LIST OF COURSES OFFERED TO INTERNATIONAL STUDENTS
NON-DEGREE PROGRAM
ODD SEMESTER, ACADEMIC YEAR 2026/2027
Faculty of Engineering - Universitas Indonesia

Course Name: Engineering Materials
Course Code: ENME601101
Course Credits: 3

Degree	Bachelor of Engineering
Department/Study Program	Department of Mechanical Engineering/ Bachelor of Mechanical Engineering
Type of Class	International
Language of Instruction	English
Lecturer Name	Prof. Sugeng Supriadi, S.T., M.S.Eng. , Ph.D.
Course Structure	Lecture and Practicum
Course Overview	Engineering materials is a discipline that explains the properties of materials used in all aspects of mechanical engineering, namely design, manufacturing, energy conversion, and reliability. Determining the structural properties of engineering materials includes tensile testing, bending testing, shock loading testing, and others.
Course Key Words	Materials, manufacturing, material structure, deformation
Academic Goal	Capable of applying basic knowledge of mathematics, basic science, and engineering principles to Materials for Engineering in the field of mechanical engineering, particularly their inherent properties based on ship operational conditions comprehensively using a scientific approach.
Course Schedule	1. Week 1: Atomic structure; Crystalic material; 2. Week 2: Metal and non-metal material; 3. Week 3: Process; phase diagram and solidification; 4. Week 4: Heat treatment process; 5. Week 5: Mechanical behavior of crystalic material; 6. Week 6: Elastic material; plastic deformation; crystal plasticity; 7. Week 7: Method of material mechanical testing; 8. Week 8: Mid-term examination 9. Week 9: Dislocation; strengthening; 10. Week 10: Failure and remaining lifetime of material; 11. Week 11: Introduction to mechanical crack and steel mechanical structure behavior; 12. Week 12: Material structure degradation;

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	13. Week 13: Corrosion process; corrosion prevention; 14. Week 14: Oxidation; wear and erotion; 15. Week 15: Concrete material behavior; wood; cement and its structure behavior 16. Week 16: Final-term exam.
Textbooks, References, and Supplementary Materials	• Callister W. D., Introduction to Material Science and Engineering, John Wiley and sons, 2007. • Hibbeler R. C., Statics and Mechanics of Materials, Prentice Hall, 2004. • Wessel J. K., Handbook of Advanced Material, John Wiley and Sons, 2004.
Grading Component	Please describe the grading component. For example: - Midterm Exam: 30% - Final Exam: 30% - Quiz: 20% - Assignment: 10% - Lav: 10%
Other (i.e. Expectations on Classroom Conduct and Decorum etc.)	Students are expected to: - Attend all classes regularly and on time. - Participate actively in discussions and learning activities. - Maintain respectful behavior toward instructors and peers. - Avoid any form of academic dishonesty (e.g., plagiarism, cheating).

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ODD SEMESTER, ACADEMIC YEAR 2026/2027
Faculty of Engineering - Universitas Indonesia

Course Name: Basic Thermodynamics
Course Code: ENME613031
Course Credits: 4

Degree	Bachelor of Engineering
Department/Study Program	Department of Mechanical Engineering/ Bachelor of Mechanical Engineering
Type of Class	International
Language of Instruction	English
Lecturer Name	Ahmad Syihan Auzani, S.T., M.T., Ph.D.
Course Structure	Lecture
Course Overview	This course introduces the basic concepts of Thermodynamics and their applications in real life, as well as providing an understanding and analytical skills related to the design of Thermodynamic systems. As a branch of Physics and Engineering, a student who has studied Thermodynamics should have a good understanding and analytical ability regarding Thermodynamic systems and their interactions with the environment.
Course Key Words	Thermodynamics cycles, Entropy, Exergy, Thermodynamics laws.
Academic Goal	
Course Schedule	1. Week 1: Definitions and Basic Concepts of Thermodynamics 2. Week 2: Energy and the First Law of Thermodynamics 3. Week 3: Properties of Pure Substances 4. Week 4: Energy Analysis in Control Mass (Closed Systems) 5. Week 5: Energy Analysis in Control Mass (Closed Systems) 6. Week 6: Analysis of the First Law of Thermodynamics in Control Volumes 7. Week 7: Analysis of the First Law of Thermodynamics in Control Volumes 8. Week 8: Mid-term examination 9. Week 9: The Second Law of Thermodynamics 10. Week 10: The Second Law of Thermodynamics 11. Week 11: Entropy 12. Week 12: Exergy 13. Week 13: Gas Cycles

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	14. Week 14: Steam Cycles 15. Week 15: Refrigeration and Heat Pumps 16. Week 16: Final-term exam
Textbooks, References, and Supplementary Materials	• Moran, Michael J. and Shapiro, Howard N. Fundamentals of Engineering Thermodynamics 5th edition. Danvers: John Wiley & Sons, 2006. • Cengel, Yunus A. and Boles, Michael A. Thermodynamic: an Engineering Approach 5th edition. Boston: McGraw-Hill, 2006.
Grading Component	Please describe the grading component. For example: - Midterm Exam: 30% - Final Exam: 30% - Quiz: 20% - Assignment: 10% - Lab: 10%
Other (i.e. Expectations on Classroom Conduct and Decorum etc.)	Students are expected to: - Attend all classes regularly and on time. - Participate actively in discussions and learning activities. - Maintain respectful behavior toward instructors and peers. - Avoid any form of academic dishonesty (e.g., plagiarism, cheating).

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Faculty of Engineering - Universitas Indonesia

Course Name: Material Selection and Manufacturing Processes
Course Code: ENME613301
Course Credits: 4

Degree	Bachelor of Engineering
Department/Study Program	Department of Mechanical Engineering/ Bachelor of Mechanical Engineering
Type of Class	International
Language of Instruction	English
Lecturer Name	Agung Shamsuddin Saragih, S.T., M.S.Eng. , Ph.D.
Course Structure	Lecture
Course Overview	Materials are one of the essential areas of knowledge and skills that a mechanical engineering graduate must possess. This includes understanding, knowledge, and competence in theory, application methods, and manufacturing technologies related to product processes. This encompasses: the principles and characteristics of the processes, process limitations, forces and energy required for the processes, the impact of process parameter settings on product quality, and the relationship between processes and materials, including the material characteristics required for each process.
Course Key Words	Manufacturing process, machining, turning, material selection
Academic Goal	Upon completing this course, students will be able to explain the fundamental theories of manufacturing processes and material selection, describe and calculate dominant process parameters, and analyze the impact of process parameters on product quality and the relationship between processes and materials.
Course Schedule	1. Week 1: Manufacturing Processes & Production Systems; Materials in Manufacturing 2. Week 2: Theory and Methods of Casting Processes; 3. Week 3: Theory and Methods of Bulk Forming Processes 4. Week 4: Theory and Methods of Sheet Metal Forming Processes; 5. Week 5: Theory and Methods of Powder Metallurgy Processes 6. Week 6: Theory and Methods of Material Machining/Cutting Processes 7. Week 7: Theory and Methods of Surface Quality Improvement

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	Processes 8. Week 8: Mid-term examination 9. Week 9: Theory and Methods of Joining Processes 10. Week 10: Welding 11. Week 11: Theory and Methods of Prototyping Processes 12. Week 12: Engineering Material Characteristics 13. Week 13: Relationship between Process Characteristics and Material Characteristics 14. Week 14: Process Parameter Adjustment for Materials 15. Week 15: Design Tasks for Material Selection and Manufacturing Processes to Meet Market Needs 16. Week 16: Final-term exam
Textbooks, References, and Supplementary Materials	• Serope Kalpakjian, Manufacturing processes for engineering materials, Addison-Wesley, 2007
Grading Component	Please describe the grading component. For example: - Midterm Exam: 30% - Final Exam: 30% - Quiz: 20% - Assignment: 10% - Lab: 10%
Other (i.e. Expectations on Classroom Conduct and Decorum etc.)	Students are expected to: - Attend all classes regularly and on time. - Participate actively in discussions and learning activities. - Maintain respectful behavior toward instructors and peers. - Avoid any form of academic dishonesty (e.g., plagiarism, cheating).