

**Program Assessment and Evaluation Matrix and Plan (IQ-10)**

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	apply knowledge of mathematics and science to solve mechanical engineering problems.	1. Choose the appropriate mathematical, science, and engineering principles in solving problems in engineering.	E-05 to E-07; P-02 to P-18; P-24 to L-21	Locally developed examination	See template for direct assessment of program outcome Rubric (a)		Meeting and Consultation with the committee and Stakeholders	60% of the students get a rating of 70%
		2. Examine different approaches in solving problems in engineering and choose the most effective approach.	E-05 to E-07; P-02 to P-18; P-24 to L-21					
		3. Apply the appropriate mathematical, science, and engineering principles to arrive at a solution	E-05 to E-07; P-02 to P-18; P-24 to L-21					
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.	L-01; L-02;L-03;L-08; L-15; L-12;	Laboratory Exercises	Laboratory Exercises Rubric		Meeting and Consultation with the committee	60% of the students get a rating of 70%
		2. Operate equipment and instruments with ease	L-08; L-13; P-16; L-15;L-04;					
		3. Analyze data, validate experimental values against theoretical values to determine possible experimental errors, and provide valid conclusions.	L-01; L-02;L-03;L-08; L-13; L-04					
c	design a system, component or process to meet desired needs within realistic constraints, in accordance with local and international standards.	1. Consideration of economic constraints	P-06 to L-07; L-20; P-29 to L-14; L-21; L-18; L-21	Culminating Design Project	Culminating Design Project Rubric		Meeting and Consultation with the committee	60% of the students get a rating of 70%
		2. Manufacturability and sustainability in accordance with standards						
		3. Consideration of health and safety/environmental constraints						
d	An ability to work effectively in multi-disciplinary and multi-cultural teams.	1. Take responsibility as an individual or as a team member fulfilling appropriate roles to assure team success.	E-08, E-09, E-10, A-05, P-13 to P-26	Group Project	Rubric for Individual and Team Work		Meeting and Consultation with the committee	60% of the students get a rating of 70%
		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	An ability to recognize, formulate, and solve engineering problems.	1. Ability to identify an engineering problem (Statement of the Problem)	E-08; P-04; P-06; P-08; P-15; P-25; P-26; P-29; P-31; P-35	Engineering Research Project	Rubric for Company Study		Meeting and Consultation with the committee	60% of the students get a rating of 70%
		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)						
f	A recognition of professional, social, and ethical responsibility.	1. Understand the code of ethics relevant to the practice of the profession	E-10; P-19; P-37; P-38; P-39	Case Problem	Culminating Design Project	Rubric for Ethics	Meeting and Consultation with the committee	60% of the students get a rating of 70%
		2. Evaluate the ethical extent of a discipline-related problem						
		3. Apply relevant principles of ethics						
g	communicate effectively.	1. Express ideas clearly in English language	P-03; L-20; L-21; P-39; L-18; L-22	Culminating Design Project	Oral and Written Report	Rubric for Effective communication	Meeting and Consultation with the committee	60% of the students get a rating of 70%
		2. Effectively communicate with diverse audiences						
		3. Effectively communicate in a variety of ways						

<b>h</b>	understand the impact of mechanical 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.)	E-10; P-03; P-12; P-13;P-19; L-20; P-34; L-21; L-18; L-22	Culminating Design Project	Rubric for Solutions with Multiple Constraints and Standards		Meeting and Consultation with the committee	60% of the students get a rating of 70%
		2. Apply appropriate engineering solutions to address the effect of current critical issues.						
<b>i</b>	recognize the need for, and engage in life-long learning .	1. Learn independently	P-01; P-03 to L-22	On the job training	Rubric for Life Long Learning		Meeting and Consultation with the committee	60% of the students get a rating of 70%
		2. Acquire relevant knowledge from outside sources to solve problems						
		3. Recognize one's weaknesses or mistakes as learning opportunities						
<b>j</b>	know contemporary issues	1. Apply appropriate techniques, skills, and modern tools to perform a discipline-specific engineering task.	E-08; E-09;E-10; P-14;P-19; P-25;L-20; L-21; L-18; L-22	Engineering Software based tools applied to design course	Rubric for Modern Tool Usage		Meeting and Consultation with the committee	60% of the students get a rating of 70%
		2. Demonstrate skills in applying different techniques and modern tools to solve engineering problems.						
		3. Recognize the benefits and constraints of modern engineering tools.						
<b>k</b>	use techniques, skills and modern engineering tools necessary for Mechanical Engineering practice.	1. Ability to identify an engineering problem (Statement of the Problem)	E-03; E-04; L-20; L-21; L-18, L-22	Group Project	Rubric for Company Study		Meeting and Consultation with the committee	60% of the students get a rating of 70%
		2. Ability to formulate engineering solutions to a given problem(Analysis and Formulation of Alternative Courses of Action)						
		3. Ability to apply the best solution to an engineering problem(Conclusion and Recommendations)						
<b>l</b>	Demonstrate knowledge and understanding of engineering and management principles that address national and local issues.	1. Identify the effect of professional engineering solutions to society and the environment.	E-09; P-18; P-34; P-38; L-18; L-22	Locally developed examination	Rubric for Environment and Sustainability		Meeting and Consultation with the committee	60% of the students get a rating of 70%
		2. Select appropriate professional engineering solutions to address social and environmental problems.						
		3. Apply professional engineering solutions in solving societal issues towards sustainable development.						
<b>m</b>	Integrate creative, effective, and implement Christian-like concepts in managing projects.	1. Understands engineering and management principles	E-09;L-04; L-06; P37; P-38; L-18; L-22	Group Project	Rubric for Project Management		Meeting and Consultation with the committee	60% of the students get a rating of 70%
		2. Applies engineering and management principles to an assigned task and in multidisciplinary environments						
		3. Manages assigned projects in multidisciplinary environments						