Curriculum

❑ Undergraduate Course

Classification	Course Code	Course Name	Lecture:Exp.: Credit (Homework)	Term	Remark
Mandatory Major Course	CBE 201	Molecular Engineering Laboratory	1:6:3(6)	Fall	
	CBE 301	Chemical and Biomolecular Engineering Laboratory	1:6:3(6)	Spring	
Elective Basic Course	CBE 202	Introduction to Chemical and Biomolecular Engineering	3:0:3(3)	Spring	
Elective Major Course	CBE 203	Industrial Organic Chemistry	3:0:3(3)	Spring or Fall	*CH221
	CBE 205	Engineering in Life Science & Chemistry	3:0:3(3)	Spring	
	CBE 221	Molecular Thermodynamics and Energy System	3:0:3(3)	Fall	
	CBE 260	Biomolecular Engineering	3:0:3(3)	Spring	*BS209
	CBE 261	Biochemical Engineering	3:0:3(3)	Fall	
	CBE 311	Molecular Reaction Engineering	3:0:3(3)	Spring	
	CBE 321	Molecular and Bio Separation Technology	3:0:3(3)	Fall	
	CBE 331	Fluid Mechanics of Microsystem	3:0:3(3)	Spring	
	CBE 332	Heat and Molecular Transfer	3:0:3(3)	Spring	
	CBE 341	Process Simulation and Control	3:1:3(3)	Fall	
	CBE 342	Chemical and Biological Product Design	3:0:3(3)	Spring	
	CBE 351	Introduction to Macromolecular Engineering	3:0:3(3)	Spring or Fall	
	CBE 362	Bioinformatics	3:0:3(3)	Fall	*BiS432
	CBE 404	Understanding of Molecules and Nanosystems	3:0:3(3)	Fall	**
	CBE 442	Optimal Design and Economics	3:0:3(3)	Fall	**
	CBE 443	Chemical and Biological Product Design Laboratory	1:6:3(3)	Spring or Fall	**
	CBE 455	Nanochemical Technology	3:0:3(3)	Spring or Fall	**
	CBE 461	Biorefineries for fuels and chemicals	3:0:3	Spring or Fall	**
	CBE 471	Introduction to Environmental Engineering	3:0:3(3)	Spring or Fall	**
	CBE 473	Microelectronics Processes	3:0:3(3)	Spring or Fall	**
	CBE 481	Special Topics in Chemical and Biomolecular Engineering	3:0:3(3)	Spring or Fall	**(Subtitle is assigned)
	CBE 483	Engineering Principles of Human Physiology	3:0:3(3)	Spring	**
	CBE 491	Special Topics in Chemical and Biomolecular Engineering II	2:0:2(2)	Spring or Fall	**(Subtitle is assigned)
	CBE 492	Special Topics in Chemical and Biomolecular Engineering III	1:0:1(1)	Spring or Fall	**(Subtitle is assigned)
Research	CBE 490	Undergraduate Research	0:6:3		
	CBE 495	Individual Study	0:6:1		
	CBE 496	Seminar for Undergraduate Students	1:0:1		

* Substitute course

** Courses for both BS and MS Students

❑ Graduate Course

Classification		Course Code	Curriculum	Lecture:Exp.: Credit (Homework)	Term	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	Spring · Fall	
		CC510	Introduction to Computer Application	2:3:3	Spring · Fall	
		CC511	Probability and Statistics	2:3:3	Spring · Fall	
		CC512	Introduction to Materials and Engineering	3:0:3	Spring · Fall	
		CC513	Engineering Economy and Cost Analysis	3:0:3	Fall	
		CC522	Introduction to Instruments	2:3:3	Fall	
		CC530	Entrepreneurship and Business Strategies	3:0:3	Fall	
		CC531	Patent Analysis and Invention Disclosure	3:0:3	Spring · Fall	
		CC532	Collaborative System Design and Engineering	4:0:4	Spring	
Selective Major Course		CBE 501	Chemical Engineering Experimentation and Research	2:3:3(3)	Spring	**
		CBE 502	Method	3:0:3(4)	Fall	**
		CBE 503	Engineering Applied Mathematics	3:0:3(4)	Spring	**
		CBE 505	Numerical Method for Chemical Process	3:0:3	Fall	**
		CBE 511	Chemical Process and Product Design	3:0:3(3)	Spring or Fall	**
		CBE 512	Design of Reaction System	3:0:3(4)	Spring or Fall	**
		CBE 522	Introduction to Catalysis Engineering	3:0:3(3)	Spring	**
		CBE 523	Introduction to Interfacial Engineering	3:0:3(4)	Fall	**
		CBE 525	Rate-controlled Separation Process	3:0:3(3)	Spring or Fall	**
		CBE 531	Molecular Electronics	3:0:3(3)	Spring	**
		CBE 532	Multiphase Reactor Engineering	3:0:3(4)	Spring	**
		CBE 533	Mass Transfer	3:0:3(4)	Spring or Fall	**
		CBE 541	Fundamentals of Microstructure Fluid Flow	3:0:3(4)	Spring	**
		CBE 542	Advanced Process Control I	3:0:3(4)	Spring	**
		CBE 551	Process Optimization	3:0:3(3)	Spring or Fall	**
		CBE 552	Polymer Rheology	3:0:3(3)	Spring or Fall	**
		CBE 554	Materials Engineering of Polymers	3:0:3(3)	Spring	**
		CBE 555	Polymer Physics	3:0:3(3)	Fall	**
		CBE 556	Biopolymer	3:0:3(3)	Spring	**
		CBE 563	Structure and Properties of Macromolecules	3:0:3(3)	Spring or Fall	**
		CBE 564	Protein Engineering	3:0:3(3)	Fall	**
		CBE 566	Bioproces Engineering	3:0:3(3)	Spring	**
		CBE 567	Principles of Human Tissue Engineering	3:0:3(4)	Fall	*BiS622,*
		CBE 568	Metabolic Engineering	3:0:3(3)	Fall	*
		CBE 569	Nanobiotechnology for Biochemical Engineers	3:0:3(3)	Spring or Fall	**
		CBE 571	DNA Biotechnology	3:0:3(4)	Fall	**
		CBE 572	Energy Engineering	3:0:3(4)	Spring or Fall	**
		CBE 573	Inorganic Materials Processing	3:0:3(3)	Fall	**
		CBE 581	Fuel Cell Processes and Materials	3:0:3(3)	Spring	**
		CBE 611	Micro-chemical and Biomolecular System	3:0:3(3)	Spring or Fall	**
		CBE 612	Theory of Catalysis	3:0:3(4)	Spring or Fall	
		CBE 613	Design of Catalysis	3:0:3	Fall	
		CBE 621	Photocatalytic Reaction Engineering	3:0:3(4)	Spring or Fall	
		CBE 622	Phase Equilibria and Physical Properties	3:0:3(3)	Spring or Fall	
		CBE 631	Mixing Technology in Chemical Engineering	3:0:3(4)	Fall	
		CBE 632	Microfluidics	3:0:3(3)	Fall	
			Colloid and Surface Chemistry			

Classification	Course Code	Curriculum	Lecture:Exp.:Credit (Homework)	Term	Remark
Selective Major Course	CBE 641	Advanced Process Design	3:0:3(4)	Spring or Fall	
	CBE 651	Multicomponent Polymer Materials	3:0:3(1)	Fall	
	CBE 652	Polymer Characterization	3:0:3(3)	Fall	
	CBE 653	Mechanical Properties of Polymers	3:0:3(4)	Spring or Fall	*MAE633
	CBE 661	Cell Culture Engineering	3:0:3(3)	Spring or Fall	
	CBE 662	Bioseparation Process Engineering	3:0:3(3)	Fall	
	CBE 664	Process for Recombinant Microorganism	3:0:3(3)	Spring or Fall	
	CBE 672	Air Pollution Control	3:0:3(3)	Fall	
	CBE 673	Water Pollution Control	3:0:3(3)	Spring	
	CBE 680	Membrane Technology	3:0:3(3)	Fall	
	CBE 682	Organic Nano-Structured Materials	3:0:3(3)	Spring	
	CBE 711	Advanced Reaction Engineering	3:0:3(4)	Spring or Fall	
	CBE 712	Surface Phenomena	3:0:3(3)	Spring or Fall	*MS654
	CBE 731	Polymer Fluid Dynamics	3:0:3(3)	Spring or Fall	
	CBE 741	Advanced Process Control II	3:0:3(4)	Spring	
	CBE 751	Advanced Rheology of Polymer	3:0:3(3)	Spring or Fall	
	CBE 761	Bioprocess Analysis and Control	3:0:3(3)	Spring	
	CBE 771	Electrochemical Engineering	3:0:3(4)	Spring or Fall	
	CBE 773	Recent Topics in Chemical & Biomolecular Engineering	3:0:3(3)	〃	(Subtitle
	CBE 811	Special Topics in Chemical Reaction Engineering	3:0:3(3)	〃	is
	CBE 821	Special Topics in Chemical Engineering Thermodynamics	3:0:3(4)	〃	assigned)
	CBE 831	Special Topics in Transport Phenomena	3:0:3(3)	〃	〃
	CBE 832	Special Topics in Separation Process	3:0:3(4)	〃	〃
	CBE 841	Special Topics in Process Engineering	3:0:3(3)	〃	〃
	CBE 851	Special Topics in Polymer Engineering	3:0:3(3)	〃	〃
	CBE 861	Special Topics in Biochemical Engineering	3:0:3(3)	〃	〃 *BS760
	CBE 871	Recent Topics in Chemical & Biomolecular Engineering II	2:0:2(2)	〃	〃
	CBE 872	Recent Topics in Chemical & Biomolecular Engineering III	1:0:1(1)	〃	〃
Research	CH 960	Thesis <Master Student>		Spring or Fall	
	CH 966	Seminar <Master Student>	1:0:1	〃	
	CH 980	Thesis <Ph.D. Student>		〃	
	CH 986	Seminar <Ph.D. Student>	1:0:1	〃	

* Substitute course

** Courses for both BS and MS Students