

International Undergraduate Program
Faculty of Engineering, Kasetsart University

Frist Semester

Course ID	Course Name	Credit	Date / Time
11208111	Engineering Drawing	3	Tue 13–15 (Lab) Tue 15–18

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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Course ID	Course Name	Credit	Date / Time
11208112	Mechanical Engineering Drawing	3	Sat 8-10 (Lab) Sat 10-13

Course Description

2D and 3D drawing. Principles of mechanical engineering drawing. Working drawing. Technology of drawing and design by using computer.

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Course ID	Course Name	Credit	Date / Time
11208211	Engineering Design & Modeling	3	Fri 8-10

Course Description

Principles of design and drafting concepts using computer for building system works. Use of drafting programs. Computer-aided-drafting standards. Electronic data management. Three-dimensional modeling for building system works.

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Course ID	Course Name	Credit	Date / Time
11208221	Engineering Mechanics I	3	Tue 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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Course ID	Course Name	Credit	Date / Time
11208241	Themodymics I	3	Mon 9-12

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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Course ID	Course Name	Credit	Date / Time
11208281	Workshop Practice	1	(Lab) Thu 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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Course ID	Course Name	Credit	Date / Time
11208321	Mechanics of Machinery	3	Thu 13-16

Course Description

Mechanisms and analysis of displacements. Velocity and acceleration of their members. Analysis of forces and motions in machines. Balancing of rotation and reciprocation masses. Use of computer in motion and force analysis of mechanics of machinery.

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Course ID	Course Name	Credit	Date / Time
11208322	Mechanical Vibrations	3	Tue 13-16

Course Description

Mathematical modeling of mechanical, electrical, and hydraulic systems. Free vibration of systems with one degree of freedom and simulation. Forced harmonic vibration. Simulation and applications – rotating unbalance, support motion vibration, vibration isolation, vibration measurement. Transient vibration, Runge-Kutta method, and simulation. Vibration of systems with multi-degrees of freedom. Lagrange's equation.

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Course ID	Course Name	Credit	Date / Time
11208341	Thermodynamics II	3	Tue 9-12

Course Description

Power cycles and refrigeration cycles. Applications of first and second law of thermodynamics to thermal systems. Workable design of thermal systems. Equation fittings. Modeling thermal equipment. System simulation and optimization. Economic analysis.

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Course ID	Course Name	Credit	Date / Time
11208351	Heat Transfer	3	Thu / Fri 9–10.30

Course Description

Principles of heat transfer by conduction, convection and radiation, steady and unsteady state condition in one, two or three dimensional heat transfer, heat exchanger, boiling and condensation.

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Course ID	Course Name	Credit	Date / Time
11208381	Mechanical Engineering Lab I	1	(Lab) Mon 16–19

Course Description

Experimental works in the areas of engineering mechanics, solid mechanics, thermodynamics, engineering materials and fluid mechanics.

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Course ID	Course Name	Credit	Date / Time
11208411	Mechanical Design	3	Tue 10–11 Thu 10–12

Course Description

Mechanical design, designers, design teams, design process, planning for design, concept generation, concept evaluation, product generation, product evaluation.

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Course ID	Course Name	Credit	Date / Time
11208421	Introduction to Finite Element Methods	3	Fri 13-16

Course Description

Concept of finite element method, integral formulations and variational methods, formulation of finite element methods for analysis of linear static solids and structures, heat transfer in solids, and fluid flow.

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Course ID	Course Name	Credit	Date / Time
11208422	Introduction to Computational Fluid Dynamics	3	Wed 9-12

Course Description

Concept of computational fluid dynamics, transport equations of flow, finite volume method, application of computational fluid dynamics software for laminar and turbulent flows in a pipe, flow over obstacles, flow and heat transfer in an air-conditioned room, heat transfer in an electronic equipment, modeling of fire in a room.

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Course ID	Course Name	Credit	Date / Time
11208426	Fluid Machinery	3	Fri 13-16

Course Description

Theory and design of turbomachinery, characteristics, performance and application of fans, blowers, compressors, and pumps, hydraulic and pneumatic systems.

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Course ID	Course Name	Credit	Date / Time
11208432	Automotive Vehicle Dynamics	3	Mon 9–12

Course Description

Standard units, vehicle resistances, traction force, acceleration of vehicles, braking, engine and vehicle performance, gear ratio selection, vehicle handling characteristics.

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Course ID	Course Name	Credit	Date / Time
11208433	Attentive Energy for Vehicles	3	Tue 13-16

Course Description

Automotive engines, automotive natural gas system, liquefied petroleum ga system, safety standard, hybrid systems, electric vehicles, automotive batteries electric motors, fuel cells, fuel cell supporting systems, flexible fuel engines.

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Course ID	Course Name	Credit	Date / Time
11208442	Management and Economics	3	Mon 13–15

Course Description

Energy situation and concepts of energy conservation. Energy audits. Calculation of the overall thermal transfer value and the roof thermal transfer value. Energy conservation in thermal and electrical system. Energy management in buildings and industry. Energy economics analysis and energy usage environment.

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Course ID	Course Name	Credit	Date / Time
11208446	Termal System Design	3	Thu 13-16

Course Description

Convective heat transfer. Basic of heat transfer enhancement. Heat transfer enhancement technique. Surface extension. Use of porous media. Use of twist plate. Modification of pipe surface. Design of piping heat transfer enhancement. Analysis of piping heat transfer enhancement.

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Course ID	Course Name	Credit	Date / Time
11208448	Introduction to Renewable Energy	3	Tue 13-16

Course Description

Sources and types of renewable energy, energy conversion processes and storage methods, equipments and implementations in energy conversion processes, evaluation of renewable energy sources.

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Course ID	Course Name	Credit	Date / Time
11208451	Applications in Refrigeration System	3	Wed 16–19

Course Description

Refrigerant, lubricating oil, expansion device, electrical control, monitoring systems, refrigerant piping and vessel design, multi–pressure refrigeration process, cold storage , food preservation by cooling, cryogenic, thermal–electric, steam jet refrigeration system, air cycle and vortex tube, design of refrigeration system and installation.

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Course ID	Course Name	Credit	Date / Time
11208453	Plumbing System	3	Tue 9-12

Course Description

Design standard. Laws and regulations related to piping design. Piping system. Water pump. Control valve and accessories. Installation. Design of sanitary system. Design of hot water system. Design of steam piping system. Design of water-based fire protection piping system.

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Course ID	Course Name	Credit	Date / Time
11208471	Engineering Measurements	3	Fri 9-12

Course Description

Measuring of engineering quantity in electrical signal for control, study and display, measurement of motion, pressure, temperature, strain, fluid flow, forces and torques, dynamic response of measuring devices.

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Course ID	Course Name	Credit	Date / Time
11208481	Special Mechanical Eng. Lab.	1	Wed 13-16

Course Description

Experimental works in the areas of heat transfer, refrigeration, air conditioning, power plant engineering, energy conversion, fluid mechanics, and internal combustion engines.

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Course ID	Course Name	Credit	Date / Time
11208496	Selected Topic in ME	3	Mon 9-12

Course Description

Selected topics in mechanical engineering at the bachelor's degree level. Topics are subject to change each semester.

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Course ID	Course Name	Credit	Date / Time
11208498	Special Problems	3	Thu 16–19

Course Description

Study and research in mechanical engineering at the bachelor's degree level and compiled into written reports.