



**BENHA UNIVERISTY**



**CIVIL ENGINEERING  
DEPARTMENT**



**FACULTY OF  
ENGINEERING AT  
SHOUBRA**

**SPECIFICATIONS OF CIVIL ENGINEERING (GENERAL) PROGRAM (201<sup>o</sup>-201<sup>٦</sup>)**

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**University:** Benha University  
**Faculty:** Faculty of Engineering at Shoubra  
**Department:** Civil Engineering Department

## **Specifications of B. SC. Civil Engineering (General) Program (2015-2016)**

### **A-Basic Information**

- (1) Program Title:** B. SC. Civil Engineering (General) Program
- (2) Program Type:** Single
- (3) Department:** Civil Engineering
- (4) Coordinator:** Prof. Dr. Ahmed Abd El Fattah Mahmoud
- (5) External evaluator:** Dr. Moustafa Ismaeil & Dr. Hytham Nour El-Deen Zohny (Were nominated by the Faculty Council on 10/2015)
- (6) Last date of program Bylaw approval:** Faculty Council on ٢٠٠٣

### **B-Professional Information**

#### **1. Program Aims**

The mission of the Civil Engineering – General Program is to provide students with a broad and thorough education in civil engineering fundamentals, applications, and design so as to prepare graduates for the practice of civil engineering at the professional level with confidence and skills necessary to meet the technical and social challenges of the future and for continuing their studies at the graduate level.

In pursuit of Program mission, the educational aims of the Civil Engineering - General Program are:

1. To provide knowledge of mathematics, science and engineering concepts to the solution of civil engineering problems.
2. Design a system, component and process to meet the required needs within realistic constraints.
3. Design and conduct experiments as well as analyze and interpret data.
4. Identify, formulate and solve fundamental engineering problems.
5. Use the techniques, skills, and appropriate engineering tools, necessary for engineering practice and project management.
6. Work effectively within multi-disciplinary teams.
7. Communicate effectively.
8. Consider the impacts of engineering solutions on society & environment.
9. Demonstrate knowledge of contemporary engineering issues.
10. Display professional and ethical responsibilities; and contextual understanding



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11. Engage in self- and life- long learning.
12. Act professionally in design and supervision of civil engineering disciplines
13. Use the codes of practice of all civil engineering disciplines effectively and professionally
14. Design, construct and protect all types of excavations and tunneling systems for different purposes
15. Manage construction sites.
16. Select appropriate building materials from the perspective of strength, durability, suitability of use to location, temperature, weather conditions and impacts of seawater and environment Select and design adequate water control structures, irrigation and water networks, sewerage systems and pumping stations
17. Define and preserve properties (lands, real estates) of individuals, communities and institutions, through different surveying and GIS tools
18. Design and construct structures for protection against dangers of unexpected natural events such as floods and storms.
19. Lead and supervise a group of designers and site or lab technicians.

The Faculty of Engineering at Shoubra has adopted the National Academic Reference Standard, NARS, Prepared by NAQAAE (National Authority for Quality Assurance and Accreditation of Education), issued August 2009

According to the National Academic Reference Standard, NARS, the program in Civil Engineering (General) must satisfy the following Learning Outcomes:

## **2. Intended learning outcomes (ILOs)**

### **a. Knowledge and understanding:**

Upon completion of the program the graduates of the civil engineering program (General) should be able to acquire knowledge and understanding of:

- a.1) Concepts and theories of mathematics and sciences, appropriate to civil engineering.
- a.2) Basics of information and communication technology (ICT).
- a.3) Characteristics of engineering materials related to civil engineering.
- a.4) Principles of design including elements design, process and/or a system related to civil engineering.
- a.5) Methodologies of solving engineering problems, data collection interpretation.
- a.6) Quality assurance systems, codes of practice and standards, health and safety requirements and environmental issues.
- a.7) Business and management principles relevant to engineering.
- a.8) Current engineering technologies as related to disciplines.
- a.9) Topics related to humanitarian interests and moral issues.
- a.10) Technical language and report writing.
- a.11) Ethics and impacts of engineering solutions on society and environment.



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- a.12) Contemporary engineering topics.
- a.13) Principles in the fields of structures analysis and design, geo-techniques, and foundations, hydraulics and hydrology, water resources, environmental and sanitary engineering, roadways and traffic systems, surveying and photogrammetry.
- a.14) Properties, behavior and fabrication of building materials.
- a.15) Projects and construction management including planning, finance, bidding and contracts.

### **b. Intellectual skills**

Upon completion of the program of civil engineering graduate should be able to:

- b.1) Select appropriate mathematical and computer-based methods for modeling and analyzing problems.
- b.2) Select appropriate solutions for engineering problems based on analytical thinking.
- b.3) Handle problem solving and designing a creative and innovative way.
- b.4) Combine, exchange, and assess different ideas, views, and knowledge from a range of sources.
- b.5) Assess and evaluate the characteristics and performance of components, systems and processes.
- b.6) Investigate the failure of components, systems, and processes.
- b.7) Solve engineering problems, often on the basis of limited and possibly contradicting information.
- b.8) Select and appraise appropriate ICT tools to a variety of engineering problems.
- b.9) Judge engineering decisions considering balanced costs, benefits, safety, quality, reliability, and environmental impact.
- b.10) Incorporate economic, social, environmental dimensions and risk management in design.
- b.11) Analyze results of numerical models and appreciate their limitations.
- b.12) Create systematic and methodic approaches when dealing with new and advancing technology.
- b.13) Select appropriate building materials from the perspective of strength, durability, suitability of use to location, temperature, weather conditions and impacts of seawater and environment.
- b.14) Select and design adequate water control structures, irrigation and water networks, sewerage systems and pumping stations.
- b.15) Analyze and select codes of practices in designing structures of all types.
- b.16) Define, plan, conduct and report management techniques.
- b.17) Assess and evaluate different techniques and strategies for solving engineering problems.

### **c. Practical and Professional skills**

Upon completion of the program of civil engineering graduate should be able to:

- c.1) Combine knowledge of mathematics, science, information technology, design, business context



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- and engineering practice to solve engineering problems.
- c.2) Professionally merge the engineering knowledge, understanding, and feedback to improve design, product and/or services.
  - c.3) Create and/or re-design a process, component or system, and carry out specialized engineering designs.
  - c.4) Practice the neatness and aesthetics in design and approach.
  - c.5) Use computational facilities and techniques, measuring instruments, workshops and laboratories equipment to design experiments, collect, analyze, and interpret results.
  - c.6) Use a wide range of analytical tools, techniques, equipment, and software packages pertaining to the discipline and develop required computer programs.
  - c.7) Compose numerical modeling methods to engineering problems.
  - c.8) Conduct safe systems at work and observe the appropriate steps to manage risks.
  - c.9) Demonstrate basic organizational and project management skills.
  - c.10) Apply quality assurance procedures and follow codes and standards.
  - c.11) Exchange knowledge and skills with engineering community and industry.
  - c.12) Prepare and present technical reports.
  - c.13) Use laboratory and field equipment competently and safely.
  - c.14) Observe record and analyze data in laboratory and in the field.
  - c.15) Practice professionally construction management skills. Prepare technical draft and detailed drawings both manually and using CAD.
  - c.16) Carry out maintenance of all type of roadways and traffic systems.
  - c.17) Prepare quantity surveying reports.
  - c.18) Plan, design, construct, operate, control and carry out maintenance of all types of roadways and traffics.

**d. General and transferable skills:**

Upon compilation of the program of civil engineering graduate should be able to:

- d.1) Collaborate effectively within multidisciplinary team.
- d.2) Work in stressful environment and within constraints.
- d.3) Communicate effectively.
- d.4) Demonstrate efficient IT capabilities.
- d.5) Lead and motivate individuals.
- d.6) Effectively manage tasks, time, and resources.
- d.7) Search for information and engage in life-long self-learning discipline.
- d.8) Present entrepreneurial skills.
- d.9) Use relevant literatures.



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### 3. Academic Reference Standards of Program

The Faculty of Engineering at Shoubra has adopted the National Academic Reference Standard, NARS, Prepared by NAQAAE (National Authority for Quality Assurance and Accreditation of Education), issued August 2009

The school and department are adopted exactly **NARS** as reference academic standards for this program.

The program vs. NARS reference academic standard matrix is:

	NARS
Program Reference Academic Standards	



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## 4. Curriculum Structure and Contents

**4a. Program duration:** 10 semesters (5-years)

**4b. Program structure:** Contact hours system

- i. No. of Contact hours= 300 144 Lectures 156 Tutorial /Exercises
- ii. No. of Contact hours= 300 276 Compulsory 24 Elective
- iii. No. of Contact hours of social science and humanities: 27 hours= 9 %
- iv. No. of Contact hours of basic science: 128 hours= 42.67%
- v. No. of Contact hours of specialized courses: 145 hours= 48.33%

**4c. Indicative curricula Content by Subject Area**

Table 1: Indicative curricula content by subject area

	Subject Area	%	Tolerance
A	Humanities and Social Sciences (Univ. Req.)	9	9-12 %
B	Mathematics and Basic Sciences	21.67	20-26 %
C	Basic Engineering Sciences (Faculty/Spec. Req.)	21	20-23 %
D	Applied Engineering and Design	22.33	20-22 %
E	Computer Applications and ICT*	9.67	9-11 %
F	Projects* and Practice	9	8-10 %
	<b>Subtotal</b>	<b>94.00</b>	<b>92-94 %</b>
G	Discretionary (Institution character-identifying) subjects	7.33	6-8 %
	<b>Total</b>	<b>100</b>	<b>100%</b>

\* This part of the curriculum may be served in separate course(s) and/or included in several courses and its hours should be indicated in the course specification

Practical/Field Training: the students must carry out 3 weeks of field training after the freshman year and after the sophomore year.

### 4. d. Program Levels:

**Preparatory Year:** It is required to pass 60 hours distributed as follows:

60 compulsory 0 Elective

**First Year Civil:** It is required to pass 60 hours distributed as follows:

60 compulsory 0 Elective

**Second Year Civil:** It is required to pass 60 hours distributed as follows:

60 compulsory 0 Elective

**Third Year Civil (General):** It is required to pass 60 hours distributed as follows:

58 compulsory 2 Elective

**Fourth Year Civil (General):** It is required to pass 60 hours distributed as follows:

38 compulsory 22 Elective



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## 5. Program Courses:

### Year of program 1 (Preparatory Year) Semester 1

a- Compulsory

Code	Course Title	No. of hours / week				Program ILOs Covered (By no.)
		Lec.	Tut.	Prac.	Total	
EMP 001	Mathematics (A)	4	2	-	6	Attached Matrix
EMP 012	Mechanics	2	2	-	4	Attached Matrix
EMP 013	Physics (A)	4	1	2	7	Attached Matrix
EMP 014	Chemistry	4	-	2	6	Attached Matrix
MEC 001	Engineering drawing and isometric	1	4	-	5	Attached Matrix
GEN 001	Technical language	-	2	-	2	Attached Matrix
Total		15	11	4	30	

### Year of program 1 (Preparatory Year) Semester 2

a- Compulsory

Code	Course Title	No. of hours / week				Program ILOs Covered (By no.)
		Lec.	Tut.	Prac.	Total	
EMP 021	Mathematics (B)	4	2	-	6	Attached Matrix
EMP 012	Mechanics	2	2	-	4	Attached Matrix
EMP 023	Physics (B)	4	-	2	6	Attached Matrix
MEC 001	Engineering drawing and isometric	-	4	-	4	Attached Matrix
ELC 006	Computer science	2	1	-	3	Attached Matrix
MEC 002	Engineering production	2	-	3	5	Attached Matrix
GEN 002	History of engineering science	2	-	-	2	Attached Matrix
Total		16	9	5	30	

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**Year of program 2 (First Year Civil) Semester 1**

a- Compulsory

Code	Course Title	No. of hours / week				Program ILOs Covered (By no.)
		Lec.	Tut.	Prac.	Total	
CVE 111	Structural Analysis (1)A	3	3	-	6	Attached Matrix
CVE 112	Properties & Testing of Materials (1)A	3	2	1	6	Attached Matrix
CVE 113	Computer Applications (1)	2	1	2	5	Attached Matrix
CVE 114	Mechanics	2	2	-	4	Attached Matrix
SUR 151	Surveying (1)	3	1	2	6	Attached Matrix
GEN 151	Engineering Geology	2	1	-	3	Attached Matrix
Total		15	10	5	30	

**Year of program 2 (First Year Civil) Semester 2**

a- Compulsory

Code	Course Title	No. of hours / week				Program ILOs Covered (By no.)
		Lec.	Tut.	Prac.	Total	
CVE 121	Structural Analysis (1)B	3	3	-	6	Attached Matrix
CVE 122	Properties & Testing of Materials (1)B	3	2	1	6	Attached Matrix
CVE 123	Civil Drawing	-	6	-	6	Attached Matrix
EMP 151	Mathematics & Statistics	2	2	-	4	Attached Matrix
EMP 152	Physics and Physical Chemistry	2	1	1	4	Attached Matrix
ARC 151	Building Construction	2	2	-	4	Attached Matrix
Total		12	16	2	30	





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### Year of program 3 (Second Year Civil) Semester 1

a- Compulsory

Code	Course Title	No. of hours / week				Program ILOs Covered (By no.)
		Lec.	Tut.	Prac.	Total	
CVE 211	Structural Analysis (2)A	3	2	1	6	Attached Matrix
CVE 212	Properties & Testing of Materials (2)A	3	2	1	6	Attached Matrix
CVE 213	Reinforced Concrete (1)A	2	2	-	4	Attached Matrix
CVE 214	Fluid Mechanics	3	2	1	6	Attached Matrix
MPH 251	Mathematics & Numerical Analysis	2	2	-	4	Attached Matrix
MEC 251	Electrical & Mechanical Engineering	2	2	-	4	Attached Matrix
Total		15	12	3	30	

### Year of program 3 (Second Year Civil) Semester 2

a- Compulsory

Code	Course Title	No. of hours / week				Program ILOs Covered (By no.)
		Lec.	Tut.	Prac.	Total	
CVE 221	Structural Analysis (2)B	3	3	-	6	Attached Matrix
CVE 222	Properties & Testing of Materials (2)B	3	2	1	6	Attached Matrix
CVE 223	Computer Applications (2)	2	1	1	4	Attached Matrix
CVE 224	Reinforced Concrete (1)B	2	2	-	4	Attached Matrix
CVE 225	Hydraulics	2	1	1	4	Attached Matrix
SUR 251	Surveying (2)	3	2	1	6	Attached Matrix
Total		15	11	4	30	

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**Year of program 4 (Third Year Civil - General) Semester 1**

a- Compulsory

Code	Course Title	No. of hours / week				Program ILOs Covered (By no.)
		Lec.	Tut.	Prac.	Total	
CVG 311	Structural Analysis (3)	3	2	1	6	Attached Matrix
CVG 312	Geotechnical Engineering (1)A	2	1	1	4	Attached Matrix
CVG 313	Reinforced Concrete (2)A	2	2	-	4	Attached Matrix
CVG 314	Steel Structures (1)A	2	2	-	4	Attached Matrix
CVG 315	Irrigation & Drainage Engineering	3	3	-	6	Attached Matrix
CVG 316	Transportation & Traffic Engineering	3	3	-	6	Attached Matrix
<b>Total</b>		<b>15</b>	<b>13</b>	<b>2</b>	<b>30</b>	

**Year of program 4 (Third Year Civil - General) Semester 2**

a- Compulsory

Code	Course Title	No. of hours / week				Program ILOs Covered (By no.)
		Lec.	Tut.	Prac.	Total	
CVG 321	Highways & Airports Engineering	3	3	-	6	Attached Matrix
CVG 322	Geotechnical Engineering (2)B	2	1	1	4	Attached Matrix
CVG 323	Reinforced Concrete (2)B	3	3	-	6	Attached Matrix
CVG 324	Steel Structures (1)B	3	3	-	6	Attached Matrix
CVG 325	Construction Project Management	3	3	-	6	Attached Matrix
<b>Total</b>		<b>14</b>	<b>13</b>	<b>1</b>	<b>28</b>	

b- Elective

Code	Course Title	No. of hours / week				Program ILOs Covered (By no.)
		Lec.	Tut.	Prac.	Total	
GEN 35x	Elective Course (1) Humanities					
GEN355	Economics	2	-	-	2	Attached Matrix
GEN 356	Legislations& Contracts	2	-	-	2	Attached Matrix
GEN357	Management& Marketing	2	-	-	2	Attached Matrix
GEN358	International Agreements& Contracts	2	-	-	2	Attached Matrix
GEN359	Environment& Community Service	2	-	-	2	Attached Matrix
GEN 360	English Language& Technical Report Writing	2	-	-	2	Attached Matrix
<b>Total</b>		<b>2</b>			<b>2</b>	



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**Year of program 5 (Fourth Year Civil - General) Semester 1**

**a- Compulsory**

Code	Course Title	No. of hours / week				Program ILOs Covered (By no.)
		Lec.	Tut.	Prac.	Total	
CVG411	Geotechnical Engineering & Foundations	3	2	1	6	Attached Matrix
CVG412	Design of Irrigation Works	2	2	-	4	Attached Matrix
CVG413	Steel Structures (2)	3	3	-	6	Attached Matrix
CVG414	Sanitary Engineering	3	3	-	6	Attached Matrix
CVG415	Railway Engineering	2	2	-	4	Attached Matrix
Total		13	12	1	26	

**b- Elective**

Code	Course Title	No. of hours / week				Program ILOs Covered (By no.)
		Lec.	Tut.	Prac.	Total	
CVG 44x	Elective Course (2) – List 2 General Civil Engineering					
CVG 441	Design of Wall-bearing Masonry Structures	2	2	-	4	Attached Matrix
CVG 442	Computer Analysis & Design of Structures	2	2	-	4	Attached Matrix
Total		2	2		4	



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**Year of program 5 (Fourth Year Civil - General) Semester 2**

**a- Compulsory**

Code	Course Title	No. of hours / week				Program ILOs Covered (By no.)
		Lec.	Tut.	Prac.	Total	
CVG 421	Quality Engineering	2	2	-	4	Attached Matrix
CVG 422	Reinforced Concrete (3)	2	2	-	4	Attached Matrix
CVS 413	Construction Engineering & Technology	2	2	-	4	Attached Matrix
CVG 423x	Graduation Project (Elective)					
CVG 423a	Graduation Project - Geotechnical Engineering	-	10	-	10	Attached Matrix
CVG 423b	Graduation Project - Highway & Airports Engineering	-	10	-	10	Attached Matrix
CVG 423c	Graduation Project - Sanitary Eng.	-	10	-	10	Attached Matrix
CVG 423d	Graduation Project - Traffic & Transportation Engineering	-	10	-	10	Attached Matrix
CVG 423e	Graduation Project - Railway Eng.	-	10	-	10	Attached Matrix
CVG 423f	Graduation Project - Irrigation & Water Resources	-	10	-	10	Attached Matrix
CVG 423g	Graduation Project - Construction Project Management	-	10	-	10	Attached Matrix
CVG 423h	Graduation Project - Computer Application in Civil Engineering	-	10	-	10	Attached Matrix
<b>Total</b>		<b>6</b>	<b>16</b>		<b>22</b>	

**b- Elective**

Code	Course Title	No. of hours / week				Program ILOs Covered (By no.)
		Lec.	Tut.	Prac.	Total	
CVG 44x	Elective Course (3) – List 3 General Civil Engineering					
CVG 44x	Elective Course (4) – List 3 General Civil Engineering					
CVG 443	Sanitary & Environmental Eng.	2	2	-	4	Attached Matrix
CVG 444	Special Topics in Water Resources & Irrigation	2	2	-	4	Attached Matrix
CVG 445	Highways Planning & Airports Eng.	2	2	-	4	Attached Matrix
CVG 446	Railway Planning & Engineering	2	2	-	4	Attached Matrix
CVG 447	Geotechnical & Foundation Eng.	2	2	-	4	Attached Matrix
CVG 448	Advanced Project Management	2	2	-	4	Attached Matrix
CVG 449	Transportation & Traffic engineering	2	2	-	4	Attached Matrix
CVG 450	Advanced Computer Applications in Civil Engineering	2	2	-	4	Attached Matrix
<b>Total</b>		<b>4</b>	<b>4</b>		<b>8</b>	



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## 6. Program admission requirements

Having Egyptian Secondary education or equivalent certificate with major in Mathematics, then after passing the preparatory year and fulfilling the admission requirements the students will be able to attend the department.

## 7. Regulations for progression and program completion First Year/Level/Semester

- a. The student is considered successful if he passes the examinations in all courses of his class.
- b. The student is promoted to the next higher level if he fails in not more than two subjects of his class or from lower classes,
- c. The referred student has to sit the examination in the courses in which he has failed together with the students studying the same courses. The student gets a pass grade when he passes the examination successfully. In case the student was considered absent with acceptable excuse in a course, he gets the actual grade,
- d. The grades of the successful student in a course and in the general grade are evaluated as follows
  - Distinction: from 85% of the total mark and upwards.
  - Very good from 75% to less than 85% of the total mark.
  - Good from 65% to less than 75% of the total mark
  - Pass: from 50% to less than 65% of the total mark
  - -The grades of a failing student in a course are estimated in one of the following grades:
    - Weak: from 30% to less than 50% of the total mark
    - Very weak: less than 30% of the total mark.
  - The B.Sc. general grade for students is based on the cumulative marks obtained during all the years of study. The students are then arranged serially according their cumulative sum.
  - The student is awarded an honor degree if his cumulative sum is distinction or very good provided that he gets a grade not less than very good in any class of study other than the preparatory year. Moreover, he should have not failed in any examination he has sat in any class other than the preparatory year.



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## **8. Assessment Methods of Program Intended Learning Outcomes:**

Assessment Method	Intended Learning Outcomes
1. Assignments	Knowledge and understanding, Intellectual skills, Professional and Practical Skills.
2. Quizzes	Knowledge and understanding, Intellectual skills
3. Oral discussions	Knowledge and understanding, Professional and Practical Skills, General and transferable skills.
4. Reports	Knowledge and understanding, Intellectual skills, Intellectual skills, General and transferable skills.
5. Written examinations	Knowledge and understanding, Intellectual skills and Practical Skills.
6. Project write-up	Intellectual skills, Intellectual skills, Professional and Practical Skills.
7. Presentations	Intellectual skills, Professional and Practical Skills, General and transferable skills
8. Laboratory experimental write-up	Professional and Practical Skills.
9. Seminars	General and transferable skills.
10. Work-shop	General and transferable skills.
11. Oral Exam	Knowledge and understanding, Professional and Practical Skills, General and transferable skills.
12. Midterm	Knowledge and understanding, Intellectual skills and Practical Skills.
13. Final exam	Knowledge and understanding, Intellectual skills and Practical Skills.

## **9. Program Assessment methods**

Sample	Tool	Evaluator
50 %	Questionnaire	1-Senior students
5%	Questionnaire & online assessment	2-Alumni
5	Questionnaire & interview	3-Stakeholders ( Employers)
2	Report	4-External Evaluator(s) (External Examiner(s))



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### 10. Matrix of Courses versus Program ILOs:

Ref. to the appendix

### 11. Matrix of Program aims versus Program ILOs

Program Aims	Program ILOs			
	Knowledge and understanding	Intellectual skills	Professional and Practical Skills	General and transferable skills
1.	√			
2.	√			
3.	√			
4.		√		
5.			√	
6.				√
7.				√
8.			√	
9.			√	
10.			√	
11.				√
12.			√	
13.			√	
14.		√	√	
15.		√		
16.				√
17.	√	√		
18.			√	
19.		√	√	

وحدة ضمان الجودة



BENHA UNIVERISTY



CIVIL ENGINEERING  
DEPARTMENT



FACULTY OF  
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SPECIFICATIONS OF CIVIL ENGINEERING (GENERAL) PROGRAM (201<sup>o</sup>-201<sup>٦</sup>)

**12. Matrix of Program aims versus NAQAAE student attributes:**

Program Aims	Students' attributes as per NAQAAE																		
	a.	b.	c.	d.	e.	f.	g.	h.	i.	j.	k.	l.	m.	n.	o.	p.	q.	r.	s.
1.	√																		
2.		√																	
3.			√																
4.				√															
5.					√														
6.						√													
7.							√												
8.								√											
9.									√										
10.										√									
11.											√								
12.												√							
13.													√						
14.														√					
15.															√				
16.																√			
17.																	√		
18.																		√	
19.																			√

**13. Matrix of Program aims and Faculty mission**





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**SPECIFICATIONS OF CIVIL ENGINEERING (GENERAL) PROGRAM (201<sup>o</sup>-201<sup>v</sup>)**

Program Aims	Mission of Faculty of Engineering at Shoubra			
	Learning Mission	Post graduate and research Mission	Society and environmental affairs mission	Ethics mission
1.	√			
2.	√			
3.	√			
4.	√			
5.	√			
6.			√	√
7.			√	√
8.			√	
9.			√	
10.				√
11.		√		
12.		√		
13.			√	
14.	√	√		
15.	√	√		
16.			√	√
17.		√		
18.		√		
19.		√		

Head of Department: Prof. Ahmed Abdel Fattah Mahmoud Ahmed

Date 9-2015

Sign: