Program Assessment and Evaluation Matrix and Plan

PO Code	PO Statement	Performance Indicators (PI)	Codes of Key Course(s) for the PI(s)	Assessment Methods			Evaluation Method(s)	Standards
				A1	A2	A3		
a	An ability to apply knowledge of mathematics and science to solve civil engineering problems.	1. Perform engineering calculations manually and by use of applicable software. 2. Analyze flows in civil engineering solution. 3. Apply academic theory into engineering applications to develop proposals to solve engineering problems	M-01 to 09, S-01 to 03, E-01 to E-03, L-01 to 20, A-01 to 02, P-01 to 41	*Locally Developed Examination*	*Rubric for Engineering Knowledge PO (a)*	*In-House Review and Pre-Board Exam*	Meeting and Consultation with the committee and Stakeholders	At least 30% of the students will get a score of 50% for problem set and 70% for plates and at least 50% of the students will get a score of 60% for final exam
b	An ability to design and conduct experiments, as well as to analyze and interpret data.	1. Conduct experiments in accordance with good and safe laboratory practice. 2. Operate equipment and instruments with ease 3. Analyze data, validate experimental values against theoretical values to determine possible experimental errors, and provide valid conclusions.	S-01 to 03, E-01 to E-10, L-01 to 20, A-01 to 02, P-01 to 13, P-16 to 17, P-19, P-21, P-23 to 24, P-28 to 29, P-30 to 31, P-34 to 41	*Laboratory Exercises*	*Rubric for Conduct of Experiments PO (b)*	*Group Work*	Meeting and Consultation with the committee and Stakeholders	At least 30% of the students will get a score of 70% for plate
c	An ability to design a system, component, or process to meet desired needs within realistic constraints, in accordance with standards.	1. Consideration of economic constraints 2. Constructability and sustainability in accordance with standards 3. Consideration of environmental contraints and health and safety issues	E-01 to E-10, L-07, L-10 to 11, L-16 to 20, A-01 to 02, P-01 to 04, P-08 to 09, P-15 to P-24, P-28 to P-31, P- 34 to 41	*Design Project*	*Rubric for Engineering Design of CE Related Structures PO (c)*		Meeting and Consultation with the committee and Stakeholders	At least 30% of the students will get a score of 50% for problem set and 70% for plates and at least 50% of the students will get a score of 60% for final exam
d	An ability to function in multidisciplinary and multi-cultural teams.	1. Take responsibility as an individual or as a team member fulfilling appropriate roles to assure team success. 2. Contribute useful inputs in relation to the team's objective. 3. Communicate freely to teammates, give and provide feedback and suggestion to improve team outputs.	E-07 to E-10, A-01 to 02, P-01 to 03, P-05 to 06, P-10 to 11,P-13, P-18, P-23 to 24,P-26 to 27,P-29 to 31,P-34 to 41	*Design Project*	*Rubric for Effective Reporting Via Multi-Disciplinary Areas PO (d)*	*Group Project*	Meeting and Consultation with the committee and Stakeholders	At least 30% of the students will get a score of 50% for problem set and 70% for plates and at least 50% of the students will get a score of 60% for final exam
e	An ability to identify, formulate and solve civil engineering problems.	1. Ability to identify an engineering problem (Statement of the Problem) 2. Ability to formulate engineering solutions to a given problem(Design/Research Methodology) 3. Ability to apply the best solution to an engineering problem(Summary and Conclusion)	M-01 to 09, S-01 to 03, E-01 to E-10, L-01 to 20, A-01 to 02, P-01 to 41	*Engineering Research Project*	*Rubric for Theory and Applications PO (e)*	*Group Project*	Meeting and Consultation with the committee and Stakeholders	At least 30% of the students will get a score of 50% for problem set and 70% for plates and at least 50% of the students will get a score of 60% for final exam
f	An ability to understand professional and ethical responsibility.	1. Understand the code of ethics relevant to the practice of the profession 2. Evaluate the ethical extent of a discipline-related problem 3. Apply relevant principles of ethics	L-05 to 20, P-01 to 41	*Case Study*	*Rubric for Ethics PO (f)*	*Group Project*	Meeting and Consultation with the committee and Stakeholders	At least 30% of the students will get a score of 50% for problem set and 70% for plates and at least 50% of the students will get a score of 60% for final
g	An ability to communicate effectively on civil engineering activities with the engineering community and with	1. Express ideas clearly in English language 2. Effectively communicate with diverse audiences 3. Effectively communicate in a variety of ways	M-01 to 09, S-01 to 03, E-01 to E-10, L-01 to 20, A-01 to 02, P-01 to 41	*Engineering Research Project*	*Rubric for Effective communication (g)*	*Oral and Written Report*	Meeting and Consultation with the committee and Stakeholders	At least 30% of the students will get a score of 50% for problem set and

h	An ability to understand the impact of civil engineering solutions in a global, economic, environmental and societal context.	1. Recognize the current effects of engineering solutions in a comprehensive context (e.g., new technologies, new regulations, environmental and energy issues, etc.) 2. Apply appropriate engineering solutions to address the effect of current critical issues.	P-14 to 15, P-20, P- 22 to 24,P-29 to 31,P-34 to 41	*Impact Study and Design Project*	*Rubric for Solutions with Multiple Constraints and Standards*	*Oral and Written Report*	Meeting and Consultation with the committee and Stakeholders	At least 30% of the students will get a score of 50% for problem set and 70% for plates and at least 50% of the students will get a score of 60% for final exam
i	An ability to Recognize the need for, and engage in life-long learning.	1. Learn independently 2. Acquire relevant knowledge from outside sources to solve problems 3. Recognize one's weaknesses or mistakes as learning opportunities	L-05 to 20, P-01 to 41	*On the Job Training*	*Rubric for Life Long Learning (i)*		Meeting and Consultation with the committee and Stakeholders	At least 30% of the students will get a score of 50% for problem set and 70% for plates and at least 50% of the students will get a score of 60% for final exam
j	An ability to know contemporary issues.	1. Ability to identify an engineering problem that will deal with pressing local and national issue. 2. Ability to formulate engineering solutions that will deal with pressing local and national issue. 3. Ability to apply the best solution that will deal with pressing national and local issue.	L-05 to 20, P-01 to 41	*Case Study*	*Rubric for Contemporary Issues PO (j)*	*Oral and Written Report*	Meeting and Consultation with the committee and Stakeholders	At least 30% of the students will get a score of 50% for problem set and 70% for plates and at least 50% of the students will get a score of 60% for final exam
k	An ability to use techniques, skills, and modern engineering tools necessary for civil engineering practice.	1. Apply appropriate techniques, skills, and modern tools to perform a discipline-specific engineering task. 2. Demonstrate skills in applying different techniques and modern tools to solve engineering problems. 3. Recognize the benefits and constraints of modern engineering tools.	M-01 to 09, S-01 to 03, E-01 to E-03, L-01 to 20, A-01 to 02, P-01 to 41	*Locally Developed Examination, Usage of Engineering Software*	*Rubric for Modern Tool usage PO (k)*	*In-House Review and Pre-Board Exam*	Meeting and Consultation with the committee and Stakeholders	At least 30% of the students will get a score of 50% for problem set and 70% for plates and at least 50% of the students will get a score of 60% for final exam
l	An ability to know and understand engineering and management principles as member and leader of a team, and to manage projects in a multidisciplinary environment.	1. Understands engineering and management principles 2. Applies engineering and management principles to an assigned task and in multidisciplinary environments 3. Manages assigned projects in multidisciplinary environments	L-16 to 20, P-14 to 24, P-28 to 31,P-34 to 41	*Case Study*	*Rubric for Project Management (l)*	*Oral and Written Report*	Meeting and Consultation with the committee and Stakeholders	At least 30% of the students will get a score of 50% for problem set and 70% for plates and at least 50% of the students will get a score of 60% for final exam
m	An ability to understand at least one specialized field of civil engineering practice.	1. Identify the effect of professional engineering solutions to society and the environment. 2. Select appropriate professional engineering solutions to address social and environmental problems. 3. Apply professional engineering solutions in solving societal issues towards sustainable development.	L-05 to 20, P-01 to 41	*Case Study*	*Rubric for Specialization Level (m)*	*Group Project*	Meeting and Consultation with the committee and Stakeholders	At least 30% of the students will get a score of 50% for problem set and 70% for plates and at least 50% of the students will get a score of 60% for final exam