جامعة القادسية

كلية الهندسة

قسم الهندسة المدنية

نظام الكورسات الدراسية

2021-2022

جامعة القادسية/ كلية الهندسة/ قسم الهندسة المدنية

نظام الكورسات الدراسية

1. للحصول على الشهادة الاولية (بكالوريوس علوم في الهندسة المدنية) على الطالب ان يجتاز بنجاح متطلبات الجامعة والكلية والقسم من المقررات الدراسية لاربع سنوات بعدد ساعاتها المقررة والبالغ مجموعها من (3600 ساعة). تغطي مجموع وحدات قدرها (154) وحدة حيث ان كل سنة دراسية تتألف من فصلين منتهيين (اول وثاني) مجموع عدد الساعات الاسبوعية (النظرية والعملية والمناقشة) لكل منها (25-30) ساعة. هذا بالاضافة الى ضرورة ان يكمل الطالب متطلب التدريب الصيفي والبالغة مدته (30) يوماً ينتظم بها في احد الدوائر الهندسية المحددة وفقاً للبرنامج المعد من القسم لهذا الغرض.
2. على الطالب الجامعي ان ينتظم بالدوام الرسمي المقرر لخمسة ايام اسبوعياً على الاقل تبتدأ عند الساعة 8:30 صباحاً وهذا الوقت المحدود من ساعات الدوام يتيح للطالب فرصة ممارسة النشاطات اللاصفية من الرياضة والتنظيم والمشاركة في المحافل الادبية والعلمية التي ينظمها القسم اوالكلية او الجامعة. لذا تم اتاحة هذه الفرصة للطلبة وفقاً لمقتضيات الوقت الراهن من خلال توفير (2) ساعة اسبوعياً لممارسة هذه النشاطات اللاصفية والمطلوبة وفقاً لمتطلبات جودة البرامج لتحقيق الاعتماد الاكاديمي. دون ان يؤثر هذا التقليص على كفاءة ومتطلبات البرامج التعليمية في الجامعة.
3. على الطالب ان ينجز مادة المشروع الهندسي (C.E.433) للمرحلة الرابعة وبمعدل اربع ساعات اسبوعيا وبوحدات عددها اربع وحدات وعلى مدار السنة الدراسية الرابعة بحيث تكون الدرجة النهائية للمشروع الهندسي في نهاية الكورس الثاني.
4. لقد تم فهرسة وتصنيف المقررات الدراسية بموجب الرموز الموضح توصيفها في الجدول (1).

جدول (1) توصيف رموز المقررات الدراسية

Code	Description
C.E.	Civil Engineering Department
1st Digit	(1 – 4) Steps of Study Year
2nd Digit	Just a normal number
3rd Digit	Odd number: means 1st semester Even Number: means 2nd semester.

5. المواد الدراسية وساعاتها الاسبوعية ووحداتها بضمنها متطلبات الجامعة والكلية والقسم

First Year

Semester I

Code	Subject	Hrs./week			Units
		Theo.	Tut.	Lab.	
C.E.101	Mathematics (I)	3	1	-	3
C.E.105	Engineering Mechanics (I)	3	1	-	3
C.E.109	Fundamentals of Computer (I)	1	1	-	1
C.E.113	Engineering Drawing	-	2	4	2
C.E.117	Probability and Statistics (I)	2	-	-	2
C.E.121	Engineering Materials Properties	1	-	2	2
C.E.125	Workshop Practice	-	-	2	1
C.E.133	Arabic Language	1	-	-	1
C.E.137	General Fitness	-	2	-	-
C.E.139	Human Rights	1	-	-	1
Total		13	9	6	16
		28			

Semester II

Code	Subject	Hrs./week			Units
		Theo.	Tut.	Lab.	
C.E.100	Mathematics (II)	3	1	-	3
C.E.104	Engineering Mechanics (II)	3	1	-	3
C.E.108	Programming (I)	1	-	2	2
C.E.110	Fundamentals of Computer (II)	1	1	-	1
C.E.114	Computer Aided Drawing	-	-	2	1
C.E.116	Probability and Statistics (II)	2	1	-	2
C.E.120	Construction Materials	1	1	2	2
C.E.124	Engineering Geology	2	1	-	2
C.E.128	English for Academic Purposes (I)	2	-	-	2
C.E.138	Democracy	1	-	-	1
Total		16	6	6	19
		28			

Second Year

Semester I

Code	Subject	Hrs./week			Units
		Theo.	Tut.	Lab.	
C.E.201	Mathematics (III)	3	1	-	3
C.E205	Strength of Material (I)	3	1	-	3
C.E.209	Programming (II)	1	-	2	2
C.E.211	Fundamentals of Computer (III)	1	1	-	1
C.E.213	Engineering Surveying (I)	2	-	2	3
C.E.217	Fluid Mechanics (I)	2	-	2	3
C.E.221	Building Construction (I)	2	-	-	2
C.E.225	Concrete Technology (I)	2	-	2	3
C.E.229	English for Academic Purposes (II)	2	-	-	2
Total		18	3	8	22
		29			

Semester II

Code	Subject	Hrs./week			Units
		Theo.	Tut.	Lab.	
C.E.200	Mathematics (IV)	3	1	-	3
C.E.204	Strength of Materials (II)	3	1	-	3
C.E.208	Programming (III)	1	-	2	2
C.E.210	Fundamentals of Computer (IV)	1	1	-	1
C.E.212	Engineering Surveying (II)	2	-	2	3
C.E.216	Fluid Mechanics (II)	2	-	2	3
C.E.220	Building Construction (II)	1	1	2	2
C.E.224	Concrete Technology (II)	2	-	2	3
Total		15	4	10	20
		29			

Third Year

Semester I

Code	Subject	Hrs./week			Units
		Theo.	Tut.	Lab.	
C.E.301	Engineering Analysis	3	-	-	3
C.E.305	Theory of Structures (I)	3	1	-	3
C.E.309	Soil Mechanics (I)	2	-	2	3
C.E.313	Reinforced Concrete (I)	2	1	-	2
C.E.317	Environmental Engineering	1	1	2	2
C.E.321	Project Management	1	1	2	2
C.E.325	Traffic Engineering	1	1	-	1
C.E.329	Irrigation & Drainage Engineering	2	1	-	2
Total		15	6	6	18
		27			

Semester II

Code	Subject	Hrs. /week			Units
		Theo.	Tut.	Lab.	
C.E.300	Numerical Analysis	3	-	-	3
C.E.304	Theory of Structures (II)	3	1	-	3
C.E.308	Soil Mechanics (II)	2	2	-	2
C.E.312	Reinforced Concrete (II)	2	1	-	2
C.E.316	Water Engineering	3	1	-	3
C.E.320	Engineering Economy	2	1	-	2
C.E.324	Geometric Road Design	1	1	-	1
C.E.332	Sustainability in Civil Engineering	1	1	-	1
C.E.334	English for Academic Purposes (III)	2	-	-	2
Total		19	8	0	19
		27			

Forth Year

Semester I

Code	Subject	Hrs./week			Units
		Theo.	Tut.	Lab.	
C.E.401	Foundation Engineering (I)	3	-	-	3
C.E.405	Asphalt Technology	2	-	2	3
C.E.409	Concrete Design (I)	2	1	-	2
C.E.413	Steel Structure (I)	2	1	-	2
C.E.417	Wastewater Engineering	3	1	-	3
C.E.421	Estimation & Specifications	2	1	-	2
C.E.425	Hydrology	2	1	-	2
C.E.429	English for Academic Purposes (IV)	2	-	-	2
C.E.430	Engineering Project	-	-	4	2
Total		18	5	6	21
		29			

Semester II

Code	Subject	Hrs./week			Units
		Theo.	Tut.	Lab.	
C.E.400	Foundation Engineering (II)	3	-	-	3
C.E.404	Pavement Design	2	-	-	2
C.E.408	Concrete Design (II)	2	1	-	2
C.E.412	Steel Structure (II)	2	1	-	2
C.E.416	Plumbing Engineering	2	1	-	2
C.E.420	Construction Methods	2	1	-	2
C.E.424	Hydraulic structures	2	1	-	2
C.E.428	Computer Aided Structural Analysis	-	-	2	1
C.E.433	Engineering Project	-	-	4	2
C.E.440	Engineering Ethics and Occupational Safety	1	1	-	1
Total		16	6	6	19
		28			

FIRST YEAR

First Year

First Semester

Code	Subject	Hrs./week			Units
		Theo.	Tut.	Lab.	
C.E.101	Mathematics (I)	3	1	-	3
C.E.105	Engineering Mechanics (I)	3	1	-	3
C.E.109	Fundamentals of Computer (I)	1	1	-	1
C.E.113	Engineering Drawing	-	2	4	2
C.E.117	Probability and Statistics (I)	2	-	-	2
C.E.121	Engineering Materials Properties	1	-	2	2
C.E.125	Workshop Practice	-	-	2	1
C.E.133	Arabic Language	1	-	-	1
C.E.137	General Fitness	-	2	-	-
Total		12	9	6	15
		27			

Weeks	C.E.101 Mathematics (I)			
	Theory	Tutorial	Laboratory	Units
	3hrs./ Week	1hr. / Week	---	3
1	General Concepts, Slope, Graphing of functions. Cartesian Coordinates, Slope of a line, Equations and distances, Graphs of equations			
2	Limits and intervals, Continuity test, Domain and Range.			
3	Matrices, Elementary Operations with matrices and Vectors.			
4	Determinants and Properties, Transpose and inverse of matrices.			
5	Solution of system of equations using Gramer's rule method.			
6	Complex Numbers, Introduction to complex numbers.			
7	Mathematical Operations for Complex Numbers, Argrand diagrams and product quotients.			
8	Demaiver's Theorem, Powers and roots.			
9	Complex Functions, Properties and roots.			
10	Complex Functions, Cauchy-Riemann equation.			
11	Trigonometric and Inverse trigonometric functions, Properties, rules and graphing.			
12	Logarithmic and exponential functions Properties and rules.			
13	Hyperbolic and Inverse hyperbolic functions, Graphing, rules and properties.			
14	Derivatives of functions Rules of derivatives, Chain rule and implicit derivatives.			
15	Derivatives of logarithmic and exponential functions, Rules of derivatives of logarithmic and exponential functions.			

Weeks	C.E.105 Engineering Mechanics (I)			
	Theory	Tutorial	Laboratory	Units
	3hrs./ Week	1hr. / Week	---	3
1	Introduction, course orientation, units, definitions and basic principles.			
2	Forces, forces resolution and combination in plane.			
3	Forces, forces resolution and combination in space.			
4	Rigid Body Force Systems, moment of a force about a point, moment of a force about an axis.			
5	Rigid Body Force Systems, couples, reduction of force and couple systems.			
6	Resultant of concurrent coplanar force system			
7	Resultant of parallel coplanar force system.			
8	Resultant of non-concurrent nonparallel coplanar force system.			
9	Equilibrium of a Particles, free body and force diagrams; equilibrium of a particle.			
10	Equations of equilibrium, Equilibrium of a rigid body.			
11	Solving problem of equilibrium			
12	Solving problem of equilibrium			
13	Analysis of Structures			
14	Trusses: method of joints			
15	Trusses: method of sections			

Weeks	C.E.109 Fundamentals of Computer (I)			
	Theory	Tutorial	Laboratory	Units
	1hrs./ Week	1hrs./ Week	----	1
1	Computer Fundamentals			
2	Computer Fundamentals			
3	Computer Classification			
4	Computer Components			
5	Computer Components			
6	Computer Components			
7	Computer Components			
8	Computer Safety and Software Licenses			
9	Computer Safety and Software Licenses			
10	Computer Safety and Software Licenses			
11	Computer Safety and Software Licenses			
12	Operating Systems			
13	Operating Systems			
14	Operating Systems			
15	Operating Systems			

Weeks	C.E.113 Engineering Drawing			
	Theory	Tutorial	Laboratory	Units
	---	2hr. / Week	4hr. / Week	2
1	Graphic instruments and their use and arabic and Latin lettering			
2	Drawing of all types of lines			
3	Drawing of all types of lines			
4	Geometrical operation			
5	Geometrical operation			
6	Drawing of Projections			
7	Drawing of Projections			
8	Drawing of Projections			
9	Drawing of Projections			
10	Collection of isomeric shapes			
11	Collection of isomeric shapes			
12	Collection of isomeric shapes			
13	Collection of isomeric shapes			
14	Drawing of sections			
15	Drawing of sections			

Weeks	C.E.117 Probability and Statistics (I)			
	Theory	Tutorial	Laboratory	Units
	2hrs./ Week	1hrs./ Week	---	2
1	Introduction and definitions			
2	Introduction and definitions			
3	Data collection and summarizing			
4	Data collection and summarizing			
5	Graphical presentations			
6	Graphical presentations			
7	Location and desperation measurement, applications and examples			
8	Location and desperation measurement, applications and examples			
9	Location and desperation measurement, applications and examples			
10	Location and desperation measurement, applications and examples			
11	Theory of probabilities, application and examples			
12	Theory of probabilities, application and examples			
13	Theory of probabilities, application and examples			
14	Theory of probabilities, application and examples			
15	Theory of probabilities, application and examples			

Weeks	C.E.121 Engineering Material properties			
	Theory	Tutorial	Laboratory	Units
	1hrs./ Week	2hr. / Week	---	2
1	Mechanical properties of materials			
2	Mechanical properties of materials			
3	Mechanical properties of materials			
4	Rocks composition of materials			
5	Rocks composition of materials			
6	Rocks composition of materials			
7	Rocks composition of materials			
8	Chemical properties of materials			
9	Chemical properties of materials			
10	Chemical properties of materials			
11	Heat and sound properties of materials			
12	Heat and sound properties of materials			
13	Heat and sound properties of materials			
14	Electrical properties of materials			
15	Electrical properties of materials			

Weeks	C.E.125 Workshops			
	Theory	Tutorial	Laboratory	Units
	---	---	2hr. / Week	1
	The workshop training program is designed to satisfy the following objectives: • Teaching safety rules and regulations on-site in an industrial environment. • Proper use of working tools, instruments, and machines. • Introducing basic workshop practices, production, labor, and time-requirements of workshop operations. • The students are introduced to training programs in many workshops including electrical, welding, turning and milling, carpentry, plumbing, auto-mechanics.			

No. of Weeks	C.E.133 Arabic Language			
	Theory	Tutorial	Laboratory	Units
	1hr. / Week	---	---	1
15	This course aims to grow the students' familiarity with and competence in Arabic literature in its various genres to increase their ability to appreciate literature and to develop their awareness of its concepts through the study of poetry, novel and the short story			

Weeks	C.E.139 Human Rights			
	Theory	Tutorial	Laboratory	Units
	1hrs./ Week	---	---	1
15	This course aims to grow the students' familiarity with origins of civil rights. Also provides an introduction to basic human rights philosophy, principles, instruments and institutions, and also an overview of current issues and debates in the field			

Second Semester

Code	Subject	Hrs./week			Units
		Theo.	Tut.	Lab.	
C.E.100	Mathematics (II)	3	1	-	3
C.E.104	Engineering Mechanics (II)	3	1	-	3
C.E.108	Programming (I)	1	-	2	2
C.E.110	Fundamentals of Computer (II)	1	1	-	1
C.E.114	Computer Aided Drawing	-	-	2	1
C.E.116	Probability and Statistics (II)	2	1	-	2
C.E.120	Construction Materials	1	1	2	2
C.E.124	Engineering Geology	2	1	-	2
C.E.128	English for Academic Purposes (I)	2	-	-	2
C.E.132	Freedom & Human Rights	1	-	-	1
Total		16	6	6	19
		28			

Weeks	C.E.100 Mathematics (II)			
	Theory	Tutorial	Laboratory	Units
	3hrs./ Week	1hr. / Week	---	3
1	Derivatives of trigonometric and inverse trigonometric functions.			
2	Derivatives of hyperbolic and Inverse hyperbolic functions.			
3	Application of Derivatives, L'Hapital rule, Velocity and acceleration, Max. and Min. and point of inflection.			
4	Indefinite Integrals, Integration formulas and integration of logarithmic, exponential trigonometric and inverse trigonometric functions.			
5	Integrals of functions, Integration of Hyperbolic and Inverse hyperbolic functions.			
6	Methods of Integration, Integration by parts and integration for odd and even powers of sine and cosine.			
7	Integration of Trigonometric Substitutions and integral involving $(ax^2 + b\,x + c)$.			
8	Integration of Partial fractions and rational functions of ***sinx*** and ***cosx*** and other trigonometric functions.			
9	Applications of Integration, Definite integral and area.			
10	General Substitutions, Length of the curve and surface area.			
11	Volume by Triple Integrals.			
12	Double Integrals, Area between two curves.			
13	Vectors, Vector in space, parallel vectors and product of vectors.			
14	Vectors, Triple product, volume of box and projection of two vectors.			
15	General Substitutions and quiz, Quiz, answers and solutions.			

Weeks	C.E.104 Engineering Mechanics (II)			
	Theory	Tutorial	Laboratory	Units
	3hrs./ Week	1hr. / Week	---	3
1	Centroids of area.			
2	Determination of centroid by integration.			
3	Centroids of a composite line or area.			
4	First Moments of area.			
5	Moments of Inertia			
6	Moments of inertia by integration			
7	Polar moment of inertia; Radius of gyration			
8	Parallel axis theorem			
9	Moment of inertia of Composite areas			
10	Moment of inertia of inclined axes.			
11	Friction, Law of friction; Angles of friction			
12	Types of cases in friction problems			
13	Solving problems in friction.			
14	Dynamics, definitions and basic principles.			
15	Rectilinear motion, curvilinear motions, relative motion; absolute dependent motion			

Weeks	C.E.108 Programming (I)			
	Theory	Tutorial	Laboratory	Units
	1hrs./ Week	-----	2hrs./ Week	2
1	File, definition, types and names, operating system (MS-DOS): Explain internal and external commands			
2	Introduction to WINDOWS, Desktop, using the mouse, My Computer, closing any open window, temporary closing			
3	Algorithms			
4	Flow Charts			
5	Introduction to Visual Basics			
6	Forms: Control Tools, Name Selection of the Control Tools			
7	Forms: Explorer Project, Properties, Events, Project, Save Project, Application			
8	Menus, Building and Writing Code, Dialogue Box, Message Box			
9	File Dialogue box, Line Dialogue Box, Color Dialogue Box, Printer Dialogue Box.			
10	Programming Statements			
11	Programming Statements			
12	Programming Statements			
13	Drawings			
14	Applications on Civil Engineering Cases Studies			
15	Applications on Civil Engineering Cases Studies			

Weeks	C.E.110 Fundamentals of Computer (II)			
	Theory	Tutorial	Laboratory	Units
	1hrs./ Week	1hrs./ Week	----	1
1	Microsoft Word 2010 Introduction			
2	Microsoft Word 2010 Toolbar functions			
3	Microsoft Word 2010 Toolbar functions			
4	Microsoft Word 2010 Insert function			
5	Microsoft Word 2010 Insert function			
6	Microsoft Word 2010 Insert function			
7	Microsoft Word 2010 Additional Tasks			
8	Microsoft Word 2010 Additional Tasks			
9	Microsoft Word 2010 Additional Tasks			
10	Microsoft Power Point 2010 Introduction			
11	Microsoft Power Point 2010 Toolbar Functions			
12	Microsoft Power Point 2010 Toolbar Functions			
13	Microsoft Power Point 2010 Insert function			
14	Microsoft Power Point 2010 Insert function			
15	Microsoft Power Point 2010 Insert function			

Weeks	C.E.112 Computer Aided Drawing			
	Theory	Tutorial	Laboratory	Units
	---	----	2hr. / Week	1
1	Introduction to AutoCAD and the application user interface			
2	AutoCAD application preferences and tools			
3	Draw Commands I			
4	Modify Commands I			
5	Draw Commands II			
6	Modify Commands II			
7	After drafting, Editing and dimension settings			
8	Plotting, Units settings and Scale			
9	Layouts and Resizing			
10	Introduction into Working-Drawings I			
11	Introduction into Working-Drawings II			
12	Civil-Engineering Details Drafting I			
13	Civil-Engineering Details Drafting II			
14	Principles of AutoCAD 3D Modelling			
15	Review			

Weeks	C.E.116 Probability and Statistics II			
	Theory	Tutorial	Laboratory	Units
	2hrs./ Week	1hrs./ Week	---	2
1	Estimation theory and hypothesis testing			
2	Estimation theory and hypothesis testing			
3	Estimation theory and hypothesis testing			
4	Z-test			
5	Z-test,			
6	Hypothesis tests			
7	Hypothesis tests			
8	T-test			
9	T-test			
10	F-test (ratio of normal variances)			
11	F-test (ratio of normal variances)			
12	chi-squared test (normal variance)			
13	chi-squared test (normal variance)			
14	Regression and data fitting			
15	Regression and data fitting			

Weeks	C.E.120 Construction Materials			
	Theory	Tutorial	Laboratory	Units
	1hrs./ Week	1hr. / Week	2hr. / Week	2
1	Bricks: Classification, manufacture, properties of brick, durability, standard tests and specifications			
2	Bricks: Classification, standard tests and specifications			
3	Bonding materials: Classification, manufacture, Standard tests and specifications			
4	Bonding materials: Classification, manufacture, Standard tests and specifications			
5	Bonding materials: Classification, manufacture, Standard tests and specifications			
6	Bonding materials: Classification, manufacture, Standard tests and specifications			
7	Bonding materials: Classification, manufacture, Standard tests and specifications			
8	Timber: Classification, seasoning, types of defects, standard tests			
9	Timber: Classification, seasoning, types of defects, standard tests			
10	Thermal and acoustic insulation materials			
11	Thermal and acoustic insulation materials			
12	Plastics: Methods of manufacturing, moldings, plastic binders, fields of application of plastics			
13	Plastics: Methods of manufacturing, moldings, plastic binders, fields of application of plastics			
14	Metal: Classification, composition, uses, standard tests and specifications.			
15	Metal: Classification, composition, uses, standard tests and specifications.			

Weeks	C.E.124 Engineering Geology			
	Theory	Tutorial	Laboratory	Units
	2hrs./ Week	1hr. / Week	---	2
1	Introduction: Relationship between geology and civil engineering, earth structure (crust, mantle, core), geological cycle			
2	Minerals and rocks			
3	Minerals and rocks			
4	Soil: Weathering, soil formation, classification, transported and residual soils, mineral composition, soils of Iraq			
5	Soil: Weathering, soil formation, classification, transported and residual soils, mineral composition, soils of Iraq			
6	Structural geology: Types of earth movements, basic definitions.			
7	Structural geology: folds, faults, joints, and their types.			
8	Topographic and geological maps			
9	Topographic and geological maps			
10	Topographic and geological maps			
11	Physical and engineering properties of rocks			
12	Physical and engineering properties of rocks			
13	Surface and ground water			
14	Surface and ground water			
15	Surface and ground water			

Weeks	C.E.128 English for Academic Purposes (I)			
	Theory	Tutorial	Laboratory	Units
	2hrs./ Week	---	---	2
1	Verbs, Numbers, Vocabulary, Reading, Speaking, Listening, and Writing Skills			
2	Countries, Vocabulary, Reading, Speaking, Listening, and Writing Skills			
3	Negatives and Questions, Vocabulary, Reading, Speaking, Listening, and Writing Skills			
4	Possessive, Vocabulary, Reading, Speaking, Listening, and Writing Skills			
5	Present Simple, Vocabulary, Reading, Speaking, Listening, and Writing Skills			
6	Present Simple, Vocabulary, Reading, Speaking, Listening, and Writing Skills			
7	Questions Words, Vocabulary, Reading, Speaking, Listening, and Writing Skills			
8	Prepositions, Vocabulary, Reading, Speaking, Listening, and Writing Skills			
9	Past Simple, Vocabulary, Reading, Speaking, Listening, and Writing Skills			
10	Past Simple, Vocabulary, Reading, Speaking, Listening, and Writing Skills			
11	Adverbs, Vocabulary, Reading, Speaking, Listening, and Writing Skills			
12	Signs all around, Vocabulary, Reading, Speaking, Listening, and Writing Skills			
13	Present Continous, Vocabulary, Reading, Speaking, Listening, and Writing Skills			
14	Grammar Revision, Vocabulary, Reading, Speaking, Listening, and Writing Skills			
15	Review			

Weeks	C.E.138 Democracy			
	Theory	Tutorial	Laboratory	Units
	1hrs./ Week	---	---	1
1	Origins of civil rights and freedom, including legislation for civil rights.			
2	Understanding civil rights, philosophy of civil rights, economical conception of civil rights			
3	Legal basis for the rule of law			
4	General Freedoms guarantee			
5	General Freedoms guarantee			
6	Basic Freedoms and basic civil rights			
7	Basic Freedoms and basic civil rights			
8	Freedom of movement of people			
9	Freedom of thought, opinion &belief			
10	Freedom of labor.			
11	Freedom of owning property, capitalistic & socialist understanding of ownership			
12	Freedom of owning property, capitalistic & socialist understanding of ownership			
13	Freedom of trade and industry including constitutional requirements, commercial freedom, etc.			
14	Other Freedoms including, forming political parties, third world application of civil rights			
15	Other Freedoms including, advances in scientific& technical aspects of civil rights			

Weeks	C.E.139 Human Rights			
	Theory	Tutorial	Laboratory	Units
	1hrs./ Week	---	---	1
15	This course aims to grow the students' familiarity with freedom and democracy. It give also a look at the crimes of the Baath party regime.			

SECOND YEAR

Second Year

First Semester

Code	Subject	Hrs./week			Units
		Theo.	Tut.	Lab.	
C.E.201	Mathematics (III)	3	1	-	3
C.E205	Strength of Material (I)	3	1	-	3
C.E.209	Programming (II)	1	-	2	2
C.E.211	Fundamentals of Computer (III)	1	1	-	1
C.E.213	Engineering Surveying (I)	2	-	2	3
C.E.217	Fluid Mechanics (I)	2	-	2	3
C.E.221	Building Construction (I)	2	-	-	2
C.E.225	Concrete Technology (I)	2	-	2	3
C.E.229	English for Academic Purposes (II)	2	-	-	2
Total		18	3	8	22
		29			

Weeks	C.E.201 Mathematics (III)			
	Theory	Tutorial	Laboratory	Units
	3hrs./ Week	1hr. / Week	---	3
1	Matrix algebra			
2	Transpose, Determinate, and Inversion of Matrix			
3	Solution of system of linear equations			
4	Vectors algebra			
5	Dot and Cross Product			
6	Lines and Planes in Space			
7	Polar Coordinates			
8	Equations Relating Polar and Cartesian Coordinates			
9	Graphing in Polar Coordinates			
10	Applications on Polar Coordinates			
11	Infinite Sequences			
12	Series Tests			
13	Power Series			
14	Taylor Series and Maclaurin Series			
15	Taylor Series and Maclaurin Series			

Weeks	C.E.205 Strength of Materials (I)			
	Theory	Tutorial	Laboratory	Units
	3hrs./ Week	1hr. / Week	---	3
1	Types of Loads and stress			
2	Simple stress			
3	Hook's low			
4	Simple strain			
5	Simple strain			
6	Thermal stress			
7	Thermal stress			
8	Torsion			
9	Torsion			
10	Shear and bending Moment Diagrams			
11	Shear and bending Moment Diagrams			
12	Flexural stress in Beam			
13	Flexural stress in Beam			
14	Composite Beams			
15	Composite Beams			

Weeks	C.E.209 Programming (II)			
	Theory	Tutorial	Laboratory	Units
	1hrs./ Week	---	2hr. / Week	2
1	Fortran programming preliminaries, Fortran contents and variables			
2	Fortran programming preliminaries, Fortran contents and variables			
3	Fortran programming preliminaries, Fortran contents and variables			
4	Arithmetic expression			
5	Arithmetic expression			
6	Input-output statements, control statements and statement subscripted variables			
7	Input-output statements, control statements and statement subscripted variables			
8	Input-output statements, control statements and statement subscripted variables			
9	Elementary format specifications logical expression, and decision table			
10	Elementary format specifications logical expression, and decision table			
11	Functions and subroutines			
12	Functions and subroutines			
13	Processing files in variables, character manipulation in Fortran			
14	Processing files in variables, character manipulation in Fortran			
15	Processing files in variables, character manipulation in Fortran			

Weeks	C.E.211 Fundamentals of Computer (III)			
	Theory	Tutorial	Laboratory	Units
	1hrs./ Week	1hrs./ Week	----	1
1	Microsoft Excel 2010 Main Functions			
2	Microsoft Excel 2010 Main Functions			
3	Microsoft Excel 2010 Main Functions			
4	Microsoft Excel 2010 Main Functions			
5	Microsoft Excel 2010 Insert Functions			
6	Microsoft Excel 2010 Insert Functions			
7	Microsoft Excel 2010 Insert Functions			
8	Microsoft Excel 2010 Formulas Tabs			
9	Microsoft Excel 2010 Formulas Tabs			
10	Microsoft Excel 2010 Formulas Tabs			
11	Microsoft Excel 2010 Formulas Tabs			
12	Microsoft Excel 2010 Formulas Tabs			
13	Microsoft Excel 2010 Additional Tasks			
14	Microsoft Excel 2010 Additional Tasks			
15	Microsoft Excel 2010 Additional Tasks			

Weeks	C.E.213 Engineering Surveying (I)			
	Theory	Tutorial	Laboratory	Units
	2hrs./ Week	-	2hr. / Week	3
1	General concepts and principles of surveying			
2	General concepts and principles of surveying			
3	Errors and mistakes			
4	Linear measurements: Taping methods; systematic error in taping, measuring obstructed distances, other uses of tape.			
5	Linear measurements: Taping methods; measuring obstructed distances, other uses of tape.			
6	Levelling:			
7	Direct levelling; level, basic parts and principles.			
8	Differential levelling; systematic errors, field procedure, types of differential levelling.			
9	Differential levelling; systematic errors, field procedure, types of differential levelling.			
10	Adjustment of differential levelling by the least squares method.			
11	Profile levelling; field procedure, adjustment of profile levelling, computation of cut and fill.			
12	Profile levelling; field procedure, adjustment of profile leveling, computation of cut and fill.			
13	Angles and directions			
14	Angles; types of angles, types of horizontal angles.			
15	Directions; direction of a line, meridian, azimuth, bearing.			

Weeks	C.E.217 Fluid Mechanics (I)			
	Theory	Tutorial	Laboratory	Units
	2hrs./ Week	---	2hrs./ Week	3
1	Introduction: Distinction between solids, liquids & gases			
2	Dimensions & Units			
3	Fluid Properties, Density, specific weight			
4	Viscosity			
5	Compressibility; surface Tension			
6	Fluid Statics: Pressure			
7	Atmospheric properties; hydrostatic equation			
8	Pressure measurement devices			
9	Forces on immersed surfaces			
10	Buoyancy and Archimedes' principle			
11	Accelerated fluid masses			
12	Fluid Dynamics :Definitions of flow types			
13	Continuity equation			
14	Euler's and Bernoulli's equations			
15	Applications on Bernoulli's equation			

	C.E.221 Building Construction (I)			
	Theory	Tutorial	Laboratory	Units
	2hrs./ Week	----	---	2
1	Introduction. definitions			
2	Earth Works (Cut and fill)			
3	Foundations Works			
4	Foundations Works			
5	Piles Works			
6	Concrete Works			
7	Concrete Works			
8	Brick and Block Works			
9	Brick and Block Works			
10	Brick and Block Works			
11	Masonry Works			
12	Forms and Scaffoldings			
13	Forms and Scaffoldings			
14	Beams, Girders and Columns			
15	Beams, Girders and Columns			

Weeks	C.E.225 Concrete Technology (I)			
	Theory	Tutorial	Laboratory	Units
	2hrs./ Week	---	2hr. / Week	3
1	Introduction to Concrete materials			
2	Manufacture of Cement and its Components			
3	Hydration of Cement			
4	Volume of Hydration			
5	Volume of Hydration			
6	Tests of Cement			
7	Types of Cement			
8	Modern cementiutes materials			
9	Aggregate, properties of Aggregate			
10	Impurities in Aggregate			
11	Alkali reaction of Aggregate			
12	Sieve analysis			
13	Application of new aggregate materials			
14	Application of new aggregate materials			
15	Admixtures			

Weeks	C.E.229 English for Academic Purposes (II)			
	Theory	Tutorial	Laboratory	Units
	2hrs./ Week	---	---	2
1	Auxiliary Verbs, Vocabulary, Reading, Speaking, Listening, and Writing Skills			
2	Present Tenses, Vocabulary, Reading, Speaking, Listening, and Writing Skills			
3	Past Tenses, Vocabulary, Reading, Speaking, Listening, and Writing Skills			
4	Quantity, Vocabulary, Reading, Speaking, Listening, and Writing Skills			
5	Verb Pattern 1, Vocabulary, Reading, Speaking, Listening, and Writing Skills			
6	Comparative Adj., Vocabulary, Reading, Speaking, Listening, and Writing Skills			
7	Present Perfect, Vocabulary, Reading, Speaking, Listening, and Writing Skills			
8	Have (got) to, Vocabulary, Reading, Speaking, Listening, and Writing Skills			
9	Time Clauses, Vocabulary, Reading, Speaking, Listening, and Writing Skills			
10	Verb Pattern 2, Vocabulary, Reading, Speaking, Listening, and Writing Skills			
11	Passives, Vocabulary, Reading, Speaking, Listening, and Writing Skills			
12	Second Conditional, Vocabulary, Reading, Speaking, Listening, and Writing Skills			
13	Present Perfect Continuous, Vocabulary, Reading, Speaking, Listening, and Writing Skills			
14	Reported Statements			
15	Communications skills			

Second Semester

Code	Subject	Hrs./week			Units
		Theo.	Tut.	Lab.	
C.E.200	Mathematics (IV)	3	1	-	3
C.E.204	Strength of Materials (II)	3	1	-	3
C.E.208	Programming (III)	1	-	2	2
C.E.210	Fundamentals of Computer (IV)	1	1	-	1
C.E.212	Engineering Surveying (II)	2	-	2	3
C.E.216	Fluid Mechanics (II)	2	-	2	3
C.E.220	Building Construction (II)	1	1	2	2
C.E.224	Concrete Technology (II)	2	-	2	3
Total		15	4	10	20
		29			

Weeks	C.E.200 Mathematics (IV)			
	Theory	Tutorial	Laboratory	Units
	3hrs./ Week	1hr. / Week	---	3
1	Functions of Several Variables			
2	Partial Derivatives			
3	The Chain Rule			
4	Applications of Partial Derivatives			
5	Multiple Integrals			
6	Double and Iterated Integrals over Rectangles			
7	Double Integrals over General Regions			
8	Double Integral in polar forms			
9	Applications of Double Integrals			
10	Triple Integrals			
11	Triple Integrals in Cylindrical and Spherical Coordinates			
12	Applications on Triple Integrals			
13	Introduction to differential equations			
14	First order ordinary differential equations			

Weeks	C.E.204 Strength of Materials (II)			
	Theory	Tutorial	Laboratory	Units
	3hrs./ Week	1hr. / Week	---	3
1	Shear stress			
2	Shear stress			
3	Spacing of nail			
4	Double integration method			
5	Double integration method			
6	Moment-area method			
7	Moment-area method			
8	Axial-flexural combined stress			
9	Axial-flexural combined stress			
10	Shear-torsion combined stress			
11	Shear-torsion combined stress			
12	Analysis of plane stress and strain			
13	Equations for the transformation of plane stress			
14	Graphical solution - Mohr's circle			

Weeks	C.E.208 Programming (III)			
	Theory	Tutorial	Laboratory	Units
	1 hrs./ Week	---	2hr. / Week	2
1	Introduction and Programming basics			
2	Conditionals , Nested conditionals; logical operators			
3	Iteration: for			
4	Iteration: while			
5	Developing algorithms; nested loop			
6	User-defined functions			
7	Executing a user-defined function			
8	Discrete vs. continuous; plotting			
9	2-d Arrays—matrix			
10	Characters and strings			
11	Cell arrays, working with numeric/text data (file I/O)			
12	Structures and structure arrays			
13	Array of objects, constructor that handles variable number of args			
14	Sorting and Searching			

Weeks	C.E.210 Fundamentals of Computer (IV)			
	Theory	Tutorial	Laboratory	Units
	1hrs./ Week	1hrs./ Week	----	1
1	Network and Internet Principles			
2	Network and Internet Principles			
3	Network and Internet Principles			
4	Network and Internet Principles			
5	Browsing and Searching the Internet			
6	Browsing and Searching the Internet			
7	Browsing and Searching the Internet			
8	E-mails and E-chatting			
9	E-mails and E-chatting			
10	E-mails and E-chatting			
11	E-mails and E-chatting			
12	The Ethics of Internet World			
13	The Ethics of Internet World			
14	The Ethics of Internet World			
15	Internet Societies and Laws			

Weeks	C.E.212 Engineering Surveying (II)			
	Theory	Tutorial	Laboratory	Units
	2hrs./ Week	-	2hr. / Week	3
1	General concepts angles measuring instruments: Basic parts and principles, optical-reading theodolites, digital theodolite, total station. Measuring horizontal angles; repetition method, direct method.			
2	Angles measuring instruments: Basic parts and principles, optical-reading theodolites, total station.			
3	Measuring horizontal angles; repetition method, direct method.			
4	Measuring horizontal angles; repetition method, direct method.			
5	Angles measuring instruments: Measuring vertical angles,			
6	Traversing: Introduction; methods of control survey, accuracy standards and specifications, basic concept of traversing, types of traverses.			
7	Traversing: Computation of horizontal coordinates of the traverse stations. Adjustment of horizontal coordinates of the traverse stations.			
8	Traversing: Computation of horizontal coordinates of the traverse stations. Adjustment of horizontal coordinates of the traverse stations.			
9	Areas: Methods of measuring area			
10	Areas: Methods of measuring area			
11	Topographic Surveying			
12	Volume of earth work			
13	Volume of earth work			
14	Horizontal and Vertical Curves			
15	Horizontal and Vertical Curves			

Weeks	C.E.216 Fluid Mechanics (II)			
	Theory	Tutorial	Laboratory	Units
	2hrs./ Week	---	2hr. / Week	3
1	Momentum Principle: Momentum equation			
2	Impinging jets; forces on vanes and blades			
3	Real Fluid Flow: Laminar and turbulent flow			
4	Laminar flow through circular pipes			
5	Turbulent Flow and the Moody Diagram			
6	Specifying Pipe Sizes			
7	Head losses in laminar flow			
8	Pipe Flow Applications: Flow resistance in smooth and rough pipes			
9	Minor losses; analysis of pipelines			
10	Three reservoirs problem			
11	Three reservoirs problem			
12	Pipe networks			
13	Pipe networks			
14	Open Channel Flow			
15	Open Channel Flow			

Weeks	C.E.220 Building Construction (II)			
	Theory	Tutorial	Laboratory	Units
	2hrs./ Week	-----	2hrs./ Week	2
1	Introduction, Definitions			
2	Floors and Roofs, Introduction to Construction Drawing			
3	Floors and Roofs, Computer Aided Construction Drawing			
4	Arches, Lintels and Sills, Computer Aided Construction Drawing			
5	Arches, Lintels and Sills, Computer Aided Construction Drawing			
6	Damp Proofing, Construction Drawing Civil Engineering Symbols			
7	Damp Proofing, Constructions Plane and Projections of Construction			
8	Finishing of Walls and Ceilings, Plane and Projections of Construction			
9	Finishing of Walls and Ceilings, Profile and Cross Section of Construction			
10	Doors and Windows, Sections of Footings			
11	Doors and Windows, Sections of Walls			
12	Means of Moving Between Levels, Sections of Columns			
13	Means of Moving Between Levels, Sections of Beams			
14	Joints in Buildings , Sections of Slabs			
15	Joints in Buildings, Compound Sections			

Weeks	C.E.224 Concrete Technology (II)			
	Theory	Tutorial	Laboratory	Units
	2hrs./ Week	---	2hrs./ Week	3
1	Introduction for fresh concrete			
2	Workability and its tests			
3	Factors affected workability			
4	Segregation			
5	Compaction of concrete			
6	Hardened Concrete			
7	Application for types of concrete			
8	Factors affected the strength of concrete			
9	Curing of concrete			
10	Mix design of concrete			
11	Modulus of elasticity			
12	Modulus of elasticity			
13	Volume Change			
14	Creep			
15	Durability of Concrete			

THIRD YEAR

Third Year

First Semester

Code	Subject	Hrs./week			Units
		Theo.	Tut.	Lab.	
C.E.301	Engineering Analysis	3	-	-	3
C.E.305	Theory of Structures (I)	3	1	-	3
C.E.309	Soil Mechanics (I)	2	-	2	3
C.E.313	Reinforced Concrete (I)	2	1	-	2
C.E.317	Environmental Engineering	1	1	2	2
C.E.321	Project Management	1	1	2	2
C.E.325	Traffic Engineering	1	1	-	1
C.E.329	Irrigation & Drainage Engineering	2	1	-	2
Total		15	6	6	18
		27			

Weeks	C.E.301 Engineering Analysis			
	Theory	Tutorial	Laboratory	Units
	3hrs./ Week	-----	---	3
1	Classification of DE			
2	Solution of 1st order ODE			
3	Applications on 1st order ODE			
4	Solution of Homogenous 2nd order ODE			
5	Solution of Non Homogenous 2nd order ODE			
6	Solution of Linear higher order ODE			
7	Euler – Cauchy equations			
8	Applications on 2nd order ODE			
9	Solution simultaneous linear DE			
10	Applications on Simultaneous linear DE			
11	Fourier Series			
12	Applications on Fourier Series			
13	Partial differential equations			
14	Separation of variables			
15	Applications on Partial differential equations			

Weeks	C.E.305 Theory of Structure (I)			
	Theory	Tutorial	Laboratory	Units
	3hrs./ Week	1hr. / Week	---	3
1	Theory of Structures			
2	Introduction and types of structures and loads			
3	Determinacy and stability			
4	Analysis of statically determinant frames			
5	Analysis of statically determinant frames			
6	Influence line for statically determinant beams			
7	Influence line for statically determinant trusses			
8	Influence line for statically determinant floor girders			
9	Maximum influence at a point due to a series of concentrated loads			
10	Maximum influence at a point due to a series of concentrated loads			
11	Deflections by virtual work method: Beams			
12	Deflections by virtual work method: Beams			
13	Deflections by virtual work method: Frames			
14	Deflections by virtual work method: Trusses			
15	Deflections of Beams by conjugated-beam method			

Weeks	C.E.309 Soil Mechanics (I)			
	Theory	Tutorial	Laboratory	Units
	2hrs./ Week	-----	2hrs./ Week	3
1	Introduction to Soil Mechanics			
2	Soil properties			
3	Soil properties			
4	Weight volume relationships			
5	Weight volume relationships			
6	Soil classification			
7	Soil classification			
8	Soil classification			
9	Soil compaction			
10	Soil compaction			
11	Soil compaction			
12	Soil permeability			
13	One dimensional flow			
14	One dimensional flow			
15	Two dimensional flow			

Weeks	C.E.313 Reinforced Concrete (I)			
	Theory	Tutorial	Laboratory	Units
	2hrs./ Week	1hr. / Week	---	2
1	Introduction			
2	Ultimate strength method principles			
3	Analysis of single beams using ultimate strength method			
4	Design of single beams using ultimate strength method			
5	Design of single beams using ultimate strength method			
6	Analysis of doubly beams using ultimate strength method			
7	Design of doubly beams using ultimate strength method			
8	Analysis of T- beams and irregular using ultimate strength method			
9	Design of T- beams and irregular using ultimate strength method			
10	Analysis and design of continuous beams.			
11	Analysis and design of continuous beams.			
12	Shear strength of concrete beams			
13	Shear strength of concrete beams			
14	Torsion Design of beams			
15	Severability of beams			

Weeks	C.E.317 Environmental Engineering			
	Theory	Tutorial	Laboratory	Units
	1hrs./ Week	1hr. / Week	2hr. / Week	2
1	Introduction to environmental protection engineering.			
2	Principle of EIA (environmental impact assessment).			
3	EIA report preparation according to international codes.			
4	EIA report preparation according to international codes.			
5	Water resources and water pollution sources.			
6	Water resources and water pollution sources.			
7	Water pollution and the kind of polluters and the diseases that transport through water.			
8	Water pollution and the kind of polluters and the diseases that transport through water.			
9	Introduction to air pollution (types, sources and measurements).			
10	Method of air pollution control and treatment.			
11	Method of air pollution control and treatment.			
12	The solid waste and its effects on the environment and the ways of storing, collecting, and treating it			
13	The solid waste and its effects on the environment and the ways of storing, collecting, and treating it			
14	Noise and its effects on the human's health.			
15	Noise and its effects on the human's health.			

Weeks	C.E.321 Project Management			
	Theory	Tutorial	Laboratory	Units
	1hrs./ Week	1hr. / Week	2hr. / Week	2
1	Introduction, project phases, Introduction to Management Computer Software			
2	Contracting methods and contract types, Computer Applications			
3	Changes in duration and cost for the construction projects, Computer Applications			
4	Planning and scheduling methods, Computer Applications			
5	Bar charts, Computer Applications			
6	Activity on Arrow Method, Computer Applications			
7	Activity on Nod Method, Computer Applications			
8	PERT method, Computer Applications			
9	Line of Balance Method, Computer Applications			
10	Time Cost Trade off Analysis, Computer Applications			
11	Time Cost Trade off Analysis, Computer Applications			
12	Cash flow forecasting, Computer Applications			
13	Cash flow forecasting, Computer Applications			
14	Cash flow forecasting, Computer Applications			
15	Review			

Weeks	C.E.325 Traffic Engineering			
	Theory	Tutorial	Laboratory	Units
	1hrs./ Week	1hr. / Week	---	1
1	Traffic administration			
2	Volume studies			
3	Volume studies			
4	Speed			
5	Speed			
6	Traffic Flow Theory			
7	Traffic Flow Theory			
8	Traffic Flow Theory			
9	Delay Studies			
10	Capacity and Level of Service (LOS)			
11	Capacity and Level of Service (LOS)			
12	Capacity and Level of Service (LOS)			
13	Design of traffic signals			
14	Design of traffic signals			
15	Traffic management to reduce congestion and increase safety			

Weeks	C.E.329 Irrigation & Drainage Engineering			
	Theory	Tutorial	Laboratory	Units
	2hrs./ Week	1hr. / Week	---	2
1	Irrigation (definition, purposes, sources)			
2	Soil-water relationship			
3	Flow of water into and through soil			
4	Water requirement, Irrigation efficiencies			
5	Consumptive use, Water duty			
6	Unlined irrigation canal			
7	Unlined irrigation canal			
8	lined irrigation canal			
9	lined irrigation canal			
10	Drainage			
11	Drainage			
12	Planning of irrigation and drainage networks			
13	Planning of irrigation and drainage networks			
14	Methods of field irrigation			
15	Methods of field irrigation			

Third Year

Second Semester

Code	Subject	Hrs. /week			Units
		Theo.	Tut.	Lab.	
C.E.300	Numerical Analysis	3	-	-	3
C.E.304	Theory of Structures (II)	3	1	-	3
C.E.308	Soil Mechanics (II)	2	2	-	2
C.E.312	Reinforced Concrete (II)	2	1	-	2
C.E.316	Water Engineering	3	1	-	3
C.E.320	Engineering Economy	2	1	-	2
C.E.324	Geometric Road Design	1	1	-	1
C.E.332	Sustainability in Civil Engineering	1	1	-	1
C.E.334	English for Academic Purposes (III)	2	-	-	2
Total		19	8	0	19
		27			

Weeks	C.E.300 Numerical Analysis			
	Theory	Tutorial	Laboratory	Units
	3hrs./ Week	---	-----	3
1	Solution of f(x) = 0			
2	Advanced Matrices			
3	Numerical solution of Ax = B			
4	Eigen value problems			
5	Numerical Solution of nonlinear system of equations			
6	Interpolation (reading between numbers)			
7	Numerical Differentiation			
8	Numerical integration			
9	Numerical solution of ODE			
10	Finite Difference			
11	Solution of ODE using finite difference			
12	Numerical solution of PDE			
13	Elliptic PDE			
14	Parabolic PED			
15	Hyperbolic PDE			

Weeks	C.E.304 Theory of Structures (II)			
	Theory	Tutorial	Laboratory	Units
	3hrs./ Week	1hr. / Week	---	3
1	Analysis of statically indeterminate Structures by the force method: Beams			
2	Analysis of statically indeterminate Structures by the force method: Beams			
3	Analysis of statically indeterminate Structures by the force method: Frames			
4	Analysis of statically indeterminate Structures by the force method: Trusses			
5	Analysis of statically indeterminate structures by slope-deflection method			
6	Analysis of statically indeterminate structures by slope-deflection method			
7	Analysis of statically indeterminate structures by slope-deflection method			
8	Analysis of statically indeterminate structures by slope-deflection method			
9	Analysis of statically indeterminate structures by moment distribution method			
10	Analysis of statically indeterminate structures by moment distribution method			
11	Analysis of statically indeterminate structures by moment distribution method			
12	Analysis of statically indeterminate structures using direct stiffness method			
13	Analysis of statically indeterminate structures using direct stiffness method			
14	Analysis of statically indeterminate structures using direct stiffness method			
15	Analysis of statically indeterminate structures using direct stiffness method			

Weeks	C.E.308 Soil Mechanics (II)			
	Theory	Tutorial	Laboratory	Units
	2hrs./ Week	2hr. / Week	-----	2
1	Stresses in a soil mass			
2	Stresses in a soil mass			
3	Stress due to loads			
4	Stress due to loads			
5	Immediate settlement			
6	Consolidation settlement			
7	Consolidation settlement			
8	Shear strength			
9	Direct shear			
10	Triaxial shear test			
11	Triaxial shear test			
12	Triaxial shear test			
13	Unconfined compression test			
14	Lateral earth pressure			
15	Lateral earth pressure			

Weeks	C.E.312 Reinforced Concrete (II)			
	Theory	Tutorial	Laboratory	Units
	2hrs./ Week	1hr. / Week	---	2
1	Analysis of one-way slab			
2	Design of one-way slab			
3	Design and analysis of continuous one-way slabs			
4	Introduction to columns			
5	Analysis and design of short concentrically loaded columns			
6	Analysis and design of short eccentrically loaded columns			
7	Analysis and design of short columns using interaction diagrams			
8	Analysis and design of short biaxially loaded columns			
9	Introduction to long columns			
10	Design and analysis of long columns			
11	Design and analysis of long columns			
12	Development length			
13	Development length			
14	Selective Topics			

Weeks	C.E.316 Water Engineering			
	Theory	Tutorial	Laboratory	Units
	3hrs./ Week	1hr. / Week	---	3
1	Introduction of Sanitary Engineering			
2	Basics of Sanitary and Environmental Engineering			
3	Sources of water, the amount of water and sewage			
4	Water collection			
5	Surface water, quality of water, drinking water standards			
6	Water consumption			
7	Pumping design			
8	Water treatment(coagulation)			
9	Water treatment (flocculation)			
10	Water treatment(sedimentation)			
11	Water treatment(sedimentation)			
12	Water treatment(filtration)			
13	Water treatment(disinfection)			
14	Water distribution			
15	Introduction to Advanced Treatments			

Weeks	C.E.320 Engineering Economy			
	Theory	Tutorial	Laboratory	Units
	2hrs./ Week	1hr. / Week	---	2
1	Introduction, demand and supply			
2	Simple and compound interest			
3	Equivalent annual cost			
4	Economical comparison methods, Annual Cost			
5	Present Worth Method			
6	Interest Rate of Return Method IRR			
7	Interest Rate of Return Method IRR			
8	Break Even Analysis			
9	Break Even Analysis			
10	Depreciation			
11	Depreciation			
12	Linear Programming			
13	Linear Programming			
14	Incentive Scheme			
15	Incentive Scheme			

Weeks	C.E.324 Geometric Road Design			
	Theory	Tutorial	Laboratory	Units
	1hrs./ Week	1hr. / Week	---	1
1	Elements of design			
2	Stopping and passing sight distance			
3	Stopping and passing sight distance			
4	Stopping and passing sight distance			
5	Design of horizontal curves			
6	Design of horizontal curves			
7	Design of horizontal curves			
8	Design of vertical curves			
9	Design of vertical curves			
10	Design of vertical curves			
11	Design of vertical curves			
12	Interchanges			
13	Interchanges			
14	Design of parking			
15	Design of parking			

Weeks	C.E. 332 Sustainability in Civil Engineering			
	Theory	Tutorial	Laboratory	Units
	1hrs./ Week	1hrs./ Week	---	1
1	Concept of Sustainability and designing it into projects			
2	frameworks			
3	LEED and Living Building Challenge			
4	Energy and Carbon Footprint			
5	Building Materials recycling and Re-use			
6	Sustainable Environment			
7	Sustainable Economic			
8	Sustainable Structures			
9	Sustainable Transportation			
10	Digital Imaging for Sustainable Development			
11	Geographic Information System for Sustainable Development			
12	Geographic Information System for Sustainable Development			
13	Remote Sensing for Sustainable Development			
14	Remote Sensing for Sustainable Development			
15	Go Green			

Weeks	C.E.334 English for Academic Purposes (III)			
	Theory	Tutorial	Laboratory	Units
	2hr. / Week	---	-----	2
1	Auxiliary Verbs, Vocabulary, Reading, Speaking, Listening, and Writing Skills			
2	Present Tenses, Vocabulary, Reading, Speaking, Listening, and Writing Skills			
3	Past Tenses, Vocabulary, Reading, Speaking, Listening, and Writing Skills			
4	Modal Verbs, Vocabulary, Reading, Speaking, Listening, and Writing Skills			
5	Future Forms, Vocabulary, Reading, Speaking, Listening, and Writing Skills			
6	Questions with like, Vocabulary, Reading, Speaking, Listening, and Writing Skills			
7	Present Perfect, Vocabulary, Reading, Speaking, Listening, and Writing Skills			
8	Conditionals, Vocabulary, Reading, Speaking, Listening, and Writing Skills			
9	Modal Verbs, Vocabulary, Reading, Speaking, Listening, and Writing Skills			
10	Present Perfect Continuous, Vocabulary, Reading, Speaking, Listening, and Writing Skills			
11	Indirect Questions, Vocabulary, Reading, Speaking, Listening, and Writing Skills			
12	Reported Speech, Vocabulary, Reading, Speaking, Listening, and Writing Skills			
13	Communications skills			
14	Communications skills			
15	Review			

FOURTH YEAR

Fourth Year

First semester

Code	Subject	Hrs./week			Units
		Theo.	Tut.	Lab.	
C.E.401	Foundation Engineering (I)	3	-	-	3
C.E.405	Asphalt Technology	2	-	2	3
C.E.409	Concrete Design (I)	2	1	-	2
C.E.413	Steel Structure (I)	2	1	-	2
C.E.417	Wastewater Engineering	3	1	-	3
C.E.421	Estimation & Specifications	2	1	-	2
C.E.425	Hydrology	2	1	-	2
C.E.429	English for Academic Purposes (IV)	2	-	-	2
C.E.430	Engineering Project	-	-	4	2
Total		18	5	6	21
		29			

Weeks	C.E.401 Foundation Engineering (I)			
	Theory	Tutorial	Laboratory	Units
	3hrs./ Week	----	---	3
1	Soil explorations			
2	Soil explorations			
3	Bearing capacity of shallow foundations			
4	Bearing capacity of shallow foundations			
5	Bearing capacity of shallow foundations			
6	Bearing capacity of shallow foundations			
7	Settlement of foundations			
8	Settlement of foundations			
9	Structural design of foundations			
10	Structural design of foundations			
11	Structural design of foundations			
12	Structural design of foundations			
13	Structural design of foundations			
14	Mat foundations			
15	Mat foundations			

Weeks	C.E.405 Asphalt Technology			
	Theory	Tutorial	Laboratory	Units
	2hrs./ Week	---	2	3
1	Cross-Section Elements and Mass Haul Diagram			
2	Cross-Section Elements and Mass Haul Diagram			
3	Cross-Section Elements and Mass Haul Diagram			
4	Types and properties of asphalt in pavement construction			
5	Types and properties of asphalt in pavement construction			
6	Types and properties of asphalt in pavement construction			
7	Aggregate used in Asphalt Concrete			
8	Aggregate used in Asphalt Concrete			
9	Aggregate used in Asphalt Concrete			
10	Requirements for bituminous mixes			
11	Volumetric Properties of Asphalt Mixtures			
12	Volumetric Properties of Asphalt Mixtures			
13	Design of aggregate gradation for asphalt mixes			
14	Design of asphalt mixes			
15	Design of asphalt mixes			

Weeks	C.E.409 Concrete Design (I)			
	Theory	Tutorial	Laboratory	Units
	2hrs./ Week	1hr. / Week	---	2
1	Review for concrete design member and types of load			
2	Types of two-way slab system and design concepts			
3	Design and analysis of two-way slab by method 3			
4	Design and analysis of two-way slab by method 3			
5	Design of two-way slab by Direct Design Method			
6	Design of two-way slab by Direct Design Method			
7	Design of two-way slab by Direct Design Method			
8	Design of two-way slab by Direct Design Method			
9	Design and analysis of Waffle slab			
10	Design and analysis of Waffle slab			
11	Design of Punching Shear in flat slab			
12	Design of Punching Shear in flat slab			
13	Design of Punching Shear in flat slab			
14	Design of Punching Shear in flat slab			
15	Design of Punching Shear in flat slab			

Weeks	C.E.413 Steel Structures (I)			
	Theory	Tutorial	Laboratory	Units
	2hrs./ Week	1hr. / Week	---	2
1	Introduction of steel structures			
2	Types of loadings			
3	Design of tension members			
4	Design of tension members			
5	Design of compression members (columns)			
6	Design of compression members (columns)			
7	Design of compression members (columns)			
8	Design of flexural members (beams)			
9	Design of flexural members (beams)			
10	Design of flexural members (beams)			
11	Design of flexural members (beams)			
12	Design of beam - column members			
13	Design of beam - column members			
14	Design of beam - column members			
15	Design of beam - column members			

Weeks	C.E.417 Wastewater Engineering			
	Theory	Tutorial	Laboratory	Units
	3hrs./ Week	1hr. / Week	---	3
1	Wastewater treatment objective			
2	Sanitary sewage flow estimation			
3	Characteristics and composition of sewage			
4	Sewerage system			
5	Types and method of wastewater treatment			
6	Primary treatment			
7	Screens			
8	Grit chamber			
9	Primary sedimentation tanks			
10	Secondary Treatment of Sewage			
11	Biological treatment(activated sludge)			
12	Biological treatment(activated sludge)			
13	Trickling filter			
14	Sludge treatment			
15	Advanced treatment			

Weeks	C.E.421 Estimation & Specifications			
	Theory	Tutorial	Laboratory	Units
	2hrs./ Week	1hr. / Week	---	2
1	Introduction about estimating and earth works with planning and leveling.			
2	Excavation of foundation			
3	Layer of boulder and layer of sub-base for the whole area of the excavation with a width equal to the foundation width indicated in plans.			
4	Casting lean with width equal to the foundation			
5	layer of block or rock			
6	Casting lean concrete with width equal to the thickness of wall			
7	Wall building work - Build by brick and cement mortar and by block			
8	Casting a concrete for girders and column s			
9	Casting a concrete to the slabs.			
10	Finishing works			
11	Roof works estimating			
12	Box Culvert estimating			
13	Water Tank estimating			
14	Canals estimating			
15	project estimating			

Weeks	C.E.425 Hydrology			
	Theory	Tutorial	Laboratory	Units
	2hrs./ Week	1hr. / Week	---	2
1	Hydrology, hydrologic cycle			
2	Meteorological data			
3	Precipitation, Rainfall information			
4	Estimating missing precipitation data			
5	Average precipitation over an area			
6	Optimum rain gage station			
7	Double mass curve analysis			
8	Evaporation and transpiration			
9	Infiltration			
10	Stream flow			
11	Extension of rating curve			
12	Hydrograph			
13	Hydrograph			
14	Reservoir routing			
15	Stream flow routing			

Weeks	C.E.429 English for Academic Purposes (IV)			
	Theory	Tutorial	Laboratory	Units
	2hrs./ Week	-----	---	1
1	Tenses System, Vocabulary, Reading, Speaking, Listening, and Writing Skills			
2	Present Perfect, Vocabulary, Reading, Speaking, Listening, and Writing Skills			
3	Narrative Tenses, Vocabulary, Reading, Speaking, Listening, and Writing Skills			
4	Questions and Negatives, Vocabulary, Reading, Speaking, Listening, and Writing Skills			
5	Future Forms, Vocabulary, Reading, Speaking, Listening, and Writing Skills			
6	Expressions of Quantity, Vocabulary, Reading, Speaking, Listening, and Writing Skills			
7	Modals Verbs 1, Vocabulary, Reading, Speaking, Listening, and Writing Skills			
8	Relative Clauses, Vocabulary, Reading, Speaking, Listening, and Writing Skills			
9	Expression Habit, Vocabulary, Reading, Speaking, Listening, and Writing Skills			
10	Modals Verbs 2, Vocabulary, Reading, Speaking, Listening, and Writing Skills			
11	Hypothesizing, Vocabulary, Reading, Speaking, Listening, and Writing Skills			
12	Articles, Determiners, Vocabulary, Reading, Speaking, Listening, and Writing Skills			
13	Communications skills			
14	Communications skills			
15	Review			

No. of Weeks	C.E.433 Engineering Project			
	Theory	Tutorial	Laboratory	Units
	---	---	4hr. / Week	2
15	Students are required to work on project in any of the areas related to Civil Engineering. The students will work 4 hrs. per week with his / her supervisor(s) during the all-academic year in the 4th stage.			

Fourth year

Second Semester

Code	Subject	Hrs./week			Units
		Theo.	Tut.	Lab.	
C.E.400	Foundation Engineering (II)	3	-	-	3
C.E.404	Pavement Design	2	-	-	2
C.E.408	Concrete Design (II)	2	1	-	2
C.E.412	Steel Structure (II)	2	1	-	2
C.E.416	Plumbing Engineering	2	1	-	2
C.E.420	Construction Methods	2	1	-	2
C.E.424	Hydraulic structures	2	1	-	2
C.E.428	Computer Aided Structural Analysis	-	-	2	1
C.E.433	Engineering Project	-	-	4	2
C.E.440	Engineering Ethics and Occupational Safety	1	1	-	1
Total		16	6	6	19
		28			

Weeks	C.E.400 Foundation Engineering (II)			
	Theory	Tutorial	Laboratory	Units
	3hrs./ Week	-----	---	3
1	Lateral earth pressure			
2	Retaining walls			
3	Retaining walls			
4	Sheet piles design in sand			
5	Sheet piles design in clay			
6	Pile foundations			
7	Design of single pile			
8	Pile design using SPT data			
9	Pile design using CPT data			
10	Pile capacity dynamic analysis			
11	Pile capacity from Pile load test			
12	Piles group			
13	Piles group			
14	Piles group			
15	Introduction to slop stability			

Weeks	C.E.404 Pavement Design			
	Theory	Tutorial	Laboratory	Units
	2hrs./ Week	----	---	2
1	Types of pavements and general principles			
2	Types of pavements and general principles			
3	Stresses in flexible pavement			
4	Stresses in flexible pavement			
5	Design of Flexible Pavement			
6	Design of Flexible Pavement			
7	Design of Flexible Pavement			
8	Thickness design of rigid Pavement			
9	Thickness design of rigid Pavement			
10	Types of joints in rigid pavement			
11	Stresses in rigid pavement			
12	Stresses in rigid pavement			
13	Reinforcement design of rigid pavement			
14	Reinforcement design of rigid pavement			
15	Reinforcement design of rigid pavement			

Weeks	C.E.408 Concrete Design (II)			
	Theory	Tutorial	Laboratory	Units
	2hrs./ Week	1hr. / Week	---	2
1	Introduction for yield line theory			
2	Analysis of slab by yield line			
3	Analysis of slab by yield line			
4	Analysis of slab by yield line			
5	Design of slab by yield line			
6	Design of slab by yield line			
7	Introduction for prestress concrete members			
8	Stresses in prestress concrete beams			
9	Stresses in prestress concrete beams			
10	Allowable stresses in prestress concrete and steel			
11	Design of prestress beam (ASD method)			
12	Design of prestress beam (ASD method)			
13	Design of prestress beam (Ultimate method)			
14	Shear in prestress beams			
15	Design of staircases			

Weeks	C.E.412 Steel Structures II			
	Theory	Tutorial	Laboratory	Units
	2hrs./ Week	1hr. / Week	---	2
1	Design of bolted connections			
2	Design of bolted connections			
3	Design of bolted connections			
4	Design of bolted connections			
5	Design of welded connections			
6	Design of welded connections			
7	Design of welded connections			
8	Design of welded connections			
9	Design of plate girders			
10	Design of plate girders			
11	Design of plate girders			
12	Miscellaneous design considerations			
13	Miscellaneous design considerations			
14	Miscellaneous design considerations			
15	Miscellaneous design considerations			

Weeks	C.E.416 Plumbing Engineering			
	Theory	Tutorial	Laboratory	Units
	2hrs./ Week	1hrs./ Week	---	2
1	Pipes: types, of pipes, fittings, and valves.			
2	Sanitary fixtures: tanks, pressures, water consumption, discharges.			
3	Design of cold-water pipe systems: Types of systems, pressures.			
4	Design of cold-water pipe systems: Calculation of pipe sizes, equivalent pipe methods, cold water cistern.			
5	Design of hot water pipe system: Direct and indirect systems of hot water distribution, hot water storage tank types, capacity and required energy.			
6	Drainage pipes system within buildings: Types and methods of joining, supports of drainage pipes.			
7	Design of drainage systems: Pipe size calculations for one-pipe system.			
8	Design of drainage systems: Pipe size calculations for two-pipe system.			
9	Design of vent systems: Individual venting, loop venting.			
10	Design of vent systems: Branch venting, and methods of jointing.			
11	Storm water drainage systems: Rainwater intensity, equivalent units.			
12	Storm water drainage systems: Equivalent units.			
13	Firefighting systems with buildings: Fire hydrants, sprinklers.			
14	Firefighting systems with buildings: sprinklers.			
15	Firefighting systems with buildings: Hazard occupancy classification.			

Weeks	C.E.420 Construction Methods			
	Theory	Tutorial	Laboratory	Units
	2hrs./ Week	1hr. / Week	---	2
1	Introduction to The Methods of construction			
2	Introduction to Methods of management projects			
3	An engineer and contractor with the economics of construction			
4	Costs of operation equipment			
5	Costs of operation equipment with examples			
6	Engineering fundamentals for choosing construction tools 1			
7	Engineering fundamentals for choosing construction tools 2 examples			
8	Engineering fundamentals for choosing construction tools 3 examples			
9	Methods of estimating the productivity of machines			
10	Methods of estimating the productivity of machines			
11	Methods of estimating the productivity of machines			
12	Methods of estimating the productivity of machines and cost s			
13	Methods of stabilities soils			
14	Methods of stabilities soils			
15	The Works of wood			

Weeks	C.E.424 Hydraulic structures			
	Theory	Tutorial	Laboratory	Units
	2hrs./ Week	1hrs./ Week	---	2
1	Hydraulic structures (introduction),			
2	Seepage under hydraulic structures			
3	Seepage under hydraulic structures			
4	Seepage under hydraulic structures			
5	Design of Regulators			
6	Design of Regulators			
7	Protection of approach U/S & D/S of concrete floor			
8	Protection of approach U/S & D/S of concrete floor			
9	Design of gates			
10	Hydraulic Jump , Design of Stilling Basins			
11	Design of Stilling Basins			
12	Design of Transition in open channels			
13	Design of Transition in open channels			
14	Design of Box- Culverts			
15	Design of Inverted Siphon			

Weeks	C.E.428 Computer Aided Structural Analysis			
	Theory	Tutorial	Laboratory	Units
	---	----	2hrs./ Week	1
1	Introduction to STAADPRO Program			
2	Editor method			
3	Orders used in editor method			
4	Orders used in editor method			
5	Analysis of concrete structures using editor			
6	Analysis of concrete structures using editor			
7	Analysis of steel structures using editor			
8	Analysis of steel structures using editor			
9	Design of concrete structures using editor			
10	Design of concrete structures using editor			
11	Design of steel structures using editor			
12	Design of steel structures using editor			
13	Viewing results of concrete design			
14	Viewing results of steel design			
15	Viewing results of steel design			

Weeks	C.E. 440 Engineering Ethics and Occupational Safety			
	Theory	Tutorial	Laboratory	Units
	1hrs./ Week	1hrs./ Week	---	1
1	Importance of Ethics in Science and Engineering			
2	Philosophy, Religion, and Ethics; Moral Analysis;			
3	Theory and practice of ethics in academic, The Role of Codes of Ethics			
4	Leadership in Engineering and Industry, Distinguishing Exterior and Interior Morality			
5	Factors Limiting Moral Responsibility and Degrees of Responsibility			
6	The Importance of Intention, Ethics in the Global Engineering Profession			
7	Fairness in Supervising; Fairness in Contracting; Intellectual Property and Society.			
8	History of the safety movement. Safety and health programs			
9	Accident causes and types of accidents. Types of injuries.			
10	Occupational safety and health performance measurement.			
11	Responsibility for occupational safety and health.			
12	Organization of the safety and health function.			
13	Safety inspections. Occupational safety and health training.			
14	Occupational safety and health standards. OSHA's role in occupational safety and health.			
15	Accident investigation. The role of insurance and risk management/ loss control in occupational safety and health.			

No. of Weeks	C.E.433 Engineering Project			
	Theory	Tutorial	Laboratory	Units
	---	---	2hr. / Week	2
15	Students are required to work on project in any of the areas related to Civil Engineering. The students will work 4 hrs. per week with his / her supervisor(s) during the all-academic year in the 4th stage.			