

## **Assessment of Program Outcomes: PO-Culminating Model**

### **Content**

- ✓ BAETE Recommended PO
- ✓ PO-Culminating Model
- ✓ Sample courses of Assessment vs CO-PO-WP-EA Mapping
- ✓ POs' Assessment for one graduating cohort: 128 students
- ✓ Examples
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## Program Outcomes (PO)

Complex Engineering Problem Solving (WP)

## Knowledge Profile (WK)

PO1 Engineering Knowledge (WK1-4)  
PO2 Problem Analysis (WK1-4)  
PO3 Design (WK5)  
PO4 Investigation (WK8)  
PO5 Modern Tools (WK6)

Analysis of problems & synthesis of solutions

PO6 Engineers & Society (WK7)  
PO7 Environment & Sustainability (WK7)  
PO8 Ethics (WK7)

Responsibilities

Complex Engineering Activities (EA)

PO9 Teamwork  
PO10 Communication  
PO11 Project Management & Finance  
PO12 Lifelong Learning

Required in workplace

## R-PO Culminating Model

R-PO-Culminating Model

No	Program Outcomes	Course Type	Course Title	PO	Complex Engineering Problem Solving												Complex Engineering Activities																	
					Depth of knowledge required												Depth of knowledge required																	
					WP1												WP2																	
					Engineering knowledge	Problem analysis	Design/development of solutions	Investigations	Modern tool usage	The engineers and society	Environment and sustainability	Ethics	Individual work and teamwork	Communication	Project management and finance	Lifelong learning	Theory based natural sciences	Conceptually-based mathematics	Theory-based engineering fundamentals	Four-level specialist knowledge for practice	Engineering design	Engineering practice (technology)	Complexification of engineering in society	Research literature	Range of conflicting requirements	Depth of analysis required	Familiarity of issues	Extent of applicable codes	Extent of multi-level involvement and level of conflicting requirements	Interdependence	Range of resources	Level of interaction	Interaction	Consequences to Society and Environment
C	C	C	P	P	A	A	A	P	A	C	C	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W		
Educational Domain					EP	EP	EP	EP	EA	A	A	A	P	A	EA	C	C	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
Complex Problems (EP),Activities (EA)					EP	EP	EP	EP	EA	A	A	A	P	A	EA	C	C	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
ENGINEERING COURSES																																		
1	CE-206	1.5	C	Practical Surveying (Two weeks Field Work)	5.8.9																													
2	CE-411	4.0	C	Structural Analysis & Design-III	1.2	V	V																											
3	CE-415	2.0	C	Prestressed Concrete	1.3.3.12	V	V																											
4	CE-417	2.0	C	Design of Steel Structures	1.3.12	V	V																											
5	CE-412	1.5	C	Structural Analysis & Design (Seminar)	1.3.5.9.10	V	V	V																										
6	CE-418	1.5	C	Design of Steel Structures (Seminar)	1.3.5.9.10	V	V	V																										
7	CE-451	3.0	C	Environmental Engineering-II	1.2.3.7	V	V																											
8	CE-461	3.0	C	Irrigation & Flood Management	1.2	V	V																											
9	CE-441	3.0	C	Transportation Engineering-II	1.2	V	V																											
10	CE-403	3.0	C	Project Planning & Management	1.8.11	V																												
11	CE-431	2.0	O	Geotechnical Engineering - III	1.3.12	V	V																											
12	CE-434	1.5	O	Geotechnical Engineering (Seminar)	8	V	V																											
13	CE-445	2.0	O	Transportation Engineering-IV	1.2.12	V	V																											
14	CE-471	2.0	O	Hydraulic Structures	1.2.12	V	V																											
15	CE-457	2.0	O	Environmental Engineering - V	1.2.7.12	V	V																											
16	CE-494	1.5	O	Environmental Engineering (Seminar)	3	V	V																											
17	CE-472	1.5	O	Hydraulic Structures (Seminar)	1.3.12	V	V																											
18	CE-400	1.5	C	Project & Thesis	2.4.5.7.8.10	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	
					14	11	7	1	4	1	3	2	3	3	1	9																		

## PO Culminating Model

CE-206	1.5	C	Practical Surveying (Two weeks Field Work)
CE-411	4.0	C	Structural Analysis & Design-III
CE-415	2.0	C	Prestressed Concrete
CE-417	2.0	C	Design of Steel Structures
CE-412	1.5	C	Structural Analysis & Design (Sessional)
CE-418	1.5	C	Design of Steel Structures (Sessional)
CE-451	3.0	C	Environmental Engineering-II
CE-461	3.0	C	Irrigation & Flood Management
CE-441	3.0	C	Transportation Engineering-II
CE-403	3.0	C	Project Planning & Management
CE-431	2.0	O	Geotechnical Engineering – III
CE-434	1.5	O	Geotechnical Engineering (Sessional)
CE-445	2.0	O	Transportation Engineering-IV
CE-471	2.0	O	Hydraulic Structures
CE-457	2.0	O	Environmental Engineering – V
CE-454	1.5	O	Environmental Engineering (Sessional)
CE-472	1.5	O	Hydraulic Structures (Sessional)
CE-400	1.5	C	Project & Thesis

## CE-206: Practical Surveying

Assessment vs CO/WA (PO)/ED/WP/EA Mapping								
i. Course Information								
Course Code:CE-206 (Practical Surveying: Two-week field work)								
Knowledge Profile(s): WK1,WK2 and WK6								
Course Outcomes (CO)	Statement	PO/WA	Performance Indicator					
CO1	<b>Employ</b> appropriate survey instruments and quantitative techniques in preparing i) longitudinal and transverse profiles of a route and ii) contour map and drainage layout of an irrigation area	2	Able to <b>prepare</b> longitudinal and transverse profiles of a route and contour map and drainage layout of an irrigation area					
CO2	<b>Employ</b> appropriate instruments or measurement techniques in survey field works	5	Able to <b>demonstrate</b> the use of modern survey tools in survey field works					
CO3	<b>Demonstrate</b> behaviour consistent with academic integrity expectations	8	<b>Able to demonstrate</b> behaviour consistent with academic integrity expectations					
CO4	<b>Work effectively</b> as an individual and in a team in survey field works	9	<b>Able to work effectively</b> as an individual and in a team in survey field works					
ii. Assessment vs CO/PO/ED/WP/EA Mapping								
Assessment Method	Question (Q) / Task (T) Number	CO	PO/WA	Educational Domains (ED)			WP	EA
				C	P	A		
Field Test	T1	1	2	3	3		1, 2, 6	1, 2
	T2	1	2	3	3			
	T3	2	5	3				
	T4	2	5	3				
	T5	3	8			3		
	T6	3	8			3		
Project	T1	4	9		3	3	1	1
	T2	4	9		3	3		
	T3	4	9		3	3		
Quiz	Q1	1	2	3				
	Q2	2	5	3				
	Q3	2	5	3				
	Q4	2	2	3				

## CE-411:Structural Analysis-III

### Assessment vs CO/WA (PO)/ED/WP/EA Mapping

#### i. Course Information

Course Code:CE-411 (Structural Analysis & Design-III)				Credit:4.0
Knowledge Profile(s): WK1,WK2, WK3, WK4				
Course Outcomes (CO)	Statement	PO/WA	Performance Indicators of PO/WA	
CO1	<b>Explain</b> the different structural frames used in tall building structures considering seismic and wind effects	1	Able to <b>explain</b> different structural frames used in tall building structures	
CO2	<b>Describe</b> the methods for analysis of statically indeterminate structures, and their principles	1	Able to <b>explain</b> methods for analysis of statically indeterminate structures, and their principles	
CO3	<b>Determine</b> the response components of the statically indeterminate structures (i.e., beams, frames and trusses, etc) using the method of consistent deformation, stiffness method, slope deflection method, moment distribution method, and column analogy method	2	Able to <b>apply</b> specific Civil Engineering concept to determine the responses of indeterminate structures such as beams, frames and trusses	
CO4	<b>Draw</b> the influence lines for statically indeterminate girders and frames, and describe the loading patterns for critical force components,	2		

#### ii. Assessment vs CO/PO/ED/WP/EA Mapping

Assessment Method	CO	PO/WA	Educational Domains (ED)			WP	EA
			C	P	A		
Class Tests	1	1	2				
	2	1	2				
	3	2	4				
Final Exam	4	2	4				

## CE-417:Design of Steel Structures

### Assessment vs CO/WA (PO)/ED/WP/EA Mapping

#### i. Course Information

Course Code:CE-417 (Design of Steel Structures)				Credit:2.0
Knowledge Profile(s): WK1,WK2, WK3, WK4				
Course Outcomes (CO)	Statement	PO/WA	Performance Indicators of PO/WA	
CO1	Describe the fundamentals of structural steel design	1	Able to <b>explain</b> fundamental concepts of structural steel design	
CO2	Analyze structural steel members and connections subjected to tension, compression, flexural actions	2,12	Able to <b>employ</b> specific civil engineering concept to determine the design forces of steel members and connections	
CO3	Design of structural steel members and connections	2,12	Able to <b>apply</b> specific civil engineering concept to design steel members and connections	

#### ii. Assessment vs CO/PO/ED/WP/EA Mapping

Assessment Method	CO	PO/WA	Educational Domains (ED)			WP	EA
			C	P	A		
Class Test	1	1	2				
	2	2,12	4				
Final Exam	3	2,12	4				

# CE-400: Thesis/Project

## Assessment vs CO/WA (PO)/ED/WP/EA Mapping

### i. Course Information

Course Code:CE-400 (Project and Thesis; Two-term project work)			
Knowledge Profile(s): WK1,WK2, WK3, WK4, WK6 and WK8			
Course Outcomes (CO)	Statement	PO / WA	Performance Indicators of PO/WA
C01	Apply the basic and specialist engineering knowledge in solving engineering problems	2	Able to <b>employ</b> quantitative analysis and tools in <b>real life</b> problem solving
C02	Conduct literature survey to <b>design</b> necessary process in solving a problem including approximation and assumptions and make valid conclusions	4	Able to <b>plan</b> investigation and / or research methodology for real life problem solving
C03	Employ appropriate professional software/ tools in solving complex engineering problems	5	Able to <b>choose</b> and <b>apply</b> appropriate professional software/ tools in solving real life problems
C04	Explain the relationship between engineering system and environment	7	Able to <b>explain</b> the relationship between engineering system and environment.
C05	Demonstrate behaviour consistent with academic integrity expectations	8	Able to <b>demonstrate</b> behaviour consistent with academic integrity expectations
C06	Communicate effectively about complex engineering activities with the engineering community	10	Able to <b>comprehend</b> and <b>write</b> effective reports, <b>design</b> documentation, <b>make</b> effective presentations and <b>give</b> and <b>receive</b> clear instructions.

### ii. Assessment vs CO/PO/ED/WP/EA Mapping

Assessment Method	CO	PO/WA	Educational Domains (ED)			WP	EA
			C	P	A		
Report Submission	1	2	4			1, 2, 3,5,7	1, 2 3
	2	4		3			
	3	5		3			
	4	7	3				
	5	8			5		
Report Submission, Viva-Voce and Final Presentation	6	10			3		

## Assessment of PO-1: Engineering Knowledge (WK1-4)

PO-1: Engineering knowledge: Apply the knowledge of mathematics, science engineering fundamentals and an engineering specialization to the solution of complex engineering problems														
Student No	CE-411	CE-415	CE-417	CE-411	CE-415	CE-411	CE-415	CE-411	CE-415	CE-411	CE-415	CE-417	CE-411	
Course Type	C	C	C	C	C	C	C	C	C	C	C	C	C	
% Attainment	%	%	%	%	%	%	%	%	%	%	%	%	%	
1401001	82.64	87.50	85.00	71.11	65.56	80.00	50.0	58.33	44.44	90		69.46	Moderately Achieved	
1401002	85.71	91.67	82.50	80.00	70.00	32.00	58.3	0.00	100.00		60.00	64.02	Moderately Achieved	
1401003	82.64	70.83	17.50	72.59	41.11	42.00	50.0	0.00	88.89		75	58.86	Poorly Achieved	
1401004	85.71	83.33	67.50	78.52	73.33	72.00	58.3	91.67	77.78	75.71		76.19	Moderately Achieved	
1401005	88.77	75.00	60.00	59.26	68.89	60.00	50.0	58.33	88.89		50.00	65.91	Moderately Achieved	
1401006	67.34	58.33	65.00	51.85	48.89	36.00	66.7	50.00	N/A	65		52.91	Poorly Achieved	
1401007	70.40	83.33	70.00	50.37	71.11	80.00	58.3	58.33	100.00		84.29	70.62	Moderately Achieved	
1401008	79.58	70.17	77.50	68.15	58.89	48.00	66.7	83.33	77.78		30	68.91	Moderately Achieved	
1401009	85.71	90.00	77.50	72.59	73.33	80.00	58.3	91.67	100.00		80.00	80.91	Achieved	
1401010	82.64	90.00	65.00	53.33	62.22	44.00	75.0	0.00	77.78		50	62.00	Moderately Achieved	
1401011	73.66	66.67	85.00	65.70	74.44	72.00	58.3	58.33	100.00		83	71.49	Moderately Achieved	
1401012	79.58	95.67	72.50	37.78	51.11	40.00	58.3	58.33	77.78		38.57	62.57	Moderately Achieved	
1401014	88.77	90.00	75.00	84.44	76.67	60.00	50.0	75.00	88.89	70		75.88	Moderately Achieved	
1401015	67.34	75.00	62.50	50.37	58.89	40.00	0.0	0.00	88.89	60		50.30	Poorly Achieved	
1401017	67.34	70.83	70.00	56.30	62.22	44.00	83.3	75.00	66.67	80		69.57	Moderately Achieved	
1401018	30A	83.33	82.50	84.44	71.11	32.00	58.3	91.67	88.89	70		68.23	Moderately Achieved	
1401019	30A	64.86	17.50	60.74	63.33	32.00	66.7	83.33	77.78			60.91	Moderately Achieved	
1401020	88.77	90.00	87.50	65.19	65.56	60.00	41.7	41.67	88.89		75	0.00	70.42	Moderately Achieved
1401021	52.04	83.33	52.50	56.30	65.56	32.00	75.0	58.33	100.00		34.29	58.93	Poorly Achieved	
1401022	64.28	58.33	85.00	80.00	70.00	68.00	41.7	41.67	88.89		71.43	64.93	Moderately Achieved	
1401023	70.40	83.33	42.50	77.78	64.44	16.00	66.7	91.67	100.00		80.00	73.38	Moderately Achieved	
1401024	70.40	83.33	62.50	72.59	63.33	72.00	50.0	50.00	77.78	45		62.69	Moderately Achieved	
1401025	82.64	70.83	17.50	59.26	64.44	56.00	50.0	83.33	88.89		50.00	66.29	Moderately Achieved	
1401026	72.24	64.86	65.00	60.74	65.56	76.00	58.3	0.00	88.89	85		63.66	Moderately Achieved	
1401027	88.77	87.50	50.00	68.15	64.44	60.00	58.3	88.67	55.56			60.80	Moderately Achieved	
1401028	85.71	75.00	67.00	80.74	66.67	60.00	33.3	25.00	88.89	65		64.51	Moderately Achieved	
1401029	85.71	83.33	70.00	56.30	66.67	60.00	66.7	83.33	0.00			57.20	Poorly Achieved	
1401030	76.52	66.67	40.00	59.26	61.11	24.00	66.7	58.33	77.78		67	59.73	Poorly Achieved	
1401031	76.52	91.67	50.00	53.33	50.00	44.00	50.0	41.67	88.89	80		62.61	Moderately Achieved	
1401032	61.22	83.33	80.00	50.37	63.33	32.00	58.3	58.33	100.00	70		63.48	Moderately Achieved	
1401033	85.71	90.00	60.00	50.37	63.33	80.00	75.0	50.00	100.00		75	72.94	Moderately Achieved	
1401034	82.64	91.67	80.00	82.86	68.89	68.00	66.7	91.67	88.89	82.86		80.42	Achieved	
1401035	76.52	90.00	77.50	72.59	67.78	56.00	66.7	0.00	100.00		74.29	68.13	Moderately Achieved	
1401036	85.71	91.67	75.00	72.59	74.44	36.00	75.0	81.67	77.78		54.29	73.89	Moderately Achieved	
1401037	73.66	83.33	67.50	56.30	62.22	56.00	63.3	81.67	77.78		83	70.46	Moderately Achieved	
1401038	N/A	N/A	N/A	59.26	68.89	0.00	58.3	58.33	N/A			24.48	Not Achieved	
1401039	N/A	91.67	25.00	51.85	65.56	60.00	66.7	83.33	77.78		60	58.19	Poorly Achieved	
1401040	30A	N/A	N/A	66.67	0.00	48.00	50.0	75.00	77.78			35.91	Not Achieved	
1401041	26.73	70.17	70.00	66.67	67.78	56.00	50.0	66.67	88.89		60	67.31	Moderately Achieved	
1401042	73.66	95.67	75.00	53.33	66.67	56.00	66.7	83.33	77.78		51.43	63.76	Moderately Achieved	
1401043	88.77	90.00	85.00	56.30	71.11	56.00	58.3	0.00	100.00		75	68.05	Moderately Achieved	
1401044	34.73	66.67	32.50	59.26	66.67	48.00	58.3	58.33	100.00	N/A		52.65	Poorly Achieved	

PO attainment <40%: Not achieved  
 40>PO attainment <60%: Poorly achieved  
 60>PO attainment <80%: Moderately achieved  
 PO attainment >80%: Achieved



## Assessment of PO-2 :Problem Analysis (WK1-4)

PO-2:Problem analysis: Identify, formulate, research and analyze complex engineering problems and reach substantiated conclusions using the principles of mathematics,the natural sciences and the engineering sciences.

Student No	CE-411	CE-415	CE-417	CE-441	CE-451	CE-461	CE-469	CE-481	CE-445	CE-457	CE-471	Weighted Average of PO Attainment	Remarks
Course Type	C	C	C	C	C	C	C	O	O	O	O		
% Attainment	%	%	%	%	%	%	%	%	%	%	%		
1401001	89.64	100.00	50.0	90.00	80.00	100.00	67.50	90.00				75.15	Moderately Achieved
1401002	77.14	88.24	56.7	100.00	0.00	86.67			60.00			33.48	Not Achieved
1401003	45.00	40.00	10.0	90.00	0.00	80.00				75.00		24.29	Not Achieved
1401004	68.57	76.47	23.3	90.00	0.00	80.00	74.50		75.71			66.83	Moderately Achieved
1401005	42.85	94.12	40.0	100.00	80.00	80.00	70.00				50.00	69.78	Moderately Achieved
1401006	37.86	70.59	46.7	0.00	40.00	78A		65.00				17.87	Not Achieved
1401007	NA	70.59	40.0	90.00	60.00	86.67	75.00		64.29			66.90	Moderately Achieved
1401008	58.92	40.00	26.7	90.00	0.00	73.33	65.00	30.00				55.28	Poorly Achieved
1401009	60.00	76.47	56.7	100.00	80.00	80.00	71.50		80.00			73.83	Moderately Achieved
1401010	31.07	41.18	70.0	90.00	0.00	80.00	58.00			50.00		44.87	Poorly Achieved
1401011	72.85	94.12	50.0	100.00	50.00	86.67	72.50			83.00		74.58	Moderately Achieved
1401012	72.85	70.59	46.7	100.00	40.00	86.67	68.50			38.57		66.77	Moderately Achieved
1401014	77.14	100.00	70.0	90.00	0.00	80.00	85.00	70.00				77.50	Moderately Achieved
1401015	49.28	82.35	33.3	90.00	0.00	73.33		60.00				27.74	Not Achieved
1401017	40.71	41.18	53.3	90.00	50.00	80.00		80.00				31.09	Not Achieved
1401018	47.14	88.24	73.3	90.00	60.00	86.67	77.50	70.00				75.56	Moderately Achieved
1401019	38.57	100.00	60.0	100.00	0.00	40.00	70.00				63.86	63.87	Moderately Achieved
1401020	84.64	100.00	33.3	90.00	70.00	100.00	72.50			75.00	0.00	75.75	Moderately Achieved
1401021	32.50	88.24	43.3	75.00	10.00	86.67	57.50				34.29	54.47	Poorly Achieved
1401022	NA	70.59	56.7	100.00	10.00	86.67	79.00		71.43			67.74	Moderately Achieved
1401023	74.99	94.12	66.7	100.00	0.00	86.67	77.50		80.00			74.64	Moderately Achieved
1401024	75.71	41.18	30.0	100.00	0.00	86.67		45.00				24.18	Not Achieved
1401025	50.35	82.35	56.7	100.00	30.00	80.00	65.00		50.00			63.60	Moderately Achieved
1401026	26.78	40.00	26.7	30.00	80.00	80.00	66.00	85.00				59.32	Poorly Achieved
1401027	38.57	94.12	33.3	90.00	0.00	86.67	67.50			8.57		57.41	Poorly Achieved
1401028	49.28	70.59	53.3	90.00	40.00	80.00	72.00	65.00				68.01	Moderately Achieved
1401029	31.07	40.00	36.7	90.00	60.00	73.33						23.65	Not Achieved

PO attainment <40%: Not achieved  
 40>PO attainment <60%: Poorly achieved  
 60>PO attainment <80%: Moderately achieved  
 PO attainment >80%: Achieved

## Assessment of PO-3 : Design and Development of Solutions

PO-3:Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for public health and safety and of cultural, societal and environmental concerns

Student No	CE-415	CE-417	CE-412	CE-418	CE-451	CE-434	CE-454	CE-446	CE-472	Weighted Average of PO Attainment	Remarks
Course Type	C	C	C	C	C	O	O	O	O		
% Attainment	%	%	%	%	%	%	%	%	%		
1401001	48.66	81.3	71.11	65.56	95.65	86.67				61.73	Moderately Achieved
1401002	16.22	75.0	78.83	70.00	86.96			72.22		56.31	Poorly Achieved
1401003	24.33	NA	71.81	61.11	30.43		40			34.66	Not Achieved
1401004	40.55	NA	79.30	73.33	78.26			80.00		50.97	Poorly Achieved
1401005	72.99	68.8	65.50	68.89	69.57				72.00	58.39	Poorly Achieved
1401006	24.33	68.8	58.48	68.89	69.57	68.89				51.34	Poorly Achieved
1401007	72.99	62.5	56.61	71.11	73.91			73.33		57.79	Poorly Achieved
1401008	8.11	81.3	76.73	58.89	82.61	74.44				52.91	Poorly Achieved
1401009	16.22	NA	71.81	73.33	95.65			77.78		48.96	Poorly Achieved
1401010	0.00	81.3	58.01	62.22	34.78		65			43.62	Poorly Achieved
1401011	0.00	81.3	68.77	74.44	82.61		45			51.18	Poorly Achieved
1401012	0.00	NA	63.63	51.11	73.91				67.00	36.81	Not Achieved
1401014	81.10	37.5	84.44	76.67	82.61	80.00				62.28	Moderately Achieved
1401015	0.00	75.0	56.61	58.89	0.00	72.22				38.59	Not Achieved
1401017	24.33	68.8	59.42	62.22	52.17	74.44				48.43	Poorly Achieved
1401018	56.77	81.3	84.44	71.11	86.96	80.00				63.80	Moderately Achieved
1401019	64.88	NA	60.35	63.33	78.26				71.00	48.14	Poorly Achieved
1401020	48.66	75.0	65.96	65.56	86.96		50			54.92	Poorly Achieved
1401021	0.00	81.3	59.42	65.56	91.30				71.00	52.09	Poorly Achieved
1401022	24.33	68.8	78.83	70.00	82.61			74.44		56.28	Poorly Achieved
1401023	64.88	87.5	79.33	64.44	86.96			73.33		62.53	Moderately Achieved
1401024	0.00	75.0	69.47	63.33	78.26	68.89				50.19	Poorly Achieved
1401025	48.66	68.8	65.50	64.44	86.96			67.78		55.96	Poorly Achieved
1401026	64.88	87.5	68.54	65.56	0.00	72.22				50.91	Poorly Achieved
1401027	32.44	62.5	75.56	64.44	86.96				69.00	54.64	Poorly Achieved
1401028	72.99	NA	79.77	66.67	13.04	72.22				44.56	Poorly Achieved
1401029	16.22	81.3	62.92	66.67	95.65	77.78				56.06	Poorly Achieved
1401030	40.55	81.3	65.50	61.11	78.26		40			51.33	Poorly Achieved

PO attainment <40%: Not achieved  
 40>PO attainment <60%: Poorly achieved  
 60>PO attainment <80%: Moderately achieved  
 PO attainment >80%: Achieved

## Assessment of PO-4 :Investigation

**PO-4:Investigation:** Conduct investigations of complex problems, considering experimental design, data analysis and interpretation and information synthesis to provide

PO attainment <40%: Not achieved  
 40>PO attainment <60%: Poorly achieved  
 60>PO attainment <80%: Moderately achieved  
 PO attainment >80%: Achieved

1		Weighted Average of PO Attainment	Remarks
Student No	CE-400		
Course Type	C		
% Attainment	%		
1401001	72.5	72.50	Moderately Achieved
1401002		#DIV/0!	#DIV/0!
1401003		#DIV/0!	#DIV/0!
1401004	77	77.00	Moderately Achieved
1401005	70	70.00	Moderately Achieved
1401006		#DIV/0!	#DIV/0!
1401007	73	73.00	Moderately Achieved
1401008	70	70.00	Moderately Achieved
1401009	72	72.00	Moderately Achieved
1401010	32.5	32.50	Not Achieved
1401011	75	75.00	Moderately Achieved
1401012	65	65.00	Moderately Achieved
1401014	82.5	82.50	Achieved
1401015		#DIV/0!	#DIV/0!
1401017		#DIV/0!	#DIV/0!
1401018	73.5	73.50	Moderately Achieved

## Assessment of PO-5 :Modern Tools

**PO-5:Modern tool usage:** Create, select and apply appropriate techniques, resources and modern engineering and IT tools, including prediction and modeling, to complex engineering activities with an understanding of their limitations.

PO attainment <40%: Not achieved  
 40>PO attainment <60%: Poorly achieved  
 60>PO attainment <80%: Moderately achieved  
 PO attainment >80%: Achieved

1		2		4		5		Weighted Average of PO Attainment	Remarks
Student No	CE-206	CE-412	CE-418	CE-400					
Course Type	C	C	C	O					
% Attainment	%	%	%	%					
1401001	49.17	71.11	65.56	62			61.96	Moderately Achieved	
1401002	51.67	77.78	70.00				66.48	Moderately Achieved	
1401003	47.50	71.11	61.11				59.91	Poorly Achieved	
1401004	48.33	80.00	73.33		45		61.67	Moderately Achieved	
1401005	47.50	71.11	68.89		67.5		63.75	Moderately Achieved	
1401006	52.50	64.44	68.89				61.94	Moderately Achieved	
1401007	52.50	62.22	71.11				61.94	Moderately Achieved	
1401008	48.33	84.44	58.89				63.89	Moderately Achieved	
1401009	50.00	71.11	73.33		60		63.61	Moderately Achieved	
1401010	45.00	62.22	62.22				56.48	Poorly Achieved	
1401011	51.67	73.33	74.44				66.48	Moderately Achieved	
1401012	54.17	68.89	51.11		71		61.29	Moderately Achieved	
1401014	66.67	84.44	76.67				75.93	Moderately Achieved	
1401015	60.83	62.22	58.89				60.65	Moderately Achieved	
1401017	52.50	62.22	62.22				58.98	Poorly Achieved	
1401018	55.83	84.44	71.11				70.46	Moderately Achieved	
1401019	55.00	60.00	63.33		72.5		62.71	Moderately Achieved	
1401020	60.00	66.67	65.56				64.07	Moderately Achieved	
1401021	54.17	62.22	65.56				60.65	Moderately Achieved	
1401022	63.33	77.78	70.00				70.37	Moderately Achieved	
1401023	58.33	81.11	64.44				67.96	Moderately Achieved	
1401024	66.67	66.67	63.33				65.56	Moderately Achieved	

## Assessment of PO-6 :Engineers and Society

**PO-6:The engineer and society:** Apply reasoning informed by context to assess societal, health, safety, legal and cultural issues and the consequences relevant to professional engineering practice.

1		Weighted Average of PO Attainment
Student No	CE-403	
Course Type	C	
% Attainment	%	
1401001	70.00	56.00
1401002	80.00	64.00
1401003	0.00	0.00
1401004	30.00	24.00
1401005	80.00	64.00
1401006	62.50	50.00
1401007	37.50	30.00
1401008	0.00	0.00
1401009	80.00	64.00
1401010	75.00	60.00
1401011	70.00	56.00
1401012	50.00	40.00
1401014	87.50	70.00
1401015	90.00	72.00
1401017	0.00	0.00
1401018	80.00	64.00
1401019	60.00	48.00
1401020	80.00	64.00

PO attainment <40%: Not achieved  
 40>PO attainment <60%: Poorly achieved  
 60>PO attainment <80%: Moderately achieved  
 PO attainment >80%: Achieved

## Assessment of PO-7 :Environment and Sustainability

**PO-7:Environment and sustainability:** Understand the impact of professional solutions in societal and environmental contexts and demonstrate the knowledge of sustainable development.

1		2		Weighted Average of PO Attainment
Student No	CE-451	CE-457	CE-400	
Course Type	C	O		
% Attainment	%	%	%	
1401001	0.00	NA	67.5	40.50
1401002	0.00	NA		0.00
1401003	0.00	72		28.80
1401004	50.00	NA	74.5	64.70
1401005	75.00	NA	70	72.00
1401006	25.00	NA		10.00
1401007	0.00	NA	75	45.00
1401008	0.00	NA	65	39.00
1401009	0.00	NA	71.5	42.90
1401010	50.00	78	38	54.00
1401011	0.00	72	72.5	72.30
1401012	33.33	NA	68.5	54.43
1401014	0.00	NA	85	51.00
1401015	41.67	NA		16.67
1401017	0.00	NA		0.00
1401018	0.00	NA	77.5	46.50
1401019	0.00	NA	70	42.00
1401020	83.33	78	72.5	76.83

PO attainment <40%: Not achieved  
 40>PO attainment <60%: Poorly achieved  
 60>PO attainment <80%: Moderately achieved  
 PO attainment >80%: Achieved



## Assessment of PO-8 : Ethics

PO-8:Ethics: Apply ethical principles and commit to the professional eth and the norms of the engineering practice.

	1	2	Weighted Average of PO Attainment
Student No	CE-206	CE-400	
Course Type	C	C	
% Attainment	%	%	
1401001	49.17	76.5	65.57
1401002	51.67		20.67
1401003	47.50		19.00
1401004	47.50	82	68.20
1401005	47.50	70	61.00
1401006	52.50		21.00
1401007	52.50	71	63.60
1401008	48.33	65	58.33
1401009	50.00	85.5	71.30
1401010	45.00	37	40.20
1401011	51.67	69	62.07
1401012	54.17	65	60.67
1401014	66.67	83.5	76.77
1401015	60.83		24.33
1401017	52.50		21.00
1401018	55.83	72	65.53
1401019	55.00	65	61.00
1401020	60.00	69	65.40

PO attainment <40%: Not achieved  
 40>PO attainment <60%: Poorly achieved  
 60>PO attainment <80%: Moderately achieved  
 PO attainment >80%: Achieved

## Assessment of PO-9 : Individual and Team work

PO-9:Individual work and teamwork: Function effectively as an individual and as a member or leader of diverse teams and in multidisciplinary settings.

	1	2	3	Weighted Average of PO Attainment	Remarks
Student No	CE-206	CE-412	CE-418		
Course Type	C	C	C		
% Attainment	%	%	%		
1401001	49.17	61.33	54.24	54.91	Poorly Achieved
1401002	51.67	65.33	55.15	57.38	Poorly Achieved
1401003	47.50	62.67	53.64	54.60	Poorly Achieved
1401004	47.50	62.67	57.58	55.91	Poorly Achieved
1401005	47.50	50.67	55.15	51.11	Poorly Achieved
1401006	52.50	48.00	56.36	52.29	Poorly Achieved
1401007	52.50	48.00	54.24	51.58	Poorly Achieved
1401008	48.33	50.67	53.03	50.68	Poorly Achieved
1401009	50.00	62.67	54.24	55.64	Poorly Achieved
1401010	45.00	50.67	53.64	49.77	Poorly Achieved
1401011	51.67	53.33	54.24	53.08	Poorly Achieved
1401012	54.17	50.67	44.55	49.79	Poorly Achieved
1401014	66.67	65.33	57.88	63.29	Moderately Achieved
1401015	60.83	48.00	53.64	54.16	Poorly Achieved
1401017	52.50	53.33	53.64	53.16	Poorly Achieved
1401018	55.83	65.33	54.24	58.47	Poorly Achieved
1401019	55.00	58.67	54.24	55.97	Poorly Achieved
1401020	60.00	58.67	55.76	58.14	Poorly Achieved

PO attainment <40%: Not achieved  
 40>PO attainment <60%: Poorly achieved  
 60>PO attainment <80%: Moderately achieved  
 PO attainment >80%: Achieved

## Assessment of PO-10 :Communication

**PO-10:Communication:** Communicate effectively about complex engineering activities with the engineering community and with society at large. Be able to comprehend and write effective reports, design documentation, make effective presentations and give and receive clear instructions.

PO attainment <40%: Not achieved  
 40>PO attainment <60%: Poorly achieved  
 60>PO attainment <80%: Moderately achieved  
 PO attainment >80%: Achieved

	1	2	3	Weighted Average of PO Attainment	Remarks
Student No	CE-412	CE-418	CE-400		
Course Type	C	C	C		
% Attainment	%	%	%		
1401001	73.33	64.44	68.26	68.51	Achieved
1401002	83.11	71.11		30.84	Not Achieved
1401003	73.33	60.00		26.67	Not Achieved
1401004	83.11	88.89	74.21	78.93	Achieved
1401005	55.00	71.11	64.00	63.62	Achieved
1401006	55.00	80.00		27.00	Not Achieved
1401007	55.00	64.44	70.10	65.95	Achieved
1401008	50.00	55.56	65.59	60.46	Achieved
1401009	55.00	64.44	69.88	65.82	Achieved
1401010	83.11	60.00	70.98	71.21	Achieved
1401011	55.00	64.44	64.93	62.85	Achieved
1401012	55.00	60.00	60.59	59.35	Achieved
1401014	73.33	91.11	74.00	77.29	Achieved
1401015	40.00	60.00		20.00	Not Achieved
1401017	83.11	60.00		28.62	Not Achieved
1401018	83.11	64.44	70.43	71.77	Achieved
1401019	88.00	64.44	58.29	65.47	Achieved
1401020	88.00	75.56	64.12	71.18	Achieved

## Assessment of PO-11 :Project Management and Finance

**PO-11:Project management and finance:** Demonstrate knowledge and understanding of engineering and management principles and apply these to one's work as a team member or a leader to manage projects in multidisciplinary environments.

PO attainment <40%: Not achieved  
 40>PO attainment <60%: Poorly achieved  
 60>PO attainment <80%: Moderately achieved  
 PO attainment >80%: Achieved

	1	Weighted Average of PO Attainment	Remarks
Student No	CE-403		
Course Type	C		
% Attainment	%		
1401001	67.14	57.07	Poorly Achieved
1401002	65.71	55.86	Poorly Achieved
1401003	45.24	38.45	Not Achieved
1401004	65.71	55.86	Poorly Achieved
1401005	63.33	53.83	Poorly Achieved
1401006	48.10	40.88	Poorly Achieved
1401007	45.24	38.45	Not Achieved
1401008	54.76	46.55	Poorly Achieved
1401009	68.57	58.29	Poorly Achieved
1401010	68.10	57.88	Poorly Achieved
1401011	64.29	54.64	Poorly Achieved
1401012	50.48	42.90	Poorly Achieved
1401014	68.57	58.29	Poorly Achieved
1401015	57.14	48.57	Poorly Achieved
1401017	55.24	46.95	Poorly Achieved
1401018	61.43	52.21	Poorly Achieved
1401019	61.90	52.62	Poorly Achieved
1401020	61.90	52.62	Poorly Achieved

## Assessment of PO-12 :Life Long Learning

PO-12:Life-long learning: Recognize the need for and have the preparation and ability to engage in independent, life-long learning in the broadest context of technological

	1		3		4		5			
Student No	CE-415	CE-417	CE-431	CE-457	CE-445	CE-471	Weighted Average of PO Attainment		Remarks	
Course Type			O	O	O	O				
% Attainment	%	%	%	%	%	%				
1401001	87.50	85.00	90				87.41		Achieved	
1401002	91.67	62.50			47.14		67.04		Moderately Achieved	
1401003	70.83	57.50		75			67.71		Moderately Achieved	
1401004	83.33	67.50			67.14		72.59		Moderately Achieved	
1401005	75.00	60.00				57.14	63.98		Moderately Achieved	
1401006	58.33	65.00	65				62.72		Moderately Achieved	
1401007	83.33	70.00			62.86		71.99		Moderately Achieved	
1401008	79.17	77.50	30				62.16		Moderately Achieved	
1401009	90.00	77.50			55.71		74.33		Moderately Achieved	
1401010	90.00	65.00		75			76.59		Moderately Achieved	
1401011	66.67	85.00		30			60.50		Moderately Achieved	
1401012	91.67	72.50				85.71	83.21		Achieved	
1401014	90.00	75.00	70				78.26		Moderately Achieved	
1401015	75.00	62.50	60				65.77		Moderately Achieved	
1401017	70.83	70.00	80				73.54		Moderately Achieved	
1401018	83.33	82.50	70				78.53		Moderately Achieved	
1401019	64.88	57.50				82.86	68.34		Moderately Achieved	
1401020	90.00	87.50		63			80.09		Achieved	

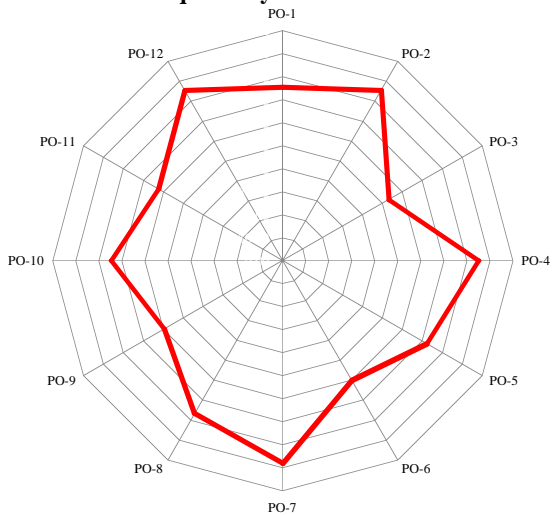
PO attainment <40%: Not achieved  
 40>PO attainment <60%: Poorly achieved  
 60>PO attainment <80%: Moderately achieved  
 PO attainment >80%: Achieved

## Assessment of Project/Thesis Course (CE-400)

Course No	Course Title	PO	Education Domain	Knowledge Profile	Complex Problem Solving	Complex Engineering Activities
CE-400	Project/thesis	2,4,5,8,10	C4, P3, A3	WK1-WK4, WK6 and WK8	WP1-WP3,WP5	EA1-EA3

PO statement	Statement of Outcomes	Marks (%)
<b>PO-2:Problem analysis:</b> Identify, formulate, research and analyze complex engineering problems and reach substantiated conclusions using the principles of mathematics, the natural sciences and the engineering sciences.	Able to identify and formulate civil engineering problems and employ quantitative analysis and tools in problem solving	
<b>PO-4:Investigation:</b> Conduct investigations of complex problems, considering experimental design, data analysis and interpretation and information synthesis to provide valid conclusions.	Able to conduct planned activities (literature review, experiments or numerical analysis and data analysis etc) and to interpret results and reaches valid conclusions regarding civil engineering problems	
<b>PO-5:Modern tool usage:</b> Create, select and apply appropriate techniques, resources and modern engineering and IT tools, including prediction and modeling, to complex engineering activities with an understanding of their limitations.	Able to choose and apply appropriate professional software/ tools in solving civil engineering problems	
<b>PO-8:Ethics:</b> Apply ethical principles and commit to the professional ethics, responsibilities and the norms of the engineering practice.	Able to demonstrate behavior consistent with academic integrity expectations	
<b>PO-10:Communication:</b> Communicate effectively about complex engineering activities with the engineering community and with society at large. Be able to comprehend and write effective reports, design documentation, make effective presentations and give and receive clear instructions.	Able to create report that is accurate to an engineering technical report by having executive summary, introduction, results and discussion, conclusions, and references, and properly arranged contents with good flow. Able to create figures, tables and drawing to technical report standards. Able to refine (accurate) figures, tables and drawing to technical report standards.	

**Assessment Chart for POs  
as required by BAETE**



PO-1:Engineering Knowledge  
 PO-2:Problem Analysis  
 PO-3:Design /Development of Solutions  
 PO-4: Investigation  
 PO-5:Modern Tools Usage  
 PO-6:Engineers & Society  
 PO-7:Environment & Sustainability  
 PO-8:Ethics  
 PO-9: Individual and Team Work  
 PO-10:Communication  
 PO-11:Project Management & Finance  
 PO-12:Lifelong Learning

**Student ID: 1401074**  
**CGPA:3.79**

**Assessment Chart for POs  
as required by BAETE**



PO-1:Engineering Knowledge  
 PO-2:Problem Analysis  
 PO-3:Design /Development of Solutions  
 PO-4: Investigation  
 PO-5:Modern Tools Usage  
 PO-6:Engineers & Society  
 PO-7:Environment & Sustainability  
 PO-8:Ethics  
 PO-9: Individual and Team Work  
 PO-10:Communication  
 PO-11:Project Management & Finance  
 PO-12:Lifelong Learning

**Student ID: 1401001**  
**CGPA:**

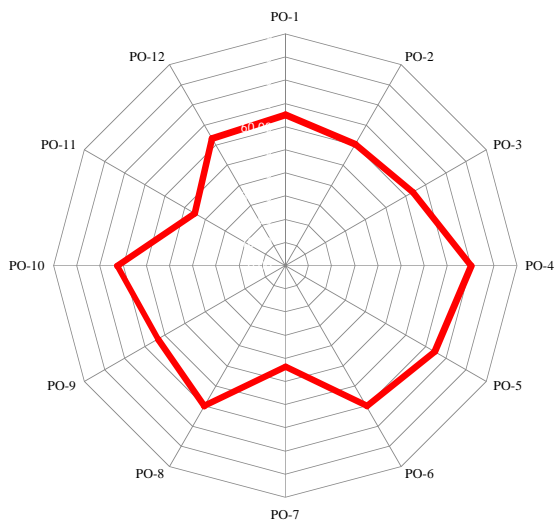
### Assessment Chart for POs as required by BAETE



PO-1:Engineering Knowledge  
 PO-2:Problem Analysis  
 PO-3:Design /Development of Solutions  
 PO-4: Investigation  
 PO-5:Modern Tools Usage  
 PO-6:Engineers & Society  
 PO-7:Environment & Sustainability  
 PO-8:Ethics  
 PO-9: Individual and Team Work  
 PO-10:Communication  
 PO-11:Project Management & Finance  
 PO-12:Lifelong Learning

Student ID: 1401007  
 CGPA:

### Assessment Chart for POs as required by BAETE



PO-1:Engineering Knowledge  
 PO-2:Problem Analysis  
 PO-3:Design /Development of Solutions  
 PO-4: Investigation  
 PO-5:Modern Tools Usage  
 PO-6:Engineers & Society  
 PO-7:Environment & Sustainability  
 PO-8:Ethics  
 PO-9: Individual and Team Work  
 PO-10:Communication  
 PO-11:Project Management & Finance  
 PO-12:Lifelong Learning

Student ID: 1401049  
 CGPA: