Course Specifications : Strength of Materials.2

Faculty of Engineering

University :Mansoura University
Faculty :Faculty of Engineering
Department :**Civil Engineering Department**.

1- Course Data

Course Code : STE8213 Study Year : **ثانية مدنى**

Programme(s) on which the course is given : **civil Engineering**

Teaching hours: Lecture : 4 Tutorial : 4 Practical : 0(hour/week)

2- Overall Aims of Course

For students undertaking this course, the aims are to:

- 1 - Select appropriate building materials from the perspective of strength, durability, suitability of use to location, temperature, weather conditions and impacts of seawater and environment.
- 2 - Design and conduct experiments and analyze and interpret data.
- 3 - Design and construct concrete mixes.

3- Intended Learning Outcomes of Course (ILOS)

a- Knowledge and Understanding

On completing this course, students will be able to:

- a - 1 - Understand the basic principles of concrete materials, component, types, advantage and disadvantage.[1]
- a - 2 - Become informed about the concrete technology, standard specifications, quality control tests in both fresh and hardened cases.[1]
- a - 3 - Understand the basic principles and design methods of concrete mixes.[1-2-3]
- a - 4 - Demonstrate a knowledge of special types of concrete.[1]

b- Intellectual Skills

At the end of this course, the students will be able to:

- b - 1 - Using principles and concepts in choosing the appropriate types of concrete to construction projects.[1]
- b - 2 - Apply the basic concepts of experimental tests in evaluating the quality control of concrete.[1-2]
- b - 3 - Analyze the results of quality control test reports of concrete materials.[2-3]
- b - 4 - Using principles and concepts in design concrete mixes.[2-3]

c- Professional and Practical Skills

On completing this course, the students are expected to be able to:

- c-1- Develop the ability to analyze and design concrete mixes for all concrete types[2-3]
- c - 2 - Choose the suitable and appropriate concrete types for different construction projects.[1-2]

- Other types of assessment - 5 %

Total 100%

8- List of References

a - Essential books (text books)

- 1 - Mohamed Yousry Elshikh, "Properties and strength of Concrete", 2008.
- 2 - Nevill, A., "Properties of Concrete", Longman, 1998.
- 3 - Mehta, P. K., "Properties of Concrete and Structures" Prentic hall Inc., New jersy, 1998.
- 4 - Ministry of Housing, Utilities and Urban Communities, " Egyptian Code for Design and construction of concrete structures" ECCS 203-2001, Cairo 2008.

- **9- Matrix of Knowledge and Skills**

	Topics	week	Knowledge	Intellectual Skills	Professional Skills	General and Transferable Skills
1	Introduction of concrete types and materials [a1-b1]	1-2	x	x		
2	Concrete technology[a2- b1]	3-4	x	x		
3	Fresh Concrete properties and tests [a2- b2]	5-6	x	x		
4	Destructive and non destructive tests of hardened concrete [a2- b2- b3- c3]	7-8	x	x	x	
5	Concrete additives [a1- c3]	9	x		x	
6	Concrete Mix design[a3- b4 - c1-c2]	10-12	x	x	c	
7	Special concrete [a4 - c2- c3]	13-14	x		x	
8	Quality control [c3- d1]	15			x	x

- Course Coordinator : د. / محمد محمد يسرى محمود الشيخ

- Head of Department : أ.د. / احمد السعيد احمد بدر

خواص ومقاومة : Course Specifications
مواد (٣)

Faculty of Engineering

University :Mansoura University
Faculty :Faculty of Engineering
Department :قسم الهندسة الإنشائية

- **1- Course Data**

Course Code :08425Study Year :fourth year of civil engineering
Programme(s) given : Civil Engineering
Teaching hours: Lecture : 2Tutorial : 2Practical : 0(hour/week)

2- Overall Aims of Course

For students undertaking this course, the aims are to:

- 1 - Select appropriate building materials from the perspective of strength, durability, suitability of use to location, temperature, weather conditions and impacts of seawater and environment.
- 2 - Design and conduct experiments and analyze and interpret data.
- 3 - Select appropriate methods of construct concrete members repair

- **3- Intended Learning Outcomes of Course (ILOS)**

a- Knowledge and Understanding

On completing this course, students will be able to:

- a - 1 - Understand the basic principles of concrete durability, component, types, advantage and disadvantage.[1]
- a - 2 - Become informed about the concrete durability, standard specifications, quality control tests in both fresh and hardened cases.[1]
- a - 3- Understand the basic principles and design methods of concrete strengthening.[1-2-3]
- a - 4 - Demonstrate a knowledge of special types of concrete.[1]

b- Intellectual Skills

At the end of this course, the students will be able to:

- b - 1 - Using principles and concepts in choosing the appropriate types of concrete to construction projects.[1]
- b - 2 - Apply the basic concepts of experimental tests in evaluating the quality control of concrete.[1-2]
- b - 3 - 3 - Analyze the results of quality control test reports of concrete repairs, strengthening and durability.[2-3]
- b - 4 - Using principles and concepts in concrete members joints.[2-3]

c- Professional and Practical Skills

On completing this course, the students are expected to be able to:

- c - • c-1- Develop the ability to analyze and design concrete joints for all concrete members[2-3]

- c - c - 2 - Choose the suitable and appropriate concrete types for different construction projects.[1-2]
- c - 3c - 3 - Observe record and analyze data in laboratory as well as in the field [3]

d- General and Transferable Skills

At the end of this course, the students will be able to:

- d - 1 - Ability to search for information and adopt long - life self learning[2-3].

- **4- Course Contents**

1 Introduction of concrete types and materials [a1-b1]
2 Concrete technology[a2- b1]
3 Causes of deterioration of concrete structures [a2- b2]
4 Repair and strengthening of construction elements [a3-b3-c1]
5 Concrete durability, deterioration mechanisms [a4-b4-c2]
6 Special concrete types [c3]
7 Joints in construction[c3-d1]
8 Cathode protection[c3-d1]

5- Teaching and Learning Methods

- 5.1 - Lectures
- 5.2 - - laboratory and classes
- 5.3 - Oral discussion
- 5.4 - Internet surveys and navigation
- 5.5 - Exercises and homework
- 5.6 - Field reports

6- Teaching and Learning Methods of Disables

- 6.1 - Lectures
- 6.2 - Oral discussion
- 6.3 - Internet surveys and navigation
- 6.4 - Exercises and homework

7- Student Assessment

a- Student Assessment Methods

• 1 - - Exercises and homework	to assess	[a1 - a2 - a3 - a4 - b1 - b2 - b3 - b4 - c1 -c2- c3]
• 2 - - Mid term exam	to assess	[a1 - a2 - b1 - b2]
• 3 - Prepare the reports	to assess	[d1]
• 4 - Oral examination	to assess	[c2]
• 5 - Final Written examination	to assess	[a3 - a4 - b2 - b3 -b4 - c1 - c3]

b- Assessment Schedule

• - Assessment 1	Final-Exam	Week End of term
• - Assessment 2	Exercises	Week all over the term
• - Assessment 3	Reports	Week All over the term
• - Assessment 4	oral examination	week12
• - Assessment 5	Mid term exam	week7

c- Weighting of Assessments

- Mid_Term Examination - 10 %
- Final_Term Examination - 70 %
- Oral Examination - 5 %

- Practical Examination - 5 %
- Semester work - 10 %
- Other types of asessment - 0 %

Total 100%

8- List of References

a - Course Notes

- 1 - Lecture notes

b - Essential books (text books)

- 1 - Neville, A., Properties of Concrete, Longman, 1998

c - Periodical

- 1 - Cement and concrete research
- 2 - Structural Journal of The American Concrete Institute (ACI)
- 3 - Structural Journal of the American Society of Civil Engineers (ASCE)

d - Web Sites

- 1 - http://www.aci-int.org

- **9- Matrix of Knowledge and Skills**

	Topics	week	Knowledge	Intellectual Skills	Professional Skills	General and Transferable Skills
1	Introduction of concrete types and materials [a1-b1]	1-2	x	x		
2	Concrete technology[a2- b1]	2-3	x	x		
3	Causes of deterioration of concrete structures [a2- b2]	3-5	x	x		
4	Repair and streenghthning of construction elements [a3-b3-c1]	5-7	x	x	x	
5	Concrete durability, deterioration mechanisms [a4-b4-c2]	8-10	x	x	x	
6	Special concrete types [c3]	11-12			x	
7	Joints in construction[c3-d1]	13-14			x	x
8	Cathodic protection[c3-d1]	15			x	x

- Course Coordinator : د. / محمد محمد يسرى محمود الشيخ

- Head of Department : أ.د. / احمد السعيد احمد بدر

	K1	C1	C2	C3	S1	S2	S3	O1
BLT4012		✓	✓	✓	✓	✓		✓
BLT4013		✓	✓	✓	✓	✓		✓
BLT4014		✓	✓	✓	✓	✓		✓
BLT4015		✓	✓	✓	✓			✓
BLT4016		✓	✓	✓	✓	✓		✓
BLT4017		✓	✓	✓	✓	✓		✓
BLT4018		✓	✓	✓	✓	✓		✓
BLT4019		✓	✓	✓	✓	✓		✓
COM4013	✓			✓			✓	✓
COM4011	✓			✓			✓	✓
COM4015	✓			✓		✓	✓	✓
BLT5000		✓	✓	✓				✓

Note: for the definition of the key skills, see the Programme Specification Document

Table 13.1.2 Skills Mapping (Learning Outcomes against modules)

- **A- Basic Information:**

Program on which the course is given	
Major or Minor element of programs	Major
Department offering the program	Structural Engineering Dept.
Department offering the course	Structural Engineering Dept.
Academic year / Level	Preliminary First Year
Date of specification approval	14-9-1997
Co-coordinator	Dr. Mohamed yousry El-shikh د. محمد يسري الشيخ

Title:	________________	Code:	-
Credit Hours:	-	Lecture:	2/week
Tutorial:	-	Practical :	-
		Total:	2/week

- **B- Professional Information:**

1- Overall Aims of Course:

1.1 Master the basics and methodologies of scientific research with versatile use of its variable tools. 1.2 Show awareness of the ongoing problems and modern visions in the area of pre cast concrete.

2- Intended Learning Outcomes of Course (ILOs):

a- Knowledge and Understanding:

a1-	Understand the advanced principles of concrete types.[1-2]
a2-	Become informed about the concrete technology, standard specifications, quality control tests in Pre – Cast Concrete.[1-2]
a3-	Demonstrate a knowledge of Scientific developments in the field of specialization[1-2]

b- Intellectual Skills:

b1-	Using principles and concepts in choosing the appropriate types of concrete to construction projects.[1-2]
b2-	Analyze and evaluate of information in the field of pre cast concrete and make full use of such information to solve problems.[1-2]

c- Professional and Practical Skills:

c1-	Develop the ability to analyze and design concrete mixes for all concrete types[2]
c2-	Demonstrate a high level of competence in the coordination of different sources of knowledge to solve

	professional problems[2]

d- General and Transferable Skills:

d1-	Ability to apply modern and principle professional skills in the area of specialization[2]
d2-	Ability to write and evaluate technical reports[2]
d3-	Ability to adopt assessment methods and tools existing in the area of specialization[2]

3- Contents:

Topic	Lecture	Tutorial/Practical	No of hours
1-Introduction to Pre-cast concrete materials, components[a1-a2]	4	-	8
2- Pre – cast concrete technology[a3-b1-b2]	8	-	16
3- Design methods of Pre cast concrete[c1-c2]	8	-	16
4- types of joints in pre cast concrete structures[c1-c2]	4	-	8
5- prepare reports about pre cast concrete between theory and applications in fields[d1-d2-d3]	4	-	8

4- Teaching and Learning Methods:

4-1	Lectures
4-2	Oral discussion
4-3	Internet surveys and navigation
4-4	Exercises and homework
4-5	Field reports

5- Teaching and Learning Methods of Disables

5-1	Lectures
5-2	Oral discussion
5-3	Internet surveys and navigation
5-4	Exercises and homework

6- Student Assessment

- Student Assessment Methods:

6-1	Exercises and homework	To assess	[a1-a2-a3-b1-b2-c1-c2-d1-d2-d3]
6-2	Mid term exam	To assess	[a1-a2-a3-b1]
6-3	Prepare the reports	To assess	[d1-d2-d3]
6-4	Oral examination	To assess	[b2-c1]

6-5	Final Exam	To assess	[b2-c1-c2]

- Assessment Schedule:

Assessment -1	contentiously /week	Week	contentiously /week
Assessment -2	Mid course	Week	7,14
Assessment -3	Before the end of the course	Week	23
Assessment -4	Before the end of the course	Week	26
Assessment -5	at the end of the course	Week	28

- Weighting Assessments:

Course Work	20	%
Reports	10	%
Projects	-	%
Oral Discussions (Examination)	10	%
Written Examination	60	%
Dissertation	-	%
TOTAL	100.00	%

7- List of References:

In preparation of certain clauses, details, tables and figures, reference has been made to the following:

British Standard BS 8110:1985 Code of Practice for The Structure Use of Concrete

British Standard BS 5606:1990 Guide to Accuracy in Buildings

British Standard BS 6093:1993 Code of Practice for Design of Joints in Building Construction

Singapore Standard CP81:1999 Precast Concrete Slab and Wall Panels

Draft New Zealand Code of Practice The Safe Handling, Transportation and Erection of Precast Concrete

The Institution of Structural Engineers Structural Joints in Precast Concrete 1978

PCI Design Handbook Precast and Prestressed Concrete 5th Edition

8- Facilities Required for Teaching and Learning:

1 - Well furnished hall for Lectures

2- laboratory and classes

3- field and projects under construction

4- Internet services

5- Virtual Labs

9- Matrix of Knowledge and Skills:

	Topics	week	Knowledge	Intellectual Skills	Professional Skills	eneral and ansferable Skills
	1-Introduction to Pre-cast concrete materials, components[a1-a2]					
	2- Pre – cast concrete technology[a3-b1-b2]					
	3- Design methods of Pre cast concrete[c1-c2]					
	4- types of joints in pre cast concrete structures[c1-c2]					
	5- prepare reports about pre cast concrete between theory and applications in fields[d1-d2-d3]					

Course Coordinators:

Associated Prof. Dr. **Mohamed Yousry Elshikh** د. محمد يسري الشيخ

Head of Department:

Prof. Dr. Ahmed Badr

Date:

31-05-2010