Specific subjects

Subject Name	Teacher Name	Semester	Term	Lecture Form	Unit Count	Purpose and objective Goals
Advanced Water Environmental Engineering 1	YAMAGUCHI Takashi	the first term	The first semester	lecture	2	This course offers comprehensive knowledge essential to those who intend in future to be involved in the field of environmental engineering; describing geo-bio-chemical behaviors of natural water systems, such as rivers, lakes, oceans waters, estuaries, ground-waters, and soil waters as well as processes involved in water and wastewater technology. The main theme of the course is the fundamental principles of chemical kinetics and thermodynamics regulating a variety of geo-bio-chemical phenomena taking place in water
Advanced Water Environmental Engineering 2	YAMAGUCHI Takashi	the second term	The second semester	lecture	2	The objective of the course is for students to develop understanding of precipitation/dissolution and oxidation/reduction in aquatic chemistry. Additional topic is also conducted the stoichiometric and kinetic fundamentals of microbiological processes used in environmental control and remediation.
Seminar on Bioengineering 1	Staff	the first term	The first semester	exercise	2	Students will examine basic study results and the research status of the fields directly and indirectly related to the laboratory subject and acquire approaches, methods, and technologies required to advance their research in a laboratory.
Seminar on Bioengineering 2	Staff	the second term	The second semester	exercise	2	Students will examine basic study results and the research status of the fields directly and indirectly related to the laboratory subject and acquire approaches, methods, and technologies required to advance their research in a laboratory.

Special Experiments of Bioengineering 1	Staff	the first term	The first semester	experiment	4	Students will acquire the skill to accomplish research independently through the experience of the processes of establishing experimental plans, accomplishing experiments, and analyzing and investigating experimental results in the bioengineering research field of the laboratory which students belong to.
Special Experiments of Bioengineering 2	Staff	the second term	The second semester	experiment	4	Students will acquire the skill to accomplish research independently through the experience of the processes of establishing experimental plans, accomplishing experiments, and analyzing and investigating experimental results in the bioengineering research field of the laboratory which students belong to.
Seminar on Bioengineering 3	Staff	the first term	The first semester	exercise	2	Students will examine basic study results and the research status of the fields directly and indirectly related to the laboratory subject of students and acquire approaches, methods, and technologies required to advance their research in a laboratory.
Seminar on Bioengineering 4	Staff	the second term	The second semester	exercise	2	Students will examine basic study results and the research status of the fields directly and indirectly related to the laboratory subject of students and acquire approaches, methods, and technologies required to advance their research in a laboratory.

Microbiology Fundamentals for Application	MASAI Eiji,TAKAHASHI Shouji,OGASAWARA Wataru	the second term	The second semester	lecture	2	Rationale for the course: This course provides fundamentals of microbiology required to perform graduate research in or related to microbiology.
Seminar on Bioengineering for Foreign	Staff	the second term	The second semester	exercise	2	Seminar on the required knowledge and technique in the research field is given for foreign students by their superviser.
Social Innovation	YAMAMOTO Maki,KAMIMURA Seiji,NANKO Makoto	the second term	The second semester	lecture	2	

Bioengineering Techniques in Plants and Animals	TAKIMOTO Koichi,ONUMA Kiyoshi,SATO Takeshi,NISHIMURA Taisuke,SHIMODA Yasushi	the second term	The second semester	lecture	2	This course is designed to introduce emerging bioengineering techniques in plants and animals. Students will learn various genetic, cell-based and other techniques, as well as related biological phenomena and concepts. These bioengineering techniques are currently being employed for food production, medical application and other purposes, whereas newer ones could change the ways we deal with problems in our society. Students will also be required to consider ongoing and potential problems associated with the use of these bioengineering techniques.

Common subjects

Subject Name	Teacher Name	Semester	Term	Lecture Form	Unit Count	Purpose and objective Goals

panese ustrial velopment perience	MIKAMI Yoshiki,Suda Aruna Rohra	the second term	The second semester	lecture	2	The course is designed to give an overview of Japanese industrial development experience after Meiji Restoration until today. The role of techno-entrepreneurs is focused.
demic sentation	Moulinos Bill Evangelos	the second term	The second semester	exercise	1	Become confident in preparing and giving academic presentations as well as exchanging feedback.

emic ment	Moulinos Bill Evangelos	the first term	The first semester	exercise	1	Become confident in analyzing, discussing, developing and exchanging academic arguments from the perspective of pros and cons. Write and present an academic argument essay.
nnology and lic Policy		the second term	The second semester	lecture	2	Creation of new market through the development, implementation, introduction and spread of innovative technologies is the key driver to the continuous economic growth. This course aimes to learn why innovation is important for the economic growth and how innovation policies have been supporting the development, implementation, introduction and spread of technologies. In addition, the recent advanced technologies, industry trends and innovation policies are introduced. 経済成長を続けていくためには、革新的な技術の開発・導入・普及を通じて新たな市場を創造するとともに、成長・拡大する市場を獲得していくことが必要である。 本授業においては、これまで日本経済及び世界経済の発展を支えてきた主な分野の産業技術を紹介するとともに、政策的にその開発・導入・普及をどのように後押ししてきたかについて習得することを目的とする。また、最近の技術・産業動向等をフォローしながら、

Gigaku Innovation and Creativity	IWAHASHI Masahiro,MIYASHITA Takeshi	the first term	The first semester	lecture	2	COURSE DESCRIPTION This course examines innovation and creativity from a GIGAKU viewpoint. GIGAKU is a term originally created in the Nagaoka University of Technology to represent the idea of applying the "Science of Technologies" to help mankind. Because of the abstract nature of this philosophy, the concept becomes very difficult to grasp if one does not possess Japanese language skills. The first part of the course examines GIGAKU theory, focusing on the technological conditions which lead to new ideas for science of technologies. The second part of the course examines how creativity and innovation can be managed and enhanced in industries, and how various research methods can be used in order to enhance GIGAKU Innovations. This course focuses on the practices and processes that engineers use to

The actual Master programs of HUST and NUT (Nagaoka Univ of Technology)

		HUST		HUST credits	NUT	
General subject		SS6011 Philosophy (3) FL6010 English (6)		9		
Basic subject	Compulsion	BF5187 Process and Equipment in Biotechnology (4) BF6145 Industrial Fermentation (2) BF 6141 Fermentation Kinetics (3) BF 6113 Downstream processing (3) BF 5186 Quality in Biotechnology (2) BF5652 Optimal cybernetics in biotechnology (2)	4 2 2	16	Seminar on Biotechnology 1 (2) Special Experiments of Bioengineering 1 (4) Seminar on Biotechnology 2 (2) Special Experiments of Biotechnology 2 (4)	Coumpulsion
	Elective	BF5184 Enzyme technology (2) BF5181 Bioremediation (2) BF5184 Bio-compound collection Tech (2) BF5121 Vaccine technology (2) BF5171 Plant cell cultivation (2) BF5191 Automatic control in Biotechnology (2) BF5651 Project design in Biotechnology (2) Practical training (2)	6	6	Seminar on Bioengineering 3 (2) Seminar on Bioengineering 4 (2) Career option for Bioengineering (2) Social innovation (2) Physics of Protein molecule (2) Genetics and Plant Biotechnology (2) Advanced Polymer Material for Bioengineering (2) Spectroscopy and simulation of Polymers (2)	Eleective
Specialized subject	Compulsion	BF6136 Gene expression and regulation (2) BF 6132 Protein recombinant (3) BF 6142 Microbial metabolism (2) BF6112 Enzymatic kinetics (2)		9	Advanced molecular genetics (2) Principles in Drug action (2) Cognitive neuroscience (2) Engineering for wildlife management (2)	
	Elective	~~BF6131 Proteomics (3)~~		5	Biocatalyst engineering (2)	

		BF6128 Bio-Polymer (2) BF5110 Toxicology (2) BF6126 Probiotic and Prebiotic (3) BF6125 Biofuel (2) BF6143 Separation and Evaluation of Bio-compounds (3) BF6129 Rapid diagnostic (2) BF6123 Bioremediation (2) BF6122 Bio-product development (2) BF6414 Data analysis (2)			Advanced course of environmental biochemistry (2) Genome and development (2) Microbiology fundamentals for application (2) Bioegineering techniques in plants and animals (2) Seminar on Biotechnology for foreign students (2) Advances water environmental engineering 1 (2) Advances water environmental engineering 2 (2) Global leader research proposal and design (1) Multi-disciplinary integrated global discussions and cooperative learning (1) Advanced in Bioengineering 1,2...8 (0.5 credits / subject)	
		Thesis		15	Bioresource engineering (2)	
		GRADUATION		>60	GRADUATION	>30

The Co- Master program

	HUST	HUST credits	Transfer	NUT	NUT credits
	FIRST YEAR				
Compulsion in Vietnam	SS6011 Philosophy (3)	3			
	FL6010 English (6)	6	→	Enghlish in NUT	1
	BF6145 Industrial Fermentation (2)	2	→	Advanced in Bioengineering 1	0.5
	BF 6141 Fermentation Kinetics (3)	3	→	Advanced in Bioengineering 1	0.5

	BF 6113 Downstream processing (3)	3	→	Advanced in Bioengineering 1	0.5
	BF6136 Gene expression and regulation (2)	2	→	Advanced molecular genetics (2)	2
	BF 6132 Protein recombinant (3)	3	→	Advanced in Bioengineering 1	0.5
	BF 6142 Microbial metabolism (2)	2	→	Microbiology fundamentals for application (2)	2
	BF6112 Enzymatic kinetics (2)	2	→	Biocatalyst engineering (2)	2
				SECOND YEARS	
	Master Thesis (Co- supervisor)	15	←	Special Experiments of Bioengineering 1 (4)	4
				Seminar on Biotechnology 1 (2)	2
				Seminar on Biotechnology 2 (2)	2
				Special Experiments of Biotechnology 2 (4)	4
				Seminar on Biotechnology 3 (2)	2
				Seminar on Biotechnology 4 (2)	2
	BF6128 Bio-Polymer (2)	2	←	Advanced Polymer Material for Bioengineering (2)	2
	BF6125 Biofuel (2)	2	←	Bioresource engineering (2)	2
	BF6123 Bioremediation (2)	2	←	Advances water environmental engineering 2 (2)	2
Total		47			31

SBFT students are excemptes 14 credits

Typical Study Plan

Nuclear Engineering, HUST

Year	HUST			Nagaoka		
	Month	Classes	HUST Credits	Month	Classes	Nagaoka Credits
2018	Sep.	ENROLMENT				
		[redacted]		→	**17AAG6 Special Exercises in Technical English**	1
	Sep.-Dec.	NE5106 Seminar NE5201 Radiation Shielding NE5101 Thermal Hydraulic in Nuclear Reactor NE5104 Management and Treatment of Radioactive Waste NE4214 Nuclear Analysis Techniques HE4503 Heating and Cooling Systems 3	16	→	**17AAC6 Seminar on Nuclear Safety Eng. I** 17BAA5 Advanced Eng. For Radiation Safety and Detection 17BCB5 Thermal Hydraulics in Nuclear Reactor	5
2019		[redacted]		→	**17AAD6 Seminar on Nuclear Safety Eng. II**	1
	Jan.-Aug.	NE6020 Calculation Techniques for Nuclear Reactor NE6210 Nuclear Reaction NE6220 Radiochemistry and Nuclear Chemistry	9	→	00AAG5 Theory of Mathematical Analysis	2
				Sep.	ENROLMENT	
				Sep.-Dec.	[redacted] 00FCC5 Japanese Industrial Development Enterprise 00FBA5 Technology and Public Policy 17AAA5 Basics of Nuclear System Eng. 17CCA5 Engineers' Ethics of Nuclear Technology 17CBA5 Advanced System Risk Analysis 17CAB5 Nuclear Emergency Planning and Resilience Engineering 17DAA5 Advanced Eng. on Radiation Physics 17DCA5 Advance Nuclear Criticality 17DDA5 Nuclear Power Reactor and Plant Systems	18
2020				Jan.-Jul.	[redacted]	
				Jul.-Aug.	[redacted]	
Total		GRADUATION	34		GRADUATION	31
			>30 to award			>30 to award
2020	Jul.-Aug.	Thesis (elective)	15			

[redacted]

Elective Subjects

Credit transfer: 20 credits
Graduation: 34 credits
One-hour-lecture: 45 min
One credit: 15 h of lecture, 7.5 h laboratory and 30 h of self -study

[redacted]

Elective Subjects
Common >6 credits
Technology, Safety and Energy >4 credits for each category

Credit transfer: 10 credits
Graduation: 30 credits
One-hour-lecture: 45 min
One credit: 15 h of lecture and 30 h of self -study

Credit transfer

NE6020 Calculation Techniques for Nuclear Reactor	3	→	Theory of Mathematical Analysis ?	2
FL6010 English	6	→	**17AAG6 Special Exercises in Technical E**	1
NE5106 Seminar	2	→	**17AAC6 Seminar on Nuclear Safety Eng. I** **17AAD6 Seminar on Nuclear Safety Eng.**	2
NE5201 Radiation Shielding	3	→	17BAA5 Advanced Eng. For Radiation Safety and Detection	2
NE6220 Radiochemistry and Nuclear Chemistry	3	→	17BDA5 Advanced Lecture on Nuclear and Radiochemistry	2
NE5101 Thermal Hydraulic in Nuclear Reactor	3	→	17BCB5 Thermal Hydraulics in Nuclear Reac	2

?: lectures given by other departments, not approved