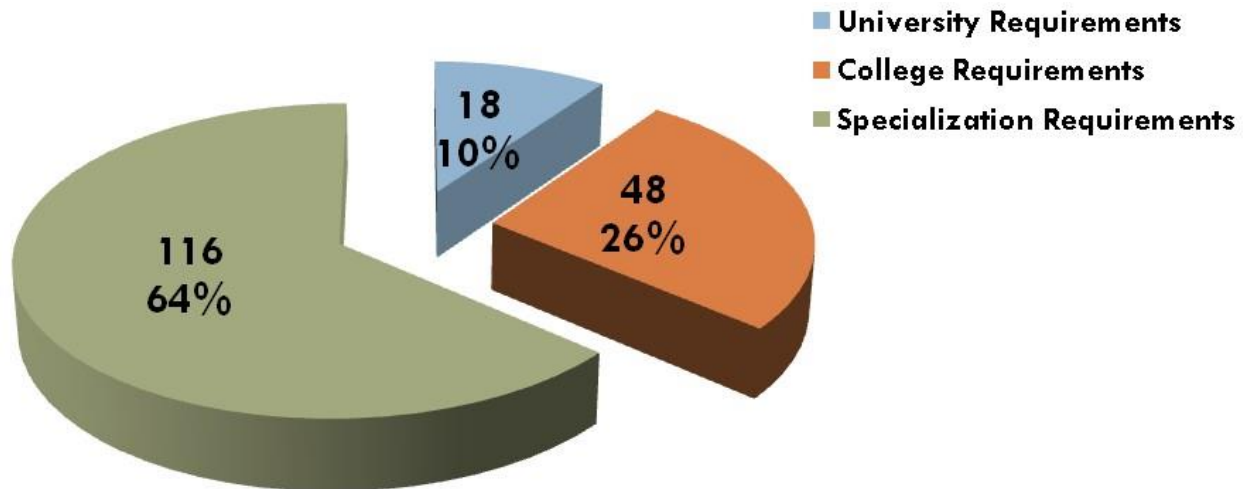


Computer Engineering and Software Systems Program



Mission and Goals Computer Engineering and Software Systems Program

Program Mission

The CESS program mission is to provide high quality education in the field of computer engineering and software systems to contribute to the preparation of a distinguished graduate capable of staying up-to-date with the global technological development in the field of computer engineering and software systems, capable of meeting the needs of the local, regional and international market, and able to conduct scientific and applied research. The program's mission is realized through the continuous development of the program.

Program Goals

The CESS program mission is to provide high quality education in the field of computer engineering and software systems to contribute to the preparation of a distinguished graduate capable of staying up-to-date with the global technological development in the field of computer engineering and software systems, capable of meeting the needs of the local, regional and international market, and able to conduct scientific and applied research. The program's mission is realized through the continuous development of the program.

University Requirements

The student will study (6) General Education Elective Courses (humanities) selected by him from the following list of courses, with a total of (18) credit hours.

Course Code	Course Title	Credit Hours
HUM 011	English Language	0
HUM 012	German Language	3
HUM 013	Technical Writing and Communication	3
HUM 014	Engineering Profession, Practice, and Responsibilities	3
HUM 111	Engineering Economy	3
HUM 112	Health and Wellness	3
HUM 211	Impact of Technology on Society	3
HUM 212	Introduction to Marketing	3
HUM 311	Engineering Management	3
HUM 312	Human Resource Management	3
HUM 313	Engineering Law	3

College Requirements

Basic Science Courses

Student must study the following list of courses as basic science requirements:

Course Code	Course Title	Credit Hours
PHM 012	Calculus for Engineering (1)	3
PHM 013	Calculus for Engineering (2)	3
PHM 014	Linear Algebra and Analytical Geometry	3
PHM 022	Waves, Electricity, and Magnetic Fields	3
PHM 032	Engineering Mechanics (1) - Statics	3
PHM 033	Engineering Mechanics (2) - Dynamics	3
PHM 042	General Chemistry	3
PHM 113	Calculus for Engineering (3)	3
PHM 114	Statistics and Probability for Engineering	3
PHM 115	Differential Equations and Partial Differential Equations	3

Basic Engineering Courses

Student must study the following list of courses as Basic Engineering requirements:

Course Code	Course Title	Credit Hours
CSE 012	Engineering Computation	3
MDP 024	Production Engineering	3
MDP 061	Engineering Design and Graphics	4
MEP 112	Thermodynamics	3
MDP 132	Structures and Properties of Materials	3

General Specialization Courses for Computer Engineering and Software Systems Program

Course Code	Course Title	Credit Hours
CSE 115	Digital Design	3
CSE 116	Computer Architecture	3
CSE 125	Computer Programming (1)	3
CSE 126	Computer Programming (2)	3
CSE 127	Data Structures and Algorithms	3
CSE 128	Software Engineering (1)	3
ECE 141	Electrical and Electronic Circuits	3
CSE 215	Electronic Design Automation	3
CSE 221	Object-Oriented Analysis and Design	3
CSE 222	Software Engineering (2)	3
CSE 223	Operating Systems	3
CSE 224	Design and Analysis of Algorithms	3
CSE 225	Software Testing, Validation, and Verification	3
CSE 226	Design of Compilers	3
CSE 227	Database Systems (1)	3
ECE 255	Signals and Systems	3
CSE 275	Control Engineering	3
CSE 316	Microcontrollers and Interfacing	3
CSE 325	Agile Software Engineering	3
CSE 326	Software Formal Specifications	3
CSE 335	Computer Networks	3
CSE 336	Distributed Computing	3
CSE 345	Real-Time and Embedded Systems Design	3
CSE 365	Computer Vision	3
CSE 415	High-Performance Computing	3
CSE 425	Software Design Patterns	3
CSE 426	Software Maintenance and Evolution	3
CSE 427	Software Project Management	2
CSE 436	Computer and Network Security	3
CSE 437	Mobile Computing	3
CSE 496	Graduation Project (1)	3
CSE 497	Graduation Project (2)	3
Total Credit Hours		95

Technical Electives for Computer Engineering and Software Systems Program

Technical elective courses are categorized into four fields; the student must select seven courses with a total of (21) credit hours. Three of these seven courses must be from the courses that have course codes in the form 3xx, while the remaining four courses are from the courses that have course codes in the form 4xx. The student must select a specific field from these four fields by selecting at least five courses from this field.

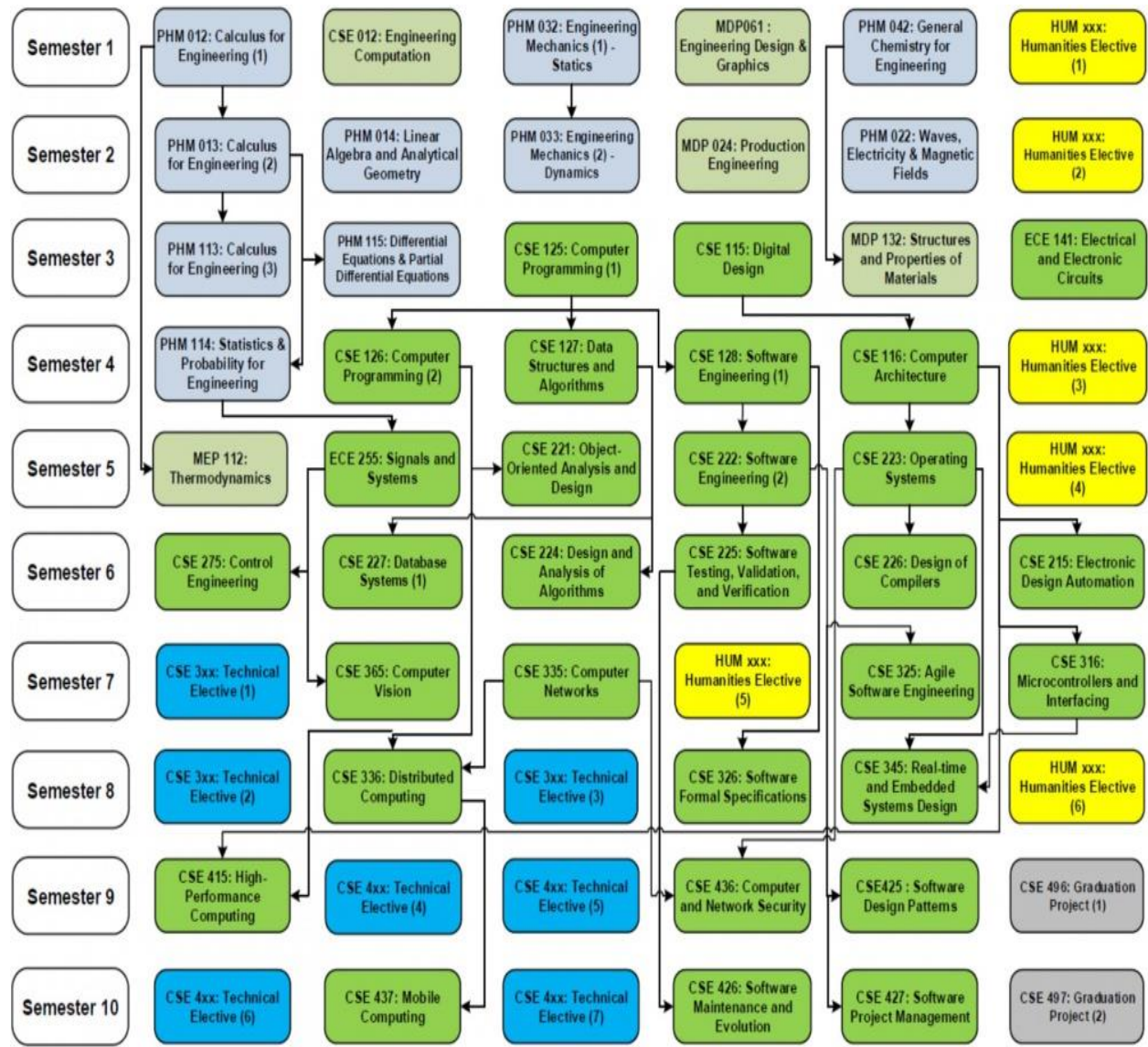
Field	Course Code	Course Title	Credit Hours
Multimedia and Computer Graphics	CSE 366	Pattern Recognition	3
	CSE 367	Digital Image Processing	3
	CSE 368	Computer Graphics	3
	CSE 369	Human-Computer Interaction	3
	CSE 444	Visualization	3
	CSE 445	Multimedia Engineering	3
	CSE 446	Computer Animation	3
	CSE 460	Selected Topics in Multimedia and Computer Graphics	3
	CSE 485	Game Design and Development	3

Field	Course Code	Course Title	Credit Hours
Distributed and Mobile Computing	CSE 317	Parallel and Cluster Computing	3
	CSE 334	Internet Programming	3
	CSE 337	Parallel and Distributed Algorithms	3
	CSE 338	Network Operation and Management	3
	CSE 430	Selected Topics in Distributed and Mobile Computing	3
	CSE 438	Cloud Computing	3
	CSE 439	Wireless Networks	3
	CSE 443	Computer and Network Forensics	3
	CSE 447	Pervasive Computing	3

Field	Course Code	Course Title	Credit Hours
Software Product Lines	CSE 327	Program Analysis	3
	CSE 328	Software Engineering Process Management	3
	CSE 329	Dependability and Reliability of Software Systems	3
	CSE 346	Business Process Modeling	3
	CSE 420	Selected Topics in Software Product Lines	3
	CSE 423	Software Performance Evaluation	3
	CSE 424	Aspect- and Service-Oriented Software Systems	3
	CSE 428	Secure Code Development	3
	CSE 429	Software Quality Assurance	3

Field	Course Code	Course Title	Credit Hours
Software Applications	CSE 320	Database Systems (2)	3
	CSE 364	Simulation of Engineering Systems	3
	CSE 385	Data Mining and Business Intelligence	3
	CSE 386	Artificial Intelligence	3
	CSE 440	Selected Topics in Software Applications	3
	CSE 448	Embedded Operating Systems	3
	CSE 449	Bioinformatics	3
	CSE 486	Ontologies and the Semantic Web	3
	CSE 487	E-learning Systems	3

Course Tree of Computer Engineering and Software Systems Program



- University Requirements
- College Requirements (Basic Science)
- College Requirements (Basic Engineering)
- Specialization Requirements
- Specialization Requirements that require fifth-level standing
- Specialization Requirements of Technical Electives (Prerequisites are determined according to the selected course)