Covenant University

B.Eng. Degree Programme in

Computer Engineering

Programme Education Outcomes(PEOs), Programme Outcomes (POs) and Mapping

<div align="center">**Computer Engineering**</div>

Revised Programme Educational Objectives and Their Mapping to the Visions and Missions of the University, Department, and Programme

Programme Educational Objectives (PEOs)

The Programme Educational Objectives (PEOs) describe the expected achievements of Computer Engineering graduates within a few years after graduation. They are tailored to the unique aspects of Computer Engineering while aligning with the broader goals of the institution.

PEO 1: Foundational Knowledge and Problem Solving
Graduates will demonstrate a strong foundation in computer engineering principles, with abilities spanning analyzing, designing, and implementation of computing systems and solutions for complex real-world problems, while adapting to technological advancements.

PEO 2: Professionalism and Interdisciplinary Collaborations
Graduates will work in diverse industrial and technological environments as licensed professional engineers and leaders with management and financial skills, collaboratively engaging with integrated teams of experts in other fields to proffer sustainable solutions to complex engineering problems.

PEO 3: Research and Innovation
Graduates will employ engineering principles and system design concepts in combination with integrated software and hardware tools to develop widely applicable methods and techniques for advancing computing technologies and enhancing societal sustainability.

PEO 4: Ethical Practice and Lifelong Learning
Graduates will practice in compliance with national and international engineering standards and recognized ethical codes within the bounds of professional rules and regulations while pursuing further studies, research, and certifications for professional development and competitiveness.

PEO 5: Entrepreneurship and Leadership
Graduates will be employed, will employ others or be self-employed, playing leadership roles and taking clear and ethical steps in creating or supporting entrepreneurial solutions to engineering challenges using computer engineering and management principles supported by continuously growing ICT knowledge.

Mapping of PEOs to the Visions and Missions of the University, Department, and Programme

The PEOs are designed to align with the visions and missions of the university, department, and the Computer Engineering program. The mapping is presented in **Table 1**. This table demonstrates how each PEO supports the institutional goals of raising leaders, creating knowledge, and promoting integrated education with real-life applicability.

Table 1: Mapping of PEOs to the Visions and Missions of the Institution, Department, and Programme

Vision	Mission	PEOs
University		
The vision of the University is to be a leading World-Class University, committed to raising a new generation of leaders in all fields of human endeavor.	The mission of the University is to create knowledge and restore man's dignity through a Human Development concept of the Total Man, employing innovative, leading-edge, teaching and learning methods. We aim for application of research that promotes integrated, life-transforming values through Science, Technology and Human Capacity Building.	1. Graduates will develop technical and leadership knowledge and skills widely applicable for solving real-world problems in the fields of electrical/electronics engineering and its related disciplines while consistently demonstrating an understanding of integrated technological changes for improving industry-relevant operations and processes.
Department		2. Graduates will work in diverse industrial and manufacturing environments as licensed professional engineers and leaders with management and financial skills, collaboratively engaging with integrated teams of experts in other fields to proffer sustainable solutions to complex engineering problems.
The vision of the Department is derived from Covenant University's vision, which is succinctly captioned — Raising a New Generation of Leaders. Therefore, the Department is raising a new generation of leaders in Electrical and Information Engineering.	The mission of the Department is to create universally applicable and technologically relevant knowledge in the field of Electrical and Information Engineering, with the aim of promoting an integrated and universal education with real-life, real-time applicability vis-	3. Graduates will employ engineering principles and system design

	à-vis science, technology and human capacity building.	concepts in combination with integrated software and hardware tools to develop widely applicable methods and techniques for product and service improvement and societal sustainability.
Programme		
The vision of the Programme is to produce total graduates empowered with the standards and practice of Electrical and Electronics Engineering, complemented with application–oriented courses that will advance their productive capacity to proffer solutions to national and international societal challenges.	The mission of the Programme is to create universally applicable and technologically relevant knowledge in the field of Electrical and Electronics Engineering, with the aim of promoting an integrated and universal education with real-life, real-time applicability vis-à-vis science, technology and human capacity building.	4. Graduates will practice in compliance with national and international engineering standards and recognized environmental code within the bounds of ethical rules and regulations while pursuing further studies, research, and certifications for professional development and competitiveness. 5. Graduates will be employed or self-employed, playing leadership roles and taking clear and ethical steps in creating or supporting entrepreneurial solutions to engineering challenges using engineering and management principles supported by continuously growing ICT knowledge.

Programme Outcomes (POs)

The Programme Outcomes (POs) outline the competencies that Computer Engineering students are expected to achieve by the time of graduation. These are adapted from a standard engineering framework (e.g., COREN handbook) and tailored where necessary to emphasize computing aspects.

1. **Engineering Knowledge**: Apply knowledge of mathematics, science, engineering fundamentals, and computer engineering specialization to the solution of developmental and complex engineering problems.

2. **Problem Analysis**: Identify, formulate, research literature, and analyze developmental and complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

3. **Design/Development of Solutions**: Proffer solutions for developmental or complex engineering problems and design systems, components, or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations.

4. **Investigation**: Conduct investigation into developmental or complex problems using research-based knowledge and research methods, including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions.

5. **Modern Tool Usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and ICT tools, including prediction, modeling, and optimization, to developmental and complex engineering activities, with an understanding of the limitations.

6. **The Engineer and Society**: Apply reasoning informed by contextual knowledge, including Humanities and Social Sciences, to assess societal, health, safety, legal, and cultural issues and the consequent responsibilities relevant to professional engineering practice.

7. **Environment and Sustainability**: Understand the impact of professional engineering solutions in societal and environmental contexts and demonstrate knowledge of and need for sustainable development.

8. **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice, including adherence to relevant codes of conduct (e.g., data privacy and security in computing).

9. **Individual and Team Work**: Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

10. **Communication**: Communicate effectively on developmental or complex engineering activities with the engineering community and society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

11. **Project Management and Finance**: Demonstrate knowledge and understanding of engineering, management, and financial principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

12. **Lifelong Learning**: Recognize the need for, and have the preparation and ability to engage in, independent and lifelong learning in the broadest context of technological and social changes.

Mapping of PEOs to POs

The mapping of PEOs to POs illustrates how the Programme Outcomes support the achievement of the Programme Educational Objectives. This is presented in **Table 2**, where an "x" indicates that a PO contributes to the fulfillment of a specific PEO.

Table 2: Mapping of PEOs to POs

PO	PEO 1	PEO 2	PEO 3	PEO 4	PEO 5
PO 1: Engineering Knowledge	x		x		x
PO 2: Problem Analysis	x	x	x		
PO 3: Design/Development	x	x	x		x
PO 4: Investigation	x	x	x		
PO 5: Modern Tool Usage	x		x		x
PO 6: The Engineer and Society		x	x	x	
PO 7: Environment & Sustainability		x	x	x	
PO 8: Ethics		x		x	x
PO 9: Individual and Team Work	x	x	x		x

PO 10: Communication	x	x			x
PO 11: Project Management and Finance		x	x		x
PO 12: Lifelong Learning	x		x	x	x

DESIGN OF PROGRAMME CURRICULUM

Presented in this section is an overview of the breakdown of credit units allocated in relation to Computer Engineering programme based courses and other courses taught of a non-Engineering nature.

Table 3: Design of the Computer Engineering Curriculum

Domain	Knowlwdge Area	COREN/NUC Recommended		Institute's Program Breakup	
		Total	Overall	Total	Overall
		Credits	%	Credits	%
Non-Engineering	Humanities	As per discipline specific COREN BMAS guidelines	25% – 40%	**23**	**27**
	Management Sciences			**7**	
	Natural Sciences			**34**	
	Computing	As per discipline specific COREN BMAS guidelines		**10**	**73**
	Engineering Foundation			**35***	
	Major Based Core (Breadth)			**35****	
	Major Based Core (Depth)			**74*****	

Engineering	Inter-Disciplinary Engineering Breadth (Electives)		60% – 75%	4	
	Final Year Design Project	6		6	
	Industrial Training (SIWES)	2		6	
Total		130 – 138	100%	234	100

*200 Level GEC courses **Other GECs except 200 Level ***Core Courses for the Program