Academic Program Description Form

UniversityName:university of Babylon

Faculty/Institute:college of engineering

ScientificDepartment:civil engineering

AcademicorProfessionalProgramName:B.Sc. Civil engineering

FinalCertificateName:Bachelor of Science in Civil Engineering

AcademicSystem: full time

DescriptionPreparationDate:

CompletionDate:7-4-20245

Signature:

HeadofDepartmentName:

Prof Dr. Zaid Hameed Majeed

Date:

Signature:

ScientificAssociateName:Date:

Prof Dr. Ali HassonNahab

Thefileischeckedby:

DepartmentofQualityAssuranceandUniversityPerformance Zainab Ali Omran

DirectoroftheQualityAssuranceandUniversityPerformanceDepartment:Date:

Signature:

ApprovaloftheDean

جامعة بابل
كلية الهندسة
مكتب العميد

Ministry of Higher Education and Scientific Research
Scientific Supervision and Scientific Evaluation Apparatus
Directorate of Quality Assurance and Academic Accreditation
Accreditation Department

Academic Program and Course Description Guide

2024

Introduction:

The educational program is a well-planned set of courses that include procedures and experiences arranged in the form of an academic syllabus. Its main goal is to improve and build graduates' skills so they are ready for the job market. The program is reviewed and evaluated every year through internal or external audit procedures and programs like the External Examiner Program.

The academic program description is a short summary of the main features of the program and its courses. It shows what skills students are working to develop based on the program's goals. This description is very important because it is the main part of getting the program accredited, and it is written by the teaching staff together under the supervision of scientific committees in the scientific departments.

This guide, in its second version, includes a description of the academic program after updating the subjects and paragraphs of the previous guide in light of the updates and developments of the educational system in Iraq, which included the description of the academic program in its traditional form (annual, quarterly), as well as the adoption of the academic program description circulated according to the letter of the Department of Studies T 3/2906 on 3/5/2023 regarding the programs that adopt the Bologna Process as the basis for their work.

In this regard, we can only emphasize the importance of writing an academic programs and course description to ensure the proper functioning of the educational process.

Concepts and terminology:

Academic Program Description: The academic program description provides a brief summary of its vision, mission and objectives, including an accurate description of the targeted learning outcomes according to specific learning strategies.

Course Description: Provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the students to achieve, proving whether they have made the most of the available learning opportunities. It is derived from the program description.

Program Vision: An ambitious picture for the future of the academic program to be sophisticated, inspiring, stimulating, realistic and applicable.

Program Mission: Briefly outlines the objectives and activities necessary to achieve them and defines the program's development paths and directions.

Program Objectives: They are statements that describe what the academic program intends to achieve within a specific period of time and are measurable and observable.

Curriculum Structure: All courses / subjects included in the academic program according to the approved learning system (quarterly, annual, Bologna Process) whether it is a requirement (ministry, university, college and scientific department) with the number of credit hours.

Learning Outcomes: A compatible set of knowledge, skills and values acquired by students after the successful completion of the academic program and must determine the learning outcomes of each course in a way that achieves the objectives of the program.

Teaching and learning strategies: They are the strategies used by the faculty members to develop students' teaching and learning, and they are plans that are followed to reach the learning goals. They describe all classroom and extra-curricular activities to achieve the learning outcomes of the program.

1. Program Vision

The Department of Civil Engineering works to provide advanced educational programs that are characterized by high quality, and are concerned with the future changes facing engineers. The college seeks to enhance professional practice in various engineering fields and contribute to securing the needs of society, through creativity and cognitive innovation and the transfer of engineering knowledge to rising generations through education. Scientific research and through partnership with international universities, in addition to partnerships with industrial institutions and government bodies

2. Program Mission

That the College of Engineering at the University of Babylon be a pioneering college in the field of engineering education and distinguished research, and building a knowledge society based on creativity and innovation.

3. Program Objectives

1- Preparing competent cadres in the field of civil engineering in Iraq.

2- 2- Contributing to the development of cadres working in the field of civil engineering in state institutions and departments.

3- 3- Providing the community with civil engineers capable of managing engineering matters in terms of design and supervision of engineering projects.

4- 4- The ability to develop engineering cadres and work on their modernity to ensure their compatibility with the latest developments in the world in the field of civil engineering.

5- Expanding civil engineering specializations to serve society and meet its needs by expanding the creation of various specializations in the field of civil engineering at the postgraduate level.

4. **Program Accreditation**
Accreditation Board for Engineering and Technology (ABET)

5. **Other external influences**
Training courses for students to develop students' professional skills/field visits/summer training.

6. **Program Structure**				
Program Structure	**Number of Courses**	**Credit hours**	**Percentage**	**Reviews***

Department Requirements				
Summer Training				
Other				

7.Program description				1. Certificates and credit hours Bachelor's 116 hours
Level/year	Course or course code	Name of the course or course	Hours and credit units	
quarterly	**EnCiMaI100 101(3+0)** **EnCiMaII10 0909(3+0)**	**mathematicsI Part One mathematicsI Part Two**	4 hours 6 units	Bachelor's degree It requires (116) hours and (147) credit units
quarterly	**EnCiEMI10 0202(3+0)** **EnCiEMII1 01010(3+0)**	**Engineering mechanicsI Engineering mechanicsII**	4 hours 6 units	
quarterly	**EnCiCPI100 303(1+2)** **EnCiCPII10 1111(1+2)**	**Computer programmingI Part One Computer programmingI Part Two**	3 hours 4 units	
quarterly	**EnCiEDI100 404(0+4)** **EnCiEDII10 1212(0+4)**	**Engineering drawingI Engineering drawingII**	5 hours 4 units	
quarterly	**EnCiES1005 05(2+0)**	**Engineering**	2 hours 2 units	

		statistics		
quarterly	**EnCiWoI10 0606(1+1) EnCiWoII10 1313(1+1)**	**WorkshopsI WorkshopsII**	3 hours 3 units	
quarterly	**EnCiAL100 707(2+0)**	**Arabic**	1 hours 2 units	
quarterly	**EnCiBMI10 0808(2+1) EnCiBMII1 01414(2+1)**	**Building materialsI Building materialsII**	3 hours 5 units	
quarterly	**EnCiEG101 515(2+0)**	**Engineering geology**	2 hours 2 units	
quarterly	**EnCiTEL10 1616 (1+0)**	**Technical English language**	2 hours 2 units	
quarterly	**EnCiMaIII2 01701 (3+0)** **EnCiMaIV2 02509(3+0)**	**mathematicsII Part One mathematicsII Part II**	4 hours 6 units	
quarterly	**EnCiSMI20 1902 (3+0)** **EnCiSMII20 2610(3+0)**	**Strength of MaterialsI Strength of MaterialsII**	4 hours 6 units	
quarterly	**EnCiCPIII2 01903 (1+2)** **EnCiCPIV2 02711(1+2)**	**Computer programmingII Part One Computer programmingII Part Two**	3 hours 4 units	
quarterly	**EnCiESI202 004(2+2)**	**Engineering**	5 hours 6 units	

	EnCiESII202812(2+2)	**spaceI Engineering spaceII**		
quarterly	**EnCiBCCDI202205(1+2)** **EnCiBCCDII202913(1+2)**	**Building construction and civil drawingI Building construction and civil drawingII**	4 hours 4 units	
quarterly	**EnCiFMI202206(2+1)** **EnCiFMII203014(2+1)**	**Fluid mechanicsI Fluid mechanicsII**	4 hours 5 units	
quarterly	**EnCiDFHR202307(1+0)**	**Human rights, freedom and democracy**	1 hours 2 units	
quarterly	**EnCiCTI202408(2+2)** **EnCiCTII203115 (2+2)**	**Concrete technologyI Concrete technologyII**	4 hours 6 units	
quarterly	**Ci.En.133**	**Engineering analyzes and numerical methods**	5 hours 5 units	
quarterly	**Ci.En.233**	**Construction theory**	4 hours 6 units	
quarterly	**Ci.En.333**	**Soil mechanics**	5 hours 6 units	
quarterly	**Ci.En.433**	**Irrigation and drainage engineering**	5 hours 4 units	

quarterly	**Ci.En.533**	**reinforced concrete**	4 hours 6 units	
quarterly	**Ci.En.633**	**Engineering Management**	2 hours 3 units	
quarterly	**Ci.En.733**	**Traffic engineering**	4 hours 3 units	
quarterly	**Ci.En.134**	**Designs of concrete structures**	3 hours 4 units	
quarterly	**Ci.En.234**	**Designs of steel structures**	5 hours 4 units	
quarterly	**Ci.En.334**	**Structural analysis**	3 hours 3 units	
quarterly	**Ci.En.434**	**Foundation engineering**	4 hours 6 units	
quarterly	**Ci.En.534**	**road engineering**	4 hours 5 units	
quarterly	**Ci.En.634**	**Sanitary and environmental engineering**	4 hours 5 units	
quarterly	**Ci.En.734**	**Construction and estimation methods**	3 hours 4 units	
quarterly	**Ci.En.834**	**Hydrology**	5 hours 4 units	
quarterly	**Ci.En.835**	**Hydraulic structures**	3 hours 2 units	
quarterly	**Ci.En.935**	**Optional lesson**	3 hours 3 units	
quarterly	**Ci.En.934**	**Engineering project**	4 hours 4 units	

8. Required learning outcomes and teaching, learning and assessment methods

A-Knowledge and understanding

A1- To become familiar with the concept of civil engineering.
A2- To classify civil engineering vocabulary
A3- That the student understands engineering designs
A4- To manage engineering matters
.

B - Subject-specific skills

B1- The student's knowledge of the concept of civil engineering.
B2-The student's ability to analyze and design in civil engineering.
B3 - Enabling students to supervise engineering projects.

Teaching and learning methods

1- **Method of giving lectures.**
2- **(Learning Technologies on Campus)(E-learning on campus)**
3- **(Scientific trips to followDesigned projects in civil engineering)**
4- **Engineering workshops**
5- **Experiential education**
6- **Applied education (laboratories)**

9. Education strategy

1- Thinking strategy according to the student's ability (Example: If the student is able to learn the correct concept of management, he will acquire the skill of managing and organizing his personal life)
2- High thinking skill strategy (for example, if the student is...If you want to make a good decision, it is important that... means he does not have high thinking skills.)
3- Critical thinking strategy in learning (Critical Thanking)**(It is a term that symbolizes the highest levels of thinkingYGoal EI have a proposalA problem and then analyze it logically to reach a solutionWanted(**

- **Determine the facts of a new situation**

- **Place these facts and information in a pattern so that you can understand them**
- **Accept or reject the source values and conclusions based upon your experience, judgment, and beliefs.**

4- Brainstorming

10- Evaluation methods
1- Exams 2- Discussing projects 3- summer training 4- Practical exams

12. Admission standard (establishing regulations related to admission to the college or institute)
central
13. The most important sources of information about the program
The college and university website **University guide** **The most important books and resources for the department** Thomas book, Survey book by Dr. Yassin Obaid

14. Planning for personal development

GLOBAL SKILLS
Student able to speak and understand other languages
Global skills
requester Able to Speak and understand Languages The other, And appreciation Other cultures.
NEGOTIATING & PERSUADING
Student able to influence and convince others, to discuss and reach agreement
The negotiate and theta convince requester able to influence and convince others, to discuss And reach an agreement.
Leadership
Student able to motivate and direct others.
Leadership
Able to motivate and guide others.
INDEPENDENCE
Accepts responsibility for views & actions and is able to work under their own direction & initiative
Independence at work

Curriculum Skills Map																	
Please tick in the relevant boxes where individual Programme Learning Outcomes are being assessed																	
				Programme Learning Outcomes													
Year / Level	Course Code	Course Title	Core (C) Title or Option (O)	Knowledge and understanding				The skills goals special to the course				Thinking Skills				General and Transferable Skills (or) Other skills relevant to employability and personal development			
				A1	**A2**	**A3**	**A4**	**B 1**	**b2**	**b3**	**B4**	**c1**	**C2**	**C3**	**C4**	**d1**	**d2**	**d3**	**D4**
The second phase	**EnCiSMI201902 (3+0)**	**Strength of Materials I**	**Basic**	*	*	*	*	*	*	*	*	*	*	*		*	*	*	*
	EnCiSMII202610(3+0)	**Strength of Materials II**	**Basic**	*	*	*	*	*	*	*	*	*	*	*		*	*	*	*
	EnCiMaIII201701 (3+0)	**Maths II Part One**	**Basic**	*	*	*	*	*	*	*	*	*	*	*		*	*	*	*
	EnCiMaIV202509(3+0)	**Maths II Part Two**	**Basic**	*	*	*	*	*	*	*	*	*	*	*		*	*	*	*
	EnCiESI202004(2+2)	**engineering space I**	**Basic**	*	*	*	*	*	*	*	*	*	*	*		*	*	*	*
	EnCiESII202812(2+2)	**engineering space II**	**Basic**	*	*	*	*	*	*	*	*	*	*	*		*	*	*	*
	EnCiBCCDI202305(1+2) EnCiBCCDI	**Building construction and civil**	**Basic**	*	*	*	*	*	*	*	*	*	*	*		*	*	*	*

	I202913(1+2)	drawingرسم I																	
	EnCiBCCDI I202913(1+2)	Building construction and civil drawingرسم II	Basic	*	*	*	*	*	*	*	*	*	*	*		*	*	*	*
	EnCiFMI20 2306(2+1)	fluid mechanics I	Basic	*	*	*	*	*	*	*	*	*	*	*		*	*	*	*
	EnCiFMII2 03014(2+1)	fluid mechanics II	Basic	*	*	*	*	*	*	*	*	*	*	*		*	*	*	*
	EnCiCTI20 2408(2+2)	concrete technology I	Basic	*	*	*	*	*	*	*	*	*	*	*		*	*	*	*
	EnCiCTII20 3115 (2+2)	concrete technology II	Basic	*	*	*	*	*	*	*	*	*	*	*		*	*	*	*
third level	Ci.En.533	concrete	Basic	*	*	*	*	*	*	*	*	*	*	*		*	*	*	*
	Ci.En.133	Engineering Analytics and Numerical Methods	Basic	*	*	*	*	*	*	*	*	*	*	*		*	*	*	*
	Ci.En.233	construction theory	Basic	*	*	*	*	*	*	*	*	*	*	*		*	*	*	*
	Ci.En.333	soil mechanics	Basic	*	*	*	*	*	*	*	*	*	*	*		*	*	*	*
	Ci.En.433	Irrigation and	Basic	*	*	*	*	*	*	*	*	*	*	*		*	*	*	*

		drainage engineering																	
	Ci.En.533	reinforced concrete	Basic	*	*	*	*	*	*	*	*	*	*	*		*	*	*	*
	Ci.En.633	Engineering Management	Basic	*	*	*	*	*	*	*	*	*	*	*		*	*	*	*
	Ci.En.733	Traffic engineering	Basic	*	*	*	*	*	*	*	*	*	*	*		*	*	*	*
The fourth stage	Ci.En.134	concrete structures designs	Basic	*	*	*	*	*	*	*	*	*	*	*		*	*	*	*
	Ci.En.234	steel structure designs	Basic	*	*	*	*	*	*	*	*	*	*	*		*	*	*	*
	Ci.En.334	Structural analysis	Basic	*	*	*	*	*	*	*	*	*	*	*		*	*	*	*
	Ci.En.434	foundation engineering	Basic	*	*	*	*	*	*	*	*	*	*	*		*	*	*	*
	Ci.En.534	road engineering	Basic	*	*	*	*	*	*	*	*	*	*	*		*	*	*	*
	Ci.En.634	Sanitary and Environmental Engineering	Basic	*	*	*	*	*	*	*	*	*	*	*		*	*	*	*
	Ci.En.734	Methods of	Basic	*	*	*	*	*	*	*	*	*	*	*		*	*	*	*

		creation and estimation																	
	Ci.En.834	**hydrology**	**Basic**	*	*	*	*	*	*	*	*	*	*	*		*	*	*	*

COURSE SPECIFICATION

This course is taught to students of the second stage of preliminary studies in the Department of Civil Engineering. The resistance of materials or the mechanics of materials is a branch of (general force mechanics). On the other hand, these relationships are followed at the moment of applying the loads until failure occurs. The course also includes a focus on how to calculate stresses and strains (in one, two or three dimensions) and their maximum and minimum values caused by these internal forces and their effects on the external displacements and the total distortions that occur. In different facilities and bodies.In light of this, the contents of the course meet the basic future need of the student in designing, analyzing and evaluating the efficiency of structures (concrete and steel) and other issues in the field of civil engineering - where the analysis of stresses, strains and displacements and knowing their relationships with external loads, is considered the main link for the purpose of achieving the optimal design and comparing it with the permissible limits International specifications and access to the ideal decision.

1. Teaching Institution	University of Babylon
2. University Department/Centre	scientific department / civil engineering Department
3. Course title/code	**EnCiSMI201902(3+0) Material Resist I** **EnCiSMII202610(3+0) Material Resistance II**
4. Degree	Bachelor
5. Modes of Attendance offered	weekly
6. Semester/Year	quarterly
7. Number of hours tuition (total)	4 per week

8. Date of production/revision of this specification	

9. Aims of the Course

The course aims to familiarize the student with the calculation of the internal forces (axial, shear, bending and torsion) and the most important stresses and deformations resulting from them for sills and structures.

10. Learning Outcomes, Teaching ,Learning and Assessment Method

Cognitive goals

1. Study and comprehend the general concepts and basic principles of material resistance andTake advantage of connecting topics with equations to solve them correctly.
2. Learn the correct ways to solve mathematical problems and train the student to solve within the general concepts of speed and accuracyRefining the scientific concept and consolidating the scientific material correctly through continuous examinations and activating the role of the student not in obtaining the degree, but in understanding and benefiting from this material to the maximum extent.

b- The skills goals special to the course

1- The ability to analyze forces
2- The ability to solve stress problems

Teaching and learning methods

1- Method of giving lectures.
2- Learning Technologies on Campus On-campus e-learning.
3- Team Project Thestudent groups
4- Applied Education

Assessment methods

1- the exam
2- class assignments
3- homework
4- daily exams

C- thinking skills

The ability to visualize a geometric figure in order to solve it

Teaching and learning methods

1- Method of giving lectures.
2- Discussion method

The course is given to students in the form of class lectures that are received and written on the board with illustrative examples. There is a practical hour in which problems and exercises are solved with the participation of the audience of students. Students are assigned homework. Also, students' understanding and comprehension of the material is tested through sudden daily exams.

Assessment methods

1- semester exam
2- Home and class duties
3- daily exams

D - General and transferable skills (other skills related to employability and personal development).

Dr1- The ability to use mathematics

Dr2- The ability to employ stereoscopic geometry.

11. Course structure: first course					
Week	hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
first week (1)	4	**Fundamental principles of mechanics and simple stress Simple strain and deformation of axially loaded members Torsion Shear force and bending moment Diagrams**		**Method of giving lectures.**	Semester and daily exam
first week (2)				**Method of giving lectures.**	Semester and daily exam
first week (3)				**Method of giving lectures.**	Semester and daily exam
first week (4)				**Method of giving lectures.**	Semester and daily exam

first week (5)			**Method of giving lectures.**	Semester and daily exam
first week (6)			**Method of giving lectures.**	Semester and daily exam
first week (7)			**Method of giving lectures.**	Semester and daily exam
first week (8)			**Method of giving lectures.**	Semester and daily exam
first week (9)			**Method of giving lectures.**	Semester and daily exam

first week (10)			**Method of giving lectures.**	Semester and daily exam
first week (11)			**Method of giving lectures.**	Semester and daily exam
first week (12)			**Method of giving lectures.**	Semester and daily exam
first week (13)			**Method of giving lectures.**	Semester and daily exam
first week (14)			**Method of giving lectures.**	Semester and daily exam

second course first week (15)			**Method of giving lectures.**	Semester and daily exam
first week (16)		**Stress in beams Compound stress and transformation of stresses and strains Deflection of beams Columns**	**Method of giving lectures.**	
first week (17)			**Method of giving lectures.**	
first week (18)			**Method of giving lectures.**	
First week (19th)			**Method of giving lectures.**	
first week (20)			**Method of giving lectures.**	
first week (21)			**Method of giving lectures.**	
first week (22)			**Method of giving lectures.**	
first week (23)			**Method of giving lectures.**	
first week (24)			**Method of giving lectures.**	
first week (25)			**Method of giving lectures.**	
first week (26)			**Method of giving lectures.**	
first week (27)			**Method of**	

			giving lectures.	
first week (28)			**Method of giving lectures.**	
first week (29)			**Method of giving lectures.**	
first week (30)			**Method of giving lectures.**	
first week (31)			**Method of giving lectures.**	
first week (32)				

12. Infrastructure	
Required readings: ▪ Basic texts ▪ Course books ▪ Other	▪ **FL .Singer, (strength of materials)** ▪ **E.Popov, (introduction to mechanics of solids)**
Special requirements (including, for example, workshops, periodicals, software and websites)	**summer training**
Social services (including guest lectures, professional training and field studies)	field visit

13. The development of the curriculum plan	
Prerequisites	central
Less number of students	50
The largest number of students	120

COURSE SPECIFICATION

The course aims to teach students mathematics, which is the basics of engineering because it is related to most engineering subjects

14. Teaching Institution	University of Babylon
15. University Department/Centre	scientific department / civil engineering Department
16. Course title/code	**EnCiMaIII201701 (3+0) Mathematics II, Part 1** **EnCiMaIV202509(3+0)Mathematics II Part Two**
17. Degree	Bachelor
18. Modes of Attendance offered	weekly
19. Semester/Year	quarterly
20. Number of hours tuition (total)	4 per week
21. Date of production/revision of this specification	
22. Aims of the Course	
Explain the basic principles and shed light on a group of topics related to the development of engineering competence for the student in order to enable him	

to be able to understand the engineering derivations that pertain to other subjects. It also prepares the student's mind for the purpose of entering the worl
The c
1- Th
other
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differ
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5- Kn
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23. Learning Outcomes, Teaching ,Learning and Assessment Method
Cognitive goals 3. Study and comprehend general concepts and basic principles in mathematicsTake advantage of connecting topics with equations to solve them correctly. 4. Learn the correct ways to solve mathematical problems and train the student to solve within the general concepts of speed and accuracyRefining the scientific concept and consolidating the scientific material correctly through continuous examinations and activating the role of the student not in obtaining the degree, but in understanding and benefiting from this material to the maximum extent.
b- The skills goals special to the course **1. The student is familiar with the use of equations and mathematical functions** **2. The student gets to know the description of mathematical problems in different fields**
Teaching and learning methods
5- Method of giving lectures. **6- Learning Technologies on Campus On-campus e-learning.** **7- Team Project Thestudent groups** **8- Applied Education**
Assessment methods
5- the exam 6- class assignments 7- homework 8- daily exams
C- thinking skills C1- The ability to imagine a geometric figure for the purpose of drawing and preparing its own calculations C2- Ability to work on adding equations to solve different problems c3- Mastery of mathematics to relate it to the stereoscopic geometry of a purpose the answer in descriptive engineering
Teaching and learning methods

3- Method of giving lectures.
4- Discussion method

The course is given to students in the form of class lectures that are received and written on the board with illustrative examples. There is a practical hour in which problems and exercises are solved with the participation of the audience of students. Students are assigned homework. Also, students' understanding and comprehension of the material is tested through sudden daily exams.

Assessment methods

4- semester exam
5- Home and class duties
6- daily exams

D - General and transferable skills (other skills related to employability and personal development).

Dr1- The ability to use mathematics
Dr2- The ability to employ stereoscopic geometry.

24. Course structure: first course					
Week	hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
first week (1)	4	**Polar Coordinate System**		**Method of giving lectures.**	Semester and daily exam
first week (2)		=		**Method of giving lectures.**	Semester and daily exam
first week (3)		=		**Method of giving lectures.**	Semester and daily exam
first week (4)		=		**Method of giving lectures.**	Semester and daily exam

first week (5)		**Vectors**		**Method of giving lectures.**	Semester and daily exam
first week (6)		=		**Method of giving lectures.**	Semester and daily exam
first week (7)		=		**Method of giving lectures.**	Semester and daily exam
first week (8)		=		**Method of giving lectures.**	Semester and daily exam
first week (9)		**Partial Derivatives and Differential Equations**		**Method of giving lectures.**	Semester and daily exam

first week (10)		==		**Method of giving lectures.**	Semester and daily exam
first week (11)		=		**Method of giving lectures.**	Semester and daily exam
first week (12)		=		**Method of giving lectures.**	Semester and daily exam
first week (13)		=		**Method of giving lectures.**	Semester and daily exam
first week (14)		=		**Method of**	Semester and

				giving lectures.	daily exam
first week (15)		**Complex Numbers**		**Method of giving lectures.**	Semester and daily exam =
second course					
first week (16)		---		**Method of giving lectures.**	
first week (17)		**Half-year holiday**		**Method of giving lectures.**	
first week (18)		**Multiple Integrals**		**Method of giving lectures.**	
First week (19th)		=		**Method of giving lectures.**	
first week (20)		=		**Method of giving lectures.**	
first week (21)		=		**Method of giving lectures.**	
first week (22)		=		**Method of giving lectures.**	
first week (23)		**Infinite Sequence and Infinite Series**		**Method of giving lectures.**	
first week (24)		=		**Method of giving lectures.**	
first week (25)		=		**Method of giving lectures.**	

first week (26)		=		**Method of giving lectures.**	
first week (27)		=		**Method of giving lectures.**	
first week (28)		=		**Method of giving lectures.**	
first week (29)		**Determinant and Matrixes**		**Method of giving lectures.**	
first week (30)				**Method of giving lectures.**	
first week (31)		**Hyperbolic Functions**		**Method of giving lectures.**	
first week (32)		=			

25. Infrastructure	
Required readings: ▪ Basic texts ▪ Course books ▪ Other	**J-Thomas (Calculus and Analysis Geometry)** **Howard Anton (Calculus and Analysis Geometry)**
Special requirements (including, for example, workshops, periodicals, software and websites)	**summer training**
Social services (including guest lectures, professional training and field studies)	field visit

26. The development of the curriculum plan	
Prerequisites	central
Less number of students	50
The largest number of students	120

COURSE SPECIFICATION

The course aims to study the properties of fluids, study fluid flow in open tubes and channels, and identify the forces affecting hydraulic installations.

27. Teaching Institution	University of Babylon
28. University Department/Centre	scientific department / civil engineering Department
29. Course title/code	**EnCiFMI202306(2+1) IFluid Mechanics EnCiFMII203014(2+1) II Fluid Mechanics**
30. Degree	Bachelor
31. Modes of Attendance offered	weekly
32. Semester/Year	quarterly
33. Number of hours tuition (total)	5 per week
34. Date of production/revision of this specification	
35. Aims of the Course	

Enable the student to understand the study of fluid properties, study fluid flow
insta

36. Learning Outcomes, Teaching ,Learning and Assessment Method

Cognitive goals

5. Study and comprehend general concepts and basic principles in fluid mechanics, benefit from linking topics with equations to solve them correctly.
6. Learning the correct ways to solve mathematical problems and training the student to solve within the general concepts of speed and accuracy. Refining the scientific concept and consolidating the scientific material correctly through continuous exams and activating the student's role not in obtaining the degree but in understanding and benefiting from this material to the maximum extent.

b- The skills goals special to the course

3. **The student is introduced to the general concepts of fluid mechanics.**
4. **The student learns about the use of different equations in engineering projects**

Teaching and learning methods

9- Method of giving lectures.
10- Learning Technologies on Campus On-campus e-learning.
11- Team Project Thestudent groups
12- Applied Education

Assessment methods

9- the exam
10- class assignments
11- homework
12- daily exams

C- thinking skills

C1- The ability to solve various problems
C2- The ability to understand the flow mechanism of different fluids

Teaching and learning methods

5- Method of giving lectures.
6- Discussion method

The course is given to students in the form of class lectures that are received and written on the board with illustrative examples. There is a practical hour in which problems and exercises are solved with the participation of the audience of students. Students are assigned homework. Also, students' understanding and comprehension of the material is tested through sudden daily exams.
Assessment methods
7- semester exam 8- Home and class duties 9- daily exams
D - General and transferable skills (other skills related to employability and personal development). Dr1- The ability to use mathematics Dr2- The ability to employ stereoscopic geometry.

37. Course structure: first course					
Week	hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
first week (1)	4	**fluid properties**		**Method of giving lectures.**	Semester and daily exam
first week (2)		=		**Method of giving lectures.**	Semester and daily exam
first week (3)		**Static fluids (pressure and measurement methods)**		**Method of giving lectures.**	Semester and daily exam
first week (4)		=		**Method of giving lectures.**	Semester and daily exam

first week (5)		**Forces acting on immersed planes**		**Method of giving lectures.**	Semester and daily exam
first week (6)		=		**Method of giving lectures.**	Semester and daily exam
first week (7)		**Forces acting on curved immersed objects**		**Method of giving lectures.**	Semester and daily exam
first week (8)		=		**Method of giving lectures.**	Semester and daily exam
first week (9)		**relative balance**		**Method of giving lectures.**	Semester and daily exam

first week (10)		**vertical rotation (axial)**		**Method of giving lectures.**	Semester and daily exam
first week (11)		**fluid flow ج**		**Method of giving lectures.**	Semester and daily exam
first week (12)		**continuity equation**		**Method of giving lectures.**	Semester and daily exam
first week (13)		**Energy equation**		**Method of giving lectures.**	Semester and daily exam
first week (14)		=		**Method of giving lectures.**	Semester and daily exam

first week (15)		**Momentum equation**		**Method of giving lectures.**	Semester and daily exam
second course					
first week (16)		**Exam**		**Method of giving lectures.**	
first week (17)		**Half-year holiday**		**Method of giving lectures.**	
first week (18)		**dimensional analysis**		**Method of giving lectures.**	
First week (19th)		=		**Method of giving lectures.**	
first week (20)		**dynamic similarity**		**Method of giving lectures.**	
first week (21)		**Pipe networks design**		**Method of giving lectures.**	
first week (22)		**pipe connection**		**Method of giving lectures.**	
first week (23)		=		**Method of giving lectures.**	
first week (24)		**Pipe branches**		**Method of giving lectures.**	
first week (25)		=		**Method of giving lectures.**	
first week (26)		**pipe networks**		**Method of giving lectures.**	

first week (27)		=		**Method of giving lectures.**	
first week (28)		**Flow in open channels**		**Method of giving lectures.**	
first week (29)		=		**Method of giving lectures.**	
first week (30)		=		**Method of giving lectures.**	
first week (31)		**Exam**		**Method of giving lectures.**	
first week (32)		**critical flow**			

38. Infrastructure	
Required readings: ▪ Basic texts ▪ Course books ▪ Other	**1- Fluid mechanics d. beautiful angels** **2- Fluid mechanics (Streeter)**
Special requirements (including, for example, workshops, periodicals, software and websites)	**summer training**
Social services (including guest lectures, professional training and field studies)	field visit

39. The development of the curriculum plan	
Prerequisites	central
Less number of students	50
The largest number of students	120

COURSE SPECIFICATION

The course aims to study and teach students the work of engineering surveying and how to deal with the means and devices of engineering surveying

40. Teaching Institution	University of Babylon
41. University Department/Centre	scientific department / civil engineering Department
42. Course title/code	**EnCiESI202004(2+2)** I engineering space **EnCiESII202812(2+2) IIEngineering Survey**
43. Degree	Bachelor
44. Modes of Attendance offered	weekly
45. Semester/Year	quarterly
46. Number of hours tuition (total)	5 per week
47. Date of production/revision of this specification	

48. Aims of the Course

49. e w a

50. Learning Outcomes, Teaching ,Learning and Assessment Method

Cognitive goals

7. Study and comprehend general concepts and basic principles in engineering space, benefit from linking topics with equations to solve them correctly.
8. Learn the correct ways to solve mathematical problems and train the student to solve within the general concepts of speed and accuracy. Refining the scientific concept and consolidating the scientific material correctly through continuous examinations and activating the role of the student not in obtaining the degree, but in understanding and benefiting from this material to the maximum extent.

b- The skills goals special to the course

5. **The student becomes familiar with the general concepts of geometric space.**
6. **The student learns about the use of surveying equipment in engineering projects**

Teaching and learning methods

13- Method of giving lectures.
14- Learning Technologies on Campus On-campus e-learning.
15- Team Project Thestudent groups
16- Applied Education

Assessment methods

13- the exam
14- class assignments
15- homework
16- daily exams

C- thinking skills

C1- The ability to solve various problems
C2- The ability to understand the flow mechanism of different fluids

Teaching and learning methods

7- Method of giving lectures.
8- Discussion method

The course is given to students in the form of class lectures that are received and written on the board with illustrative examples. There is a practical hour in which problems and exercises are solved with the participation of the audience of students. Students are assigned homework. Also, students' understanding and comprehension of the material is tested through sudden daily exams.

Assessment methods

10- semester exam
11- Home and class duties
12- daily exams

D - General and transferable skills (other skills related to employability and personal development).

Dr1- The ability to use mathematics

Dr2- The ability to employ stereoscopic geometry.

51. Course structure: first course					
Week	hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
first week (1)	4	**Introduction**		**Method of giving lectures.**	Semester and daily exam
first week (2)		**Measure distances with tape**	**On-site applications**	**Method of giving lectures.**	Semester and daily exam
first week (3)		=	=	**Method of giving lectures.**	Semester and daily exam
first week (4)		**leveling**	=	**Method of giving lectures.**	Semester and daily exam

first week (5)		=	=	**Method of giving lectures.**	Semester and daily exam
first week (6)		=	=	**Method of giving lectures.**	Semester and daily exam
first week (7)		**syllables**	=	**Method of giving lectures.**	Semester and daily exam
first week (8)		=	=	**Method of giving lectures.**	Semester and daily exam
first week (9)		=	=	**Method of giving lectures.**	Semester and daily exam

first week (10)		**Theodolite**	=	**Method of giving lectures.**	Semester and daily exam
first week (11)		=	=	**Method of giving lectures.**	Semester and daily exam
first week (12)		**directione**	=	**Method of giving lectures.**	Semester and daily exam
first week (13)		=	=	**Method of giving lectures.**	Semester and daily exam
first week (14)		**Area Calculation**	=	**Method of giving lectures.**	Semester and daily exam

first week (15)		=	=	**Method of giving lectures.**	Semester and daily exam
second course					
first week (16)		=	=	**Method of giving lectures.**	
first week (17)		**Half-year holiday**		**Method of giving lectures.**	
first week (18)		**curves**	=	**Method of giving lectures.**	
First week (19th)		=	=	**Method of giving lectures.**	
first week (20)		=	=	**Method of giving lectures.**	
first week (21)		=	=	**Method of giving lectures.**	
first week (22)		=	=	**Method of giving lectures.**	
first week (23)		**Measuring distances on the highways**	=	**Method of giving lectures.**	
first week (24)		=	=	**Method of giving lectures.**	
first week (25)		**topographic survey**	=	**Method of giving lectures.**	
first week (26)		**topographic survey**	=	**Method of giving lectures.**	
first week (27)		**earthworks**	=	**Method of giving lectures.**	
first week (28)		=	=	**Method of giving lectures.**	
first week (29)		=	=	**Method of giving lectures.**	
first week (30)		=	=	**Method of giving lectures.**	
first week (31)		**Photogramm etry**		**Method of giving lectures.**	

first week (32)		=			

52. Infrastructure	
Required readings: ▪ Basic texts ▪ Course books ▪ Other	**1 Engineering Survey, Yassin Obaid, Baghdad, 1990**
Special requirements (including, for example, workshops, periodicals, software and websites)	**summer training**
Social services (including guest lectures, professional training and field studies)	field visit

53. The development of the curriculum plan	
Prerequisites	central
Less number of students	50
The largest number of students	120

COURSE SPECIFICATION(3)

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME

COURSE SPECIFICATION

The chief task of the structural engineer is the design of structures. By design is meant the determination of the general shape and all specific dimensions of a particular structure so that it will perform the function for which it is created and will safety withstand the influences which will act on it throughout its useful life.

The chief items of behavior which are of practical interest are:-

(a.) The strength of the structure, ie, that negative of loads of a given distribution which will cause the structure to fail.

(b.) the deformations, such as deflections and extent of cracking, which the structure will undergo when loaded under service load.

Reinforced-concrete structures are non homogeneous in that they are made of two entirely different materials. The methods used in the analysis of reinforced-concrete member are therefore different from those used in the design or investigation of beams composed any other structured mater.

54. Teaching Institution	University of Babylon
55. University Department/Centre	scientific department / civil engineering Department
56. Course title/code	**Ci.En.533 Reinforced Concrete**
57. Degree	Bachelor
58. Modes of Attendance offered	weekly

59. Semester/Year	annual
60. t	
61. p th	
62.	

63. Learning Outcomes, Teaching ,Learning and Assessment Method

A - Cognitive goals
A1- Origin analysis and design
C2-Knowing the forces affecting the origin, its analysis and design
C3-Knowing the moments affecting the origin, its analysis and design

b- The skills goals special to the course
B 1 - Analytical and design ability
B2 -Comparison between Species different buildings
B3 - Know the basics of concrete and how it works

Teaching and learning methods

1- using the patient
2- using electronic screens
3- workshops
4- laboratories

Assessment methods

1- Semester exams الامتحانات
2- daily exams
3- Home and class duties

C- thinking skills
C1- The ability to determine the type of facilities
C2- Ability to analyze and design facilities

1. Cor
2.Rei
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4.Bea
5.Bon
6.Cor
7. Co
8. Bea
9.Cor
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12. Tv
13.Tw
14.Co
15. Rc
16. Bi
17. St
18. A

64. Course structure:					
Week	hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
first week (1)	4	**1. Concrete and steel reinforcement properties.** **2.Reinforced concrete behavior at different load stage.** **3.Beam flexure design.**	concrete	**using the patient using electronic screens**	semester exam practical exam
first week (2)		**4.Beam shear design.** **5.Bond and anchorage requirement.** **6.Control of cracking.**		**using the patient using electronic screens**	semester exam practical exam
first week (3)		**7. Control of deflection.** **8. Beam torsion design.** **9.Continous beams shear and moment coefficient.**		**using the patient using electronic screens**	semester exam practical exam
first week (4)		**10.One way solid slab design.** **11. One way**		**using the patient using electronic screens**	semester exam practical exam

		ribbed slab design. **12. Two way solid slab design.** **13.Two way ribbed slab design.** **14.Compression plus bending member design.** **15. Rectangular and circular column design and ACI code requirement.** **16. Biaxial rectangular column.** **17. Stairways design.** **18. ACI and structural stairs requirements.**			
first week (5)				**using the patient using electronic screens**	semester exam practical exam
first week (6)				**using the patient using electronic screens**	semester exam practical exam
first week (7)				**using the patient using electronic screens**	semester exam practical exam
first week (8)				**using the patient using electronic screens**	semester exam practical exam
first week (9)				**using the patient**	semester exam practical exam

				using electronic screens	
first week (10)				**using the patient using electronic screens**	semester exam practical exam
first week (1)				**using the patient using electronic screens**	semester exam practical exam
first week (11)				**using the patient using electronic screens**	semester exam practical exam
first week (12)				**using the patient using electronic screens**	semester exam practical exam

first week (13)				**using the patient using electronic screens**	semester exam practical exam
first week (14)				**using the patient using electronic screens**	semester exam practical exam
first week (15)				**using the patient using electronic screens**	semester exam practical exam
first week (16)				**using the patient using electronic screens**	semester exam practical exam
first week (17)				**using the patient using electronic screens**	semester exam practical exam

first week (18)				**using the patient using electronic screens**	semester exam practical exam
first week (19)				**using the patient using electronic screens**	semester exam practical exam
first week (20)				**using the patient using electronic screens**	semester exam practical exam
first week (21)				**using the patient using electronic screens**	semester exam practical exam

first week (22)				**using the patient using electronic screens**	semester exam practical exam
first week (23)				**using the patient using electronic screens**	semester exam practical exam
first week (24)				**using the patient using electronic screens**	semester exam practical exam
first week (25)				**using the patient using electronic screens**	semester exam practical exam
first week (26)				**using the patient using electronic screens**	semester exam practical exam

first week (27)				**using the patient using electronic screens**	semester exam practical exam
first week (28)				**using the patient using electronic screens**	semester exam practical exam
first week (29)				**using the patient using electronic screens**	semester exam practical exam
first week (30)				**using the patient using electronic screens**	semester exam practical exam

65. Infrastructure

Required readings: ▪ Basic texts ▪ Course books ▪ Other	**a. Design of concrete structures, By Winter and Nilson** **b. Reinforced concrete fundamentals, By Ferguson** **c. Design of concrete structures, By Nilson, et.al** **d. Reinforced concrete structures, By Way and Solmor** **e. Reinforced concrete structures, By Park and Bowly** **f. Building code requirements for structural concrete (ACI 318 M-02)**
Special requirements (including, for example, workshops, periodicals, software and websites)	**summer training**
Social services (including guest lectures, professional training and field studies)	field visit

66. The development of the curriculum plan	
Prerequisites	central
Less number of students	35
The largest number of students	100

COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME

COURSE SPECIFICATION

It is concerned with teaching the student the different accurate and approximate structural analysis methods for different structures and how to find the forces and displacements and the behavior of the structures considering their material is linearly flexible.

67. Teaching Institution	University of Babylon

76. Learning Outcomes, Teaching ,Learning and Assessment Method
A - Cognitive goals A1- Origin analysis and design C2- Knowing the forces affecting the origin, its analysis and design C3- Knowing the moments affecting the origin, its analysis and design
b- The skills goals special to the course B 1 - Analytical and design ability B2 -Comparison between Species different buildings B3 - Know the basics of concrete and how it works
Teaching and learning methods
5- using the patient **6- using electronic screens** **7- workshops** **8- laboratories**
Assessment methods
4- Semester exams الامتحانات 5- daily exams 6- Home and class duties
C- thinking skills C1- The ability to determine the type of facilities C2- Ability to analyze and design the facility

77. Course structure					
Week	hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
first week (1)	3	**Types of loads, forces, stability and balance of installations**	construction	**using the patient using electronic screens**	semester exam practical exam
first week (2)		**Diagrams of axial forces, shear and bending**		**using the patient using electronic screens**	semester exam practical exam
first week (3)		**Ground beam systems**		**using the patient using electronic screens**	semester exam practical exam
first week (4)		**Types of trusses and analysis of statically defined trusses**		**using the patient using electronic screens**	semester exam practical exam

first week (5)		**influence line for statically defined cusps"**		**using the patient using electronic screens**	semester exam practical exam
first week (6)		**Line of influence for statically defined ground cusps"**		**using the patient using electronic screens**	semester exam practical exam
first week (7)		**Line of influence for statically defined structures and trusses"**		**using the patient using electronic screens**	semester exam practical exam
first week (8)		**Series of live moving loads on statically defined installations.**		**using the patient using electronic screens**	semester exam practical exam
first week (9)		**The absolute value of the maximum shear force and the maximum bending**		**using the patient using electronic**	semester exam practical exam

		moment عزم		**screens**	
first week (10)		**Approximate analysis methods for statically indeterminate trusses.**		**using the patient using electronic screens**	semester exam practical exam
first week (1)		**Methods for approximate analysis of portal structures**		**using the patient using electronic screens**	semester exam practical exam
first week (11)		**Methods of approximate analysis of multi-storey structures**		**using the patient using electronic screens**	semester exam practical exam
first week (12)		**Precipitation at statically defined thresholds" by one unit convection method**		**using the patient using electronic screens**	semester exam practical exam

first week (13)		**Precipitation in statically defined structures by one unit convection method**		**using the patient using electronic screens**	semester exam practical exam
first week (14)		**Precipitation in statically defined trusses" by one unit convection method**		**using the patient using electronic screens**	semester exam practical exam
first week (15)		**Precipitation in statically defined compound installations by the one unit load method**		**using the patient using electronic screens**	semester exam practical exam
first week (16)		**Half-year holiday**		**using the patient using electronic screens**	semester exam practical exam
first week (17)		**statically indeterminate beam analysis by the method of congruent anomalies**		**using the patient using electronic screens**	semester exam practical exam

first week (18)		**Analysis of statically indeterminate beams by the method of compatible deformations, taking into account the deformation of the supports**		**using the patient using electronic screens**	semester exam practical exam
first week (19)		**Analysis of statically indeterminate structures by the method of congruent deformations**		**using the patient using electronic screens**	semester exam practical exam
first week (20)		**Analysis of statically indeterminate trusses by the method of congruent deformations**		**using the patient using electronic screens**	semester exam practical exam
first week (21)		**Analysis of statically indeterminate complex structures by the method of congruent deformations**		**using the patient using electronic screens**	semester exam practical exam
first week		**statically**		**using the**	semester exam

(22)		**indeterminate thresholds analysis by slope-precipitation method**		**patient using electronic screens**	practical exam
first week (23)		**Analysis of statically indeterminate beams by slope-precipitation method, taking into account the deformation of the supports**		**using the patient using electronic screens**	semester exam practical exam
first week (24)		**Analysis of statically indeterminate structures (without lateral displacement) by slope-precipitation method**		**using the patient using electronic screens**	semester exam practical exam
first week (25)		**Analysis of statically indeterminate structures (with lateral displacement) by slope-precipitation method**		**using the patient using electronic screens**	semester exam practical exam
first week (26)		**Analysis of statically indeterminate thresholds by moment distribution method**		**using the patient using electronic screens**	semester exam practical exam

first week (27)		**Analysis of statically indeterminate thresholds by torque distribution method, taking into account the deformation of the supports**		**using the patient using electronic screens**	semester exam practical exam
first week (28)		**Analysis of statically indeterminate structures (without lateral displacement) by torque distribution method**		**using the patient using electronic screens**	semester exam practical exam
first week (29)		**Analysis of statically indeterminate structures (with lateral displacement) by torque distribution method بطريقة**		**using the patient using electronic screens**	semester exam practical exam
first week (30)		**Selected topics in construction theory**		**using the patient using electronic screens**	semester exam practical exam

78. Infrastructure

Required readings: ▪ Basic texts ▪ Course books ▪ Other	▪ **Elements of Structural Mechanics by NC Sinha & SK Sen Gupta.** **2. Structural Analysis by RC Hibbeler.**
Special requirements (including, for example, workshops, periodicals, software and websites)	**summer training**
Social services (including guest lectures, professional training and field studies)	field visit

79. The development of the curriculum plan	
Prerequisites	central
Less number of students	35
The largest number of students	100

COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME

COURSE SPECIFICATION

1- Solve differential equations Ordinary first-rate Or more And theits applications
2. Learn about Laplace Transforms and the Expansion and Cama Functions
3. Solve differential equations Linear Ordinary Using Laplace Transforms
4. Understand the algebra of matrices and determinants
5. Solve a set of linear equations using Cramer's rule and the inverse matrix method
6. Recognize the eigenvalue problems and the way to solve them
7. Solve a group of differential equations Ordinary using Cramer's rule and Laplace transforms and their applications
8. Identify the Fourier series and its applications
9. Solve Partial Differential Equations and its applications".

80. Teaching Institution	University of Babylon

81. University Department /Centre	scientific department / civil engineering Department

89. Learning Outcomes, Teaching ,Learning and Assessment Method

A - Cognitive goals
Solve problems using different numerical methods

b- The skills goals special to the course
B 1 - Analytical ability
B2 -Comparison between Species The different differential equations
B3 - Know how to solve numerical problems in different ways

Teaching and learning methods

9- using the patient
10- using electronic screens
11- workshops
12- laboratories

Assessment methods

7- Semester exams الامتحانات
8- daily exams
9- Home and class duties

C- thinking skills
C1- The ability to determine the type of facilities
C2- Ability to analyze and design the facility

90. Course structure					
Week	hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
first week (1)	5	Subject vocabulary, resources, and general introduction to ODEs (classification, types of solutions, etc.)	Numerical analyzes and engineering methods وطرق	**using the patient using electronic screens**	semester exam practical exam
first week (2)		Ordinary differential equations of the first order (separable variables, homogeneous, perfect, linear, and Bernoulli) (1)		**using the patient using electronic screens**	semester exam practical exam
first week (3)		Ordinary differential equations of the first order (separable variables, homogeneous, perfect, linear, and Bernoulli) (2)		**using the patient using electronic screens**	semester exam practical exam
first week (4)		Ordinary differential equations of the first order		**using the patient using electronic screens**	semester exam practical exam

first week (5)		Linear Differential Equations of Order (n) with constant coefficients (1)		**using the patient using electronic screens**	semester exam practical exam
first week (6)		Linear Differential Equations of Order (n) with constant coefficients (2)		**using the patient using electronic screens**	semester exam practical exam
first week (7)		Euler - Cauchy equation		**using the patient using electronic screens**	semester exam practical exam
first week (8)		second order ordinary differential equations (1)		**using the patient using electronic screens**	semester exam practical exam
first week (9)		second order ordinary differential equations (2)		**using the patient using electronic**	semester exam practical exam

				screens	
first week (10)		Laplace transforms		**using the patient using electronic screens**	semester exam practical exam
first week (1)		Laplace Transforms and the Expansion and Kama Functions		**using the patient using electronic screens**	semester exam practical exam
first week (11)		Solve differential equations Linear Ordinary Using Laplace Transforms		**using the patient using electronic screens**	semester exam practical exam
first week (12)		Algebra of Matrices and Determinants (1)		**using the patient using electronic screens**	semester exam practical exam

first week (13)		Algebra of Matrices and Determinants (2)		**using the patient using electronic screens**	semester exam practical exam
first week (14)		Algebra of Matrices and Determinants (3)		**using the patient using electronic screens**	semester exam practical exam
first week (15)		Preliminary exam for the semester the first		**using the patient using electronic screens**	semester exam practical exam
first week (16)		**Half-year holiday**		**using the patient using electronic screens**	semester exam practical exam
first week (17)		Solve a set of linear algebraic equations using Cramer's rule and the inverse matrix method		**using the patient using electronic screens**	semester exam practical exam

first week (18)		eigenvalue issues مسائل		**using the patient using electronic screens**	semester exam practical exam
first week (19)		solve a set of differential equations Regular use of Cramer's base		**using the patient using electronic screens**	semester exam practical exam
first week (20)		solve a set of differential equations Ordinary using Laplace transforms		**using the patient using electronic screens**	semester exam practical exam
first week (21)		apps a group of Ordinary Differential Equations (1)		**using the patient using electronic screens**	semester exam practical exam
first		apps a group of		**using the**	semester exam

week (22)		Ordinary Differential Equations (2)		**patient using electronic screens**	practical exam
first week (23)		Fourier Series (1)		**using the patient using electronic screens**	semester exam practical exam
first week (24)		Fourier series (2)		**using the patient using electronic screens**	semester exam practical exam
first week (25)		Fourier Series Applications تطبيقات		**using the patient using electronic screens**	semester exam practical exam
first week (26)		Partial Differential Equations and its applications (1)		**using the patient using electronic screens**	semester exam practical exam

first week (27)		Partial Differential Equations and its applications (2)		**using the patient using electronic screens**	semester exam practical exam
first week (28)		Partial Differential Equations and its applications (3)		**using the patient using electronic screens**	semester exam practical exam
first week (29)		Partial Differential Equations and its applications (4)		**using the patient using electronic screens**	semester exam practical exam
first week (30)		Partial Differential Equations and its applications (5)		**using the patient using electronic screens**	semester exam practical exam

91. Infrastructure

Required readings: ▪ Basic texts ▪ Course books ▪ Other	**1. Kreyszib, E. (1972).** "Advanced Engineering Mathematics." John Wiley & Sons, USA, 3th edition. **2.Bronson, R. (1972).**"Modern Introductory Differential Equations." McGraw-Hill, USA.
Special requirements (including, for example, workshops, periodicals, software and websites)	**summer training**
Social services (including guest lectures, professional training and field studies)	field visit

92. The development of the curriculum plan	
Prerequisites	central
Less number of students	35
The largest number of students	100

COURSE SPECIFICATION

The course aims to teach students the details of traffic engineering work

93. Teaching Institution	University of Babylon
94. University Department/Centre	scientific department / civil engineering Department
95. Course title/code	**the traffic**
96. Degree	Bachelor
97. Modes of Attendance offered	weekly
98. Semester/Year	annual
99. Number of hours tuition (total)	3 per week
100. Date of production/revision of this specification	

101. Aims of the Course

The course aims to teach students the details of traffic engineering work

102. Learning Outcomes, Teaching ,Learning and Assessment Method

A - Cognitive goals
Traffic engineering study in all its details

b- The skills goals special to the course
B 1 - Analytical ability
B2 -Comparison between Species different ways

Teaching and learning methods

13- using the patient
14- using electronic screens
15- workshops
16- laboratories

Assessment methods

10- Semester exams الامتحانات
11- daily exams
12- Home and class duties

C- thinking skills
C1- Ability to select the type of roads
C2- Ability to analyze and design methods

103. Course structure					
Week	hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
first week (1)	3	**Driver characteristics, vehicle characteristics, classification, and vehicle characteristics**	**Study the condition of the roads, parking lots and the condition of the vehicles at the university site**	**using the patient using electronic screens**	semester exam practical exam
first week (2)		**Driver characteristics, vehicle characteristics, classification, and vehicle characteristics**	**Study the condition of the roads, parking lots and the condition of the pedestrians at the university site**	**using the patient using electronic screens**	semester exam practical exam
first week (3)		**The importance of planning, types and classification of roads, and how to choose the path of the road**	**Study the condition of the roads, parking lots and the condition of the pedestrians at the university site**	**using the patient using electronic screens**	semester exam practical exam
first week (4)		**The importance of planning, types and classification of roads, and how to choose the path of the road**	**Study the condition of the roads, parking lots and the condition of the pedestrians at the university site**	**using the patient using electronic screens**	semester exam practical exam

first week (5)		**Explanation and design of the safety distance in stopping and passing vehicles**	**Study the condition of the roads, parking lots and the condition of the pedestrians at the university site**	**using the patient using electronic screens**	semester exam practical exam
first week (6)		**Explanation and design of the safety distance in stopping and passing vehicles**	**Calculation of traffic volumes, speeds and traffic densities in selected areas in the city of Hilla**	**using the patient using electronic screens**	semester exam practical exam
first week (7)		**Road engineering design concept and driver's security vision concept**	**Calculation of traffic volumes, speeds and traffic densities in selected areas in the city of Hilla**	**using the patient using electronic screens**	semester exam practical exam
first week (8)		**Road engineering design concept and driver's security vision concept**	**Calculation of traffic volumes, speeds and traffic densities in selected areas in the city of Hilla**	**using the patient using electronic screens**	semester exam practical exam
first week (9)		**The concept of traffic volume, speed, capacity, delay content, and**	**Calculation of traffic volumes, speeds and traffic densities in selected**	**using the patient using electronic**	semester exam practical exam

		distance between vehicles	**areas in the city of Hilla**	**screens**	
first week (10)		**The concept of traffic volume, speed, capacity, delay content, and distance between vehicles**	**Calculation of traffic volumes, speeds and traffic densities in selected areas in the city of Hilla**	**using the patient using electronic screens**	semester exam practical exam
first week (1)		**The concept of traffic volume, speed, capacity, delay content, and distance between vehicles**	**Choosing the path of the road with how to fall off**	**using the patient using electronic screens**	semester exam practical exam
first week (11)		**Describe the linear and nonlinear relationship between speed and traffic density**	**Choosing the path of the road with how to fall off**	**using the patient using electronic screens**	semester exam practical exam
first week (12)		**Describe the linear and nonlinear relationship between speed and traffic density**	**Choosing the path of the road with how to fall off**	**using the patient using electronic screens**	semester exam practical exam

first week (13)		**Describe the linear and nonlinear relationship between speed and traffic density**	**Choosing the path of the road with how to fall off**	**using the patient using electronic screens**	semester exam practical exam
first week (14)		**Classification of land intersections, classification of multi-level intersections and types**	**Calculation of the volumes of earthworks for the road that was projected**	**using the patient using electronic screens**	semester exam practical exam
first week (15)		**Classification of land intersections, classification of multi-level intersections and types**	**Calculation of the volumes of earthworks for the road that was projected**	**using the patient using electronic screens**	semester exam practical exam
first week (16)		**Classification of land intersections, classification of multi-level intersections and types**	**Calculation of the volumes of earthworks for the road that was projected**	**using the patient using electronic screens**	semester exam practical exam
first week (17)		**Half-year holiday**		**using the patient using electronic screens**	semester exam practical exam

first week (18)		**Analyze the intersections equipped with the traffic light and design the phases and times of the intersection**	**Calculation of the volumes of earthworks for the road that was projected**	**using the patient using electronic screens**	semester exam practical exam
first week (19)		**Analyze the intersections equipped with the traffic light and design the phases and times of the intersection**	**Calculation of the volumes of earthworks for the road that was projected**	**using the patient using electronic screens**	semester exam practical exam
first week (20)		**Analyze the intersections equipped with the traffic light and design the phases and times of the intersection**	**Calculation of the volumes of earthworks for the road that was projected**	**using the patient using electronic screens**	semester exam practical exam
first week (21)		**Types of traffic signs and signs, their types and design, in addition to furnishing and planning roads with signs**	**Study and design of the path and layers of the road with drawing the longitudinal and transverse sections according to the levels**	**using the patient using electronic screens**	semester exam practical exam
first week		**Types of traffic**	**Study and design of**	**using the**	semester exam

(22)		**signs and signs, their types and design, in addition to furnishing and planning roads with signs**	**the path and layers of the road with drawing the longitudinal and transverse sections according to the levels**	**patient using electronic screens**	practical exam
first week (23)		**Types of traffic signs and signs, their types and design, in addition to furnishing and planning roads with signs**	**Study and design of the path and layers of the road with drawing the longitudinal and transverse sections according to the levels**	**using the patient using electronic screens**	semester exam practical exam
first week (24)		**Vehicle parking classification and design**	**Study and design of the path and layers of the road with drawing the longitudinal and transverse sections according to the levels**	**using the patient using electronic screens**	semester exam practical exam
first week (25)		**Vehicle parking classification and design**	**Study and design of the path and layers of the road with drawing the longitudinal and transverse sections according to the levels**	**using the patient using electronic screens**	semester exam practical exam
first week (26)		**Vehicle parking classification and design**	**Study and design of the path and layers of the road with drawing the longitudinal and transverse sections according to the levels**	**using the patient using electronic screens**	semester exam practical exam

first week (27)		**The concept of traffic texture, study and drawing of the types of its areas, and the design of the overlap area in it**	**Study and design of the path and layers of the road with drawing the longitudinal and transverse sections according to the levels**	**using the patient using electronic screens**	semester exam practical exam
first week (28)		**The concept of traffic texture, study and drawing of the types of its areas, and the design of the overlap area in it**	**Study and design of ground intersections inside the university with drawing detailed plans M**	**using the patient using electronic screens**	semester exam practical exam
first week (29)		**The concept of traffic texture, study and drawing of the types of its areas, and the design of the overlap area in it**	**Study and design of ground intersections inside the university, with drawing of detailed plans**	**using the patient using electronic screens**	semester exam practical exam
first week (30)		**The concept of a traffic accident and its types, the design of the accident form, the design of dangerous traffic areas and how to re-design them**	**Study and design of ground intersections inside the university, with drawing of detailed plans**	**using the patient using electronic screens**	semester exam practical exam

104. Infrastructure

Required readings: ▪ Basic texts ▪ Course books ▪ Other	1. Highway Capacity Manual, HCM 2000 2. A Policy on Geometric Design of Highway and Streets, AASHTO 1994 3. Highway Engineering, Paul H. Wright, 2003
Special requirements (including, for example, workshops, periodicals, software and websites)	**summer training**
Social services (including guest lectures, professional training and field studies)	field visit

105. The development of the curriculum plan	
Prerequisites	central
Less number of students	35
The largest number of students	100

COURSE SPECIFICATION

Introducing the student to the subject of irrigation and drainage engineering and its importance and applications that are of interest to the civil engineer in terms of designing irrigation and drainage networks and their systems.

106. Teaching Institution	University of Babylon
107. University Department/Centre	scientific department / civil engineering Department
108. Course title/code	**irrigation and drainage**
109. Degree	Bachelor
110. Modes of Attendance offered	weekly
111. Semester/Year	annual
112. Number of hours tuition (total)	3 per week

113. Date of production /revision of th	
114.	

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115. Learning Outcomes, Teaching ,Learning and Assessment Method
A - Cognitive goals Study irrigation engineering and bazl in all its details
b- The skills goals special to the course B 1 - Irrigation engineering designs B2 -Comparison between Species Different channels for different irrigation and drainage
Teaching and learning methods
17- using the patient **18- using electronic screens** **19- workshops** **20- laboratories**
Assessment methods
13- Semester exams الامتحانات 14- daily exams 15- Home and class duties
C- thinking skills C1- Ability to identify irrigation and drainage channels قنوات C2- The ability to design irrigation and drainage channels

116. Course structure					
Week	hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
first week (1)	3	**Definition of Irrigation and drainage engineering and irrigation water sources.**		**using the patient using electronic screens**	semester exam practical exam
first week (2)		**The relationship of soil, water, soil types and soil physical properties.**		**using the patient using electronic screens**	semester exam practical exam
first week (3)		**Definition of field capacity, wilting point and soil water availability forms.**		**using the patient using electronic screens**	semester exam practical exam
first week (4)		**Methods of measuring ground moisture and water movement in the soil.**		**using the patient using electronic screens**	semester exam practical exam

first week (5)		**Definition of infiltration, methods of calculating infiltration, water needs and irrigation efficiency.**		**using the patient using electronic screens**	semester exam practical exam
first week (6)		**Estimation of water consumption, water quantities and irrigation cycles.**		**using the patient using electronic screens**	semester exam practical exam
first week (7)		**Design theories of transverse and longitudinal sections of irrigation canals.**		**using the patient using electronic screens**	semester exam practical exam
first week (8)		**Land slope leveling design for surface irrigation.**		**using the patient using electronic screens**	semester exam practical exam
first week (9)		**Study of the phenomenon of water leakage in canals and canals**		**using the patient using electronic**	semester exam practical exam

		lining.		**screens**	
first week (10)		**Channel planning.**		**using the patient using electronic screens**	semester exam practical exam
first week (1)		**Study of irrigation methods (strip - basin - Almrouz).**		**using the patient using electronic screens**	semester exam practical exam
first week (11)		**Sprinkle and drip irrigation.**		**using the patient using electronic screens**	semester exam practical exam
first week (12)		**Design calculations of a sprinkler irrigation network with an applied example.**		**using the patient using electronic screens**	semester exam practical exam

first week (13)		**Design calculations for a drip irrigation network with an applied example.**		**using the patient using electronic screens**	semester exam practical exam
first week (14)		**theories Design of irrigation pipes and pumping stations.**		**using the patient using electronic screens**	semester exam practical exam
first week (15)		**Discuss and review some irrigation projects.**		**using the patient using electronic screens**	semester exam practical exam
first week (16)		**Half-year holiday**		**using the patient using electronic screens**	semester exam practical exam
first week (17)		**an introduction definition About the punctureAnd its types.**		**using the patient using electronic screens**	semester exam practical exam

first week (18)		**Puncture project investigations**		**using the patient using electronic screens**	semester exam practical exam
first week (19)		**Sources of drainage water and types of soils affected by salts.**		**using the patient using electronic screens**	semester exam practical exam
first week (20)		**Puncture system planning.**		**using the patient using electronic screens**	semester exam practical exam
first week (21)		**Puncture methods and types of trocars.**		**using the patient using electronic screens**	semester exam practical exam
first week		**Types of open**		**using the**	semester exam

(22)		**trocars (features and disadvantages).**		**patient using electronic screens**	practical exam
first week (23)		**Open trough designs.**		**using the patient using electronic screens**	semester exam practical exam
first week (24)		**Types of covered trocars (features and disadvantages).**		**using the patient using electronic screens**	semester exam practical exam
first week (25)		**Covered trough designs.**		**using the patient using electronic screens**	semester exam practical exam
first week (26)		**Spaces between horizontal trocars.**		**using the patient using electronic screens**	semester exam practical exam

first week (27)		**Practical examples and exercises.**		**using the patient using electronic screens**	semester exam practical exam
first week (28)		**Subsurface puncture**		**using the patient using electronic screens**	semester exam practical exam
first week (29)		**Vertical puncture using wells.**		**using the patient using electronic screens**	semester exam practical exam
first week (30)				**using the patient using electronic screens**	semester exam practical exam

117. Infrastructure

Required readings: ▪ Basic texts ▪ Course books ▪ Other	***1- Irrigation Principles and Practices,*** **by Orson W. Israelsenand Vaughn E. Hansen. 3rd Ed.** **2.Principles and Practice of Irrigation Engineering, by SK Sharma.** **3. Irrigation Engineering and Hydraulic Structures, by SK Garg.**
Special requirements (including, for example, workshops, periodicals, software and websites)	**summer training**
Social services (including guest lectures, professional training and field studies)	field visit

118. The development of the curriculum plan	
Prerequisites	central
Less number of students	35
The largest number of students	100

COURSE SPECIFICATION

Introduce students to the principles of soil mechanics and engineering behavior and to employ this knowledge in relation to the designs of civil engineering facilities.

119. Teaching Institution	University of Babylon
120. University Department/Centre	scientific department / civil engineering Department
121. Course title/code	**soil engineering**
122. Degree	Bachelor
123. Modes of Attendance offered	weekly
124. Semester/Year	annual
125. Number of hours tuition (total)	5 per week

126. Date of production/revision of this specification	

127. Aims of the Course

Introduce students to the principles of soil mechanics and engineering behavior and to employ this knowledge in relation to the designs of civil engineering facilities.

128. Learning Outcomes, Teaching ,Learning and Assessment Method

A - Cognitive goals

Study soil engineering in all its details

b- The skills goals special to the course

B 1 - The ability to understand the engineering details of the soil

B2 -Comparison between Species Different soils and their impact on engineering facilities

Teaching and learning methods

21- using the patient

22- using electronic screens

23- workshops

24- laboratories

Assessment methods

16- Semester exams الامتحانات

17- daily exams

18- Home and class duties

C- thinking skills

C1- The ability to identify the different types of soils and their impact on civil facilities

129. Course structure					
Week	hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
first week (1)	5	The nature of soil - Basic structural units of clay minerals.		**using the patient using electronic screens**	semester exam practical exam
first week (2)		Particle size analysis – Methods, definitions, effect of soil gradation on behavior of coarse grained soils.		**using the patient using electronic screens**	semester exam practical exam
first week (3)		Plasticity of fine soils - liquid limit, plastic limit, liquidity index, soil activity.		**using the patient using electronic screens**	semester exam practical exam
first week (4)		Soil description and soil classification - Comparisons between description and classification.		**using the patient using electronic screens**	semester exam practical exam

first week (5)		Uses of description and classification. The unified soil classification system (USCS).		**using the patient using electronic screens**	semester exam practical exam
first week (6)		Phase relationships: - definition, void ratio, porosity, water content, air content, degree of saturation.		**using the patient using electronic screens**	semester exam practical exam
first week (7)		Specific gravity, density (dry, total, saturated), unit weight (dry, total, saturated, submerged).		**using the patient using electronic screens**	semester exam practical exam
first week (8)		Theory of soil compaction		**using the patient using electronic screens**	semester exam practical exam
first week (9)		Standard compaction tests and compaction parameters		**using the patient using electronic**	semester exam practical exam

				screens	
first week (10)		Control on compaction activities		**using the patient using electronic screens**	semester exam practical exam
first week (1)		Field compaction equipments		**using the patient using electronic screens**	semester exam practical exam
first week (11)		Field density measurement		**using the patient using electronic screens**	semester exam practical exam
first week (12)		Soil water, conditions of ground & static water, seeping water condition, heads and Bernoulli's equation, capillarity in soil.		**using the patient using electronic screens**	semester exam practical exam

first week (13)		Permeability: Darcy's law, factors affecting soil permeability, seepage velocity, seepage theory, one-dimensional and two-dimensional fluid flow.		**using the patient using electronic screens**	semester exam practical exam
first week (14)		Flow nets – conditions of homogenous isotropic soil		**using the patient using electronic screens**	semester exam practical exam
first week (15)		Conditions of non-homogenous and anisotropic conditions, transfer conditions, filter design requirement.		**using the patient using electronic screens**	semester exam practical exam
first week (16)		**Half-year Break**		**using the patient using electronic screens**	semester exam practical exam
first week (17)		Introduction and definitions to effective stresses.		**using the patient using electronic screens**	semester exam practical exam

first week (18)		The principal of effective stresses, geostatic stresses, coefficient of lateral earth pressure.		**using the patient using electronic screens**	semester exam practical exam
first week (19)		of effective stress to a change in total stress.		**using the patient using electronic screens**	semester exam practical exam
first week (20)		Consolidation (definition and brief explanation), consolidation analogy.		**using the patient using electronic screens**	semester exam practical exam
first week (21)		Influence of seepage on effective stresses. Factor of safety on quick condition, critical hydraulic gradient.		**using the patient using electronic screens**	semester exam practical exam
first week (22)		Shear failure, Mohr		**using the**	semester exam

		- Coulomb failure law, Mohr envelope modified shear strength parameters, principle of stress path - principle stresses and Mohr circle.		**patient using electronic screens**	practical exam
first week (23)		Basic relationship between shear strength parameters: stresses on failure plane and principal stresses at failure		**using the patient using electronic screens**	semester exam practical exam
first week (24)		Shear strength tests - direct shear test, triaxial - compression test, regarding drainage condition, pore water pressure measurement during the triaxial test.		**using the patient using electronic screens**	semester exam practical exam
first week (25)		Testing under back pressure. The unconfined compression test, field determination of shear strength – The vane shear test – The standard penetration test.		**using the patient using electronic screens**	semester exam practical exam
first week (26)		Shear strength of sands, behavior of coarse and dense sand (effect of void ratio) – Liquefaction in sand deposits, effect of particle size distribution.		**using the patient using electronic screens**	semester exam practical exam

first week (27)		Shear strength of saturated clays – Isotropic compression – effect of stress history.		**using the patient using electronic screens**	semester exam practical exam
first week (28)		Normally consolidated and over consolidated clays. Over consolidation ratio.		**using the patient using electronic screens**	semester exam practical exam
first week (29)		Stresses induced within a soil mass due to applied surface loads.		**using the patient using electronic screens**	semester exam practical exam
first week (30)		Soil compressibility parameters. One-dimensional consolidation theory.		**using the patient using electronic screens**	semester exam practical exam
		Derivation and assumptions calculation of consolidation parameters.			

		Settlement analysis. Immediate settlement, consolidation settlement:- secondary compression settlement.			

130. Infrastructure	
Required readings: ▪ Basic texts ▪ Course books ▪ Other	1. 'Craiag's Soil Mechanics', RF Craig, seventh edition, Spon Press, 2004 2. 'Soil Mechanics', Lambe& Whitman, John Wiley & Sons
Special requirements (including, for example, workshops, periodicals, software and websites)	**summer training**
Social services (including guest lectures, professional training and field studies)	field visit

131. The development of the curriculum plan	
Prerequisites	central
Less number of students	35
The largest number of students	100

COURSE SPECIFICATION

1- Introducing the students The student can manage any project correctly.

132. Teaching Institution	University of Babylon
133. University Department/Centre	scientific department / civil engineering Department
134. Course title/code	**Engineering Management**
135. Degree	Bachelor

136. Modes of Attendance offered	weekly
137. Semester/Year	annual
138. Number of hours tuition (total)	2 per week
139. Date of production/revision of this specification	

140. Aims of the Course

1- **The student can manage any project properly.**
2- **Develop correct work programs that fit the nature of each project.**
3- **Establishing a work progress schedule for any project within the specified period for completing that project.**

How to change any work schedule before or during implementation due to any emergency event that delays work on that project.

141. Learning Outcomes, Teaching ,Learning and Assessment Method

A - Cognitive goals

Control of time, control of cost, control of quality, and definition of the general conditions for Iraqi engineering contracting.

b- The skills goals special to the course

B 1 - Ability to understand engineering details of projects

B2 -The ability to manage the time and cost of the engineering project

Teaching and learning methods

25- using the patient
26- using electronic screens
27- workshops
28- laboratories

Assessment methods

19- Semester exams الامتحانات
20- daily exams
21- Home and class duties

C- thinking skills

1- The student's ability to solve problems

142. Course structure					
Week	hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
first week (1)	2	construction management(Introduction to engineering management & Environment consideration, Relationships between project achieving team & project phases)		**using the patient using electronic screens**	semester exam practical exam
first week (2)		construction management(Introduction to engineering management & Environment consideration, Relationships between project achieving team & project phases)		**using the patient using electronic screens**	semester exam practical exam
first week (3)				**using the patient using electronic screens**	semester exam practical exam
first week (4)		Planning techniques(Planning		**using the patient using electroni**	semester exam practical exam

		Techniques) types of planning techniques(Types of Planning Techniques 1) Line diagram style (Bar Chart)		**c screens**	
first week (5)		2) Critical Path Methods (CPM) A- sagittal networks (Arrow Net Work Technique)		**using the patient using electronic screens**	semester exam practical exam
first week (6)				**using the patient using electronic screens**	semester exam practical exam
first week (7)		2Critical Path MethodsCPM) A- sagittal networksArrow Net Work Technique)		**using the patient using electronic screens**	semester exam practical exam
first week (8)		ب- precedence networks (Precedence Net		**using the patient using electronic screens**	semester exam practical exam

		Work Technique)			
first week (9)				**using the patient using electronic screens**	semester exam practical exam
first week (10)		b- networks of precedence (Precedence Net Work Technique)		**using the patient using electronic screens**	semester exam practical exam
first week (1)		ت- schemes (PERT)(Program Evaluation and Review Technique)		**using the patient using electronic screens**	semester exam practical exam
first week (11)				**using the patient using electronic screens**	semester exam practical exam
first week (12)		T-schemes (PERT)(Progra		**using the patient using**	semester exam practical exam

		m Evaluation and Review Technique)		**electronic screens**	
first week (13)		budget line style (LOB)(Line of Balance)		**using the patient using electronic screens**	semester exam practical exam
first week (14)				**using the patient using electronic screens**	semester exam practical exam
first week (15)		General Conditions of Contracting for Civil Engineering Works in Iraq		**using the patient using electronic screens**	semester exam practical exam
first week (16)				**using the patient using electronic screens**	semester exam practical exam

first week (17)		General Conditions of Contracting for Civil Engineering Works in Iraq		**using the patient using electroni c screens**	semester exam practical exam
first week (18)		engineering contracts (Engineering Contracts)		**using the patient using electroni c screens**	semester exam practical exam
first week (19)				**using the patient using electroni c screens**	semester exam practical exam
first week (20)		engineering contracts (Engineering Contracts)		**using the patient using electroni c screens**	semester exam practical exam
first week (21)		Project implementation methods (Project Execution		**using the patient using electroni c screens**	semester exam practical exam

		Approaches)			
first week (22)				**using the patient using electronic screens**	semester exam practical exam
first week (23)		Kinds of tenders (Method of Tendering)		**using the patient using electronic screens**	semester exam practical exam
first week (24)		The relationship between time and cost (Time-cost relationship & Envelope curve) and (Cash Flow Diagram)		**using the patient using electronic screens**	semester exam practical exam
first week (25)				**using the patient using electronic screens**	semester exam practical exam

first week (26)		The relationship between time and cost (Time-cost relationship & Envelope curve) and (Cash Flow Diagram)		**using the patient using electronic screens**	semester exam practical exam
first week (27)		Operations Research (Operation Research) Linear programming and its applications (Linear Programming & it's application)		**using the patient using electronic screens**	semester exam practical exam
first week (28)				**using the patient using electronic screens**	semester exam practical exam
first week (29)		Cost control in construction projects (types of costs) Types of costs & cost control system)		**using the patient using electronic screens**	semester exam practical exam
first week (30)		engineering economics (Engineering		**using the patient using electroni**	semester exam practical exam

		Economy) (Interest and time value of the money) (Single payment, Regular payment,Interes t tables)		**c screens**	

143. Infrastructure	
Required readings: ▪ Basic texts ▪ Course books ▪ Other	***** Principles of Construction management By: Roy Piltcher * Construction management By: Robert Hares & Frank Hares * Construction Project Management and Professional Relationships Author: Ihsan Al-Attar
Special requirements (including, for example, workshops, periodicals, software and websites)	**summer training**
Social services (including guest lectures, professional training and field studies)	field visit

144. The development of the curriculum plan	
Prerequisites	central
Less number of students	35
The largest number of students	100

COURSE SPECIFICATION (4)

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME

COURSE SPECIFICATION

The course explains the basic principles in the design of structural members and buildings constructed of reinforced concrete as well as pre-stressed concrete in a scientific manner based on American specifications in the design of buildings(ACI-code 05 The course is considered as a unit of study for the design of reinforced concrete for civil engineering students who have previously studied the topics of engineering mechanics, resistance of materials and construction theory, as the course contains many design issues for different structural parts.

145. Teaching Institution	University of Babylon
146. University Department/Centre	scientific department / civil engineering Department
147. Course title/code	**Ci.En.134 Concrete**
148. Degree	Bachelor
149. Modes of Attendance offered	weekly
150. Semester/Year	annual
151. Number of hours tuition (total)	3 per week
152. Date of production/revision of this specification	
153. Aims of the Course	
The term objectives of the course means that the phrases indicate the outcomes to be achieved by the student, represented by cognitive, emotional and skill objectives. The phrase should be clear and specific, with no difference in its interpretation, and it helps to measure the outcomes. 1. The first semester, the student learns about the behavior of reinforced concrete with its different materials from concrete	

and steel reinforcement. The students are also introduced to

154. Learning Outcomes, Teaching ,Learning and Assessment Method

A - Cognitive goals
A1- Analysis and design of the facility
C2- Analyze, analyze and design the forces affecting the structure
C3- Analysis of the moments affecting the origin, its analysis and design

b- The skills goals special to the course
B 1 -Analysis and design of the facility
B2 -Comparison between Species different buildings
B3 - Know the basics of concrete and how it works

Teaching and learning methods

Method of delivering lecture, discussion and workshops

Assessment methods

semester exam
daily exam
Home and class duties

C- thinking skills
C1- The ability to determine the type of facilities
C2- Ability to analyze and design

155. Course structure					
Week	hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
first week (1)	4	**Deflecion control of two-way slabs**	concrete structures designs	1- the blackboard 2- electronic screen	semester exam daily exam
first week (2)					
first week (3)					
first week (4)		**Direct design method of two-way slabs**			
first week (5)					
first week (6)					
first week (7)					
first week (8)		**Shear in two-way slabs**			
first week (9)					
first week (10)					
first week (1)		**Equivalent frame method of two-way slabs**			
first week (11)					
first week (12)					
first week (13)					
first week (14)					
first week (15)					
first week (16)		**Half-year holiday**			
first week (17)		**Yield-line analysis**			
first week (18)					
first week (19)					
first week (20)					

first week (21)					
first week (22)					
first week (23)					
first week (24)		**Prestressed concrete**			
first week (25)					
first week (26)					
first week (27)					
first week (28)					
first week (29)					
first week (30)					

156. Infrastructure	
Required readings: ▪ Basic texts ▪ Course books ▪ Other	**1-Design of reinforced concrete.Jack.Mc Cormac 2009.**
Special requirements (including, for example, workshops, periodicals, software and websites)	**summer training**
Social services (including guest lectures, professional training and field studies)	field visit

157. The development of the curriculum plan	
Prerequisites	central
Less number of students	35
The largest number of students	100

COURSE SPECIFICATION

This course aims to prepare cadres specialized in environmental and health engineering, capable of implementing development plans and effective plans for improving and protecting the environment, and equipped with a theoretical and practical background that qualifies them to practice their engineering specialization in various environmental fields.

158. Teaching Institution	University of Babylon
159. University Department/Centre	scientific department / civil engineering Department
160. Course title/code	**Ci.En.634 Sanitary Engineering**
161. Degree	Bachelor
162. Modes of Attendance offered	weekly
163. Semester/Year	annual
164. Number of hours tuition (total)	4 per week
165. Date of production/revision of this specification	

166. Aims of the Course

The contents of this course deal with basic concepts in sanitary and environmental engineering, the sources of environmental pollution for various environmental media, such as air, water and soil pollution, methods of controlling and managing them in a safe manner, and their relationship to humans and the environment in terms of direct damage, causes and response.Cause, Effect and Response) and its environmental impacts. The contents also deal with the study of water from its various sources, its treatment and distribution, then its collection as waste water, treatment and disposal. and their pumping and treatment stations. The student also learns ways to deal with rainwater in terms of collecting it, calculating its quantities, and ways to dispose of it.

167. Learning Outcomes, Teaching ,Learning and Assessment Method

A - Cognitive goals
A1- Knowledge of sanitary designs and water networks
C2- Knowledge of sanitary designs and sewage networks

b- The skills goals special to the course
B 1 -Analysis and design of the facility
B2 -Comparison between Species different buildings
B3 - Know the basics of concrete and how it works

Teaching and learning methods

Method of delivering lecture, discussion and workshops

Assessment methods

semester exam daily exam Home and class duties
C- thinking skills C1- Ability to solve design problems in sanitary engineering C2- Ability to analyze and design

168. Course structure					
Week	hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
first week (1)	4	**INTRODUCTION**		3- the black board 4- electronic screen	semester exam daily exam
first week (2)		**QUANTITY OF WATER AND SEWAGE**			
first week (3)		**HYDRAULICS**	**PH meter**		
first week (4)		**AQUEDUCTS WATER PIPES**	**Al-kalinity**		
first week (5)		**COLLECTION AND DISTRIBUTION OF WATER**	**Acidity**		
first week (6)		**QUALITY OF WATER SUPPLIES**	**Chlorine (Cl2)**		
first week (7)		**CLARIFICATION OF WATER**	**Chloride (Cl-)**		
first week (8)		**FILTRATION OF WATER**	**Turbidity**		
first week (9)		**MISCELLANEOUS WATER TREATMENT TECHNIQUES**			
first week (10)		**Half-year holiday**			
first week (1)		**SEWARAGE – GENERAL CONSIDERATION**	**Total Solids**		
first week (11)		**STORM WATER FLOW**	**Hardness**		
first week (12)		**SEWER MATERIALS**	**Sulfate Ion (So4)**		
first week (13)		**SEWER APPURTENANCES**	**Dissolved Oxygen, EC**		
first week (14)		**INTRODUCTION**			

first week (15)		**QUANTITY OF WATER AND SEWAGE**			
first week (16)		**HYDRAULICS**	**PH meter**		
first week (17)		**AQUEDUCTS WATER PIPES**	**Al-kalinity**		
first week (18)		**COLLECTION AND DISTRIBUTION OF WATER**	**Acidity**		
first week (19)		**QUALITY OF WATER SUPPLIES**	**Chlorine (Cl2)**		
first week (20)		**CLARIFICATION OF WATER**	**Chloride (Cl-)**		
first week (21)		**FILTRATION OF WATER**	**Turbidity**		
first week (22)		**MISCELLANEOUS WATER TREATMENT TECHNIQUES**			
first week (23)		**Half-year holiday**			
first week (24)		**SEWARAGE – GENERAL CONSIDERATION**	**Total Solids**		
first week (25)		**STORM WATER FLOW**	**Hardness**		
first week (26)		**SEWER MATERIALS**	**Sulfate Ion (So4)**		
first week (27)		**SEWER APPURTENANCES**	**Dissolved Oxygen, EC**		
first week (28)		**INTRODUCTION**			
first week (29)		**QUANTITY OF WATER AND SEWAGE**			
first week (30)		**HYDRAULICS**	**PH meter**		

170. The development of the curriculum plan	
Prerequisites	central
Less number of students	35
The largest number of students	100
(including, for example, workshops, periodicals, software and websites)	**summer training**
Social services (including guest lectures, professional training and field studies)	field visit

COURSE SPECIFICATION

The course aims to familiarize the student with how to determine the required investigations for the site, the appropriate types of examinations that are conducted (field and laboratory), excavation methods, how to take samples, and what are the obstacles.

171. Teaching Institution	University of Babylon
172. University Department/Centre	scientific department / civil engineering Department
173. Course title/code	**Ci.En.434 Foundation Engineering**
174. Degree	Bachelor
175. Modes of Attendance offered	weekly
176. Semester/Year	annual
177. Number of hours tuition (total)	3 per week
178. Date of production/revision of this specification	
179. Aims of the Course	
The course aims to achieve the following: 1- The student learns how to determine the required investigations for the site, the appropriate types of examinations that are conducted (field and laboratory), excavation methods, how to take samples, and what are the obstacles. 2- The student learns how to use the information extracted from examinations and investigations in designs and analysis. 3- The student learns how to conduct on-site examinations and how to use them in design. 4- The student learns how to calculate the pressure applied by the soil on the foundation and submerged structures in other soils (retaining walls, pile walls, intensive excavations, prefabricated walls).	

5- The student learns how to determine the stability of the slopes resulting from cutting the soil for the purpose of constructing and supporting the
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180. Learning Outcomes, Teaching ,Learning and Assessment Method

A - Cognitive goals
A1- Knowledge of foundation designs for different buildings
C2- Knowing the types of foundations for different buildings and the quality of the soil

b- The skills goals special to the course
B 1 -Analysis and design of the facility
B2 -Comparison between Species different building foundations
B3 - Knowledge of the basics of concrete and its mechanism of action in the foundations

Teaching and learning methods

Method of delivering lecture, discussion and workshops

Assessment methods

semester exam
daily exam
Home and class duties

C- thinking skills
C1- Ability to solve design problems in sanitary engineering
C2- Ability to analyze and design

181. Course structure					
Week	hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
first week (1)	4	**Site investigations (4 hours)**		5- the black board 6- electronic screen	semester exam daily exam
first week (2)		**The purpose and methods of investigations.**			
first week (3)		**2- Test drilling (4 hours)**			
first week (4)		**Their preparation, depth, and distance between them, fuzzy and non-fuzzy models, and reasons for distortion of samples.**			
first week (5)		**3- On-site examinations (4 hours)**			
first week (6)		**Feather shear test, standard penetration test, plate bearing test**			
first week (7)		**4- Lateral dust pressure, Rankin's theory (for sloping and non-sloping soil surfaces) (20 hours)**			
first week (8)		**5- Tablet pillars.**			
first week (9)		**6- Evidence of limited and unlimited slopes. (14 hours)**			
first week (10)		**Unlimited slopes, limited slopes,**			

		methods of calculating the safety coefficient (slices method..etc)			
first week (1)		**7- Soil bearing capacity (18 hours)**			
first week (11)		**8- Terzaki equation to calculate bearing capacity, the effect of water and shape on bearing capacity**			
first week (12)		**Methods of calculating bearing capacity in clay soils, safety coefficient.**			
first week (13)		**9- Landing calculations (8 hours)**			
first week (14)		**Initial landing, joining landing.**			
first week (15)		**10- Structural design of the foundations (24 hours)**			
first week (16)		**Structural design of single reinforced and unarmed foundations, wall foundation, effect of load on الحمل**			
first week (17)		**Dimensions test for exponents, rectangular united exponents, trapezoidal united exponents, exponents**			
first week (18)		**Tethered or Alhadidip, mat foundations.**			
first week (19)		**11- Pillars**			
first week (20)		**Single piles in clay, single piles in sand and group piles (distribution of piles in**			
first week (21)		**group), pile group (distribution of weight on the piles), group efficiency, friction**			
first week (22)		**negative surface.**			
first week (23)		**Site investigations (4 hours)**			

first week (24)		**The purpose and methods of investigations.**			
first week (25)		**2- Test drilling (4 hours)**			
first week (26)		**Their preparation, depth, and distance between them, fuzzy and non-fuzzy models, and reasons for distortion of samples.**			
first week (27)		**3- On-site examinations (4 hours)**			
first week (28)		**Feather shear test, standard penetration test, plate bearing test**			
first week (29)		**4- Lateral dust pressure, Rankin's theory (for sloping and non-sloping soil surfaces) (20 hours)**			
first week (30)		**5- Tablet pillars.**			

182. Infrastructure	
Required readings: ▪ Basic texts ▪ Course books ▪ Other	**Youssef Al-Shakarji and Nouri Al-Mohammadi, 1985 "Engineering of Foundations" First Class**
Special requirements (including, for example, workshops, periodicals, software and websites)	**summer training**
Social services (including guest lectures, professional training and field studies)	field visit

183. The development of the curriculum plan	
Prerequisites	central
Less number of students	35
The largest number of students	100

COURSE SPECIFICATION

Teaching engineering students to analyze and design steel structures used in civil engineering journals .

184. Teaching Institution	University of Babylon

193. Learning Outcomes, Teaching ,Learning and Assessment Method

A - Cognitive goals
A1- Knowledge of iron designs for different buildingsبنية

b- The skills goals special to the course
B 1 -Analysis and design of the facility
B2 -Comparison between Species different steel buildings

Teaching and learning methods

Method of delivering lecture, discussion and workshops

Assessment methods

semester exam
daily exam
Home and class duties

C- thinking skills

C1- Ability to solve design problems in sanitary engineering

C2- Ability to analyze and design

194. Course structure					
Week	hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
first week (1)	4	**types of iron**		7- the black board 8- electronic screen	semester exam daily exam
first week (2)		**Types of clips and their classification**			
first week (3)		**tensile organ analysis**			
first week (4)		**The successive distribution of the stabilizers to the tension members**			
first week (5)		**tensile organ design**			
first week (6)		**Compression members, their types and buckling stresses**			
first week (7)		**Analysis of compression members and columns**			
first week (8)		**Compound compression members**			
first week (9)		**Compression members design**			
first week (10)		**Introduction to lintels and their types**			
first week (1)		**The effect of lateral attribution on the cusp**			
first week (11)		**Analysis of beams subjected to a bending moment about its strong axis**			

first week (12)		**Design of beams subject to strong torques**			
first week (13)		**Analysis of beams subjected to a bending moment about its weak axis**			
first week (14)		**Analysis of beams subjected to strong and weak bending moments**			
first week (15)		**Design of beams subject to strong and weak torques**			
first week (16)		**Half-year holiday**			
first week (17)		**Members that act as stub-pillars**			
first week (18)		**Analyze members that act as a stub-column**			
first week (19)		**Designing members that act as stub-pillars**			
first week (20)		**Fixings and their types**			
first week (21)		**simple links**			
first week (22)		**Simple link analysis**			
first week (23)		**simple link design**			
first week (24)		**Simple welding analysis**			
first week (25)		**Simple welding design**			
first week (26)		**Central difference link analysis**			
first week (27)		**Center-differentiated links design**			
first week (28)		**Centrifugal Welding Analysis**			
first week (29)		**Center differential welding design اللحام**			
first week (30)		**Composite Stabilizer Analysis**			

195. Infrastructure	
Required readings: ▪ Basic texts ▪ Course books ▪ Other	**Structural Steel Design by Mc Cormac, 2008**

Special requirements (including, for example, workshops, periodicals, software and websites)	**summer training**
Social services (including guest lectures, professional training and field studies)	field visit

196. The development of the curriculum plan	
Prerequisites	central
Less number of students	35
The largest number of students	100

COURSE SPECIFICATION

Introducing the student to the engineering and structural design of the road section and the types of construction materials used in road works, their properties and methods of evaluation

197. Teaching Institution	University of Babylon
198. University Department/Centre	scientific department / civil engineering Department
199. Course title/code	**Ci.En.534 Road Engineering**
200. Degree	Bachelor
201. Modes of Attendance offered	weekly
202. Semester/Year	annual
203. Number of hours tuition (total)	3 per week
204. Date of production/revision of this specification	
205. Aims of the Course	
The course aims to introduce the student to the different types of road designs and how to work with them	

206. Learning Outcomes, Teaching ,Learning and Assessment Method
A - Cognitive goals A1- Know the different road designs
b- The skills goals special to the course B 1 -Method analysis and design B2 -Comparison between Species different ways
Teaching and learning methods
Method of delivering lecture, discussion and workshops
Assessment methods
semester exam daily exam Home and class duties
C- thinking skills C1- Ability to solve design problems in road engineering C2- Ability to analyze and design

207. Course structure					
Week	hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
first week (1)	4	road section elements	Sieve analysis of mixed stones	9- the black board 10- electronic screen	semester exam daily exam
first week (2)		road section elements	Sieve analysis of mixed stones		
first week (3)		Earthworks and block transfer scheme	Examination of the relationship between dry density and moisture content		
first week (4)		Earthworks and block transfer scheme	Examination of the relationship between dry density and moisture content		
first week (5)		asphalt materials	Calforin tolerance testCBR)		
first week (6)		asphalt materials	Calforin tolerance testCBR)		
first week (7)		asphalt materials	Estimation of specific weights of cement, sand and gravel		
first week (8)		asphalt materials	Estimation of specific weights of cement, sand and gravel		
first week (9)		cumulus	Stitch check for asphalt		
first week (10)		cumulus	Stitch check for asphalt		
first week (1)		cumulus	Asphalt Softness Point Determination Inspection		
first week (11)		asphalt mixture	Asphalt Softness Point Determination Inspection		
first week (12)		asphalt mixture	Estimation of the		

			specific gravity of asphalt		
first week (13)		asphalt mixture	Flashing or ignition check for asphalt		
first week (14)		asphalt mixture	Flashing or ignition check for asphalt		
first week (15)		Reserve			
first week (16)		Half-year holiday			
first week (17)		Drainage	Examination of ductility of asphalt materials		
first week (18)		Drainage	Examination of ductility of asphalt materials		
first week (19)		Assessment of the durability of natural soil	Viscosity check for asphalt		
first week (20)		Asphalt paving layer thickness design	Viscosity check for asphalt		
first week (21)		Asphalt paving layer thickness design	Examination of the effect of heat on a thin layer of asphalt		
first week (22)		Asphalt paving layer thickness design	Examination of the effect of heat on a thin layer of asphalt		
first week (23)		Cement paving layer design	Marshall method for the design of asphalt mixtures		
first week (24)		Cement paving layer design	Marshall method for the design of asphalt mixtures		
first week (25)		Cement paving layer design	Marshall method for the design of asphalt mixtures		
first week (26)		Cement paving layer design	Marshall method for the design of asphalt mixtures		
first week (27)		Effect of filler type and quantity on the properties of asphalt mix	Examination of determining the degree of compaction of paving in asphalt mixtures		
first week (28)		Effect of filler type and quantity on the properties of asphalt mix	Examination of determining the degree of compaction of paving in asphalt mixtures		
first week (29)		Road paving maintenance	Check the separation of the components of the asphalt mixture		
first week (30)		Road paving maintenance	Check the separation of the components of the asphalt mixture		

208. Infrastructure

Required readings: ▪ Basic texts ▪ Course books ▪ Other	1. Yoder; EJ and MW Witczak, "Principles of Pavement Design", A Wiley-Interscience Publication, John Wiley & Sons Inc., USA, 1975. 2. Yaug H. Huang, "Pavement Analysis and Design", Prentic Hall Inc., USA, 1993. 3. Paul Croney and David Croney, "The Design and Performance of Road Pavements", McGraw Hill, USA, 1998. 4. "AASHTO Guide for Design of Pavement Structures 1993", AASHTO, American Association of State Highway and Transportation Officials, USA, 1993. "A Policy on Geometric Design of Highways and Streets 2001", AASHTO, American Association of State Highway and Transportation Officials, USA, 2001.
Special requirements (including, for example, workshops, periodicals, software and websites)	**summer training**
Social services (including guest lectures, professional training and field studies)	field visit

209. The development of the curriculum plan	
Prerequisites	central
Less number of students	35
The largest number of students	100

COURSE SPECIFICATION

Teaching the student the most important methods of implementing construction projects, conducting the work of preparing the speculative statements

210. Teaching Institution	University of Babylon

211. University Department /Centre	scientific department / civil engineering Department
212.	219. Learning Outcomes, Teaching ,Learning and Assessment Method
213.	**Teaching the student the most important methods of implementing construction projects, conducting the work of preparing the speculative statements**
214. o	
215.	b- The skills goals special to the course B 1 -The most important ways to implement projects B2 -Various counter works for engineering worksعمال
216. tu	
217. p th	Teaching and learning methods
218.	**Method of delivering lecture, discussion and workshops**
Teach condu	Assessment methods
	semester exam daily exam Home and class duties
	C- thinking skills C1- Ability to solve design problems in road engineering C2- Ability to analyze and design

220. Course structure					
Week	hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
first week (1)	4	**construction equipment**		11- the black board 12- electronic screen	semester exam daily exam
first week (2)		**construction equipment**			
first week (3)		**engineering foundations**			
first week (4)		**Construction Equipment Productivity**			
first week (5)		**Construction Equipment Productivity**			
first week (6)		**Compaction and soil stabilization**			
first week (7)		**Compaction and soil stabilization**			
first week (8)		**Methods of production and transportation of ready-mix concrete**			
first week (9)		**Methods of production and transportation of ready-mix concrete**			
first week (10)		**Mold design for concrete**			
first week (1)		**Mold design for concrete**			
first week (11)		**Introduction to quantitative surveying**			

first week (12)		**Planning for construction projects**			
first week (13)		**Types of guessing**			
first week (14)		**Methods for calculating the quantities of construction materials**			
first week (15)		**first semester exam**			
first week (16)		**Half-year holiday**			
first week (17)		**Tables of quantities and arms**			
first week (18)		**Tables of quantities and arms**			
first week (19)		**Methods adopted for calculating quantities and volume of materials**			
first week (20)		**The central line method for calculating quantities**			
first week (21)		**The central line method for calculating quantities**			
first week (22)		**use a program (AUTOCAD) for calculating quantities**			
first week (23)		**use a program (AUTOCAD) for calculating quantities**			
first week (24)		**Structural price analysis**			
first week (25)		**Technical specifications for civil engineering works**			
first week (26)		**Technical specifications for civil engineering works**			
first week (27)		**General terms of construction contracting**			
first week (28)		**General terms of construction contracting**			
first week (29)		**Building estimation project**			
first week (30)		**Building estimation project**			

221. Infrastructure	
Required readings: ▪ Basic texts ▪ Course books ▪ Other	**1-Construction Planning, Equipment And Methods By RL Peurifoy** **2- guessing – Medhat Fadel –Baghdad University**
Special requirements (including, for example, workshops, periodicals, software and websites)	**summer training**
Social services (including guest lectures, professional training and field studies)	field visit

222. The development of the curriculum plan	
Prerequisites	central
Less number of students	35
The largest number of students	100

COURSE SPECIFICATION

Teaching the students the principles to analyze the multi-story building, reinforced concrete tanks (circular and rectangular), and reinforced concrete bridges as well as using the STAAD Pro.2006 computer program to analysis and design buildings.

223. Teaching Institution	University of Babylon
224. University Department/Centre	scientific department / civil engineering Department
225. Course title/code	**Structural analysis**
226. Degree	Bachelor
227. Modes of Attendance offered	weekly
228. Semester/Year	annual

229. Number of hours tuition (total)	4 per week
230. Date of production/revision of this specification	

231. Aims of the Course

Teaching the student the most important methods of implementing construction projects, conducting the work of preparing the speculative statements

232. Learning Outcomes, Teaching ,Learning and Assessment Method

Teaching the students the principles to analyze the multi-story building, reinforced concrete tanks (circular and rectangular), and reinforced concrete bridges as well as using the STAAD Pro.2006 computer program to analysis and design buildings.

b- The skills goals special to the course

1- Multi-Story Buildings (Reinforced Concrete).
2- Application of STAAD Pro.2006 Computer Program.
3- Circular Tanks (Reinforced Concrete).
4- Rectangular Tanks (Reinforced Concrete).
5-Reinforced Concrete Bridges

Teaching and learning methods

Method of delivering lecture, discussion and workshops

Assessment methods

semester exam
daily exam
Home and class duties

C- thinking skills

C1- Ability to solve design problems in road engineering
C2- Ability to analyze and design

233. Course structure					
Week	hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
first week (1)	4	Introduction about the Multi-Story Buildings. ----------		13- the blackboard 14- electronic screen	semester exam daily exam
first week (2)		Details of Loads. ----------			
first week (3)		Methods of Analysis. ----------			
first week (4)		Analysis of Slabs (One and Two-way, Continuous strip) ----------			
first week (5)		Requirements of ACI-Code 2005. ----------			
first week (6)		Loads Transmission (from Slabs to Beams). ----------			
first week (7)		Loads Transmission (from Slabs to Beams). ----------			
first week (8)		Loads Transmission(from Beams to Columns). ----------			
first week (9)		DivisionBuilding into Frames. ----------			
first week		Analysis of Frames. ----------			

(10)		---			
first week (1)		Analysis of Frames. ---------- ---			
first week (11)		Analysis of Foundation (Isolate). ---------- ---			
first week (12)		Analysis of Foundation (Strip). ---------- ---			
first week (13)		Analysis of Foundation (Strip). ---------- ---			
first week (14)		Reinf. Con.Tanks (Introduction). ---------- ---			
first week (15)		Introduction about the Multi-Story Buildings. ---------- ---			
first week (16)		Details of Loads. ---------- ---			
first week (17)		Methods of Analysis. ---------- ---			
first week (18)		Analysis of Slabs (One and Two-way, Continuous strip) ---------- ---			
first week (19)		Requirements of ACI-Code 2005. ---------- ---			
first week (20)		Loads Transmission (from Slabs to Beams). ---------- ---			
first week (21)		Loads Transmission (from Slabs to Beams). ---------- ---			
first week (22)		Loads Transmission(from Beams to Columns). ---------- ---			
first week (23)		DivisionBuilding into Frames. ---------- --------			
first week		Analysis of Frames.			

(24)		---------- ---			
first week (25)		Analysis of Frames. ---------- ---			
first week (26)		Analysis of Foundation (Isolate). ---------- ---			
first week (27)		Analysis of Foundation (Strip). ---------- ---			
first week (28)		Analysis of Foundation (Strip). ---------- ---			
first week (29)		Reinf. Con.Tanks (Introduction). ---------- ---			
first week (30)		Introduction about the Multi-Story Buildings. ---------- ---			

234. Infrastructure	
235. The development of the curriculum plan	
Prerequisites	central
Less number of students	35
The largest number of students	100
▪ Other	(ACI 318RM-05)", ACI Committee 318, 2005. 3- Help manual of (STAAD Pro.2006) computer program.
Special requirements (including, for example, workshops, periodicals, software and websites)	**summer training**
Social services (including guest lectures, professional training and field studies)	field visit

COURSE SPECIFICATION

The course aims to introduce the phases of the hydrological cycle and then study each phase and methods of calculating their quantities and their importance in the practical field, especially the design and operation of hydraulic installations and the control of water resources and their uses for various purposes.

236. Teaching Institution	University of Babylon
237. University Department/Centre	scientific department / civil engineering Department
238. Course title/code	**hydrologic**
239. Degree	Bachelor
240. Modes of Attendance offered	weekly
241. Semester/Year	annual
242. Number of hours tuition (total)	3 per week
243. Date of production/revision of this specification	
244. Aims of the Course	
Teaching the student the most important methods of implementing construction projects, conducting the work of preparing the speculative statements	

245. Learning Outcomes, Teaching ,Learning and Assessment Method

The course includes a statement of the devices used to calculate the quantities of water in the different phases of the hydrological cycle, the equations used in the different methods, in addition to the different water schemes and their uses.

b- The skills goals special to the course
1- Study of the different devices for rain water
2- Studying different topics in groundwater

Teaching and learning methods
Method of delivering lecture, discussion and workshops
Assessment methods
semester exam daily exam Home and class duties
C- thinking skills C1- Ability to solve various hydrology problems C2- Ability to analyze and design

246. Course structure					
Week	hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
first week (1)	4	**water cycle in nature**		15- the blackboard 16- electronic screen	semester exam daily exam
first week (2)		=			
first week (3)		**fallow**			
first week (4)		=			
first week (5)		**evaporation**			
first week (6)		=			
first week (7)		=			
first week (8)		**filtration**			
first week (9)		=			
first week (10)		**water flow**			
first week (1)		=			
first week (11)		=			
first week (12)		**water chart analysis**			
first week (13)		=			
first week (14)		=			
first week (15)		**first semester exam**			
first week (16)		**Half-year holiday**			
first week (17)		**water chart analysis**			
first week (18)		=			
first week (19)		**Follow the flow in the tanks**			
first week (20)		**Trace the flow in the channels**			
first week (21)		**ground water movement**			
first week (22)		=			
first week (23)		**movement of water in**			

		wells			
first week (24)		=			
first week (25)		**Statistics in hydrology**			
first week (26)		=			
first week (27)		=			
first week (28)		**sediment transfer**			
first week (29)		=			
first week (30)		**Simulation of water collection basins**			

247. Infrastructure	
Required readings: ▪ Basic texts ▪ Course books ▪ Other	**"“Hydrology for engineers”, Linsely RK, MA KohlerandPaulhus, McGraw-Hill, USA, 1958.** **“Hydrology Principles, Analysis, Design”, HM Raghunath, Second Edition, NEW AGE INTERNATIONAL PUBLISHERS, New Delhi, 2006.** **“Engineering hydrology”, Wielson, EM, Macullan, London, 1983.** **4- Engineering Hydrology, translated by Dr. Nizar Ali Sebti and Dr. Labib Khalil Ismail.**
Special requirements (including, for example, workshops, periodicals, software and websites)	**summer training**
Social services (including guest lectures, professional training and field studies)	field visit

248. The development of the curriculum plan	
Prerequisites	central
Less number of students	35
The largest number of students	100

COURSE SPECIFICATION

Course aims يهدفundressingyq students On the hardware and software components of the calculator Introducing the student How to solve math problems using BASIC language.

249. Teaching Institution	University of Babylon
250. University Department/Centre	scientific department / civil engineering Department
251. Course title/code	**Ci.En.331 computer programming I**
252. Degree	Bachelor
253. Modes of Attendance offered	weekly
254. Semester/Year	annual
255. Number of hours tuition (total)	45
256. Date of production/revision of this specification	

257. Aims of the Course

1. **The student will be able to know the hardware and software components of the computer.**

2- The student can Learn about algorithms and their importance in being the rationale for a solution Any arithmetic or logical question**.**

3_ The student can write programs in BASIC to solve mathematical and engineering problems.

258. Learning Outcomes, Teaching ,Learning and Assessment Method

A - Cognitive goals

1. **The student will be familiar with number systems and writing flowcharts.**
2. **Recognition** Input and output sentences **And the Library functions in BASIC and how to use them in writing its program**
3. **The student recognizes** on one-dimensional matrices **And theTwo-dimensional arrays and their great importance in software applications .**
4. **Identify the first section of the subprograms, which is the external function And theThe second section of the subprograms, which is the subroutines.**

b- The skills goals special to the course

7. **The student will become familiar with the basic program interface and its contents.**
8. **The student will be familiar with the methods of drawing flowcharts.**
9. **The student is introduced to ways to solve civil engineering problems using the computer.**

Teaching and learning methods

17- Method of giving lectures.
18- Learning Technologies on Campus On-campus e-learning.
19- Team Project Thestudent groups
20- Work Shop workshops
21- Applied Education

Assessment methods

17- the exam
18- class assignments
19- homework
20- daily exams
21- Practical exams

C- thinking skills

C1- Familiarize students with the basics of programming
C2- The ability to write a program for the purpose of applying it to a computer
C3- Ability to work on a computer and master its programs
C4- The lie from the BASIC program, which needs to understand and realize its commands for the purpose of solving engineering problems

Teaching and learning methods

1- Solve programming problems without using a computer
2- Application on a computer using BASIC

Assessment methods

13- semester exam
14- Home and class duties
15- daily exams

16- Practical exams

D - General and transferable skills (other skills related to employability and personal development).

D1- Mastery Program in Basic Language بي

D2- Proficiency with computers and basic software

D3- The ability to use and solve math problems in BASIC language

D4- The ability to employ engineering mechanics problems and solve them in BASIC language

259. Course structure					
Week	hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessmer Method
first week (	3	Familiarize yourself wit the physical and softwar components of the calculator in a simplified manner	**computer programmin g I**	**Method of giving lectures. and e-learning**	Debate
Week The second	3	Familiarize yourself with the physical and software componen ts of the calculator in a simplified manner	**computer programmin g I**	**Method of giving lectures. and e-learning**	daily exam
Week the third	3	Number systems	**computer programmin g I**	**Method of giving lectures. and e-learning**	Debate
Week the fourth	3	Number systems	**computer programmin g I**	**Method of giving lectures.**	daily exam

				and e-learning	
Week Fifth	3	Algorithms	**computer programming I**	**Method of giving lectures. and e-learning**	Debate
Week VI	3	Algorithms	**computer programming I**	**Method of giving lectures. and e-learning**	daily exam
Week seventh	3	Flowcharts	**computer programming I**	**Method of giving lectures. and e-learning**	Debate

Week VIII	3	Flowcharts	**computer programming I**	**Method of giving lectures. and e-learning**	monthly exam
Week ninth	3	Input and output sentences	**computer programming I**	**Method of giving lectures. and e-learning**	Debate
Week The tenth	3	Input and output sentences	**computer programming I**	**Method of giving lectures. and e-learning**	Debate

Week a eleventh	3	Input and output sentences	**computer programming I**	**Method of giving lectures. and e-learning**	Debate
Week twelveth	3	Input and output sentences	**computer programming I**	**Method of giving lectures. and e-learning**	daily exam
Week Thirteenth	3	Office functions in BASIC	**computer programming I**	**Method of giving lectures. and e-learning**	Debate
Week fourteenth	3	Office functions in BASIC	**computer programming I**	**Method of giving lectures. and e-learning**	Debate

Week a Fifteenth	3	Office functions in BASIC	**computer programming I**	**Method of giving lectures. and e-learning**	daily exam semester exam

260. Infrastructure	
Required readings: ▪ Basic texts ▪ Course books ▪ Other	**TheKTFather Themethod for the student**
Special requirements (including, for example, workshops, periodicals, software and websites)	**summer training**
Social services (including guest lectures, professional training and field studies)	**ThegyField Arat**

261. The development of the curriculum plan	
Prerequisites	central
Less number of students	50
The largest number of students	120

COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME

COURSE SPECIFICATION

Course aims يهدفDefinition of students On the hardware and software components of the calculator Introducing the student How to solve math problems using BASIC language.

1. Teaching Institution	University of Babylon
2. University Department/Centre	Scientific Department / Civil Engineering Department
3. Course title/code	**Ci.En.331 computer programming I**
4. Degree	Bachelor
5. Modes of Attendance offered	weekly
6. Semester/Year	annual
7. Number of hours of study (total)	45
8. Date of production/revision of this specification	
9. Aims of the Course	
1- The student will be able to know the hardware and software	

components of the computer.

10. Learning Outcomes, Teaching ,Learning and Assessment Method

A - Cognitive goals

5. **The student will be familiar with number systems and writing flowcharts.**
6. **Recognition** Input and output sentences and office functions in BASIC and how to use them in writing its program
7. **The student recognizes** On one-dimensional and two-dimensional matrices and their great importance in software applications **.**
8. **Identify the first section of the subprograms, which is the external function, and the second section of the subprograms, which is the subroutines.**

b- The skills goals special to the course

10. **The student will become familiar with the basic program interface and its contents.**
11. **The student will be familiar with the methods of drawing flowcharts.**
12. **The student is introduced to ways to solve civil engineering problems using the computer.**

Teaching and learning methods

1- **Method of giving lectures.**
2- **Learning Technologies on Campus On-campus e-learning.**
3- **Team Project student groups**
4- **Work Shop**
5- **Applied Education**

Assessment methods

1- the exam
2- class assignments
3- homework
4- daily exams
5- Practical exams

C- thinking skills

C1- Familiarize students with the basics of programming
C 2- The ability to write a program for the purpose of applying it to the computer
C 3- The ability to work on a computer and master its programs

C4- Lies from the BASIC program, which needs to understand and understand its commands for the purpose of solving engineering problems

Teaching and learning methods

1- Solve programming problems without using a computer
2- Application on a computer using BASIC

Assessment methods

1- semester exam
2- Home and class duties
3- daily exams
4- Practical exams

D - General and transferable skills (other skills related to employability and personal development).

D1 - mastery of a program in the basic language
D2 - mastery of computers and basic software
D3- The ability to use and solve math problems in BASIC language
D4 - The ability to employ engineering mechanics problems and solve them in BASIC language

11. Course structure					
Week	hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
first week (	3	Control and control sentences	**computer programming I**	**Method of giving lectures. and e-learning**	Debate
second week	3	Control and control sentences	**computer programming I**	**Method of giving lectures. and e-learning**	Debate
Week the third	3	Control and control sentences	**computer programming I**	**Method of giving lectures. and e-learning**	Debate

		ces			
Week the fourth	3	Control and control sentences	**computer programming I**	**Method of giving lectures. and e-learning**	Debate
Week Fifth	3	Control and control sentences	**computer programming I**	**Method of giving lectures. and e-learning**	daily exam
the sixth week	3	one-dimensional matrices	**computer programming I**	**Method of giving lectures. and e-learning**	Debate

Week seventh	3	one-dimensional matrices	**computer programming I**	**Method of giving lectures. and e-learning**	daily exam
The eighth week		two dimensional matrices	**computer programming I**	**Method of giving lectures. and e-learning**	Debate
Week ninth	3	two dimensional m	**computer programming I**	**Method of giving lectures. and e-learning**	Debate

		atr ic es			
Week The tenth	3	two di m en si on al m atr ic es	**computer programmi ng I**	**Method of giving lectures. and e-learning**	monthly exam
Week a eleventh	3	Extern al fu nc tio ns Fu nc tio ns	**computer programmi ng I**	**Method of giving lectures. and e-learning**	Debate
Twelfth week	3	Extern al fu nc tio ns Fu nc tio ns	**computer programmi ng I**	**Method of giving lectures. and e-learning**	daily exam
Week Thirteenth	3	Subrou tin es Su	**computer programmi ng I**	**Method of giving lectures. and e-learning**	Debate

		br ou tin es			
Week fourteenth	3	Subrou tin es Su br ou tin es	**computer programmi ng I**	**Method of giving lectures. and e-learning**	Debate
Week a Fifteenth	3	Subrou tin es Su br ou tin es	**computer programmi ng I**	**Method of giving lectures. and e-learning**	daily exam semester exam

12. Infrastructure	
Required readings: ▪ Basic texts ▪ Course books ▪ Other	**Student's curriculum book**
Special requirements (including, for example, workshops, periodicals, software and websites)	**summer training**

Social services (including guest lectures, professional training and field studies)	**Field visits**

13. The development of the curriculum plan	
Prerequisites	central
Less number of students	50
The largest number of students	120

COURSE SPECIFICATION

Providing the most important basic information that the student needs in the College of Engineering in the matter of constructing buildings and preparing for the assimilation of a lot of information that has to do with his studies of the Qiblah and his practice of the profession thereafter.

14. Teaching Institution	University of Babylon
15. University Department/Centre	Scientific Department / Civil Engineering Department
16. Course title/code	**construction of buildings**
17. Degree	Bachelor
18. Modes of Attendance offered	weekly
19. Semester/Year	annual
20. Number of hours of study (total)	4
21. Date of production/revision of this specification	10-10-2014

22. Aims of the Course

23. T
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ar
nc

24. Learning Outcomes, Teaching ,Learning and Assessment Method

Cognitive goals

1- Providing the most important basic information that the student needs in the College of Engineering in the matter of constructing buildings and preparing for the assimilation of a lot of information related to his studies of the Qiblah and the practice of the profession after that.

2- The course mainly means introducing the student to the sequence of building paragraphs starting from planning, then excavations, foundation works, floors, brick and stone construction, concrete works and stairs, with an emphasis on topics that are not discussed in other stages.

b- The skills goals special to the course

13. The student is introduced to the general concepts of building construction.

14. The student learns about the use of civil maps in engineering projects

Teaching and learning methods

6- Method of giving lectures.

7- Learning Technologies on Campus On-campus e-learning.

8- Team Project student groups

9- Applied Education

Assessment methods

6- the exam
7- class assignments
8- homework
9- daily exams

C- thinking skills

A- The ability to solve various problems

C 2- The ability to understand the flow mechanism of different fluids

Teaching and learning methods

1- Method of giving lectures.

2- Discussion method

The course is given to students in the form of class lectures that are received and written on the board with illustrative examples. There is a practical hour in which problems and exercises are solved with the participation of the audience of students. Students are assigned homework. Also, students' understanding and comprehension of the material is tested through sudden daily exams.

Assessment methods

3- semester exam
4- Home and class duties
5- daily exams

D - General and transferable skills (other skills related to employability and personal development).

D 1- The ability to employ mathematics
D2 - The ability to employ stereoscopic engineering.

25. Course structure					
Week	hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
first week (1)	4	**Curriculum Vocabulary Review - Introduction**		**Method of giving lectures.**	Semester and daily exam
first week (2)		**Stages of construction of buildings - earthworks**		**Method of giving lectures.**	Semester and daily exam
first week (3)		**foundations**		**Method of giving lectures.**	Semester and daily exam
first week (4)		**Foundations - Pillar Works**		**Method of giving lectures.**	Semester and daily exam
first week (5)		**Concrete Works (1)**		**Method of giving lectures.**	Semester and daily exam

first week (6)		**Concrete Works(2)**		**Method of giving lectures.**	Semester and daily exam
first week (7)		**Eid holiday**		**Method of giving lectures.**	Semester and daily exam
first week (8)		**Brick work**		**Method of giving lectures.**	Semester and daily exam
first week (9)		**Brick work**		**Method of giving lectures.**	Semester and daily exam

first week (10)		**Brick building details**		**Method of giving lectures.**	Semester and daily exam
first week (11)		**stone work (1)**		**Method of giving lectures.**	Semester and daily exam
first week (12)		**stone work(2)**		**Method of giving lectures.**	Semester and daily exam
first week (13)		**Formwork and scaffolding**		**Method of giving lectures.**	Semester and daily exam
first week (14)		**columns**		**Method of giving lectures.**	Semester and daily exam

first week (15)		**The lintels and beams**		**Method of giving lectures.**	Semester and daily exam
first week (16)		**Preliminary exam for the first semester**		**Method of giving lectures.**	
first week (17)				**Method of giving lectures.**	
first week (18)		**Floors and ceilings**		**Method of giving lectures.**	
First week (19th)		**Floors and ceilings**		**Method of giving lectures.**	
first week (20)		**Arches and thresholds**		**Method of giving lectures.**	
first week (21)		**Moisture blocker**		**Method of giving lectures.**	
first week (22)		**the stairs**		**Method of giving lectures.**	
first week (23)		**Stairs and their drawings**		**Method of giving lectures.**	
first week (24)		**Doors and Windows**		**Method of giving lectures.**	
first week (25)		**joints in buildings**		**Method of giving lectures.**	
first week (26)		**joints in buildings**		**Method of giving lectures.**	
first week (27)		**Stoves and chimneys**		**Method of giving lectures.**	
first week (28)		**Finishing walls and ceilings**		**Method of giving lectures.**	
first week (29)		**general references**		**Method of giving lectures.**	

first week (30)		**General Review**		**Method of giving lectures.**	
first week (31)		**Preliminary exam for the second semester**		**Method of giving lectures.**	
first week (32)					

26. Infrastructure	
Required readings: ▪ Basic texts ▪ Course books ▪ Other	**1 Engineering Survey, Yassin Obaid, Baghdad, 1990**
Special requirements (including, for example, workshops, periodicals, software and websites)	**summer training**
Social services (including guest lectures, professional training and field studies)	field visit

27. The development of the curriculum plan	
Prerequisites	central
Less number of students	50
The largest number of students	120