



Construction Engineering and Management Program

Program Matrices



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1. Faculty Mission Vs. Program Mission Matrix

Faculty Mission		Program Mission		
		The Benha faculty of Engineering Construction Engineering and Management program aims to develop the skills and knowledge students need to successfully complete construction projects on time and on budget while adhering to construction standards and safety guidelines within human values and social responsibility. Graduates will have sufficient knowledge and skills to develop their postgraduate research skills and find a local or international employment in the commercial, design-build, and residential sectors of the construction industry.		
		The Benha faculty of Engineering Construction Engineering and Management program aims to develop the skills and knowledge students need to successfully complete construction projects on time and on budget	Adhering to construction standards and safety guidelines within human values and social responsibility.	Graduates will have sufficient knowledge and skills to develop their postgraduate research skills and find a local or international employment in the commercial, design-build, and residential sectors of the construction industry.
Benha Faculty of Engineering - Benha University is committed to graduate well prepared engineers equipped with knowledge and skills necessary to compete in labor market, and capable of using and developing modern technology, and providing research in engineering fields to serve society and community.	Benha Faculty of Engineering - Benha University is committed to graduate well prepared engineers equipped with knowledge and skills necessary to compete in labor market	*		
	Capable of using and developing modern technology		*	
	Providing research in engineering fields to serve society and community			*

2. Program Mission Vs. Program Objectives Matrix

Program Mission		Program Objectives					
		PO1	PO2	PO3	PO4	PO5	PO6
The Benha faculty of Engineering Construction Engineering and Management program aims to develop the skills and knowledge students need to successfully complete construction projects on time and on budget while adhering to construction standards and safety guidelines within human values and social responsibility. Graduates will have sufficient knowledge and skills to develop their postgraduate research skills and find a local or international employment in the commercial, design-build, and residential sectors of the construction industry.	The Benha faculty of Engineering Construction Engineering and Management program aims to develop the skills and knowledge students need to successfully complete construction projects on time and on budget	*				*	
	Adhering to construction standards and safety guidelines within human values and social responsibility.		*	*	*		
	Graduates will have sufficient knowledge and skills to develop their postgraduate research skills and find a local or international employment in the commercial, design-build, and residential sectors of the construction industry.				*	*	*

3. Student Competences Vs. (NARS 2018) CBE Matrix

Student Competences	(NARS 2018) CBE Matrix															
	A - Level										Civil				Arc.	
	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B1	B3
A1	*															
A2		*														
A3			*													
A4				*												
A5					*											
A6						*										
A7							*									
A8								*								
A9									*							
A10										*						
B1											*					
B2												*				
B3													*			
B4														*		
D1															*	
D2																*

4. Program Learning Outcomes Vs. (NARS 2018) CBE Matrix

Program Learning Outcomes	(NARS 2018) CBE Matrix															
	A - Level										Civil				Arc.	
	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B1	B3
PLO 1	*															
PLO 2		*														
PLO 3			*													
PLO 4				*												
PLO 5					*											
PLO 6						*										
PLO 7							*									
PLO 8								*								
PLO 9									*							
PLO 10										*						
PLO 11											*					
PLO 12												*				
PLO 13													*			
PLO 14														*		
PLO 15															*	
PLO 16																*

5. Program Learning Outcomes Vs. Student Competences

Program Learning Outcomes	Student Competences															
	A - Level										B-Level				D-Level	
	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	D1	D2
PLO 1	*															
PLO 2		*														
PLO 3			*													
PLO 4				*												
PLO 5					*											
PLO 6						*										
PLO 7							*									
PLO 8								*								
PLO 9									*							
PLO 10										*						
PLO 11											*					
PLO 12												*				
PLO 13													*			
PLO 14														*		
PLO 15															*	
PLO 16																*

6. Program Mission Vs. (NARS 2018) CBE Matrix

Program Mission		(NARS 2018) CBE																	
		A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B1	B3		
The Benha faculty of Engineering Construction Engineering and Management program aims to develop the skills and knowledge students need to successfully complete construction projects on time and on budget while adhering to construction standards and safety guidelines within human values and social responsibility. Graduates will have sufficient knowledge and skills to develop their postgraduate research skills and find a local or international employment in the commercial, design-build, and residential sectors of the construction industry.	The Benha faculty of Engineering Construction Engineering and Management program aims to develop the skills and knowledge students need to successfully complete construction projects on time and on budget	*	*		*	*	*	*	*	*	*	*	*		*	*		*	*
	Adhering to construction standards and safety guidelines within human values and social responsibility.			*		*	*	*	*	*	*			*		*	*		*
	Graduates will have sufficient knowledge and skills to develop their postgraduate research skills and find a local or international employment in the commercial, design-build, and residential sectors of the construction industry.				*	*	*	*	*		*			*	*	*			

7. Program Objectives Vs. (NARS 2018) CBE Matrix

Program Objectives	(NARS 2018) CBE															
	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B1	B3
PO1	*	*		*					*		*	*		*	*	
PO2		*	*				*			*		*	*	*	*	*
PO3							*	*	*				*	*		
PO4					*	*		*		*					*	*
PO5	*	*		*		*	*	*			*	*	*	*	*	*
PO6	Will be covered through postgraduate courses															

8. Program Objectives Vs. Graduate Attributes Matrix

Program Objectives	Graduate Attributes												
	GA1	GA2	GA3	GA4	GA5	GA6	GA7	GA8	GA9	GA10	GA11	GA12	GA13
PO1	*	*					*				*		*
PO2			*		*	*		*				*	
PO3				*						*		*	
PO4						*			*			*	
PO5							*				*		*
PO6								*			*	*	*

9. Graduate Competencies Vs Graduate Attributes

Graduate Competencies	Graduate Attributes												
	GA1	GA2	GA3	GA4	GA5	GA6	GA7	GA8	GA9	GA10	GA11	GA12	GA13
A1	*	*									*		*
A2		*											*
A3			*		*	*					*		*
A4						*	*				*		*
A5								*			*		*
A6				*								*	
A7				*								*	
A8									*			*	
A9										*		*	
A10								*			*	*	
B1											*		
B2											*		
B3												*	
B4												*	
D1												*	*
D2												*	*

10. Graduate Attributes Vs. Requirements Matrix

<u>Graduates Attributes</u>	GA	Credit Hours of Requirements			
		University Requirements	Faculty Requirements	Discipline Requirements	Program Requirements
1. Master a wide spectrum of engineering knowledge and specialized skills and can apply acquired knowledge using theories and abstract thinking in real-life situations.	1	*	*	*	*
2. Apply analytic critical and systemic thinking to identify, diagnose and solve engineering problems with a wide range of complexity and variation.	2	*	*	*	*
3. Behave professionally and adhere to engineering ethics and standards.	3			*	*
4. Work in and lead a heterogeneous team of professionals from different engineering specialties and assume responsibility for own and team performance.	4	*	*		*
5. Recognize his/her role in promoting the engineering field and contribute to the development of the profession and the community.	5			*	*
6. Value the importance of the environment, both physical and natural, and work to promote sustainability principles.	6		*	*	*
7. Use techniques, skills, and modern engineering tools necessary for engineering practice.	7		*	*	*
8. Assume full responsibility for own learning and self-development, engage in lifelong learning and demonstrate the capacity to engage in post-graduate and research studies.	8			*	*
9. Communicate effectively using different modes, tools, and languages with various audiences; to deal with academic/professional challenges in a critical and creative manner.	9	*	*		*
10. Demonstrate leadership qualities, business administration, and entrepreneurial skills.	10	*			*
In addition to all engineering graduate attributes defined by NARS 2018, Construction and Management engineering graduates should be able to:					
11. Identify the essential construction processes technologies techniques, Properties, behavior & fabrication of construction materials.	11			*	*
12. Master Projects management, including planning, finance, bidding, contract procedures, cost estimators, and quality systems.	12			*	*
13. Use the different analytical and computational methods that can be applied to the various areas of construction and building engineering.	13			*	*

11. Program Objectives Vs Requirements Matrix

Program Objectives	Credit Hours of Requirements			
	University Requirements	Faculty Requirements	Discipline Requirements	Program Requirements
PO1. Apply a wide spectrum of engineering knowledge, science, and specialized skills with analytic, critical, and systemic thinking to identify and solve engineering problems in real-life situations.		*	*	*
PO2. Behave professionally, adhere to engineering ethics and standards, and work to develop the profession and community and promote sustainability principles.		*	*	*
PO3. Work in and lead a heterogeneous team and display leadership qualities, business administration, and entrepreneurial skills.	*			*
PO4. Master self-learning and life-long learning strategies to communicate effectively in academic/professional fields.	*		*	*
PO5. Apply analytical, experimental, design, construction engineering techniques and project management skills with proficiency aided by modern tools.			*	*
PO6. Graduate a postgraduate student who has the necessary scientific knowledge and innovative thinking needed for the Construction engineering and management engineering field.			*	*

12. Program Objectives Vs Subject Area

Program Objectives	Credit Hours of Subject Area						
	Humanities and Social Sciences	Mathematics and Basic Sciences	Basic Engineering Sciences	Applied Engineering and Design	Computer Applications and ICT	Projects and Practice	Discretionary
PO1. Apply a wide spectrum of engineering knowledge, science, and specialized skills with analytic, critical, and systemic thinking to identify and solve engineering problems in real-life situations.		*	*	*	*	*	*
PO2. Behave professionally, adhere to engineering ethics and standards, and work to develop the profession and community and promote sustainability principles.		*	*	*	*	*	*
PO3. Work in and lead a heterogeneous team and display leadership qualities, business administration, and entrepreneurial skills.	*			*		*	*
PO4. Master self-learning and life-long learning strategies to communicate effectively in academic/professional fields.	*			*		*	
PO5. Apply analytical, experimental, design, construction engineering techniques and project management skills with proficiency aided by modern tools.		*	*	*	*	*	
PO6. Graduate a postgraduate student who has the necessary scientific knowledge and innovative thinking needed for the Construction engineering and management engineering field.			*	*	*	*	

13. Graduates Attributes Vs Subject Area

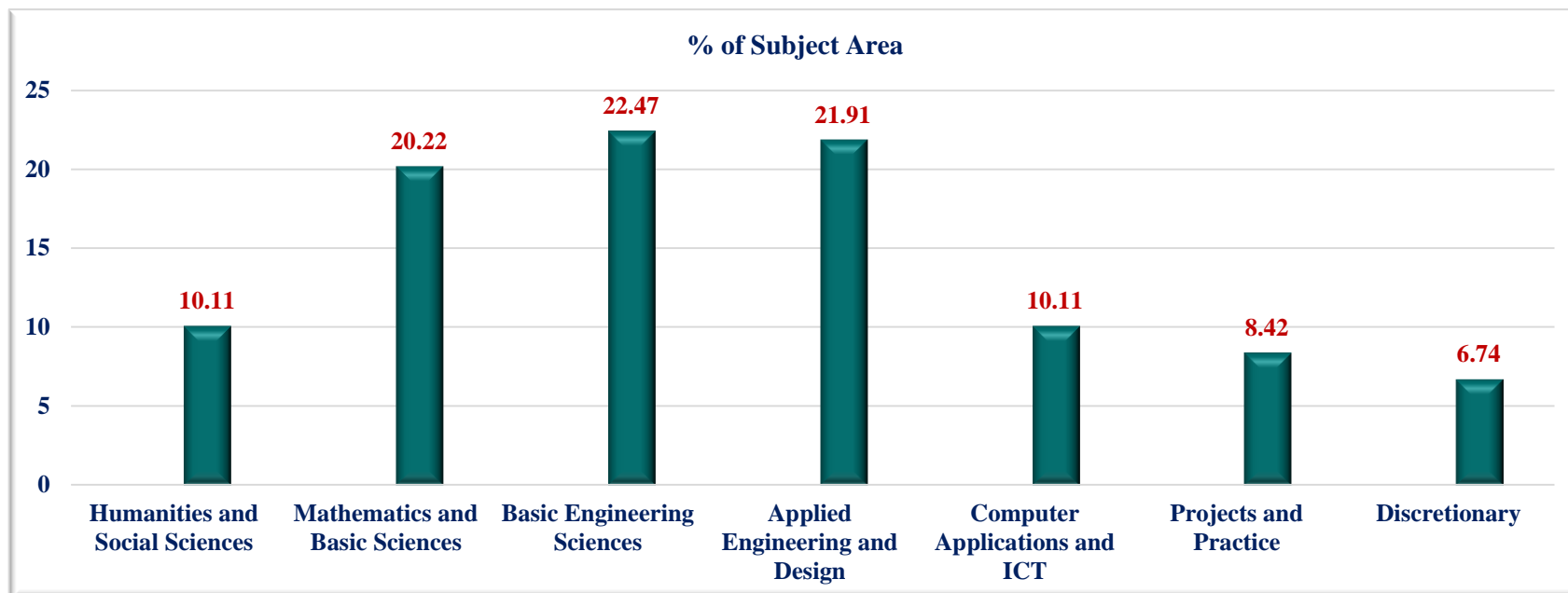
<u>Graduates Attributes</u>	GA	Credit Hours of Subject Area						
		Humanities and Social Sciences	Mathematics and Basic Sciences	Basic Engineering Sciences	Applied Engineering and Design	Computer Applications and ICT	Projects and Practice	Discretionary
1. Master a wide spectrum of engineering knowledge and specialized skills and can apply acquired knowledge using theories and abstract thinking in real-life situations.	1		*	*	*	*	*	
2. Apply analytic critical and systemic thinking to identify, diagnose and solve engineering problems with a wide range of complexity and variation.	2		*	*	*	*	*	
3. Behave professionally and adhere to engineering ethics and standards.	3	*				*	*	*
4. Work in and lead a heterogeneous team of professionals from different engineering specialties and assume responsibility for own and team performance.	4	*			*		*	*
5. Recognize his/her role in promoting the engineering field and contribute to the development of the profession and the community.	5				*	*	*	
6. Value the importance of the environment, both physical and natural, and work to promote sustainability principles.	6				*	*	*	*

<u>Graduates Attributes</u>	GA	Credit Hours of Subject Area						
		Humanities and Social Sciences	Mathematics and Basic Sciences	Basic Engineering Sciences	Applied Engineering and Design	Computer Applications and ICT	Projects and Practice	Discretionary
7. Use techniques, skills, and modern engineering tools necessary for engineering practice.	7		*	*	*	*	*	
8. Assume full responsibility for own learning and self-development, engage in lifelong learning and demonstrate the capacity to engage in post-graduate and research studies.	8	*					*	*
9. Communicate effectively using different modes, tools, and languages with various audiences; to deal with academic/professional challenges in a critical and creative manner.	9	*			*	*	*	
10. Demonstrate leadership qualities, business administration, and entrepreneurial skills.	10	*			*		*	
In addition to all engineering graduate attributes defined by NARS 2018, Construction and Management engineering graduates should be able to:								
11. Identify the essential construction processes technologies techniques, Properties, behavior & fabrication of construction materials.	11			*	*	*	*	*
12. Master Projects management, including planning, finance, bidding, contract procedures, cost estimators, and quality systems.	12			*	*	*	*	*
13. Use the different analytical and computational methods that can be applied to the various areas of construction and building engineering.	13			*	*	*	*	*

14. Subject Area

14.1 Subject Area (Table)

Subject Area	Required	Program Total Credit Hours	
		Total hours of five Levels	% Hours of five Levels
Humanities and Social Sciences	9-12%	18	10.11
Mathematics and Basic Sciences	20-26%	36	20.22
Basic Engineering Sciences	20-23%	40	22.47
Applied Engineering and Design	20-22%	39	21.91
Computer Applications and ICT	9-11%	18	10.11
Projects and Practice	8-10%	15	8.42
Discretionary	6-8%	12	6.74



14.2 Chart of % of Subject Area

14.3 Program Courses Vs Subject Area

Level	Courses		Weekly Contact Hours			Credit Hours of Subject Area						
	Code	Course Title	Lect.	Lab.	Tut.	Humanities and Social Sciences	Mathematics and Basic Sciences	Basic Engineering Sciences	Applied Engineering and Design	Computer Applications and ICT	Projects and Practice	Discretionary
1 st Level	FRB 101	Mathematics I	2	0	2		*					
	FRB 103	Mechanics I	2	0	2		*					
	FRB 105	General Chemistry	2	2	1		*					
	FRB 107	Physics I	2	2	2		*					
	FRM 109	Engineering Graphics	2	0	5			*				
	UHS 101	English language	2	0	0	*						
	FRB 102	Mathematics II	2	2	2		*					
	FRB 104	Mechanics II	2	0	2		*					
	FRM 106	Production Engineering	2	3	0			*				
	FRB 108	Physics II	2	2	2		*					
	FRE 110	Computer Programming	2	3	0		*					
UHS 102	Social Issue	2	0	0	*							
2 nd Level	FRB 201	Mathematics III	2	0	2		*					
	CMC 201	Structural Analysis-1	2	0	3			*				
	CMC 203	Properties Engineering Materials	2	1	2			*				
	CMC 205	Construction Engineering Drawings	1	0	2			*				
	CMC 207	Surveying for Engineers-1	2	1	2			*				
	CMC 209	Concrete Technology	1	0	2			*				
	UHS 201	Technical writing	2	0	0	*						
	FRB 202	Mathematics IV	2	0	2		*					
	CMC 202	Structural Analysis-2	2	1	2					*		
	CMC 204	Construction Materials	2	0	2			*				

Courses			Weekly Contact Hours			Credit Hours of Subject Area						
Level	Code	Course Title	Lect.	Lab.	Tut.	Humanities and Social Sciences	Mathematics and Basic Sciences	Basic Engineering Sciences	Applied Engineering and Design	Computer Applications and ICT	Projects and Practice	Discretionary
2 nd Level	CMC 206	CAD for Civil Engineering	2	2	0					*		
	CMA 208	Basic Architectural Engineering	1	0	2			*				
	CMM 210	Fundamental of Thermal Engineering	2	0	2			*				
	UHS 202	Engineering Economics	2	0	0	*						
3 rd Level	FRB 301	Numerical Methods	2	0	2		*					
	CMC301	Hydraulics for Civil Engineer	2	1	3			*				
	CMC 303	Structural Analysis-3	2	0	3			*				
	CMC305	Soil Mechanics	2	0	3				*			
	CMC307	Building Construction & City Planning	2	0	2			*				
	CMC309	Project Management	2	0	0					*		
	FRB 302	Probabilities & Statistics	2	0	2		*					
	CMC302	Water Resources, Irrigation & Drainage	2	1	3			*				
	CMC 304	Design of R.C. structures-1	2	0	3				*			
	CMC306	Surveying for engineers-2	2	0	3					*		
	CMM 308	Technical Installations in Buildings	2	0	2				*			
HS3XX	Humanities–Elective1	2	0	0	*							
4 th Level	CMC 401	Design of Metallic Structures-1	2	0	3				*			
	CMC 403	Environmental & Sanitary Engineering	2	0	2				*			
	CMC 405	Construction Management	1	0	2					*		
	CMC 407	Foundation Engineering	2	0	3				*			
	CMC 409	Design of R.C. Structures2	2	0	3				*			
	CMC 411	Cost Engineering & Quantity Surveying	1	0	2					*		
	UHS 401	Legislation & Engineering Ethics	2	0	0	*						

Courses			Weekly Contact Hours			Credit Hours of Subject Area						
Level	Code	Course Title	Lect.	Lab.	Tut.	Humanities and Social Sciences	Mathematics and Basic Sciences	Basic Engineering Sciences	Applied Engineering and Design	Computer Applications and ICT	Projects and Practice	Discretionary
4 th Level	CMC 402	Design of Metallic Structures-2	2	0	3				*			
	CMC 404	Design of Hydraulic Structures	2	0	3				*			
	CMC 406	Environmental Engineering	2	0	3				*			
	CMC 408	Construction Methods	1	0	2						*	
	CMC 410	Slope Stability & Retaining Structure	1	0	2						*	
	CMC 412	Highway Engineering	2	0	2				*			
	HS4XX	Humanities – Elective 2	2	0	0	*						
5 th Level	CMC 501	Concrete and Steel Bridges	2	0	3				*			
	CMC 503	Dynamics of Structures	2	0	3				*			
	CMC5XX	Elective Course-1	2	0	3							*
	CMC5XX	Elective Course-2	2	0	3							*
	CMC 509	Project-1	2	0	3						*	
	HS 5XX	Humanities – Elective 3	2	0	0	*						
	CMC 502	Computer Applications in Civil Engineering	2	3	0					*		
	CMC 504	Quality Control & Inspection of Structures	2	0	2						*	
	CMM 506	Equipment for Construction	2	0	1						*	
	CMC5XX	Elective Course-3	2	0	3							*
	CMC5XX	Elective Course-4	2	0	3							*
	CMC 512	Project-2	0	0	6						*	
	HS 5XX	Humanities – Elective 4	2	0	0	*						
FT	CMC/E380	Field Training I										
	CMC/E480	Field Training II										
Total hours of five Levels						18	36	40	39	18	15	12
% Hours of five Levels						10.11	20.22	22.47	21.91	10.11	8.42	6.74
Reference Ratio from NARS						9-12%	20-26%	20-23%	20-22%	9-11%	8-10%	6-8%

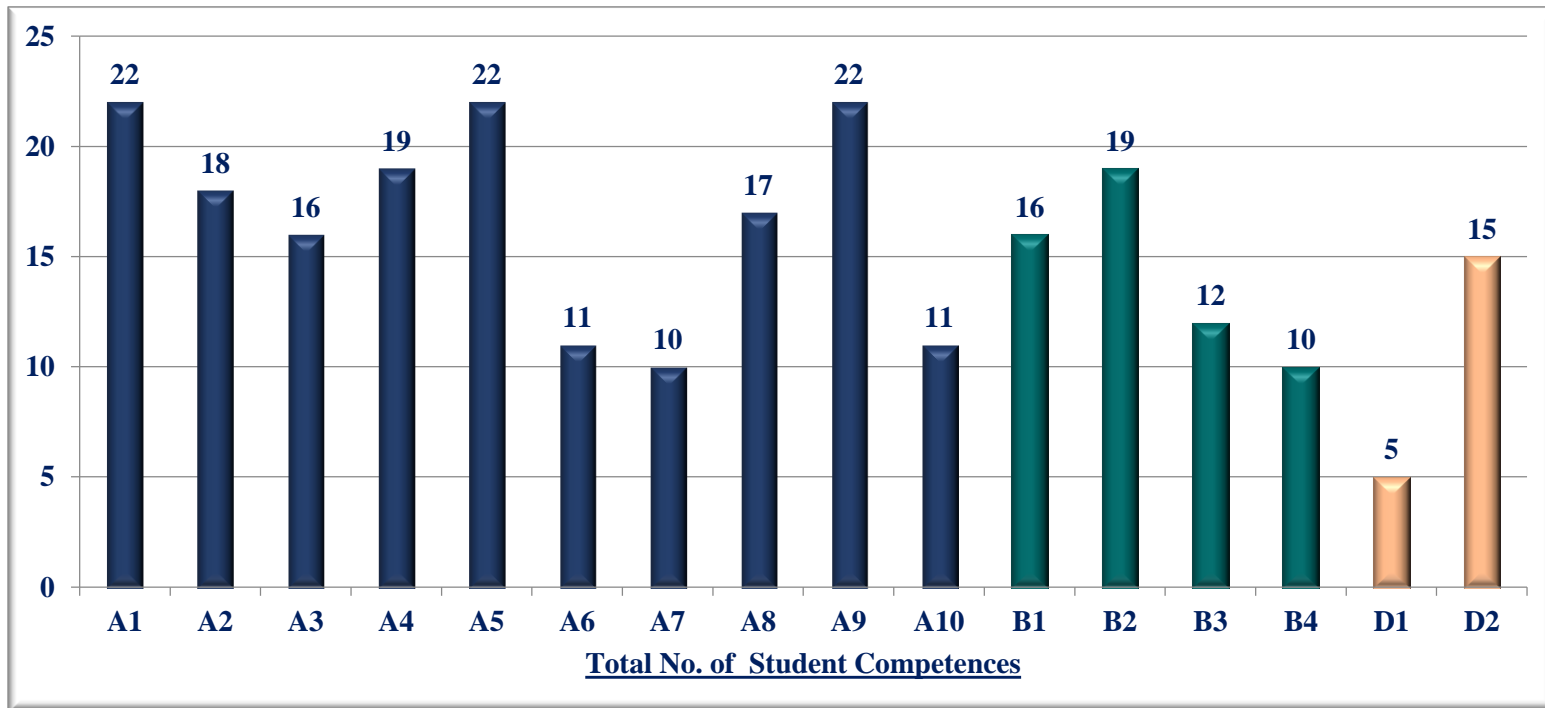
15. Student Competences Vs. Courses

Compulsory Courses			Student Competences																
Level	Code	Course Title	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	D1	D1	Total
First Level	Fall Sem.	FRB 101	Mathematics I	1	1														2
		FRB 103	Mechanics I	1	1														2
		FRB 105	General Chemistry	1	1														2
		FRB 107	Physics I	1	1														2
		FRM 109	Engineering Graphics						1		1								2
		UHS 101	English language					1			1		1						3
	Spring Sem.	FRB 102	Mathematics II	1	1														2
		FRB 104	Mechanics II	1	1														2
		FRM 106	Production Engineering				1		1										2
		FRB 108	Physics II	1	1														2
		FRE 110	Computer Programming	1	1														2
		UHS 102	Social Issues					1		1			1						3
Second Level	Fall Sem.	FRB 201	Mathematics III	1	1													2	
		CMC201	Structural Analysis-1	1									1					2	
		CMC203	Properties of Engineering Materials		1								1						2
		CMC205	Construction Engineering Drawings								1			1					2
		CMC207	Surveying for Engineers-1		1					1			1						3
		CMC209	Concrete Technology			1							1						2
		UHS 201	Technical writing								1	1							2
	Spring Sem.	FRB 202	Mathematics IV	1	1														2
		CMC202	Structural Analysis-2		1								1						2
		CMC204	Construction Materials	1									1						2
		CMC206	CAD for Civil Engineering				1							1					2
		CMA208	Basic Architectural Engineering								1	1						1	3
CMM210	Fundamental of Thermal Engineering	1											1				2		

Compulsory Courses			Student Competences																		
Level	Code	Course Title	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	D1	D1	Total		
	UHS 202	Engineering Economics	1								1								2		
Third Level	Fall Sem.	FRB 301	Numerical Methods	1	1														2		
		CMC301	Hydraulics for Civil Engineer		1	1								1					3		
		CMC 303	Structural Analysis-3	1										1					2		
		CMC305	Soil Mechanics					1						1					2		
		CMC307	Building Construction & City Planning					1			1							1	3		
		CMC309	Project Management							1							1		1	3	
	Spring Sem.	FRB 302	Probabilities & Statistics	1	1															2	
		CMC302	Water Resources, Irrigation & Drainage		1										1					2	
		CMC 304	Design of R.C. structures-1			1	1								1				1	4	
		CMC306	Surveying for engineers-2					1						1						2	
		CMM 308	Technical Installations in Buildings					1					1	1				1		4	
		HS3XX.....Humanity – Elective 1																			
		HS302	Human Resource Management				1	1													2
		HS304	Strategic Management				1	1													2
		HS306	Computer and Society				1	1													2
		HS308	Accounting				1	1													2
Fourth Level	Fall Sem.	CMC 401	Design of Metallic Structures-1			1	1							1					3		
		CMC 403	Environmental & Sanitary Engineering		1											1		1	3		
		CMC 405	Construction Management							1		1				1			3		
		CMC 407	Foundation Engineering			1									1					2	
		CMC 409	Design of R.C. Structures2			1	1								1			1		4	
		CMC 411	Cost Engineering & Quantity Surveying	1							1						1			3	
		UHS 401	Legislation & Engineering Ethics									1	1							2	
	Spring Sem.	CMC 402	Design of Metallic Structures-2			1	1								1					3	
		CMC 404	Design of Hydraulic Structures			1	1								1				1	4	
		CMC 406	Environmental Engineering					1								1			1	3	
CMC 408	Construction Methods				1				1								1	3			
CMC 410	Slope Stability & Retaining Structure											1	1					2			

Compulsory Courses			Student Competences																		
Level	Code	Course Title	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	D1	D1	Total		
Fourth Level	Spring Sem.	CMC 412	Highway Engineering					1						1	1				3		
		HS4XX.....Humanity – Elective 2																			
		HS402	Foundations of Marketing					1	1			1								3	
		HS404	Introduction to Finance					1	1			1								3	
		HS406	Human Computer Interaction					1				1	1							3	
		HS408	Sustainable Development					1				1	1							3	
Fifth Level	Fall Sem.	CMC 501	Concrete and Steel Bridges			1	1							1	1				3		
		CMC 503	Dynamics of Structures	1		1								1					3		
		CMC5XX.....Elective Course-1																			
		CMC 505	Building Construction					1					1					1	1	4	
		CMC 507	Advanced Engineering Materials						1				1						1	3	
		CMC 509	Special Topics in Structural Analysis						1				1						1	3	
		CMC5XX.....Elective Course-2																			
		CMC 511	Techniques of Planning, Scheduling and Project Control							1			1				1			1	4
		CMC 513	Construction Management-2							1			1				1			1	4
	CMC 515	Urban Planning							1			1						1	1	4	
	CMC 509	Project-1			1	1			1	1	1	1	1	1	1	1	1		1	12	
	HS5XX.....Humanity – Elective 3																				
	HS501	Specifications and feasibility studies									1	1								2	
	HS503	Analytical Skills and Critical Thinking									1	1								2	
	HS505	Communication Laws and Codes									1	1								2	
	HS507	Construction Contracts and Law									1	1								2	
	Spring Sem.	CMC 502	Computer Applications in Civil Engineering			1									1	1				3	
		CMC 504	Quality Control & Inspection of Structures				1							1						2	
CMM 506		Equipment for Construction					1								1				2		
CMC5XX.....Elective Course-3																					
CMC 508		Transportation & Logistics	1		1									1						3	

Compulsory Courses			Student Competences																	
Level	Code	Course Title	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	D1	D1	Total	
Fifth Level	Spring Sem.	CMC 510	Prefabricated Water and Prestressed Concrete Structures	1		1								1					3	
		CMC 512	Analysis and Design of Composite Structures	1		1									1					3
	CMC5XX.....Elective Course-4																			
		CMC 514	Special Topics in Geotechnical Engineering					1			1					1	1			4
		CMC 516	Total Quality Management					1			1					1	1			4
		CMC 518	Value Engineering in the Construction Industry					1			1					1	1			4
		CMC 512	Project-2			1	1		1	1	1	1	1	1	1	1	1		1	12
	HS5XX.....Humanity – Elective 4																			
		HS502	Professional Communication Skills				1				1									2
		HS504	Principles of industrial health					1			1									2
		HS506	Social Risks and Security of Computer Systems				1				1									2
		HS508	Risk Management				1				1									2
	FT	CMC/E380	Field Training I							1			1			1				3
		CMC/E480	Field Training II							1			1			1				3
Total Number of courses covering each A			22	18	16	19	22	11	10	17	22	11	16	19	12	10	5	15		



15.1 Chart of Total No. of Student Competences

16. Program Courses Vs Requirements

16.1 Compulsory Courses Vs Requirements

Level		Courses		Pr. Req.	Weekly Contact Hours					Credit Hours of Requirements			
		Code	Course Title		Cr. Hrs	Lect.	Lab.	Tut.	Total	University Requirements	Faculty Requirements	Discipline Requirements	Program Requirements
1st Level	Fall Sem.	FRB 101	Mathematics I	....	3	2	0	2	4		3		
		FRB 103	Mechanics I	....	3	2	0	2	4		3		
		FRB 105	General Chemistry	....	3	2	2	1	5		3		
		FRB 107	Physics I	....	3	2	2	2	6		3		
		FRM 109	Engineering Graphics	....	4	2	0	5	7		4		
		UHS 101	English language	....	2	2	0	0	2	2			
	Spring Sem.	FRB 102	Mathematics II	FRB101	3	2	2	2	6		3		
		FRB 104	Mechanics II	FRB103	3	2	0	2	4		3		
		FRM 106	Production Engineering	.....	3	2	3	0	5		3		
		FRB 108	Physics II	FRB107	3	2	2	2	6		3		
		FRE 110	Computer Programming	....	3	2	3	0	5		3		
		UHS 102	Social Issues	....	2	2	0	0	2	2			
2nd Level	Fall Sem.	FRB 201	Mathematics III	FRB102	3	2	0	2	4		3		
		CMC 201	Structural Analysis-1	FRB104	3	2	0	3	5			3	
		CMC 203	Properties Engineering Materials	FRB107	3	2	1	2	5			3	
		CMC 205	Construction Engineering Drawings	FRM109	2	1	0	2	3				2
		CMC 207	Surveying for Engineers-1	FRB101	3	2	1	2	5			3	
		CMC 209	Concrete Technology	.....	2	1	0	2	3				2
		UHS 201	Technical writing	.....	2	2	0	0	2	2			
	Spring Sem.	FRB 202	Mathematics IV	FRB201	3	2	0	2	4		3		
		CMC 202	Structural Analysis-2	CMC201	3	2	1	2	5			3	
		CMC 204	Construction Materials	CMC203	3	2	0	2	4				3
	CMC 206	CAD for Civil Engineering	CMC205	3	2	2	0	4			3		
	CMA 208	Basic Architectural Engineering	FRM109	2	1	0	2	3				2	

Level		Courses		Pr. Req.	Weekly Contact Hours					Credit Hours of Requirements			
		Code	Course Title		Cr. Hrs	Lect.	Lab.	Tut.	Total	University Requirements	Faculty Requirements	Discipline Requirements	Program Requirements
	Spring Sem.	CMM 210	Fundamental of Thermal Engineering	FRB107	3	2	0	2	4				3
		UHS 202	Engineering Economics	.....	2	2	0	0	2	2			
3rd Level	Fall Sem.	FRB 301	Numerical Methods	FRB201	3	2	0	2	4		3		
		CMC301	Hydraulics for Civil Engineer	FRB107	3	2	1	3	6			3	
		CMC 303	Structural Analysis-3	CMC202	3	2	0	3	5			3	
		CMC305	Soil Mechanics	CMC204	3	2	0	3	5			3	
		CMC307	Building Construction & City Planning	CMC204	3	2	0	2	4				3
		CMC309	Project Management	.....	2	2	0	0	2				2
	Spring Sem.	FRB 302	Probabilities & Statistics	FRB201	3	2	0	2	4		3		
		CMC302	Water Resources, Irrigation & Drainage	CMC301	3	2	1	3	6			3	
		CMC 304	Design of R.C. structures-1	CMC202	3	2	0	3	5			3	
		CMC306	Surveying for engineers-2	CMC207	3	2	0	3	5			3	
		CMM 308	Technical Installations in Buildings	CMM210	3	2	0	2	4				3
		HS3XX	Humanities–Elective1	.....	2	2	0	0	2	2			
4th Level	Fall Sem.	CMC 401	Design of Metallic Structures-1	CMC202	3	2	0	3	5			3	
		CMC 403	Environmental & Sanitary Engineering	CMC301	3	2	0	2	4			3	
		CMC 405	Construction Management	CMC309	2	1	0	2	3				2
		CMC 407	Foundation Engineering	CMC305	3	2	0	3	5			3	
		CMC 409	Design of R.C. Structures2	CMC304	3	2	0	3	5			3	
		CMC 411	Cost Engineering & Quantity Surveying	.....	2	1	0	2	3				2
		UHS 401	Legislation & Engineering Ethics	.....	2	2	0	0	2	2			
	Spring Sem.	CMC 402	Design of Metallic Structures-2	CMC401	3	2	0	3	5			3	
		CMC 404	Design of Hydraulic Structures	CMC301	3	2	0	3	5			3	
		CMC 406	Environmental Engineering	CMC403	3	2	0	3	5			3	
		CMC 408	Construction Methods	.....	2	1	0	2	3				2
		CMC 410	Slope Stability & Retaining Structure	CMC305	2	1	0	2	3				2

Level		Courses		Pr. Req.	Weekly Contact Hours					Credit Hours of Requirements			
		Code	Course Title		Cr. Hrs	Lect.	Lab.	Tut.	Total	University Requirements	Faculty Requirements	Discipline Requirements	Program Requirements
Spring Sem.		CMC 412	Highway Engineering	CMC305	3	2	0	2	4			3	
		HS4XX	Humanities – Elective 2	.....	2	2	0	0	2	2			
5th Level	Fall Sem.	CMC 501	Concrete and Steel Bridges	CMC409	3	2	0	3	5			3	
		CMC 503	Dynamics of Structures	CMC202	3	2	0	3	5			3	
		CMC5XX	Elective Course-1		3	2	0	3	5				3
		CMC5XX	Elective Course-2		3	2	0	3	5				3
		CMC 509	Project-1	*	3	2	0	3	5				3
		HS 5XX	Humanities – Elective 3	2	2	0	0	2	2			
	Spring Sem.	CMC 502	Computer Applications in Civil Engineering	FRE110	3	2	3	0	5				3
		CMC 504	Quality Control & Inspection of Structures	CMC202	3	2	0	2	4			3	
		CMM 506	Equipment for Construction	.....	2	2	0	1	3				2
		CMC5XX	Elective Course-3		3	2	0	3	5				3
		CMC5XX	Elective Course-4		3	2	0	3	5				3
		CMC 512	Project-2	CMC 509	3	0	0	6	6				3
		HS 5XX	Humanities – Elective 4	2	2	0	0	2	2			
FT		CMC/E380	Field Training I	**									
		CMC/E480	Field Training II	***									
Total hours of five Levels									18	43	66	51	
% Hours of five Levels									10.1123	24.1573	37.0786	28.6516	
Reference Ratio									min 8%	min 20%	min35%	max30%	

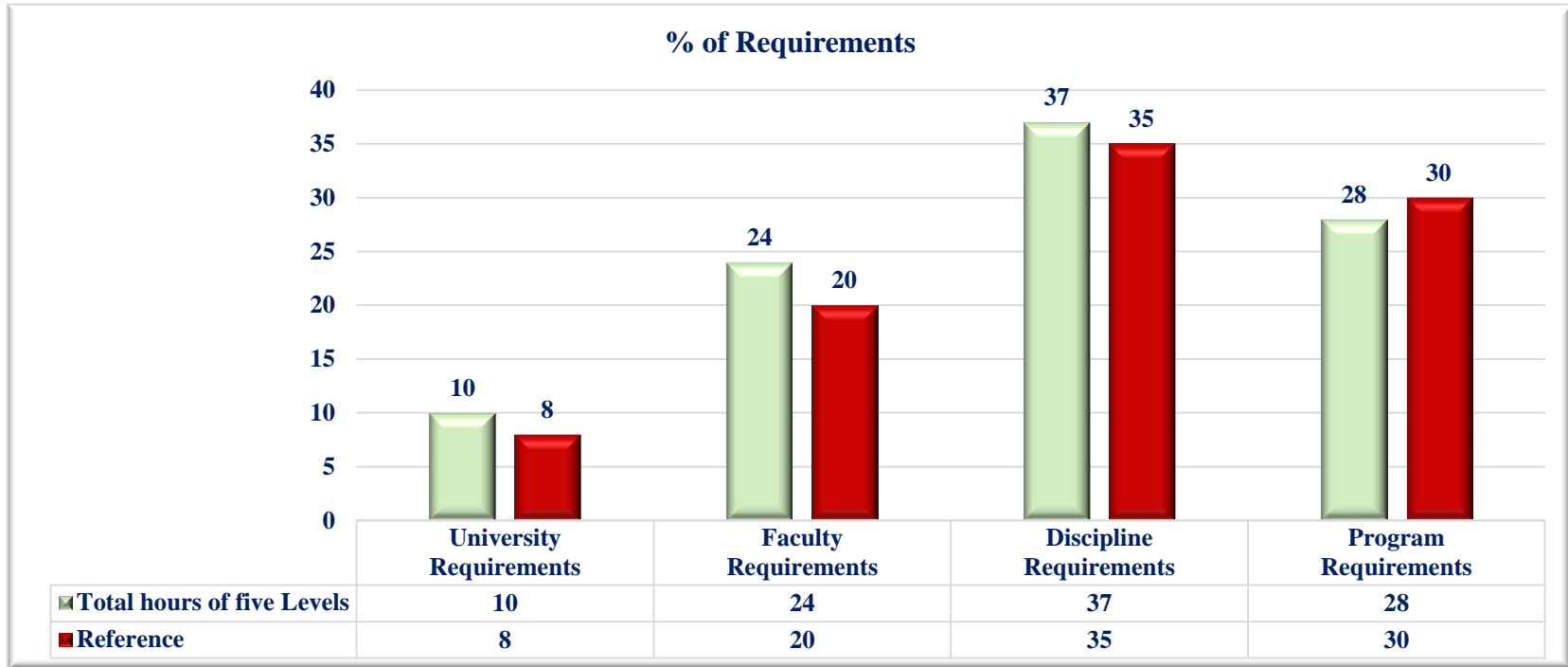
* The student can register for the Senior Design Project course after passing 70% of the program cr. hrs,

** Completion of 50 Credit Hours

***Completion of 90 Credit Hours

16.2 Elective Courses Vs Requirements

Level	Courses		Pr. Req.	Weekly Contact Hours					Credit Hours of Requirements				
	Code	Course Title		Cr.Hrs	Lect.	Lab.	Tut.	Total	University Requirements	Faculty Requirements	Discipline Requirements	Program Requirements	
Elective Course-1	Fifth (Fall Sem.)	CMC505	Building Construction	....	3	2	0	3	5				3
		CMC507	Advanced Engineering Materials	CMC202 , CMC204	3	2	0	3	5				3
		CMC509	Special Topics in Structural Analysis	CMC202	3	2	0	3	5				3
Elective Course-2	Fifth (Fall Sem.)	CMC511	Techniques of Planning, Scheduling and Project Control	CMC309	3	2	0	3	5				3
		CMC513	Construction Management-2	CMC405	3	2	0	3	5				3
		CMC515	Urban Planning	CMC307	3	2	0	3	5				3
Elective Course-3	Fifth (Spring Sem.)	CMC508	Transportation & Logistics	.....	3	2	0	3	5				3
		CMC510	Prefabricated Water and Prestressed Concrete Structures	CMC409	3	2	0	3	5				3
		CMC512	Analysis and Design of Composite Structures	CMC402	3	2	0	3	5				3
Elective Course-4	Fifth (Spring Sem.)	CMC514	Special Topics in Geotechnical Engineering	CMC407	3	2	0	3	5				3
		CMC516	Total Quality Management	CMC504	3	2	0	3	5				3
		CMC518	Value Engineering in the Construction Industry	.....	3	2	0	3	5				3



16.3 Chart of % of Requirements

17. Student Competences Vs. Learning and Teaching Methods

Teaching & Learning Methods	Student Competences															
	A1	A2	A3	A4	A 5	A6	A7	A8	A9	A10	B1	B2	B3	B4	D1	D1
Lecture	*		*	*		*		*			*	*	*	*	*	*
Tutorials	*		*	*		*		*			*	*	*	*	*	*
Computer-based Instruction		*		*							*	*	*	*		*
Problem-based Learning	*			*					*		*	*	*	*		*
Project-based Learning			*			*	*		*				*		*	*
Interactive Learning		*					*	*	*	*	*					*
Presentations		*	*	*	*				*		*	*	*	*	*	*
Case Study			*	*					*	*			*		*	*
Report					*		*		*	*	*	*				
Co-operative Learning					*		*				*					*
Brain Storming				*			*	*	*				*			
Projects			*			*	*	*	*							*
Discussion	*	*	*					*		*	*	*	*	*	*	*
Practical-based Learning		*		*		*	*	*			*	*	*	*		
Self-Learning					*					*	*					
Hybrid Learning	*		*	*	*				*	*	*	*	*	*	*	*
Teaching and Learning Methods for Students with Special Needs:																
Methods																
1. Discussion Session																
2. Extra Lectures																
3. Create classroom centers																
4. Rotate lessons																
5. Provide different levels of books and materials																

18. Student Competences Vs. Assessment Methods

Teaching & Learning Methods		Student Competences																
		A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	D1	D1	
Formative Assessment Method																		
Tests	Oral Test		*			*	*	*	*	*	*	*						
	Written Exam	*		*	*		*		*			*	*	*	*	*	*	*
	Experimental		*					*										
	Quizzes	*	*	*	*		*		*			*	*	*	*	*	*	*
Reports		*	*			*		*		*	*	*	*					
Observation		*	*			*		*		*	*		*					
Discussions		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Projects	Projects	*	*	*	*	*	*	*	*	*	*		*	*	*	*	*	*
	Mini Projects	*	*	*		*	*	*	*	*	*		*	*	*	*	*	*
Assignments		*	*	*	*		*		*			*	*	*	*	*	*	*
Presentations					*	*	*	*		*	*	*	*	*	*	*	*	*
Summative Assessment Method																		
Practical			*					*				*						
Oral Exam			*			*	*	*	*	*	*	*						
Final Exam		*		*	*		*		*		*	*	*	*	*	*	*	*

19. Assessment Methods Vs Learning and Teaching Methods

Assessment Methods		Teaching and Learning Methods														
		Lecture	Tutorials	Computer-based Instruction	Problem-based Learning	Project-based Learning	Interactive Learning	Presentations	Case Study	Report	Co-operative Learning	Brain Storming	Projects	Discussion	Practical-based Learning	Self-Learning
Formative Assessment Method																
Tests	Oral Test				*		*	*	*			*	*	*	*	*
	Written Exam	*	*										*			*
	Experimental			*										*		
	Quizzes	*	*										*			*
Reports								*		*				*		*
Observation					*	*		*			*	*				
Discussions		*	*	*	*	*	*	*	*	*	*			*		
Projects	Projects				*		*	*	*	*	*	*	*	*	*	*
	Mini Projects				*	*	*	*	*	*	*		*	*		*
Assignments				*	*	*										
Presentations		*	*				*		*	*	*		*			*
Summative Assessment Method																
Practical				*										*		
Oral Exam					*		*	*	*			*	*	*	*	*
Final Exam		*	*										*			*

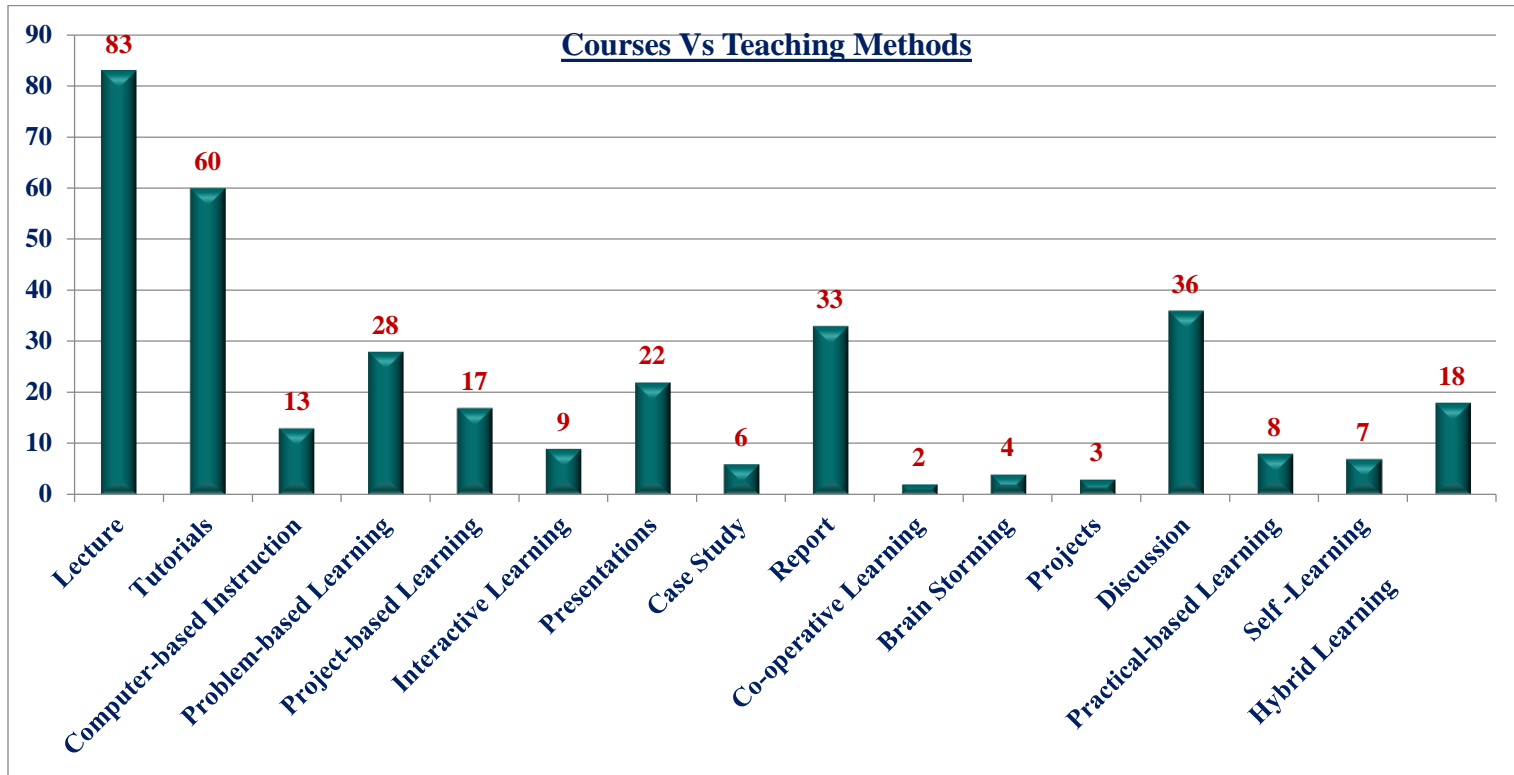
20. Courses Vs. Learning and Teaching Methods

Courses			Lecture	Tutorials	Computer-based	Problem-based Learning	Project-based Learning	Interactive Learning	Presentations	Case Study	Report	Co-operative Learning	Brain Storming	Projects	Discussion	Practical-based Learning	Self -Learning	Hybrid Learning	Total		
Level	Code	Course Title																			
First Level	Fall Sem.	FRB 101	Mathematics I	1	1		1								1					4	
		FRB 103	Mechanics I	1	1		1									1					4
		FRB 105	General Chemistry	1	1		1	1									1				5
		FRB 107	Physics I	1	1												1				3
		FRM109	Engineering Graphics	1	1												1				3
		UHS 101	English language	1					1								1	1			4
	Spring Sem.	FRB 102	Mathematics II	1	1	1										1					4
		FRB 104	Mechanics II	1	1											1					3
		FRM106	Production Engineering	1			1	1									1				4
		FRB 108	Physics II	1	1												1				3
		FRE 110	Computer Programming	1		1															2
		UHS 102	Social Issues	1								1							1	1	4
Second Level	Fall Sem.	FRB 201	Mathematics III	1	1	1	1								1					5	
		CMC201	Structural Analysis-1	1	1														1		3
		CMC203	Properties Engineering Materials	1	1					1	1						1				5
		CMC205	Construction Engineering Drawings	1	1																2
		CMC207	Surveying for Engineers-1	1	1		1						1				1				5
		CMC209	Concrete Technology	1	1							1									3
		UHS 201	Technical writing	1					1												2
	Spring Sem.	FRB 202	Mathematics IV	1	1	1	1									1					5
		CMC202	Structural Analysis-2	1	1	1	1														4
		CMC204	Construction Materials	1	1					1											3
		CMC206	CAD for Civil Engineering	1		1														2	

		Courses																			
Level	Code	Course Title	Lecture	Tutorials	Computer-based	Problem-based Learning	Project-based Learning	Interactive Learning	Presentations	Case Study	Report	Co-operative Learning	Brain Storming	Projects	Discussion	Practical-based Learning	Self -Learning	Hybrid Learning	Total		
Second Level	Spring Sem.	CMA208	Basic Architectural Engineering	1	1			1							1				4		
		CMM210	Fundamental of Thermal Engineering	1	1						1					1				3	
		UHS 202	Engineering Economics	1			1	1				1				1			1	6	
Third Level	Fall Sem.	FRB 301	Numerical Methods	1	1		1												3		
		CMC301	Hydraulics for Civil Engineer	1	1						1						1			4	
		CMC 303	Structural Analysis-3	1	1		1													3	
		CMC305	Soil Mechanics	1	1		1					1								4	
		CMC307	Building Construction & City Planning	1	1			1		1		1								5	
		CMC309	Project Management	1	1	1	1		1		1									6	
	Spring Sem.	FRB 302	Probabilities & Statistics	1	1	1	1									1				5	
		CMC302	Water Resources, Irrigation & Drainage	1	1			1									1			4	
		CMC304	Design of R.C. structures-1	1	1		1			1						1				5	
		CMC306	Surveying for engineers-2	1	1	1						1								4	
		CMM 308	Technical Installations in Buildings	1	1			1				1				1				5	
		Humanity – Elective 1																			
		HS302	Human Resource Management	1			1					1	1		1		1				6
		HS304	Strategic Management	1								1	1				1				4
		HS306	Computer and Society	1							1		1				1				4
		HS308	Accounting	1							1		1				1				4
	Fourth Level	Fall Sem.	CMC401	Design of Metallic Structures-1	1	1														2	
			CMC403	Environmental & Sanitary Engineering	1	1					1						1				4
CMC405			Construction Management	1	1	1		1											1	5	
CMC407			Foundation Engineering	1	1											1				3	
CMC409			Design of R.C. Structures2	1	1						1					1				4	
CMC411			Cost Engineering & Quantity Surveying	1	1	1	1		1												5
UHS 401			Legislation & Engineering Ethics	1						1								1	1		4

		Courses																				
Level	Code	Course Title	Lecture	Tutorials	Computer-based	Problem-based Learning	Project-based Learning	Interactive Learning	Presentations	Case Study	Report	Co-operative Learning	Brain Storming	Projects	Discussion	Practical-based Learning	Self -Learning	Hybrid Learning	Total			
Fourth Level	Spring Sem.	CMC402	Design of Metallic Structures-2	1	1															2		
		CMC404	Design of Hydraulic Strictures	1	1					1			1								4	
		CMC406	Environmental Engineering	1	1					1		1				1					5	
		CMC408	Construction Methods	1	1							1									3	
		CMC410	Slope Stability & Retaining Structure	1	1		1	1								1					5	
		CMC412	Highway Engineering	1	1							1									3	
		Humanity – Elective 2																				
		HS402	Foundations of Marketing	1			1					1		1		1				1	6	
		HS404	Introduction to Finance	1			1					1		1		1				1	6	
		HS406	Human Computer Interaction	1				1		1		1		1						1	6	
HS408	Sustainable Development	1						1		1				1				1	5			
Fifth Level	Fall Sem. Fall Sem.	CMC501	Concrete and Steel Bridges	1	1															2		
		CMC503	Dynamics of Structures	1	1					1											3	
		Elective Course-1																				
		CMC505	Building Construction	1	1					1		1									4	
		CMC507	Advanced Engineering Materials	1	1			1											1		4	
		CMC509	Special Topics in Structural Analysis	1	1		1												1		4	
		Elective Course-2																				
		CMC511	Techniques of Planning, Scheduling and Project Control	1	1			1	1	1												5
		CMC513	Construction Management-2	1	1			1	1	1												5
		CMA515	Urban Planning	1	1			1	1	1		1				1						7
		CMC509	Project-1	1	1		1									1	1					5
		Humanity – Elective 3																				
		HS501	Specifications and feasibility studies	1				1				1					1				1	5
HS503	Analytical Skills and Critical Thinking	1								1									1	3		
HS505	Communication Laws and Codes	1								1					1				1	4		
HS507	Construction Contracts and Law	1													1				1	3		

Courses			Lecture	Tutorials	Computer-based	Problem-based Learning	Project-based Learning	Interactive Learning	Presentations	Case Study	Report	Co-operative Learning	Brain Storming	Projects	Discussion	Practical-based Learning	Self -Learning	Hybrid Learning	Total		
Level	Code	Course Title																			
Fifth Level	Spring Sem.	CMC502	Computer Applications in Civil Engineering	1		1					1							1	4		
		CMC504	Quality Control & Inspection of Structures	1	1			1				1								4	
		CMM506	Equipment for Construction	1	1					1		1				1				5	
		Elective Course-3																			
		CMC508	Transportation & Logistics	1	1	1	1														4
		CMC510	Prefabricated Water and Pre-stressed Concrete Structures	1	1		1	1													4
		CMC512	Analysis and Design of Composite Structures	1	1		1	1													4
		Elective Course-4																			
		CMC514	Special Topics in Geotechnical Engineering	1	1		1			1		1							1		6
		CMC516	Total Quality Management	1	1		1			1		1							1		6
		CMC518	Value Engineering in the Construction Industry	1	1					1											3
		CMC 512	project 2		1		1								1	1					4
		Humanity – Elective 4																			
		HS502	Professional Communication Skills	1													1			1	3
		HS504	Principles of industrial health							1		1								1	3
		HS506	Social Risks and Security of Computer Systems	1												1				1	3
		HS508	Risk Management	1												1				1	3
FT	CMC/E380	Field Training I								1	1				1				3		
	CMC/E480	Field Training II								1	1				1				3		
Total Number of courses covering each PLO			83	60	13	28	17	9	22	6	33	2	4	3	36	8	7	18	349		



20.1 Chart of Courses Vs Teaching Methods

21. Courses Vs. Assessment Methods

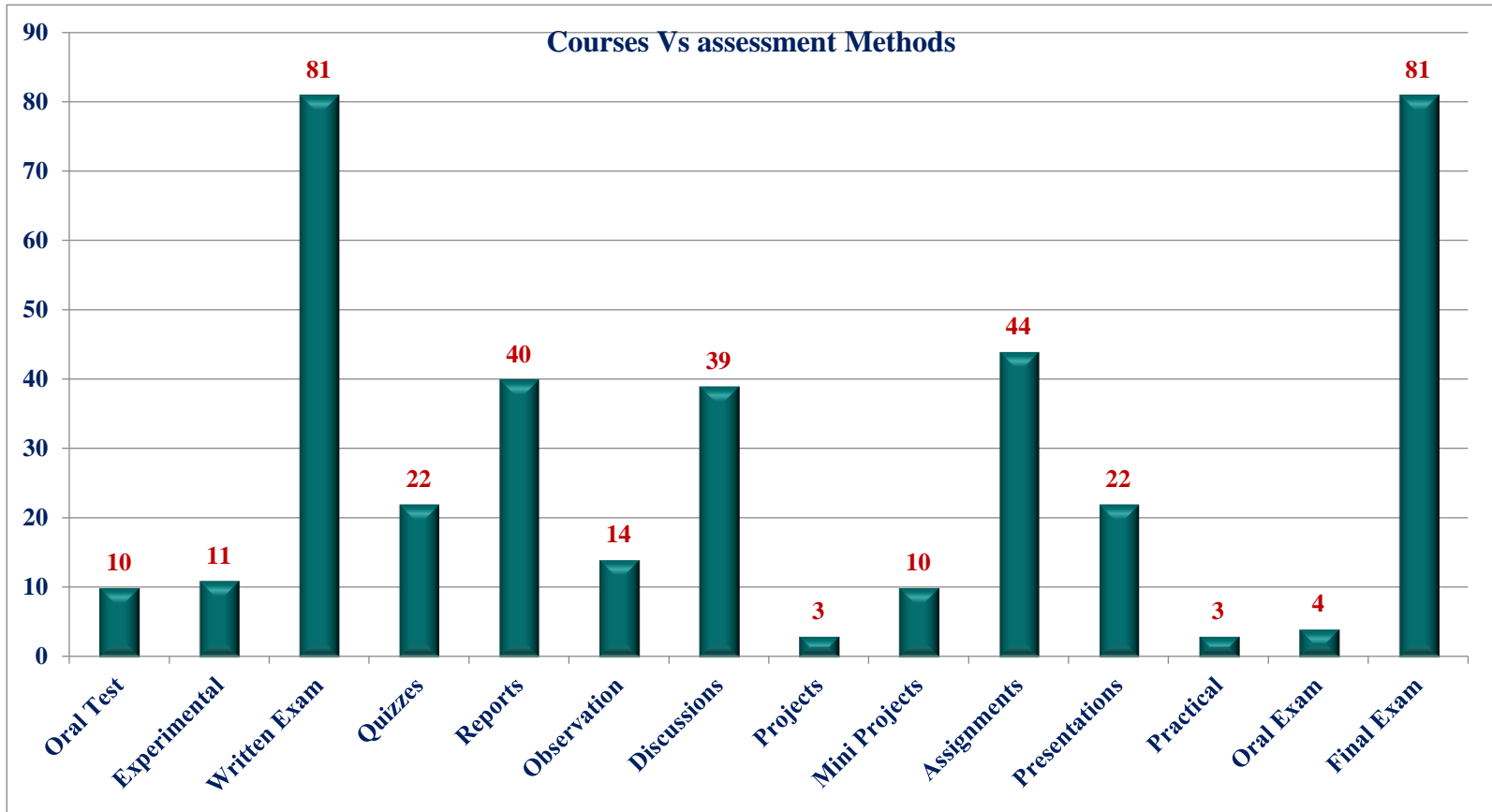
Compulsory Courses			Formative Assessment Method										Summative Assessment Method			Total	
Level	Code	Course Title	Tests				Reports	Observation	Discussions	Projects		Assignments	Presentations	Practical	Oral Exam		Final Exam
			Oral Test	Experimental	Written Exam	Quizzes				Projects	Mini Projects						
First Level	Fall Sem.	FRB 101	Mathematics I			1			1							1	3
		FRB 103	Mechanics I			1	1					1				1	4
		FRB 105	General Chemistry		1	1			1							1	4
		FRB 107	Physics I	1	1	1										1	4
		FRM 109	Engineering Graphics			1	1			1		1				1	5
	UHS 101	English language			1		1	1	1						1	5	
	Spring Sem.	FRB 102	Mathematics II			1						1				1	3
		FRB 104	Mechanics II			1	1					1				1	4
		FRM 106	Production Engineering	1		1				1						1	4
		FRB 108	Physics II	1	1	1										1	4
FRE 110		Computer Programming		1	1								1		1	4	
UHS 102	Social Issues			1		1					1			1	4		
Second Level	Fall Sem.	FRB 201	Mathematics III			1			1			1			1	4	
		CMC 201	Structural Analysis-1			1						1			1	3	
		CMC 203	Properties Engineering Materials	1	1	1		1				1			1	6	
		CMC 205	Construction Engineering Drawings			1						1			1	3	
		CMC 207	Surveying for Engineers-1	1	1	1			1	1					1	6	
		CMC 209	Concrete Technology			1		1							1	3	
		UHS 201	Technical writing			1			1						1	3	
	S. Sem.	FRB 202	Mathematics IV			1				1		1			1	4	
		CMC 202	Structural Analysis-2		1	1	1					1			1	5	
	CMC 204	Construction Materials			1	1						1		1	4		

Compulsory Courses			Formative Assessment Method										Summative Assessment Method			Total		
			Tests				Reports	Observation	Discussions	Projects		Assignments	Presentations	Practical	Oral Exam		Final Exam	
Level	Code	Course Title	Oral Test	Experimental	Written Exam	Quizzes				Projects	Mini Projects							
Second Level	S. Sem.	CMC 206	CAD for Civil Engineering		1						1		1				3	
		CMA 208	Basic Architectural Engineering			1				1		1				1	5	
		CMM 210	Fundamental of Thermal Engineering			1		1				1				1	4	
		UHS 202	Engineering Economics			1		1		1			1			1	5	
Third Level	Fall Sem.	FRB 301	Numerical Methods			1				1						1	3	
		CMC301	Hydraulics for Civil Engineer	1	1	1	1	1								1	6	
		CMC 303	Structural Analysis-3			1	1					1				1	4	
		CMC305	Soil Mechanics			1		1				1				1	4	
		CMC307	Building Construction & City Planning			1		1				1	1			1	5	
	CMC309	Project Management			1			1	1		1				1	5		
	Spring Sem.	FRB 302	Probabilities & Statistics			1	1			1		1				1	5	
		CMC302	Water Resources, Irrigation & Drainage	1	1	1	1				1					1	6	
		CMC 304	Design of R.C. structures-1			1	1			1		1				1	5	
		CMC306	Surveying for engineers-2			1		1				1				1	4	
		CMM 308	Technical Installations in Buildings	1		1		1								1	4	
		Humanity – Elective 1																
		HS302	Human Resource Management			1		1	1	1				1			1	6
		HS304	Strategic Management			1		1		1				1			1	5
HS306		Computer and Society			1		1		1				1			1	5	
HS308	Accounting			1		1		1				1			1	5		
Fourth Level	Fall Sem.	CMC 401	Design of Metallic Structures-1			1	1					1				1	4	
		CMC 403	Environmental & Sanitary Engineering			1	1			1		1				1	5	
		CMC 405	Construction Management			1				1		1				1	5	

Compulsory Courses			Formative Assessment Method										Summative Assessment Method			Total		
Level	Code	Course Title	Tests				Reports	Observation	Discussions	Projects		Assignments	Presentations	Practical	Oral Exam		Final Exam	
			Oral Test	Experimental	Written Exam	Quizzes				Projects	Mini Projects							
Fourth Level	Fall Sem.	CMC 407	Foundation Engineering			1			1			1				1	4	
		CMC 409	Design of R.C. Structures2			1	1			1			1				1	5
		CMC 411	Cost Engineering & Quantity Surveying			1			1				1				1	4
		UHS 401	Legislation & Engineering Ethics			1			1								1	3
	Spring Sem.	CMC 402	Design of Metallic Structures-2			1	1						1				1	4
		CMC 404	Design of Hydraulic Structures			1	1					1		1			1	5
		CMC 406	Environmental Engineering			1	1			1			1				1	5
		CMC 408	Construction Methods			1		1					1				1	4
		CMC 410	Slope Stability & Retaining Structure			1				1			1				1	4
		CMC 412	Highway Engineering			1		1					1				1	4
		Humanity – Elective 2																
		HS402	Foundations of Marketing			1		1	1	1								1	5
	HS404	Introduction to Finance			1		1	1	1								1	5
HS406	Human Computer Interaction			1		1	1	1		1		1				1	7	
HS408	Sustainable Development			1		1		1				1				1	5	
Fifth Level	Fall Sem.	CMC 501	Concrete and Steel Bridges			1	1					1				1	4	
		CMC 503	Dynamics of Structures			1	1	1				1				1	5	
		Elective Course-1																
		CMC505	Building Construction			1	1	1					1				1	5
		CMC507	Advanced Engineering Materials	1		1		1					1				1	5
		CMC509	Special Topics in Structural Analysis	1		1	1	1					1				1	6
		Elective Course-2																
		CMC511	Techniques of Planning, Scheduling and Project Control			1		1	1			1						1	5
CMC513	Construction Management-2			1		1	1			1						1	5	
CMC515	Urban Planning			1		1	1		1			1				1	6	

Compulsory Courses			Formative Assessment Method										Summative Assessment Method			Total			
			Tests				Reports	Observation	Discussions	Projects		Assignments	Presentations	Practical	Oral Exam		Final Exam		
Level	Code	Course Title	Oral Test	Experimental	Written Exam	Quizzes				Projects	Mini Projects					Projects		Mini Projects	Assignments	Presentations	Practical	Oral Exam	Final Exam	Total
Fifth Level	Fall Sem.	CMC 509	Project-1						1	1		1	1		1		5		
		Humanity – Elective 3																	
		HS501	Specifications and feasibility studies			1		1				1						1	4
		HS503	Analytical Skills and Critical Thinking			1		1										1	3
		HS505	Communication Laws and Codes			1		1		1								1	4
	HS507	Construction Contracts and Law			1				1								1	3	
	Spring Sem.	CMC 502	Computer Applications in Civil Engineering		1		1	1							1			4	
		CMC 504	Quality Control & Inspection of Structures			1		1				1	1				1	5	
		CMM 506	Equipment for Construction			1	1	1		1			1				1	6	
		Elective Course-3																	
		CMC508	Transportation & Logistics			1							1					1	3
		CMC510	Prefabricated Water and Prestressed Concrete Structures			1				1		1	1					1	5
		CMC512	Analysis and Design of Composite Structures			1				1		1	1					1	5
		Elective Course-4																	
		CMC514	Special Topics in Geotechnical Engineering			1		1		1			1	1				1	6
		CMC516	Total Quality Management			1		1		1			1	1				1	6
		CMC518	Value Engineering in the Construction Industry			1		1					1	1				1	5
		CMC 512	Project-2							1	1		1	1			1		5

Compulsory Courses			Formative Assessment Method										Summative Assessment Method			Total	
			Tests				Reports	Observation	Discussions	Projects		Assignments	Presentations	Practical	Oral Exam		Final Exam
Level	Code	Course Title	Oral Test	Experimental	Written Exam	Quizzes				Projects	Mini Projects					Assignments		Presentations	Practical	Oral Exam	Final Exam	Total
Fifth Level	Spring Sem.	Humanity – Elective 4															
		HS502	Professional Communication Skills			1				1						1	3
		HS504	Principles of industrial health			1		1								1	3
		HS506	Social Risks and Security of Computer Systems			1				1						1	3
		HS508	Risk Management			1				1						1	3
FT	CMC/E380	Field Training I					1					1		1		3	
	CMC/E480	Field Training II					1					1		1		3	
Total Number of courses covering each A. Methods			10	11	81	22	40	14	39	3	10	44	22	3	4	81	384



21.1 Chart of Courses Vs Assessment Methods

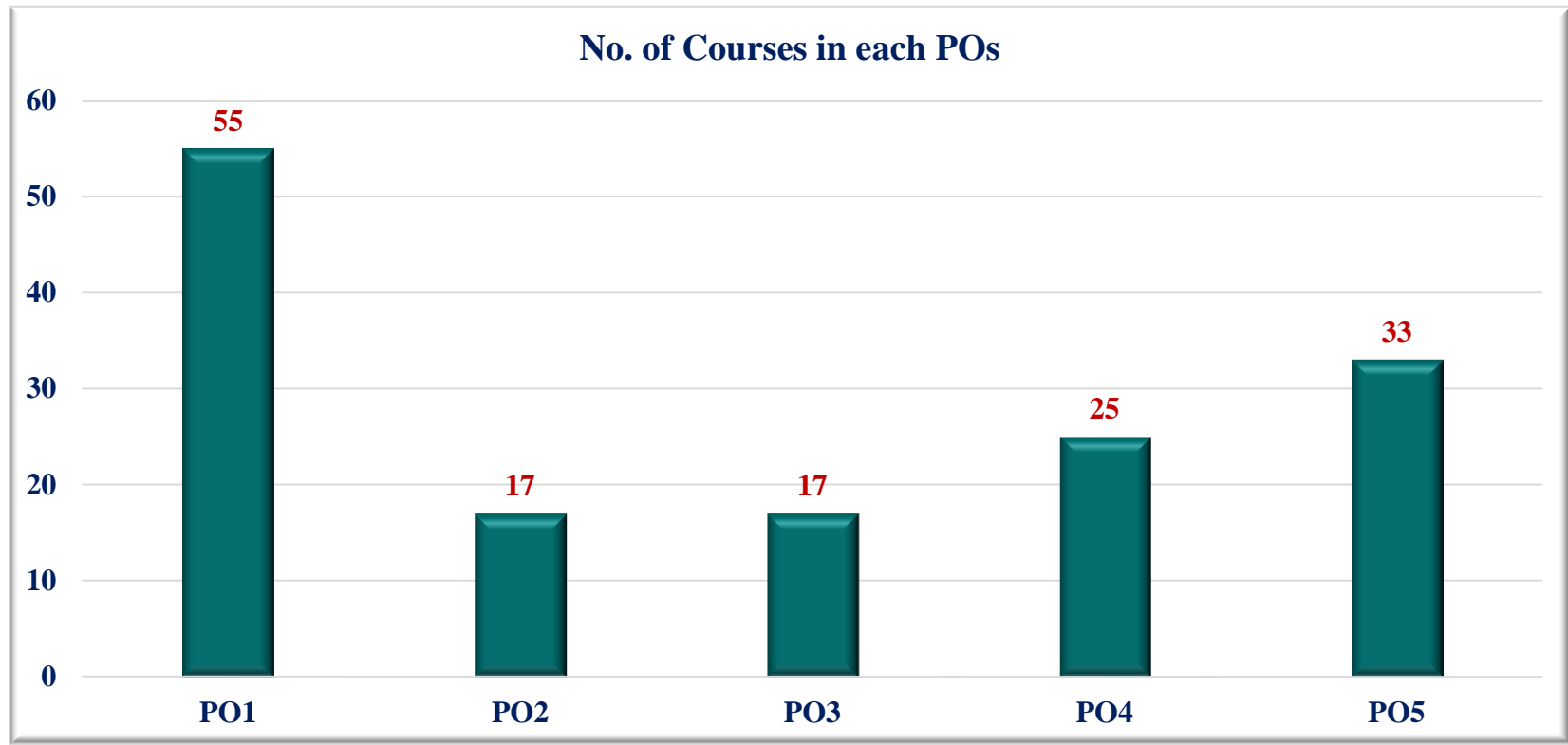
22. Program Objectives Vs Courses

Courses			Program Objectives					Total	
Level	Code	Course Title	PO1	PO2	PO3	PO4	PO5		
First Level	Fall Sem.	FRB 101	Mathematics I	1	1				2
		FRB 103	Mechanics I	1					1
		FRB 105	General Chemistry	1					1
		FRB 107	Physics I	1				1	2
		FRM 109	Engineering Graphics				1	1	2
		UHS 101	English language				1		1
	Spring Sem.	FRB 102	Mathematics II	1					1
		FRB 104	Mechanics II	1					1
		FRM 106	Production Engineering	1			1		2
		FRB 108	Physics II	1				1	2
		FRE 110	Computer Programming	1					1
		UHS 102	Social Issues			1	1		2
Second Level	Fall Sem.	FRB 201	Mathematics III	1					1
		CMC 201	Structural Analysis-1	1					1
		CMC 203	Properties Engineering Materials	1					1
		CMC 205	Construction Engineering Drawings	1	1				2
		CMC 207	Surveying for Engineers-1	1				1	2
		CMC 209	Concrete Technology		1			1	2
		UHS 201	Technical writing	1			1		2
		FRB 202	Mathematics IV	1					1
		CMC 202	Structural Analysis-2	1				1	2
		CMC 204	Construction Materials	1					1
		CMC 206	CAD for Civil Engineering					1	1

Courses			Program Objectives					Total		
Level	Code	Course Title	PO1	PO2	PO3	PO4	PO5			
Second Level	Spring Sem.	CMA 208	Basic Architectural Engineering	1					1	
		CMM 210	Fundamental of Thermal Engineering	1					1	
		UHS 202	Engineering Economics	1					1	
Third Level	Fall Sem.	FRB 301	Numerical Methods	1	1				2	
		CMC301	Hydraulics for Civil Engineer	1				1	2	
		CMC 303	Structural Analysis-3	1					1	
		CMC305	Soil Mechanics	1					1	
		CMC307	Building Construction & City Planning	1				1	2	
		CMC309	Project Management	1				1	2	
	Spring Sem.	FRB 302	Probabilities & Statistics	1				1	2	
		CMC302	Water Resources, Irrigation & Drainage	1				1	2	
		CMC 304	Design of R.C. structures-1	1	1			1	3	
		CMC306	Surveying for engineers-2					1	1	
		CMM 308	Technical Installations in Buildings	1				1	2	
		Humanity – Elective 1								
		HS302	Human Resource Management					1	1	
		HS304	Strategic Management					1	1	
HS306	Computer and Society					1	1	2		
HS308	Accounting					1	1			
Fourth Level	Fall Sem.	CMC 401	Design of Metallic Structures-1	1				1	2	
		CMC 403	Environmental & Sanitary Engineering	1				1	2	
		CMC 405	Construction Management	1	1				2	
		CMC 407	Foundation Engineering					1	1	
		CMC 409	Design of R.C. Structures2	1				1	2	
		CMC 411	Cost Engineering & Quantity Surveying	1	1				2	
		UHS 401	Legislation & Engineering Ethics	1				1	2	

		Courses		Program Objectives					Total	
Level		Code	Course Title	PO1	PO2	PO3	PO4	PO5		
Fourth Level	Spring Sem.	CMC 402	Design of Metallic Structures-2	1				1	2	
		CMC 404	Design of Hydraulic Structures					1	1	
		CMC 406	Environmental Engineering		1			1	2	
		CMC 408	Construction Methods					1	1	
		CMC 410	Slope Stability & Retaining Structure	1					1	
		CMC 412	Highway Engineering				1	1	2	
		Humanity – Elective 2								
		HS402	Foundations of Marketing				1	1		2
		HS404	Introduction to Finance				1	1		2
		HS406	Human Computer Interaction				1	1		2
		HS408	Sustainable Development				1	1		2
		Fifth Level	Fall Sem.	CMC 501	Concrete and Steel Bridges		1			1	2
CMC 503	Dynamics of Structures			1	1				2	
Elective Course-1										
CMC505	Building Construction							1	1	
CMC507	Advanced Engineering Materials			1					1	
CMC509	Special Topics in Structural Analysis			1	1				2	
Elective Course-2										
CMC511	Techniques of Planning, Scheduling and Project Control			1		1			2	
CMC513	Construction Management-2			1		1			2	
CMC515	Urban Planning			1					1	
CMC 509	Project-1			1	1		1	1	4	
Humanity – Elective 3										
HS501	Specifications and feasibility studies					1	1		2	
HS503	Analytical Skills and Critical Thinking					1	1		2	
HS505	Communication Laws and Codes			1	1		2			
HS507	Construction Contracts and Law			1			1			

Courses			Program Objectives					Total		
Level	Code	Course Title	PO1	PO2	PO3	PO4	PO5			
Fifth Level	Spring Sem.	CMC 502	Computer Applications in Civil Engineering	1	1				2	
		CMC 504	Quality Control & Inspection of Structures					1	1	
		CMM 506	Equipment for Construction			1		1	2	
		Elective Course-3								
		CMC508	Transportation & Logistics	1	1			1	3	
		CMC510	Prefabricated Water and Prestressed Concrete Structures	1	1				2	
		CMC512	Analysis and Design of Composite Structures	1	1				2	
		Elective Course-4								
		CMC514	Special Topics in Geotechnical Engineering	1		1			2	
		CMC516	Total Quality Management	1		1			2	
		CMC518	Value Engineering in the Construction Industry	1		1			2	
		CMC 512	Project-2	1	1		1	1	4	
		Humanity – Elective 4								
		HS502	Professional Communication Skills				1	1	2	
		HS504	Principles of industrial health	1					1	
		HS506	Social Risks and Security of Computer Systems				1		1	
		HS508	Risk Management				1		1	
		FT	CMC/E380	Field Training I			1	1		2
			CMC/E480	Field Training II			1	1		2
Total Number of courses covering each A			55	17	17	25	33	147		



22.1 Chart of No. of Courses in each PO

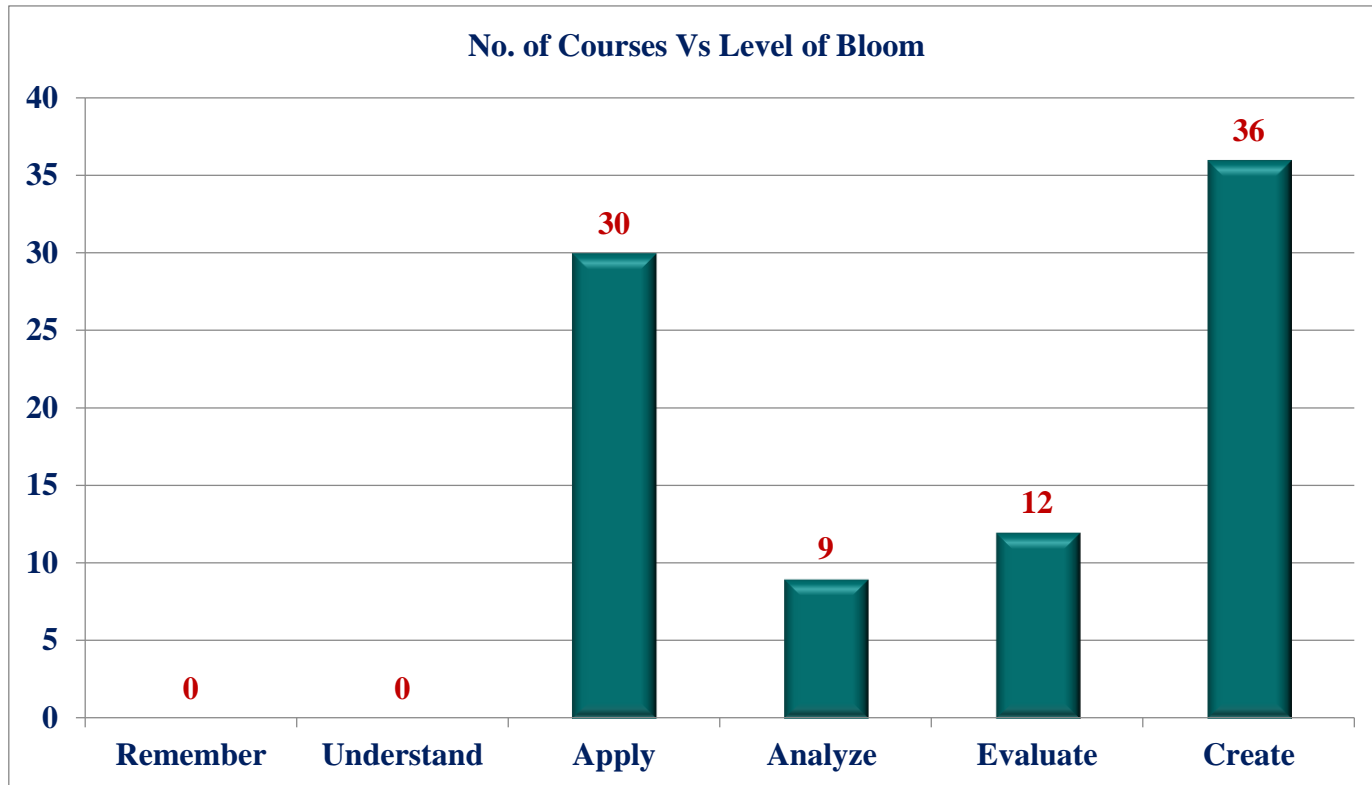
23. Level of Courses on Bloom Levels

Courses			Bloom Levels						
Level	Code	Course Title	Remember	Understand	Apply	Analyze	Evaluate	Create	
First Level	Fall Sem.	FRB 101	Mathematics I				1		
		FRB 103	Mechanics I			1			
		FRB 105	General Chemistry			1			
		FRB 107	Physics I			1			
		FRM 109	Engineering Graphics			1			
		UHS 101	English language			1			
	Spring Sem.	FRB 102	Mathematics II					1	
		FRB 104	Mechanics II				1		
		FRM 106	Production Engineering				1		
		FRB 108	Physics II			1			
		FRE 110	Computer Programming			1			
UHS 102		Social Issues					1		
Second Level	Fall Sem.	FRB 201	Mathematics III				1		
		CMC 201	Structural Analysis-1				1		
		CMC 203	Properties Engineering Materials			1			
		CMC 205	Construction Engineering Drawings			1			
		CMC 207	Surveying for Engineers-1			1			
		CMC 209	Concrete Technology			1			
		UHS 201	Technical writing						1
	Spring Sem.	FRB 202	Mathematics IV					1	
		CMC 202	Structural Analysis-2				1		
		CMC 204	Construction Materials			1			
		CMC 206	CAD for Civil Engineering			1			
CMA 208		Basic Architectural Engineering						1	

Courses			Bloom Levels								
Level	Code	Course Title	Remember	Understand	Apply	Analyze	Evaluate	Create			
Third Level	Fall Sem.	CMM210	Fundamental of Thermal Engineering			1					
		UHS 202	Engineering Economics			1					
	Spring Sem.	Fall Sem.	FRB 301	Numerical Methods				1			
			CMC301	Hydraulics for Civil Engineer			1				
			CMC 303	Structural Analysis-3				1			
			CMC305	Soil Mechanics			1				
			CMC307	Building Construction & City Planning				1			
			CMC309	Project Management			1				
		Spring Sem.	FRB 302	Probabilities & Statistics						1	
			CMC302	Water Resources, Irrigation & Drainage						1	
			CMC 304	Design of R.C. structures-1						1	
			CMC306	Surveying for engineers-2					1		
			CMM308	Technical Installations in Buildings						1	
			Humanity – Elective 1								
			HS302	Human Resource Management							1
	HS304	Strategic Management						1			
	HS306	Computer and Society			1						
HS308	Accounting				1						
Fourth Level	Fall Sem.	CMC 401	Design of Metallic Structures-1						1		
		CMC 403	Environmental & Sanitary Engineering						1		
		CMC 405	Construction Management			1					
		CMC 407	Foundation Engineering						1		
		CMC 409	Design of R.C. Structures2						1		
		CMC 411	Cost Engineering & Quantity Surveying			1					
		UHS 401	Legislation & Engineering Ethics							1	

Courses			Bloom Levels						
Level	Code	Course Title	Remember	Understand	Apply	Analyze	Evaluate	Create	
Spring Sem.	CMC 402	Design of Metallic Structures-2						1	
	CMC 404	Design of Hydraulic Structures						1	
	CMC 406	Environmental Engineering						1	
	CMC 408	Construction Methods						1	
	CMC 410	Slope Stability & Retaining Structure						1	
	CMC 412	Highway Engineering						1	
	Humanity – Elective 2								
	HS402	Foundations of Marketing			1				
	HS404	Introduction to Finance			1				
	HS406	Human Computer Interaction							1
	HS408	Sustainable Development							1
	Fifth Level Fall Sem.	CMC 501	Concrete and Steel Bridges						1
		CMC 503	Dynamics of Structures						1
Elective Course-1									
CMC505		Building Construction			1				
CMC507		Advanced Engineering Materials						1	
CMC509		Special Topics in Structural Analysis						1	
Elective Course-2									
CMC511		Techniques of Planning, scheduling and Project Control			1				
CMC513		Construction Management-2				1			
CMC515		Urban Planning						1	
CMC 509		Project-1						1	
Humanity – Elective 3									
HS501		Specifications and feasibility studies							1
HS503	Analytical Skills and Critical Thinking			1					
HS505	Communication Laws and Codes						1		
HS507	Construction Contracts and Law						1		

Courses			Bloom Levels						
Level	Code	Course Title	Remember	Understand	Apply	Analyze	Evaluate	Create	
Spring Sem.	CMC 502	Computer Applications in Civil Engineering						1	
	CMC 504	Quality Control & Inspection of Structures						1	
	CMM 506	Equipment for Construction					1		
	Elective Course-3								
	CMC508	Transportation & Logistics						1	
	CMC510	Prefabricated Water and Prestressed Concrete Structures						1	
	CMC512	Analysis and Design of Composite Structures						1	
	Elective Course-4								
	CMC514	Special Topics in Geotechnical Engineering						1	
	CMC516	Total Quality Management			1				
	CMC518	Value Engineering in the Construction Industry					1		
	CMC 512	Project-2						1	
	Humanity – Elective 4								
	HS502	Professional Communication Skills						1	
	HS504	Principles of industrial health				1			
	HS506	Social Risks and Security of Computer Systems			1				
	HS508	Risk Management			1				
	FT	CMC/E380	Field Training I			1			
		CMC/E480	Field Training II						1
	Total Number of courses covering each A			0	0	30	9	12	36



23.1 Chart of No. of Courses Vs Level of Bloom