Curriculum

❑ Undergraduate Course

Classification	Course No.	Course Name	Lecture:Lab.: Credit (Homework)	Semester	Remark
Mandatory Major Course	CBE201	Molecular Engineering Laboratory	1:6:3(6)	Fall	
	CBE202	Introduction to Chemical and Biomolecular Engineering	3:0:3(3)	Spring	
	CBE203	Industrial Organic Chemistry	3:0:3(3)	Spring or Fall	*CH221
	CBE205	Chemical and Biomolecular Engineering Analysis	3:0:3	Spring	
	CBE221	Molecular Thermodynamics and Energy System	3:0:3(3)	Fall	
	CBE301	Chemical and Biomolecular Engineering Laboratory	1:6:3(6)	Spring	
Elective Major Course	CBE206	Introduction to Numerical Methods for Chemical and Biomolecular Engineers	3:0:3	Fall	
	CBE260	Biomolecular Engineering	3:0:3(3)	Spring	*BS209
	CBE261	Biochemical Engineering	3:0:3(3)	Fall	
	CBE303	Physical Chemistry for Chemical and Bimolecular Engineers Ⅰ	3:0:3	Fall	*CH213
	CBE311	Molecular Reaction Engineering	3:0:3(3)	Spring	
	CBE321	Separation Processes	3:0:3(3)	Fall	
	CBE331	Fluid Mechanics for Chemical Engineering	3:0:3(3)	Spring	
	CBE332	Heat and Molecular Transfer	3:0:3(3)	Spring	
	CBE341	Process Simulation and Control	3:1:3(3)	Spring	
	CBE351	Introduction to Macromolecular Engineering	3:0:3(3)	Spring or Fall	
	CBE362	Bioinformatics	3:0:3(3)	Fall	*BiS438
	CBE371	Electrochemical Principles for Chemical and Biomolecular Engineering	3:0:3	Spring	
	CBE404	Physical Chemistry for Chemical and Bimolecular Engineers Ⅱ	3:0:3(3)	Spring or Fall	*CH211
	CBE441	Chemical and Biological Product Design	3:0:3(3)	Spring	
	CBE442	Optimal Design and Economics	3:0:3(3)	Fall	**
	CBE443	Chemical and Biological Product Design Laboratory	1:6:3(3)	Spring or Fall	**
	CBE455	Nanochemical Technology	3:0:3(3)	Spring or Fall	**
	CBE461	Biorefineries for fuels and chemicals	3:0:3	Spring or Fall	**
	CBE462	Bioseparation Engineering	3:0:3	Spring or Fall	**
	CBE471	Introduction to Environmental Engineering	3:0:3(3)	Spring or Fall	**
	CBE473	Microelectronics Processes	3:0:3(3)	Spring or Fall	**
	CBE474	Instrumental Analysis for Chemical Engineers	3:0:3	Spring or Fall	**
	CBE481	Special Topics in Chemical and Biomolecular Engineering	3:0:3(3)	Spring or Fall	**(Subtitle is assigned)
	CBE483	Engineering Principles of Human Physiology	3:0:3(3)	Spring	*BS453 **
	CBE491	Special Topics in Chemical and Biomolecular Engineering Ⅱ	2:0:2(2)	Spring or Fall	**(Subtitle is assigned)
	CBE492	Special Topics in Chemical and Biomolecular Engineering Ⅲ	1:0:1(1)	Spring or Fall	**(Subtitle is assigned)
Research	CBE490	Undergraduate Research	0:6:3		
	CBE495	Individual Study	0:6:1		
	CBE496	Seminar for Undergraduate Students	1:0:1		

※ Notes: 1) * stands for substitutable courses

2) ** stands for courses open to both undergraduate and graduate students

❑ Graduate Course

Classification		Course No.	Course Name	Lecture:Lab. : Credit (Homework)	Semester	Remark
Manda-tory General Course	Manda-tory	CC010	Special Lecture on Leadership	1:0:0	Fall	
		CC020	Ethics and Safety I	1AU	Spring·Fall	
	Choose 1	CC500	Scientific Writing	3:0:3(4)	Spring·Fall	
		CC510	Introduction to Computer Application	2:3:3(10)	Spring·Fall	
		CC511	Probability and Statistics	2:3:3(6)	Spring·Fall	
		CC512	Introduction to Materials and Engineering	3:0:3(3)	Spring·Fall	
		CC513	Engineering Economy and Cost Analysis	3:0:3(6)	Fall	
		CC522	Introduction to Instruments	3:0:3(8)	Fall	
		CC530	Entrepreneurship and Business Strategies	3:0:3(6)	Fall	
		CC531	Patent Analysis and Invention Disclosure	3:0:3(6)	Spring·Fall	
		CC532	Collaborative System Design and Engineering	4:0:4(8)	Spring	
Mandatory Major Course		CBE601	Research Methodology for Chemical & Biomolecular Engineers	2:3:3(3)	Spring	
		CBE602	Problem Solving in Chemical & Biomolecular Engineering	3:0:3	Spring or Fall	
Selective Major Course		CBE502	Engineering Applied Mathematics	3:0:3(4)	Fall	**
		CBE503	Numerical Method for Chemical Engineers	3:0:3(4)	Spring	**
		CBE505	Chemical Process and Product Design	3:0:3	Fall	**
		CBE511	Design of Reaction System	3:0:3(3)	Spring or Fall	**
		CBE512	Introduction to Catalysis Engineering	3:0:3(4)	Spring or Fall	**
		CBE513	Catalysis for Renewables	3:0:3	Spring	**
		CBE522	Introduction to Interfacial Engineering	3:0:3(3)	Spring	**
		CBE523	Rate-controlled Separation Process	3:0:3(4)	Spring	**
		CBE525	Molecular Electronics	3:0:3(3)	Spring or Fall	**
		CBE531	Multiphase Reactor Engineering	3:0:3(3)	Spring	**
		CBE532	Mass Transfer	3:0:3(4)	Spring	**
		CBE533	Fundamentals of Microstructure Fluid Flow	3:0:3(4)	Spring or Fall	**
		CBE541	Advanced Process Control I	3:0:3(4)	Spring	**
		CBE542	Process Optimization	3:0:3(4)	Spring	**
		CBE551	Polymer Rheology	3:0:3(3)	Spring or Fall	**
		CBE552	Materials Engineering of Polymers	3:0:3(3)	Spring or Fall	**
		CBE554	Physical Principles of Polymers	3:0:3(3)	Fall	**
		CBE555	Biopolymer	3:0:3(3)	Fall	**
		CBE556	Structure and Properties of Macromolecules	3:0:3(3)	Spring	**
		CBE563	Protein Engineering	3:0:3(3)	Spring or Fall	**
		CBE564	Bioproces Engineering	3:0:3(3)	Fall	**
		CBE566	Principles of Human Tissue Engineering	3:0:3(3)	Spring	**
		CBE567	Metabolic Engineering	3:0:3(4)	Fall	*BiS622,**
		CBE568	Nanobiotechnology for Biochemical Engineers	3:0:3(3)	Spring or Fall	**
		CBE569	Nucleic Acid Engineering	3:0:3(3)	Spring or Fall	**
		CBE571	Energy Engineering	3:0:3(4)	Fall	**
		CBE572	Inorganic Materials Processing	3:0:3(4)	Spring or Fall	**

Classification	Course No.	Course Name	Lecture:Lab. : Credit (Homework)	Semester	Remark
	CBE573	Fuel Cell Processes and Materials	3:0:3(3)	Fall	**
	CBE581	Micro-chemical and Biomolecular System	3:0:3(3)	Spring	**
	CBE611	Theory of Catalysis	3:0:3(3)	Spring or Fall	
	CBE612	Design of Catalysis	3:0:3(4)	Spring or Fall	
	CBE613	Photocatalytic Reaction Engineering	3:0:3	Fall	
	CBE621	Phase Equilibria and Physical Properties	3:0:3(4)	Spring or Fall	
	CBE622	Mixing Technology in Chemical Engineering	3:0:3(3)	Spring or Fall	
	CBE623	Thin Film Nanotechnology	3:0:3	Fall	
	CBE631	Microfluidics	3:0:3(4)	Fall	
	CBE632	Colloid and Surface Chemistry	3:0:3(3)	Fall	
	CBE641	Advanced Process Design	3:0:3(4)	Spring or Fall	
	CBE651	Multicomponent Polymer Materials	3:0:3(1)	Fall	
	CBE652	Polymer Characterization	3:0:3(3)	Fall	
	CBE653	Mechanical Properties of Polymers	3:0:3(4)	Spring or Fall	*MAE633
	CBE661	Cell Culture Engineering	3:0:3(3)	Spring or Fall	
	CBE664	Process for Recombinant Microorganism	3:0:3(3)	Spring or Fall	
	CBE672	Air Pollution Control	3:0:3(3)	Fall	
	CBE673	Water Pollution Control	3:0:3(3)	Spring	
	CBE680	Membrane Technology	3:0:3(3)	Fall	
	CBE682	Organic Nano-Structured Materials	3:0:3(3)	Fall	
	CBE683	Electroactive Polymeric Materials and Devices	3:0:3	Spring or Fall	
	CBE711	Advanced Reaction Engineering	3:0:3(4)	Spring or Fall	
	CBE712	Surface Phenomena	3:0:3(3)	Spring or Fall	*MS654
	CBE731	Polymer Fluid Dynamics	3:0:3(3)	Spring or Fall	
	CBE741	Advanced Process Control II	3:0:3(4)	Spring	
	CBE751	Advanced Rheology of Polymer	3:0:3(3)	Spring or Fall	
	CBE761	Bioprocess Analysis and Control	3:0:3(3)	Spring	
	CBE771	Advanced Electrochemical Engineering	3:0:3(4)	Spring or Fall	
	CBE773	Recent Topics in Chemical & Biomolecular Engineering	3:0:3(3)	Spring or Fall	Subtitle is assigned
	CBE811	Special Topics in Chemical Reaction Engineering	3:0:3(3)	Spring or Fall	〃
	CBE821	Special Topics in Chemical Engineering Thermodynamics	3:0:3(4)	Spring or Fall	〃
	CBE831	Special Topics in Transport Phenomena	3:0:3(3)	Spring or Fall	〃
	CBE832	Special Topics in Separation Process	3:0:3(4)	Spring/Fall	〃
	CBE841	Special Topics in Process Engineering	3:0:3(3)	Spring/Fall	〃
	CBE851	Special Topics in Polymer Engineering	3:0:3(3)	Spring/Fall	〃
	CBE861	Special Topics in Biochemical Engineering	3:0:3(3)	Spring/Fall	〃 ,*BS760
	CBE871	Recent Topics in Chemical & Biomolecular Engineering II	2:0:2(2)	Spring/Fall	〃
	CBE872	Recent Topics in Chemical & Biomolecular Engineering III	1:0:1(1)	Spring/Fall	〃
Research	CBE960	Thesis <Master Student>		Spring/Fall	
	CBE966	Seminar <Master Student>	1:0:1	Spring/Fall	

Classification	Course No.	Course Name	Lecture:Lab. : Credit (Homework)	Semester	Remark
	CBE980	Thesis <Ph.D. Student>		Spring/Fall	
	CBE986	Seminar <Ph.D. Student>	1:0:1	Spring/Fall	

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