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الحاسب الآلي
وتقنية المعلومات

جامعة شقراء
Shaqra University

Bachelor of Computer and Network Engineering (BCNE)
Program Handbook – V4

Computer and Network Engineering Department (CNE)

College of Computing and Information Technology (CCIT)

Shaqra University (SU)

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The field of Computing is one of the most advanced scientific fields that has influenced all aspects of modern life. Continuous development has become one of the most important features of this field in which all scientific and applied efforts are focused. As the computer stands at the top of the knowledge pyramid in this age due to the rapid technological development, it becomes important for all the institutes to adapt to this particular curriculum. Therefore, the College of Computing and Information Technology (CCIT) in Shaqra University (SU) intends through the available programs and disciplines to meet the increasing needs of requirements in the field of computer science and information technology by graduating their students with good knowledge in the field of computer science. The main emphasis is given on providing theoretical and practical knowledge to compete in the labor market in light of the strong competition and rapid development witnessed by Saudi Arabia and the world at a major level. The CCIT also seeks to qualify graduates to complete their higher studies and join the elite researchers interested in the field of technology and computer science. As a newly established college, the prime focus is to identify the potential of the organization. In order to achieve this, we are working on the continuous development of the science curriculum and developing students' learning skills and attracting outstanding faculty members so that we can move towards achieving the goals of the College at a confident pace.

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Technology is a real force of change that stands behind most of the rapid developments in all aspects of life. As a result, the demand for highly skilled graduates has increased. To meet these requirements, the Agency for Educational Affairs at the College of Computing and Information Technology (CCIT) at Shaqra University seeks to provide modern, effective and sophisticated curriculum similar to those offered by other major educational institutions around the world who are able to keep pace with the rapid development of information technology. Currently, the CCIT offers a bachelor's degree in computer science, computer and network Engineering and information systems. The College's Educational Affairs Agency is also on the way to complete the requirements of local academic accreditation by the National Center for Assessment and Accreditation (NCAAA) and international academic accreditation by the Engineering Accreditation Council (ABET). In order to improve the educational process and provide it in an organized manner and based on high-quality international standards the educational affairs are trying hard to acquire such international level certificates. Thus, we can ensure that the college student shall be of immense importance. The College also strives to promote scientific research at the College, where we work to achieve leadership and excellence in both quantitative and qualitative terms, and to encourage joint research work and promote the exchange of scientific expertise and research among faculty members at the College. In view of the university's tendency to encourage graduate studies and scientific research, the college is in the process of opening two master's programs in cybersecurity and assurance, and in data science and artificial intelligence, and shall be applying for the opening of a doctoral program.

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As Saudi Arabia works toward its Vision 2030 goals, the Computer and Network Engineering Department at Shaqra University is dedicated to training engineers who can support the Kingdom's growing tech needs. We focus on equipping future engineers with skills to build modern network systems, improve internet and communication technologies like 5G, and use AI to create smarter cities, automate industries, and connect everyday devices. By blending classroom learning with hands-on labs, partnerships with tech companies, and research in areas like data protection and cloud systems, we prepare engineers to solve real-world challenges such as keeping critical information safe, expanding reliable internet access, and promoting sustainable development. Aligned with Vision 2030's goals of building a thriving economy and creating new opportunities, we encourage creativity and responsibility, ensuring our engineers not only adapt to global advancements but also design practical solutions for Saudi Arabia's future. Through this effort, we aim to develop skilled engineers and leaders who can turn the Kingdom's vision into lasting progress.

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BCNE Program

The College of Computing and Information Technology (CCIT) has been established in 1434 H (2014 G), and in turn, it emphasizes the provision of the best means of education and research that serve the community and become an effective partner in the industry. The Bachelor of Computer and Network Engineering (BCNE) program was established on 11/07/1429H in the College of Engineering at Al-Duwadimi. Next, the department moved on 15/04/1438H to the College of Computing and Information Technology at Shaqra. Then, the students started studying in the BCNE program on 02/01/1441H. Two batches of students have graduated from the program during the academic years (1445 H and 1446 H) given that admission to new students is only given at the first semester of the academic year. In terms of education, the program provides a broad knowledge in the field of different computer and network engineering as Networks, Cybersecurity and Robotics sectors. The College and the Computer and Network Engineering department aim to establish a close relationship between professors and students and provide a university atmosphere that helps creativity, performance, acquisition of advanced knowledge, and practical skills in many important computer and network engineering fields. Through the program with a team of highly experienced instructors (i.e., assistant professor, associate professor, professors) and qualified students, the college seeks to play an active role in the community and serve the national vision of Saudi Arabia (Vision 2030) as we believe that the graduates of the computer and network engineering field will play a leading role in many aspects of the vision. Furthermore, the program graduates are expected to acquire the knowledge and skills that enable them to effectively perform in the technical fields of computer and network engineering whether in governmental organizations or private sectors.

CCIT Vision

“A nationally distinguished college in the fields of computing, scientific research, and community service ”.

CCIT Mission

“Preparing distinguished cadres to keep pace with the requirements of the job market through competitive programs in the fields of computing through an environment that encourages scientific research and community service”.

BCNE Program Vision

“To be a distinguished program in computer and network engineering, delivering high-quality education, impactful research, and effective community service.”.

BCNE Program Mission

“Preparing distinguished engineers in computer and network engineering who are capable of meeting the evolving needs of industry and addressing technological challenges, supported by qualified professionals, a high-quality learning environment, advanced scientific research, and effective community partnerships.”.

CCIT Strategic Goals

	CCIT Goals
1	Develop the college's organizational structure and academic programs.
2	Raise the efficiency of the college's academic and administrative human resources.
3	Achieve competitive educational outcomes for academic programs in keeping with job market changes.
4	Provide scientific research in the fields of computing in line with development and societal priorities.
5	Strengthen partnership with the community and effectively contributing to its development and service in the fields of computing.
6	Provide an enticing educational environment and improve teaching and learning methods.

BCNE Program Strategic Goals

	BCNE Program Goals
1	Enhance the efficiency and effectiveness of the organizational and administrative environment within the program.
2	Support the professional growth of the program's faculty and staff through targeted training and cutting-edge skill development.
3	Qualify specialized engineers in computer and networks engineering capable of continuous learning to meet the demands of the labor market.
4	Promote scientific research and innovation in computing and network technologies.
5	Offer technical consultations and services to the community, public, and private sectors.
6	Provide a safe and stimulating educational environment.

BCNE Program Learning Outcomes (PLOs)

The BCNE program has an approved and announced set of program learning outcomes (PLOs) that support its goals. The attainment of these outcomes prepares graduates to enter the professional practice in the field of computer and network engineering.

Learning Domains	BCNE Program Learning Outcomes (PLOs)	
Knowledge & Understanding	**K1**	Demonstrate the knowledge of mathematics and basic sciences related to the computer and network engineering discipline.
	K2	Recognize the fundamental principles of the computer and network engineering discipline.
Skills	**S1**	Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
	S2	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.
	S3	Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
	S4	Communicate effectively with a range of audiences.
Values	**V1**	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.
	V2	Function effectively on a team whose members together provide leadership, create a

		collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
	V3	Acquire and apply new knowledge as needed, using appropriate learning strategies.

Admission and Registration Rules

1. Student Admissions

1a. Admission of Fresh students

The general requirements for admission to Shaqra University can be listed as below:

- The new student should be a holder of a secondary school certificate or its equivalent from withinthe Saudi Arabia or from outside it.
- He/She should not have obtained a high school or equivalent for more than five years. While, theuniversity council may exempt from this condition if there are convincing reasons.
- He/She should have a good behavior registry.
- He/She should successfully pass any personal interview or test that the University Councilrequires.
- He/She should be medically fit.
- He/She should obtain his approval for study if he works in any governmental or private organization.
- He/she should meet any other conditions determined by the University Council at the time of admission.

According to the admission of freshmen, the University Council determines on the proposal of the College Council the number of students who can be admitted in the next academic year. If there is anexcess in the applicant number, the selection is done according to their grades in the general secondary certificate, personal interview, and admission tests (if found). In addition, the result of the general capabilities test, which is a prerequisite for all applicants, is considered. The ratio of each applicant is calculated as follows: 40% of the general cumulative average for the second year, 30% for the general capabilities test, and 30% for the acquisition test score. It is worth mentioning that the specialization in the College of Computing and Information Technology (CCIT), Shaqra University requires that the student passes successfully all the courses of the curriculum for the full preparatory year with a rate as mentioned in the following link: https://su.edu.sa/ar/deanships/deanship-admission-and-registration/allocation-criteria-after-passing-preparatory-year

1b. Admission of International Students

The admission process for international students is somewhat as same as national ones with alladdition of the following:

- To pass the required scores of both capabilities and acquisition tests.
- The equivalent cumulative ratio (40% secondary - 30% capabilities - 30% acquisition) should bea total higher than 85 degrees.
- Not to exceed 25 years of age.
- The student must be a regular resident of Saudi Arabia.

2. Transfer of Students

2a. Transfer from Other Universities

The student may, upon the approval of the head of the department and the dean of the collegein Shaqra University, accept his transfer from outside the university according to the following rules:

- The student has studied at a recognized college or university.
- The student should not be separated from the University for Disciplinary Reasons.
- The student has spent at least two semesters at the university from which he wishes to transfer, provided that the number of study credit hours recorded in his academic record is not less than (24) hours.
- The student should study at Shaqra University at least 60% of the graduation requirements.
- The student must apply for transfer before the beginning of the semester at least five weeks.

2b. Transfer from College to Other within the University

After the approval of the head of the department and the dean of the college in Shaqra University,accept his transfer from according to the following rules:

- The student must have spent at least one semester in the college that he wants to transfer from with at least (14) credit hours.
- The student should not be interrupted, delayed or apologized for the study from the college from which he wishes to transfer.
- His cumulative average should not be less than the limit determined by the College Council and should not be less than (2 of 5).
- Transfers between university faculties are permitted only twice during the entire period of university study.

2c. Transfer from One Specialization to Another within the College

After the approval of the Dean of the College, the student may transfer from one specialization toanother within the College according to the following rules:

- Completion of entry requirements for the specialization to be transferred to.
- Not violating the capacity of the department.
- The student has spent at least one semester in the specialization in which he wishes totransfer with 14 credit hours.
- The student should not be interrupted, delayed or apologized for the study from thespecialization in which he wishes to transfer.

3. Transfer of Courses

The College Council should compare the courses studied by the student outside the university onthe recommendation of the departments that provide these courses. The student's academic record should be confirmed in the student's academic records, and should not be included in the calculationof his cumulative average according to the following rules:

- The student has studied at a recognized college or university.
- The number of hours studied by the student in the course he wants to equal should be equalto or more than the number of hours spent at Shaqra University. This rule may be to considerexceptions by a maximum of one hour.
- The content of the material studied by the student must be identical to the content of the material in the Shaqra University by not less than (70%).

4. Visiting Students

Additionally, the transfer courses can be done for the visiting students. The visiting student isdefined as the student who is studying some courses in another university or in a branch of the university to which he belongs without transferring him. His credit hours can be calculatedaccording to the following rules:

- The acceptance of the department, the faculty and the grant acceptance and registration to allow the student to study as a visiting student.
- To be studied at a recognized college or university.
- The course topics being taught by the student outside the college are equivalent to the coursetopics in his college by 70% or more.
- The maximum number of academic credit hours outside the university is 25% of the total number of credit hours required to graduate from Shaqra University.
- The number of credit hours for the course which the student has studied outside the university should be equal to or more than the number of credit hours in Shaqra University.

5. Attendance and Apology from Study

5a. Attendance Rules

- The regular student must attend lectures and practical lessons. He is prohibited from entering the final exam if his attendance is less than the percentage determined by the university council,but not less than (75%) of the lectures and practical lessons specified for each course during thesemester.
- A student who has been prohibited from entering the final exam, is considered to be failing in the course and his final degree will be denied (DN)
- The College Council or its authorized representative may exclude the prohibition and allow thestudent to enter the test. But the student must present an excuse accepted by the Council. The University Council shall determine the attendance rate, not less than (50%) of the lectures and practical courses specified for the course.
- The student who misses the final test is zero in that test. His final result is calculated from his quarterly work degrees.

5b. Apology Rules

- A student may withdraw with the excuse of one or more courses during the semester with thefollowing rules;
- The number of remaining credit hours shall not be less than 12 hours. If he presents an acceptable excuse to the Dean of the College at least three weeks before the start of the final tests.
- A student may apologize for continuing to study a semester without being considered a failingstudent if he presents an acceptable excuse to the body determined by the university council.His final grade will be (W). The apology semesters must not exceed two consecutive semestersor three non-consecutive semesters.

6. Withdrawal from University

The student may withdraw from the university after completion of the procedures of removingthe university from the university and return the university card and bring his identity papers to return the original file. The withdrawal from the university shall entail the following:

- The period during which the student withdraws from the university shall be calculated as ifhe were not studying.
- The rewards of the withdrawn student shall be suspended from the semester until he registers for another semester.
- The student must be evacuated from the residence, the library and other university facilities.
- The student is considered to be withdrawn from the university and he has the right to re- enroll if he required in a period not exceeding four semesters or two academic years.
- The student may apply for postponement of the study for an excuse acceptable to the body determined by the University Council, provided that the postponement does not exceed twoconsecutive or three semesters.

7. Graduation Requirements

The Admission and Registration Deanship Office of the University is responsible for ensuringthat graduating students have met all graduation requirements which can be classified as below:

7a. First Year

The first year aims at enhancing the skills of the student through intense English courses andcourses that improve their communication and computer skills. The preparatory year is 35 credit hours.

7b. Course Requirements

After successfully passing the first year (35 credit hours) and to complete the graduation requirements for a B.S. in Computer and Network Engineering, the students are required to successfully pass a total of 167 credit hours.

7c. Graduation Project Requirements

According to the graduation project requirements, the project is divided into two parts (3 credit hours each). The student is eligible to register for the Graduation Project (1) if the student completes successfully at least 120 credit hours including first year. Graduation Project (1) and (2) can be taken during the first and second semesters only (not during summer semester).

7d. Cooperative Training Requirements

Prior to graduation, after completion of at least 120 credit hours, each Computer and Network Engineering major must complete an approved Computer and Network Engineering Cooperative Training Program. Cooperative training extends over at about 6 months, and must be undertaken in companies or establishments accepted by the college.

BCNE Program Curriculum Structure

Program Structure	Required/ Elective	No. of courses	Credit Hours	Percentage
Institution Requirements	Required	5	11	7%
	Elective	1	2	1%
College Requirements	Required	16	49	29%
	Elective	0	0	0%
Program Requirements	Required	30	87	51%
	Elective	2	6	4%
Capstone Course/Project	Required	2	6	4%
Cooperative Training/ Internship	Required	1	6	4%
Residency year	-	-	-	0%
Others	-	-	-	0%
Total		57	167	100%

BCNE Program Study Plan

Level	Course Code	Course Title	Required or Elective	Pre-Requisite Courses	Credit Hours	Type of requirements (Institution,
Level 1	ENGL 1601	English Language Skills 1	Required	-	6	Program
	CUR 1201	Academic Skills	Required	-	2	Institution
	CIT 1301	Computer Skills	Required	-	3	Institution
	MATH 1301	Calculus 1	Required	-	3	College
	STAT 1304	Principles of Statistics and Probabilities	Required	-	3	College
Level 2	ENGL 1602	English Language Skills 2	Required	ENGL 1601	6	
	CSC 1202	English for Computing Purposes	Required	-	2	College
	PHYS 1401	Physics 1	Required	-	4	College
	CSC 1301	Principles of Programming and Algorithms	Required	CIT 1301	3	College
	CIS 1302	Introduction to Database	Required	CIT 1301	3	College

Level	Course Code	Course Title	Required or Elective	Pre-Requisite Courses	Credit Hours	Type of requirements (Institution,
Level 3	SLM 1201	Principles of Islam	Required	-	2	Institution
	MATH 1302	Linear Algebra	Required	-	3	Program
	MATH 1307	Advanced Calculus	Required	MATH 1301	3	Program
	PHYS 1402	Physics 2	Required	PHYS 1401	4	Program
	GE 1201	Introduction to Engineering	Required	-	2	Program
	CSC 2302	Computer Programming 1	Required	CSC 1301	3	College
Level 4	CHEM 1301	Chemistry 1	Required	-	3	Program
	MATH 1306	Differential Equations	Required	MATH 1307	3	Program
	CNE 2301	Electric Circuits	Required	MATH 1307 PHYS 1401	3	Program
	CNE 2101	Electric Circuits Lab	Required	CNE 2301/Co	1	Program
	CNE 2302	Digital Logic Design 1	Required	PHYS 1401	3	College
	CNE 2102	Digital Logic Lab	Required	CNE 2302/Co CNE 2101/Co	1	Program

Level	Course Code	Course Title	Required or Elective	Pre-Requisite Courses	Credit Hours	Type of requirements (Institution,
	CNE 2303	Computer Aided Engineering Drawing	Required	GE 1201	3	Program
Level 5	ARB 1201	Language Skills	Required	-	2	Institution
	MATH 1303	Discrete Mathematics	Required	-	3	College
	CIS 2304	Systems Analysis and Design 1	Required	CIS 1302	3	College
	CNE 3301	Electronics	Required	CNE 2301	3	Program
	CNE 3101	Electronics Lab	Required	CNE 3301/Co CNE 2101	1	Program
	CNE 3303	Computer Organization and Architecture 1	Required	CNE 2302	3	Program
	CNE 3304	Computer Networks 1	Required	CNE 2302	3	College
Level 6	SLM 1202	Social Values in Islam	Required	-	2	Institution
	CSC 2303	Computer Programming 2	Required	CSC 2302	3	College
	CSC 2305	Software Engineering	Required	CIS 2304	3	College

Level	Course Code	Course Title	Required or Elective	Pre-Requisite Courses	Credit Hours	Type of requirements (Institution,
	CIS 3302	Data Structures	Required	CSC 2302	3	College
	CNE 3302	Digital Logic Design 2	Required	CNE 2302	3	Program
	CNE 3305	Computer Networks 2	Required	CNE 3304	3	Program
Level 7	-	Elective Course (University)	Elective	-	2	Institution
	CIT 3306	Operating Systems	Required	CIS 3302	3	College
	CSC 3301	Analysis and Design of Algorithms	Required	CIS 3302	3	Program
	CNE 4301	Signals and Systems	Required	MATH 1306	3	Program
	CNE 4302	Embedded Systems	Required	CNE 3303	3	Program
	CNE 4102	Embedded Systems Lab	Required	CNE 4302/Co	1	Program
	CNE 4303	Computer Organization and Architecture 2	Required	CNE 3303	3	Program
Level 8	GE 1305	Ethics and Professional Practice	Required	-	3	Program
	CIS 3307	Information Security	Required	CNE 3304	3	College

Level	Course Code	Course Title	Required or Elective	Pre-Requisite Courses	Credit Hours	Type of requirements (Institution,
	CNE 4304	Digital Systems and Projects Engineering	Required	CNE 2302 CNE 4302	3	Program
	CNE 4305	Internet of Things	Required	CNE 3304	3	Program
	CNE 4306	Digital Signal Processing	Required	CNE 4301	3	Program
	CNE 4307	Introduction to Robotics	Required	MATH 1302	3	Program
Level 9	CNE 5391	Graduation Project 1	Required	Achieving 120+ credit hours	3	Program
	CNE 5699	Cooperative Training	Required	Achieving 120+ credit hours	6	Program
Level 10	GE 1303	Engineering Economy	Required	-	3	Program
	CSC 2304	Artificial Intelligence	Required	CSC 2302	3	Program
	CNE 5301	Digital Control Systems	Required	CNE 4306	3	Program
	CNE 53--	Elective Course 1	Elective	X	3	Program
	CNE 53--	Elective Course 2	Elective	X	3	Program
	CNE 5392	Graduation Project 2	Required	CNE 5391	3	Program

Elective Courses

Group	Course Code	Course Title	Pre-Requisite Courses	Credit Hours
Computer Networks	CNE 5321	Mobile Computing	CNE 3305	3
	CNE 5322	Analytical Methods for Networks	CNE 5321/co	3
	CNE 5323	Network Protocols and Algorithms	CNE 5321/co	3
Cyber Security	CNE 5331	Network Security	CNE 3305	3
	CNE 5332	Web and eCommerce Security	CNE 5331/co	3
	CNE 5333	Blockchain and Public Key Infrastructure	CNE 5331/co	3

BCNE Course Description

1. Level 1

Subject Code	CIT 1301
Course Title	Computer Skills
Credit hours	3 (2, 0, 2)
Level	1
Pre-Requisite	None
Co-Requisite	None
Catalogue Description	The computer skills course is concerned with developing students' computer use skills and prepares the student with the skills necessary to use and operate a computer. Topics included Introduction to Information Technology, Operating systems and file management, Word processing program, Spreadsheet program – Excel, Presentation program – PowerPoint, Database software – Access, Cloud services

Subject Code	MATH 1304
Course Title	Introduction to Probability and Statistic
Credit hours	3 (2, 1, 0)
Level	1
Pre-Requisite	None
Co-Requisite	None
Catalogue Description	Define the meaning of statistics, data, population, meaning of quantitative variables, levels of measures and sampling methods. Topics included Introduction to Probability and Random events, calculating probability using Venn diagram, Probability rules, Baye's Theorem Mean and Standard Deviation of a Discrete Random Variable, Application to the Random Variables, Mean and Standard Deviation of a Continuous Random Variable, Application to the Continues Random Variables, The mean and The Standard deviation of a Binomial Distribution, The Standard Normal Distribution, Concepts of simple linear correlation and linear regression.

2. Level 2

Subject Code	CSC 1301
Course Title	Principles of Programming and Algorithms
Credit hours	3 (2, 0, 2)
Level	2
Pre-Requisite	CIT 1301 - Computer Skills
Co-Requisite	None
Catalogue Description	This course helps the students understand how to develop algorithmic solutions for simple problems and represent them formally. Topics included Introduction to programming and algorithms, Algorithms, flowcharts and pseudocode, Concepts of datatypes, Concepts of control structures, Java overview, Java data types, Java operators, Java control structures, Java classes, Java methods, Java file I/O

Subject Code	CIS 1302
Course Title	Introduction to Database
Credit hours	3 (2, 0, 2)
Level	2
Pre-Requisite	CIT 1301 - Computer Skills
Co-Requisite	None
Catalogue Description	This course covers a wide array of topics such as characteristics and advantages of the database management systems, the concepts of database and its architecture, data models, database schemas and instances. Topics included Introduction and Overview, Centralized and client/server Architecture for DBMS, The Relational Data Model and Relational Database Constraints. Introduction to Structured Query Language (SQL), Formal Relational Query. Language (Relational Algebra & Relational Calculus), Conceptual Modeling and Database Design, SQL: Intersect expressions, Union and except expressions, Serious quantification lacking, Disk Storage, Basic File Structures, Normalization, group discussion.

3. Level 3

Subject Code	MATH 1302
Course Title	Linear Algebra
Credit hours	3 (2, 1, 0)
Level	3
Pre-Requisite	None
Co-Requisite	None
Catalogue Description	This course introduces the Matrices and their operations., types of matrices. Elementary transformations. Determinants, elementary properties. Inverse of a matrix. Linear systems of equations. Vector spaces, linear independence, finite dimensional spaces, linear subspaces. Inner product spaces. Linear transformations, kernel and image of a liner transformation. Eigen values and Eigen vectors of a matrix and of a linear operator.

Subject Code	MATH 1307
Course Title	Advanced Calculus
Credit hours	3 (2,1,0)
Level	3
Pre-Requisite	None
Co-Requisite	None
Catalogue Description	This course introduces the basic concepts of mathematical analysis used in science and engineering. The course teaches an introduction to differential and integral calculus. Topics includes limits, derivatives, rates, Newton's method, the mean value theorem, max-min problems, integral and the fundamental theorem of integral calculus, area, volume and average values.

Subject Code	PHYS 1402
Course Title	Physics 2
Credit hours	3 (3, 0, 2)
Level	3
Pre-Requisite	PHYS 1401 – Physics 1
Co-Requisite	None
Catalogue Description	This course provides an introduction to the fundamental concepts of electricity, magnetism, and optics. Topics covered include electric charge, Coulomb's law, electric fields, Gauss's law, electric potential, current and resistance, electromotive force, force due to magnetic fields, sources of magnetic fields, electromagnetic waves, and geometric optics. The course integrates theoretical principles with laboratory experiments to enhance students' understanding of physical phenomena and their applications in engineering and technology.

Subject Code	GE 1201
Course Title	Introduction to Engineering
Credit hours	2 (2, 0, 0)
Level	3
Pre-Requisite	None
Co-Requisite	None
Catalogue Description	Introducing the concept and discipline behind Engineering as a science. Introduction to engineering course is pointing to the career requirements and how the process goes on. Explaining the role of the engineer in civilization. Debating Engineering as a Job. Orientating the engineering education scheme. Discussing the Engineer profession, education and career planning. Offering most of the success skills as time management, training procedures, teamwork, solve problems and study groups. Approaching the main idea behind being apart of any project to solve problems. Introducing some of the Engineering software tools.

Subject Code	CSC 2302
Course Title	Computer Programming 1
Credit hours	3 (2, 0, 2)
Level	3
Pre-Requisite	CSC 1301 - Principles of Programming and Algorithms
Co-Requisite	None
Catalogue Description	This course covers Object Oriented Programming (OOP); Advantages of OOP over structured programming; Encapsulation; Classes and objects; Access specifies; Static and non-static members; Constructors, destructors and copy constructors; Array of objects, object pointers, and object references; Inheritance: single and multiple inheritance; Polymorphism: overloading, abstract classes, virtual functions and overriding; Exceptions; Object Oriented I/O; Template functions and classes; Multi-threaded Programming. Memory models, the message-based philosophy.

4. Level 4

Subject Code	CHEM 1301
Course Title	Chemistry 1
Credit hours	3 (2,0,2)
Level	4
Pre-Requisite	None
Co-Requisite	None
Catalogue Description	This course is designed as an introductory course of chemistry for computer and network engineering students to cover the main principles of chemistry, including the fundamental. By the end of the course, students are expected to Recognize the laws of gases and their applications, Recognize the properties of liquids and the different methods for their studies, Recognize the structure of atoms and study the various related theories, Recognize the chemical bonds and their characteristics and Recognize the chemical elements and their properties by studying the periodic table.

Subject Code	MATH 1306
Course Title	Differential Equations
Credit hours	3(2, 1, 0)
Level	4
Pre-Requisite	MATH 1308 Calculus 2
Co-Requisite	None
Catalogue Description	This course is designed as an introductory course for Various types of first order equations and their applications. Linear equations of higher order. Systems of linear equations with constant coefficients, reduction of order. Power series methods for solving second order equations with polynomial coefficients. Fourier series, Fourier series for even and odd functions. Complex Fourier series. The Fourier integral.

Subject Code	CNE 2301
Course Title	Electric Circuits
Credit hours	3(2, 1, 0)
Level	4
Pre-Requisite	MATH 1308 - Calculus 2 PHYS 1402 - Physics 2
Co-Requisite	None
Catalogue Description	This course covers the principles and concepts of electric circuit analysis. Topics covered in this course include circuit elements, electric quantities, mesh and nodal analysis methods, RL and RC circuits, AC circuit analysis in time and phasor domains. This course presents an overview of electric circuits for the students to be familiar with the main principles and basic concepts of electric circuit analysis.

Subject Code	CNE 2101
Course Title	Electric Circuits Lab
Credit hours	1 (0, 0, 2)
Level	4
Pre-Requisite	None
Co-Requisite	CNE 2301 - Electric Circuits
Catalogue Description	This course focuses on the practical aspects of electric circuit analysis. It includes experiments using both simulation and practical implementations of simple electric circuits built from essential electric elements such as resistors, inductors, and capacitors. This course also allows the undergraduate computer and network engineering students to practically develop and test electrical circuits and conduct basic electric circuit experiments.

Subject Code	CNE 2302
Course Title	Digital Logic Design 1
Credit hours	3 (2, 0, 2)
Level	4
Pre-Requisite	CIS 1302 - Introduction to Database
Co-Requisite	None
Catalogue Description	System analysis and design courses deal with planning the development of information systems through understanding and specifying in detail what a system should do and how the components of the system should be implemented and work together. System analysts solve business problems by analyzing the requirements of information systems and designing such systems by applying analysis and design techniques. This course provides the concepts, skills, methodologies, techniques, tools, and perspectives essential for systems analysts. The practical session deals with object-oriented and use-case-driven, requiring students to go through the steps of system analysis and design to solve a real-life business problem.

Subject Code	CNE 2102
Course Title	Digital Logic Lab
Credit hours	1 (0, 0, 2)
Level	4
Pre-Requisite	None
Co-Requisite	CNE 2302 - Digital Logic Design 1 CNE 2101 - Electric Circuits Lab
Catalogue Description	The main objective of this course is to provide students with the Familiarization with logic circuits laboratory. Introduction to logic gates. Implementation of Boolean functions using AND and OR gates. NAND and NOR implementation. XOR and adders. Design of combinational circuits. Flip-flops. Design of sequential circuits. Sequential PLA's.

Subject Code	CNE 2303
Course Title	Computer Aided Engineering Drawing
Credit hours	3 (2, 0, 2)
Level	4
Pre-Requisite	GE 1201- Introduction to Engineering
Co-Requisite	None
Catalogue Description	This course introduces the basics and fundamentals of computer-aided drawing and graphics for computer engineering including modeling and design, 2D model representation and electronic diagrams. By the end of the course, students are expected to Recognize the fundamentals of drafting in a computer lab using AutoCAD drafting software, Recognize 3-D visualization using computer wireframe and surface modeling techniques, Recognize the modeling and design of electronic circuit diagrams

5. Level 5

Subject Code	MATH 1303
Course Title	Discrete Mathematics
Credit hours	3 (2, 1, 0)
Level	5
Pre-Requisite	None
Co-Requisite	None
Catalogue Description	This course is continuing to provide students with the ability to understand the Fundamentals of Mathematical Logic: Sets and Subsets, Operations on Sets, Prepositional Logic: Matrix and Determinant, Counting: Basics and Binomial theorem, Number theory: Introduction to Linear Equations, Recursion and Recurrences, Linear Programming, Graphs and Trees: Graph Traversal, Tree Traversal, Sorting

Subject Code	CIS 2304
Course Title	System Analysis and Design 1
Credit hours	3(2,0,2)
Level	5
Pre-Requisite	CIS 1302 - Introduction to Database
Co-Requisite	None
Catalogue Description	This course provides an introduction of System analysis and design courses which deals with planning the development of information systems through understanding and specifying in detail what a system should do and how the components of the system should be implemented and work together. System analysts solve business problems by analyzing the requirements of information systems and designing such systems by applying analysis and design techniques. This course provides the concepts, skills, methodologies, techniques, tools, and perspectives essential for systems analysts. The practical session deals with object-oriented and use-case-driven, requiring students to go through the steps of system analysis and design to solve a real-life business problem.

Subject Code	CNE 3101
Course Title	Electronics Lab
Credit hours	1(0,0,2)
Level	5
Pre-Requisite	CNE 2101 - Electric Circuits Lab
Co-Requisite	CNE 3301- Electronics
Catalogue Description	This course is designed to cover the practical aspects of electronic devices.The aim of this course is to provide students with an ability to Distinguish the basic principle of operation of the dual trace oscilloscope, Apply the oscilloscope to measure: the frequency and amplitude of a signal, the phase-shift between signals, Familiarize the students with Diode Characteristics, Studying the Bipolar Junction Transistor (BJT) input/output Characteristics, Studying the Field Effect Transistor (FET) input/output Characteristics

Subject Code	CNE 3303
Course Title	Computer Organization and Architecture 1
Credit hours	3 (2, 0, 2)
Level	5
Pre-Requisite	CNE 2302 - Digital Logic Design 1
Co-Requisite	None
Catalogue Description	This course helps the students understand how computers operate under the hood. The course topics are covered at both the architectural and micro-architectural (i.e., organizational) levels. It also provides the students with hands-on experience in designing a simple processor at the micro-architectural level.

Subject Code	CNE 3304
Course Title	Computer Networks 1
Credit hours	3 (2, 0, 2)
Level	5
Pre-Requisite	CNE 2302 - Digital Logic Design 1
Co-Requisite	None
Catalogue Description	This course presents an overview of computer networks (types, layered standard models, and protocols). It covers data communication basics, signals basics, performance basics, data encoding, modulation, and transmission media. Data link control protocols and the Ethernet standard, as are network layer protocols, are discussed in depth. It also covers the transport layer role, protocols, and some application layer protocols in greater detail.

6. Level 6

Subject Code	CSC 2303
Course Title	Computer Programming 2
Credit hours	3 (2, 0, 2)
Level	6
Pre-Requisite	CSC 2301 - Computer Programming 1
Co-Requisite	None
Catalogue Description	This course covers data processing and analysis using Python. The topics covered in this course are based on modern python libraries such as Pandas, NumPy, SciPy, Matplotlib, Seaborn, tensors and composition of pipeline operations, etc.

Subject Code	CSC 2305
Course Title	Software Engineering
Credit hours	3 (2, 0, 2)
Level	6
Pre-Requisite	CIS 2304 – System Analysis and Design 1
Co-Requisite	None
Catalogue Description	This course covers the Software engineering and also the application theory, knowledge, and practice to effectively and efficiently create dependable software systems that meet the needs of customers and users. Small, medium, and large - scale systems can all benefit from this subject. It includes elicitation, analysis, and specification of requirements, as well as design, building, verification and validation, deployment, and operation and maintenance of software systems. Software engineering is concerned with the best way to design good software systems, whether small or large, following a classic plan driven development process, an agile approach, or another method. Software engineering methods, procedures, techniques, and metrics are all engineering related. The use of tools helps to manage software development, analyze, and model software artifacts, assess and regulate quality, and provide a disciplined, controlled approach to software evolution and reuse.

Subject Code	CIS 3302
Course Title	Data Structures
Credit hours	3 (2, 0, 2)
Level	6
Pre-Requisite	CSC 2302 - Computer Programming 1
Co-Requisite	None
Catalogue Description	The main objective of this course is to provide students with the basics of data structures. It covers a wide area of topics such as Array, Linked lists, Stacks, Queues, Recursion, Graph and Tree structures. This course also aims to provide students with an understanding of the basic searching and sorting algorithms, including, binary search and bubble sort, selection sort, and merge sort. The students will also provide with a conceptual understanding of the trade-offs among different abstract of data structures, hence enabling students to choose an optimal and appreciated data structure for a particular application.

Subject Code	CNE 3302
Course Title	Digital Logic Design 2
Credit hours	3 (2, 0, 2)
Level	6
Pre-Requisite	CNE 2302 - Digital Logic Design 1
Co-Requisite	None
Catalogue Description	This course builds on the foundational concepts of digital logic design introduced in Digital Logic Design 1. It focuses on the design, simulation, and implementation of digital systems using VHDL (VHSIC Hardware Description Language). Topics include VHDL syntax, combinational and sequential logic design, finite state machines (FSMs), and simulation techniques. Students will gain hands-on experience with VHDL programming and FPGA (Field-Programmable Gate Array) platforms.

Subject Code	CNE 3305
Course Title	Computer Networks 2
Credit hours	3 (2, 0, 2)
Level	6
Pre-Requisite	CIT 3304 - Computer Networks 1
Co-Requisite	None
Catalogue Description	This course introduces the students to the field of networking and give them competence in networking-based system design. Topics included, Overview of computer networks., Introduction to the Principles of internetworking, Internetworking hardware-Bridging and switching technologies, Virtual LANs and Routing strategies, The network development life cycle, Network analysis and design methodology, Network security design and the structured cabling systems, Traffic flow analysis, network reliability, Network management (SNMP), Network administration.

7. Level 7

Subject Code	CIT 3306
Course Title	Operating Systems
Credit hours	3 (2, 0, 2)
Level	7
Pre-Requisite	CSC 3302 - Data Structures
Co-Requisite	None
Catalogue Description	An operating system is a software program that abstracts hardware and handles resource sharing among computer users. The topics in this category cover the fundamentals of operating systems, such as how to connect an operating system to a network, how to distinguish between kernel and user modes, and how to construct important operating system design and implementation approaches.

Subject Code	CSC 3301
Course Title	Analysis and Design of algorithms
Credit hours	3 (2, 0, 2)
Level	7
Pre-Requisite	CIS 3302 Data Structures
Co-Requisite	None
Catalogue Description	This course is continuing to provide students with the ability to select algorithms appropriate to particular purpose and to apply them, recognizing the possibility that no suitable algorithm may exist. Topics covered are: Mathematical essentials; sorting; space and time complexity; algorithm design methods: greedy algorithms, divide and conquer, and dynamic programming; introduction to graph theory; and NP-completeness. The course aims at giving the students a broad foundation in the fundamental concepts of Object-Oriented programming accompanied by specific labs to develop the basic skills in object-oriented programming with Java.

Subject Code	CNE 4301
Course Title	Signals and Systems
Credit hours	3 (2, 0, 2)
Level	7
Pre-Requisite	MATH 1306 Differential Equations
Co-Requisite	None
Catalogue Description	This course covers the topics of various signals and systems, including basic transformations and different signal representation methods. This course provides the students about the use of MATLAB software for simulation of signals and systems, Signal classification, sketching, and basic time-domain operations, Describe a system by its impulse/step response, differential/difference equation, and block diagram, Apply the basic definitions of the Fourier transform, Laplace transform and Z-transform

Subject Code	CNE 4302
Course Title	Embedded Systems
Credit hours	3 (2, 1, 0)
Level	7
Pre-Requisite	CNE 3303 - Computer Organization and Architecture 1
Co-Requisite	None
Catalogue Description	This course Introduce embedded system design concepts. Investigating the architecture of one of the microcontroller families and its instruction set. Programming embedded systems with assembly and/or high-level languages. Configuring different processor modules, such as reset, oscillator interrupts, timers, Analog/Digital, and serial communications.

Subject Code	CNE 4102
Course Title	Embedded Systems Lab
Credit hours	3 (0, 0, 2)
Level	7
Pre-Requisite	None
Co-Requisite	CNE 4302- Embedded Systems
Catalogue Description	This course gives an introduction to embedded systems design tools and hardware programmers. It includes experiments using both simulation and practical implementation of embedded systems considering a variety of sensors and actuators such as: switches, LEDs, LDRs, ultrasonic, motors, … etc. It also contains a design project.

Subject Code	CNE 4303
Course Title	Computer Organization and Architecture 2
Credit hours	3 (2, 0, 2)
Level	7
Pre-Requisite	CNE 3303 - Computer Organization and Architecture 1
Co-Requisite	None
Catalogue Description	This course builds on the foundational knowledge of computer organization and architecture. It covers advanced topics such as computer arithmetic, instruction pipelining, instruction-level parallelism, and advanced memory systems. Students will gain a deeper understanding of how modern computers perform complex computations and optimize performance.

8. Level 8

Subject Code	GE 1305
Course Title	Ethics and Professional Practice
Credit hours	3 (3, 0, 0)
Level	8
Pre-Requisite	None
Co-Requisite	None
Catalogue Description	This course provides an introduction and guidelines that addresses and debates issues related to ethics in the engineering profession. The course is designed to familiarize students with the ethical dilemmas, ethical governmental regulations, and ethical decision making by professional engineers. Introducing the students to the conceptual groundwork of the professional engineering ethics. Providing them with an appropriate training considering ethical while solving the problem. Increasing the student's verbal and communication skills.

Subject Code	CIS 3307
Course Title	Information Security
Credit hours	3 (2, 0, 2)
Level	8
Pre-Requisite	CNE 3304-Computer Networks 1
Co-Requisite	None
Catalogue Description	This course consists of an introduction to information security, types of major computer malware programs and cybersecurity attacks and their impacts, the general prevention mechanisms from the cyberattacks, using modern technologies that help to create and manage passwords more effectively, wireless networks and their security mechanisms, commonly used wired and Wi-Fi routers and secured them

Subject Code	CNE 4304
Course Title	Digital Systems and Projects Engineering
Credit hours	3(2, 0, 2)
Level	8
Pre-Requisite	CNE 3302 – Digital Logic Design 2 CNE 4302 – Embedded Systems
Co-Requisite	None
Catalogue Description	This course introduces the different techniques and procedures of Computer engineering discipline: the potential role of computer engineers in modern society, the role of engineering societies and organizations, opportunities for computer engineers; Overview of the engineering design process; Project selection, needs identification and problem statements; Requirements specification; Concept generation and evaluation; System design: bottom-up and top-down design, functional decomposition; Behavior models: state diagrams and flowcharts; Testing; Ethical and Legal Issues in the design process; Project management: Project plans, Gnatt charts, Cost models, Break-even analysis, Cost estimation.

Subject Code	CNE4305
Course Title	Internet of Things
Credit hours	3(2, 0, 2)
Level	8
Pre-Requisite	CNE 3304 – Computer Networks 1
Co-Requisite	None
Catalogue Description	This course introduces the concept and discipline of the Internet of Things, exploring different topics within the course area such as sensing, actuation, basics of networking, communication protocols, sensor networks, machine-to-machine communications, and interoperability in IoT, Implementing IoT with Arduino and/or Raspberry Pi, Introducing Software Defined Networks (SDN) for IoT, Data handling and analytics, Cloud computing, and Sensor-cloud.

Subject Code	CNE 4306
Course Title	Digital signal Processing
Credit hours	3 (2, 0, 2)
Level	8
Pre-Requisite	CNE 4301 Signals and Systems
Co-Requisite	None
Catalogue Description	This course introduces the History and overview of digital signal processing, sampling theorem, aliasing; sampled signals, periodic signals, non-periodic signals; impulse response and convolution; digital spectra analysis; discrete Fourier transform, fast Fourier transform; z-transform; digital filters, FIR and IIR filter design; windowing; effect of finite word length in digital signal processors; application in audio and image processing

Subject Code	CNE 4307
Course Title	Introduction to Robotics
Credit hours	3 (2, 0, 2)
Level	8
Pre-Requisite	MATH 1302-Linear Algebra
Co-Requisite	None
Catalogue Description	This course is designed to cover theoretical and practical aspects of robotics. Topics covered include the history of robots, types of robots, 2D and 3D transformations, forward and inverse kinematics, and manipulator velocity. This course also introduces the structure and control of different types of robotic systems (with real-life applications) and make the student aware of the basic principles of forward and inverse kinematics of robots.

9. Level 9

Subject Code	CNE 5391
Course Title	Graduation Project 1
Credit hours	3 (0, 0, 6)
Level	9
Pre-Requisite	Senior Standing (Achieving at least 120 Credit Hours)
Co-Requisite	None
Catalogue Description	The student proposes a project topic or idea according to his specialization background with technical merit under the supervision of academic members in the college. Toward the end of the semester, the graduation project (GP) should be well-defined by the student, submitting a report with the following sections: Background, Motivation of the project, Problem Statement, Scope of the Project, Computing Requirements, and Expected Outcomes, Identified Tasks and a Tentative Workplan, Required Technical Tools. This early stage of GP is finally assessed by the supervisor(s) and the GP committee members.

Subject Code	CNE 5699
Course Title	Cooperative Training
Credit hours	6 (0, 0, 12)
Level	9
Pre-Requisite	Achieving at least 120 Credit Hours
Co-Requisite	None
Catalogue Description	This cooperative training program provides students with hands-on industry experience in the field of computer and network engineering. Participants will apply theoretical knowledge to real-world scenarios, working alongside professionals to develop practical skills in network configuration, system administration, cybersecurity, troubleshooting, and IT infrastructure management. The training emphasizes problem-solving, teamwork, and adapting to emerging technologies, preparing students for careers in network engineering, system administration, and IT support. Through this program, students gain valuable industry exposure, enhance their technical competencies, and build a strong foundation for professional growth.

10. Level 10

Subject Code	GE 1303
Course Title	Engineering Economy
Credit hours	3 (2, 1, 0)
Level	10
Pre-Requisite	None
Co-Requisite	None
Catalogue Description	This course Introduces the engineering economics to present work analysis, financial management, cash flow points, taxes, and project break-even structures. Including the sensitivity analysis for a particular project. This course also evaluates the economic feasibility of investments related to engineering projects. Assess the impact of depreciation, taxation, and other economic factors on projects feasibility. Conduct sensitivity analysis on key compounding parameters. Make financially prudent decisions in everyday life.

Subject Code	CSC 2304
Course Title	Artificial Intelligence
Credit hours	3 (2, 0, 2)
Level	10
Pre-Requisite	CSC 2302 - Computer Programming 1
Co-Requisite	None
Catalogue Description	This course concentrates on topics in artificial intelligence, such as Introduction about Artificial Intelligence, Intelligent Agent, Problem solving, Solving Problem by Searching, Beyond Classical Search Adversarial Search, Constraint satisfaction problems, Markov decision process, Reinforcement learning, swarm intelligence, and logical agents.

Subject Code	CNE5301
Course Title	Digital Control Systems
Credit hours	3 (2, 0, 2)
Level	10
Pre-Requisite	CNE 4306 - Digital Signal Processing
Co-Requisite	None
Catalogue Description	This course is designed to give an introductory course on digital control systems design and analysis. This course also lays a foundation for designing digital control systems. It recognizes mathematical modeling of digital control systems and stability, practical state feedback control, and optimal solutions for real-time computerized systems.

Subject Code	CNE5392
Course Title	Graduation Project 2
Credit hours	3 (0, 0, 6)
Level	10
Pre-Requisite	CNE 5391 - Graduation Project (1)
Co-Requisite	None
Catalogue Description	This course is the continuation of the previous course Graduation Project 1. The primary purpose of the Graduation Project is to ascertain that the students have acquired the skills, knowledge, and concepts necessary to perform well after graduation. The students show their maturity in handling the graduation project (GP) by making significant progress as planned in the GP (1). By the end of the semester, the students should be able to implement and complete their projects successfully. Then, the students submit the final GP report and present their achievements and contributions to be judged by supervisors and GP committee members.

11. Elective Courses

Subject Code	CNE 5321
Course Title	Mobile Computing
Credit hours	3 (2, 0, 2)
Level	10
Pre-Requisite	CNE 3305 - Computer Networks 2
Co-Requisite	None
Catalogue Description	Mobile Computing is a core area of modern technology, enabling seamless communication and computing on mobile devices. This course provides computer engineering students a comprehensive understanding of mobile hardware, software, communication protocols, and networking. Students will explore mobile application development, mobile cloud computing, and emerging trends like IoT and AR/VR. Through hands-on labs and real-world case studies, students will gain practical skills in designing, developing, and optimizing mobile systems, preparing them for careers in this rapidly evolving field.

Subject Code	CNE 5322
Course Title	Analytical Methods for Networks
Credit hours	3 (2, 0, 2)
Level	10
Pre-Requisite	None
Co-Requisite	CNE 5321 Mobile Computing
Catalogue Description	This course introduces students to the fundamental analytical methods and mathematical tools used to model, analyze, and optimize the performance of computer networks. The focus is on understanding the behavior of networks through quantitative analysis, emphasizing key performance metrics such as throughput, delay, packet loss, and resource utilization. Students will learn to apply mathematical frameworks, including queueing theory, optimization techniques, and probabilistic models, to solve real-world networking problems

Subject Code	CNE 5323
Course Title	Network Protocols and Algorithms
Credit hours	3 (2, 0, 2)
Level	10
Pre-Requisite	None
Co-Requisite	CNE 5321 Mobile Computing
Catalogue Description	Network Protocols and Algorithms are the backbone of modern computer networks, enabling efficient and reliable communication. This course provides computer engineering students with a comprehensive understanding of the design, analysis, and implementation of network protocols and algorithms. Students will explore routing algorithms, congestion control, QoS mechanisms, security protocols, and emerging trends like SDN and IoT. Through hands-on labs and real-world case studies, students will gain practical skills in simulating and optimizing network protocols, preparing them for careers in network engineering and research

Subject Code	CNE 5331
Course Title	Network Security
Credit hours	3 (2, 0, 2)
Level	10
Pre-Requisite	CNE 3305 - Computer Network 2
Co-Requisite	None
Catalogue Description	The course highlights standards, concepts, and defensive techniques in network security. It aims to provide the students with the ability to identify network attacks and weaknesses and then design and implement appropriate security measures. During the course, practical sessions on diverse types of attacks and how network security measures could counter such threats are given to the students.

Subject Code	CNE 5332
Course Title	Web and eCommerce Security
Credit hours	3 (2, 0, 2)
Level	10
Pre-Requisite	None
Co-Requisite	CNE 5331 - Network Security.
Catalogue Description	The course will cover eCommerce's fundamentals and practical aspects (consumer-to-business C2B and business-to-business B2B). It is an extension to computer networks and a layer of current advancements and issues related to commerce and business conducted over non-proprietary networks. The course familiarizes students with concepts and ideas, including the fundamentals of e-commerce and its applicability, the Internet and the World Wide Web, and Cryptography and its applications in e-commerce. The course further defines various aspects of Internet security and secure electronic payment systems.

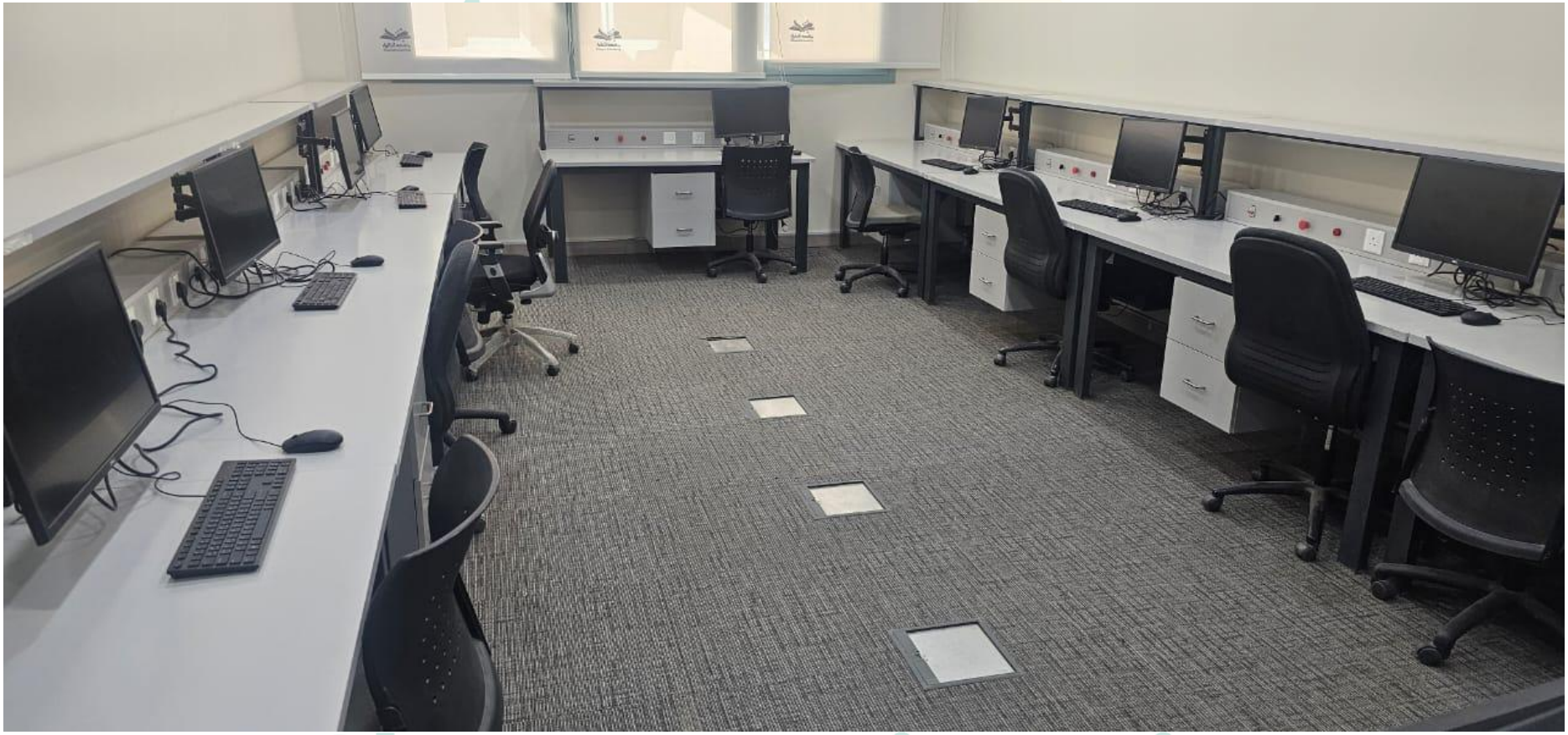
Subject Code	CNE 5333
Course Title	Blockchain and Public Key Infrastructure
Credit hours	3 (2, 0, 2)
Level	10
Pre-Requisite	None
Co-Requisite	CNE 5331 - Network Security
Catalogue Description	The course covers the fundamentals and practical aspects of public key cryptography in various open computer networks on the Internet. It highlights the main components of public key infrastructure (PKI) and how symmetric and asymmetric cryptography work. The course also highlights the importance of digital certificates and their application in securing online communication, privacy, and authenticity. Further, in this course and to extend the use of cryptography, Blockchain technologies are also reviewed regarding their advances in security and transparency with respect to the Internet of Value and/or Web 3.

BCNE Program Laboratories

The BCNE program has a total of 5 computer laboratories. All the laboratories contain PCs that run Microsoft Windows. The average capacity of the laboratory is 20 students (or PC).

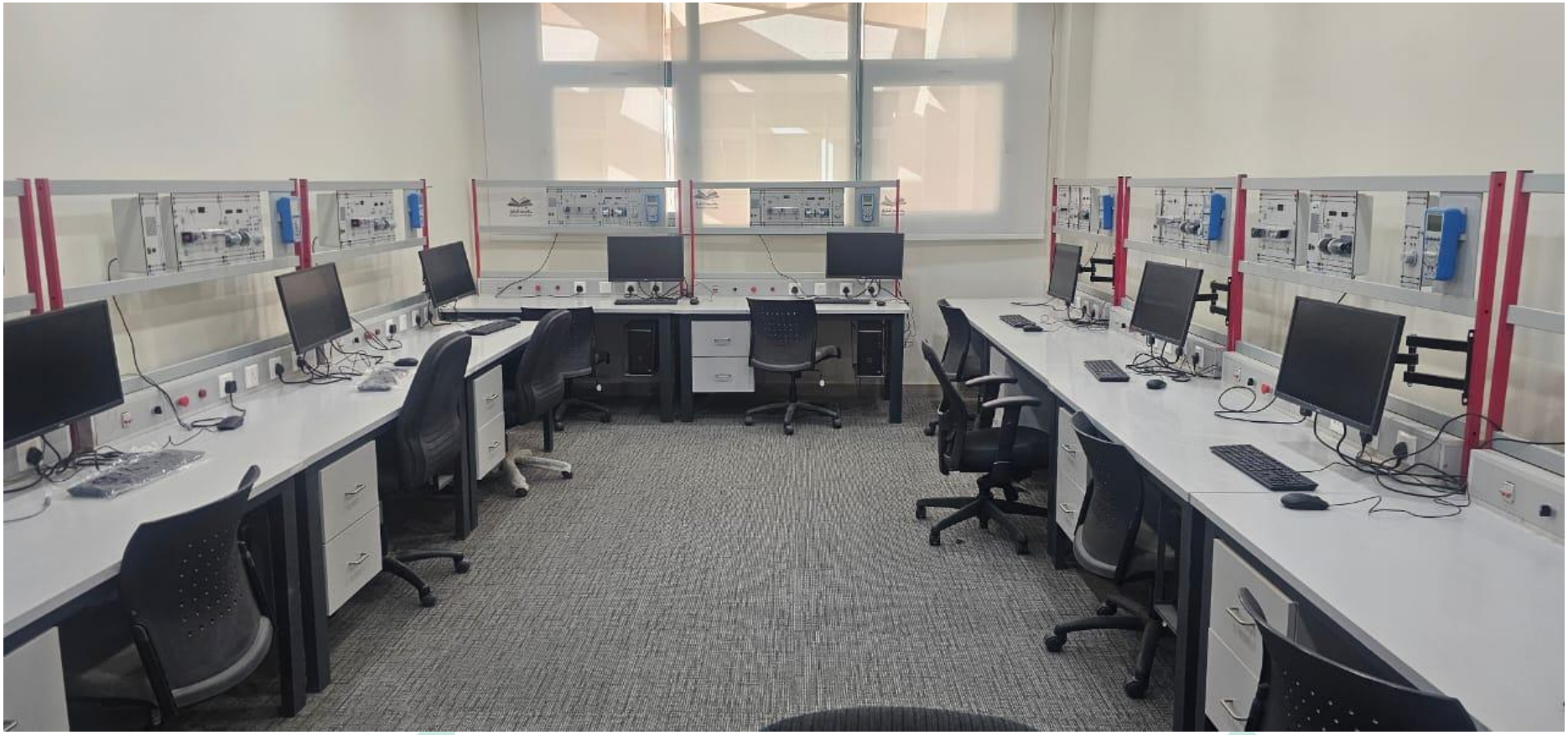
1. Circuits Lab

2. Digital Logic Lab



3. Electronics Lab

4. Control Lab



5. Embedded Systems Lab