

**International Undergraduate Program**  
**Faculty of Engineering, Kasetsart University**

**Second Semester**

<b>Course ID</b>	<b>Course Name</b>	<b>Credit</b>	<b>Date / Time</b>
11208111	Engineering Drawing	3	Tue 10–12 (Lab) Tue 13–16

**Course Description**

Lettering techniques, applied geometry drawing, orthographic drawing, pictorial drawing, dimensioning and tolerancing, sectional view drawing, auxiliary views, development, sketching techniques, detail and assembly drawings, introduction to computer-aided drawing.

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<b>Course ID</b>	<b>Course Name</b>	<b>Credit</b>	<b>Date / Time</b>
11208221	Engineering Mechanics I	3	Thu 9-12

**Course Description**

Force analysis, equilibrium, application of equilibrium equations to frames and machines, centroid, theorem of Pappus, beams, shear and bending moment diagrams, cable, dry friction, wedges, screws and belts, virtual work, stability of equilibrium, area moment of inertia, introduction to dynamics.

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<b>Course ID</b>	<b>Course Name</b>	<b>Credit</b>	<b>Date / Time</b>
11208222	Engineering Mechanics II	3	Tue 9-12

**Course Description**

Mass moment of inertia, mechanics of particle and rigid body in plane motion, equation of motion, principle of impulse and momentum, principle of work and energy, impact, fundamental of space motion.

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<b>Course ID</b>	<b>Course Name</b>	<b>Credit</b>	<b>Date / Time</b>
11208223	Mechanics of Materials	3	Tue 14.30–17.30

**Course Description**

Equilibrium of deformable body, concept of stresses and strains, stresses and strains relationship, normal stress and strain in axially loaded member, shearing stress and strain in circular shaft subjected to torsion, bending and shearing stresses in beams, deflection of beams, stresses under combined loading, Mohr's circle, buckling of columns.

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<b>Course ID</b>	<b>Course Name</b>	<b>Credit</b>	<b>Date / Time</b>
11208241	Thermodynamics I	3	Mon, Wed 9–10.30

**Course Description**

Properties of pure substances, work and heat, ideal gas, first and second laws of thermodynamics, simple steam power plant and refrigeration cycle, entropy, basic heat transfer and energy conversion.

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<b>Course ID</b>	<b>Course Name</b>	<b>Credit</b>	<b>Date / Time</b>
11208242	Fluid Mechanics	3	Fri 13-16

**Course Description**

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<b>Course ID</b>	<b>Course Name</b>	<b>Credit</b>	<b>Date / Time</b>
11208281	Workshop Practice	1	(Lab) Wed 13-16

**Course Description**

Practices in the use of measurement devices, hand tools, power tools, materials and accessories in mechanical works, welding, machining, wood works, piping system, electrical and electronics works, and safety.

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<b>Course ID</b>	<b>Course Name</b>	<b>Credit</b>	<b>Date / Time</b>
11208311	Machine Design	3	Thu 13-16

**Course Description**

Fundamental of mechanical design, properties of materials, theories of failure, design of simple machine elements, rivets, welding, screw fasteners, keys and pins, shafts, springs, gears, power screws, couplings, bearings, brakes, clutches, belts, chains.

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<b>Course ID</b>	<b>Course Name</b>	<b>Credit</b>	<b>Date / Time</b>
11208323	Computer Methods for Mechanical Engineering	3	Tue 13–15

**Course Description**

Problem solving by numerical methods. Curve fitting. Numerical methods for integration and differentiation. Numerical problem solving for differential equations. Numerical error of each method. Computer use in analysis of mechanical–system problems. Simulation and numerical analysis for problems in mechanical engineering and related applications.

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<b>Course ID</b>	<b>Course Name</b>	<b>Credit</b>	<b>Date / Time</b>
11208331	Automotive Technology	3	Fri 13-16

**Course Description**

Automotive body and frame, engine operation, lubrication systems, cooling systems, fuel delivery systems, ignition systems, starting and charging systems, power train systems, suspension systems, braking, and steering systems.

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<b>Course ID</b>	<b>Course Name</b>	<b>Credit</b>	<b>Date / Time</b>
11208342	Power Plant Engineering	3	Fri 9-12

**Course Description**

Energy conversion principles and availability concept, fuels and combustion analysis and component study of steam, gas turbine and internal combustion engine power plants, combined cycle and cogeneration, hydro power plant, nuclear power plant, control and instrumentation, power plant economics and environmental impacts.

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<b>Course ID</b>	<b>Course Name</b>	<b>Credit</b>	<b>Date / Time</b>
11208352	Refrigeration and Air Conditioning	3	Mon 13–16

**Course Description**

Basic knowledge of refrigeration and coefficient of performance, modified vapor compression, refrigeration cycles, system components analysis, refrigerant and their properties, evaporative cooling and cooling towers, absorption refrigeration, calculation of cooling load of refrigeration systems, freezing of foods, air condition, cooling load estimation of air conditioning systems, air distribution and duct system design.

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<b>Course ID</b>	<b>Course Name</b>	<b>Credit</b>	<b>Date / Time</b>
11208371	Automatic Control	3	Mon, Tue 9-10.30

**Course Description**

Modeling of physical system, transfer function and block diagram, on-off control and PID control, solution of ordinary differential equation using Laplace transformation, time variable response, analysis of system stability by root-locus method, frequency response and data display, design and improvement of control system efficiency, state-space method.

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<b>Course ID</b>	<b>Course Name</b>	<b>Credit</b>	<b>Date / Time</b>
1120413	Enterpreneuship for ME	3	Tue 9-12

**Course Description**

Creative thinking, product development, market opportunity, legal aspects in entrepreneurship, entrepreneurial financial, marketing and human resource management, financial accounting for management.

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<b>Course ID</b>	<b>Course Name</b>	<b>Credit</b>	<b>Date / Time</b>
11208423	Biomechanics Engineering	3	Wed 9-12

**Course Description**

Mechanics and dynamics of body motion, muscle, joints and heart, analysis of force, stress and strain of bone, muscle and tissue, applications of biomechanics engineering to medical equipment and instrument.

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<b>Course ID</b>	<b>Course Name</b>	<b>Credit</b>	<b>Date / Time</b>
11208424	Introduction to Engineering Composite Materials	3	Thu 9-12

**Course Description**

Fiber-reinforced polymeric composites, micromechanics of fiber-reinforced composites, mechanical behavior of laminae, classical lamination theory, thermal and hygroscopic stress analysis, strength of laminates, structural analysis of laminated plates, fabric-reinforced composites, preliminary design of composite structures.

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<b>Course ID</b>	<b>Course Name</b>	<b>Credit</b>	<b>Date / Time</b>
11208435	Control of Air Pollution from Automobile	3	Tue 13-16

**Course Description**

Air pollution from spark-ignition and diesel engines, emission regulations for air pollution, impacts of each air pollution species on ecology system, greenhouse gases, control devices of air pollution from automobile.

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<b>Course ID</b>	<b>Course Name</b>	<b>Credit</b>	<b>Date / Time</b>
11208436	Automotive Battery System and Energy	3	Mon 13–16

**Course Description**

Materials for energy conversion and storage, thermodynamics and transport processes of electrochemical cell, battery testing, battery modelling, battery degradation, battery management systems, thermal management systems, control of battery systems, battery pack manufacturing.

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<b>Course ID</b>	<b>Course Name</b>	<b>Credit</b>	<b>Date / Time</b>
11208445	Gas Turbine	3	Thu 13-16

**Course Description**

Types of engine and working, gas turbine cycle, improve of gas turbine performance, gas turbine for airplane, gas turbine accessory.

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<b>Course ID</b>	<b>Course Name</b>	<b>Credit</b>	<b>Date / Time</b>
11208449	Energy Audits	3	Wed 13-15

**Course Description**

Analysis and measurement of performance for heating, ventilating, and air conditioning systems, refrigeration systems, lighting and hot water systems in commercial and industrial buildings, measurement techniques for energy audits, energy conservation.

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<b>Course ID</b>	<b>Course Name</b>	<b>Credit</b>	<b>Date / Time</b>
11208455	Clean Room and Applications in Air Conditioning System	3	Sat 13-16

**Course Description**

Controlling room environment, principle of air filtration, selection and application of air filter, introduction to clean room, environmental pollution, clean room type, clean room design, energy savings, control of air flow, biological clean room, countermeasures for biological hazards.

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<b>Course ID</b>	<b>Course Name</b>	<b>Credit</b>	<b>Date / Time</b>
11208461	Principles of Fire Protection	3	Mon 9–12

**Course Description**

Principles of fire protection, fire classifications and selection of extinguishers, human behavior in fires, safety to life from fire, principles of passive and active fire protection, fundamental of fire suppression systems, building fire safety design, fire safety planning, fire safety inspection, fire hazard analysis.