	Construction Engineering and Management Program	كلية الهندســـة ببنها FACULTY OF ENGINEERING- BENHA	

Program Specification
Bylaw 2017 according to NARS2018

1. Basic Information

ProgramTitle (according to what is stated in the bylaw):	**Bachelor of engineering (Construction Engineering and Management)**
Total number of credit hours/points of the program:	178
Number of academic years/levels (expected program duration):	5 years
Department (s) Participating (if any) in teaching the program:	• Civil Engineering • Architecture Engineering • Mechanical Engineering • Basic Engineering Sciences • Electrical Engineering
Faculty/Institute:	Benha Faculty of Engineering
University/Academy:	Benha University
Program majors/divisions/tracks/specialties in the final year (if any):	NA
Partnerships with other parties and the nature of each (if any):	NA
Name of the program coordinator (attach the assignment decision):	Dr Ahmed Gamal Mahmoud Morsi
Program Specification Approval Date:	Approved in the Department Board Meeting Number (78) on 7/10/2025
Council responsible for Program Specification Approval (Attach the Decision / Minutes):	Approved in the Faculty Board Meeting Number (461) on 18/11/2025

2. Program Aims (Brief description of the overall purpose of the program)

This program aims to develop the skills and knowledge of students to successfully complete construction projects on time and on budget while adhering to construction standards and safety guidelines within human values, social responsibility, and environmental conservation. Graduates will have sufficient experience to develop their postgraduate research skills and find local or international employment in the commercial, design-build, and residential sectors of the construction industry.

3. Program Structure (Curriculum)

- **Program Components**

Requirement Category/Type		Number of Courses	Number of Credit Hours/Points	Percentage from the total number of hours/points
University Requirements		9	18CR	10.1%
Faculty/College Requirements (if applicable)		14	43 CR	24.2 %
Program Requirements		42	117 CR	65.7 %
Requirements of the majors/ divisions/ tracks/ specializations in the final year (if any)		NA	NA	NA
Other requirements	Field Training	2	0 CR	0 %
	Graduation Project	2	5 CR	2.8 %
	Mandatory training year	NA	NA	NA
	Other (to be mentioned)	-	-	-
Total Compulsory Courses		57	158 CR	88.8 %
Elective Courses		4 University Requirements + 4 Program Requirements = 8	8 University Requirements + 12 Program Requirements =20	11.2%
Total		65*	178	100%

*Plus 2 Field Training Course With zero CR

- **Program courses according to the expected study plan**

Academic Level	Semester	Course Code	Course Title	Course Type (Compulsory / Elective)	Requirement Category/ Type	Number of Credit Hours/ Points	Number of Weekly Hours		
							Theoretical teaching	Practical training	Tutorial
One	خريف	FRB 101	Mathematics I	اجباري	كلية	3	2	0	2
One	خريف	FRB 103	Mechanics I	اجباري	كلية	3	2	0	2
One	خريف	FRB 105	General Chemistry	اجباري	كلية	3	2	2	1
One	خريف	FRB 107	Physics I	اجباري	كلية	3	2	2	2
One	خريف	FRM 109	Engineering Graphics	اجباري	كلية	4	2	0	5
One	خريف	UHS 101	English language	اجباري	جامعة	2	2	0	0
One	ربيع	FRB 102	Mathematics II	اجباري	كلية	3	2	2	2
One	ربيع	FRB 104	Mechanics II	اجباري	كلية	3	2	0	2
One	ربيع	FRM 106	Production Engineering	اجباري	كلية	3	2	3	0
One	ربيع	FRB 108	Physics II	اجباري	كلية	3	2	2	2
One	ربيع	FRE 110	Computer Programming	اجباري	كلية	3	2	3	0
One	ربيع	UHS 102	Social Issues	اجباري	جامعة	2	2	0	0
Two	خريف	FRB 201	Mathematics III	اجباري	كلية	3	2	0	2
Two	خريف	CMC 201	Structural Analysis-1	اجباري	تخصص	3	2	0	3
Two	خريف	CMC 203	Properties Engineering Materials	اجباري	تخصص	3	2	1	2
Two	خريف	CMC 205	Construction Engineering Drawings	اجباري	تخصص	2	1	0	2
Two	خريف	CMC 207	Surveying for Engineers-1	اجباري	تخصص	3	2	1	2
Two	خريف	CMC 209	Concrete Technology	اجباري	تخصص	2	1	0	2
Two	خريف	UHS 201	Technical writing	اجباري	جامعة	2	2	0	0
Two	ربيع	FRB 202	Mathematics IV	اجباري	كلية	3	2	0	2
Two	خريف	CMC 202	Structural Analysis-2	اجباري	تخصص	3	2	1	2
Two	ربيع	CMC 204	Construction Materials	اجباري	تخصص	3	2	0	2
Two	ربيع	CMC 206	CAD for Civil Engineering	اجباري	تخصص	3	2	2	0

Academic Level	Semester	Course Code	Course Title	Course Type (Compulsory / Elective)	Requirement Category/ Type	Number of Credit Hours/ Points	Number of Weekly Hours		
							Theoretical teaching	Practical training	Tutorial
Two	ربيع	CMA 208	Basic Architectural Engineering	اجباري	تخصص	2	1	0	2
Two	ربيع	CMM 210	Fundamental of Thermal Engineering	اجباري	تخصص	3	2	0	2
Two	ربيع	UHS 202	Engineering Economics	اجباري	جامعة	2	2	0	0
Three	خريف	FRB 301	Numerical Methods	اجباري	كلية	3	2	0	2
Three	خريف	CMC301	Hydraulics for Civil Engineer	اجباري	تخصص	3	2	1	3
Three	خريف	CMC 303	Structural Analysis-3	اجباري	تخصص	3	2	0	3
Three	خريف	CMC305	Soil Mechanics	اجباري	تخصص	3	2	0	3
Three	خريف	CMC307	Building Construction & City Planning	اجباري	تخصص	3	2	0	2
Three	خريف	CMC309	Project Management	اجباري	تخصص	2	2	0	0
Three	ربيع	FRB 302	Probabilities & Statistics	اجباري	كلية	3	2	0	2
Three	ربيع	CMC302	Water Resources, Irrigation & Drainage	اجباري	تخصص	3	2	1	3
Three	ربيع	CMC 304	Design of R.C. structures-1	اختياري	تخصص	3	2	0	3
Three	ربيع	CMC306	Surveying for engineers-2	اجباري	تخصص	3	2	0	3
Three	ربيع	CMM 308	Technical Installations in Buildings	اجباري	تخصص	3	2	0	2
Three	ربيع	HS3XX	Humanities– Elective1	اختياري	جامعة	2	2	0	0
Four	خريف	CMC 401	Design of Metallic Structures-1	اجباري	تخصص	3	2	0	3
Four	خريف	CMC 403	Environmental & Sanitary Engineering	اجباري	تخصص	3	2	0	2
Four	خريف	CMC 405	Construction Management	اجباري	تخصص	2	1	0	2
Four	خريف	CMC 407	Foundation Engineering	اجباري	تخصص	3	2	0	3

Academic Level	Semester	Course Code	Course Title	Course Type (Compulsory / Elective)	Requirement Category/ Type	Number of Credit Hours/ Points	Number of Weekly Hours		
							Theoretical teaching	Practical training	Tutorial
Four	خريف	CMC 409	Design of R.C. Structures2	اجباري	تخصص	3	2	0	3
Four	خريف	CMC 411	Cost Engineering & Quantity Surveying	اجباري	تخصص	2	1	0	2
Four	خريف	UHS 401	Legislation & Engineering Ethics	اجباري	جامعة	2	2	0	0
Four	ربيع	CMC 402	Design of Metallic Structures-2	اجباري	تخصص	3	2	0	3
Four	ربيع	CMC 404	Design of Hydraulic Strictures	اختياري	تخصص	3	2	0	3
Four	ربيع	CMC 406	Environmental Engineering	اجباري	تخصص	3	2	0	3
Four	ربيع	CMC 408	Construction Methods	اختياري	تخصص	2	1	0	2
Four	ربيع	CMC 410	Slope Stability & Retaining Structure	اجباري	تخصص	2	1	0	2
Four	ربيع	CMC 412	Highway Engineering	اجباري	تخصص	3	2	0	2
Four	ربيع	HS4XX	Humanities – Elective 2	اختياري	جامعة	2	2	0	0
Five	خريف	CMC 501	Concrete and Steel Bridges	اجباري	تخصص	3	2	0	3
Five	خريف	CMC 503	Dynamics of Structures	اختياري	تخصص	3	2	0	3
Five	خريف	CMC 5XX	Elective Course-1	اجباري	تخصص	3	2	0	3
Five	خريف	CMC 5XX	Elective Course-2	اجباري	تخصص	3	2	0	3
Five	خريف	CMC 509	Project-1	اجباري	تخصص	3	2	0	3
Five	خريف	HS 5XX	Humanities – Elective 3	اختياري	جامعة	2	2	0	0
Five	ربيع	CMC 502	Computer Applications in Civil Engineering	اختياري	تخصص	3	2	3	0
Five	ربيع	CMC 504	Quality Control & Inspection of Structures	اجباري	تخصص	3	2	0	2

Academic Level	Semester	Course Code	Course Title	Course Type (Compulsory / Elective)	Requirement Category/ Type	Number of Credit Hours/ Points	Number of Weekly Hours		
							Theoretical teaching	Practical training	Tutorial
Five	ربيع	CMM 506	Equipment for Construction	اختياري	تخصص	2	2	0	1
Five	ربيع	CMC 5XX	Elective Course-3	اجباري	تخصص	3	2	0	3
Five	ربيع	CMC 5XX	Elective Course-4	اختياري	تخصص	3	2	0	3
Five	ربيع	CMC 512	Project-2	اختياري	تخصص	3	0	0	6
Five	ربيع	HS 5XX	Humanities – Elective 4	اختياري	جامعة	2	2	0	0
FT	صيف	CMC/E380	Field Training I	اجباري	كلية	0	0	0	0
FT	صيف	CMC/E480	Field Training II	اجباري	كلية	0	0	0	0

4. Academic Standards

The program adopted the NARS 2018 (2nd Edition) issued by the NAQAAE for engineering sector. In addition to Level A and level B, the program prepared and approved the competencies for level D.

- **Adopted Academic Standards NARS**
- **Level A: The engineering graduate must be able to:**

A1. Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.

A2. Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.

A3. Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.

A4. Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.

A5. Practice research techniques and methods of investigation as an inherent part of learning.

A6. Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements.

A7. Function efficiently as an individual and as a member of multi-disciplinary and multi-cultural teams.

A8. Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.

A9. Use creative, innovative and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.
A10. Acquire and apply new knowledge, and practice self, lifelong and other learning strategies.

- **Level B: The engineering graduate must be able to:**

B1. Select appropriate and sustainable technologies for the construction of buildings, infrastructures, and water structures; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics.
B2. Achieve an optimum design of Reinforced Concrete and Steel Structures, Foundations and Earth Retaining Structures; and at least three of the following civil engineering topics: Transportation and Traffic, Roadways and Airports, Railways, Sanitary Works, Irrigation, Water Resources and Harbors; or any other emerging field relevant to the discipline.
B3. Plan and manage construction processes; address construction defects, instability and quality issues; maintain safety measures in construction and materials; and assess environmental impacts of projects.
B4. Deals with biddings, contracts and financial issues including project insurance and guarantees.

Adopted Academic Standards ARS

- **Level D: The engineering graduate must be able to:**

D1. Create architectural, urban, and planning designs that satisfy both aesthetic and technical requirements, using adequate knowledge of history and theory, related fine arts, local culture and heritage, technologies, and human sciences.
D2. Generate ecologically responsible environmental conservation and rehabilitation designs, through an understanding of structural design, construction, technology, and engineering problems

- **Date of Adoption of Standards in the governing Council: 11/12/2019**
  *** Decision/Minutes of the governing Council to be attached**

Faculty council number (461**) dated** 18/11/2025
Approved in the Department Board Meeting Number (78) on 7/10/2025

Approved in the Faculty Board Meeting Number (461) on 18/11/2025

5. Matrix of Academic Standards (Program Outcomes POs) with Courses

Compulsory courses

Compulsory Courses		Academic Standards															
		NARS														ARS	
Code	Title	A1	A2	A3	A4	A 5	A6	A7	A8	A9	A10	B1	B2	B3	B4	D1	D2
FRB 101	Mathematics I	1	1														
FRB 103	Mechanics I	1	1														
FRB 105	General Chemistry	1	1														
FRB 107	Physics I	1	1														
FRM 109	Engineering Graphics						1		1								
UHS 101	English language					1			1		1						
FRB 102	Mathematics II	1	1														
FRB 104	Mechanics II	1	1														
FRM 106	Production Engineering				1		1										
FRB 108	Physics II	1	1														
FRE 110	Computer Programming	1	1														
UHS 102	Social Issues					1		1			1						
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				
CMC 207	Surveying for Engineers-1		1					1				1					
CMC 209	Concrete Technology			1								1					
UHS 201	Technical writing								1	1							
FRB 202	Mathematics IV	1	1														
CMC 202	Structural Analysis-2		1									1					
CMC 204	Construction Materials	1										1					
CMC 206	CAD for Civil Engineering				1								1				
CMA 208	Basic Architectural Engineering								1	1						1	
CMM 210	Fundamental of Thermal Engineering	1											1				
UHS 202	Engineering Economics	1								1							
FRB 301	Numerical Methods	1	1														
CMC301	Hydraulics for Civil Engineer		1	1								1					
CMC 303	Structural Analysis-3	1										1					
CMC305	Soil Mechanics					1						1					
CMC307	Building Construction & City Planning					1			1							1	
CMC309	Project Management							1							1		1
FRB 302	Probabilities & Statistics	1	1														
CMC302	Water Resources, Irrigation & Drainage		1										1				

Compulsory Courses		Academic Standards															
		NARS														ARS	
CMC 304	Design of R.C. structures-1			1	1								1				1
CMC306	Surveying for engineers-2					1						1					
CMM 308	Technical Installations in Buildings					1					1	1				1	
CMC 401	Design of Metallic Structures-1			1	1								1				
CMC 403	Environmental & Sanitary Engineering		1											1			1
CMC 405	Construction Management							1		1					1		
CMC 407	Foundation Engineering			1									1				
CMC 409	Design of R.C. Structures2			1	1								1				1
CMC 411	Cost Engineering & Quantity Surveying	1						1							1		
UHS 401	Legislation & Engineering Ethics									1	1						
CMC 402	Design of Metallic Structures-2			1	1								1				
CMC 404	Design of Hydraulic Strictures			1	1								1				1
CMC 406	Environmental Engineering					1								1			1
CMC 408	Construction Methods				1			1									1
CMC 410	Slope Stability & Retaining Structure											1	1				
CMC 412	Highway Engineering					1							1	1			
CMC 501	Concrete and Steel Bridges			1	1								1				
CMC 503	Dynamics of Structures	1		1								1					
CMC 509	Project-1			1	1		1	1	1	1	1	1	1	1	1		1
CMC 502	Computer Applications in Civil			1									1	1			
CMC 504	Quality Control & Inspection of				1							1					
CMM 506	Equipment for Construction					1								1			
CMC 512	Project-2			1	1		1	1	1	1	1	1	1	1	1		1
CMC/E380	Field Training I							1			1			1			
CMC/E480	Field Training II							1			1			1			

Humanity Elective courses

Elective Courses		Academic Standards															
		NARS														ARS	
Code	Title	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	D1	D2
HS3XX	Humanities–Elective1																
HS302	Human Resource Management				1	1											
HS304	Strategic Management				1	1											
HS306	Computer and Society				1	1											
HS308	Accounting				1	1											
HS4XX	Humanities – Elective 2																
HS402	Foundations of Marketing					1	1			1							
HS404	Introduction to Finance					1	1			1							
HS406	Human Computer Interaction					1			1	1							
HS408	Sustainable Development					1			1	1							
HS 5XX	Humanities – Elective 3																
HS501	Specifications and feasibility studies								1	1							
HS503	Analytical Skills and Critical Thinking								1	1							
HS505	Communication Laws and Codes								1	1							
HS507	Construction Contracts and Law								1	1							
HS 5XX	Humanities – Elective 4																
HS502	Professional Communication Skills				1				1								
HS504	Principles of industrial health					1				1							
HS506	Social Risks and Security of Computer Systems				1				1								
HS508	Risk Management				1				1								

Program Elective courses

Elective Courses		Academic Standards															
		NARS														ARS	
Code	Title	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	D1	D2
CMC 3XX	Program Elective Courses I																
CMC505	Building Construction					1					1					1	1
CMC507	Advanced Engineering Materials						1				1						1
CMC509	Special Topics in Structural Analysis						1				1						1
CMC 3XX	Program Elective Courses II																
CMC511	Techniques of Planning, Scheduling and Project						1			1					1		1
CMC513	Construction Management-2						1			1					1		1
CMC515	Urban Planning						1			1						1	1
CMC 3XX	Program Elective Courses III																
CMC508	Transportation & Logistics	1		1									1				
CMC510	Prefabricated Water and Pre-stressed Concrete Structures	1		1									1				
CMC512	Analysis and Design of Composite Structures	1		1									1				
CMC 4XX	Program Elective Courses IV																
CMC514	Special Topics in Geotechnical Engineering					1				1			1	1			
CMC516	Total Quality Management					1				1			1	1			
CMC518	Value Engineering in the Construction					1				1			1	1			

6. Teaching and Learning strategies/methods to achieve Program Outcomes:

1. Lecture (problem-based learning- interactive learning – case study – co-operative learning – brainstorming - discussion)
2. Tutorials
3. Practical-based Learning
4. Projects
5. Self-Learning
6. Hybrid Learning

7. Student Assessment strategies/methods to verify and ensure students' acquisition of Program Outcomes:

1. Formative Assessment Method: quizzes
2. Summative Assessment Method
   a. First midterm: 30%
   b. Second midterm (practical/ oral or both in case of the course includes practical part): 20%
   c. Student activities: 10 % (Presentations, Reports, projects, assignments, observation)
   d. Final exam: 40%

8. Program Key Performance Indicators

No.	Performance Indicator	Target Level	Method	Measurement
1.	Students' evaluation and opinions on courses	Students	Electronic Survey	End of Semester
2.	Faculty members' evaluation and opinions on laboratories	Faculty Members	Electronic Survey	End of Semester
3.	Faculty members' evaluation and opinions on classrooms	Faculty Members	Electronic Survey	End of Semester
4.	Students' evaluation and opinions on laboratories	Students	Electronic Survey	End of Semester
5.	Students' evaluation and opinions on classrooms	Students	Electronic Survey	End of Semester
6.	Students' evaluation and opinions on the library	Students	Electronic Survey	End of Academic Year
7.	Students' evaluation and opinions on admission and transfer policies	Students	Electronic Survey	Beginning of Semester
8.	Students' evaluation and opinions on hybrid learning	Students	Electronic Survey	End of Semester
9.	Students' evaluation and opinions on the Programs Board Chairman	Students	Electronic Survey	End of Semester
10.	Students' evaluation and opinions on the General Programs Supervisor	Students	Electronic Survey	End of Semester
11.	Students' evaluation and opinions on the Program Coordinator	Students	Electronic Survey	End of Semester
12.	Students' evaluation and opinions on academic advising	Students	Electronic Survey	End of Semester
13.	Faculty members' evaluation and opinions on the Programs Board Chairman	Faculty Members	Electronic Survey	End of Semester

No.	Performance Indicator	Target Level	Method	Measurement
14.	Faculty members' evaluation and opinions on the General Programs Supervisor	Faculty Members	Electronic Survey	End of Semester
15.	Faculty members' evaluation and opinions on the Program Coordinator	Faculty Members	Electronic Survey	End of Semester
16.	Faculty members' evaluation and opinions on the Program Quality Coordinator	Faculty Members	Electronic Survey	End of Semester
17.	Administrative staff evaluation and opinions on the Programs Board Chairman	Administrative Staff	Electronic Survey	End of Semester
18.	Administrative staff evaluation and opinions on the General Programs Supervisor	Administrative Staff	Electronic Survey	End of Semester
19.	Administrative staff evaluation and opinions on the Program Coordinator	Administrative Staff	Electronic Survey	End of Semester
20.	Employers' evaluation and opinions on program graduates	Employers	Electronic Survey	Academic Year
21.	Training organizations' evaluation and opinions on students	Training Organizations	Electronic Survey	After Field Training
22.	Field training supervisors' evaluation and opinions on students	Field Training Supervis	Electronic Survey	After Field Training
23.	Students' evaluation and opinions on field training	Students	Electronic Survey	After Field Training
24.	Civil society views on the program mission and objectives	Civil Society	Electronic Survey	Academic Year
25.	Faculty members' views on the program mission and objectives	Faculty Members	Electronic Survey	Academic Year
26.	Students' views on the program mission and objectives	Students	Electronic Survey	Academic Year

Name & Signature
Program Coordinator

Dr Ahmed Gamal M. Morsi



Name & Signature
Vice Dean for Education and Student Affairs

Prof Dr Fahmy Abdelhaleem

