



الجامعة المستنصرية | كلية الهندسة

قسم هندسة الطرق و النقل

نظام فصلي + نظام سنوي

2021/2020

Mustansiriay University / Faculty of Engineering
Highway and Transportation Engineering Department
First level

مفردات مناهج الدراسات الاولية – المرحلة الاولى
النظام السنوي

Subject		1 st Semester			2 nd Semester			Units
No.	Name	The.	Tut.	Prac.	The.	Tut.	Prac.	
HTE201	Mathematics I	3	1	-	3	1	-	6
HTE202	Computer Programing	1	-	2	1	-	2	4
HTE203	Engineering Mechanics	3	1	-	3	1	-	6
HTE204	Engineering Drawing	2	-	2	2	-	2	6
HTE205	Engineering Statistics	1	2	-	1	2	-	2
HTE206	Principle of Transportation Engineering	2	1	-	2	1	-	4
HTE207	Languages	2	-	-	2	-	-	4
HTE208	Engineering Geology	1	1	-	1	1	-	2
HTE209	Highway Construction Materials	1	-	2	1	-	2	4
Totsl		16	6	6	16	6	6	38
Total Hrs./Week		28			28			

Mustansiriya University / Faculty of Engineering
Highway and Transportation Engineering Department
Second Year

Code	First semester				
	Subject	Theoretical	Practical	Tutorial	Unit
506062011	Applied Mathematics 1	3		1	3
506062021	Strength of Materials 1	3		1	3
506062031	AutoCAD 1	1		2	2
506062041	Elementary Surveying	2	2	1	3
506062051	Principles of Fluid Mechanics	2	2		3
506062061	Asphalt pavement Materials	2	2		3
506062071	Highway Infrastructure	2			2
506062081	Principles of Concrete Technology	1	2		2
506062091	Human Rights	2			2
Total		18	8	5	23
No. of week hours		31			

Code	Second semester				
	Subject	Theoretical	Practical	Tutorial	Unit
506062012	Applied Mathematics 11	3		1	3
506062022	Strength of Materials 11	3		1	3
506062032	AutoCAD 11	1		2	2
506062042	Engineering Surveying	2	2	1	3
506062052	Fluid Mechanics Applications	2	2		3
506062062	Asphalt Mixture Design	2	2		3
506062072	Environmental of Highway Engineering	2			2
506062082	Concrete Mixture Technology	1	2		2
506062092	Democracy	2			2
Total		18	8	5	23
No. of week hours		31			

Mustansiriay University / Faculty of Engineering
Highway and Transportation Engineering Department
Third Year

Code	First Semester				
	Subject	Theoretical	Practical	Tutorial	Unit
506063011	Numerical Analysis	2	-	2	2
506063021	Principle of Soil Mechanics	2	2	1	3
506063031	Pavement Structural Analysis	2	-	1	2
506063041	Airport Engineering	3	-	-	3
506063051	Principle of Structural Analysis	2	-	1	2
506063061	Highway Construction Management	2	-	1	2
506063071	Principle of Traffic Engineering	2	2	-	3
506063081	Hydrology for Highway Engineering	2	-	-	2
506063091	Remote Sensing and GIS Application	1	2	-	2
Total		18	6	6	21
No. of week Hours		30			

Code	Second Semester				
	Subject	Theoretical	Practical	Tutorial	Unit
506063012	Engineering Analysis	2	-	2	2
506063022	Pavement Geotechnique	2	2	1	3
506063032	Pavement Structural Design	2	-	1	2
506063042	Railway Engineering	3	-	-	3
506063052	Concrete Structure Design	2	-	1	2
506063062	Highway Engineering Economy	2	-	1	2
506063072	Traffic Engineering Application	2	2	-	3
506063082	Highway Drainage System	2	-	-	2
506063092	Sustainable Pavement Systems				2
Total		17	4	7	21
No. of week Hours		28			

Mustansiriay University / Faculty of Engineering
Highway and Transportation Engineering Department
Fourth Year
First semester

Code	Subject	No. of Hours			
		Theoretical	Practical	Tutorial	Unit
506064011	Soil Investigation and Slope Stability	2	-	1	2
506064021	Urban Transportation Planning	2	-	1	2
506064031	Structural Analysis of Concrete Bridges	2	-	1	2
506064041	Highway Geometric Design	2	-	1	2
506064051	Principle of Steel Bridges Structures	2	-	1	2
506064061	Road Quantity Estimation	1	-	1	1
506064071	Software Application for Pavement Design	1	2		2
506064081	Engineering Project	1	2	-	2
506064091	Highway Maintenance	2	1	-	2
Total		15	5	6	17
No. of week Hours		26			

Second semester

Code	Subject	No. of Hours			
		Theoretical	Practical	Tutorial	Unit
506064012	Embankment Stabilization	2	-	1	2
506064022	Public Transportation Engineering	2	-	1	2
506064032	Structural Design of Concrete Bridges	2	-	1	2
506064042	Highway Capacity and Performance	2	-	1	2
506064052	Design of Steel Bridges Structures	2	-	1	1
506064062	Route Location	1	-	1	1
506064072	Software Application for Highway and Transportation	1	2		2
506064082	Engineering Project	1	2	-	2
506064092	Highway Safety	2	1	-	2
Total		15	5	6	17
No. of week Hours		26			

First Year

2020-2021

Annual **S**ystem



(نموذج الخطة الدراسية للمساق)
Course Plan

Course No.: HTE101

Course Name: Mathematics 1

Course Website: ---

Time Division:

3hr Theoretical + 1hr Practical

Semester & Year:

First , 2020/ 2021

Course Description [وصف المساق]

(6 credit hours, Prerequisite [المتطلب السابق] No. and Name)

This subject (**Math. I**) is a basic guide to all the mathematics an engineer might encounter during the 1st year of engineering college. The aim is more to highlight and explain some areas commonly found difficult, such as calculus, and to ease the transition from school level to university level mathematics, where sometimes the subject matter is similar, but the emphasis is usually different. Specifically the subject treats functions of one variable, analytic geometry in two dimensions. It also contains lectures on determinants, and matrices.

Course Intended Outcomes [المخرجات المتوقعة من المساق]

At the end of the course, students are expected to learn:

- The functions, derivatives and its applications,
- The integration methods,
- The plane analytic geometry,
- Hyperbolic function, its graph and integrals, and
- Matrices.

Course Outline

Week	(Text Sec.)
1	Inequalities
2	Functions (Domain and Range) .
3	Shifting graphs
4	Trigonometric functions
5	Limits and quiz.
6	Continuity.
7	Differentiation
8	Application of differentiation and quiz
9	Sketching graphs of polynomials and rational functions
10	Newton's method and First exam
11	Inverse functions
12	Logarithms and exponential function
13	Hyperbolic functions and quiz
14	Inverse of trigonometric and hyperbolic functions
15	L'Hopital's rule
16	Integration
17	Application of definite integral
18	Area between two curves.
19	Volumes by disks and Volumes by washers
20	Volumes by cylindrical shells and quiz.
21	Length of curves

22	Area of the surface and quiz
23	Trigonometric substitutions and Integration involving ax^2+bx+c
24	Integration by parts and Integration by partial fractions
25	Integrals involving rational exponents and second exam
26	Integrals involving rational expression in sine & cosine ,Integrating power of sine & cosine and Integrating power of secant & tangent
27	Numerical integration
28	Improper integrals
29	Matrices and determinants and quiz
30	Complex numbers

Textbooks: [الكتاب المنهجي]

George B. Thomas, JR. and Ross L. Finney "Calculus and Analytic Geometry", 11th Ed. ,2010.

Suggested references: [المراجع المساعدة للمنهج]

1. Michael Batty "Essential Engineering Mathematics", 2011.
2. John Bird "Basic Engineering Mathematics", 5th Ed.2010.
3. George B. Thomas "Calculus", 13th Ed. ,2014.

Marking: [توزيع الدرجات]

Exam	15 marks	QUIZ	10 marks		
H.W	10 marks	Report	5 marks	Final Exam	60 marks

Regulations: [الظوابط والأنظمة]

1. There will be three term exams given during this semester. The best two out of three will be considered for the First & Second exam. This means there will NO makeup exams. Missing one of the two left exams means a ZERO grade will be given for that exam.
2. There is no markup for quizzes.
3. Attendance is mandatory and University regulations will be enforced.
4. All Cheating incidents will be reported to the chair. The following activities are considered cheating:
 - a. Turning in assignment that includes parts of someone else work.
 - b. Turning in someone else assignment as your own.
 - c. Giving assignment to someone else to turn in as their own.
 - d. Copying answers in a test or quiz.
 - e. Taking a test or quiz for someone else.
 - f. Having someone else take a test or quiz for you.
5. See student handbook for other regulations.

Assignments and/or Projects: [الواجبات والمشاريع]

Assignment/Project	Description	Due Date	Marking
H.W. 1	SOLVING EXERCISES		5 Marks
H.W. 2	SOLVING EXERCISES		5 Marks
Quizzes	Two or more quizzes	During the course	10Marks
Report			5 Marks

Instructor(s) information: [معلومات الأستاذ]

Section: 1 **Lecture Room:** 4 **Time:**

Instructor's Name: Assist. Prof. Dr. Amal A. Mohammed

Office No.:

E-Mail: d.amaalam@yahoo.com

Office Hours: Other office hours are available by appointment.

Important: The content of this syllabus may not be changed during the current semester.

Lecturer Signature

Chair Signature



Ministry Of Higher Education and Scientific Research
AL-Mustansiriyah University/Collage of Engineering /Department of Highway and
Transportation



Course Plan

Course No.: HTE102

Course Name: Computer Programming

Time Division: 1hr. Theoretical, 2hr. Practical

Course Website: -

Semester & Year: 1st, 2020 - 2021

Course Description

(3 credit hours)

The basic goal of this course is to make students are familiar with computer's applications and able to transform the mathematic and physical problems into computer language as preapprehension to solve them. So, this course consists of two parts; theoretical and practical depending on Visual BASIC language.

The theoretical part is care with the fundamental basis of the Visual BASIC language such as its statements, algorithms, priorities, basic elements of the language; design the programs and how to structuring and build sophisticated programs. Most of problems are mathematical and engineering applications such as matrices, mechanics, physics and others.

The practical part represents the direct training on the computer to check and develop the qualification of the students on Visual BASIC language.

At the last of this course the student will be ready to learn more and high level computer languages to solve more complicated scientific problems.

Course Intended Outcomes

At the end of the course, students are expected to learn:

- The basic components of computer system, hardware and software.
- The development in computer sciences.
- The generation of BASIC and Visual BASIC language and create their skills in programming.

Course Outline

Week	Theoretical	Practical
1+2+3+4	Period of Enrollment and Registering for New Students. So, these early four weeks are excluded from Academic Schedule.	
5+6	Computers as engineering tools.	
7+8	Review of computer basics	
9+10	Forms and Control tools.	
11	Project explorer, properties and events.	
12	Formulating and solving highway and transportation engineering problem	Application
13	Make project, save it and its applications. Files	Application
14	projects and exercises. With Examples and Quiz	
15	Mid Exam	

16+18+19	Dialogue boxes message boxes. With Examples and Quiz	Application
20	Basic elements for visual basic statements, Variables, assignment statements.	
21		
22	If- statement with example and Quiz.	Application
23	For-next statement.	Application
24	Condition loop	Application
25	Assignment statements	Application
26+27	Introduction to MATLAB	Application
28+29	Variables and Assignment Statements	Application
30	<i>First Term Exam</i>	<i>Solve the Exam</i>

Textbooks

1. Schaum's Outline of theory and problems of programming with BASIC, including microcomputer BASIC, Byron S Gottfried, 1982.
2. Lou Tylee, Learn Visual Basic 6.0, 1998.
3. Manual for Visual BASIC MSDN.

Marking

First Semester			Final Exam
Quizzes	Exam	Practical	Test
10	25	15	50

Instructor Information

Instructor's Name: *lect.* Dr.Ahmed Hassan

E-Mail: ahmedxpx987@gmail.com

Lecturer Signature

Chair Signature



(نموذج الخطة الدراسية للمساق)

Course Plan

Course No.: HTE103

Course Name: Engineering Mechanics

Time Division: 3hr Theoretical and 1hr Tutorial

Course Website: ---

Semester & Year: 2020/2021

Course Description [وصف المساق]

(6 credit hours, Prerequisite [المتطلب السابق] No. and Name)

Engineering mechanics is a branch of the physics which deals with the study of the effect of force system acting on a particle or a rigid body which may be at rest or in motion.

Course Intended Outcomes [المخرجات المتوقعة من المساق]

At the end of the course, students are expected to learn:

- Analysis of forces and find the resultant of force.
- Calculation of the moments of forces.
- Calculation of the reaction forces and internal forces in the structural elements
- Knowledge and calculation of position, velocity and acceleration.
- Knowledge and calculation of some types of motion such as linear and rectilinear motion.
- Knowledge and calculation the velocity of moving particle relative to another moving particle.

First Semester Outline

Week	(Text Sec.)	Week	(Text Sec.)
1	Basic Concepts, Analysis of Force. (with Examples)	16	Friction - Coefficient of friction - Angle of friction
2	Concept of Moments, (with Examples)	17	Frictional forces (with Examples)
3	Concept of Couples. (with Examples)	18	Frictional forces (with Examples)
4	Resultant of Force System A-Concurrent and non-concurrent coplanar (with Examples)	19	Dynamics(Kinematics and particles) position, velocity, acceleration
5	Resultant of Force System B-Parallel(with Examples)	20	Dynamics(Kinematics and particles) position, velocity, acceleration (with Examples)
6	Equilibrium and Free Body Diagrams , Equations of equilibrium for a concurrent, coplanar force system(with Examples)	21	Rectilinear kinematics continuous motion
7	Equilibrium of bodies acted on by non-concurrent, coplanar force system Equilibrium of bodies acted on by two	22	Rectilinear kinematics continuous motion (with Examples)

	forces or three force (with Examples)		
8	Equilibrium of bodies acted on by concurrent, non-coplanar force system (with Examples)	23	General curvilinear motion
9	Equilibrium of bodies acted on by non-concurrent, non-coplanar force system (with Examples)	24	General curvilinear motion (Examples)
10	Analysis of Structures; - Analysis of truss Joint Method(with Examples)	25	Motion of a Projectile (Examples)
11	Analysis of Structures; - Analysis of truss Section Method(with Examples)	26	Motion of a Projectile (Examples)
12	Centroid and Center of Gravity(with Examples)	27	Motion of a Projectile (Examples)
13	Centroid and Center of Gravity Composite Areas(with Examples)	28	Relative motion of two particles using translating axis
14	Moment of Inertia (with Examples)	29	Relative motion of two particles using translating axis(Examples)
15	Composite Areas(with Examples)	30	Relative motion of two particles using translating axis(Examples)

Textbooks [الكتاب المنهجي]

1. ENGINEERING MECHANICS

Third Edition 2002, A. HIGDON and W. STILS

Suggested references [المراجع المساعدة للمنهج]

1. Engineering Mechanics (Statics & Dynamics)

Timoshenko & Young

2. ENGINEERING MECHANICS

Fourteenth Edition by R.C. HIBBELER

3. ENGINEERING MECHANICS

Fifth Edition by J.L. MERIAM and L.G. KRAIGE

Marking [توزيع الدرجات]

First semester exam 15 marks/ Home works 10 marks/ Quizzes 15 marks / Final exam 60 marks

Regulations [الظوابط والأنظمة]

1. There will be three term exams given during this semester. The best two out of three will be considered for the First & Second exam. This means there will NO makeup exams. Missing one of the two left exams means a ZERO grade will be given for that exam.
2. There is no markup for quizzes.
3. Attendance is mandatory and University regulations will be enforced.
4. All Cheating incidents will be reported to the chair. The following activities are considered cheating:
 - a. Turning in assignment that includes parts of someone else work.
 - b. Turning in someone else assignment as your own.
 - c. Giving assignment to someone else to turn in as their own.
 - d. Copying answers in a test or quiz.
 - e. Taking a test or quiz for someone else.
 - f. Having someone else take a test or quiz for you.
5. See student handbook for other regulations.

Assignments and/or Projects [الواجبات والمشاريع]

Assignment/Project	Description	Due Date	Marking
H.W.	Solving Exercises	During the course	10 Marks
Quizzes	Two or more quizzes	During the course	15Marks

Instructor(s) information [معلومات الأستاذ]

Instructor's Name:

Lecturer Signature
Lec .Rana Hashim

Chair Signature



Ministry Of Higher Education and Scientific Research
Mustansiriyah University/Collage of Engineering/Department of Highway and
Transportation
Course Plan



Course No.: HTE104

Course Name: Engineering Drawing

Time Division: 1hr. Theoretical, 3hr. Practical

Course Website: -

Semester & Year: 2020 - 2021

Course Description

(4 credit hours)

it is a subject concerned to learn the students basics of drawing for geometric shapes and imagination and drawing of the 3 dimensional shapes. ***This course will be cover the:*** function of geometrical drawing tools •types of geometrical lines • geometrical operations• 2-dimensional drawings • 3-isometric • 4-projections • 5- missing projection ,6-Drawing the sections.

Course Intended Outcomes

At the end of the course, students are expected to learn:

- Understand the basics of geometrical drawing
- Understand the geometrical operations,
- Understand the drawing for the projections,
- Understand the drawing for the isometrics,
- Understand the drawing for shape section

Course Outline

Week	Description depends on the Timing table(Theoretical & Practical)
1	This Weeks Not In The Academic Schedule Because Student
2	Registering Not Completed
3	
4	How to use the geometrical drawing tools
5	Line types and draw the slope lines
6	Drawing the circles and curves
7	<i>First Exam + Review of Exam</i>
8	The geometrical operation: Drawing curve between two curves
9	Drawing the elapse
10	Drawing the pentagon
11	Drawing the hexagon
12	Introduction to projections: Drawing top, side, front projection
13	<i>Second Exam + Review of Exam</i>
14	Drawing the projections of bridge sections
15	Drawing the missing projection
16	Drawing missing projection
17	Drawing the missing view
18	Drawing the missing view
19	Define the isometric plan
20	Draw the isometric
21	<i>third Exam + Review of Exam</i>
22	Draw the missing projection
23	Draw missing view
24	Draw missing view With Examples
25	Draw the sectional projections

26	Draw the sectional projections With Examples
27	Draw the sectional projections With Examples
28	Draw the dimensions
29	Draw the dimensions
30	<i>Fourth Exam + Review of Exam</i>

Textbooks

1. الرسم الهندسي ، عبد الرسول عبد العزيز الخفاف .

Suggested References

1. مبادئ الرسم الهندسي ، محمد كريم .

Marking

Semester			Final Exam
Quizzes	Exam	Practical	Test
10	20	30	60

Instructor information:

Lecture Room: [Drawing room (HWY Department)] Time: Sun., Mon. 8:30-10:30
Sun., Mon. 10:30-12:30

Instructor's Name:E-Mail:

NOTES:

- Office Hours: Other office hours are available by appointment.*
- The content of this syllabus not be changed during the current semester.*

Lecturer Signature Chairman Signature



Ministry of Higher Education and Scientific Research
Mustansiriyah University/ College of Engineering/
Department of Highway & Transportation
Course Plan



Course No.: HTE105

Course Name: Engineering Statistics

Course Website:

Time Division: 2hr Theoretical and 1hr Tutorial

Year: 2020 - 2021

Course Description

(3 credit hours)

Topics covered in this subject include

- (1) Introduction to Statistics and its relation to scientific thinking and methods.
- (2) Methods and approaches of collection, organization data to get results and conclusions.
- (3) Statistical center and variation measurements.
- (4) Introduction for probabilities; their elementary, properties and laws.
- (5) Estimation theory and its tests and levels of significance.
- (6) Sampling and population test to quality control and decision making.
- (7) Relations among data and prediction of dependent variable and linear equations.

Course Intended Outcomes

At the end of the course, students should be able to:

- (1) Collect, organize, and perform basic analysis of data using statistical methods.
- (2) Perform simple inference from measured data.
- (3) Analyze the reliability between the collected data.
- (4) Perform a significance test to verify assumptions based on measured data.
- (5) Make decisions based on statistical data.
- (6) Predict and construct linear equations from correlated variables.

Course Outline

Week	Topics Covered	
1	Concept of Engineering Statistics	Statistics and the Scientific Method
2		Branches and Elements of Statistics: Descriptive Statistics, Inferential Statistics
3	Data Collection and Organization	Statistical Data: Qualitative Data, Quantitative Data
4		Collecting of Data: Observational Study, Experimental Study
5	Examples and Exam	
6	Data Graphical Representations	Cumulative Distribution
7		Graphical Presentation
8	Descriptive Measures	Measures of Central Tendency
9		Measures of Deviation
10	Examples and Exam	
11	Probability Theory	Introduction to Probability
12		Combinatorial Analysis
13		Probability Distribution: Binomial Distribution, Poisson Distribution
14		Continuous Probability Distribution: Normal Distribution
15	Examples and Exam	
16	Estimation Theory	Point estimation, Interval estimation
17		Statistical Hypothesis



Ministry Of Higher Education and Scientific Research

Mustansiriayah University/College of Engineering /Department of Highway and Transportation



(نموذج الخطة الدراسية للمساق)

Course Plan

Course No.: HTE106

Course Name: Principles of Transportation Engineering

Course Website: ---

Time Division:

3hr Theoretical

Semester & Year:

First , 2020/ 2021

Course Description

(3 credit hours, Prerequisite)

Acquaint students with the importance of the transport engineering and the most important modes of transport and details about the subject of transport from the engineering standpoint. This course will be helpful to comprehend basics of different subjects related to transportation like traffic, geometric design and other branches of highway and transportation engineering.

Course Intended Outcomes

At the end of the course, students are expected to learn:

- Understand the basics of traffic engineering
- Understand the basics of geometric design
- Understand the Traffic stream characteristics,
- Understand the basics of public transport,

Course Outline

Week	Monday Class (Text Sec.)
Week 1-2	Introduction to Transportation Engineering, Importance of Transportation, History and importance.
Week 3-4	Transportation Elements, Characteristics of the Driver, the Pedestrian, the Vehicle and the Road.
Week 5-6	Transportation Elements, Characteristics of the Driver, the Pedestrian, the Vehicle and the Road.
Week 7-8	Traffic stream characteristics, Volume and flow rate, speed, spot speed, running speed, journey speed, average travel speed, space mean speed, time mean speed, free-flow speed, density, critical density, spacing, and headway
Week 9-10	Traffic stream characteristics, Volume and flow rate, speed, spot speed, running speed, journey speed, average travel speed, space mean speed, time mean speed, free-flow speed, density, critical density, spacing, and headway
Week 11-12	Traffic Studies, Relationship among basic parameters, delay, average daily traffic, average annual daily traffic, maximum annual hourly volume, design hourly volume, capacity, and level of service, Traffic volume forecasting.
Week 13-14	Traffic Studies, Relationship among basic parameters, delay, average daily traffic, average annual daily traffic, maximum annual hourly volume, design hourly volume, capacity, and level of service, Traffic volume forecasting.
Week 15	Mid Exam
Week	Geometric design of streets and highways: elements of design, stopping

16-17	sight distance, Passing sight distance, intersection sight distance, highway cross-section elements, Intersection, intersection types.
Week 18-19-20	Geometric design of streets and highways: elements of design, stopping sight distance, Passing sight distance, intersection sight distance, highway cross-section elements, Intersection, intersection types.
Week 21-22	Highway Planning
Week 23-24	Road alignment: Vertical alignment.
Week 25-26-27	Road alignment: Vertical alignment, Horizontal Alignment.
Week 28-29	Public Transport
Week 30	Exam

Textbooks:

. 1 Garber, N. J., and L.A. Hoel, "Traffic & Highway Engineering", Thomson corp., 3rd edition, USA, 2002.

Suggested reference

. 1 Hay, W.W., "Railroad Engineering", John Wiley & Sons, Inc., USA, 1982.

2-Horonjeff, R., F. .X. McKelvey, " Planning and Design of Airports", 4th edition, McGraw Hill, Inc., 1994.

3-Handouts.

Marking

Semester			Final Exam
Quizzes	Exam	Practical	Test
10	20	30	60

Regulations:

1. There will be three term exams given during this semester. The best two out of three will be considered for the First & Second exam. This means there will NO makeup exams. Missing one of the two left exams means a ZERO grade will be given for that exam.
2. There is no markup for quizzes.
3. Attendance is mandatory and University regulations will be enforced.
4. All Cheating incidents will be reported to the chair. The following activities are considered cheating:
 - a. Turning in assignment that includes parts of someone else work.
 - b. Turning in someone else assignment as your own.
 - c. Giving assignment to someone else to turn in as their own.
 - d. Copying answers in a test or quiz.
 - e. Taking a test or quiz for someone else.
 - f. Having someone else take a test or quiz for you.
5. See student handbook for other regulations.

Assignments and/or Projects

Assignment/Project	Description	Due Date	Marking
H.W. 1	SOLVING EXERSICES		2 Marks
H.W. 2	SOLVING EXERSICES		2 Marks
Quizzes	Two or more quizzes	During the course	5Marks

Instructor(s) information**Section:** 1 **Lecture Room:** 3 **Time:****Instructor's Name:** Lecturer: Hanan Adel Khudair **E-Mail:** hanan8_transp@yahoo.com **Office No.:** 5**Office Hours:**

Other office hours are available by appointment.

Important: The content of this syllabus may not be changed during the current semester.**Lecturer Signature****Chair Signature**



Ministry of Higher Education and Scientific Research
Mustansiriyah University/College of Engineering /Dept. of Highway and Transportation



(نموذج الخطة الدراسية للمساق)

Course Plan

Course No.: HTE107

Course Name: Languages

Course Website: ---

Time Division:

3hr Theoretical + 1hr Practical

Semester & Year:

First , 2020/ 2021

Course Description [وصف المساق]

(6 credit hours, Prerequisite [المتطلب السابق] No. and Name)

It is a course to teach the principals of English and Arabic languages, simple grammar, listening, reading, and talking.

Course Intended Outcomes [المخرجات المتوقعة من المساق]

At the end of the course, students are expected to learn:

- The functions, derivatives and its applications,
- The integration methods,
- The plane analytic geometry,
- Hyperbolic function, its graph and integrals, and
- Matrices.

Course Outline

Week	(Text Sec.)
1	Technical English I (S1)
2+3	Assessment and discussion on text pieces including reading reference
4+5	Reference to phonetic symbols and dictionary usage
7+8	discussion on contemporary issues
9	Development of advance vocabulary
10	Precise and comprehension
11	Process of communication
12	Principle of letter writing resumeSocial, Correspondence, Types of reports
13	Structure of formal reports element of style
14	Use of illustrations, Making presentations and participatingingroupdiscussions
15	MidExam
	Arabic Language Skills (S2)
16+17+18	الجملة الفعلية ومكوناتها الأفعال والفاعل و نائب الفاعل و المفعول به
19+20+21	دراسة نص قرآني و تفسير هو علامات الترقيم
22+23	أخطاء لغوية شائعة و الجملة الاسمية وما يدخل عليها مثل كان و اخواتها وان واخواتها
24+25+26	حالات الاسم مفرد ،مثنى ، جمع ، درس تطبيقي في المفردات الهندسية
27+28	(درس في كتابة السيرة الذاتية ، الهمزة وانواعها ، المشتقات (اسم الفاعل – اسم المفعول
29	الصفات ، صيغة المبالغة ، الصفة المشبهة ، اسم التفضيل
30	الامتحان النهائي

Textbooks[الكتاب المنهجي]

New headway for beginners (student book)

Oxford university

Marking [توزيع الدرجات]

Exam	15 marks	QUIZ	10 marks		
H.W	10 marks	Report	5 marks	Final Exam	60 marks

Regulations [الظوابط والأنظمة]

- There will be three term exams given during this semester. The best two out of three will be considered for the First & Second exam. This means there will NO makeup exams. Missing one of the two left exams means a ZERO grade will be given for that exam.
- There is no markup for quizzes.
- Attendance is mandatory and University regulations will be enforced.
- All Cheating incidents will be reported to the chair. The following activities are considered cheating:
 - Turning in assignment that includes parts of someone else work.
 - Turning in someone else assignment as your own.
 - Giving assignment to someone else to turn in as their own.
 - Copying answers in a test or quiz.
 - Taking a test or quiz for someone else.
 - Having someone else take a test or quiz for you.
- See student handbook for other regulations.

Assignments and/or Projects [الواجبات والمشاريع]

Assignment/Project	Description	Due Date	Marking
H.W. 1	SOLVING EXERCISES		5 Marks
H.W. 2	SOLVING EXERCISES		5 Marks
Quizzes	Two or more quizzes	During the course	10Marks
Report			5 Marks

Instructor(s) information [معلومات الأستاذ]**Section:** 1**Lecture Room:** 4**Time:****Instructor's Name:** Assi. lec. Nidaa Adil Jasem **Office No.:** 5 **e-mail****Office No.:****:eng.nidaa.adel@gmail.com****Office Hours:** Other office hours are available by appointment.**Important:** The content of this syllabus may not be changed during the current year.**Lecturer Signature****Chair Signature**



Ministry Of Higher Education and Scientific Research

Mustansiriayah University

Faculty of Engineering/Department of Highway and Transportation Engineering

(الخطة الدراسية للمساق)

Course Plan



Course No.: HTE208

Course Name: Engineering Geology

Course Website: Not Available

Time Division:

1hrs Theoretical 1hrs tutorial

Semester and Year:

first , 2020-2021

Course Description:

(2 credit hours)

This course will Study the general natural phenomena that must be taken into consideration when it is desired to design, build and operate Engineering structures and geological process

Course Intended Outcomes:

At the end of the course, students are expected to learn:

1. Understanding of basic geological and geophysical concepts and terminology.
2. Identify basic rock types and the properties of these rocks that an engineer may be concerned with.
3. Understand surface geological processes and how they affect engineering studies.
4. Understand internal geological processes (e.g. faults, folds) and how they affect engineering studies.

Course Outline

Week	hrs	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	2	Introduction		Text book, Lecture	-Students activities - Examinations+Homework and reports
2	2	The surface of earth	earth parts, Earth age and origin	=	=
3	2	The interior of the earth	Earth interior parts	=	=
4	2	Introduction,	Surface processes	=	=
5	2	minerals	physical characteristics of minerals, the rock forming minerals	=	=
6	2	Types of rocks, introduction, Igneous rocks	types of rocks Formation of Igneous rocks,	=	=
7	2	Igneous rocks	types of Igneous rocks	=	=
8	2	Sedimentary Rocks,	Formation of Sedimentary Rocks,	=	=
9	2	Sedimentary Rocks,	types of Sedimentary Rocks	=	=
10	2	Metamorphic Rocks	Formation of Metamorphic Rocks,	=	=
11	2	Metamorphic Rocks	types of Metamorphic Rocks	=	=
12	2	Physical properties of rocks	Porosity and permeability,	=	=
13	2	Physical properties of rocks	Density and Compaction,	=	=
14	2	Physical properties of rocks	solving problems	=	=
15	2	mechanical properties of rocks	compression , tension & shear.	=	=
Mid-Year Exam					
16	2	Surface processes	Weathering	=	=
17	2	Surface processes	erosion		
18	2	Ground water	wells	=	=
19	2	Ground water	Dams	=	=
20		Ground water	Types of dams, Dams collapse		
21	2	Ground water	reservoir	=	=



(نموذج الخطة الدراسية للمساق)
Course Plan

Course No.: HTE109

Time Division: 1hr Theoretical 2 Practical

Course Name: Highway Construction Materials

Semester & Year: First , 2020/ 2021

Course Website: ---

Course Description [وصف المساق]

(6 credit hours, Prerequisite [المتطلب السابق] No. and Name)

- This subject (Highway Construction Materials) is a basic guide to Understand the materials involved in pavement installation, their characteristics, whether they are physical or chemical, for flexible and rigid pavement sorts.

Course Intended Outcomes [المخرجات المتوقعة من المساق]

At the end of the course, students are expected to learn:

- Understand the materials of asphalt pavement,
- Understand the materials of concrete pavement,
- The physical characteristics of pavement materials.
- The chemical characteristics of pavement materials.

Course Outline

Week	(Text Sec.)
1+2	Properties of construction materials and testing machines
3+4+5	Bricks and brick tests + other types of bricks
6+7	Plaster and binders
8+9	Cement and cement mortar
10	Kashi and sticker
11	Asphalt
12	Wood
13	Glass
15	Steel
١٦	Introduction to pavement and its types
١٧	Asphalt pavement materials
١٨	<i>The physical characteristics of asphalt binder</i>
١٩	The physical characteristics of aggregate
٢٠	The chemical characteristics of asphalt binders
٢١	Organic Chemistry
٢٢	Some Chemical Group Properties
٢٣	Quiz and Presentation
٢٤	Molecular Size Distribution
٢٥	CHEMISTRY LEVELS

٢٦	Fractions of Asphalt
٢٧	The Relationship between Chemical Composition and asphalt performance
٢٨	The Relationship with asphalt pavement distresses
٢٩	Chemistry of Asphalt-Aggregate Interaction
٣٠	Final Exam

Textbooks: [الكتاب المنهجي]

Edwin J. Barth. "Asphalt Science and Technology", 1st Ed. ,1962.

Suggested references: [المراجع المساعدة للمنهج]

1. James Speight" Asphalt Materials Science and Technology", 1st Edition 2015.

Marking [توزيع الدرجات]

First Exam	15 marks	Second Exam	15 marks	
QUIZ	5 marks	QUIZ	5 marks	Final Exam 60 marks

Regulations: [الظوابط والأنظمة]

1. There will be three term exams given during this semester. The best two out of three will be considered for the First & Second exam. This means there will NO makeup exams. Missing one of the two left exams means a ZERO grade will be given for that exam.
2. There is no markup for quizzes.
3. Attendance is mandatory and University regulations will be enforced.
4. All Cheating incidents will be reported to the chair. The following activities are considered cheating:
 - a. Turning in assignment that includes parts of someone else work.
 - b. Turning in someone else assignment as your own.
 - c. Giving assignment to someone else to turn in as their own.
 - d. Copying answers in a test or quiz.
 - e. Taking a test or quiz for someone else.
 - f. Having someone else take a test or quiz for you.
5. See student handbook for other regulations.

Assignments and/or Projects: [الواجبات والمشاريع]

Assignment/Project	Description	Due Date	Marking
H.W. 1	Theoretical Reports		2 Marks
H.W. 2	SOLVING EXERCISES		2 Marks
Quizzes	Two or more quizzes	During the course	5Marks

Instructor(s) information [معلومات الأستاذ]

Section: 1 **Lecture Room:** 6 **Time:**

Instructor's Name: Assist. Prof. Dr. Sady Abd Tayh
Lecturer Dunya Sahib Alak

Office No.: 6

E-Mail: saabta75@yahoo.com, sady.tayh75@uomustansiriyah.edu.iq
E-mail: dunia_eng@uomustansiriyah.edu.iq

Office Hours:

Other office hours are available by appointment.

Important: The content of this syllabus may not be changed during the current semester.

Assist. Prof. Dr. Sady Abd Tayh



Lecturer Dunya Sahib Alak



Lecturer Signature

Chair Signature

Second Year

2020-2021

Semester System



Ministry Of Higher Education and Scientific Research
AL-Mustansiriyah University/ Collage of Engineering /Highway and Transportation
Engineering Department
(الخطة الدراسية للمساق)
Course Plan



Course No.: 506062011

Course Name: Principle of Applied Mathematics

Time Division:

3 hr. Theoretical and 1 hr. Practical

Course Website: ---

Year:

2020/2021

Course Description

(4 credit hours, Prerequisite No. and Name : 506060101 Applied Mathematics I)

- Definition of polar coordinates and their relationship with the Cartesian coordinates and using them in the calculation of areas and lengths of curves.
- Definition of vectors and their mathematical processes .
- Performing the partial differentiation for the functions of many variables and using it in the calculation of some engineering applications.

Course Intended Outcomes

At the end of the course, students are expected to learn:

- Applying calculus in real-world situations using three-dimensional space.
- Using different coordinates systems to express functions.
- Dealing with functions of several variables: differentiation and integration.

Course Outline

Week	Description depends on the Timing table (Theoretical)
1	Polar coordinates: definition and Graphing
2	Area and Length in Polar Coordinates
3	Three-Dimensional Coordinate System and Definition of vectors
4	Algebra operations of vectors
5	Vectors product
6	Parametric Equations of line
7	Equation of plane
8	Vector functions
9	Partial derivative
10	The Chain Rule
11	Directional derivatives and Gradients , Lagrange multipliers
12	Total Differentials and Linear Approximation
13	Maxima , minima , and saddle points
14	Maxima , minima , and saddle points
15	Tangent plane and normal line

Textbooks

George B. Thomas, JR. and Ross L. Finney "Calculus and Analytic Geometry", 11th Ed. ,2010.

Suggested references

Calculus with analytic geometry: By Howard Anton

Marking [توزيع الدرجات]



Ministry Of Higher Education and Scientific Research

Mustansiriyah University / Collage of Engineering / Highway
and Transportation Engineering Department



(نموذج الخطة الدراسية للمساق)

Course Plan

Course No.: 506062021

Course Name: Principle of Strength of Materials **Time Division:** 3hr Theoretical + 1hr Tutorial

Course Website: -

Semester & Year: First , 2020/2021

Course Description [وصف المساق]

The course is based on explaining the physical properties of materials used in construction of many types of structures under different load types and their strength to carry resulted stresses and their ability to resist the deformations due to external effects on the structure leading to understanding the structural behavior of these materials and their efficiency to be used in practical application.

Course Intended Outcomes [المخرجات المتوقعة من المساق]

At the end of the course, students are expected to learn:

- Engineering properties of materials that used in practice.
- Determining stresses and strains developed in materials (and their relationships) due to external loads.
- Structural analysis of applied loads on structures and determination of internal forces for all members.

Course Outline

Week	Monday Class (Text Sec.)	Wednesday Class (Text Sec.)
1	Introduction	Introduction
2	Normal stresses	Average shear stresses
3	Application examples	Applications- strength of highway materials
4	Definition of strains	Hooke's law of axial load and Poisson's ratio
5	Application examples	Month exam
6	Statically indeterminate members	Application examples
7	Thermal strain	Application examples
8	Torsion on circular shafts	Angle of twist for circular shafts
9	Application examples	Torsion of Non-circular shafts
10	Application examples	Month exam
11	Axial force, shear force and bending moment diagrams	Application examples
12	Application examples	Graphical method
13	Application examples	Application examples
14	Month exam	Review
15	Final Exam	

Textbooks [الكتاب المنهجي]

- Andrew Pytel and Ferdinand, L. Singer, "Strength of Materials", 4th Ed.

Suggested references [المراجع المساعدة للمنهج]

- Hibbeler, R. C., "Mechanics of Materials", SI Edition, Prentice Hall, 8th Ed, 2008.

- Popov, E., "Mechanics of Materials".

Marking [توزيع الدرجات]

Month exams	15 marks
Quizzes	10 marks
H.W.	10 marks
Reports	5 marks
Final Exam	60 marks

Regulations [الظوابط والأنظمة]

1. There will be two term exams given during this semester. Missing one of the two exams means a ZERO grade will be given for that exam.
2. There will be two quizzes (at least) given during this semester.
3. Home works and reports should be submitted when requested. The grades will be given for oral discussions in their contents.
4. Attendance is mandatory and University regulations will be enforced for the following:
 - a. Copying answers in a test or quiz.
 - b. Taking a test or quiz for someone else.
 - c. Having someone else take a test or quiz for you.
5. See student handbook for other regulations.
6. All Cheating incidents will be reported to the chair. The following activities are considered cheating:
 - a. Turning in assignment that includes parts of someone else work.
 - b. Turning in someone else assignment as your own.
 - c. Giving assignment to someone else to turn in as their own.

Instructor(s) information [معلومات الأستاذ]**Section:** 1**Lecture Room:** 5**Time:** 10:30-12:30 Mon
8:30-10:30 Wed**Instructor's Name:** *Dr. Mohammed Hashim Mohammed***E-Mail:** mohammed_hashim@uomustansiriyah.edu.iq**Office No.:** 1**Office Hours:** [8:30-10:00], [12:00-1:00] Sun, Tue.
Other office hours are available by appointment.**Important:** The content of this syllabus may not be changed during the current semester.**Lecturer Signature****Chair Signature**



Ministry of Higher Education and Scientific Research
Mustansiriyah University/ Collage of Engineering /Department of Highway and
Transportation
Course Plan



Course No.: 506062031

Course Name: Principle of AutoCAD

Time Division: 1hr. Theoretical, 2hr. Practical

Course Website: -

Semester & Year: 1st, 2020 - 2021

Course Description

(3 credit hours)

The basic goal of this course is to learn the students how utilization the computer programs for drafting and design. So, this course consists of two parts; theoretical and practical depending on 2-dimensional drawings using AutoCAD.

Course Intended Outcomes

At the end of the course, students are expected to learn:

- Almost features of AutoCAD program.
- How to draw and print 2-dimensional maps accepted for engineering purposes.
- Using AutoCAD facilities to measure and find out areas or dimensions.
- Import and export maps and data among computer programs.

Course Outline

Week	Theoretical	Practical
1	Getting Starting to AutoCAD	Application
2	Drawing Tools part I	Application
3	Modify Tools Part I	Application
4	Drawing Tools part II	Application
5	Modify Tools Part II	Application
6	Drawing Tools part III	Application
7	Review Tools	Application
8	Measure Tools	Application
9	Modify Tools Part III	Application
10	Dimension Tools Text Tools	Application
11		Application
12		Application
13	Managing Layers	Application
14	Osnap & Grid & Ortho	Application
15		Application
Final Examination		

Textbooks

1. Introduction to AutoCAD 2008 2D and 3D Design, Alf Yarwood.

Suggested References

1. AutoCAD, Mart Book for 2D Drawings Only.
2. Any Book or Exercise related to AutoCAD.

Marking

Quizzes	Exam	Practical	Final Examination
10	25	15	50

Regulations

1. There will be three quizzes and one term exam given during the semester. The best two out of three quizzes will be considered. However, the marks of the term exams are dependable.
2. Attendance is mandatory and University regulations will be enforced.
3. All Cheating incidents will be reported to the chair. The following activities are considered cheating:
 - a. Turning in assignment that includes parts of someone else work.
 - b. Turning in someone else assignment as your own.
 - c. Giving assignment to someone else to turn in as their own.
 - d. Copying answers in a test or quiz.
 - e. Taking a test or quiz for someone else.
 - f. Having someone else take a test or quiz for you.
4. See student handbook for other regulations.

Assignments and/or Projects:

1. There will be four assignments for drawing maps AutoCAD given during the semester. The best three out of four assignments will be considered.

Instructor Information

Instructor's Name: Saif Khudhair Ali **E-Mail:** saifkhudhair@gmail.com

Office No.:

Other office hours are available by appointment.

Important: The content of this syllabus may not be changed during the current semester.

Lecturer Signature

Chair Signature



Ministry Of Higher Education and Scientific Research

AL-Mustansiriayah University / Collage of Engineering / Department of Highway and Transportation Engineering

(نموذج الخطة الدراسية للمساق)



Course Plan

Course No.: 506062041

Course Name: Elementary Surveying

Time Division:

2hr Theoretical , 1hr Tutorial , and 2hr Practical

Course Website: _

Semester & Year:

First , 2020 / 2021

Course Description

Distance Measurement , Leveling , Profile and Cross Sections , Contours , Planimeter , Areas and Volumes , Digital Elevation Model (DEM) , Theodolite , Stadia Tacheometry .

Course Intended Outcomes

At the end of the course, students are expected to learn:

- *basics of elementary surveying.*
- *surveying instrumentations : Level and Theodolite.*
- *implementation of profile and cross sections.*
- *areas and volumes calculation.*

Course Outline

Week	Class (Text Sec.)
1	Surveying Defined and Surveying Instrumentation
2	Distance Measurement
3	Level Instrument
4	Level Adjustment
5	Methods of Leveling
6	Leveling Errors and Corrections
7	Profile Leveling and Cross Sections
8	Contours
9	Areas and Planimeter
10	Area of cross section
11	Volumes and Earthwork Calculation
12	Digital Elevation Model (DEM)
13	Theodolite Instrument
14	Measurement of Horizontal and Vertical Angles
15	Stadia Tacheometry

Textbooks

1. Arthur Bannister , Stanley Raymond and Raymond Baker , " Surveying " , Longman , London , 1998 .
2. Barry F. Kavanagh , " Surveying , Principles and Applications " , Pearson Prentice Hall , United States of America , 2006 .

Suggested references

1. Charles D. Ghilani and Paul R. Wolf , " Elementary Surveying , An Introduction to Geomatics " , Pearson Education Limited , Edinburgh Gate , Harlow , United States of America , 2011 .

Marking

Semester

Practical

Final Exam

Regulations:

1. There will be three term exams given during this semester. The best two out of three will be considered for the First & Second exam. This means there will NO makeup exams. Missing one of the two left exams means a ZERO grade will be given for that exam.
2. There is no markup for quizzes.
3. Attendance is mandatory and University regulations will be enforced.
4. All Cheating incidents will be reported to the chair. The following activities are considered cheating:
 - a. Turning in assignment that includes parts of someone else work.
 - b. Turning in someone else assignment as your own.
 - c. Giving assignment to someone else to turn in as their own.
 - d. Copying answers in a test or quiz.
 - e. Taking a test or quiz for someone else.
 - f. Having someone else take a test or quiz for you.
5. See student handbook for other regulations.

Assignments and/or Projects

Assignment/Project	Description	Due Date	Marking
H.W.	Questions and problems	During the course	---
Quizzes	Two or more quizzes	During the course	---

Instructor(s) information

Section: - **Lecture Room: -** **Time: -**

Instructor's Name: wafaa khudier leabi **E-Mail:** - wleabi@gmail.com

Office No.:

Office Hours: Other office hours are available by appointment.

Important: The content of this syllabus may not be changed during the current semester.

Lecturer Signature

wafaa khudier leabi

Chair Signature



Ministry Of Higher Education and Scientific Research

AL-Mustansiriayah University/College of Engineering/Department of Highway Transportation

(الخطة الدراسية للمساق)

Course Plan

Course No.: 506062051

Course Name: Principles of Fluid Mechanics

Academic Year: 2020-2021

Time Division: 2hrs. Theoretical-2 hrs practical.

Course Description

It is a course to teach the principals of fluid (gases and liquids) mechanics, its definition, physical properties like force, pressure, density viscosity .

Course Intended Outcomes:

At the end of the course, students are expected to learn:

The basic principles of fluid mechanics and solving numerous application in field of fluid transport system, chemical processing operation, fluid power, fluid generation, transportation, . Throughout the lectures, the student will understand the concepts and be able to use the equations properly for problem solving. Understanding concepts allows the student to have reasonable expectation of how fluid system should behave.

Course Outline:

Week	Description depends on the Timing table(Theoretical & Practical)
	First course
1	Introduction
2+3	Properties of fluids
4	Archimedes theory
5+6	Atmosphere and gage pressure, measuring the fluid pressure on a point+ quiz

7+8	Calculating the fluid force on gates, dams.
9+10	Forces consideration in fluids on inclined surfaces
11	Quiz + discussing their reports
12	Continue the reports discussing
13	Monthly exam
14	review
15	Final exam + holydays

Textbooks:

Fluid mechanics
 Victor L. Streeter
 E.Benjamin Wylie
 7th edition ,Mc Graw Hill, 1979.

Suggested references:

Fluid Mechanics with Applications
 ANTHONY ESPOSITO
 Prentice Hall-1998

Marking:

During the course				Final exam
quiz	Monthly exam	practical	report	50
10	20	15	5	

Instructor information:

-

Instructor's Name: Asst. prof. Nidaa Adil Jasem Office No.: 5, e-mail
eng.nidaa.adel@gmail.com_

Lecturer Signature

Chairman Signature



Ministry Of Higher Education and Scientific Research
Mustansiriyah University / Collage of Engineering / Department of Highway
and Transportation



(نموذج الخطة الدراسية للمساق)

Course Plan

Course No.: 506062061

Course Name: Asphalt Pavement Materials

Time Division:

2^{hr}. Theoretical 2^{hr}. Practical

Course Website: -

Semester & Year:

First and second , 2020/2021

Course Description [وصف المساق]

To introduce students to the principles of bituminous mixture design for road pavement applications. Materials selection and performance characterization procedures will be addressed. The course will include a discussion on the analytical and experimental methods used to characterize basic mechanical properties and performance of bituminous materials. The course will also include a discussion on the newer generation of asphalt mixtures geared towards environmental stewardship and sustainable development initiatives

Course Intended Outcomes [المخرجات المتوقعة من المساق]

At the end of the course, students are expected to learn:

- Ability to understand the properties of bituminous material and hot mix asphalt
- Ability to perform bitumen and hot mix asphalt testing
- Ability to perform asphalt mix design

Course Outline

week	Topics Covered (Wednesday)
1-2	Introduction, definition, Classification or Source of Asphalt
3-5	Manufacturing Methods:- Fractional Distillation of Crude Oil; Asphalt Emulsion and Destructive Distillation of Coal , Q ₁
6-7	Fractional Compounds of Asphalt; according to Rostler Sternberg and ASTM D-41424
8-10	Asphalt Cement Properties as Binder Materials
11-12	Rheological Properties of Asphalts, Paving Asphalt Material (Elastic , viscous ,plastic , combination) ; (Visco-elastic , 1- <i>Mechanical Model (Maxwell , Kelvin , Burgers and Krass Model)</i> ; Visco-elastic , 2- <i>Creep Compliance, Q₂</i>
13-14	Mineral Aggregate Used in Asphalt Mixtures, Q ₃
15	Exam

Textbooks[الكتاب المنهجي]

1. Hot-mix Asphalt Materials, Mixture Design and Construction by F.L. Roberts, P. S. Kandhal, E.R. Brown, D-Y. Lee and T. W. Kennedy, 2nd Edition, NAPA Research and Education Foundation, Lanham, MD, 1996.
2. Introduction to Asphalt by Asphalt institute 2007 .(MS-5)
3. Shell handbook (2015).
4. ASTM, BS specification (2015) and SCRB (Iraq specification 2010).

Suggested references[المراجع المساعدة للمنهج]

- Traffic and Highway Engineering by Garber and Hoel; 2010
- Introduction to Asphalt by Asphalt institute 2007. (MS-5)

Marking[توزيع الدرجات]

(First semester) : Month exams and quiz and H.W. 10 marks
(Second semester) : Month exams and quiz and H.W. 10 marks

semester Exam 15 marks
semester Exam 15 marks
Final Exam 50 marks

Regulations: [الظوابط والأنظمة]

1. There will be three term exams given during this semester. The best two out of three will be considered for the First & Second exam. This means there will NO makeup exams. Missing one of the two left exams means a ZERO grade will be given for that exam.
2. There is no markup for quizzes.
3. Attendance is mandatory and University regulations will be enforced.
 - a. Copying answers in a test or quiz.
 - b. Taking a test or quiz for someone else.
 - c. Having someone else take a test or quiz for you.
4. See student handbook for other regulations.
5. All Cheating incidents will be reported to the chair. The following activities are considered cheating:
 - a. Turning in assignment that includes parts of someone else work.
 - b. Turning in someone else assignment as your own.
 - c. Giving assignment to someone else to turn in as their own.

Instructor(s) information: [معلومات الأستاذ]

Section: 1 **Lecture Room:** 9 , 11 **Time:** 8:30-2:30 Wen

Instructor's Name: Assist. Prof. Dr. Abdulhaq Hadi Abed Ali **E-Mail:**

abdulhaq_alhaddad@yahoo.com

Office No.: 2

Lecturer Sady Abd Tayh

E-Mail: Saabta75@yahoo.com

Office Hours: [8-2:30], head office every day

Other office hours are available by appointment.

Important: The content of this syllabus may not be changed during the current semester.

Lecturer Signature

Chair Signature



Ministry Of Higher Education and Scientific Research

AL-Mustansiriyah University/ Collage of Engineering/Department of Highway and Transportation



(نموذج الخطة الدراسية للمساق)

Course Plan

Course No.: 506062071

Course Name: Highway Infrastructure

Time Division:

2hr Theoretical

Course Website: ---

Semester & Year:

Second, 2020/2021

Course Description

(2 credit hours, Prerequisite)

Acquaint students with the importance of the infrastructure for the transportation facilities and the most important modes of transport. This course will be helpful to comprehend basics of different subjects related to transportation like human, vehicles and travelway characteristics with other branches of highway and transportation engineering.

Course Intended Outcomes

At the end of the course, students are expected to learn:

- Understand the highway infrastructure features,
- Understand the transportation system models,
- Understand the fundamentals of transportation planning,
- Understand the fundamentals of transportation safety and intelligent transportation.

Course Outline

Week	Monday Class (Text Sec.)
Week 1	Overview of Transportation Transportation and Society, Transportation History
Transportation Systems Models	
Week 2	Systems and Their Characteristics
Week 3	Tools and Techniques for Analyzing Transportation Systems
Human, Vehicle, and Travelway Characteristics	
Week 4	Human Characteristics, and The Human Response Process
Week 5	Vehicle Characteristics
Week 6	Travelway Characteristics
Transportation Capacity Analysis	
Week 7	The Capacity Concept and Highway Capacity
Week 8	Transit Capacity and Airport Runway Capacity
Week 9	Exam
Transportation Planning	
Week 10	The Transportation Planning Process
Week 11	Evaluation Transportation Alternatives
Week 12	Classification of Airport Runways, Classification of Airport Taxiways,
Week 13	Determination of the Orientation and length of an Airport Runway
Week 14	Transportation Safety
Week 15	Intelligent Transportation and Information Technology

Textbooks:

1. Hoel, Lester A., Nicholas J. Garber, and Adel W. Sadek. *Transportation infrastructure engineering: A*

Suggested reference

Marking

Midterm Exam 30 marks
QUIZE 5 marks QUIZE 5 marks Final Exam 60 marks

Regulations

1. There will be one midterm exams given during this semester. Missing the exams means a ZERO grade will be given for you.
2. There is no markup for quizzes.
3. Attendance is mandatory and University regulations will be enforced.
4. All Cheating incidents will be reported to the chair. The following activities are considered cheating:
 - a. Turning in assignment that includes parts of someone else work.
 - b. Turning in someone else assignment as your own.
 - c. Giving assignment to someone else to turn in as their own.
 - d. Copying answers in a test or quiz.
 - e. Taking a test or quiz for someone else.
 - f. Having someone else take a test or quiz for you.
5. See student handbook for other regulations.

Assignments and/or Projects

Assignment/Project	Description	Due Date	Marking
H.W. 1	SOLVING EXERSICES		2.5 Marks
H.W. 2	SOLVING EXERSICES		2.5 Marks
Quizzes	Two or more quizzes	During the course	5Marks

Instructor(s) information

Section: 1	Lecture Room:	Time:
Instructor's Name: Asset. lecturer Samer Shafeeq Al Amili E-Mail: samr_alamily2000@yahoo.com		
Office Hours:	Other office hours are available by appointment. Important: The content of this syllabus may not be changed during the current semester.	
Lecturer's Signature Chair's Signature		



Ministry Of Higher Education and Scientific Research
Mustansiriyah University/ Collage of Engineering /Highway and Transportaton Department
(الخطة الدراسية للمساق)
COURSE PLAN



Course No.:506062081

Course Name: Principles of Concrete Technology

Academic Year: 2020-2021

Time Division: 1hr. Theoretical 2hr. Practical.

Course Description

(3 credit hours)

Attention is drawn to the need for increased levels of care and attention in the teaching of **Concrete technology. This course will be cover the:** Identify the methods used in the production of cement and of the main compounds for cement and hydration process. Portland Cement, types, characteristics, and uses of each type. Tests of Cement, Coarse Aggregate and Fine Aggregate. Preview devices and laboratory equipment used in the concrete experiences and the methods used for testing and how to prepare inspection reports. DURABILITY OF CONCRETE.

Course Intended Outcomes:

At the end of the course, students are expected to learn:

- Understand the compound of concrete and the specifications of its materials.
- Understand what is Mix Design & Explain in detail the various factors governing the selection of mix proportion,
- Understand the Laboratory Tests of Cement, Coarse Aggregate and Fine Aggregate.
- Understand the Laboratory Tests of Concrete in Fresh and Hard state.
- Understand the DURABILITY OF CONCRETE.

Course Outline: Principle of Concrete Technology

Week	Description depends on the Timing table (Theoretical & Practical)
1	Introduction to Concrete :
2	Portland cement ,manufacture, chemical composition
3	The main and, minor compounds of cement
4	The action of gypsum, finesse of cement, hydration of cement
5	Het of hydration , setting, false setting
6	Types of Cement Different Types of Cement (Ordinary Portland cement, Rapid Hardening Cement, Sulphates resisting cement)
7	Different Types of Cement (Blast Furnace Slag Cement, Pozzolanic Cement,).
8	Different Types of Cement (with cement, Expansive Cement, High Alumina Cement)
9	Sustainable cementation materials , advantages of sustainable of cement
10	AGGREGATE Types of Aggregates, Properties of Aggregates
11	Finesse modulus , shapes of aggregate, surface textures
12	First Exam + Review of Exam
13	Bond of aggregate , strength of aggregate and others mechanical properties of aggregate ,
14	Specific gravity, porosity and absorption, bulking of fine aggregate
15	Deleterious substances in aggregate, soundness, thermal properties

Textbooks:

1. A.M. Neville, "Properties of concrete", 2nd Edition, 2010.

Suggested references:

2. John Newman, B S Choo, "Advanced Concrete Technology", 04 Dec 2003.

3- 1. Shiv Kumar , "CONCRETE TECHNOLOGY", Indian Railways Institute of civil engineering ,2007

Marking[توزيع الدرجات]

Marking

Semester

Practical

Final Exam

Instructor information:

Lecture Room: [Group A: 9, Group B:10]Time: Wednesday. A-8:30-10:30, B-12:30-2:30

Thursday .A-8:30-9:30, B-12:30-1:30.

Instructor's Name: Lecturer. Zainab Mohammed Ali

E-Mail:zainab_ali365@yahoo.com

NOTES:

- Office Hours: Other office hours are available by appointment.*
- The content of this syllabus not be changed during the current semester.*

Lecturer Signature Chairman Signature



Ministry Of Higher Education and Scientific Research

Mustansiriayah University/ Collage of Engineering /Department

(نموذج الخطة الدراسية للمساق)

Course Plan



ملاحظة: يمكن اعتماد نفس الخطة باللغة العربية مع مراعاة وجود نفس المقررات ادناه

Course No.: 506062091

Course Name: الحقوق والديمقراطية

Course Website: ٢

Course Description [وصف المساق]

Time Division:

الصف الثاني

Semester & Year:

First , 2020-2021

(2 credit hours, Prerequisite [المتطلب السابق] No. and Name)

تتضمن مادة حقوق الانسان فهم الطالب لهذه المادة والحقوق الاساسية والمفيدة التي من شأنها دعم حرية وحق وكرامة الانسان منها حق الحياة وحق العمل والتعليم والتعبير والعمل والمساواة. حيث تضمن المحاضرات دروس نظرية مع اشارة الى المصادر المهمة والمقالات والمتغيرات ضمن الاعراف والقانون الدولي والمعاهدات والتفقايات الدولية.

Course Intended Outcomes [المخرجات المتوقعة من المساق]

At the end of the course, students are expected to learn:

- يفهم الطالب حقوق الانسان وتعزيز مكانة الانسان لدى المواطن ومنها حق الحياة والعمل والتعليم والتعبير والصحة والتعامل بروح الاخوة والمساواة بين الطلبة واحترام الكادر التدريسي. تجعل هذه الحقوق عاملا مشتركا يساهم في الحياة العامة.

Course Outline

Week	Sunday Class (Text Sec.)
1	قانون انضباط وسلوك الطالب داخل الحرم الجامعي
2	تعريف حقوق الانسان وما هي صفات حقوق الانسان
3	تعريف الحرية وصفاتها
4	الانسان وتعريفه
5	جذور حقوق الانسان في التاريخ
6	حقوق انسان في الحضارات
7	حقوق الانسان في الاسلام
8	حقوق المدنية والسياسية في الدساتير العربية
9	اشكال واجيال حقوق الانسان
10	المنظمات غير الحكومية
11	الاعتراف المعاصر بحقوق الانسان
12	ضمانات حقوق الانسان
13	الفساد المالي والاداري
14	حقوق المرأة والطفل
15	امتحان

Textbooks: [الكتاب المنهجي]

حقوق الانسان والديمقراطية – عزيز صالح – ٢٠٠٤ – بغداد

Suggested references: [المراجع المساعدة للمنهج]

حقوق الانسان الحديثة – ٢٠٠٦

Marking [توزيع الدرجات]

First Exam 10 marks Second Exam 10 marks
Activity 10 marks Final Exam 70 marks

Regulations: [الظوابط والأنظمة]

1. There will be three term exams given during this semester. The best two out of three will be considered for the First & Second exam. This means there will NO makeup exams. Missing one of the two left exams means a ZERO grade will be given for that exam.
2. There is no markup for quizzes.
3. Attendance is mandatory and University regulations will be enforced.
4. All Cheating incidents will be reported to the chair. The following activities are considered cheating:
 - a. Turning in assignment that includes parts of someone else work.
 - b. Turning in someone else assignment as your own.
 - c. Giving assignment to someone else to turn in as their own.
 - d. Copying answers in a test or quiz.
 - e. Taking a test or quiz for someone else.
 - f. Having someone else take a test or quiz for you.
5. See student handbook for other regulations.

Assignments and/or Projects: [الواجبات والمشاريع]

Assignment/Project	Description	Due Date	Marking
H.W. 1	حقوق الانسان	During the course	2 Marks
Quizzes	Two or more quizzes	During the course	6 Marks

Instructor(s) information [معلومات الأستاذ]

Section: 1 **Lecture Room:** MA6 **Time:** 10:30-12:30 Tue &The

Instructor's Name: المدرس محمد سلمان صالح **E-Mail:** mr.mohammed89@yahoo.com **Office No.:** -

Office Hours: [8-9:30], [11-12], [1:30-2] All days

Other office hours are available by appointment.

Important: The content of this syllabus may not be changed during the current semester.

Lecturer Signature

المدرس محمد سلمان صالح

Chair Signature



Ministry Of Higher Education and Scientific Research
AL-Mustansiriyah University/Faculty of Engineering /Highway and Transportation
Engineering Department
(الخطة الدراسية للمساق)
Course Plan



Course No.: 506060201

Course Name: Applied Mathematics

Time Division: 3 hr. Theoretical and 1 hr. Practical

Course Website: ---

Year: 2020/2021

Course Description

(4 credit hours, Prerequisite No. and Name : 506060101 Applied Mathematics II)

- Solution of the first and second order Differential equations using several methods.
- Performing the double and triple integrals and using them to calculate the areas and volumes bounded by various functions .
- Definition of series and methods of testing their nature (convergent or divergent) and using them to represent some functions.

Course Intended Outcomes

At the end of the course, students are expected to learn:

- Applying calculus in real-world situations using three-dimensional space.
- Using different coordinates systems to express functions.
- Dealing with functions of several variables: differentiation and integration.

Course Outline

Week	Description depends on the Timing table (Theoretical)
1	1 st order Differential equation: Variables separable and Homogeneous equations
2	Linear and Exact equations
3	2 nd order Differential equation: Homogeneous equations
4	Non Homogenous second order diff. eq. (method of undetermined coefficient)
5	Double integrals in Cartesian coordinates
6	Double integrals in polar coordinates
7	Changing Cartesian Integrals to Polar integrals
8	Triple integrals in Cartesian coordinates
9	Triple integral in cylindrical and spherical coordinates , surface area
10	Sequences of numbers
11	Infinite Series, Geometric series
12	Tests of convergence
13	Power series
14	Applications of Power Series, Interval of convergence
15	Alternating series , conditional convergence , Binomial series
	FINAL EXAM Durations

Textbooks:

George B. Thomas, JR. and Ross L. Finney "Calculus and Analytic Geometry", 11th Ed. ,2010.

Suggested references:

Calculus with analytic geometry: by Howard Anton

Marking [توزيع الدرجات]

First Exam	15 marks	Second Exam	15 marks		
QUIZ	5 marks	QUIZ	5 marks	Final Exam	60 marks

Regulations

1. There will be three term exams given during each semester. The best two out of three will be considered for the First & Second exam. Missing one of the two left exams means a ZERO grade will be given for that exam.
2. There will be three to four quizzes for each semester.
3. Attendance is mandatory and University regulations will be enforced.
4. All Cheating incidents will be reported to the chair. The following activities are considered cheating:
 - a. Turning in assignment that includes parts of someone else work.
 - b. Turning in someone else assignment as your own.
 - c. Giving assignment to someone else to turn in as their own.
 - d. Copying answers in a test or quiz.
 - e. Taking a test or quiz for someone else.
 - f. Having someone else take a test or quiz for you.
5. See student handbook for other regulations.

Assignments and/or Projects [الواجبات والمشاريع]

Assignment/Project	Description	Due Date	Marking
H.W. 1	SOLVING EXERCISES		2 Marks
H.W. 2	SOLVING EXERCISES		2 Marks
Quizzes	Two or more quizzes	During the course	5Marks

Instructor information

Section:	Lecture Room:	Time: 08:30-10:30 Sun, Tue
	Lecture Room:	Time: 10:30-12:30 Sun 12:30-02:30 Tue

Instructor's Name: *Lec. Yasmin Hamed Abd* **E-Mail:** alkatibyasmin@gmail.com

Office No.: 4

Office Hours:

Other office hours are available by appointment.

Important: The content of this syllabus may not be changed during the current academic year.

Lecturer Signature

Chair Signature



Ministry Of Higher Education and Scientific Research

Mustansiriyah University / Faculty of Engineering / Highway
and Transportation Engineering Department



(نموذج الخطة الدراسية للمساق)

Course Plan

Course No.: 506062022

Course Name: Strength of Engineering Materials

Time Division:

3hr Theoretical + 1hr Tutorial

Course Website: -

Semester & Year:

Second , 2020/2021

Course Description [وصف المساق]

The course is based on explaining the determination of stresses in materials due to different load types and their ability to resist the deformations due to external effects on the structure leading to understanding the structural behavior of these materials and their efficiency to be used in practical application.

Course Intended Outcomes [المخرجات المتوقعة من المساق]

At the end of the course, students are expected to learn:

- Structural analysis of applied loads on structures and determination of internal forces for all members.
- The ability of materials to resist different types of stresses due to external loads.
- Calculation of beams deformations under many types of loading.

Course Outline

Week	Monday Class (Text Sec.)	Wednesday Class (Text Sec.)
1	Bending stresses in beams	Applications for rectangular sections
2	Applications for different sections	Application examples
3	Application examples	Bending stresses of composite beams
4	Analysis of reinforced concrete sections	Application examples
5	Month exam	Shearing stresses in beams
6	Application examples	Application examples
7	Shear flow in built-up members	Application examples
8	Application examples	Month exam
9	Combined axial and bending stresses	Combined shearing and torsional stresses
10	Application examples	Deflection of beams
11	Integration method	Application examples
12	Moment area method	Application examples
13	Month exam	Stress transformation
14	Mohr's circle	Application examples
15	Final Exam	

Textbooks: [الكتاب المنهجي]

- Andrew Pytel and Ferdinand, L. Singer, "Strength of Materials", 4th Ed.

Suggested references: [المراجع المساعدة للمنهج]

- Hibbeler, R. C., "Mechanics of Materials", SI Edition, Prentice Hall, 8th Ed, 2008.

- Popov, E., "Mechanics of Materials".

Marking [توزيع الدرجات]

Month exams	15 marks
Quizzes	10 marks
H.W.	10 marks
Reports	5 marks
Final Exam	60 marks

Regulations [الظوابط والأنظمة]

1. There will be two term exams given during this semester. Missing one of the two exams means a ZERO grade will be given for that exam.
2. There will be two quizzes (at least) given during this semester.
3. Home works and reports should be submitted when requested. The grades will be given for oral discussions in their contents.
4. Attendance is mandatory and University regulations will be enforced for the following:
 - a. Copying answers in a test or quiz.
 - b. Taking a test or quiz for someone else.
 - c. Having someone else take a test or quiz for you.
5. See student handbook for other regulations.
6. All Cheating incidents will be reported to the chair. The following activities are considered cheating:
 - a. Turning in assignment that includes parts of someone else work.
 - b. Turning in someone else assignment as your own.
 - c. Giving assignment to someone else to turn in as their own.

Instructor(s) information [معلومات الأستاذ]**Section:** 1**Lecture Room:** 5**Time:** 10:30-12:30 Mon
8:30-10:30 Wed**Instructor's Name:** *Dr. Mohammed Hashim Mohammed***E-Mail:** mohammed_hashim@uomustansiriyah.edu.iq**Office No.:** 1**Office Hours:** [8:30-10:00], [12:00-1:00] Sun, Tue.

Other office hours are available by appointment.

Important: The content of this syllabus may not be changed during the current semester.**Lecturer Signature****Chair Signature**



Ministry of Higher Education and Scientific Research
Mustansiriyah University/Faculty of Engineering /Department of Highway and
Transportation
Course Plan



Course No.: 506062032

Course Name: Application of AutoCAD

Time Division: 1hr. Theoretical, 2hr. Practical

Course Website: -

Semester & Year: 2nd, 2020 - 2021

Course Description

(3 credit hours)

The basic goal of this course is to learn the students how utilization the computer programs for drafting and design. So, this course consists of two parts; theoretical and practical depending on 2-dimensional drawings using AutoCAD.

Course Intended Outcomes

At the end of the course, students are expected to learn:

- Almost features of AutoCAD program.
- How to draw and print 2-dimensional maps accepted for engineering purposes.
- Using AutoCAD facilities to measure and find out areas or dimensions.
- Import and export maps and data among computer programs.

Course Outline

Week	Theoretical	Practical
1	Insert Attach and Block	Application
2	Annotation Objects	Application
3	Drawing with Coordinates	Application
4	Units	Application
5	Preparing sheet for planning	Application
6	Add-ins	Application
7		
8	Properties of Layers, Colors and line types	Application
9		
10		
11	Plotting and printing scale	Application
12		
13		
14	Use the AutoCAD in Highway and Transportation lessons.	Application
15		
Final Examination		

Textbooks

1. AutoCAD 2013, 3D Tutorials, Kristen S. Kurland.
2. Introduction to AutoCAD 2008 2D and 3D Design, Alf Yarwood.

Suggested References

1. Any Book or Exercise related to AutoCAD.

Marking

Quizzes	Exam	Practical	Final Examination
10	25	15	50

Regulations

1. There will be three quizzes and one term exam given during the semester. The best two out of three quizzes will be considered. However, the marks of the term exams are dependable.
2. Attendance is mandatory and University regulations will be enforced.
3. All Cheating incidents will be reported to the chair. The following activities are considered cheating:
 - a. Turning in assignment that includes parts of someone else work.
 - b. Turning in someone else assignment as your own.
 - c. Giving assignment to someone else to turn in as their own.
 - d. Copying answers in a test or quiz.
 - e. Taking a test or quiz for someone else.
 - f. Having someone else take a test or quiz for you.
4. See student handbook for other regulations.

Assignments and/or Projects:

1. There will be four assignments for drawing maps AutoCAD 2D given during the semester. The best three out of four assignments will be considered.

Instructor Information

Instructor's Name: Saif Khudhair Ali

E-Mail: saifkhudhair@gmail.com

Office No.:

Other office hours are available by appointment.

Important: The content of this syllabus may not be changed during the current semester.

Lecturer Signature

Chair Signature



Ministry Of Higher Education and Scientific Research

AL-Mustansiriayah University / Faculty of Engineering / Department of Highway and Transportation Engineering

(نموذج الخطة الدراسية للمساق)



Course Plan

Course No.: 506062042

Course Name: Engineering Surveying

Time Division:

2hr Theoretical , 1hr Tutorial , and 2hr Practical

Course Website: _

Semester & Year:

Second , 2020 / 2021

Course Description

Directions , Electronic Distance Measurement (EDM) , Total Station , Traversing , Horizontal and Vertical Curves , Photogrammetry and Remote Sensing , Global Positioning System (GPS) , Geographic Information System (GIS) , and Laser Scanning .

Course Intended Outcomes

At the end of the course, students are expected to learn:

- *basics of engineering surveying.*
- *types of surveying measurements : angles , distances , and coordinates.*
- *surveying instrumentations and modern surveying systems : Total Station , GPS , and GIS.*
- *photogrammetry and remote sensing science.*

Course Outline

Week	Class (Text Sec.)
1	Directions
2	Electronic Distance Measurement (EDM)
3	Total Station Instrument
4	Total Station Field Techniques
5	Traversing
6	Latitudes and Departures
7	Coordinates
8	Traverse Adjustment
9	Horizontal Curves
10	Vertical Curves
11	Aerial Photogrammetry
12	Remote sensing
13	Global Positioning System (GPS)
14	Geographic Information System (GIS)
15	Laser Scanning

Textbooks:

1. Barry F. Kavanagh , " Surveying , Principles and Applications " , Pearson Prentice Hall , United States of America , 2006 .

Suggested references

1. Arthur Bannister , Stanley Raymond and Raymond Baker , " Surveying " , Longman , London , 1998 .

2. Charles D. Ghilani and Paul R. Wolf , " Elementary Surveying , An Introduction to Geomatics " , Pearson Education Limited , Edinburgh Gate , Harlow , United States of America , 2011 .

Marking

Semester

Practical

Final Exam

Regulations:

1. There will be three term exams given during this semester. The best two out of three will be considered for the First & Second exam. This means there will NO makeup exams. Missing one of the two left exams means a ZERO grade will be given for that exam.
2. There is no markup for quizzes.
3. Attendance is mandatory and University regulations will be enforced.
4. All Cheating incidents will be reported to the chair. The following activities are considered cheating:
 - a. Turning in assignment that includes parts of someone else work.
 - b. Turning in someone else assignment as your own.
 - c. Giving assignment to someone else to turn in as their own.
 - d. Copying answers in a test or quiz.
 - e. Taking a test or quiz for someone else.
 - f. Having someone else take a test or quiz for you.
5. See student handbook for other regulations.

Assignment; and/or Projects

Assignment/Project	Description	Due Date	Marking
H.W.	Questions and problems	During the course	---
Quizzes	Two or more quizzes	During the course	---

Instructor(s) information

Section: - **Lecture Room: -** **Time: -**

Instructor's Name: wafaa khudier leabi **E-Mail:** -wleabi@gmail.com

Office No.:

Office Hours: Other office hours are available by appointment.

Important: The content of this syllabus may not be changed during the current semester.

Lecturer Signature

wafaa khudier leabi

Chair Signature



Ministry Of Higher Education and Scientific Research

AL-Mustansiriayah University/College of Engineering/Department of Highway Transportation

(الخطة الدراسية للمساق)

Course Plan

Course No.: 506062052

Course Name: Fluid Mechanics Applications

Academic Year: 2020-2021

Time Division: 2hrs. Theoretical-2 hrs practical.

Course Description

It is a course to teach the applications in fluid mechanics (gases and liquids), fluid in dynamic. Also it is study energy and Bernoulli equations. It is study flow of fluid in pipelines and open channels.

Course Intended Outcomes:

At the end of the course, students are expected to learn:

The basic principles of fluid mechanics and solving numerous application in field of fluid transport system, chemical processing operation, fluid power, fluid generation, transportation, open channel flow. Throughout the lectures, the student will understand the concepts and be able to use the equations properly for problem solving. Understanding concepts allows the student to have reasonable expectation of how fluid system should behave.

Course Outline:

Week	Description depends on the Timing table(Theoretical & Practical)
	Second course
1	Fluids in motion (Continuity & Bernoulli's equations)
2	Fluids in motion (Continuity & Bernoulli's equations)
3	Forces due to change in fluid motion+quiz
4+5	Flow in pipeline (pressure, velocity, head)
6+7	Methods for connecting the pipelines
8	Water Pipeline connecting under roads

9	The drainage system types in the world(ganaral)
10	Open channel flow principles
11	Classification of channels at roads
12	Monthly exam
13	Reports discussion
14+15	Final exam+ holydays

Textbooks:

Fluid mechanics
 Victor L. Streeter
 E.Benjamin Wylie
 7th edition ,Mc Graw Hill, 1979.

Suggested references:

Fluid Mechanics with Applications
 ANTHONY ESPOSITO
 Prentice Hall-1998

Marking:

During the course				Final exam
quiz	Monthly exam	practical	report	50
10	20	15	5	

Instructor information:

Instructor's Name: Asst. prof.. Nidaa Adil Jasem Office No.: 5 **e-mail**
:eng.nidaa.adel@gmail.com

NOTES:

- *Office Hours: Other office hours are available by appointment.*
- *The content of this syllabus not be changed during the current semester.*

Lecturer Signature

Chairman Signature



Ministry of Higher Education and Scientific Research

Mustansiriyah University / Faculty of Engineering /
Department of Highway and Transportation



(نموذج الخطة الدراسية للمساق)

Course Plan

Course No.: 506062062

Course Name: Asphalt Mixture Design

Time Division:

2^{hr}. Theoretical 2^{hr}. Practical

Course Website: -

Semester & Year:

second and second , 2020/2021

Course Description [وصف المساق]

To introduce students to the principles of bituminous mixture design for road pavement applications. Materials selection and performance characterization procedures will be addressed. The course will include a discussion on the analytical and experimental methods used to characterize basic mechanical properties and performance of bituminous materials. The course will also include a discussion on the newer generation of asphalt mixtures geared towards environmental stewardship and sustainable development initiatives

Course Intended Outcomes [المخرجات المتوقعة من المساق]

At the end of the course, students are expected to learn:

- Ability to understand the properties of bituminous material and hot mix asphalt
- Ability to perform bitumen and hot mix asphalt testing
- Ability to perform asphalt mix design

Course Outline

week	Topics Covered (Wednesday)
1-2	Requirements for Asphalt Mixtures
3-5	Asphalt Mixture Volumetric Q_1
6-7	Mix Design Methods (according to Marshall Method)
8-9	Superpave Mix Design and Superpave Gyrotory Compacter
10-11	Warm Mixture Asphalt (WMA) and Cold Mix Asphalt Q_2
12	Production of HMA (Manufactures)
13	Transportation of Mixture:-
14	Placing of Paving Mixture; Compaction Q_3
15	Second Term Exam

Textbooks: [الكتاب المنهجي]

1. Hot-mix Asphalt Materials, Mixture Design and Construction by F.L. Roberts, P. S. Kandhal, E.R. Brown, D-Y. Lee and T. W. Kennedy, 2nd Edition, NAPA Research and Education Foundation, Lanham, MD, 1996.
2. Introduction to Asphalt by Asphalt institute 2007 .(MS-5)
3. Shell handbook (2015).
4. ASTM, BS specification (2015) and SCRB (Iraq specification 2010).

Suggested references: [المراجع المساعدة للمنهج]

- Traffic and Highway Engineering by Garber and Hoel; 2010
- Introduction to Asphalt by Asphalt institute 2007. (MS-5)

Marking [توزيع الدرجات]

(First semester) : Month exams and quiz and H.W.	10 marks	semester Exam	15 marks
(Second semester) : Month exams and quiz and H.W.	10 marks	semester Exam	15 marks
		Final Exam	50 marks

Regulations: [الظوابط والأنظمة]

1. There will be three term exams given during this semester. The best two out of three will be considered for the First & Second exam. This means there will NO makeup exams. Missing one of the two left exams means a ZERO grade will be given for that exam.
2. There is no markup for quizzes.
3. Attendance is mandatory and University regulations will be enforced.
 - a. Copying answers in a test or quiz.
 - b. Taking a test or quiz for someone else.
 - c. Having someone else take a test or quiz for you.
4. See student handbook for other regulations.
5. All Cheating incidents will be reported to the chair. The following activities are considered cheating:
 - a. Turning in assignment that includes parts of someone else work.
 - b. Turning in someone else assignment as your own.
 - c. Giving assignment to someone else to turn in as their own.

Instructor(s) information: [معلومات الأستاذ]

Section: 1 **Lecture Room:** 9 , 11 **Time:** 8:30-2:30 Wen

Instructor's Name: Assist. Prof.Dr. Abdulhaq Hadi Abed Ali **E-Mail:**
abdulhaq_alhaddad@yahoo.com

Office No.: 2

Lecturer Sady Abd Tayh

E-Mail: Saabta75@yahoo.com

Office Hours: [8-2:30], head office every day

Other office hours are available by appointment.

Important: The content of this syllabus may not be changed during the current semester.

Lecturer Signature

Chair Signature



Ministry Of Higher Education and Scientific Research

Mustansiriyah University / Faculty of Engineering / Department of Highway and Transportation Engineering

(نموذج الخطة الدراسية للمساق)



Course Plan

Course No.: 506062072

Course Name: Environmental of Highway Engineering

Course Website: _

Time Division:

2hr Theoretical

Semester & Year:

Second , 2020 / 2021

Course Description

Attention is drawn to the need for increased levels of care and attention in the teaching of environmental engineering .

Course Intended Outcomes

At the end of the course, students are expected to learn:

- Understand the effect of highway construction at environmental

Course Outline

	Subject Title	Hours
1	Chapter one : Air pollution	
1-1	Introduction	1
1-2	Concept of environment and Environment engineering (Pollution and environment)	
1-3	The Atmosphere	
1-4	The air pollution	2
1-4-1	Source of air pollution	
1-4-2	Types of air pollution	3
1-4-3	The relation between traffic and air pollution	
1-4-4	The rotation of motor vehicles and pollution emission	
1-5	Effect of climate elements on air pollution	4
2	Chapter two: Noise pollution	
2-1	Introduction	5,6
2-2	Concept of noise pollution	
2-3	Nature of Noise	
2-4	Effects of noise on people	7
2-5	Source of noise	
2-6	Basic principles of noise control	8,9
2-7	Road traffic noise and its control	
2-8	Aircraft and airport noise	
	Examination	10
3	Chapter three: Sustainable Environment	
3-1	Introduction	11,12
3-2	Concept of sustainable environment & sustainable transportation	
3-3	Benefit of roadside plantings	
3-4	Guidelines for planting within highway right-of-way	13
3-5	The way of planting trees in Arabian highway countries.	14
	Examination	15

Textbook:

1- Noise pollution , Dr. Aradhanna Salpekar, New Delhi,2008

Suggested references:

1- Guidelines for planting within highway right -of-way ,North Carolina of transportation ,march 2016.

2-Guid to sustainable transportation performance measures , united states environmental protection Agency ,August , 2011.

Marking

First Exam	15 marks	Second Exam	15 marks		
QUIZ	5 marks	QUIZ	5 marks	Final Exam	60 marks

Regulations:

1. There will be three term exams given during this semester. The best two out of three will be considered for the First & Second exam. This means there will NO makeup exams. Missing one of the two left exams means a ZERO grade will be given for that exam.
2. There is no markup for quizzes.
3. Attendance is mandatory and University regulations will be enforced.
4. All Cheating incidents will be reported to the chair. The following activities are considered cheating:
 - a. Turning in assignment that includes parts of someone else work.
 - b. Turning in someone else assignment as your own.
 - c. Giving assignment to someone else to turn in as their own.
 - d. Copying answers in a test or quiz.
 - e. Taking a test or quiz for someone else.
 - f. Having someone else take a test or quiz for you.
5. See student handbook for other regulations.

Assignments and/or Projects

Assignment/Project	Description	Due Date	Marking
H.W.	Questions and problems	During the course	---
Quizzes	Two or more quizzes	During the course	---

Instructor(s) information

Section: - **Lecture Room: -** **Time: -**

Instructor's Name: Dr. Nahla H. Jawad

E-Mail: nahlahafidh@yahoo.com

Office No.: - **No.:** H 5.

Office Hours: Other office hours are available by appointment.

Important: The content of this syllabus may not be changed during the current semester.

Lecturer Signature

Chair Signature



Ministry Of Higher Education and Scientific Research
Mustansiriyah University/Faculty of Engineering /Highway and Transportation Department
(الخطة الدراسية للمساق)
COURSE PLAN



Course No.:506062082

Course Name:Concrete Mixture Technology

Academic Year: 2020-2021

Time Division: 1hr. Theoretical 2hr. Practical.

Course Description

(3 credit hours)

Attention is drawn to the need for increased levels of care and attention in the teaching of **Concrete technology. This course will be cover the:** Identify the methods used in the production of cement and of the main compounds for cement and hydration process. Portland cement, types, characteristics, and uses of each type. Tests of Cement, Coarse Aggregate and Fine Aggregate. Preview devices and laboratory equipment used in the concrete experiences and the methods used for testing and how to prepare inspection reports. DURABILITY OF CONCRETE.

Course Intended Outcomes:

At the end of the course, students are expected to learn:

- Understand the compound of concrete and the specifications of its materials.
- Understand what is Mix Design & Explain in detail the various factors governing the selection of mix proportion,
- Understand the Laboratory Tests of Cement, Coarse Aggregate and Fine Aggregate.
- Understand the Laboratory Tests of Concrete in Fresh and Hard state.
- Understand the DURABILITY OF CONCRETE.

Course Outline: Concrete Mixture Technology

Week	Description depends on the Timing table(Theoretical & Practical)
1	Fresh properties , introduction ,factors affecting workability
2	Measurements of workability
3	Test of fresh concrete ,Bleeding
4	Properties of hardened concrete , curing of concrete
5	Compressive strength of concrete , tensile of concrete ,flexural strength tests
6	Splitting tension test , modulus of elasticity , poison ratio
7	<i>First Exam + Review of Exam</i>
8	Drying shrinkage , creep, Water permeability,
9	Concrete mix design, specification
10	Examples of concrete mix design
11	Admixtures ,
12	Types of concrete
13	<i>Second Exam + Review of Exam</i>
	FINAL EXAM Durations

Textbooks:

1. A.M. Neville, "*Properties of concrete*", 2nd Edition, 2010.

Suggested references:

2. John Newman, B S Choo, "*Advanced Concrete Technology*", 04 Dec 2003.
- 3- 1. Shiv Kumar , "*CONCRETE TECHNOLOGY*", Indian Railways Institute of civil engineering ,2007

Marking:

First Semester			Second Semester			Final Exam
1st exam	2nd exam	Practical	1st exam	2nd exam	Practical	Test
5	10	10	5	10	10	50

Instructor information:

Lecture Room: [Group A: 9, Group B:10]Time: Wednesday. A-8:30-10:30, B-12:30-2:30

Thursday .A-8:30-9:30, B-12:30-1:30.

Instructor's Name: Dr. Zainab Mohammed Ali

E-Mail:zainab_ali365@yahoo.com

NOTES:

- Office Hours: Other office hours are available by appointment.*
- The content of this syllabus not be changed during the current semester.*

Lecturer Signature Chairman Signature



Ministry Of Higher Education and Scientific Research

Mustansiriyah University/Faculty of Engineering /Department

(نموذج الخطة الدراسية للمساق)

Course Plan

ملاحظة: يمكن اعتماد نفس الخطة باللغة العربية مع مراعاة وجود نفس الفترات ادناه

Course No.: 506062092

Course Name: ديمقراطية

Course Website: ٢

Time Division:

الصف الثاني

Semester & Year:

First , 2020-2021

Course Description [وصف المساق]

(2 credit hours, Prerequisite [المتطلب السابق] No. and Name)

تتضمن مادة حقوق الانسان فهم الطالب لهذه المادة والحقوق الاساسية والمفيدة التي من شأنها دعم حرية وحقوق وكرامة الانسان منها حق الحياة وحق العمل والتعليم والتعبير والعمل والمساواة. حيث تتضمن المحاضرات دروس نظرية مع اشارة الى المصادر المهمة والمقالات والمتغيرات ضمن الاعراف والقانون الدولي والمعاهدات والتفقيات الدولية.

Course Intended Outcomes [المخرجات المتوقعة من المساق]

At the end of the course, students are expected to learn:

- يفهم الطالب حقوق الانسان وتعزيز مكانة الانسان لدى المواطن ومنها حق الحياة والعمل والتعليم والتعبير والصحة والتعامل بروح الاخوة والمساواة بين الطلبة واحترام الكادر التدريسي. تجعل هذه الحقوق عاملا مشتركا يساهم في الحياة العامة.

Course Outline

Week	Sunday Class (Text Sec.)
1	تعريف الديمقراطية وانواعها
2	خصائص ومميزات الديمقراطية
3	الديمقراطية في الحضارات
4	الديمقراطية في العراق القديم
5	الديمقراطية والمجتمع المدني
6	الديمقراطية والمواطنة
7	الديمقراطية والاحزاب
8	الانتخابات والديمقراطية
9	الصحافة والديمقراطية
10	جماعات الضغط
11	الاسلام والديمقراطية
12	الديمقراطية السياسية والاجتماعية
13	كيفية محاربة الارهاب فكريا واعلاميا
14	مفاهيم لها تاثير في العملية الديمقراطية مثل العنف والازمة والصراع
15	امتحان

Textbooks: [الكتاب المنهجي]

حقوق الانسان والديمقراطية – عزيز صالح – ٢٠٠٤ – بغداد

Suggested references [المراجع المساعدة للمنهج]

حقوق الانسان الحديثة - ٢٠٠٦

Marking [توزيع الدرجات]

First Exam	10 marks	Second Exam	10 marks
Activity	10 marks	Final Exam	70 marks

Regulations [الظوابط والأنظمة]

1. There will be three term exams given during this semester. The best two out of three will be considered for the First & Second exam. This means there will NO makeup exams. Missing one of the two left exams means a ZERO grade will be given for that exam.
2. There is no markup for quizzes.
3. Attendance is mandatory and University regulations will be enforced.
4. All Cheating incidents will be reported to the chair. The following activities are considered cheating:
 - a. Turning in assignment that includes parts of someone else work.
 - b. Turning in someone else assignment as your own.
 - c. Giving assignment to someone else to turn in as their own.
 - d. Copying answers in a test or quiz.
 - e. Taking a test or quiz for someone else.
 - f. Having someone else take a test or quiz for you.
5. See student handbook for other regulations.

Assignments and/or Projects [الواجبات والمشاريع]

Assignment/Project	Description	Due Date	Marking
H.W. 1	حقوق الانسان	During the course	2 Marks
H.W. 2	الديمقراطية	During the course	2 Marks
Quizzes	Two or more quizzes	During the course	6 Marks

Instructor(s) information [معلومات الأستاذ]**Section:** 1 **Lecture Room:** MA6 **Time:** 10:30-12:30 Tue &The**Instructor's Name:** المدرس محمد سلمان صالح **E-Mail:** mr.mohammed89@yahoo.com **Office No.:** -**Office Hours:** [8-9:30], [11-12], [1:30-2] All days

Other office hours are available by appointment.

Important: The content of this syllabus may not be changed during the current semester.**Lecturer Signature**

المدرس محمد سلمان صالح

Chair Signature

Third Year

2020-2021

Semester System



Ministry Of Higher Education and Scientific Research
AL-Mustansiriyah University/College of Engineering/Department of Highway and
Transportation
(الخطة الدراسية للمساق)
Course Plan



Course No.: 506063011
Academic Year: 2020-2021

Course Name: Numerical Analysis
Time Division: 4hr. Theoretical

Ministry Of Higher Education and Scientific Research
AL-Mustansiriyah University/Faculty of Engineering/Department of Highway and Transportation
(الخطة الدراسية للمساق)
Course Plan

Course No.: 506063011 Course Name: Engineering Analysis & Numerical
Methods\

Academic Year: 2019-2020 Time Division: 4hr. Theoretical

Course Description This course will present the introduction numerical
methods to address the system of linear equations and how to use them
in engineering applications.

Course Intended Outcomes:

At the end of the course, students are expected to learn:

- Understand the Numerical methods (Gaussian elimination) and (direct methods)
- Understand the Numerical methods (iteration method) and (Gauss- Jordan elimination) and Eigen value and Eigen vector.
- Understand the Finite difference method (diff. of a function) with Applications (Beams).
- Understand the Lagrange's interpolation formula and Polynomial interpolation formula.
- Understand the Solution of higher-order problems by central difference and Applications (Moment and the shear at point).
- Understand the Newton's divided difference formula and Gregory- Newton's divided difference formula.
- Understand the Numerical solution of Partial differential equations & Applications (slab plate)

Course Outline:

Second course:

Week	Description depends on the Timing table(Theoretical & Practical)
1	Numerical methods (Gaussian elimination) and (direct methods)
2	Numerical methods (iteration method) and (Gauss- Jordan elimination) and Eigen value and Eigen vector
3	Finite difference method (diff. of a function) with Applications (Beams)
4	Lagrange's interpolation formula and Polynomial interpolation formula
5	Solution of higher-order problems by central difference
6	Applications (Moment and the shear at point)
7	
8	
9	Newton's divided difference formula
10	
11	Gregory- Newton's divided difference formula
12	Numerical solution of Partial differential equations

13	
14	Applications (slab plate)
15	Exam

Textbooks:

1. Advanced Engineering Mathematics (by C.R. Wylie)

Suggested references:

1. **Text book:** Advanced Engineering Mathematics (by C.R. Wylie)

2. Numerical Method in Engineering (by Al. Khafaji)

3. Numerical Method (by Berdun)

Marking:

First Exam 15 marks

Second Exam 15 marks

Activity 10 marks

Final Exam 60 marks

regulations: [الظوابط والأنظمة]

- There will be three term exams given during this semester. The best two out of three will be considered for the First & Second exam. This means there will NO makeup exams. Missing one of the two left exams means a ZERO grade will be given for that exam.
- There is no markup for quizzes.
- Attendance is mandatory and University regulations will be enforced.
- All Cheating incidents will be reported to the chair. The following activities are considered cheating:
 - Turning in assignment that includes parts of someone else work.
 - Turning in someone else assignment as your own.
 - Giving assignment to someone else to turn in as their own.
 - Copying answers in a test or quiz.
 - Taking a test or quiz for someone else.
 - Having someone else take a test or quiz for you.
- See student handbook for other regulations.

Assignments and/or Projects:

Assignment/Project	Description	Due Date	Marking
<u>H.W</u>	<u>Solving exercises</u>	<u>During the course</u>	10Marks
<u>Quizzes</u>	<u>Two or more</u>	<u>During the course</u>	10Marks
<u>Project</u>	<u>Course project</u>	:	5 Marks

Instructor information:

Lecture Room: [Group, Group] Time:

Instructor's Name: Assist. Prof. EsraaKh. Muhsen

Office No.: E-Mail: esraa.khudair@gmail.com

Office Hours:

NOTES:

- Office Hours: Other office hours are available by appointment.*

The content of this syllabus not be changed during the current semester.

Important: The content of this syllabus may not be changed during the current semester.

Lecturer Signature

Chair Signature



Ministry Of Higher Education and Scientific Research
Mustansiriyah University/Collage of Engineering /Department of Highways and
Transportation Engineering
(الخطة الدراسية للمساق)
Course Plan



Course No.: **506063021**

Course Name: **Principles of Soil Mechanics**

Academic Year: 2020-2021 Time Division: 3hr. Theoretical 1hr Tutorial 2hr.

Practical.

Course Description

(6 credit hours)

Attention is drawn to the need for increased levels of care and attention in the teaching of basic programming. ***This course will be cover the:*** The branch of Highway and Transportation Engineering that deals with the properties of soils and rocks and their capability of supporting structures placed on or under them. Soil Mechanics is the branch of science that deals with the study of the physical properties of soil and the behavior of the principles of soil mechanics to practical problems. Thus, soil classification (USCS) and (AASHTO) will be presented, as well as in how manner the stress transfer and calculated within the soil mass are also achieved.

Course Intended Outcomes:

At the end of the course, students are expected to learn:

- Understand the basics of Soil Mechanics.
- Understand the behavior of subgrade after compaction.
- Understand the in how manner the stress transfer and calculated within the soil mass.
- Understand the Object-oriented towards Highways Geotechniques.

Course Outline:

Theoretical + Tutorial	
week	Topics Covered
1-2	Introduction, definition, Texture of Soil Particles, Description of an individual Soil Particle, Soil Formation
3	Plasticity Chart, Atterberg Limits, Liquidity index
4-5	Weight-Volume Relationship, Physical relationship
6-9	Stress in soil, Concept of effective stress in soil, Transfer stresses through soil
10	Mid-semester exam+ <i>review of exam</i>
11-12	One Dimensional Fluid Flow ,Permeability and seepage
13-15	Two Dimensional Fluid Flow, Flow through Embankments and Dams
16	<i>Final Semester Exam</i>

Practical (Soil Lab.)	
week	Topics Covered
1-2	Water content determination
3-4	Specific gravity determination
5-6	Atterberg limits
7-8	Sieve analysis
9	Exam
10-11	Hydrometer analysis
12-13	Permeability test
14	Exam

Textbooks:

1. Lambe, T. W., and Whitman, R. V. (1979) Soil Mechanics. Wiley, New York.
2. Mitchell, J. K. (1993) Fundamentals of soil behavior, 2nd edition. Wiley, New York

Suggested references:

1. *Soil Mechanics* by R.F.Craig, Inc., 2010.
2. Introduction to Geotechnical Engineering By Braja M. Das, 2009.

Marking:

Semester			Final Exam
HW & Quizzes	exam	Practical	50
10	20	20	

Assignments and/or Projects:

Assignment/Project	Description	Due Date	Marking
Case study	There are 3 case study in the semester	During the course	Including the Exam.

Instructor information:

Lecture Room: [3rd Floor ,Class T 3& T4] Time: Mon., 8:30-10:30/ 10:30-12:30

Instructor's Name: Dr. Yasir Moula Al-Badran

Room No.: 2 / E-Mail: yasiralbadran@gmail.com

NOTES:

- Office Hours: Other office hours are available by appointment.*
- The content of this syllabus may change during the current semester.*

Lecturer Signature Chairman Signature



(نموذج الخطة الدراسية للمساق)

Course Plan

Course No.: 506063031

Course Name: Pavement Structural Analysis

Time Division:

2hr Theoretical 1hr. Tutorial

Course Website: ---

Semester & Year:

First , 2020/ 2021

Course Description [وصف المساق]

(4 credit hours)

Pavement types and design factors; stresses and strains in flexible and rigid pavements; Solutions at Axis of Symmetry; Nonlinear Mass/ Approximate Method (Layered System); Two- Layer System; Three- Layer Systems Stress and Deflections Due to Loading; Effect of Volume Change on Concrete; Steel Stress and Design of Dowels and Joints.

Course Intended Outcomes [المخرجات المتوقعة من المساق]

At the end of the course, students are expected to learn:

- Understand the stresses and strains in flexible and rigid pavements.
- Ability to understand the analysis methods.

Course Outline

Week	Sunday Class (Text Sec.)	Thirsday Class (Text Sec.)
1	Pavement Types (Flexible and Rigid Pavement)	Stresses in Flexible Pavements(Solutions by Charts)
2	Strains in Flexible Pavements(Solutions by Charts)	Solutions at Axis of Symmetry
3	Nonlinear Mass	Approximate Method(Layered System)
4	Approximate Method(Layered System)	Two-Layer System
5	Two- Layer System	Examples
6	Three- Layer Systems	Examples
7	First Exam	Stresses in Rigid Pavements(Solutions by Charts)
8	Strains in Rigid Pavements(Solutions by Charts)	Stresses Due to Vehicle Loading
9	Stresses Due to Curling	Stresses Due to Friction
10	Stress and Deflections Due to Loading	Stress and Deflections Due to Loading
11	Stress and Deflections Due to Loading	Quiz
12	Effect of Volume Change on Concrete	Examples
13	Steel Stress	Examples
14	Design of Dowels and Joints	Design of Dowels and Joints
15		Final Exam

Textbooks: [الكتاب المنهجي]

1. Traffic and Highway Engineering, Nicholas J. Garber and Lester A. Hoel, Fourth Edition, USA, 2010.

Suggested references: [المراجع المساعدة للمنهج]

1. Pavement Analysis and Design (2nd Edition) [Yang H. Huang], USA, 2004
2. AASHTO Guide for Design of Pavement Structures, 4th Edition, ١٩٩٣ .

Marking [توزيع الدرجات]

First Exam	15 marks	Second Exam	15 marks	Final Exam	60 marks
QUIZE	5 marks	QUIZE	5 marks		

Regulations [الظوابط والأنظمة]

1. There will be three term exams given during this semester. The best two out of three will be considered for the First & Second exam. This means there will NO makeup exams. Missing one of the two left exams means a ZERO grade will be given for that exam.
2. There is no markup for quizzes.
3. Attendance is mandatory and University regulations will be enforced.
4. All Cheating incidents will be reported to the chair. The following activities are considered cheating:
 - a. Turning in assignment that includes parts of someone else work.
 - b. Turning in someone else assignment as your own.
 - c. Giving assignment to someone else to turn in as their own.
 - d. Copying answers in a test or quiz.
 - e. Taking a test or quiz for someone else.
 - f. Having someone else take a test or quiz for you.
5. See student handbook for other regulations.

Assignments and/or Projects [الواجبات والمشاريع]

Assignment/Project	Description	Due Date	Marking
Quizzes	Two or more quizzes	During the course	5Marks

Instructor(s) information [معلومات الأستاذ]

Section: 1 **Lecture Room:** 1 **Time:** :

Instructor's Name: Dr. Rana A. Yousif

Office No.:

E-Mail: ranaratna1976@gmail.com / eng.ranaa.y@umostansiriyah.edu.iq

Office Hours: Other office hours are available by appointment.

Important: The content of this syllabus may not be changed during the current semester.

Lecturer Signature

Chair Signature



Ministry Of Higher Education and Scientific Research

AL-Mustansiriyah University

Collage of Engineering/Department of Highway and Transportation Engineering

(الخطة الدراسية للمساق)

Course Plan



Course No.: 506063041

Course Name: Airport Engineering

Course Website: Not Available

Time Division:

2hrs Theoretical 1hrs Practical

Semester & Year:

Third , 2020-2021

Course Description:

(3 credit hours)

This course will be cover the Airport Engineering theory, classification, Geometric design, Structural design, planning, capacity, drainage, And practical applications. Airport engineering involves design and construction of a wide variety of facilities for the landing, takeoff, movement on the ground, and parking of aircraft, maintenance and repair of aircraft, fuel storage, and handling of passengers, baggage, and freight.

Course Intended Outcomes:

At the end of the course, students are expected to learn:

1. Understand the Airports classification according to (Community size and airport types),
2. Understand the Aircraft Characteristics that affect the airport design,
3. Understand the Airport planning according to (size and type of airport),
4. Understand the Airport Geometric design and airfield structural design.

1.

Course Outline

Week	Description of Topics
1	Introduction to Airport Engineering
2	Airport Classification:
3	(Community size and airport types, Airport classification according to types of services, Functional classification of airports, airport classification for the purpose of stipulating geometric standards).
4	Aircraft Characterizes: Related to airport design characterizes of principle transport aircrafts , Gear configuration, Static weight on main gears and nose gear, Trends size, speed and productivity of transport aircraft, Turning Radii
5	Airport Planning:
6	(Size and type of airport, Selection of site for the airport, Analytical methods for air travel demand for casting).
7	First Exam
8	Geometric design:
9	(Element of an airport, runway and taxi way width, Runway profile and runway length, Runway orientation).
10	Airport capacity: (Ultimate and Practical runway capacity, Runway arrangement factors effecting runway capacity, Practical annual capacity and practical hourly capacity).
11	Airport Drainage System.

Week	Description of Topics
12 13	Airfield Pavements: (Rigid pavement & Flexible pavement): (Highway and airfield Pavements compared, Design of rigid airport pavements, Methods of rigid airport pavement, Junction of flexible and rigid pavements, Application, Design of Flexible airport pavement).
14	Second Exam
15	Airport Marking and Lightening
16	FINAL EXAM Durations

Textbooks:

1. *Text book: Planning and Design of Airports*, by Horonjeff, R. and Mc-Kelvey, X. 2011.
2. *Airport Engineering*, by Ashford, N., and P. H. Wright. 2010.

Suggested references:

1. *Supplementary reading & References: International Civil Aviation Organization (ICAO). International Standards and Recommended Practices, Aerodromes, Annex 14,*

Marking:

First Exam 15 marks Second Exam 15 marks
Activity 10 marks Final Exam 60 marks

Regulations:

1. There will be three term exams given during each semester. The best two out of three will be considered for the First & Second exam. Missing one of the two left exams means a ZERO grade will be given for that exam.
2. There will be three to four quizzes for each semester.
3. Attendance is mandatory and University regulations will be enforced.
4. All Cheating incidents will be reported to the chair. The following activities are considered cheating:
 - a. Turning in assignment that includes parts of someone else work.
 - b. Turning in someone else assignment as your own.
 - c. Giving assignment to someone else to turn in as their own.
 - d. Copying answers in a test or quiz.
 - e. Taking a test or quiz for someone else.
 - f. Having someone else take a test or quiz for you.
5. See student handbook for other regulations

Assignments and/or Projects:

Assignment/Project	Description	Due Date	Marking
H.W.	Case study1 report	Deadline 21 st Dec	5 Marks
Quizzes	Two quiz during each semester	During the course	2.5Marks each

Instructor(s) information:

Section: A, B and C **Lecture Room:** T3, T4, T5 **Time:** 8:00-10:00, 12:00-2:00, 10:00-11:00, 12:00-1:00

Instructor's Name: Dr. Gofran J. Qasim **E-Mail:** gofranqasim@gmail.com

Office No.: 5

Office Hours: Office hours are available by appointment.

Important: The content of this syllabus may not be changed during the current semester.

Lecturer's Signature **Chair's Signature**



(الخطة الدراسية للمساق)

Course Plan

Course No.: 506063051

Course Name: Principle of Structural Analysis

Time Division: 2hrs Theoretical

Semester & Year: First , 2020 /2021

Course Website: -----

Course Description [وصف المساق]

Theoretical study that deals with learning the methods used to analysis and design of reinforced concrete structures.

Course Intended Outcomes [المخرجات المتوقعة من المساق]

At the end of the course, students are expected to learn:

- Analysis and design of singly reinforced concrete beam rectangular section
- Analysis and design of doubly reinforced concrete beam rectangular section
- Analysis and design of reinforced concrete beam(T-section)
- Analysis and design of shear reinforcement of reinforced concrete beam.
- Analysis and design of reinforced concrete one way slab.
- Analysis and design of reinforced concrete short column.

Course Outline

Week	Tuesday Class (Text Sec.)
1	Introduction
2	flexural behavior of beams Elastic stresses:
3	1-uncracked section
4	2- cracked section
5	Examples
6	Ultimate strength method
7	Singly reinforced rectangular section
8	under-over – balance reinforced beam
9	Examples (analysis)
10	Examples (design)
11	over-reinforced beam
12	<i>First Exam + Review of Exam</i>
13	Examples
14	Doubly reinforced rectangular section
15	Examples (analysis)
16	Examples (design)
17	T- section beam
18	<i>Second Exam + Review of Exam</i>
19	Examples (analysis)
20	Examples (design)
21	Shear and diagonal tension



Ministry Of Higher Education and Scientific Research
AL-Mustansiriyah University
Collage of Engineering/Department of Highway and Transportation Engineering
(الخطة الدراسية للمساق)
Course Plan



Course No.: 506063061

Course Name: Highway Construction Management

Academic Year: 2020-2021

Time Division: 2hrs. Theoretical, 1 hr. Tutorial

Course Description

(3 credit hours)

Construction project management is essential subject for the management of highway and transportation projects. ***This course will covers:*** • Basics of project time scheduling techniques, • Common project time scheduling methods and techniques, and • Resource allocation and scheduling.

Course Intended Outcomes:

At the end of the course, students are expected to learn:

- How to apply project time scheduling using different techniques.*
- How to plan and schedule project resources,*
- How to make economic studies and comparisons among alternatives,*
- How to optimize (minimize cost or maximize profit) of Transportation and Assignment problems using Linear Programming Techniques.*

Course Outline:

Week	Description of Topics
1	Introduction about Project Planning
2	Bar Chart technique
3	Network Analysis: Activity on Arrow (AOA)for highway and railway projects
4	Network Analysis: Critical Path Method (CPM)for highway and railway projects
5	Examples on CPM method
6	Network Analysis: Program Evaluation and Review Technique (PERT)) for highway and railway projects
7	Examples on PERT technique
8	Network Analysis: Activity on Node (AON)) for highway and railway projects
9	Examples on (AON) technique
10	Line of Balance (LOB) method) for highway and railway projects
11	Examples on (LOB) method
12	Resource allocation and leveling) for highway and railway projects
13	Examples on resource leveling techniques
14	Introduction about using computers for Project Planning
15	Applying project planning examples by using MS Project program

Textbooks:

1. Pilcher, Roy, "Principles of Construction Management", McGraw Hill, 1976.
2. Degarmo et al., "Engineering Economy", 8th Ed., McMillan, 1989.

Suggested References:

1. Lester, E.A., "Project Planning and Control", 4th Ed., Elsevier Ltd., 2003.
2. March, Chris, "Finance and Control for Construction", Taylor & Francis Group, 2009.

Marking:

First Semester			Final Exam
Exams	Quizzes	HW	Test
10	5	5	60

Assignments and/or Projects:

Assignment/Project	Description	Due Date	Marking
Home-works	There is 1 HW within the semester, for project time scheduling	During the course	1 x 5

Instructor information:

Lecture Room:

Days and Time:

Instructor's Name: Asst. Prof. Dr. Ali Jabbar Kadhim Office No.: 4 E-Mail: draliJabbar@yahoo.com

NOTES:

- Office Hours: Other office hours are available by appointment.*
- The content of this syllabus is not to be changed during the current semester.*

Lecturer Signature Chairman Signature



Course Plan

Course No.: 506063071

Course Name: Principles of Traffic Engineering **Time Division:** 2hr Theoretical and 2hr Practical

Course Website: <https://uomustansiriyah.edu.iq/e-learn/profile.php?id=2766> **Semester & Year** 2020-2021

Course Description

(2 credit hours)

The purpose of this course is to provide students with an overview of the fundamentals of traffic engineering, with emphasis on traffic studies, which include volume study; spot speed study; travel time and delay study; parking study; pedestrian study. Also To introduce fundamental knowledge of traffic flow modeling and so that the students can understand and be able to deal with traffic issues and Identify traffic stream characteristics.

Course Intended Outcomes

At the end of the course, students are expected to learn:

- Understand the traffic volume study
- Understand the spot speed study.
- Understand the travel time and delays.
- Understand the parking study analysis and design.
- Understand the pedestrian Characteristics .
- Understand the fundamental characteristics of traffic flow models.
- Understand the space time trajectories.

Course Outline

Week	Sunday Class (Text Sec.)
1	Introduction
2	Traffic Volume Study
3	Traffic Volume Study
4	Spot Speed Study
5	Spot Speed Study
6	Travel Time and Delay Studies
7	Travel Time and Delay Studies
8	Parking Study
9	Parking Study
10	Exam
11	Pedestrian Studies
12	Pedestrian Studies
13	Traffic Flow Fundamentals
14	Traffic Flow Fundamentals

Textbooks:

- Nicholas J. Garber, Lester A. Hoel, (2010) Traffic and Highway Engineering, 4th ed.

Suggested References:

- [Roger P. Roess](#), [William R. McShane](#), (2004), update copy (2016) Traffic Engineering (4th Edition).
- [Highway Capacity Manual, \(HCM, 2010\).](#)
- **Traffic Engineering Handbook: Institute of Transportation Engineers, Seventh Editions (2016).**

- **Marking:**

First course 50 %			Final exam
Quiz and project assignment	Exam	Practical	50 %
20	20	10	

Regulations:

1. There will be three term exams given during this semester. The best two out of three will be considered for the First & Second exam. This means there will NO makeup exams. Missing one of the two left exams means a ZERO grade will be given for that exam.
2. There is no makeup for quizzes.
3. Attendance is mandatory and University regulations will be enforced.
4. All Cheating incidents will be reported to the chair. The following activities are considered cheating:
 - a. Turning in assignment that includes parts of someone else work.
 - b. Turning in someone else assignment as your own.
 - c. Giving assignment to someone else to turn in as their own.
 - d. Copying answers in a test or quiz.
 - e. Taking a test or quiz for someone else.
 - f. Having someone else take a test or quiz for you.
5. See student handbook for other regulations.

Instructor information:

Lecture Room: T3, T1

Time: Tuesday/ Theo. 10:00-12:00 , 12:00-2:00
 Sunday/ Lab. 8:00-10:00 , 10:00-12:00 , 12:00-2:00

Instructor's Name: Assist. Prof. Dr. Zainab Ahmed Alkaissi

Office No.: 3

E-Mail: dr.zainabalkaissi77@uomustansiriyah.edu.iq

Lecturer Signature
 Dr. Zainab Alkaissi

Chairman Signature



Ministry Of Higher Education and Scientific Research

AL-Mustansiriyah University/College of Engineering/Department of Highway Transportation

(الخطة الدراسية للمساق)

Course Plan

Course No.: 506063081

Course Name: Hydrology for highway engineering

Academic Year: 2020-2021

Time Division: 2hrs. Theoretical.

Course Description

It is a course to teach the principals of hydrology, precipitation, evaporation, runoff, infiltration, stream flow.

Course Intended Outcomes:

At the end of the course, students are expected to learn:

The basic principles of hydrology, calculating the average precipitation over an area by many methods, how can the engineer measure and find the evaporation, infiltration at field and mathematically, calculate the flow of rainwater on the land.

Course Outline:

Week	Description depends on the Timing table(Theoretical & Practical)
	First course
1	Introduction(definition)
2	precipitation
3	Precipitation(continue)
4	evaporation
5	Evaporation(continue)+quiz
6	infiltration

7	Infiltration(continue)
8	Stream flow
9	Stream flow(continue)+quiz
10	Monthly exam
11	Reports discussion
12	Runoff calculating
13	Runoff calculating(continue)
14	review
15	Final exam+ holydays

Textbooks:

1-Engineering hydrology
 K subramanya
 Mc GrawHill,2007, 2nd edition
 2- garber

Suggested references:

Hydrology analysis and design
 Richard H.McCuen
 Pearson Education 2005.3rd edition.

Marking:

During the course			Final exam
quiz	Monthly exam	report	60
10	20	10	

Instructor information:

-
Instructor's Name: Dr.Huda Tariq

Lecturer Signature

Chairman Signature



Ministry Of Higher Education and Scientific Research

Mustansiriyah University / Collage of Engineering / Department of Highway and Transportation Engineering

(نموذج الخطة الدراسية للمساق)



Course Plan

Course No.: 506063091

Course Name: Remote Sensing and GIS Application **Time Division:** 1hr Theoretical , and 2hr Practical

Course Website: _ **Semester & Year:** First , 2020 / 2021

Course Description

Concepts and Foundations of Remote Sensing , Basic Principles of Photogrammetry , Geographic Information System (GIS) , Earth Resource Satellites Operating in the Optical Spectrum , Coordinate Systems and Map Projections , Displaying Data , Editing Data , Image Rectification , Image Enhancement , Image Classification , Map Layout , Applications .

Course Intended Outcomes

At the end of the course, students are expected to learn:

- *basics of Remote Sensing , Photogrammetry , and Geographic Information Systems .*
- *Types of Earth Resource Satellites Operating Systems .*
- *Coordinate Systems , Map Projections , and Map Layout .*
- *Digital Image Processing and Remote Sensing Applications .*

Course Outline

Week	Class (Text Sec.)
1	Concepts and Foundations of Remote Sensing
2	Basic Principles of Photogrammetry
3	Geographic Information System (GIS)
4	Raster GIS and Vector GIS
5	Earth Resource Satellites Operating in the Optical Spectrum
6	Coordinate Systems and Map Projections
7	Displaying Data , Creating a Composite Image , Band Combinations , Sub-Setting Imagery
8	Editing Data
9	Image Rectification
10	Radiometric Enhancement of Imagery
11	Spatial Enhancement of Imagery
12	Spectral Enhancement of Imagery
13	Image Classification
14	Map Layout
15	Applications

Textbooks

1. Lillesand , Thomas M. , Kiefer , Ralph W. , Chipman , Jonathan W. , " Remote Sensing and Image Interpretation " , Fifth Edition , John Wiley & Sons , United States of America , 2004 .
2. Parece , Tammy E. and Campbell , James B. , " Remote Sensing Analysis in an ArcMap Environment " , James Campbell & John McGee , America View , October , 2013 .

Suggested references

1. ArcGIS Help , ESRI Inc , 2010 , [http : // www.esri.com](http://www.esri.com) .

Marking

Semester

Practical

Final Exam

Regulations

1. There will be three term exams given during this semester. The best two out of three will be considered for the First & Second exam. This means there will NO makeup exams. Missing one of the two left exams means a ZERO grade will be given for that exam.
2. There is no markup for quizzes.
3. Attendance is mandatory and University regulations will be enforced.
4. All Cheating incidents will be reported to the chair. The following activities are considered cheating:
 - a. Turning in assignment that includes parts of someone else work.
 - b. Turning in someone else assignment as your own.
 - c. Giving assignment to someone else to turn in as their own.
 - d. Copying answers in a test or quiz.
 - e. Taking a test or quiz for someone else.
 - f. Having someone else take a test or quiz for you.
5. See student handbook for other regulations.

Assignments and/or Projects

Assignment/Project	Description	Due Date	Marking
H.W.	Questions and problems	During the course	---
Quizzes	Two or more quizzes	During the course	---

Instructor(s) information

Section: -

Lecture Room: -

Time: -

Instructor's Name: Ruba Yousif Hussain

E-Mail: -

Office No.: -

Office Hours: Other office hours are available by appointment.

Important: The content of this syllabus may not be changed during the current semester.

Lecturer Signature

Ruba Yousif Hussain

Chair Signature



Ministry Of Higher Education and Scientific Research
AL-Mustansiriyah University/College of Engineering/Department of Highway and
Transportation
(الخطة الدراسية للمساق)
Course Plan



Course No.: 506063012

Course Name: Engineering Analysis

Academic Year: 2020-2021

Time Division: 4hr. Theoretical

Course Description

(3 credit hours)

This course will present the introduction ordinary and partial differential equations and their applications.

And teach students to solve ordinary and partial differential equations and how to use them to solve engineering problems ways

Course Intended Outcomes:

At the end of the course, students are expected to learn:

- Understand the Basic Concepts about ordinary differential equations(D.E) of the first order and solve some
- Understand the Applications of ordinary differential equations of the first order with examples
- Understand the Second & Higher order differential equations with constant coefficients with examples
- Understand the Method of undetermined coefficients with examples and Understand the Method of variation of parameters with examples
- Understand the Applications of second order differential equations with constant coeff.
- Understand the System of simultaneous linear differential equations with examples with applications
- Understand the Fourier series with examples with applications

- Understand the Partial differential equations

Course Outline:

First course:

Week	Description depends on the Timing table(Theoretical & Practical)
1	ordinary differential equations of the first order
2	Applications of ordinary differential equations of the first order with examples (solutions concentration tanks)
3	Second & Higher order differential equations with constant coefficients with examples
4	Method of variation of parameters with examples
5	Applications of second order differential equations with constant coeff.(spring mass oscillation)
6	Applications of second order differential equations with constant coeff.(elastic stability)
7	System of simultaneous linear differential equations with examples with applications
8	Fourier series with examples
9	Fourier expansion half-range expansion of Fourier series

10	the Applications of Fourier series
11	Partial differential equations (One dimension)
12	Partial differential equations (equation of vibration string)
13	Partial differential equations (Heat Flow)
14	Partial differential equations (two –dimension Laplace equation)
15	Exam

Textbooks:

1. Advanced Engineering Mathematics (by C.R.Wylie)

Suggested references:

1. **Text book:** Advanced Engineering Mathematics (by C.R.Wylie)

2. Numerical Method in Engineering (by Al.Khafaji)

3. Numerical Method (by Berdun)

Marking:

First Exam 15 marks

Second Exam 15 marks

Activity 10 marks

Final Exam 60 marks

regulations [الظوابط والأنظمة]

- There will be three term exams given during this semester. The best two out of three will be considered for the First & Second exam. This means there will NO makeup exams. Missing one of the two left exams means a ZERO grade will be given for that exam.
- There is no markup for quizzes.
- Attendance is mandatory and University regulations will be enforced.
- All Cheating incidents will be reported to the chair. The following activities are considered cheating:
 - Turning in assignment that includes parts of someone else work.
 - Turning in someone else assignment as your own.
 - Giving assignment to someone else to turn in as their own.
 - Copying answers in a test or quiz.
 - Taking a test or quiz for someone else.
 - Having someone else take a test or quiz for you.
- See student handbook for other regulations.

Assignments and/or Projects:

Assignment/Project	Description	Due Date	Marking
<u>H.W.</u>	<u>Solving exercises</u>	<u>During the course</u>	10 Marks
<u>Quizzes</u>	<u>Two or more</u>	<u>During the course</u>	10 Marks
<u>Project</u>	<u>Course project</u>	-	5 Marks

Instructor information:

Lecture Room: [Group, Group] Time:

Instructor's Name: Assist. Prof. Esraa Kh. Muhsen

Office No.: E-Mail:esraa.khudair@gmail.com

Office Hours:

NOTES:

- Office Hours: Other office hours are available by appointment.*
- The content of this syllabus not be changed during the current semester.*

Important: The content of this syllabus may not be changed during the current semester.

Lecturer Signature

Chair Signature



Ministry Of Higher Education and Scientific Research
Mustansiriyah University/College of Engineering /Department of Highways and
Transportation Engineering
(الخطة الدراسية للمساق)
Course Plan



Course No.: **506063022**

Course Name: **Pavement Geotechnique**

Academic Year: 2020-2021

Time Division: 2 hr. Theoretical 1hr Tutorial 2hr.

Practical.

Course Description

(6 credit hours)

Attention is drawn to the need for increased levels of care and attention in the teaching of basic programming. **This course will be cover the:** The branch of Highway and Transportation Engineering that deals with the properties of soils and rocks and their capability of supporting structures placed on or under them. with the growth of science and technology, the need for the better and more economical structural design and construction became critical so all structural designer depend on soil specialist to get more information about behavior ,physical properties of soil beneath structure which lead to evaluate the seepage, settlement and bearing capacity criteria's.

Course Intended Outcomes:

At the end of the course, students are expected to learn:

- Understand the basics of water flow through the Soil media (seepage).
- Understand the Evaluation of Settlement characteristics and compressibility Characteristics of soil.
- Understand the general Evaluation of shear strength parameters of soil.
- Understand the behavior of problematic soil and soil stabilization for highway.

Course Outline:

Theoretical + Tutorial	
week	Topics Covered
1-2	Grain Size Distribution, Sieve Analysis, Hydrometer, Soil description and classification, Unified Soil Classification System, AASHTO Soil Classification
3-4	Compaction and Soil Mechanics Aspect of Highway Design
5-7	Volume change and Consolidation Theory for normally and over consolidated Soil
8-9	Shear Strength Tests, Shear Strength of Sand and Clay, The Mohr Coulomb Failure Criterion
10	Drained and Undrained condition and stress-strain relation for drained and Undrained soils.
11-12	Evaluate of Undrained or Shear Strength and angle of friction due to total and effective stress
13	Exam + Review of Exam
14-15	Problematic Soils and Subgrade Improvement and Strengthening for highway
16	FINAL EXAM Durations

Practical (Soil Lab.)	
week	Topics Covered
1-2	Compaction test
3-4	In place soil density (sand replacement method)
5	In place soil density (core-cutting method)
6-7	CBR test
8	Exam
9-10	Consolidation test
11	Unconfined test
12-13	Direct shear test
14	Exam

Textbooks:

1. Lambe, T. W., and Whitman, R. V. (1979) Soil Mechanics. Wiley, New York.
2. Mitchell, J. K. (1993) Fundamentals of soil behavior, 2nd edition. Wiley, New York

Suggested references:

1. *Soil Mechanics* by R.F.Craig, Inc., 2010.
2. Introduction to Geotechnical Engineering, By Braja M. Das, 2009.
3. Geotechnical Aspects of Pavements. National Highway Institute. Reference Manual. 2006.

Marking:

HW & Quizzes	exam	Practical	50
10	20	20	

Assignments and/or Projects:

Assignment/Project	Description	Due Date	Marking
Case study	There are 3 case study in the semester	During the course	Including the Exam.

Instructor information:

Lecture Room: [3rd Floor ,Class T 3 & T4] **Time:** Mon., 8:30-10:30/ 10:30-12:30

Instructor's Name: Dr. Yasir Moula Al-Badran

Room No.: 2 / **E-Mail:** yasiralbadran@gmail.com

NOTES:

- Office Hours: Other office hours are available by appointment.
- The content of this syllabus may change during the current semester.

Lecturer Signature Chairman Signature



(نموذج الخطة الدراسية للمساق)

Course Plan

Course No.: 506063032

Course Name: Pavement Structural Design

Time Division:

2hr Theoretical 1hr. Tutorial

Course Website: ---

Semester & Year:

First, 2020 / 2021

Course Description [وصف المساق]

(4 credit hours)

Pavement types and design factors; stresses and strains in flexible and rigid pavements; traffic analysis and design considerations; material characterization; performance evaluation; reliability aspects in design and construction; structural thickness design of highway pavements using different methodologies; pavement evaluation; Computer application in pavement design will be considered in this course. Mechanistic – empirical approach which will be described. Other design considerations such as shoulders, drainage, pavement type selection, and pavement management will also be discussed.

Course Intended Outcomes [المخرجات المتوقعة من المساق]

At the end of the course, students are expected to learn:

- Understand the basics and the main principle concepts of pavement design.
- Understand the pavement design generation and development.
- Ability to design different types of pavement using different types of design methods.

Course Outline

Week	Sunday Class (Text Sec.)	Thirsdays Class (Text Sec.)
1	Introduction to Pavement (Types, Function, Load distribution concept. Soil Stabilization.	Oil Compaction.
2	Special tests for pavement design, CBR, Resistance Value, Resilient Modulus, Plate Loading Test.	Design Traffic Loading and contact area
3	Flexible Pavement Design (Climate Models(Heat Transfer Model, Moisture Equilibrium Model)	Structural Models (Finite Element Models, Elastic Layer Program)
4	Distress Models (Fatigue Cracking Models, Rutting Models)	Thermal Cracking Models
5	Asphalt Institute Method	Examples
6	AASHTO Design Methods : Theoretical Considerations	AASHTO Methods : Design Example (2 nd Quiz)
7	First Assessment Exam	Rigid Pavement
8	Historical Developments of Rigid Pavement Design	Detailed description of development of Rigid pavement
9	Materials used in Rigid Pavements, Joints in Rigid Pavements	Precisely described of the following joints type Expansion, contraction warping (key) construction
10	Types of Rigid Pavements	Plain concrete , Simply reinforced concrete pavement , Continuously reinforced concrete pavement, Pre-stressed concrete pavement:
11	Portland Cement Associated Method	Example

12	AASHTO Method	Example
13	Modulus of Subgrade Reaction	Modulus of Subgrade Reaction
14	Continuous Reinforcement Concrete Pavement	Example
15	Final Exam	

Textbook: [الكتاب المنهجي]

1. Traffic and Highway Engineering, Nicholas J. Garber and Lester A. Hoel, Fourth Edition, USA, 2010.

Suggested references: [المراجع المساعدة للمنهج]

1. Pavement Analysis and Design (2nd Edition) [Yang H. Huang], USA, 2004
2. AASHTO Guide for Design of Pavement Structures, 4th Edition, ١٩٩٣ .

Marking [توزيع الدرجات]

First Exam	15 marks	Second Exam	15 marks	Final Exam	60 marks
QUIZ	5 marks	QUIZ	5 marks		

Regulation: [الظوابط والأنظمة]

1. There will be three term exams given during this semester. The best two out of three will be considered for the First & Second exam. This means there will NO makeup exams. Missing one of the two left exams means a ZERO grade will be given for that exam.
2. There is no mark up for quizzes.
3. Attendance is mandatory and University regulations will be enforced.
4. All Cheating incidents will be reported to the chair. The following activities are considered cheating:
 - a. Turning in assignment that includes parts of someone else work.
 - b. Turning in someone else assignment as your own.
 - c. Giving assignment to someone else to turn in as their own.
 - d. Copying answers in a test or quiz.
 - e. Taking a test or quiz for someone else.
 - f. Having someone else take a test or quiz for you.
5. See student handbook for other regulations.

Assignments and/or Projects [الواجبات والمشاريع]

Assignment/Project	Description	Due Date	Marking
Quizzes	Two or more quizzes	During the course	5Marks

Instructor(s) information [معلومات الأستاذ]

Section: 1 **Lecture Room:** 1 **Time:** :

Instructor's Name: Dr. Rana A. Yousif
/ eng.ranaa.y@umostansiriyah.edu.iq

E-Mail: ranaratna1976@gmail.com

Office No.:

Office Hours: Other office hours are available by appointment.

Important: The content of this syllabus may not be changed during the current semester.

Lecturer Signature

Chair Signature



Ministry Of Higher Education and Scientific Research

AL-Mustansiriyah University

Collage of Engineering/Department of Highway and Transportation Engineering

(الخطة الدراسية للمساق)

Course Plan



Course No.:506063042

Course Name:RailwayEngineering

Course Website: Not Available

Time Division:

2hrs Theoretical 1hrs Practical

Semester & Year:

Third , 2020-2021

Course Description:

(3 credit hours)

This course will be cover theRailway Engineering theory, classification, Geometric design, Structural design, planning, capacity, drainage, And practical applications. Railway engineering is a multi-faceted engineering discipline dealing with the design, construction and operation of all types of railway systems.

Course Intended Outcomes:

At the end of the course, students are expected to learn:

1. Understand the Railway track elements of permanent way,
2. Understand the Stresses in Rails,
3. Understand the design of the rail way track line (geometric design),
4. Understand theHorizontal and Vertical Alignment of rail way track.

1.

Course Outline

Week	Description of Topics
1 2	Introduction to Railway Engineering: (General ,Transportation systems, Revenues & Cost, Railway Network in Iraq).
3 4	Railway track elements: (Permanent way, RAILS, Types of rail sections , Selection of rails, Length of rails, Tie Plates (Bearing Plates), BALLAST, Ballast subgrade system, Ties (Sleepers), Timber or wooden sleepers, Metal sleepers, Concrete sleeper).
5	Gauges in Railway Track
6	First Exam
7	Stresses in Rails: Different type of stresses in railway track
8 9	Geometric design (Gradient, Ruling gradient, Momentum gradient, Pusher or helper gradient, Gradients at station yards, Grade Compensation on Curve).
10	Negative Superelevation Application
11	Second Exam
12 13	Horizontal Alignment: (Curves, type of transition curves, length of transition curves, Widening of gauge on curves, Shift, Applications).
14 15	Vertical Alignment: (type of vertical curves, length of vertical curves, Applications).
16	FINAL EXAM Durations

Textbooks:

1.Text book:Railway engineering, byS.C. saxena and S.P.arora,2010.

Suggested references:

Marking:

First Exam 15 marks Second Exam 15 marks
Activity 10 marks Final Exam 60 marks

Regulations:

1. There will be three term exams given during each semester. The best two out of three will be considered for the First & Second exam. Missing one of the two left exams means a ZERO grade will be given for that exam.
2. There will be three to four quizzes for each semester.
3. Attendance is mandatory and University regulations will be enforced.
4. All Cheating incidents will be reported to the chair. The following activities are considered cheating:
 - a. Turning in assignment that includes parts of someone else work.
 - b. Turning in someone else assignment as your own.
 - c. Giving assignment to someone else to turn in as their own.
 - d. Copying answers in a test or quiz.
 - e. Taking a test or quiz for someone else.
 - f. Having someone else take a test or quiz for you.
5. See student handbook for other regulations

Assignments and/or Projects:

Assignment/Project	Description	Due Date	Marking
H.W.	Case study1 report	Deadline 21 st May	5 Marks
Quizzes	Two quiz during each semester	During the course	2.5Marks each

Instructor(s) information:

Section: A, B and C **Lecture Room:** T3, T4, T5 **Time:** 8:00-10:00, 12:00-2:00, 10:00-11:00, 12:00-1:00

Instructor's Name: Dr. Gofran J. Qasim **E-Mail:** gofranqasim@gmail.com

Office No.: 5

Office Hours: Office hours are available by appointment.

Important: The content of this syllabus may not be changed during the current semester.

Lecturer's Signature **Chair's Signature**



(نموذج الخطة الدراسية للمساق)

Course Plan

Course No.: 506063052

Course Name: Concrete Structure Design **Time Division:** 2hrs Theoretical
Analysis

Course Website: ----- **Semester & Year:** second , 2020 /2021

Course Description [وصف المساق]

Theoretical study that deals with learning the methods used to structural analysis and finding the reactions and moments acting on statically determinate and indeterminate structures.

Course Intended Outcomes [المخرجات المتوقعة من المساق]

At the end of the course, students are expected to learn:

- The basics of structural analysis,
- The types of structures according to stability and determinacy,
- Drawing of shear force, axial force and bending moment diagrams,
- Drawing the influence lines of different structures,
- Analysis of different statically indeterminate structures by selected three methods .

Course Outline

Week	Tuesday Class (Text Sec.)
1	Stability and determinacy of structures
2	a-Beams
3	b-Trusses
4	c-Frames
5	Axial force, shear force and bending moment diagrams
6	a-beams
7	b-frames
8	c-Trusses
9	Joint method
10	Section method
11	Influence lines for stat. Det. structures
12	<i>First Exam + Review of Exam</i>
13	a-Beams
14	b-Continuous beams
15	c-Main girders
16	Moving load
17	Deformation
18	<i>Second Exam + Review of Exam</i>
19	Unit load method a-beams
20	b-frames
21	Statically Indeterminate structures

22	Consistent deformation method a-Beams
23	b-Frames
24	<i>First Exam + Review of Exam</i>
25	Slope-deflection method
26	a-Beams
27	b-Frames(non-sway)
28	Moment distribution method a-Beams
29	b-Frames (non side sway).
30	<i>Second Exam + Review of Exam</i>
	FINAL EXAM Durations

Textbooks [الكتاب المنهجي]

- Hibbeler, R. C., "Structural Analysis", SI Edition, Prentice Hall, 6th Ed, 2006.

Suggested references [المراجع المساعدة للمنهج]

- Wang, C.K., "Intermediate Structural Analysis" international student edition, McGraw-Hill, 3rd edition , 1986.

Marking [توزيع الدرجات]

((Second semester) : **Month exams** and quiz and H.W. 20 marks

semester Exam 10 marks

Final Exam 70 marks

Regulations [الظوابط والأنظمة]

1. There will be three term exams given during this semester. The best two out of three will be considered for the First & Second exam. This means there will NO makeup exams. Missing one of the two left exams means a ZERO grade will be given for that exam.
2. There is no markup for quizzes.
3. Attendance is mandatory and University regulations will be enforced.
 - a. Copying answers in a test or quiz.
 - b. Taking a test or quiz for someone else.
 - c. Having someone else take a test or quiz for you.
4. See student handbook for other regulations.
5. All Cheating incidents will be reported to the chair. The following activities are considered cheating:
 - a. Turning in assignment that includes parts of someone else work.
 - b. Turning in someone else assignment as your own.
 - c. Giving assignment to someone else to turn in as their own.

Instructor(s) information [معلومات الأستاذ]

Instructor's Name: *asst.lec. Saif khudhair Ali*

E-Mail: saifkhudhair@Gmail.com

Lecturer Signature

Chair Signature



Ministry Of Higher Education and Scientific Research
AL-Mustansiriyah University
Collage of Engineering/Department of Highway and Transportation Engineering
(الخطة الدراسية للمساق)
Course Plan



Course No.: 506063062
Academic Year: 2020-2021

Course Name: Highway Engineering Economy
Time Division: 2hrs. Theoretical, 1 hr. Tutorial

Course Description

(3 credit hours)

engineering economy is the essential subject for the management of highway and transportation projects. **This course will cover:** • Basics of Engineering Economy, • How to make economic studies and economic comparisons among alternative projects, and • Linear Programming and some of its applications such as Transportation and Assignment matrices.

Course Intended Outcomes:

At the end of the course, students are expected to learn:

- How to apply project time scheduling using different techniques.
- How to plan and schedule project resources,
- How to make economic studies and comparisons among alternatives,
- How to optimize (minimize cost or maximize profit) of Transportation and Assignment problems using Linear Programming Techniques.

Course Outline:

Week	Description of Topics
1	Introduction about Engineering Economics
2	Nominal and Effective interest rates; Compounding interest rate more than once per year
3	Relationship between cost and production size and between Supply and Demand
4	Depreciation of assets, methods of calculation
5	Economical comparisons using Net Present Value (NPV), Future Worth, and Internal Rate of Return (IRR) methods) for highway and railway projects
6	Examples on NPV, FW, and IRR methods
7	Economical comparisons using External Rate of Return (ERR) and Explicit Reinvestment Rate of Return (ERRR) methods) for highway and railway projects
8	Comparisons Using the Repeatability Assumption
9	Comparisons Using the Contaminated Assumption
10	Examples on ERR and ERRR methods
11	Resource allocation using Linear Programming - Simplex method
12	Examples on Simplex method
13	Linear Programming: Assignment and Transportation Matrices
14	Examples on Assignment and Transportation Matrices
15	Cost-benefit analysis for sustainability of highway projects

Textbooks:

1. Pilcher, Roy, "Principles of Construction Management", McGraw Hill, 1976.
2. Degarmo et al., "Engineering Economy", 8th Ed., McMillan, 1989.

Suggested References:

1. Lester, E.A., "Project Planning and Control", 4th Ed., Elsevier Ltd., 2003.
2. March, Chris, "Finance and Control for Construction", Taylor & Francis Group, 2009.

Marking:

Second Semester			Final Exam
Exams	Quizzes	HW	Test
10	5	5	60

Assignments and/or Projects:

Assignment/Project	Description	Due Date	Marking
Home-works	There is 1 HW within the semester for Engineering Economy study	During the course	1 x 5

Instructor information:

Lecture Room:

Days and Time:

Instructor's Name: Asst. Prof. Dr. Ali Jabbar Kadhim Office No.: 4E-Mail: draliJabbar@yahoo.com

NOTES:

- Office Hours: Other office hours are available by appointment.*
- The content of this syllabus is not to be changed during the current semester.*

Lecturer Signature Chairman Signature



Ministry Of Higher Education and Scientific Research
Mustansiriyah University/ Collage of Engineering / Highway and Transportation Department
Course Plan



Course No.: 506063072

Course Name: Traffic Engineering Applications

Time Division: 2hr Theoretical and 2hr Practical

Course Website : <https://uomustansiriya.edu.iq/e-learn/profile.php?id=2766>

Semester & Year 2020-2021

Course Description

(2 credit hours)

This course presents the basic elements types of intersection separated at grade and grade separation. Principles of traffic control signal and design , signalized intersection and traffic rotaries. Study the characteristics and interaction behavior of user ;vehicle and road. Also introduce the traffic operation and LOS. Discussed and give learn the students how to give alternatives; ideas to solve congestion with local conditions. Application of intelligent transportation system are also introduced to study their major contributions.

Course Intended Outcomes

At the end of the course, students are expected to learn:

- Understand the types of road intersection, grade separated and at grade separated.
- Understand the principles and design of traffic control.
- Understand vehicle , user and road interaction.
- Understand the traffic operation and LOS.
- Understand and make the students capable of find solution to traffic congestion with local conditions.
- Understand the intelligent transportation system.

Course Outline

Week	Sunday Class (Text Sec.)
1	Road Intersection, types of intersection at grade and grade separated, channelization's
2	Principles of traffic control
3	Signalized intersection
4	Design of traffic control
5	Traffic rotaries
6	Traffic signs and road markings
7	Exam
8	Vehicle, user and road interaction characteristics
9	Vehicle, user and road interaction characteristics
10	Traffic operation and level of service
11	Traffic operation and level of service
12	How to control congestion and traffic jam
13	Intelligent Transportation
14	Intelligent Transportation
15	General discussion and project assignment

Textbooks:

- Nicholas J. Garber, Lester A. Hoel, (2010) Traffic and Highway Engineering, 4th ed.

Suggested References:

- [Roger P. Roess](#), [William R. McShane](#), (2004), update copy (2016) Traffic Engineering (4th Edition).
- [Highway Capacity Manual, \(HCM, 2010\)](#).
- **Traffic Engineering Handbook: Institute of Transportation Engineers, Seventh Editions (2016).**

• Marking:

First course 50 %			Final exam
Quiz and project assignment	Exam	Practical	50 %
20	20	10	

Regulations:

1. There will be three term exams given during this semester. The best two out of three will be considered for the First & Second exam. This means there will NO makeup exams. Missing one of the two left exams means a ZERO grade will be given for that exam.
2. There is no makeup for quizzes.
3. Attendance is mandatory and University regulations will be enforced.
4. All Cheating incidents will be reported to the chair. The following activities are considered cheating:
 - a. Turning in assignment that includes parts of someone else work.
 - b. Turning in someone else assignment as your own.
 - c. Giving assignment to someone else to turn in as their own.
 - d. Copying answers in a test or quiz.
 - e. Taking a test or quiz for someone else.
 - f. Having someone else take a test or quiz for you.
5. See student handbook for other regulations.

Instructor information:

Lecture Room: T3, T1

Time: Tuesday/ Theo.. 10:00-12:00 , 12:00-2:00

Sunday/ Lab. 8:00-10:00 , 10:00-12:00 , 12:00-2:00

Instructor's Name: Assist. Prof.. Dr. Zainab Ahmed Alkaissi

Office No.: 3

E-Mail: dr.zainabalkaissi77@uomustansiriyah.edu.iq

NOTES:

- Office Hours: Other office hours are available by appointment.
- The content of this syllabus not be changed during the current semester.

Lecturer Signature
Dr. Zainab Alkaissi

Chairman Signature



Ministry Of Higher Education and Scientific Research

AL-Mustansiriayah University/College of Engineering/Department of Highway Transportation

(الخطة الدراسية للمساق)

Course Plan

Course No.: 506063082

Course Name: Highway drainage system

Academic Year: 2020-2021

Time Division: 2hrs. Theoretical.

Course Description

It is a course to teach the application of hydrology in highways, such as drainage system design, water pipe line under roadways, channels design, culvert design .

Course Intended Outcomes:

At the end of the course, students are expected to learn:

The surfaces apparatus under the road ways, like drinking water pipeline, drainage pipeline, sewage system and channels. Also the student will able to calculate the runoff amount, flow, and drawing the hydrograph of the runoff, predict and calculating the flood, design many kinds of highways drainage.

Course Outline:

Week	Description depends on the Timing table(Theoretical & Practical)
	Second course
1	runoff
2	Runoff(continue)
3	Runoff(continue)
4	Hydrograph
5	Hydrograph (continue)
6	Hydrograph (continue)+quiz

7	Culvert design
8	Culvert design (continue)
9	Culvert design (continue) +Monthly exam
10	Flood forecasting
11	Flood routing
12	review
13	Monthly exam
14	Reports discussion
15	Final exam+ holydays

Textbooks:

1-Engineering hydrology
K subramanya
Mc GrawHill,2007, 2nd edition
2- garber

Suggested references:

Hydrology analysis and design
Richard H.McCuen
Pearson Education 2005.3rd edition.

Marking:

During the course			Final exam
quiz	Monthly exam	report	60
10	20	10	

Instructor information:

Instructor's Name Dr. Huda Tariq Office No.:

NOTES:

- *Office Hours: Other office hours are available by appointment.*
- *The content of this syllabus not be changed during the current semester.*

Lecturer Signature

Chairman Signature



(نموذج الخطة الدراسية للمساق)
Course Plan

Course No.: 506063092

Time Division: 2 hr.

Course Name: Sustainable Pavement Systems

Semester and Year: Second, 2020/ 2021

Course Website:

Course Description [وصف المساق]

(2 credit hours, Prerequisite [المتطلب السابق] No. and Name)

This subject (**Sustainable Pavement Systems**) is a guide to describe the sustainable systems and methods applied in pavement engineering. The aim is to enable the graduates to professionally apply the possible techniques to design and construct cleaner pavements of superior performance, and economically effective to preserve the environment, maintain the natural resources. This course also aims to increase the awareness of graduates about the applications of sustainable engineering and its importance to society.

Course Intended Outcomes [المخرجات المتوقعة من المساق]

At the end of the course, students are expected to learn:

- The importance of sustainable pavement systems in terms of environmental and economic perspectives,
- Types of sustainable pavement systems and their properties and uses,
- Design of sustainable pavement systems,
- Performance of sustainable pavement systems.

Course Outline

Week	(Text Sec.)
1	Introduction to sustainable pavement systems
2-4	Reclaimed Asphalt Pavement (RAP)
5-6	Warm Mix Asphalt (WMA) Technologies
7-8	Cold Mix Asphalt (CMA) Technologies
9	Porous Asphalt
10-11	Recycled Modified Asphalt
12	Using of waste materials in producing asphalt concrete pavements
13	Using of waste materials in producing rigid concrete pavements
14	Discussion of research and poster presentation
15	Pavement harvesting Energy

Suggested references [المراجع المساعدة]

1- Van Dam, Thomas J., et al. Towards sustainable pavement systems: a reference document. No. FHWA-HIF-15-002. United States. Federal Highway Administration, 2015.

2- Useful website:

<https://www.pavementinteractive.org>

<http://www.asphaltinstitute.org>

Marking [توزيع الدرجات]

First Exam	15 marks	H.W	5 marks		
QUIZ	10 marks	Research	10 marks	Final Exam	60 marks

Regulations [الظوابط والأنظمة]

1. There will be three term exams given during this semester. The best two out of three will be considered for the First & Second exam. This means there will NO makeup exams. Missing one of the two left exams means a ZERO grade will be given for that exam.
2. There is no markup for quizzes.
3. Attendance is mandatory and University regulations will be enforced.
4. All Cheating incidents will be reported to the chair. The following activities are considered cheating:
 - a. Turning in assignment that includes parts of someone else work.
 - b. Turning in someone else assignment as your own.
 - c. Giving assignment to someone else to turn in as their own.
 - d. Copying answers in a test or quiz.
 - e. Taking a test or quiz for someone else.
 - f. Having someone else take a test or quiz for you.
5. See student handbook for other regulations.

Assignments and/or Projects [الواجبات والمشاريع]

Assignment/Project	Description	Due Date	Marking
H.W. 1	SOLVING EXERCISES		5 Marks
H.W. 2	SOLVING EXERCISES		5 Marks
Quizzes	Two or more quizzes	During the course	5Marks
Research			10Marks

Instructor(s) information [معلومات الأستاذ]

Section: 1 Lecture Room: 6 Time:

Instructor's Name:

Mr. Ahmed Ibrahim Ahmed (lecturer)

E-Mail:

ahmedjb_ahmed@yahoo.com

Office Hours:

Office No.: 6

Office hours are available by appointment.

Important: The content of this syllabus may not be changed during the current semester.

Lecturer Signature

Chair Signature

Forth Year

2020-2021

Semester System



Ministry Of Higher Education and Scientific Research

AL-Mustansiriyah University/College of Engineering /Department of of Highway and Transportation Engineering

(الخطة الدراسية للمساق)

Course Plan



Course No.: 506064011

Course Name: Soil Investigation and Slope Stability **Time Division:** 3hr Theoretical

Course Website: إن وجد **Semester & Year:** First , 2020/2021

Course Description [(3 credit hours) Teaching the students the fundamental concept of different types of foundations and how to design the different types of foundations. Moreover, provide an introduction to the soil field tests and soil investigation report.]

Course Intended Outcomes [المخرجات المتوقعة من المساق]

At the end of the course, students are expected to learn:

- Site investigation
- Lateral earth pressure
- Retaining walls
- Sheet pile
- Slope stability
- Bearing capacity
- Foundation design

Course Outline

First course: Site investigation and slope stability

Week	Sunday, Thursday Class (Text Sec.)	Sunday, Thursday Class (Text Sec.)
1	Syllabus & Introduction to Foundation engineering	
2	Site investigation/ 3 weeks	• Soil investigation report.
3	Site investigation	• Soil boring methods
4	Site investigation	• Field tests.
5	Lateral earth pressure/ 4 weeks	• Earth pressure at rest, active, passive.
6	Lateral earth pressure	• Rankine's theory of earth pressure/ active .
7	Lateral earth pressure	• Coulomb's theory of earth pressure/ active.
8	Lateral earth pressure	• Rankine's/ Coulomb's theory of earth pressure/ passive.
9	Retaining walls/ 3 weeks	• Types of retaining walls. • Gravity wall.
10	Retaining walls	• Cantilever wall.
11	Retaining walls	• Cantilever wall.
12	Sheet pile/ 3 weeks	• Type of sheet pile./
13	Sheet pile	• cantilever & Anchored sheet pile
14	Slope stability	• Types of slope/ Infinite slopes & Finite slope
15	Main 1st Semester Exam	Return and Discussions of first exam results

Textbooks: [الكتاب المنهجي]

1. Bowles, J.E. "Foundation analysis and design" New york , McGraw Hill.
2. بغداد جامعة الاولى، الطبعة، "الاسس هندسة"، (1985) نوري، المحمدي، و يوسف الشكري،

Suggested references: [المراجع المساعدة للمنهج]

- 1.

Marking: [توزيع الدرجات]

First Semester			Second Semester			Final Exam
Quiz & HW	Main Exam	Practical	Quiz & HW	Main Exam	Practical	
5	15	-	5	15	-	40

Regulations: [الظوابط والأنظمة]

1. There will be three quizzes exams and two HW's beside one main exam given during each semester. The best two out of three quizzes and one of the two HW's will be considered.
2. Attendance is mandatory and University regulations will be enforced.
3. All Cheating incidents will be reported to the chair. The following activities are considered cheating:
 - a. Turning in assignment that includes parts of someone else work.
 - b. Turning in someone else assignment as your own.
 - c. Giving assignment to someone else to turn in as their own.
 - d. Copying answers in a test or quiz.
 - e. Taking a test or quiz for someone else.
 - f. Having someone else take a test or quiz for you.
4. See student handbook for other regulations.

Assignments and/or Projects: [الواجبات والمشاريع]

Assignment /Project	Description	Due Date	Markings
H.W. 1	Calculating the required equation using a given degree of soil friction	During the course	1 Marks
H.W. 2	Calculating the required equation using a given degree of soil friction	During the course	1 Marks
Quizzes	About six quizzes	During the course	3 Marks

Instructor(s) information: [معلومات الأستاذ]

Section: **Lecture Room:** 1, 2, 5 **Time:** 8:00-12:30 Sun

Instructor's Name: Lec. Dr. Hanan Adnan - **E-Mail:** ghassan_hanan@yahoo.com **Office No.:** 5

Office Hours: [8:30-12:30] Sunday, [8:30-10:30] Thursday
Other office hours are available by appointment.

Important: The content of this syllabus may not be changed during the current semester.

Lecturer Signature

Chair Signature



(نموذج الخطة الدراسية للمساق)

Course Plan

Course No.: 506064021

Course Name: Urban Transportation Planning

Time Division:

2hr Theoretical 1hr. Tutorial

Course Website: ---

Semester & Year:

First, 2020 / 2021

Course Description [وصف المساق]

(4 credit hours)

Fundamentals of transportation, Principles of planning, evaluation, selection, adoption, financing, and implementation of alternative urban transportation systems; formulation of community goals and objectives, inventory of existing conditions; transportation modeling, Demand and supply planning, Overall Planning process, 4 step travel demand estimation, trip generation, distribution, modal choice, assignment will be considered in this course.

Course Intended Outcomes [المخرجات المتوقعة من المساق]

At the end of the course, students are expected to learn:

- Understand the basics and the main Transportation Planning.
- Students are able to identify and formulate an engineering problem and to develop a solution.
- Understand the travel demand modelling.
- Ability to calibrate different types of demand models.

Course Outline

Week	Tuesday Class (Text Sec.)	Wednesday Class (Text Sec.)
Oct. 3	Introduction to Urban transportation planning	Definition of transportation planning, transportation problems
Oct. 10	Modelling	Purpose and Types of Modelling, Long and short -term Planning
Oct. 17	Land use and transportation system	Land Use Types, Accessibility
Oct.24	The Transportation System	Travel demand, Transportation supply, Factors Influencing Travel Demand
Oct.31	Study Area (TAZ), Types of Surveys, Screen and cordon lines	Orign – Destination Marix (O-D)
Nov. 7	Four Step Modelling	TRIP GENERATION
Nov. 14	TRIP GENERATION	Regression Analysis, Trip Rates method
Nov.21	TRIP DISTRIBUTION	Gravity Model, Growth Factor Models
Nov.28		Mid- Exam
Dec.5	Mode choice	Direct Generation Models, Trip End Models
Jan. 5	Mode choice	logit model
Jan. 12	Trip assignment:	Capacity-Constrained Assignment
	Final exam	-----

Textbooks [الكتاب المنهجي]

1. Traffic and Highway Engineering, Nicholas J. Garber and Lester A. Hoel, Fourth Edition, USA, 2010.

Suggested references [المراجع المساعدة للمنهج]

- Khisty, C. Jotin and Lall, B. Kent, Introduction to Transportation Engineering, 2002

Marking [توزيع الدرجات]

First Exam 15 marks

Second Exam 15 marks

QUIZ 5 marks

QUIZ 5 marks

Final Exam 60 marks

Regulation: [الظوابط والأنظمة]

1. There will be three term exams given during this semester. The best two out of three will be considered for the First & Second exam. This means there will NO makeup exams. Missing one of the two left exams means a ZERO grade will be given for that exam.
2. There is no markup for quizzes.
3. Attendance is mandatory and University regulations will be enforced.
4. All Cheating incidents will be reported to the chair. The following activities are considered cheating:
 - a. Turning in assignment that includes parts of someone else work.
 - b. Turning in someone else assignment as your own.
 - c. Giving assignment to someone else to turn in as their own.
 - d. Copying answers in a test or quiz.
 - e. Taking a test or quiz for someone else.
 - f. Having someone else take a test or quiz for you.
5. See student handbook for other regulations.

Assignments and/or Projects [الواجبات والمشاريع]

Assignment/Project	Description	Due Date	Marking
Quizzes	Two or more quizzes	During the course	5Marks

Instructor(s) information [معلومات الأستاذ]

Section: 1 **Lecture Room:** 1 **Time:** :

Instructor's Name: Dr. Noor M. Asmael **E-Mail:** nour_moutatz@yahoo.com

Office No.:

Office Hours: Other office hours are available by appointment.

Important: The content of this syllabus may not be changed during the current semester.

Lecturer Signature

Chair Signature



Ministry of Higher Education and Scientific Research
Mustansiriyah University/ Collage of Engineering /Department of Highway
& Transportation



Course Plan

Course No.: 506064031

Course Name: Structural Analysis of Concrete Bridges **Time Division:** 2hr Theoretical and 1hr Tutorial

Course Website: **Semester & Year:** First: 2020 / 2021

Course Description

(3 credit hours)

Topics covered in this subject include

- (1) General review on bridges classifications, lengths and structural skeleton.
- (2) Explain the structural differences between the slab bridges and beam bridges.
- (3) Analyze the decks and girders in concrete slab bridges and beam bridges.
- (4) Clarifying the differences among reinforcements and its structural actions.
- (5) Understanding the philosophy of LEFD method and its factors on concrete bridges.
- (6) Focusing on deformation and cracking as well the adequacy of the concrete bridges.

Course Intended Outcomes

At the end of the course, students are expected to learn:

- (1) Choosing the suitable bridge type according to its span and material.
- (2) Analyzing bridges according to loads defined in AASHTO specifications and factored according to (LRFD) method.
- (3) Evaluating the existing bridges for different types of permanent and transient loads in different load combinations.
- (4) Check the strength and serviceability of slab bridges and beam bridges.
- (5) How to distribute the live load on the deck and girders of the bridge.
- (6) The loads that especially affect the bridges in difference with other civil structures.

Course Outline

Week	Topics Covered	
1	Introduction to Bridges	
2	AASHTO Specifications for LRFD Method, Load Designation	
3	Load Combinations and Load Factors, Resistance Factors	
4	Decks in Slab Bridges	Required Reinforcement, Interior and Exterior Strips
5		Adequacy for Flexure and Shear
6		Minimum Reinforcement and Control for Cracking
7		Deflection and Camber
8		Reinforcement Stresses Due to Fatigue, Exam
9	Decks in Beam Bridges	Required Reinforcement
10		Adequacy for Flexure and Shear, Exam

11	Girders in Beam Bridges	Required Reinforcement, Distribution Factors for Live Load
12		Adequacy for Flexure and Shear
13		Minimum Reinforcement and Control for Cracking
14		Deflection and Camber
15		Reinforcement Stresses Due to Fatigue, Exam

Textbooks

- (1) Narendra Taly, 2015, "Highway Bridge Superstructure Engineering", Taylor & Francis Group.
- (2) "AASHTO LRFD Bridge Design Specifications", 2017, US Units, 8th Ed.
- (3) "AASHTO LRFD Bridge Design Specifications", 2007, SI Units, 4th Ed.

Suggested References

- (1) Eugene J. O'Brien, Damien L. Keogh, Alan J. O'Connor and Barry M. Lehane, 2015, "Bridge Deck Analysis", 2nd Ed., Taylor & Francis Group.
- (2) Gongkang Fu, 2013, "Bridge Design and Evaluation", John Wiley & sons Inc.

Marking

Exams	30 marks
Quizzes, H.W and Class Participation	20 marks

Regulations

1. There will be two term exams given during the academic semester.
2. There are three quizzes, H.W. and practice grading in the semester.
3. Attendance is mandatory and University regulations will be enforced.
4. All Cheating incidents will be reported to the chair. The following activities are considered cheating:
 - a. Turning in assignment that includes parts of someone else work.
 - b. Turning in someone else assignment as your own.
 - c. Giving assignment to someone else to turn in as their own.
 - d. Copying answers in a test or quiz.
 - e. Taking a test or quiz for someone else.
 - f. Having someone else take a test or quiz for you.
5. See student handbook for other regulations.

Instructor information

Section:	Lecture Room:	Time:
Instructor's Name: Assist. Prof. Awadh E. Ajeel		
E-Mail: awadh.ajeel@uomustansiriyah.edu.iq		
Office No.:	Office Hours:	

Important

- Office Hours: Other office hours are available by appointment
- The content of this syllabus not be changed during the current semester

Lecturer Signature
Awadh Ewayed Ajeel

Chair Signature



(نموذج الخطة الدراسية للمساق)

Course Plan

Course No.: 506064041

Course Name: Highway Geometric Design

Course Website: ---

Time Division:

2hr Theoretical 1hr. Tutorial

Semester & Year:

First ,2020/ 2021

Course Description [وصف المساق]

(4 credit hours)

This course introduces students to the basic principles and criteria utilized by engineers and designers in design and analysis the different facilities of roads network at different conditions. It covers the elements of design represented by human physiological and psychological behavior, vehicle properties, and traffic characteristics. Then how to use these elements to design the facilities according to the required criteria and with acceptable level of service.

Course Intended Outcomes [المخرجات المتوقعة من المساق]

At the end of the course, students are expected to learn:

- The elements of roads geometric design,
- Using the design elements with required criteria to design the highway features,
- Propose a suitable geometric solution for the roads network troubles.

Course Outline

Week	
Oct. 1 st W	Introduction to Highway Geometric Design
Oct. 2 nd W	Mobility and Accessibility, Highway functional classification
Oct. 3 rd W	Design control and criteria I (Vehicle, Driver)
Oct. 4 th W	Design control and criteria II (Traffic, HW Capacity, pedestrian, bicycle, Safety, Environment, and Economic analysis)
Nov. 1 st W	Elements of design: Sight distance (Stopping, decision, passing)
Nov. 2 nd W	Elements of design: Horizontal alignment (tangent, transition, circular curve) I
Nov. 3 rd W	Elements of design: Horizontal alignment (Super elevation, widening) II
Nov. 4 th W	Mid Exam
Dec. 1 st W	Elements of design: Vertical alignment (Grades, Vertical curves)
Dec. 2 nd W	Elements of design (Combinations of Horizontal and Vertical alignments)
Dec. 3 rd W	Other elements affected design (drainage, lighting, Utility, Traffic control device, noise barriers, Fencing)
Dec. 4 th W	Cross section elements (Pavement, Lane widths, Shoulder...)
Jan. 1 st W	Review
Jan. 2 nd W	Final exam

Textbooks [الكتاب المنهجي]

Wolhuter, Keith M. (2015), Geometric Design of Roads Handbook

Suggested references [المراجع المساعدة للمنهج]

AASHTO (2011), A Policy on Geometric Design of Highways and Streets

Marking [توزيع الدرجات]

First Exam 15 marks Second Exam 15 marks
QUIZE 5 marks QUIZE 5 marks Final Exam 60 marks

Regulations [الظوابط والأنظمة]

1. There will be three term exams given during this semester. The best two out of three will be considered for the First & Second exam. This means there will NO makeup exams. Missing one of the two left exams means a ZERO grade will be given for that exam.
2. There is no markup for quizzes.
3. Attendance is mandatory and University regulations will be enforced.
4. All Cheating incidents will be reported to the chair. The following activities are considered cheating:
 - a. Turning in assignment that includes parts of someone else work.
 - b. Turning in someone else assignment as your own.
 - c. Giving assignment to someone else to turn in as their own.
 - d. Copying answers in a test or quiz.
 - e. Taking a test or quiz for someone else.
 - f. Having someone else take a test or quiz for you.
5. See student handbook for other regulations.

Assignments and/or Projects [الواجبات والمشاريع]

Assignment/Project	Description	Due Date	Marking
Quizzes	Two or more quizzes	During the course	5Marks

Instructor(s) information [معلومات الأستاذ]

Section: 1 Lecture Room: Time :

Instructor's Name: Dr. Mohammed Zuhair Mohamedmeki email: moh7312@gmail.com
Lecturer AlaaSaadi email: alaa202.eng2004@yahoo.com

Office No.:

Office Hours: Other office hours are available by appointment.

Important: The content of this syllabus may not be changed during the current semester.

Lecturer Signature

Chair Signature



Ministry Of Higher Education and Scientific Research

AL-Mustansiriyah University

College of Engineering/Department of Highway and Transportation Engineering

(الخطة الدراسية للمساق)

Course Plan



Course No.: 506064051

Course Name: Principal of Steel Bridge Structures

Time Division:

2hrs Theoretical 1hrs Practical

Course Website: Not Available

Semester & Year:

First , 2020-2021

Course Description:

(3 credit hours)

This semester will present the introduction to steel bridge structures including steel bridges classifications, loading and materials strength with specifications, the semester include also the analysis of bridges tension and compression members with all types connections.

Course Intended Outcomes:

At the end of the course, students are expected to learn:

- 1- Understand of steel bridge classifications, loading, analysis methods and construction.
- 2- Understand structural features of different types of bridge, including beam bridges, arch bridges, truss bridges, suspension bridges and cable stayed bridges.
- 3- Understand and deal with international codes and standards.

Course Outline

Week	Description of Topics
1	Introduction & Advantages of steel bridges
2	FUNDAMENTAL BRIDGE FORMS (Beam bridges, Truss bridge, Arch bridges, Stayed girder bridges, {Plate girder bridges, Box girder bridges & Suspension bridges)
3	Bridges Loading Deck Slab & Bridges Loading Transfer to the Structural Members
4	Specification And Materials
5	Member Behavior and Design Strength
6	Fasteners Connections of Bridge Elements
7	Welding Connection of Bridge Elements
8	Tension members, (Single)
9	Tension members, Built-up member <i>Exam</i>
10	Compression members (Effective length, Buckling and Local Buckling) Compression members (single)
11&12	Compression members (built up) <i>Exam</i>
13	Column base plate (concentric loading)
14	Column base plate (eccentric loading)
15	First Semester Final Exam.

Textbooks:

- 1- Weiwei Lin & Teruhiko Yoda "Bridge Engineering", 1st Edition 2017"
- 2- Manual of Steel Construction (ASD)-9th Edition

Suggested references:

- 1- AISC 303-05 Code of Standard Practice for Steel Buildings and Bridges

- 2- *Supplementary reading &References: Wai-Fah Chen &Lian Duan, "Bridge Engineering Handbook", 2nd Edition 2014.*
- 3- *Supplementary reading &References: Gaylord and Gaylord, Design of Steel Structures.*

Marking:

First MonthExam 15 marks Second monthExam 15 marks
 H.W 3 marks Quizzes 7 marks
 Final Exam 60 marks

Regulations:

1. There will be three term exams given during each course. The best two out of three will be considered for the First & Second exam. Missing one of the two left exams means a ZERO grade will be given for that exam.
2. There will be three to four quizzes for each course.
3. Attendance is mandatory and University regulations will be enforced.
4. All Cheating incidents will be reported to the chair. The following activities are considered cheating:
 - a. Turning in assignment that includes parts of someone else work.
 - b. Turning in someone else assignment as your own.
 - c. Giving assignment to someone else to turn in as their own.
 - d. Copying answers in a test or quiz.
 - e. Taking a test or quiz for someone else.
 - f. Having someone else take a test or quiz for you.
5. See student handbook for other regulations.

Assignments and/or Projects: First Semester

Assignment/Project	Description	Due Date	Marking
H.W	Three Case study	Deadline 1 st Jan.	1.0 Mark each
Quizzes	Three quizzes during each course	During the course	2 Marks each

Instructor(s) information:

Section: A and B, A(Evening) **Lecture Room:** T1, T2, &T5, **Time:** 8:00-10:00, 10:00-12:00, 12:00-2:00

Instructor's Name: *Dr. Qusai Khudhur Hameed*

Office No.: 5

E-Mail: [E-mail: qusai.kh.hameed@uomustansiriyah.edu.iq](mailto:qusai.kh.hameed@uomustansiriyah.edu.iq)

Office Hours: Office hours are available by appointment.

Important: The content of this syllabus may not be changed during the current courses.

Lecturer's Signature **Chair's Signature**



Ministry Of Higher Education and Scientific Research

AL-Mustansiriyah University

Collage of Engineering/Department of Highway and Transportation Engineering

(الخطة الدراسية للمساق)

Course Plan



Course No.: 506064061

Course Name: Road Quantity Estimation

Time Division:

2hrs Theoretical 1hr Tutorial

Course Website: Not Available

Semester & Year:

Forth , 2020-2021

Course Description:

(2 credit hours, Prerequisite:Basic Engineering drawing and Math)

Quantity surveying, cost estimation, specifications, construction equipment management, and construction methods represent important parts in the work of highway engineers. This course will cover the main aspects of these subjects in the construction projects of highways, bridges, and their related structures, including: • Project phases and main contract documents, • Construction items in the Bills of Quantities (BOQs), • Quantity surveying of BOQ items, • Pricing of BOQ items by breaking them down to their basic cost components and estimating project cost, • Writing specifications of BOQ items, • Management of highway construction equipments, • Construction methods of highway projects

Course Intended Outcomes:

At the end of the course, students are expected to learn:

- How to describe work items in the Bills of Quantities (BOQs),
- How to calculate the quantities of most common BOQ items in highway and bridges projects,
- Pricing BOQ items and estimating project cost,
- Understand and be able to write construction specifications of BOQ items,
- How to manage the cost and productivity of heavy construction equipments,
- The main phases and methods in the construction of highway projects.

Course Outline

Week	Description of Topics
1	1.Introduction: Project phases, Common contract types, Contract documents, and Definition and benefits of Bills of Quantities (BOQs)
2	Description of common work items in the BOQs of highway and bridges projects
3	2.Quantity surveying of work items: Earth works
4	Rigid and Flexible pavements, Reinforced concrete, Structural steel
5	3.Pricing of work items; (Analysis of work items' components): Earth works
6	Rigid and Flexible pavements, Reinforced concrete, Structural steel
7	4. Quantity surveying of railway project;
8	6. Factors affecting the selection of heavy construction equipment;
9	7. Cost analysis of heavy construction equipments: Basic concepts: Useful life, Equipment depreciation, and Operating factor
10	8. Productivity of heavy construction equipments: Engineering fundamentals: machine resistance types with their correction for non-standard site conditions
11	9. Stages, method; and specifications of highway construction: Site preparation and earth works
12	10. Common heavy equipment; used in highway construction: Site preparation, leveling and earth works equipments (Bulldozers, Scrapers, Graders, ...etc)
13	Pavement equipments (Loaders, Pavers, Pavement removers, and Rollers)
14	Other equipments
15	Final Exam



Ministry Of Higher Education and Scientific Research
Mustansiriyah University/ Collage of Engineering /Department of
Highway and Transportation



(نموذج الخطة الدراسية للمساق)

Course Plan

Course No.:506066071

Course Name:Software Application for Pavement Design **Time Division:** 1hr Theoretical
2hrs Practical

Course Website:

Semester & Year: Fourth stage-1st semester,2020/ 2021

Course Description [وصف المساق]

(3 credit hours)

In this course, the students will have a good idea about programs related to their specialty. This course will cover three types of programs related to pavement design. So that this course will be helpful either in field or for scientific research after graduate.

Course Intended Outcomes [المخرجات المتوقعة من المساق]

At the end of the course, students are expected to learn:

How to use specialized computer programs and understand their theoretical background, and be able to choose suitable program to solve any problem in the field of highway and transportation depending upon the type of problem.

Course Outline

Week	Thursday Class (Text Sec.)
	KENPAVE
1	Introduction to Package Program for
2	Use of KENPAVE Main Screen
3	LAYERINP and SLABSINP
4	Steps to Design by KENPAVE Software
5	Steps to Design by KENPAVE Software
	First Course Exam + Review of Exam
6	Application Example on KENLAYER
7	Application Example on KENLAYER
8	Application Example on KENSLAP
	DowelCad
10	Definition of Dowel bar & its use in rigid
11	Use of Dowel Main Screen
12	Dowel Spacing Analysis Methodology
	Second Course Exam + Review of Exam
	Illipave
13	Introduction to Illipave (2005) software
14	Application example
15	Class project
	FINAL EXAM Durations

Textbooks [الكتاب المنهجي]

1. Dowel CAD Guidelines.
2. KENPAVE Design Guidelines.
3. Pavement Analysis and Design book.
4. Handouts.

Suggested references [المراجع المساعدة للمنهج]

1. Dowel CAD 2.0 Guidelines (2008), the transtec group, American concrete pavement association and American highway technology.
2. Huang, Y. H. (2004): "Pavement Analysis and Design," 2nd edition, Prentice Hall, Englewood Cliffs, New Jersey.
3. Handouts.

Marking [توزيع الدرجات]

Exam	Grade (Marks)	note
Exam 1	20	The best one out of two will be considered
Exam 2	20	
Quiz	10	
Quiz	10	
Lab. exam	5	Practical
Class project	5	
Final Exam	50	
Total	100	

Regulations [الظوابط والأنظمة]

1. There will be two term exams given during this semester (Exam 1 and 2). The best one out of two will be considered. This means there will NO makeup exams. Missing one of the two exams means a ZERO grade will be given for that exam.
2. There is no markup for quizzes.
3. Attendance is mandatory and University regulations will be enforced.
4. All Cheating incidents will be reported to the chair. The following activities are considered cheating:
 - a. Turning in assignment that includes parts of someone else work.
 - b. Turning in someone else assignment as your own.
 - c. Giving assignment to someone else to turn in as their own.
 - d. Copying answers in a test or quiz.
 - e. Taking a test or quiz for someone else.
 - f. Having someone else take a test or quiz for you.
5. See student handbook for other regulations.

Assignments and/or Projects [الواجبات والمشاريع]

<u>Assignment/Project</u>	<u>Description</u>	<u>Due Date</u>	<u>Marking</u>
Project	The course project will be assigned during	End of the course	Extra Credit to be

	the second or third week of class. A group of students (max. 3 students) will discuss with the instructor on the topic and work on the project topic that is related to the class. The student should expect oral questions after the presentation on the project and the course materials (related to the project).		added to final score (max 5marks)
--	---	--	-----------------------------------

Instructor(s) information [معلومات الأستاذ]

Instructor's Name:

Dr. Abbas F. Jasim (Office No.7)

E-Mail: abbas.jasim@uomustansiriyah.edu.iq

Ghada G. Masued (Office No.6)

E-Mail: ghadahghassan2013@gmail.com

Class Time: Thursday 8:00-10:00 am
10:00-12:00 am

Office Hours: Other office hours are available by appointment.

Important: The content of this syllabus may not be changed during the current semester.



(نموذج الخطة الدراسية للمساق)

Course Plan

Course No.: 506064081

Course Name: Engineering Project

Course Website: ---

Time Division:

3hr Theoretical

Semester & Year:

First, 2020/ 2021

Course Description [وصف المساق]

(4 credit hours)

During the first semester, the meaning of the engineering project will be clarified and the work mechanism will be completed. The theoretical and practical project is treated according to its nature. Preparing the scientific background of the research by gathering resources for the specific topic. Preparation of equipment for research and Data collection is done during this phase>

Course Intended Outcomes [المخرجات المتوقعة من المساق]

At the end of the course, students are expected to learn:

- The general meaning of the engineering project and its handling of data.
- Gather information correctly

Course Outline

Week	Sunday Class (Text Sec.)
1, 2	Collection of precision engineering sources
3, 4, 5	Collection of precision engineering sources and Data collection.
6, 7, 8	Writing the second chapter of the engineering project (Literature Review)
9, 10	Data Collection
11, 12, 13,14	Writing the third chapter of the engineering project (Methodology) and Data collection
15	Final Exam

Textbooks: [الكتاب المنهجي]

1. Depend on the project

Suggested references: [المراجع المساعدة للمنهج]

1. Depend on the project

Marking [توزيع الدرجات]

First Exam 15 marks

Second Exam 15 marks

Final Exam 60 marks

Regulations: [الضوابط والأنظمة]

1. Attendance is mandatory and University regulations will be enforced.
2. Discussions are weekly and ongoing

Assignments and/or Projects [الواجبات والمشاريع]

Assignment/Project	Description
Weekly meeting	Two or more quizzes

Instructor(s) information [معلومات الأستاذ]**Section:** depend on the supervisor**Lecture Room:** depend on the supervisor**Time:** :2**Instructor's Name:** Dr. Rana A. Yousif**Office No.:****E-Mail:** ranaratna1976@gmail.com /

eng.ranaa.y@umostansiriyah.edu.iq

Office Hours: Other office hours are available by appointment.**Important:** The content of this syllabus may not be changed during the current semester.**Lecturer Signature****Chair Signature**



Ministry of Higher Education and Scientific Research

Mustansiriayah University

Collage of Engineering /Department of Highways and Transportation Engineering

(الخطة الدراسية للمساق)

Course Plan



Course No.:506064091

Course Name:Highways Maintenance

Course Website: Not Available

Time Division:

3hr. Theoretical 1hr-Tutorial

Semester & Year:

Fourth , 2020-2021

Course Description:

(3 credit hours)

Teaching maintenance of highways "techniques and methods". Teaching students causes of highways pavement distress and repairs. Highway maintenance has the following objectives:

1. The repair of the functional pavement defects
2. Prolonging the functional and structural life of the pavement
3. Maintaining road safety and signage
4. Keeping the road reserve in an acceptable condition
5. Management of the above activities

This course will include: General-Objectives-Definitions-Types of Maintenance, Unique Properties of Flexible Pavements, Type of flexible pavement distress, Factors Affecting Performance of Flexible Pavements, Distresses in Flexible Pavements and Causes, Type of Rigid pavement distress, Distresses in Rigid Pavements and Causes, Pavement Condition Survey and rating, Pavement Performance: Structural, functional, and Safety Performance, Maintenance Technique, Surface Treatment and Surface Dressing, Overlay Design.

Course Intended Outcomes:

At the end of the course, students are expected to learn:

- Understand the basics of highway maintenance system,
- Understand the types, causes and repair of pavement distress.
- Understand the methods to prolonging the functional and structural life of highway pavement.
- Understand the sustainability and recycling techniques of highway pavement.
- Understand the management of above activities.

Course Outline

Week	Description of Topics
Week 1	1. Introduction: General- Objectives-Definitions and Types of Maintenance
Week 2	2. Type of Flexible Pavement Distress , Factors Affecting Performance of Flexible Pavements
Week 3	Distresses in Flexible Pavements and Causes
Week 4	Distresses in Flexible Pavements and Causes
Week 5	3. Type of Rigid Pavement Distress
Week 6	Distresses in Rigid Pavements and Causes
Week 7	Distresses in Rigid Pavements and Causes
Week 8	4. Pavement Condition Survey and Rating
Week 9	5. Pavement Performance; Functional Performance, Structural Performance, and Safety Performance
Week 10	6. Maintenance Technique ; Crack Sealing and Filling,
Week 11	Pothole Filling and Patching
Week 12	7. Surface Treatments; Pavement Sealers,
Week 13	Chip Seals,
Week 14	Slurry Seals
Week 15	8. Overlay Design and Recycling
	1st Semester Exam

Textbooks:

1. Huang, Yang H., "Pavement analysis and design", 2nd edition, Prentice Hall, Inc., New Jersey, USA, 2004.
2. Nikolaides Athanassios, "Highway Engineering, Pavements, Materials and Control of Quality", 1sted , USA, CRC Press (2014).

Suggested references:

1. ASTM D6433-16, "Standard Practice for Roads and Parking Lots Pavement Condition Index Survey", 2016.
2. Y. Shahin and S.D.Kohn, "Pavement Maintenance management for Roads and Parking Lots, "Construction Engineering Research Laboratory (CERL), United States Army Corps of Engineers, Technical Report M-294.2004.
3. Asphalt Institute, "Asphalt in Pavement Maintenance," manual Series No.16 (MS-16).1999.
4. Roads and Transportation Association of Canada, "Pavement Management Guide."2014.
5. <http://www.dot.gov>

Marking:

Participation in class or my office	10%
HW Assignments	10%
Presentation	10%
Quiz	20%
Exam	50%
	100%

Regulations:

1. There will be one term exam given during each semester, with additional quizzes. There will be NO markup exams. Missing any of the exams means a ZERO grade will be given for that exam.
2. There is no markup for quizzes.
3. Attendance is mandatory and University regulations will be enforced.
4. All Cheating incidents will be reported to the chair. The following activities are considered cheating:
 - a. Turning in assignment that includes parts of someone else work.
 - b. Turning in someone else assignment as your own.
 - c. Giving assignment to someone else to turn in as their own.
 - d. Copying answers in a test or quiz.
 - e. Taking a test or quiz for someone else.
 - f. Having someone else take a test or quiz for you.

See student handbook for other regulation

Assignments and/or Projects:

Assignment/Project	Description	Due Date	Marking
H.W. 1	Selected topics	During the course	5 Marks
H.W. 2	Selected topics	During the course	5 Marks
Presentation	Selected topics	During the course	5 Marks
Quizzes	More than one quiz during each semester	During the course	10 Marks each

Instructor(s) information:

Section: A and A, B(Evening) **Lecture Room:** T1, T2, **Time:** 8:30-10:30, 10:30-12:30, 12:30-2:30 Theoretical
9:30-10:30, 10:30-11:30, 11:30-12:30 Practical

Instructor's Name: Dr. Qais Sahib Almusawi

E-Mail: qaisalmusawi@uomustansiriyah.edu.iq

Office No.: T3

Office Hours: Office hours are available by appointment.

Important: The content of this syllabus may not be changed during the current semester.

Lecturer Signature

Chair Signature



Ministry Of Higher Education and Scientific Research

AL-Mustansiriyah University/College of Engineering /Department of Highway and Transportation Engineering

(الخطة الدراسية للمساق)

Course Plan



Course No.: 506064012

Course Name: Embankment Stabilization

Time Division:

3hr Theoretical

Course Website: إن وجد

Semester & Year:

First , 2020/2021

Course Description [(3 credit hours) Teaching the students the fundamental concept of different types of foundations and how to design the different types of foundations. Moreover, provide an introduction to the soil field tests and soil investigation report.]

Course Intended Outcomes [المخرجات المتوقعة من المساق]

At the end of the course, students are expected to learn:

- Site investigation
- Lateral earth pressure
- Retaining walls
- Sheet pile
- Slope stability
- Bearing capacity
- Foundation design

Course Outline

First course: Site investigation and slope stability

Week	Sunday, Thursday Class (Text Sec.)	Sunday, Thursday Class (Text Sec.)
1	Syllabus & Introduction to Foundation engineering	
2	Site investigation/ 3 weeks	<ul style="list-style-type: none">• Soil investigation report.
3	Site investigation	<ul style="list-style-type: none">• Soil boring methods
4	Site investigation	<ul style="list-style-type: none">• Field tests.
5	Lateral earth pressure/ 4 weeks	<ul style="list-style-type: none">• Earth pressure at rest, active, passive.
6	Lateral earth pressure	<ul style="list-style-type: none">• Rankine's theory of earth pressure/ active .
7	Lateral earth pressure	<ul style="list-style-type: none">• Coulomb's theory of earth pressure/ active.
8	Lateral earth pressure	<ul style="list-style-type: none">• Rankine's/ Coulomb's theory of earth pressure/ passive.
9	Retaining walls/ 3 weeks	<ul style="list-style-type: none">• Types of retaining walls.• Gravity wall.
10	Retaining walls	<ul style="list-style-type: none">• Cantilever wall.
11	Retaining walls	<ul style="list-style-type: none">• Cantilever wall.
12	Sheet pile/ 3 weeks	<ul style="list-style-type: none">• Type of sheet pile./
13	Sheet pile	<ul style="list-style-type: none">• cantilever & Anchored sheet pile
14	Slope stability	<ul style="list-style-type: none">• Types of slope/ Infinite slopes & Finite slope
15	Main 1st Semester Exam	Return and Discussions of first exam results



Ministry Of Higher Education and Scientific Research

AL-Mustansiriyah University/Faculty of Engineering /Department of of Highway and Transportation Engineering

(الخطة الدراسية للمساق)

Course Plan



Course No.: 506060401

Course Name: Foundation Engineering

Time Division:

3hr Theoretical

Course Website: إن وجد

Semester & Year:

First , 2019/2020

Course Description [(3 credit hours) Teaching the students the fundamental concept of different types of foundations and how to design the different types of foundations. Moreover, provide an introduction to the soil field tests and soil investigation report.]

Course Intended Outcomes [المخرجات المتوقعة من المساق]

At the end of the course, students are expected to learn:

- Site investigation
- Lateral earth pressure
- Retaining walls
- Sheet pile
- Slope stability
- Bearing capacity
- Foundation design

Course Outline

Second course: Embankment stabilization

Week	Sunday, Thursday Class (Text Sec.)	Sunday, Thursday Class (Text Sec.)
1	Bearing capacity/ 4 weeks	<ul style="list-style-type: none">• Types of failure.
2	Bearing capacity	<ul style="list-style-type: none">• Bearing capacity equations.
3	Bearing capacity	<ul style="list-style-type: none">• Effect of water table, shape of footing.
4	Bearing capacity	<ul style="list-style-type: none">• Bearing capacity for footing on layered soils.
5	Foundation settlements/ 1 week	<ul style="list-style-type: none">• Immediate (elastic) settlement computation theory.
6	Foundations design/ 8 weeks	<ul style="list-style-type: none">• Sprites footing design.
7	Foundations design	<ul style="list-style-type: none">• Rectangular combined footings.
8	Foundations design	<ul style="list-style-type: none">• Rectangular combined footings + Design of trapezoid footing.
9	Foundations design	<ul style="list-style-type: none">• Design of Raft footing
10	Foundations design	<ul style="list-style-type: none">• Design of Raft footing
11	Foundations design	<ul style="list-style-type: none">• Static pile capacity.
12	Foundations design	<ul style="list-style-type: none">• Ultimate static pile capacity/ Skin resistance capacity & Efficiency of pile group.
13	Foundations design	<ul style="list-style-type: none">• Ultimate static pile capacity/ Skin resistance capacity & Efficiency of pile group.
14	Foundations design	<ul style="list-style-type: none">• Foundation on problematic soil and its treatment
15	Final Exams	

Textbooks: [الكتاب المنهجي]

1. Bowles, J.E. "Foundation analysis and design" New york , McGraw Hill.
2. بغداد جامعة الاولى، الطبعة، "الاسس هندسة"، (1985) نوري، المحمدي، و يوسف الشكري،

Suggested references: [المراجع المساعدة للمنهج]

- 1.

Marking: [توزيع الدرجات]

First Semester			Second Semester			Final Exam
Quiz & HW	Main Exam	Practical	Quiz & HW	Main Exam	Practical	
5	15	-	5	15	-	40

Regulations: [الظوابط والأنظمة]

1. There will be three quizzes exams and two HW's beside one main exam given during each semester. The best two out of three quizzes and one of the two HW's will be considered.
2. Attendance is mandatory and University regulations will be enforced.
3. All Cheating incidents will be reported to the chair. The following activities are considered cheating:
 - a. Turning in assignment that includes parts of someone else work.
 - b. Turning in someone else assignment as your own.
 - c. Giving assignment to someone else to turn in as their own.
 - d. Copying answers in a test or quiz.
 - e. Taking a test or quiz for someone else.
 - f. Having someone else take a test or quiz for you.
4. See student handbook for other regulations.

Assignments and/or Projects: [الواجبات والمشاريع]

Assignment /Project	Description	Due Date	Marks
H.W. 1	Calculating the required equation using a given degree of soil friction	During the course	1 Marks
H.W. 2	Calculating the required equation using a given degree of soil friction	During the course	1 Marks
Quizzes	About six quizzes	During the course	3 Marks

Instructor(s) information: [معلومات الأستاذ]

Section: **Lecture Room:** 1, 2, 5 **Time:** 8:00-12:30 Sun

Instructor's Name: Lec. Dr. Hanan Adnan - **E-Mail:** ghassan_hanan@yahoo.com **Office No.:** 5

Office Hours: [8:30-12:30] Sunday, [8:30-10:30] Thursday
Other office hours are available by appointment.

Important: The content of this syllabus may not be changed during the current semester.

Lecturer Signature

Chair Signature



(نموذج الخطة الدراسية للمساق)
Course Plan

Course No.: 506064022

Course Name: Public Transportation Engineering **Time Division:** 2hr Theoretical 1hr. Tutorial

Course Website: ---

Semester & Year: First, 2020 / 2021

Course Description [وصف المساق]

(4 credit hours)

This course introduces students to the basic principles and methodologies utilized by engineers and planners in planning, design and operation of transportation systems for different modes. It covers technological and common elements of all modes of transportation; their effect on performance, demand, outputs of a transportation system, and development of new transportation systems.

Course Intended Outcomes [المخرجات المتوقعة من المساق]

At the end of the course, students are expected to learn:

- Understand the basic concept of urban transit system.
- Understand the transit Operation, service, and characteristics.
- To enable the students to have a strong analytical and practical knowledge of Planning, Designing and solving the transportation problems

Course Outline

Week	Tuesday Class (Text Sec.)	Wednesday Class (Text Sec.)
1	Introduction of public transport systems	Transportation Systems Types and service Concepts
2	Urban Public Transit	Road based transit, Rail based urban transit
3	Public Transport Availability	Bicycle parking, Park and Ride,
4	Infrastructure of urban transit systems	Right of way, Topology and relationship to urban area
5	Public Transit Network Types	Public Transit Network Design
6	Bus stop types	Bus stop placement, bus berth, bus capacity
7	Transit Data-collection techniques	Ride check, Point check
8	Transit Operation Concepts	Service Frequency and Headway
9	Transit Line Capacity	Capacity concepts
10	Transit system performance	Speed, Fleet size, Dwell time
11	Passenger Demand Characteristics	Passenger flow along Transit Line
12	Mid Exam	
13	Reliability Concepts	Level of service of urban transit
14	Public Transit Planning Process	Transit Operation Design
15	Transport sustainability	Cycling, Walking, etc.
	Final exam	

Textbook: [الكتاب المنهجي]

Khisty, C. Jotin and Lall, B. Kent, Introduction to Transportation Engineering, 2002

Suggested references [المراجع المساعدة للمنهج]

Teodorovic, D., & Janic, M. (2016). Transportation Engineering: Theory, Practice and Modeling. Butterworth-Heinemann.

Marking [توزيع الدرجات]

First Exam	15 marks	Second Exam	15 marks	Final Exam	60 marks
QUIZE	5 marks	QUIZE	5 marks		

Regulations [الظوابط والأنظمة]

1. There will be three term exams given during this semester. The best two out of three will be considered for the First & Second exam. This means there will NO makeup exams. Missing one of the two left exams means a ZERO grade will be given for that exam.
2. There is no markup for quizzes.
3. Attendance is mandatory and University regulations will be enforced.
4. All Cheating incidents will be reported to the chair. The following activities are considered cheating:
 - a. Turning in assignment that includes parts of someone else work.
 - b. Turning in someone else assignment as your own.
 - c. Giving assignment to someone else to turn in as their own.
 - d. Copying answers in a test or quiz.
 - e. Taking a test or quiz for someone else.
 - f. Having someone else take a test or quiz for you.
5. See student handbook for other regulations.

Assignment; and/or Projects [الواجبات والمشاريع]

Assignment/Project	Description	Due Date	Marking
Quizzes	Two or more quizzes	During the course	5Marks

Instructor(s) information [معلومات الأستاذ]

Section: 1 **Lecture Room:** 1 **Time:** :

Instructor's Name: Dr. Noor M. Asmael **E-Mail:** nour_moutatz@yahoo.com

Office No.:

Office Hours: Other office hours are available by appointment.

Important: The content of this syllabus may not be changed during the current semester.

Lecturer Signature

Chair Signature



Ministry of Higher Education and Scientific Research
Mustansiriyah University/ Collage of Engineering /Department of Highway
& Transportation



Course Plan

Course No.: 506064032

Course Name: Structural Design of Concrete Bridges **Time Division:** 2hr Theoretical and 1hr Tutorial

Course Website: **Semester & Year:** Second: 2020 / 2021

Course Description

(3 credit hours)

Topics covered in this subject include

- (1) Design of different types of bridges according to their spans and AASHTO specifications.
- (2) Design the superstructure of slab bridges and both monolithic and composite beam bridges.
- (3) Capability of design the deck in different strips and chose uniform reinforcement details for both.
- (4) Capability of design the girders in different interior and exterior and chose uniform reinforcement details for both.
- (5) Coverage of the design for both strength and serviceability of the bridge section.
- (6) Explain the effects of service design on bridge life-cycle.

Course Intended Outcomes

At the end of the course, students are expected to learn:

- (1) Design the suitable bridge type according to its span and materials.
- (2) The bridge design for loads defined in AASHTO specifications and factored according to (LRFD) method.
- (3) Determination of different types of permanent and transient loads in different load combinations.
- (4) Achieving of the strength and serviceability of slab bridges and beam bridges.
- (5) How to calculate the live load distribution factors on the deck and girders of the bridge.
- (6) Determinations load demands that affect the bridges and design the safe capacity.

Course Outline

Week	Topics Covered	
1	AASHTO Specifications for Loads and Materials Specified to Bridge Design	
2	Load Combinations and Load Factors, Resistance Factors	
3	Review on Concrete Bridges Design According to LRFD Method	
4	Decks in Slab Bridges	Design the Interior Strips of the Deck
5		Check Minimum Reinforcement and Control for Cracking
6		Check Deflection and Camber
7		Check Reinforcement Stresses Due to Fatigue,
8		Design the Exterior Strips of the Deck, Exam
9	Decks in Beam Bridges	Design the Deck for Positive, Negative Moments
10		Check the Required Shrinkage and Temperature Reinforcement, Exam

11	Girders in Beam Bridges	Design the Interior Girders
12		Check Minimum Reinforcement and Control for Cracking
13		Check Deflection and Camber
14		Check Reinforcement Stresses Due to Fatigue,
15		Design the Exterior Girders, Exam

Textbooks

- (1) Narendra Taly, 2015, "Highway Bridge Superstructure Engineering", Taylor & Francis Group.
- (2) "AASHTO LRFD Bridge Design Specifications", 2017, US Units, 8th Ed.
- (3) "AASHTO LRFD Bridge Design Specifications", 2007, SI Units, 4th Ed.

Suggested References

- (1) Richard M. Barker and Jay A. Puckett, 2013, "Design of Highway Bridges", 3rd Ed., John Wiley & sons Inc.
- (2) Jai B. Kim, Robert H. Kim, Jonathan R. Eberle, Eric J. Weaver and Dave M. Mante, 2013, "Simplified LRFD Bridge Design", Taylor & Francis Group, LLC.
- (3) Gongkang Fu, 2013, "Bridge Design and Evaluation", John Wiley & sons Inc.

Marking

Exams	30 marks
Quizzes, H.W and Class Participation	20 marks

Regulations

1. There will be two term exams given during the academic semester.
2. There are three quizzes, H.W. and practice grading in the semester.
3. Attendance is mandatory and University regulations will be enforced.
4. All Cheating incidents will be reported to the chair. The following activities are considered cheating:
 - a. Turning in assignment that includes parts of someone else work.
 - b. Turning in someone else assignment as your own.
 - c. Giving assignment to someone else to turn in as their own.
 - d. Copying answers in a test or quiz.
 - e. Taking a test or quiz for someone else.
 - f. Having someone else take a test or quiz for you.
5. See student handbook for other regulations.

Instructor information

Section:	Lecture Room:	Time:
Instructor's Name: Assist. Prof. Awadh E. Ajeel		
E-Mail: awadh.ajeel@uomustansiriyah.edu.iq		
Office No.:	Office Hours:	

Important

- Office Hours: Other office hours are available by appointment
- The content of this syllabus not be changed during the current semester

Lecturer Signature
Awadh Ewayed Ajeel

Chair Signature



Ministry Of Higher Education and Scientific Research

Mustansiriyah University/ College of Engineering
Department of Highway and Transportation



(نموذج الخطة الدراسية للمساق)

Course Plan

Course No. 506064042

Course Name: Highway capacity and performance

Time Division:

2hr Theoretical 1hr. Tutorial

Course Website: ---

Semester & Year:

Second , 2020/ 2021

Course Description [وصف المساق]

(4 credit hours)

This course will cover the topics associated to Highway capacity and performance. By focusing on the concept of Level Of Service and its relation with the highway capacity the student will be able to manage the requirements of highway geometric design through finding the number and dimensions of lanes and related elements affected on highway capacity.

Course Intended Outcomes [المخرجات المتوقعة من المساق]

At the end of the course, students are expected to learn:

- The concept of Level Of Service LOS,
- How to calculate Highway capacity using HCM procedure,
- Design highway based on the relation between capacity and LOS.

Course Outline

Week	
Feb. 3 rd W	Review LOS definition and determinants
Feb. 4 th W	Capacity and relate to “ideal” capacities
Mar. 1 st W	Calculating capacity using HCM procedures for basic freeway section
Mar. 2 nd W	Relations between capacity, level-of-service, and design
Mar. 3 rd W	Principles for Acceptable Degree of Congestion
Mar. 4 th W	Mid Exam
Apr. 1 st W	Multilane Highways
Apr. 2 nd W	LOS criteria for multilane highway, FFS or BFFS and Volume
Apr. 3 rd W	FFS Adjustment for (lane width, lateral clearance, median type, and access point)
Apr. 4 th W	Volume Adjustment (peak hour factor, number of lanes, Driver population, and Heavy vehicle)
May 1 st W	Speed flow curve, determining speed
May 2 nd W	Compute density using flow rate and speed, determining LOS
May 3 rd W	Design Decision
May 4 th W	Final exam

Textbooks: [الكتاب المنهجي]

HCM (2000), Highway Capacity Manual

Wolhuter, Keith M. (2015), Geometric Design of Roads Handbook

Suggested references [المراجع المساعدة للمنهج]

AASHTO (2011), A Policy on Geometric Design of Highways and Streets

Marking [توزيع الدرجات]

First Exam 15 marks Second Exam 15 marks
QUIZE 5 marks QUIZE 5 marks Final Exam 60 marks

Regulations [الظوابط والأنظمة]

1. There will be three term exams given during this semester. The best two out of three will be considered for the First & Second exam. This means there will NO makeup exams. Missing one of the two left exams means a ZERO grade will be given for that exam.
2. There is no markup for quizzes.
3. Attendance is mandatory and University regulations will be enforced.
4. All Cheating incidents will be reported to the chair. The following activities are considered cheating:
 - a. Turning in assignment that includes parts of someone else work.
 - b. Turning in someone else assignment as your own.
 - c. Giving assignment to someone else to turn in as their own.
 - d. Copying answers in a test or quiz.
 - e. Taking a test or quiz for someone else.
 - f. Having someone else take a test or quiz for you.
5. See student handbook for other regulations.

Assignments and/or Projects [الواجبات والمشاريع]

Assignment/Project	Description	Due Date	Marking
Quizzes	Two or more quizzes	During the course	5Marks

Instructor(s) information [معلومات الأستاذ]

Section: 1 Lecture Room: Time :

Instructor's Name: Dr. Mohammed Zuhair Mohamedmekie-mail:moh7312@gmail.com

Office No.:

Lecturer AlaaSaadie-mail:alaa202.eng2004@yahoo.com

Office Hours: Other office hours are available by appointment.

Important: The content of this syllabus may not be changed during the current semester.

Lecturer Signature

Chair Signature



Ministry Of Higher Education and Scientific Research

AL-Mustansiriyah University

College of Engineering/Department of Highway and Transportation Engineering

(الخطة الدراسية للمساق)

Course Plan



Course No.: 506064052

Course Name: Design of Steel Bridge
Structure

Time Division:

2hrs Theoretical 1hrs Practical

Course Website: Not Available

Semester & Year:

First , 2020-2021

Course Description:

(3 credit hours)

This semester will present the design of steel bridges structural members and side rails including design of different type of bridge structural steel members such as tension member, compression member, beam, plate gir and other members that form steel bridges.

Course Intended Outcomes:

At the end of the course, students are expected to learn:

- 1-Understand the design philosophies, characteristic of steel and loads combinations
- 2-Understand how to design and analysis different type of structural steel especially steel bridgesplate and box girder.
- 3-Understand type and design ofconnections,
- 4-

Course Outline

Week	Description of Topics
1	Introduction to Design of Steel and Composite Bridges Part
2, & 3	Beams (Laterally supported an unsupported beams, flexure, shear and deflection)
4	Design of Bridge Beams bearing Plates
5 & 6	Welding ,Welded connection and design <i>Exam</i>
7 & 8	Combined loading member (beam-column)
9	Beam – Beam connections (Shear Connection)
10	Beam – column connections (Shear Connection)
11, 12&13	Design of Bridge Plate girder (welded member) <i>Exam</i>
14	Bridge steel safety rails analysis and design
15	<i>Second Couse Final Exam</i>

Textbooks:

- 1- Jack C.McCormac "Structural Steel Design"
- 2- State of ConnecticutDepartment of Transportation "Bridge Design Manual", 2003.
- 3- Manual of Steel Construction (ASD)-9th Edition

Suggested references:

- 1- Supplementary reading &References:Don White, "Steel Bridge Design Handbook: Structural Behavior of Steel", 2015.
- 2- Supplementary reading &References: Gaylord and Gaylord, Design of Steel Structures.
- 3- Stanley W. &Ropert M. "Steel Buildings Analysis and Design" forth edition.

Marking:

First MonthExam 15 marks Second monthExam 15 marks

H.W 3 marks Quizzes 7 marks

Final Exam 60 marks

Regulations:

1. There will be three term exams given during each course. The best two out of three will be considered for the First & Second exam. Missing one of the two left exams means a ZERO grade will be given for that exam.
2. There will be three to four quizzes for each course.
3. Attendance is mandatory and University regulations will be enforced.
4. All Cheating incidents will be reported to the chair. The following activities are considered cheating:
 - a. Turning in assignment that includes parts of someone else work.
 - b. Turning in someone else assignment as your own.
 - c. Giving assignment to someone else to turn in as their own.
 - d. Copying answers in a test or quiz.
 - e. Taking a test or quiz for someone else.
 - f. Having someone else take a test or quiz for you.
5. See student handbook for other regulations.

Assignments and/or Projects: First Semester

Assignment/Project	Description	Due Date	Marking
H.W	Three Case study	Deadline 1 st Jan.	1.0 Mark each
Quizzes	Three quizzes during each course	During the course	2 Marks each

Instructor(s) information:

Section: A and B, A(Evening) **Lecture Room:** T1, T2, &T5, **Time:** 8:00-10:00, 10:00-12:00, 12:00-2:00

Instructor's Name: *Dr. Qusai Khudhur Hameed*

Office No.: 5

E-Mail: [E-mail: gusai.kh.hameed@uomustansiriyah.edu.iq](mailto:gusai.kh.hameed@uomustansiriyah.edu.iq)

Office Hours: Office hours are available by appointment.

Important: The content of this syllabus may not be changed during the current courses.

Lecturer's Signature Chair Signature



Ministry Of Higher Education and Scientific Research

AL-Mustansiriyah University/ Collage of Engineering /Department of of Highway and Transportation Engineering

(الخطة الدراسية للمساق)

Course Plan



Course No.: 506064062

Course Name: Route Location

Time Division: 3hr Theoretical

Course Website: ان وجد

Semester & Year: First , 2020/2021

Course Description [(3 credit hours) Teaching the students the fundamental concept of different types of available routes between two locations and how to use the geometric limitations and economic criteria to choose the best route .

Course Intended Outcomes [المخرجات المتوقعة من المساق]

At the end of the course, students are expected to learn:

- Application of Geometric Design Principles to Route Design
- Preliminary Route Layout
- Construction Cost Estimate
- Economic Cost
- Environmental Impact Analysis
- Screening of Alternatives

Course Outline

First course: Site investigation and slope stability

Week	Sunday, Thursday Class (Text Sec.)	
1	Syllabus & Introduction to Foundation engineering	
2	Factors Affecting Selection of the Highway Route	•
4	Application of Geometric Design Principles to Route Design/ 2weeks	•
5	Depth and Height of Cut and Fill Sections	•
7	Preliminary Route Layout and Geometric Design/ 2weeks	•
8	Drainage Provisions	•
10	Construction Cost Estimate/ 2weeks	•
12	Economic Cost/ 2weeks	•
13	Environmental Impact Analysis	•
14	Screening of Alternatives	•
15	Non-Standard Situations	•
	Main 1st Semester Exam	

Textbooks [الكتاب المنهجي]

GEOMETRIC DESIGN PROJECTS FOR HIGHWAYS, J.G. Schoon, American Society of Civil Engineers

Suggested references [المراجع المساعدة للمنهج]

Marking [توزيع الدرجات]

First Semester			Second Semester			Final Exam
Quiz & HW	Main Exam	Practical	Quiz & HW	Main Exam	Practical	
5	15	-	5	15	-	40

Regulations[الظوابط والأنظمة]

- There will be three quizzes exams and two HW's beside one main exam given during each semester. The best two out of three quizzes and one of the two HW's will be considered.
- Attendance is mandatory and University regulations will be enforced.
- All Cheating incidents will be reported to the chair. The following activities are considered cheating:
 - Turning in assignment that includes parts of someone else work.
 - Turning in someone else assignment as your own.
 - Giving assignment to someone else to turn in as their own.
 - Copying answers in a test or quiz.
 - Taking a test or quiz for someone else.
 - Having someone else take a test or quiz for you.
- See student handbook for other regulations.

Assignments and/or Projects[الواجبات والمشاريع]

Assignment/Project	Description	Due Date	Marking
H.W. 1	Choosing the best route between two locations	During the course	1 Marks
H.W. 2	Calculating the economic evaluation of highway construction	During the course	1 Marks
Quizzes	About four quizzes	During the course	3 Marks

Instructor(s) information[معلومات الأستاذ]

Section: Lecture Room: 1, 2, 5 **Time:** 8:00-12:30 Sun

Instructor's Name:

- E-Mail:

Office No.:

Office Hours: [8:30-12:30] Sunday, [8:30-10:30] Thursday
Other office hours are available by appointment.

Important: The content of this syllabus may not be changed during the current semester.

Lecturer Signature

Chair Signature



Ministry Of Higher Education and Scientific Research
Mustansiriyah University/Faculty of Engineering /Department of Highway
and Transportation



(نموذج الخطة الدراسية للمساق)

Course Plan

Course No.:506066072

Course Name:Software Application for Highway and Transportation **Time Division:** 1hr Theoretical
2hrs Practical

Course Website:

Semester & Year: Fourth stage-2nd semester,2020/ 2021

Course Description [وصف المساق]

(3 credit hours)

In this course, the students will have a good idea about programs related to their specialty. This course will cover one software (Civil 3D 2018) that related to highways geometric design of programs. This course will be helpful either in field or for scientific research after graduate.

Course Intended Outcomes [المخرجات المتوقعة من المساق]

At the end of the course, students are expected to learn:

How to design horizontal and vertical alignments of highways. Also, the course will cover working with cross sections and material quantities. The student will be able to solve any problem in the field of highway and transportation depending upon the type of problem.

Course Outline

Week	Class (Text Sec.)
1	About the software
2	Import and export points
3	Working with surface
4	Horizontal alignment (Plan)
	First Course Exam + Review of Exam
5	Superelevation
6	Vertical alignment (Profile) (Existing)
7	Vertical alignment (Profile) (Design)
8	Second Course Exam + Review of Exam
9	Cross sections of existing ground
10	Design Cross sections
11	Corridor design
12	Create Assembly
13	Material volumes
14	Final production
15	Class Project
	FINAL EXAM Durations

Textbooks [الكتاب المنهجي]

1. Civil 3D software user manual (2018)
2. Rick Ellis, 2018 “A Practical Guide to AutoCAD® Civil 3D® 2018.”
3. Handouts.

Suggested references [المراجع المساعدة للمنهج]

1. Rick Ellis, 2018 “A Practical Guide to AutoCAD® Civil 3D® 2018.”
2. Handouts.

Marking [توزيع الدرجات]

Exam	Grade (Marks)	note
First exam	20	The best one out of two will be considered
Second exam	20	
Quiz	10	
Quiz	10	
Lab. exam	5	Practical
Project Class	5	
Final Exam	50	
Total	100	

Regulations [الظوابط والأنظمة]

1. There will be two term exams given during this semester (Exam 1 and 2). The best one out of two will be considered. This means there will NO makeup exams. Missing one of the two exams means a ZERO grade will be given for that exam.
2. There is no markup for quizzes.
3. Attendance is mandatory and University regulations will be enforced.
4. All Cheating incidents will be reported to the chair. The following activities are considered cheating:
 - a. Turning in assignment that includes parts of someone else work.
 - b. Turning in someone else assignment as your own.
 - c. Giving assignment to someone else to turn in as their own.
 - d. Copying answers in a test or quiz.
 - e. Taking a test or quiz for someone else.
 - f. Having someone else take a test or quiz for you.
5. See student handbook for other regulations.

Assignments and/or Projects [الواجبات والمشاريع]

<u>Assignment/Project</u>	<u>Description</u>	<u>Due Date</u>	<u>Marking</u>
Project	The course project will be assigned during the second or third week of class. A group of students (max. 3 students) will discuss with the instructor on the topic and work on a project topic that is related to the class. The student should expect oral questions after the presentation on the	End of the course	Extra Credit to be added to final score (max 5 marks)

	project and the course materials (related to the project).		
--	--	--	--

Instructor(s) information [معلومات الأستاذ]

Instructor's Name:

Dr. Abbas F. Jasim (Office No.7)

E-Mail: abbas.jasim@uomustansiriyah.edu.iq

Ghada G. Masued (Office No.6)

E-Mail: ghadahghassan2013@gmail.com

Class Time: Thursday 8:00-10:00 am
10:00-12:00 am

Office Hours: Other office hours are available by appointment.

Important: The content of this syllabus may not be changed during the current semester.



(نموذج الخطة الدراسية للمساق)

Course Plan

Course No.: 506064082

Course Name: Engineering Project

Course Website: ---

Time Division:

2hr Theoretical

Semester & Year:

First, 2020/ 2021

Course Description [وصف المساق]

(4 credit hours)

During the second semester, The integrated concept of scientific engineering research is clear to the researcher , The ability to complete a thorough research will be integrated and The student's ability to analyze the data is clear.

Course Intended Outcomes [المخرجات المتوقعة من المساق]

At the end of the course, students are expected to learn:

- Ability to complete integrated scientific research
- Gather information correctly

Course Outline

Week	Sunday Class (Text Sec.)
1, 2	Data Collection
3, 4, 5	Data Collection and Data analysis
6, 7, 8	Data analysis and writing the 4 th chapter of the engineering project (Results)
9, 10, 11, 12, 13, 14	Data analysis and writing the 5 th chapter of the engineering project (Conclusions and recommendations)
15	Final Exam

Textbook: [الكتاب المنهجي]

1. Depend on the project

Suggested references: [المراجع المساعدة للمنهج]

1. Depend on the project

Marking [توزيع الدرجات]

First Exam 15 marks

Second Exam 15 marks

Final Exam 60 marks

Regulation: [الظروف والأنظمة]

1. Attendance is mandatory and University regulations will be enforced.
2. Discussions are weekly and ongoing

Assignments and/or Projects [الواجبات والمشاريع]

Assignment/Project	Description
Weekly meeting	Two or more quizzes

Instructor(s) information [معلومات الأستاذ]**Section:** depend on the supervisor**Lecture Room:** depend on the supervisor**Time:** :2**Instructor's Name:** Dr. Rana A. Yousif**Office No.:****E-Mail:** ranaratna1976@gmail.com /

eng.ranaa.y@umostansiriyah.edu.iq

Office Hours: Other office hours are available by appointment.**Important:** The content of this syllabus may not be changed during the current semester.**Lecturer Signature****Chair Signature**



Ministry of Higher Education and Scientific Research

Mustansiriayah University

Faculty of Engineering /Department of Highways and Transportation Engineering

(الخطة الدراسية للمساق)

Course Plan



Course No.:506064092

Course Name:Highways Safety

Course Website: Not Available

Time Division:

3hr. Theoretical 1hr-Tutorial

Semester & Year:

Fourth , 2020-2021

Course Description:

(3 credit hours)

This course will include: Introduction,what is traffic safety;what are the major factors involved in transportation crashes: Vehicles and equipment, Environment, Human Factors in Traffic Safety, and Road Design and Road Installations;Effect of pavement conditions on traffic safety; What are the ways to improve transportation safety?

Course Intended Outcomes:

Students who complete Highway safety course will be able to:

- 1-Understand the basic concepts of highway safety.
- 2-Factors effect in traffic crashes,
- 3- Identification of hazardous sites.
- 4- Ways to improve transportation safety.

Course Outline

Week	Description of Topics
Week 1	What is the highway safety
Week 2	Driver behavior and Human factors considerations in highway safety
Week 3	Elements of highway safety management systems
Week 4	Traffic Safety; Basics of crash statistics; Accident studies - purpose, types, causes,
Week 5	Crash reporting and collision diagrams ; Crash investigation and analysis
Week 6	Exam
Week 7	Highway geometry and safety
Week 8	Traffic control device pavement signs and lights
Week 9	pavement marketing
Week 10	Road safety audits
Week 11	Exam
Week 12	Pavement safety Performance
Week 13	Transportation Safety Planning
Week 14	Highway Safety Improvement Program
Week 15	Economic Evaluation of Roadside Safety
	2 nd Semester Exam

Textbooks:

1. Highway Safety Manual, (2010) American Association of State Highway and Transportation Officials. You may borrow a copy of this expensive manual from the transportation professors. There are only three copies available. Or you are welcome to buy your own if you want: https://bookstore.transportation.org/Item_details.aspx?id=1592
2. Hoel, L.A. and Garber, N.J., Traffic and Highway Engineering, 4th Edition

Suggested references:

- 1- Hauer, E. (1997) Observational Before-After Studies in Road Safety: Estimating the Effect of Highway and Traffic Engineering Measures on Road Safety. Elsevier Science Ltd, Oxford.
- 2- Hilbe, J.M. (2011) Negative Binomial Regression. 2nd Ed. Cambridge University Press, Cambridge, UK.
- 3- Rune Elvik and Truls Vaa, The Handbook of Road Safety Measures, Elsevier, 2004.

Marking:

Participation in class or my office	10%
HW Assignments	10%
Presentation	10%
Quiz	20%
Exam	50%
<hr/>	
	100%

Regulations:

1. There will be one term exam given during each semester, with additional quizzes. There will be NO markup exams. Missing any of the exams means a ZERO grade will be given for that exam.
2. There is no markup for quizzes.
3. Attendance is mandatory and University regulations will be enforced.
4. All Cheating incidents will be reported to the chair. The following activities are considered cheating:
 - a. Turning in assignment that includes parts of someone else work.
 - b. Turning in someone else assignment as your own.
 - c. Giving assignment to someone else to turn in as their own.
 - d. Copying answers in a test or quiz.
 - e. Taking a test or quiz for someone else.
 - f. Having someone else take a test or quiz for you.
5. See student handbook for other regulation

Assignments and/or Projects:

Assignment/Project	Description	Due Date	Marking
H.W. 1	Selected topics	During the course	5 Marks
H.W. 2	Selected topics	During the course	5 Marks
Presentation	Selected topics	During the course	5 Marks
Quizzes	More than one quiz during each semester	During the course	10 Marks each

Instructor(s) information:

Section: **Lecture Room:** **Time:**

Instructor's Name: *Dr. Qais Sahib Almusawi*
E-Mail: qaisalmusawi@uomustansiriyah.edu.iq

Office No.: T3

Office Hours: Office hours are available by appointment.

Important: The content of this syllabus may not be changed during the current semester.

Lecturer Signature

Chair Signature