

ERASMUS COURSE CATALOGUE

2021/2022 – 1st SEMESTER

LIST OF CORE COURSES

The Institute of Technology of Hungarian University of Life Sciences is currently offering the below-listed core courses for the Autumn semester of the 2021/2022 academic year. Additional courses may be announced before the start of the semester, providing a wider range of courses to choose from.

Subjects from Bsc in Mechanical Engineering course

3rd semester subjects

5th semester subjects

7th semester subjects

SUBJECT CODE	TITLE OF SUBJECT	SHORT DESCRIPTION	CREDIT	NAME OF SUBJECT TEACHER
SGMMCX27XXN	Dynamics	Purpose of this subject is to present the mechanics of moving solids. It discusses kinematics and kinetics of material points, rigid solids and structures using knowledge of physics. During examining the structures it gives some knowledge in fundamental theories of mechanisms. Theory of vibrations is discussed apart chapter showed basic elements of that. Engineering practicing is enhanced.	5	Dr. Keppler István
SGMGSX15XXN	Introduction to Machine Elements Design	The course provides basic knowledge on designing elements of machines. The main objective is to develop in the junior mechanical engineering student the ability to analyse operational principles of different machine elements with special emphasis on their	3	Dr. Szendrő Péter
SGMMUM003BN	Material handling and logistics	The objectives of the course to introduce students into the theory and practice of material handlings machines (which are designed to move individual articles such as solids or free-flowing bulk materials over a horizontal, inclined, declined, or vertical path of travel with continuous motion) and to give elementary knowledge to the design of these equipments. The course based on knowledge of Maths, Mechanics, Elements of Machines. In every topic operation, construction, application and design	5	Dr. Magó László

		<p>of the machine will be discussed. Examination requirements: written or oral exam</p> <p>Topics</p> <ol style="list-style-type: none"> 1. Introduction of the Course, Basics of Material Handling 2. Material handling and logistics. Elements of Material Handling; Example on the performance of discontinuous handling systems 3. Belt Conveyor; Example on Belt Conveyor 4. Bucket Elevator; Example on Bucket Elevator 5. Scraper chain conveyor; Example on Scraper Chain Conveyor 6. Screw Conveyor; Example on Screw Conveyor 7. Transport Systems, Road-, Rail-, Sea-, Air-, Pipeline-transport; Practice: View of material handling machines in the TK building 8. Written Exam I.; Means of transport; 9. Project Week I 10. Machines of Warehousing; Example on Alternative Storage Systems Compensation of Written Exam II; 11. Continuous and discontinuous Conveyors; Packages, Loading Units, and Load Carriers; Example on Conveying Capacity 12. Machines of Handling, and Picking Systems; Example on Storage Space Requirements 13. Inventory and Stock Management. Example on ABC-Analysis 14. Written Exam II <p><i>Literature:</i> Written and electronic material of the Presentations</p> <p>Requirements: Maximum reachable points due the Exams are 100 points, 25-25 points from the written exam at middle and at the end of the course on 7th - 14th week, and 50 points from the oral exam in examination period. Minimum point from written exams is 13 points separately. Minimum point for the signature (recognition of a semester) are 26 points, which can be collected from the written exams at middle and at the end of the course on 7th - 14th week. The oral exam is valid if the student can achieve 26 points. The final evaluation: 51 - 60 point mark - 2</p>	
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SGMGSX14XXN	Introduction to Computer Aided Design	The objective of the subject is to acquaint students with computer aided 3 dimensional modelling techniques with the help of SolidEdge parametric design software. Beside the 3D model creation the students learn the methods of assembly techniques and to generate 2D technical drawings from the 3 dimensional models.	4	Dr. Szabó István
SGMGTX03XXN	Materials	Understand the basic laws of materials and metallography. Understand the important material testing procedures used in practice. The theoretical basics of heat treatment of materials and the most commonly used methods. The properties and markings of the most important structural and tool steels, cast iron castings, aluminum castings and copper alloys.	4	Dr. Szakál Zoltán
SGMMGX32XXN	Quality Management	The main objective is to teach the basic elements and connections of quality management scope to development of quality-culture and to build up a quality-philosophy. Topics: Means and importance of quality ? Cost of quality ? Designing for quality ? Cont	2	Dr. Husti István
SGMGTX13XXN	Mechanical Engineering Technology	The general laws of cutting. The theoretical and practical issues of the most important cutting technologies. Cutting tools. Construction, operation and control of machine tools. Devices' Functions and Design Basics. Designing Machining Technology for Typical Component Types. Action Planning. Brief description of integrated manufacturing systems. Programming numerical controlled machine tools, industrial robots. Structure of flexible manufacturing cells and manufacturing systems. Designing production processes. Individual, Type and Group Technologies. Computer-aided process planning. Design of tool movements. Human-machine connection tools. Data and knowledge base. The economy of machine manufacturing. Computer-integrated production.	5	Dr. Kári-Horváth Attila

SGMGET008BN	Pneumatic and hydraulic energy transmission	The subject discusses the most important details of fluid technology in hydrostatic and aerostatic approximation. In both cases, you will review the elements used and details of the construction, operation and testing of the circuits. In the field of hydraulics, it manages the solutions applied in vehicle technology and field machines (steering, traction drive, auxiliary drives, etc.) while in pneumatics it presents the industrial air supply, the foundations of vacuum technology and some catches of PLC control. Summarizes the automation found in pneumatics.	4	Dr. Jánosi László
SGMKOR004BN	Environmental management and technology	This module focuses on the technical-, economic-, and ecological foundations of relationship. For the mechanical engineers this subject presents the basically of ecology and the relationships between of ecological nature and social environment are discussed. The course, students learn about the global and regional economic development and growth problems, environmental impact, and their possible regulatory responsibilities to ensure harmony. The course introduces the operations and the processes that can be applied in environmental protection with emphasis on their technical background and equipment. The main parts of the subject are: mechanical-, hydrodynamic-, caloric- and mass transport operations and chemical- and biological processes.	5	Dr. Géczi Gábor
SGMJTX25XXN	CAM practice	Students learn about the principles and methods of computer modeling of mechanical systems that are of primary importance to practice. During the exercises, the fundamental features of modeling tools and models are studied. The subject is based on computer-based NC technology design based on modeling, tool design and other engineering design based on modeling methods, computer-led manufacturing, and model analysis. With the knowledge gained, the student will be able to know and apply without any difficulties during later studies and professional practice of the student modern modeling tool.	2	Dr. Keresztes Róbert Zsolt
SGMJTX26XXN	Programming of modern machine tools		2	Dr. Keresztes Róbert

SGMMHX31XXN	Tribology	It includes the study and application of the principles of friction, lubrication and wear.	2	Dr. Zsidai László
SGMGTX24XXN	CAE Practice III.	The aim of the course is to acquire the correct design basics for different molding tools and to familiarize the practical application of different tooling structures, and to apply design knowledge in the CAD / CAE system. From the product model, virtual design, optimization (eg injection molding simulation) of the complete molding tool, as well as the utilization of the widely used tool normalities in practice. Generate models for rapid prototype production.	2	Dr. Pataki Tamás István

Subjects from Msc in Mechanical Engineering course

3rd semester subjects

SUBJECT CODE	TITLE OF SUBJECT	SHORT DESCRIPTION	CREDIT	NAME OF SUBJECT TEACHER
SGMFFX02XMN	Computer Simulation	The aim of the course is to introduce the development of physical based mathematical models using examples from engineering practice. Then computational realization and solution of mathematical models of dynamical systems in interactive graphical simulation environment. Measurement based identification of model parameters and model validation. The topics of the main case studies: thermal behavior of electrical engines, modeling and simulation of environmental meteorological parameters, modeling and simulation of flat plate collector and a solar hot water system.	4	Dr. Farkas István
SGMMHX01XMN	Automation Engineering	<p>An Introduction first defines and organizes the key elements of mechatronics, exploring design approach, system interfacing, instrumentation, control systems, and microprocessor-based controllers and microelectronics. It then surveys physical system modeling, introducing MEMS along with modeling and simulation. Coverage then moves to essential elements of sensors and actuators, including characteristics and fundamentals of time and frequency, followed by control systems and subsystems, computer hardware, logic, system interfaces, communication and computer networking, data acquisition, and computer-based instrumentation systems.</p> <p>The subject consists of 2 hours lecture and 1 hour laboratory practice on every week.</p> <p>Topics:</p> <ul style="list-style-type: none"> • Introduction to Mechatronics • What is Mechatronics? Development of Mechatronics • Home work discussion. Selection of topic of report • Literature research. Literature sources. How to find the relevant sources? 	4	Dr. Jánosi László

		<ul style="list-style-type: none">• Key elements of Mechatronics. Integration and synergy in mechatronics• Industry 4.0. Agromechatronics• Energy transmission in Mechatronics. Pneumatic Drives• Energy transmission in Mechatronics. Hydraulic energy transmission• Geographical Positioning System• Automation in vehicle technics• Summary, consultation• Written test		
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