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

Course Name: Telecommunication System Devices
Course Code: ENEE616245
Course Credits: 3

Degree	Bachelor
Department/Study Program	Electrical Engineering
Type of Class	International
Language of Instruction	English
Lecturer Name	
Course Structure	Lecture
Course Overview	The Telecommunication System course provides an indepth understanding of the principles and technologies used in modern communication networks. Students explore topics such as signal transmission, modulation, multiplexing, and network protocols, with a focus on both wired and wireless systems. This course equips students with the skills to design, analyze, and optimize telecommunication networks in fields like mobile communication, satellite systems, and the internet.
Course Key Words	
Academic Goal	1. Able to analyze the performance of microwave communication devices in a communication system 2. Able to design telecommunication system devices
Course Schedule	Simple passive radio wave components; simple active radio wave components
Textbooks, References, and Supplementary Materials	1. D. M. Pozar, “Microwave Engineering”, Addison-Wesley, 1998 2. Gonzalez, “Microwave Transistor Amplifiers: Analysis and Design”, 2nd Edition, Prentice Hall, 1997
Grading Component	- Midterm Exam: 25% - Final Exam: 25% - Assignments: 40% - Quizzes: 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).

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

Course Name: Power Electronics and Laboratory
Course Code: ENEE616137
Course Credits: 3

Degree	Bachelor
Department/Study Program	Electrical Engineering
Type of Class	International
Language of Instruction	English
Lecturer Name	
Course Structure	Lecture
Course Overview	The Power Electronics and Laboratory course focuses on the principles and applications of electronic circuits used to convert and control electrical power. Students learn about power semiconductor devices, converters, inverters, and the design of power electronic systems. Through hands-on laboratory experiments, students gain practical experience in building and testing power electronics circuits for use in renewable energy, electric vehicles, and industrial applications.
Course Key Words	
Academic Goal	1. Able to analyze the working principles of simple power electronics circuits in everyday life applications 2. Able to validate the results of experiments conducted on simple power electronics circuits in everyday life applications
Course Schedule	Introduction to power electronics; power electronics components; AC-AC converters; AC-DC converters; DC-DC converters; DC-AC converters; power electronics applications.
Textbooks, References, and Supplementary Materials	1. M. Rashid, “Power Electronics Circuits, Devices, and Applications”, 4th Edition, Prentice Hall, 2014 2. R. Erickson, D. Maksimovic, “Fundamentals of Power Electronics”, 2nd Edition, Chapman and Hall, 1997 3. N. Mohan, T.M. Undeland, W.P. Robbins, “Power Electronics”, 3rd Edition, John Wiley and Sons, 2003
Grading Component	- Midterm Exam: 25% - Final Exam: 25% - Assignments: 40% - Quizzes: 10%
Other (i.e. Expectations on Classroom	Students are expected to: - Attend all classes regularly and on time.

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

Conduct and Decorum etc.)	- Participate actively in discussions and learning activities. - Maintain respectful behavior toward instructors and peers. - Avoid any form of academic dishonesty (e.g., plagiarism, cheating).

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

Course Name: Optoelectronic Devices
Course Code: ENEE616353
Course Credits: 3

Degree	Bachelor
Department/Study Program	Electrical Engineering
Type of Class	International
Language of Instruction	English
Lecturer Name	
Course Structure	Lecture
Course Overview	The Optoelectronic Devices course covers the principles and applications of devices that convert electrical signals into optical signals and vice versa. Students study key topics such as light-emitting diodes (LEDs), laser diodes, photodetectors, and optical modulators. This course prepares students to understand and design optoelectronic components used in a variety of fields, including telecommunications, medical devices, and sensing technologies.
Course Key Words	
Academic Goal	1. Able to design optoelectronic devices. 2. Able to apply knowledge of optoelectronic devices to solve engineering problems in daily life.
Course Schedule	Light theory: Snell's law; Fresnel's laws; Maxwell's equations; Fermat's principle; polarization; diffraction; Numerical Aperture (NA); attenuation; mode concepts; dispersive power; resolving power; free spectral range; coherence; Jones vectors; Passive photonic devices: waveguides; gratings; polarizers; Active photonic devices: laser diodes; LEDs; and photodetectors.
Textbooks, References, and Supplementary Materials	1. Tom Markvart and Luis Castaner, "Solar Cells: Material, Manufacture and Operation," Elsevier, 2005 2. Martin A. Green, "Silicon Solar Cell: Advanced Principles and Practice", Centre for Photovoltaic Devices and Systems, The University of New South Wales, Sydney, 1995 3. Stuart R. Wenham, Martin A. Green, Muriel E. Watt, "Applied Photovoltaics", Centre for Photovoltaic Devices and Systems.
Grading Component	- Midterm Exam: 25% - Final Exam: 25% - Assignments: 40% - Quizzes: 10%
Other (i.e. Expectations on Classroom	Students are expected to: - Attend all classes regularly and on time.

LIST OF COURSES OFFERED TO INTERNATIONAL STUDENTS
NON-DEGREE PROGRAM
ODD SEMESTER, ACADEMIC YEAR 2026/2027
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Conduct and Decorum etc.)	- Participate actively in discussions and learning activities. - Maintain respectful behavior toward instructors and peers. - Avoid any form of academic dishonesty (e.g., plagiarism, cheating).

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

Course Name: Electronic Instrumentation Design
Course Code: ENEE617356
Course Credits: 2

Degree	Bachelor
Department/Study Program	Electrical Engineering
Type of Class	International
Language of Instruction	English
Lecturer Name	
Course Structure	Lecture
Course Overview	The Electronic Instrumentation Design course teaches students the principles and techniques for designing electronic systems used in measurement and control applications. Topics include sensor interfacing, signal conditioning, data acquisition, and system integration. This course equips students with practical skills to design and implement reliable instrumentation systems for industrial, medical, and scientific applications.
Course Key Words	
Academic Goal	1. Able to design electronic instrumentation. 2. Able to analyze electronic instrumentation.
Course Schedule	Technologies in industrial electronic instrumentation; medical electronic instrumentation; RF electronic instrumentation; IoT electronic instrumentation.
Textbooks, References, and Supplementary Materials	1. Jacob, J. Michael, “Power electronics: principles & 2. applications,” Delmar Thomson Learning, 2002.
Grading Component	- Midterm Exam: 25% - Final Exam: 25% - Assignments: 40% - Quizzes: 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).

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

Course Name: Electrical Power System and Laboratory
Course Code: ENEE616139
Course Credits: 3

Degree	Bachelor
Department/Study Program	Electrical Engineering
Type of Class	International
Language of Instruction	English
Lecturer Name	
Course Structure	Lecture
Course Overview	The Electrical Power System and Laboratory course provides an in-depth study of the generation, transmission, distribution, and utilization of electrical power. Students learn about power system components, load flow analysis, fault diagnosis, and stability considerations. Through hands-on laboratory work, students gain practical experience in simulating and analyzing real-world power system operations, preparing them for careers in electrical power engineering and system management.
Course Key Words	
Academic Goal	1. Able to calculate parameters in power systems 2. Able to analyze power systems such as power flow analysis, short circuit analysis, stability analysis, and economic operation analysis of power systems
Course Schedule	Fundamental concepts of power systems; Power system component modeling; Admittance Matrix; Power Flow Study; Impedance Matrix; Symmetrical Components; Short-circuit calculation; Stability; Power system operation; Fundamentals of Power System Control.
Textbooks, References, and Supplementary Materials	1. John J. Grainger, William D. Stevenson, Jr. “Power System Analysis “. McGraw-Hill 2. B.M. Weedy, B.J. Cory, “Electric Power Systems,” 4th Edition, John Wiley and Sons, 2001 3. Hadi Saadat. “Power System Analysis”. Mc Graw Hill
Grading Component	- Midterm Exam: 25% - Final Exam: 25% - Assignments: 40% - Quizzes: 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).

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

Course Name: Electric Motor Control System
Course Code: ENEE616460
Course Credits: 3

Degree	Bachelor
Department/Study Program	Electrical Engineering
Type of Class	International
Language of Instruction	English
Lecturer Name	
Course Structure	Lecture
Course Overview	The Electric Motor Control Systems course focuses on the principles and techniques used to control the operation of electric motors in various applications. Students learn about motor types, control methods such as PID and vector control, and the use of power electronics in motor drives. This course provides practical knowledge for designing efficient and reliable motor control systems in industries like automation, robotics, and electric vehicles.
Course Key Words	
Academic Goal	1. Able to analyze control components and electric drive system components, as well as simple motor components using simulation 2. Able to design electric motor control systems
Course Schedule	Electric drive systems; Modeling electric motors (DC; PMSM; IM); Power transfer circuits (3-phase PWM inverter); DC brushless servo motors; Speed and position controllers; Reference frame concepts; Vector controllers; Simulation of electric drive systems
Textbooks, References, and Supplementary Materials	1. Peter Vas, “Electrical Machines and Drives: A Space-Vector Theory Approach”, Oxford University Press UK, 1993. 2. Peter Vas, “Sensorless Vector and Direct Torque Control”, Oxford University Press, 1998.
Grading Component	- Midterm Exam: 25% - Final Exam: 25% - Assignments: 40% - Quizzes: 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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NON-DEGREE PROGRAM
ODD SEMESTER, ACADEMIC YEAR 2026/2027
Faculty of Engineering - Universitas Indonesia

Course Name: Electric Materials
Course Code: ENEE613013
Course Credits: 2

Degree	Bachelor
Department/Study Program	Electrical Engineering
Type of Class	International
Language of Instruction	English
Lecturer Name	
Course Structure	Lecture
Course Overview	The Electric Materials course explores the properties and applications of materials used in electrical engineering, including conductors, semiconductors, insulators, and magnetic materials. Students learn about the atomic structure, electrical behavior, and thermal characteristics of these materials, and how they influence the design and performance of electrical systems. This course provides a foundation for understanding the role of materials in modern electronic devices and power systems.
Course Key Words	
Academic Goal	Able to classify the properties of materials in electrical engineering.
Course Schedule	Atoms in solids; Dielectric polarization; Dielectric losses; Classification of electric materials: solids; ceramics; polymers; Insulation materials: gases and liquids; properties/characteristics of materials: conductivity; thermal; electrical; optical; Insulation failures; optical materials.
Textbooks, References, and Supplementary Materials	1. Rudy Setiabudy, “Material Teknik Listrik”, UI Press, 2007 2. R. E. Hummel, “Electronic Properties of Materials”, Third Edition, Springer, 2000
Grading Component	- Midterm Exam: 25% - Final Exam: 25% - Assignments: 40% - Quizzes: 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).

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

Course Name: Autonomous Vehicle Systems
Course Code: ENEE616462
Course Credits: 3

Degree	Bachelor
Department/Study Program	Electrical Engineering
Type of Class	International
Language of Instruction	English
Lecturer Name	
Course Structure	Lecture
Course Overview	The Autonomous Vehicle Systems course provides an indepth understanding of the technologies and algorithms that enable self-driving vehicles. Students explore key topics such as sensor fusion, path planning, perception, and control systems, along with machine learning applications in autonomous navigation. This course prepares students to design, develop, and implement intelligent systems for autonomous vehicles used in automotive, robotics, and transportation industries.
Course Key Words	
Academic Goal	1. Able to design effective controls for autonomous vehicle systems 2. Able to identify complex problems in autonomous vehicles
Course Schedule	Concepts and trends in autonomous vehicle systems; Coordinate transformation; OpenGL 3D Modelling; Locomotion; Standard line follower simulation with OpenGL; AI-based self-drive car simulation with Javascript; Line follower practice; AI jetbot practice; Quad Copter DJI TELLO practice
Textbooks, References, and Supplementary Materials	1. Shaoshan Liu et al, Creating Autonomous Vehicle Systems / Sistem Kendaraan Otonomus, Second Edition, Morgan & Claypool, 2020 2. Shaoshan Liu, Engineering Autonomous Vehicles and Robots: The Dragonfly Modular-Based Approach, Wiley, 2020 3. Hong Cheng, Autonomous Intelligent Vehicles: Theory, Algorithms, and Implementation, Springer-Verlag, 2011
Grading Component	- Midterm Exam: 25% - Final Exam: 25% - Assignments: 40% - Quizzes: 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).