Prince Sattam bin Abdulaziz University
College of Computer Engineering & Sciences
Computer Engineering Department

PROGRAM BOOKLET

Computer Engineering Program | **2026-2027**

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1. PROGRAM OVERVIEW

The Computer Engineering (CE) Program prepares graduates with strong foundations in hardware, software, embedded systems, digital design, networks, and emerging technologies. The curriculum integrates theoretical knowledge, laboratory experience, and design-oriented learning to meet national and international accreditation expectations.

2. VISION

Achievement of academic and research excellence in computer engineering locally and regionally.

3. MISSION

To provide a suitable environment for graduating highly qualified computer engineers, capable of solving problems and assuming leadership to make a significant contribution to a knowledge society.

4. PROGRAM EDUCATIONAL OBJECTIVES (PEOS)

Within a few years of graduation, the graduates of the CE Program are expected to:

PEO1. Practice professionally and ethically as individuals, team members, or leaders in computer engineering or related fields.

PEO2. Advance successfully in their careers or postgraduate studies by participating in research and relevant professional activities.

PEO3. Engage in lifelong learning to adapt to emerging technologies and enhance their professional skills.

5. STUDENT OUTCOMES (SOS)

The Computer Engineering program enables students to acquire, by the time of graduation, the following learning outcomes:

1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
3. An ability to communicate effectively with a range of audiences.
4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
5. An ability to function effectively on a team whose members together provide leadership, create a collaborative environment, establish goals, plan tasks, and meet objectives.
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

6. PROGRAM STRUCTURE AND DEGREE REQUIREMENTS

6.1 Total Credit Hours

Total: 156 credit hours.

6.2 Credit Distribution

- University Requirements: 12 cr. hrs.
- College Requirements: 60 cr. hrs.
- CE Core Requirements: 75 cr. hrs.
- CE Electives: 9 cr. hrs.

7. COURSE CATEGORIES

Table 7-1. Credit Hours by Subject Area and Depth of Study

Credit Hours	Subject Area	Course Groups and Depth of Study
30	Mathematics and Basic Sciences	• 22 credit hours of Mathematics, including Discrete Mathematics, Probability, and Statistics • 8 credit hours of Science, consisting of Physics I and Physics II
29	General / Broad Education	• 16 credit hours of Language Skills (Arabic and English) • 8 credit hours of Islamic Culture • 5 credit hours of General Skills, including Computer Skills and Communication Skills
15	Engineering Sciences	• 8 credit hours in Electrical and Electronic Circuits • 7 credit hours in Signals and Control Systems
29	Computing Sciences	• 20 credit hours in Programming, Operating Systems, Data Structures & Algorithms, Artificial Intelligence, and Ethical/Professional Practices • 6 credit hours in Software Engineering and Software Project Management • 3 credit hours in Database Systems
44	Computer Engineering	• 35 credit hours in Logic Design, Microprocessor Systems, Digital Systems Design, Computer Organization and Architecture, Embedded Systems Design, Data Communications, Computer Networks, Computer & Network Security, Robotics & Automation, and VLSI Design • 6 credit hours of Capstone Design (two-semester senior design project) • 3 credit hours of Industrial Training (8 weeks, 5 days/week, 8 hours/day)
9	Technical Electives	• Advanced courses primarily in Computer Engineering, with options in Computer Science and Software Engineering
156	**Total Program Credit Hours**	

8. ADMISSION REQUIREMENTS

8.1 Entry Requirements

- Completion of the Common First Year (CFY)
- Minimum GPA required by the college
- Placement requirements in mathematics and English
- Formal admission to CE at Level 4, based on a criterion that will be updated, announced, and published to students at Level 3

9. GRADUATION REQUIREMENTS

9.1 Requirements for the B.Sc. in CE

- Completion of **156 credit hours**
- Completion of all University, College, and Department requirements
- Field Training (CE4901) after 140 CHs
- Graduation Project I & II
- Minimum cumulative GPA (CGPA) of 2 out of 5 points
- Compliance with university regulations

10. ACADEMIC POLICIES AND REGULATIONS

10.1 Attendance Policy

Minimum 75% attendance required.

10.2 Assessment and Grading

Includes quizzes, assignments, labs, midterms, and final exams.

10.3 Prerequisite Enforcement

Examples: CE3411 → CE2401; CE3711 → CE3701 + STAT1050
CE4921 → CE4910

10.4 Academic Integrity

Cheating, plagiarism, and misconduct are prohibited.

11. STUDY PLAN (SEMESTER-BY-SEMESTER)

Table 11-1. Computer Engineering Program Study Plan -1444/1445 (2023/2024)

Level	Course Code	Course Title	Pre-Requisite Courses	Credit Hours	Distribution			Actual Hours
					Lect.	Tut.	Lab.	
Level 1	PHYS1010	General Physics (1)	----------	4	3	1	1	6
	MATH1050	Differential Calculus	----------	3	3	2	0	5
	ENGL1210	Reading Skills	----------	3	3	3	0	6
	ENGL1220	Writing Skills	----------	3	3	3	0	6
	IC101	Introduction to Islamic Culture	----------	2	2	0	0	2
				15	**14**	**9**	**1**	**25**
Level 2	ARAB101	Language Skills	--------	2	2	0	0	2
	MATH1060	Integral Calculus	MATH1050	3	3	2	0	5
	ENGL1230	Listening & Speaking Skills	--------	3	3	3	0	6
	CT1400	Computer Skills	--------	3	2	0	1	4
	MC1400	Communication Skills	--------	2	2	0	0	2
	ENGL1604	English for Technical Purposes	--------	3	3	3	0	6
				16	**15**	**8**	**1**	**25**
Level 3	CE1111	Logic Design	--------	3	3	1	0	4
	CS1112	Discrete Mathematics	--------	4	4	0	0	4
	CS1301	Computer Programming 1	--------	4	2	2	0	4
	MATH2220	Linear Algebra for Computer Students	--------	3	3	1	0	4
	IC102	The Islam and Society Building		2	2	0	0	2
				16	**14**	**4**	**0**	**18**
Level 4	PHYS1040	General Physics (2)	PHYS1010 + MATH1060	4	3	1	1	6
	CE2121	Logic Design Lab	CE1111	1	0	0	1	2
	CS2301	Computer Programming2	CS1301	4	2	2	0	4
	CS2321	Data Structures & Algorithms	CS1301	3	3	0	0	3
	IS2511	Fundamentals of Database Systems	--------	3	2	2	0	4
	MATH3310	Differential Equations for Computer Students	MATH1060	3	3	1	0	4
				18	**13**	**6**	**2**	**23**
Level 5	ARAB103	Arabic Editing	--------	2	2	0	0	2
	STAT1050	Probability and Statistics for Computer Students	CS1112	3	3	1	0	4
	CE2401	Computer Organization and Design	CE1111	3	3	0	0	3
	CE2501	Electrical Circuits	MATH3310	3	3	1	0	4
	CE3270	Number Theory	MATH2220	3	3	0	0	3
	CS3701	Operating Systems	CS2321	3	3	0	0	3
				17	**17**	**2**	**0**	**19**

Level	Course Code	Course Title	Pre-Requisite Courses	Credit Hours	Distribution			Actual Hours
					Lect.	Tut.	Lab.	
Level 6	CE2511	Electrical Circuits Lab	CE2501	1	0	0	1	2
	CE3401	Computer Architecture	CE2401	3	3	0	0	3
	CE3411	Microprocessor Systems	CE2401	3	2	0	1	4
	CS3501	Introduction to Artificial Intelligence	CS2321	3	3	0	0	3
	CE3501	Electronic Circuits	CE2501	3	3	1	0	4
	CE3520	Signals Analysis and Systems	CE2501	3	3	0	0	3
	IC103	The Foundation of the Economic System in Islam	--------	2	2	0	0	2
				18	**16**	**1**	**2**	**21**
Level 7	SE2111	Foundations of Software Engineering	--------	3	3	0	0	3
	CS3001	Computing Ethics and Research Methods	Completion of 94 CHs	3	3	0	0	3
	CE3510	Electronic Circuits Lab	CE3501	1	0	0	1	2
	CE3541	Control Systems	CE3520	3	3	0	0	3
	CE3601	Digital Systems Design	CE2401	3	2	0	1	4
	CE3701	Data Communications	CE3520	3	2	0	1	4
	IC106	Prophet Biography	--------	2	2	0	0	2
				18	**15**	**0**	**3**	**21**
Level 8	CE3551	Control Systems Lab	CE3541	1	0	0	1	2
	CE3631	Embedded Systems Design	CE3411	3	2	0	1	4
	CE3711	Computer Networks	CE3701 + STAT1050	3	3	0	0	3
	SE4231	Software Project Management	SE2111	3	3	0	0	3
	CE4501	VLSI Design	CE3501	3	2	0	1	4
	CE4910	Graduation Project I	CS3001	2	2	0	0	2
	xxxx	Elective course 1	--------	3	3	0	0	3
				18	**15**	**0**	**3**	**21**
Level 9	CE3721	Computer Networks Lab	CE3711	1	0	0	1	2
	CE4711	Computer and Network Security	CE3711	3	3	0	0	3
	CE4801	Robotics and Automation	CS3501	3	2	0	1	4
	CE4921	Graduation Project II	CE4910	4	2	0	2	6
	xxxx	Elective course 2	--------	3	3	0	0	3
	xxxx	Elective course 3	--------	3	3	0	0	3
				17	**13**	**0**	**4**	**21**
Level 10	CE4901	Field Training	Completion of 140 CHs	3	0	0	3	6
Total				**156**	**132**	**30**	**19**	**200**

Table 11-2. List of Selected Elective (SE) Courses

Course Code	Course Title	Pre-Requisite Courses	Credit Hours	Distribution			Actual Hours
				Lect.	Tut.	Lab.	
CE4981	Selected Topics	Dept Approval	4	4	0	0	4
CE4991	Research	Dept Approval	3	3	0	0	3
CE4521	Digital Signal Processing	CE3520	3	3	0	0	3
CE4531	Storage Media Technology	CE3401	3	3	0	0	3
CE4601	Reconfigurable Computing	CE3601	3	2	0	1	4
CE4721	Sensory Networks	CE3711	3	3	0	0	3
CE4740	Cloud Computing	CE3711	3	3	0	0	3
CE4751	Multimedia Networking	CE3711	3	3	0	0	3
CE4760	Mobile & Wireless Networks	CE3711	3	3	0	0	3
CS4201	Soft Computing	CS3501	3	3	0	0	3
CS4211	Simulation and Modeling	STAT1050	3	2	0	1	4
CS4301	Compiler Design	CS2321	3	3	0	0	3
CS4654	Digital Image Processing	CS2321	3	3	0	0	3
CS4851	Computer Networks Management	CE3711	3	3	0	0	3
SE4541	Advanced Software Engineering	SE2111	3	3	0	0	3
SE4551	Real Time Systems	CE3401	3	3	0	0	3
CS4731	Systems Programming & Administration	CS3701	3	2	0	1	4
CE4770	Internet of Things	CE3711	3	3	0	0	3
CE4561	Industrial Automation	CE3541	3	2	0	1	4
CE3421	High Performance Computing	CE2401	3	3	0	0	3

Table 11-3. Equivalency-Recognized Elective (ERE) Courses

Course Code	Course Title	Pre-Requisite Courses	Credit Hours	Distribution			Actual Hours
				Lect.	Tut.	Lab.	
SE4981	Emerging Digital Technologies	-	2	2	0	0	2
CE2131	Computer Maintenance Lab	-	1	0	0	2	1
CS2401	Computation Theory	CS1112	3	3	0	0	3
MATH2540	Numerical Methods	MATH2220	3	3	0	0	3
CE 3001	Engineering Economics	SE2111	3	3	0	0	3
CS3101	Seminar in Undergraduate Advanced Research	-	2	2	0	0	2

Equivalency-Recognized Elective: A course completed under a previous study plan that has no direct equivalent in the current plan but is formally accepted as fulfilling elective credit requirements.

12. CURRICULUM FLOWCHART

Table 12-1. Course Pre-requisite Chart (Required Courses)

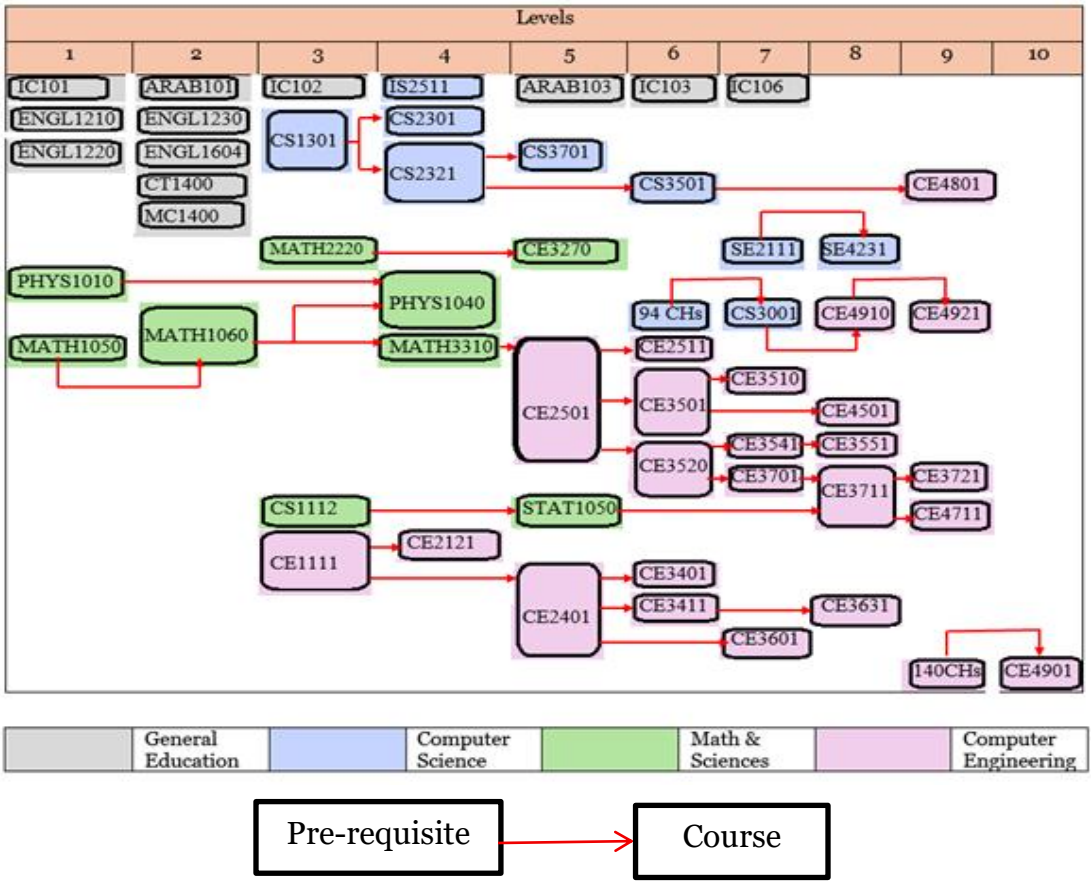

Table 12-2. Course Pre-requisite Chart (Selected Elective Courses)

Selected Elective		Pre-requisite	
Course Code	Course Title	Course Code	Level
CE3421	High Performance Computing	CE2401	5
CE4531	Storage Media Technology	CE3401	6
SE4551	Real Time Systems		
CE4521	Digital Signal Processing	CE3520	6
CE4561	Industrial Automation	CE3541	7
CE4601	Reconfigurable Computing	CE3601	7
CE4721	Sensory Networks	CE3711	8
CE4740	Cloud Computing		
CE4751	Multimedia Networking		
CE4760	Mobile & Wireless Networks		
CS4851	Computer Networks Management		
CE4770	Internet of Things		
CS4301	Compiler Design	CS2321	4
CS4654	Digital Image Processing		
CS4201	Soft Computing	CS3501	6
CS4731	Systems Programming & Administration	CS3701	5
CE4981	Selected Topics	Dept Approval	NA
CE4991	Research		
SE4541	Advanced Software Engineering	SE2111	7
CS4211	Simulation and Modeling	STAT1050	5

	Computer Science		Math & Sciences		Computer Engineering

13. FACILITIES AND LABORATORIES

The CE Program supports hands-on learning through specialized labs, including:

- Logic Design Lab
- Electrical Circuits Lab
- Electronics Lab
- Microprocessor Systems Lab
- Control Systems Lab
- Digital Systems Design Lab

- Data Communications Lab
- Computer Networks Lab
- Embedded Systems Lab
- VLSI Design Lab
- Robotics and Automation Lab

14. STUDENT SUPPORT SERVICES

- Guidance and Counseling Unit
- Academic Advising System
- Career Development and Training
- Library and Learning Resources

15. CAREER OPPORTUNITIES

Graduates are prepared for roles such as:

- Computer Engineer
- Embedded Systems Engineer
- Network Engineer
- Cybersecurity Specialist
- Robotics and Automation Engineer
- VLSI/Hardware Designer
- Software and Systems Developer
- Research and Development Engineer

16. CONTACT INFORMATION

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