List of electives of BEng in Computer Engineering for 4-year curiculum

****Remark: If a CPEG elective course is categorized into 2 areas, it can only be counted in exactly one area towards graduation.**

		Area							
Course Code	**Course Title**	**Graphic / Multimedia**	**Software / Database**	**Systems / Networking**	**AI / Theory**	**Signal Processing**	**Communications**	**Semiconductor / VLSI**	**Embedded System / Robotics**
COMP 1001	Exploring Multimedia and Internet Computing								
COMP 1021	Introduction to Computer Science								
COMP 1022P	Introduction to Computing with Java								
COMP 1022Q	Introduction to Computing with Excel VBA								
COMP 1941	Great Ideas in Computing								
COMP 1942	Exploring and Visualizing Data								
COMP 2011	Programming with C++								
COMP 2012	Object-Oriented Programming and Data Structures								
COMP 2012H	Honors Object-Oriented Programming and Data Structures								
COMP 2021	Unix and Script Programming		√						
COMP 2611	Computer Organization								
COMP 2711	Discrete Mathematical Tools for Computer Science								
COMP 2711H	Honors Discrete Mathematical Tools for Computer Science								
COMP 3021	Java Programming		√						
COMP 3031	Principles of Programming Languages		√						
COMP 3071	Honors Competitive Programming								
COMP 3111	Software Engineering		√						
COMP 3111H	Honors Software Engineering		√						
COMP 3211	Fundamentals of Artificial Intelligence				√				
COMP 3311	Database Management Systems		√						
COMP 3511	Operating Systems								
COMP 3711	Design and Analysis of Algorithms				√				
COMP 3711H	Honors Design and Analysis of Algorithms				√				
COMP 3721	Theory of Computation				√				
COMP 4021	Internet Computing		√						
COMP 4111	Software Engineering Practices		√						
COMP 4211	Machine Learning				√				
COMP 4221	Introduction to Natural Language Processing				√				
COMP 4311	Principles of Database Design		√						
COMP 4321	Search Engines for Web and Enterprise Data		√						
COMP 4331	Data Mining		√		√				
COMP 4332	Big Data Mining and Management		√		√				
COMP 4411	Computer Graphics	√							
COMP 4421	Image Processing	√			√				
COMP 4431	Multimedia Computing	√							
COMP 4441	Computer Music	√							
COMP 4451	Game Programming	√							
COMP 4511	System and Kernel Programming in Linux			√					
COMP 4521	Mobile Application Development		√						√
COMP 4611	Design and Analysis of Computer Architectures			√					√
COMP 4621	Computer Communication Networks I			√					
COMP 4622	Computer Communication Networks II			√					
COMP 4631	Computer and Communication Security			√					

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COMP 4632	Practicing Cybersecurity: Attacks and Counter-measures			√					
COMP 4641	Social Information Network Analysis and Engineering			√					
COMP 4911	IT Entrepreneurship								
COMP 4971	Independent Work								
COMP 5411	Advanced Computer Graphics	√							
COMP 5421	Computer Vision	√			√				
COMP 5711	Introduction to Advanced Algorithmic Techniques				√				
ELEC 1010	Electronic and Information Technology								
ELEC 1020	Media Production: Technology and Design								
ELEC 1100	Introduction to Electro-Robot Design								
ELEC 1200	A System View of Communications: from Signals to Packets								
ELEC 2100	Signals and Systems								
ELEC 2100H	Honors Signals and Systems								
ELEC 2200	Digital Circuits and Systems								
ELEC 2300	Computer Organization								
ELEC 2400	Electronic Circuits								
ELEC 2420	Basic Electronics								
ELEC 2600	Probability and Random Processes in Engineering								
ELEC 2600H	Honors Probability and Random Processes in Engineering								
ELEC 3100	Signal Processing and Communications					√	√		
ELEC 3200	System Modeling, Analysis and Control								√
ELEC 3300	Introduction to Embedded Systems								
ELEC 3400	Introduction to Integrated Circuits and Systems							√	
ELEC 3500	Microelectronic Devices and Technology							√	
ELEC 3600	Electromagnetics: From Wireless to Photonic Applications						√		
ELEC 3710	Hi-Tech Entrepreneurship								
ELEC 4010	Special Topics								
ELEC 4110	Digital Communications and Wireless Systems						√		
ELEC 4120	Computer Communication Networks			√					
ELEC 4130	Digital Image Processing					√			
ELEC 4140	Speech and Image Compression					√			
ELEC 4150	Information Theory and Error-Correcting Codes						√		
ELEC 4160	Introduction to Digital Speech Recognition					√			
ELEC 4170	Digital Media and Multimedia Applications	√							
ELEC 4310	Embedded System Design			√					√
ELEC 4320	FPGA-based Design: From Theory to Practice								√
ELEC 4330	Mobile Embedded Systems: Hardware Platform, Software Development, and Applications								
ELEC 4410	CMOS VLSI Design							√	
ELEC 4420	Analogue Integrated Circuits Design and Analysis							√	
ELEC 4430	Integrated Power Electronics							√	
ELEC 4510	Semiconductor Materials and Devices							√	
ELEC 4520	Integrated Circuit Fabrication Technology							√	
ELEC 4610	Engineering Optics						√		
ELEC 4620	Photonics and Optical Communications						√		
ELEC 4630	Radio Frequency Engineering						√		
ELEC 4810	Introduction to Biosensors and Bioinstrumentation					√			

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ELEC 4820	Medical Imaging					√			
ELEC 4940	Independent Study								
ENGG 4950	Engineering Special Project								√
	No. of course in each area:	8	13	9	11	6	7	7	6

Remarks:

Courses in red font are Program Required Courses