergy.

Couse ID: 2104021322 **Description:** Thermodynamics (2)

Full Course Description: Review of basic laws and principles, vapor, air power and refrigeration cycles, mixtures of gas and vapor, psychrometry, combustion, enthalpy of formation, heat of reaction, compressible flow, velocity of sound Mach number, normal shock waves, nozzle and diffuser flows.

Couse ID: 2104021330 **Description:** Strength of Materials Lab

Full Course Description: Measuring and/or determination of some material properties such as stress (yield, ultimate & fracture) and strain, torsion, impact, fatigue, bending, creep, hardness and tensile tests.

Couse ID: 2104021332 **Description:** Manufacturing Processes

Full Course Description: It explores the technology behind different types of manufacturing operations, and the proper application of processes and techniques to transform raw materials into components, and components into assemblies. It focuses on the methods used in the manufacturing and processing of metals, plastics and composites including material removal, bulk deformation, hot and cold forming, casting and molding. It also discusses the products surface qualities and properties according to the manufacturing process utilized. The course covers casting of metals and alloys, rolling, forging, extrusion, drawing, cutting, bending, and drawing of sheet metal, traditional, shear process machining (turning, drilling, milling, cutting tools, chip type machining processes), nontraditional machining (like laser, electron beam, water jet) and contemporary topics such as rapid manufacturing, manufacturing of polymers and reinforced plastics.

Couse ID: 2104021341 **Description:** Machine Design (1)

Full Course Description: Evaluation and considerations of design process, static strength and theories of failure, fatigue strength, fatigue theories of failure, design of fasteners and connections, riveted joints, bolts and screws, force-deflection diagrams of bolted connections, welded joints.

Couse ID: 2104021342 **Description:** Theory of Machines

Full Course Description: Mechanisms and applications, mobility and linkages, cams, spur gears, helical and bevel gears, worm gears and Gear trains. Velocity analysis of mechanisms, Acceleration analysis of machinery, Static force analysis, dynamic force analysis, balancing of rotors and reciprocating engines, synthesis of mechanisms. Term project.

Courses Description

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Couse ID: 2104021401 **Description:** Engineering Measurements

Full Course Description: Introduction to measurement systems and experimental methods, basic concepts, calibration, dynamic response, analysis of experimental data, basic electrical measurements and sensing devices, displacement and area measurements, pressure measurement, flow measurement, temperature measurement, force, torque and strain measurements.

Couse ID: 2104021411 **Description:** Turbo-machinery

Full Course Description: Classification of turbomachines, dimensional analysis and similarity laws, pressure and temperature isentropic relations for compressible flow, total pressure and temperature relations, energy transfer between rotating rotors and fluid flow, degree of reaction, construction of velocity diagrams, analyses of axial and radial flow compressors and turbines, free vortex design, estimation of stage and design point performance.

Couse ID: 2104021412 **Description:** Fluid power system

Full Course Description: The course covers the fundamentals of fluid power systems (hydraulic and pneumatic) and its components. Fluid power modulation, static and dynamic modeling of pumps, motor, control valves, transmission lines, and fluid drives. It also deals with design control and operation of mechanical and electrical hydraulic servo-drives with feedback. Emphasis on circuit design, symbols, schematic diagrams, and hydraulic systems behavior.

Couse ID: 2104021421 **Description:** Heat Transfer

Full Course Description: Introduction to heat transfer mechanisms, heat conduction equation, steady heat conduction including the thermal resistance networks, transient heat conduction, lumped systems, fundamental of convection and thermal boundary layers, external and internal forced convection, natural convection, boiling and condensation, thermal radiation, and heat exchangers.

Couse ID: 2104021422 **Description:** Thermal Science Lab (1)

Full Course Description: Marcet Boiler, Gas Calorific Value, Nozzle Test, Refrigeration Cycle., Stiring Cycle, 6-two-stage compressor, Thermal Resistance Of multilayer materials, Double-pipe concentric tube heat exchanger, Cross-flow heat exchanger, combined convection and Radiation, forced convection and radiation.

Couse ID: 2104021431 **Description:** Mechanical Vibrations

Full Course Description: Linear Spring-mass-damper modeling, Single and Multi-Degree Degree of Freedom systems, Newton's Methods, Energy and Lagrange methods, Hysteretic Damping, Coulomb Friction Damping, Free and Forced Response, Harmonic, Periodic and Arbitrary Forced Excitation Response, Modal analysis and Mode summation techniques, Basic Principles of Vibrations Measurements, Design of Vibration Isolators, Continuous systems.

Couse ID: 2104021433 **Description:** Composite Materials

Full Course Description: Classification and characterization of composite materials, basic terminology of laminated fiber reinforced composite material, manufacturing methods, testing for mechanical properties, non-destructive inspection, macro-behavior of lamina, stress- strain relations for anisotropic material, orthotropic materials, invariant properties and strength of orthotropic lamina , biaxial strength theories for orthotropic lamina, micro behavior of lamina, mechanics of material and elasticity approaches to stiffness, mechanics of material approach to strength.

Couse ID: 2104021441 **Description:** Machine Design (2)

Full Course Description: Mechanical springs: helical, leaf and torsion springs shafts, rolling element bearings. Lubrication and journal bearings, clutches, coupling and brakes, gears and geometry, gear trains force and stress, multi-speed gear boxes design and analysis, couplings, clutches, brakes and fly wheels, cams, belts and chains, and term project.

Courses Description

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Couse ID: 2104021451 **Description:** Automotive Technology

Full Course Description: Automobile Overview, engine systems (ignition, fuel, lubrication, cooling), spark ignition and compression ignition engine types, design and operating parameters of engines, combustion, engine cycles, combustion chamber design, Octane and Cetane numbers, air induction systems and volumetric efficiency, fuel injection systems, exhaust systems, engine emissions and air pollutions, automobile systems (power terrain, brakes, steering, suspension, air-conditioning and heating), wheels and tires, common malfunctions and remedies, basic hand tools, engine maintenance, automobile up to date technologies, modern automobile mechanical, electrical, control and electronic systems, engine control unit (ECU), sensors technologies, electrical vehicles, hybrid vehicles.

Couse ID: 2104021452 **Description:** Design of Thermal Systems

Full Course Description: Designing of a workable thermal system, modeling of thermal equipment, system simulation and optimization, thermodynamic properties, and steady-state simulation of large systems.

Couse ID: 2104021461 **Description:** Energy Conservation

Full Course Description: Basic principles, terminology and concepts of conservation, energy auditing, energy conservation in boilers, furnaces & dryers, energy storage and waste heat recovery, co-generation and combined heat and power systems.

Couse ID: 2104021533 **Description:** Strength of Materials (2)

Full Course Description: This course covers fundamental theories of stress and strain; Transformations of stress and strain; 2D and 3D Mohr's Circle for stress and strain; Linear Stress-Strain-Temperature relations; Inelastic Material Behavior; Energy Methods and Castigliano Theorems; Flat Plates Theory; Basic Contact and Fracture Mechanics Problems.

Couse ID: 2104021534 **Description:** Flight Mechanics

Full Course Description: The Standard Atmosphere. Measurement of air data. Air data computers. Equations of motion for performance - the aircraft force system. Lift, drag, and thrust forces. Total airplane drag- estimation, drag reduction methods. The propulsive forces - the thrust production engines, power producing engines, variation of thrust, propulsive power and specific fuel consumption with altitude and flight speed. The minimum drag speed, minimum power speed. Aerodynamic relationships for a parabolic drag polar.

Couse ID: 2104021535 **Description:** Green Biomaterials

Full Course Description: The importance of green biomaterials in modern industries, the factors that influence their behavior at the macro and micro levels, and the use of natural resources to obtain such sustainable materials. As well as their manufacturing methods, components and physical, chemical and mechanical properties. This course will also study the methods of selecting suitable fibers for various modern engineering applications and the impact of selection processes on design processes to produce environmentally friendly green materials and products to contribute to the development of modern sustainable industries.

Couse ID: 2104021541 **Description:** Electromechanical Systems

Full Course Description: A study of devices and components that translate electrical energy into mechanical motion. Interfacing of mechanical and electrical systems and mechatronics. Basic introduction to sensors, actuators and computer interfacing and control. Transducers and measurement devices, actuators, A/D and D/A conversion, signal conditioning and filtering. DC and AC motors, servomotors, stepping motors, solenoids, relays, and timers. Applications of sensors and actuators in mechanical systems.

Couse ID: 2104021542 **Description:** Engineering Measurements Lab

Full Course Description: Experiments in the laboratory include the use of oscilloscope, voltmeters and operational amplifiers to calibrate and measure various mechanical and electrical quantities such as force, torque, temperature, displacement, flow, strain using various types of sensors

Courses Description

College: Engineering

Department: Mechanical Engineering

Couse ID: 2104021543 **Description:** Computer Aided Design and Manufacturing

Full Course Description: Introduction to CAD/CAM, engineering design idea; implementation and manipulation, introduction to concepts of wireframe, surface and solid modeling, geometric transformations of entities, data fitting techniques (splines, Bezier and B-splines), CAD/CAM integration, Numerical control, NC Part Programming, cutting tools and tool path generations, utilization of CAD/CAM packages to visualize, optimize, simulate, and machine mechanical components for different applications .

Couse ID: 2104021544 **Description:** System Dynamics and Modeling

Full Course Description: Developing mathematical models of dynamic systems, including mechanical, electrical, electromechanical, and fluid-thermal systems, and representing these models in transfer function and state space form. Analysis of dynamic system models, including time and frequency responses. Theory of single and multi-degree-of-freedom systems with an introduction to continuous systems. Determination of equations of motion, including natural frequency for free vibration and amplitude of forced vibration. Introduction to linear feedback control techniques. Synthesis and analysis by analytical and computer methods.

Couse ID: 2104021550 **Description:** Thermal Science Lab (2)

Full Course Description: Flash point, stroke S.I engine, stroke diesel engine, Emission analysis of, S.I engine, Psychometric process, Air Conditioning reversed cycle, Center heating system, Weather station, Solar collector efficiency, Film and drop wise condensation, Boiling heat transfer.

Couse ID: 2104021551 **Description:** HVAC (Heating, Ventilation and Air-Conditioning)

Full Course Description: Review of psychrometry, thermal comfort, air conditioning processes, inside and outside design conditions, heating load calculations, infiltration, cooling load calculations, solar gain, heating systems, design, layout, hot water, steam, hot air systems, under floor heating.

Couse ID: 2104021572 **Description:** Graduation Project (1)

Full Course Description: Planning, design, construction and/or management of a mechanical engineering project. Writing a technical report. Preparation of technical engineering drawings

Couse ID: 2104021573 **Description:** Graduation Project (2)

Full Course Description: Completion of Graduation Project 1.