Mission and PEO Statements of CSE, UAP

Mission Statements of CSE Program:

Mission 1: Equipping students with a strong foundation in computer science theory, engineering principles, and practical skills required to excel in diverse careers and pursue advanced studies.

Mission 2: Providing opportunities for lifelong learning, professional development, and satisfying career demands by embracing technological advancements and engaging in cutting-edge research.

Mission 3: Cultivating an entrepreneurial mindset, fostering innovation, and empowering individuals to develop sustainable solutions and technologies.

Mission 4: Fostering ethical values, social responsibility, and a commitment to serving the community, emphasizing the responsible use of technology for the betterment of society.

Program Educational Objectives (PEO) of CSE Program:

PEO 1: Graduates will demonstrate successful careers in various sectors such as software development, IT consulting, research and development, entrepreneurship, or pursuing advanced studies in computer science or related fields at home and beyond.

PEO 2: Graduates will apply in-depth engineering knowledge and skills to solve complex real-life problems.

PEO 3: Graduates will engage in lifelong learning and professional development by adapting to technological advancements.

PEO 4: Graduates will make valuable contributions to society by leveraging their engineering knowledge, skills, and ethical values.

PO, K, P, A of BAETE_Manual_v.2.1_07.06.2022-Final-2

The BAETE specifically requires that students should acquire the following graduate attributes:

a	Apply knowledge of mathematics, natural science, engineering fundamentals and an engineering specialization as specified in K1 to K4 respectively to the solution of complex engineering problems.
b	Identify, formulate, research literature and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences. (K1 to K4)
c	Design solutions for 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. (K5)
d	Conduct investigations of complex problems using research-based knowledge (K8) and research methods including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions.
e	Create, select and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to complex engineering problems, with an understanding of the limitations. (K6)
f	Apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice and solutions to complex engineering problems. (K7)
g	Understand and evaluate the sustainability and impact of professional engineering work in the solution of complex engineering problems in societal and environmental contexts. (K7)
h	Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice. (K7)
i	Function effectively as an individual, and as a member or leader in diverse teams and in multi-disciplinary settings.
j	Communicate effectively on complex engineering activities with the engineering community and with 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.
k	Demonstrate knowledge and understanding of engineering management principles and economic decision-making and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
l	Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Knowledge Profile (K):

No.	**Attribute**
K1	A systematic, theory-based understanding of the natural sciences applicable to the discipline
K2	Conceptually based mathematics, numerical analysis, statistics and the formal aspects of computer and information science to support analysis and modeling applicable to the discipline
K3	A systematic, theory-based formulation of engineering fundamentals required in the engineering discipline
K4	Engineering specialist knowledge that provides theoretical frameworks and bodies of knowledge for the accepted practice areas in the engineering discipline; much is at the forefront of the discipline
K5	Knowledge that supports engineering design in a practice area
K6	Knowledge of engineering practice (technology) in the practice areas in the engineering discipline
K7	Comprehension of the role of engineering in society and identified issues in engineering practice in the discipline: ethics and the engineer's professional responsibility to public safety; the impacts of engineering activity; economic, social, cultural, environmental and sustainability
K8	Engagement with selected knowledge in the research literature of the discipline

Range of Complex Engineering Problem Solving (P):

Attribute	**Complex Engineering Problems** have characteristic P1 and some or all of P2 to P7:
Depth of knowledge required	P1: Cannot be resolved without in-depth engineering knowledge at the level of one or more of K3, K4, K5, K6 or K8 which allows a fundamentals-based, first principles analytical approach
Range of conflicting requirements	P2: Involve wide-ranging or conflicting technical, engineering and other issues

Depth of analysis required	P3: Have no obvious solution and require abstract thinking, originality in analysis to formulate suitable models
Familiarity of issues	P4: Involve infrequently encountered issues
Extent of applicable codes	P5: Are outside problems encompassed by standards and codes of practice for professional engineering
Extent of stakeholder involvement and conflicting requirements	P6: Involve diverse groups of stakeholders with widely varying needs
Interdependence	P7: Are high-level problems including many component parts or sub-problems

Range of Complex Engineering Activities (A):

Attribute	**Complex activities** means (engineering) activities or projects that have some or all of the following characteristics:
Range of resources	A1: Involve the use of diverse resources (and for this purpose resources include people, money, equipment, materials, information and technologies)
Level of interaction	A2: Require resolution of significant problems arising from interactions between wide-ranging or conflicting technical, engineering or other issues
Innovation	A3: Involve creative use of engineering principles and research-based knowledge in novel ways
Consequences for society and the environment	A4: Have significant consequences in a range of contexts, characterized by difficulty of prediction and mitigation
Familiarity	A5: Can extend beyond previous experiences by applying principles-based approaches