

科目ジュークボックスに登録された「マレーシア工科大学」科目一覧

科目名 (post_title)	course_number	degree	学部	学科	overview (概要)	卒業認定区分 (生物資源学類)	
1	Organic Chemistry I	SMJC 1003	Bachelor	Malaysia-Japan International Institute of Technology	Department of Environmental Engineering & Green Technology	This course discusses the chemistry of alkanes and the fundamental concepts of functional groups in organic compounds. The functional groups include alkenes, alkynes, aromatic hydrocarbons, alcohols, phenols, organohalogens, ethers, epoxides, and their derivatives. In each topic, the students will be introduced to the structures of the functional groups and the nomenclatures (common names and IUPAC names). Physical properties, preparations, reactions and visual tests will also be discussed. Inter-conversion of the related functional groups and their reaction mechanisms are also included. 1. Apply names and properties of organic compounds according to their functional groups. 2. Describe chemical reactions to synthesise organic compounds and inter conversion to different functional groups. 3. Explain mechanisms and intermediates in organic reactions based on stability of reactive species and stereochemistry.	専門科目
2	Engineering Drawing with CAD	SMJC 1101	Bachelor	Malaysia-Japan International Institute of Technology	Department of Environmental Engineering & Green Technology	This course provides a fundamental background in engineering drawing to the students, which will enable them to work more effectively in the various fields of engineering. It will emphasize on the introduction to engineering drawing, fundamentals of engineering drawing, geometry, orthographic and isometric drawing. This course also introduces the sectional and flowchart drawing and computer aided engineering drawing to the students. 1. Describe and apply the knowledge of sketching and technical drawing in the various fields of engineering. 2. Identify and analyze mechanical drawings (2D and 3D) Use the tools, equipments and CAD software to produce mechanical drawings. 3. Use the tools, equipments and CAD software to produce mechanical drawings.	専門科目
3	Thermodynamics	SMJC 1213	Bachelor	Malaysia-Japan International Institute of Technology	Department of Environmental Engineering & Green Technology	This course provides the basic fundamental of thermodynamics for engineering application & problem solving. The topics covered include the first and second laws of thermodynamics, closed system and control volume analysis, entropy, reversible and irreversible processes, properties of pure substances. Application to engineering problems includes vapor power cycles, refrigeration and heat pump & air conditioning systems. 1. Explain the different properties and states of open and closed systems Calculate the thermodynamic properties for a given specific system or a process. 2. Analyze the performance of power and refrigeration cycles	専門科目
4	Organic Chemistry II	SMJC 2013	Bachelor	Malaysia-Japan International Institute of Technology	Department of Environmental Engineering & Green Technology	This course discusses the chemistry of fundamental concepts of functional groups in organic compounds. The functional groups of aldehydes, ketones, carboxylic acids and their derivatives, and amines and their derivatives. In each topic, the students will be introduced to the structures of the functional groups and the nomenclatures (common names and IUPAC names). Physical properties, preparations, reactions and visual tests will also be discussed. Inter-conversion of the related functional groups and their reaction mechanisms are also included. Infrared spectroscopy is included as a technique in characterizing the functional groups of organic compounds. This course also introduces students to the classifications, synthesis and reactions of biomolecules such as carbohydrates, peptides, proteins and lipids. 1. Apply names and properties of organic compounds according to their functional groups 2. Describe chemical reactions to synthesise organic compounds and inter conversion to different functional groups. 3. Explain mechanisms and intermediates in organic reactions based on stability of reactive species and stereochemistry.	専門科目
5	Analytical Chemistry	SMJC 2022	Bachelor	Malaysia-Japan International Institute of Technology	Department of Environmental Engineering & Green Technology	This course provides an introduction to quantitative chemical analysis, with emphasis on wet chemistry and instrumental methods. Topics in wet chemistry include introduction to analytical chemistry, sampling, sample preparation, data analysis, gravimetric analysis and volumetric analysis. The course also introduces the principles, instrumentation, and application of chromatographic and spectroscopic methods. 1. Apply the principles of analytical chemistry common to classical and instrumental methods. 2. Analyze qualitative and quantitative classical and instrumental chemical concepts and trends with understanding and reasoning. 3. Acquire information on the principles, instrumentation, and application of chromatographic and spectroscopic methods. 4. Evaluate methods to solve quantitative chemistry problems and discuss issues related to classical and instrumental analytical chemistry.	専門科目
6	Fluid Mechanics	SMJC 2113	Bachelor	Malaysia-Japan International Institute of Technology	Department of Environmental Engineering & Green Technology	This course covers the basic principles to fluid mechanics and classification of flow. It comprises but not limited to fluid statics, fluid dynamics, application of Bernoulli and momentum equations, flow in pipes include the usage of Moody chart, flow metering devices, pump, and dimensional analysis. 1. Explain the physical properties of a fluid and the consequence of such properties on fluid flow. 2. Apply fluid mechanics laws in fluid statics and dynamics problem. 3. Investigate fluid mechanics-based problems using appropriate tools. 4. Participate constructively in group discussions and presentations	専門科目
7	Mass and Energy Balance	SMJC 2223	Bachelor	Malaysia-Japan International Institute of Technology	Department of Environmental Engineering & Green Technology	This course provides students with the basic principles of chemical engineering, that is material and energy balances as well as calculation techniques to solve the material and energy balance problems for chemical process systems and equipment. 1. Apply material balance on single or multiple process units with or without recycle, purge, or bypass streams for nonreactive processes, reactive processes and gas-liquid systems at equilibrium. Apply energy balance on closed/open system and nonreactive/reactive processes. 3. Analyse material and energy balance and solve material and energy balance with respect to changes in temperature, pressure and phase. Develop solutions in material and energy balance on closed/open system and nonreactive/reactive processes	専門科目
8	Physical Chemistry for Chemical Engineer	SMJC 2233	Bachelor	Malaysia-Japan International Institute of Technology	Department of Environmental Engineering & Green Technology	This course introduces the fundamental of physical principles that govern the properties and behavior of chemical systems. Three important areas are introduced: review on thermodynamics, electrochemical systems and kinetics. In thermodynamics, students will learn the interrelationship of various equilibrium properties of the system and its changes in processes. In electrochemical systems, electric potential that lead to the determination of thermodynamic properties in the electrochemical cells will be discussed. In kinetics, rate processes of chemical reactions, diffusion, adsorption and molecular collisions are included. 1. Apply the concepts of thermodynamics and chemical kinetics theories to the complex systems. 2. Analyze the properties of various complex systems. 3. Evaluate the thermodynamics properties of complex systems.	専門科目
9	Chemical Engineering Thermodynamics	SMJC 2243	Bachelor	Malaysia-Japan International Institute of Technology	Department of Environmental Engineering & Green Technology	Through this course, students will learn chemical engineering thermodynamic theory and applications in the areas of volumetric properties of fluids, heat effects, thermodynamics properties of fluids, thermodynamics of solutions, and physical and chemical equilibria. 1. Apply the thermodynamics equations for chemical process; thermodynamic properties, solution thermodynamics and chemical-reaction equilibrium. 2. Analyse relevant thermodynamics principles for specific chemical process; application in VLE, LLE and reaction equilibria. 3. Solve thermodynamic problems in a chemical process engineering using chemical thermodynamics principles. 4. Ability to work in team efficiently to accomplish the assigned task or project.	専門科目
10	Transport Phenomena	SMJC 2253	Bachelor	Malaysia-Japan International Institute of Technology	Department of Environmental Engineering & Green Technology	The students will be introduced to the basic principles and application of heat and mass transfer engineering. The understanding from this course will lead to better understanding in distillation, absorption, liquid-liquid extraction, membrane separation, leaching, evaporation and other chemical processes. 1. Explain the equation, which relate to heat and mass transfer system for steady state and unsteady state conditions. 2. Calculate the rate of transfer (mass or heat) using empirical equations for every system.	専門科目

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Separation Process 1	SMJC 3263	Bachelor	Malaysia-Japan International Institute of Technology	Department of Environmental Engineering & Green Technology	This course introduces principle in separation process between liquid-liquid, gas-liquid, vapour-liquid and solid-liquid separation processes. Different types of unit operations involved in the industries such as humidification process, absorption, distillation, liquid-liquid extraction and solid-liquid extraction is also included. Students will also apply the separation operations process using mass transfer principles. 1. Apply fundamental knowledge to classify the differences of unit operations involved in chemical industries 2. Analyse the theoretical number of equilibrium stages for gasliquid separation, liquid-liquid and solid-liquid processes. 3. Investigate and analyse industrial engineering problems related to separation process Work in a group as a leader or member to conduct related activities. 4. Acquire additional knowledge from industry to comply the knowledge of separation process for life-long learning.	専門科目
Numerical Methods for Chemical Engineer	SMJC 3273	Bachelor	Malaysia-Japan International Institute of Technology	Department of Environmental Engineering & Green Technology	This course discusses techniques of solving problems using numerical methods that involve non-linear equations, systems of linear equation, interpolation and curve fitting, numerical differentiation and numerical integration, eigenvalue problems, ordinary differential equations and partial differential equations. Mathematical tools and software is also incorporated in this course. 1. Able to define numerical methods concepts, formulate method of solutions and select appropriate procedures and techniques in solving routine problems (Knowledge) 2. Able to apply numerical methods concepts to evaluate, analyze and solve engineering problems (Problem Ability) 3. Able to show the ability to perform and cooperate in group work (Team Working) 4. Able to show the ability to acquire information on selected topics of numerical methods via various resources to accomplish an assigned task (Lifelong Learning).	専門科目
Separation Process 2	SMJC 3283	Bachelor	Malaysia-Japan International Institute of Technology	Department of Environmental Engineering & Green Technology	Students will be introduced with several types of unit operations and separation processes such as particle technology, crystallization, solid-liquid separation, filtration, membrane separation processes, drying and evaporation in this subject. Examples and exercises from related industry will be used in this subject. 1. Describe the different of solid-liquid operations process and equipment. 2. Solve complex engineering problem related to mechanical separation, size reduction process and crystallization process. 3. Apply knowledge of solid handling for chemical engineering design. Work in a group as a leader or member to conduct related activities. 4. Acquire additional knowledge from industry to comply the knowledge of solid-liquid separation process for life-long learning.	専門科目
Materials Science	SMJC 3293	Bachelor	Malaysia-Japan International Institute of Technology	Department of Environmental Engineering & Green Technology	Students will learn relationship between structure and physicochemical properties of materials. This course provides a conceptual framework for understanding the basic theory and physicochemical behavior of fundamental and modern engineering materials. It also attempts to present a general picture of material nature and mechanism that act upon, analyze, modify, and control their properties. 1. Explain types of atomic bonding/structure and relate to properties of engineering materials 2. Analyze characterization methods of structures/properties of engineering materials to investigate material performance. 3. Choose information on structures/properties of engineering materials, evaluate, and recommend materials for given application.	専門科目
Chemical Kinetics Reactor Design	SMJC 3303	Bachelor	Malaysia-Japan International Institute of Technology	Department of Environmental Engineering & Green Technology	This course introduces students to chemical reactor design and theories in the area of chemical kinetics and reaction engineering with emphasis on homogeneous and heterogeneous reactions. It will examine some problems related to multiple reactions and nonisothermal operations. Students will also work cooperatively on a computer assignment to expose them to solving complex problems using software packages such as PolyMath. 1. Ability to apply mole balance equation for isothermal reactor design. 2. Ability to analyze kinetic data to determine rate law parameters. 3. Ability to design a reactor for a range of conditions complex reaction system. 4. Ability to derive energy balance for solving non-isothermal reactor design. 5. Ability to work in a team to configure and solve complex design problems for different reactor system.	専門科目
Process Control and Instrumentation	SMJC 3313	Bachelor	Malaysia-Japan International Institute of Technology	Department of Environmental Engineering & Green Technology	In this course, students will gain knowledge on the fundamentals of dynamic process modelling, dynamic process behaviours and process control. Lumped parameter systems modelling, distributed parameter systems, feedback control system design, analysis and tuning are introduced. Model estimation techniques for FOPDT systems are also included. Other commonly found control structures, such as feedforward, ratio and cascade control, and plant-wide control systems design are taught qualitatively. 1. Classify and select variables for identifying and designing feedback, inferential, feedforward, ratio, split-range and cascade control systems 2. Derive and utilize lumped parameter dynamic models and identify systems that require distributed parameter models 3. Identify, describe, derive and analyze first order, pure capacitive, second order, dead time, higher order and inverse response dynamic behaviours 4. Explain each of the three modes of feedback controllers and appropriately select suitable ones. Tune feedback control systems, and analyze and evaluate response 5. Demonstrate with confidence to tune the feedback control.	専門科目
Fundamentals of Microbiology and Biotechnology	SMJC 3323	Bachelor	Malaysia-Japan International Institute of Technology	Department of Environmental Engineering & Green Technology	This course provides up-to-date and concise information on basic and applied aspects of microbiology in a well-illustrated and simple language. The orientation of this lecture is presented in an understandable manner to the student. The lecture in overall is divided into three sections: Basic, Applied and Medical Microbiology. The Basic Microbiology section covers chapters on fundamental aspects of microbiology such as historical milestones in microbiology, microbial taxonomy, structure, physiology, biochemistry, genetics, molecular biology, and physical and chemical control of microorganisms including principles of antimicrobial chemotherapy. The Applied Microbiology section lays emphasis on the diverse applications of microorganisms in industry, health, environment and agriculture and includes chapters on soil, air and water microbiology, food and environmental microbiology, industrial microbiology and biotechnology. 1. Acquire fundamental knowledge on microbiology and biotechnology such as historical development, type, identification and culture of microbes. 2. State and apply microbial physiology and molecular biology. 3. Analyse and solve problems for different applied and environmental and medical microbiology system. 4. Adopt team working and assume responsibility as leader to configure and solve This is an introductory course on the aspect of environmental science and engineering on the causes, effects, measurement and controlling of pollution including air, water, noise solid and hazardous waste and land. The course covers the fundamental aspects of all these pollution with greater emphasizes on three major categories of industrial related pollution i.e water, air and solid waste management. 1. Explain the effect of pollution to the environment and public health at large 2. Identify the causes of the pollution generated by human activities 3. Identify the techniques of measurement of various types of pollutants of interest 4. Categorize the various methods of pollution control 5. Show Concern on the causes, effects of pollution on air, water and environment.	専門科目
Introduction to Environmental Engineering	SMJC 3333	Bachelor	Malaysia-Japan International Institute of Technology	Department of Environmental Engineering & Green Technology	This is an introductory course on the aspect of environmental science and engineering on the causes, effects, measurement and controlling of pollution including air, water, noise solid and hazardous waste and land. The course covers the fundamental aspects of all these pollution with greater emphasizes on three major categories of industrial related pollution i.e water, air and solid waste management. 1. Explain the effect of pollution to the environment and public health at large 2. Identify the causes of the pollution generated by human activities 3. Identify the techniques of measurement of various types of pollutants of interest 4. Categorize the various methods of pollution control 5. Show Concern on the causes, effects of pollution on air, water and environment.	専門科目
Process Safety and Health	SMJC 4353	Bachelor	Malaysia-Japan International Institute of Technology	Department of Environmental Engineering & Green Technology	This course presents fundamental principle of safety and risk assessment in chemical process industry. In particular, it emphasises on safety legislations, inherent safety design concept, method of hazard identification, chemical health risk assessment and the various methods of risk assessments. At the end of this course, it is expected that the students will be able to appreciate the theoretical and practical aspect of occupational safety and health in chemical process industry and also be able to use the techniques of hazard identification and risk assessment in the design and operation of chemical plant. 1. Describe process safety, loss prevention and inherent safety aspects in the workplace 2. Develop understanding and appreciation on safety legislations in Malaysia and the important of occupational health and safety management system 3. Identify various hazard identification methods and their applications in chemical process industry 4. Distinguished the concept of toxicity and industrial hygiene and evaluate the exposure due to the use of chemical hazardous to health 5. Analyze risk assessment involving a chemical process industry. 6. Elaborate the functions of ethics, safety and health in the engineering profession.	専門科目
Fine Chemicals Technology	SMJC 4413	Bachelor	Malaysia-Japan International Institute of Technology	Department of Environmental Engineering & Green Technology	Through this course, students will be able to learn the fundamental of fine chemicals technologies, including applications to pharmaceutical drugs, coating materials, and electronic materials.	専門科目

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21	Polymer Science and Engineering	SMJC 4423	Bachelor	Malaysia-Japan International Institute of Technology	Department of Environmental Engineering & Green Technology	This course provides the fundamentals of polymer science and engineering with emphasis on polymeric materials and their classifications, molecular weight, polymers in solution and solid state, thermal properties and the relationship as well as the implication on polymer synthesis. 1. Describe basic properties and classification of polymers, calculate average molecular weight of the polymer and the implications from the molecular weight differences with respect to properties and processing 2. Compare and contrast between step-growth polymerization and addition polymerization techniques and determine simple chemical reaction kinetic. 3. Explain the concept of solubility, factors affecting solubility and determine the solubility parameter based on the molecular structure of the polymer. 4. Distinguish between crystalline and amorphous region in polymers and describe thermal behaviour of polymers and factors affecting the thermal transition and properties in polymeric material. 5. Identify and explain general processing techniques used to process polymeric material.	専門科目
22	Biotechnology and Bioprocessing	SMJC 4433	Bachelor	Malaysia-Japan International Institute of Technology	Department of Environmental Engineering & Green Technology	This course will provide knowledge on how biotechnology evolves from the ancient time. It also discusses on how this technology contributes towards the wealth creation, health improvement, environmental protection and issues related to social security globally. The active involvement of Malaysia in biotechnology for a new source of economic engine is also discussed and evaluated. The course will also expose the students to various industrial bioprocessing areas. It will guide the students in being independently acquire and explain information on some key issues in food engineering, biopharmaceutical engineering renewable resources and waste management bioprocessing science and technology. 1. Understand the principles of bioprocess engineering and biotechnology 2. Understand process development from shakeflask through bench-scale and the criteria for pilot-scale work. 3. Develop suitable biotechnology approach to improve the quality and quantity of biotechnology products in the area of food, agriculture, medical and environment 4. Adopt team working and demonstrate ability to identify business opportunity in biotechnology	専門科目
23	Fundamentals and Application of Biosensors	SMJC 4443	Bachelor	Malaysia-Japan International Institute of Technology	Department of Environmental Engineering & Green Technology	This course covers the principles, technologies, methods and applications of biosensors. Students will be exposed to fundamentals of measurement science that are applied in biosensors such as optical, electrochemical, mass, and pressure signal transduction. At the end of this course students will be able to link fundamentals of engineering principles and biosystems in biosensors and design and construct biosensors instrumentation. 1. Extend principles of engineering to the development of bio-analytical devices and the design of biosensors 2. Apply the principles of linking cell components and biological pathways with energy transduction, sensing and detection 3. Explain the basic configuration and distinction among biosensor system 4. Design appropriate biosensors 5. Seek in literature the principles, technologies, methods and applications of biosensors in chemical industries	専門科目
24	Air Pollution Control Engineering	SMJC 4513	Bachelor	Malaysia-Japan International Institute of Technology	Department of Environmental Engineering & Green Technology	This course introduces the philosophy and procedures for designing air pollution control systems. The main objectives of the course are to present the characteristics of air pollutants and the techniques for controlling them to the students. 1. Identify and analyze the properties of specific pollutants and the techniques for controlling them. Design the operation of air pollution control system for a specific application 3. 2. Complete with confidence to identify and solve problems related to design of a pollution control system	専門科目
25	Solid Hazardous Waste Management	SMJC 4533	Bachelor	Malaysia-Japan International Institute of Technology	Department of Environmental Engineering & Green Technology	This introductory course aims to provide an overview of solid and hazardous waste management, whereby the student will be able to have the basic understanding of waste management upon their completion of the course. The course deals with sources, generation and characteristics of industrial and municipal wastes, analysis of collection systems, handling and disposal practices of municipal wastes, significance of industrial wastes as environmental pollutants, pollution prevention and techniques for processing, treatment and disposal of industrial wastes 1. Identify sources and characteristics of industrial and municipal solid waste. 2. Describe national and international policy and legislation that related to waste management Identify and design suitable systems for collection, transportation and haulage of solid waste 3. Identify and design suitable systems for collection, transportation and haulage of solid waste 4. Manage Scheduled Waste according to the requirement set by the local regulatory body under the Scheduled Waste 5. Regulation Design material recovery facility, composting plants, thermal treatment system and landfill Seek in literature about the sources, generation and characteristics of industrial and municipal wastes, analysis of collection systems, handling and disposal practices of municipal	専門科目
26	Environmental Microbiology and Biotechnology	SMJC 4543	Bachelor	Malaysia-Japan International Institute of Technology	Department of Environmental Engineering & Green Technology	This course to provide wide-ranging training in environmental microbiology, applicable both to students with previous knowledge of a relevant subject and to those with little background in environmental microbiology. We aim to provide students with theoretical knowledge, practical skills and an appreciation of the application of the subject. We also develop students' communication and generic skills. 'Environmental Microbiology is the study of microorganisms that inhabit the earth and their roles in carrying out processes in both natural and human-made systems'. In this subject there is much emphasis on interfaces between environmental sciences and microbial ecology. An environmental microbiologist thus needs a good grounding in basic microbiology and molecular biology, but this must be combined with knowledge of environmental science. 1. State and apply the application of microbial reactions like aerobic treatment of organic wastes and wastewater. 2. State and apply the application of microbial reactions like aerobic treatment of anaerobic treatments 3. Derive and analyze microbial interaction between microbes, interaction of microbes with plants 4. State and apply positive role of microbes in environmental, degradation such as conversion solid waste to food, and negative roles of microbes in Electrical energy conversion to other energy is easy, and it is most convenient and safe form of energy for the short time required to transport as much as possible. At the same time to understand the mechanism of this electrical energy generation, to help students acquire education may be a view of future energy problems. The current status and future trends are explained as well as the world's energy situation and transition of power resources. Illustrate points of current hydro, thermal, and nuclear power generation. In addition, also describe new technologies and systems such as solar power, wind power, and fuel cell power generation. 1. Explain the thermodynamic equations relating power generation i.e. energy conversion 2. Discuss energy issues, resource issues and environmental issues 3. Explain features and advantages and disadvantages of various power generation methods 4. Calculate and analyze the energy 5. Seek in the literature on the future outlook of new energy sources, including renewable natural energy, such as sunlight, wind powerconversion efficiency of the system that involve in the physical or chemical processes	専門科目
27	Power Plant Engineering	SMJC 4613	Bachelor	Malaysia-Japan International Institute of Technology	Department of Environmental Engineering & Green Technology	Electrical energy conversion to other energy is easy, and it is most convenient and safe form of energy for the short time required to transport as much as possible. At the same time to understand the mechanism of this electrical energy generation, to help students acquire education may be a view of future energy problems. The current status and future trends are explained as well as the world's energy situation and transition of power resources. Illustrate points of current hydro, thermal, and nuclear power generation. In addition, also describe new technologies and systems such as solar power, wind power, and fuel cell power generation. 1. Explain the thermodynamic equations relating power generation i.e. energy conversion 2. Discuss energy issues, resource issues and environmental issues 3. Explain features and advantages and disadvantages of various power generation methods 4. Calculate and analyze the energy 5. Seek in the literature on the future outlook of new energy sources, including renewable natural energy, such as sunlight, wind powerconversion efficiency of the system that involve in the physical or chemical processes	専門科目
28	Energy Conversion Science And Technology	SMJC 4623	Bachelor	Malaysia-Japan International Institute of Technology	Department of Environmental Engineering & Green Technology	This course consists of energy supply and consumption principles, different types of energy sources, and energy management & evaluation of various conversion paths in relation to renewable and sustainable energy technology. 1. Explain principles of current energy supply and consumption systems. 2. Analyse different types of energy sources and power generation technologies based on fossil fuel, nuclear, solar, biomass, hydro, wind and fuel cell 3. Evaluate various paths for conversion of renewable energy 4. Deduce preferable renewable and sustainable energy technology applicable under given conditions resources and their sustainability	専門科目
29	Fuel Cell Fundamental	SMJC 4633	Bachelor	Malaysia-Japan International Institute of Technology	Department of Environmental Engineering & Green Technology	This course provides information about various aspects of the hydrogen-based fuel cell and an introduction to several other fuels and fuel cell technologies. This course is intended for engineers in all disciplines who want to learn more about this type of renewable energy. Among topics discussed are the history of the fuel cell, basics of its operation, comparison of fuel cells with other power sources, and details of several aspects of fuel cells, the various applications and impact to the environment. 1. Understand basic operating principles of fuel cells and their efficiency in converting chemical energy directly to electrical energy 2. Distinguish various types of fuel cells and their best operating conditions and their contribution to energy and environmental sustainability 3. Explain the components and configurations of PEM fuel cell and their requirement for potential applications 4. Adopt team working and demonstrate the ability to conceptually propose PEM fuel cell system for green mobility or eco-building	専門科目
30	Biomass Technology	SMJC 4643	Bachelor	Malaysia-Japan International Institute of Technology	Department of Environmental Engineering & Green Technology	Electrical energy conversion to other energy is easy, and it is most convenient and safe form of energy for the short time required to transport as much as possible. At the same time to understand the mechanism of this electrical energy generation, to help students acquire education may be a view of future energy problems. The current status and future trends are explained as well as the world's energy situation and transition of power resources. Illustrate points of current hydro, thermal, and nuclear power generation. In addition, also describe new technologies and systems such as solar power, wind power, and fuel cell power generation. 1. State and apply biomass as an alternative energy 2. State and apply biomass energy conversions with a focus on thermal-chemical conversions 3. Analyze renewable energy systems from biomass and their potential use for power generation, including electricity 4. Derive and apply characterization of biomass as fibre source 5. Adopt teamwork to configure and solve different biomass sources problems. 6. Assume responsibility as leader to configure and solve different biomass sources problems	専門科目