Architectural Engineering Sciences Program Level 0

Course Specification

Course Specification

1. Basic Information:

Program Title	Architectural Engineering Sciences Program			
Department Offering the program	Architectural Engineering Sciences Department			
Department Offering the course	Basic Engineering Sciences Department			
Course Title	Mathematics I		Code	BES 011
Type	**Compulsory** ☒		**Elective** ☐	
Semester	Level 0-1			
Teaching Hours	**Lec.**	**Tut.**	**Lab.**	**Credit hours**
	2	2	0	3

2. Professional Information:

2.1. Course description:

Differential Calculus: Real functions and their graphs (Algebraic functions, trigonometric functions and their inverses, exponential, hyperbolic and logarithmic functions). Limits and continuity. Differentiation of real functions of one variable. Applications of differentiation (maxima, minima and inflection points, curve tracing, optimization problems, related rates). The first mean value theorem and first order approximation of function. Taylor, and Maclaurin's expansions of functions.
Algebra: Elements of mathematical logic with applications, Matrix algebra and system of linear equations (Gauss elimination, Gauss-Gordon elimination and LU Factorization and Matrix inversion). Eigenvalues and Eigenvectors. Complex variables

2.2. Course Objectives (CO):

Program objective		**Course objective**	
PO1	Apply a wide spectrum of engineering knowledge, science, and specialized skills with analytic, critical, and systemic thinking to identify and solve engineering problems in real-life situations.	CO1	Explain elements of mathematical logic, relations, mappings, real functions and their graphs applications of differentiation, and its applications.
PO2	Behave professionally and adhere to engineering ethics and standards and work to develop the profession and the community and promote sustainability principles.	CO2	Select a suitable item to evaluate applied engineering problems.

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
A1-PLO1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.	CLO1	Identify the basic items of the course.
		CLO2	Explain how to use all items of the course in applied engineering problems
A2-PLO2	Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess, and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	CLO3	Solve the suitable solution methods for various mathematics elements
		CLO4	Analyze the different problems and verifications

2.4. Course Topics:

Course Topics	Week	Course LO's Covered			
		CLO1	CLO2	CLO3	CLO4
Real functions and their graphs	1&2	√	√		
Limits and continuity Elements of mathematical logic with applications	3		√		√
Differentiation of real functions of one variable	4&5	√			
Gauss elimination, Gauss-Gordon elimination	6&7	√	√		√
Midterm Exam	8				
The first mean value theorem and first order approximation of function	9	√		√	√
Gauss elimination, Gauss-Gordon elimination and LU Factorization	10	√			√
Eigenvalues and Eigenvectors	11		√	√	
The first mean value theorem and first order approximation of function	12	√	√	√	
Taylor, and Maclaurin's expansions of functions	13		√	√	
Complex variables	14	√			√
Total	**14**	**11**	**8**	**4**	**6**

2.6 Teaching and Learning Methods:

Teaching and Learning Methods:	Course LO's Covered			
Methods	**CLO1**	**CLO2**	**CLO3**	**CLO4**
1. Lecture	√	√	√	
2. Tutorials			√	√
3. Problem-based Learning	√	√		√
Teaching and Learning Methods for Students with Special Needs:				
Methods				
1. Discussion Session				
2. Extra Lectures				
3. Provide different levels of books and materials				

2.7 Assessment Methods:

Assessment Methods:		Course LOs Covered			
Methods		**CLO1**	**CLO2**	**CLO3**	**CLO4**
Formative Assessment Method					
1.Tests	Midterm Exam	√	√		√
	Quizzes		√	√	√
2.Discussion			√		√
Summative Assessment Method					
3.Final Exam		√		√	

2.7.1. Assessment Schedule & Grades Distribution:

Assessment Method	Week	Weighting of Asses.
1. Midterm Exam	8	**30%**
2. Discussion	3,6,9,11	**15%**
3. Quizzes	4,7,12	**15%**
4. Final Exam	Scheduled by the faculty council	**40%**
Total		**100%**

2.8. List of Reference:

Essential Books (Textbooks):	Tai-Ran Hsu, Applied Engineering Analysis, published by John Wiley & Sons, 2018 (ISBN 97811119071204)
	Ray E. Bolz, CRC Handbook of Tables for Applied Engineering Science, CRC Press, 2019, doi.org/10.1201/9781315214092
Periodicals, Web Sites, … etc:	• https://byjus.com • https://ncert.nic.in

2.9. Facilities required for Teaching and Learning:

Different Facilities	
Lecture Hall	
Library Usage	
Data Show	
White Board	

3. Matrix:

3.1. Program Objectives VS Course Objectives:

Program Objectives	Course Objective	
	CO1	CO2
PO1	√	
PO2		√

3.2. Course Objectives VS Course Learning Outcomes:

Course Objectives	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
CO1	√	√		
CO2			√	√

3.3. Program Learning Outcomes VS Course Learning Outcomes:

Program Learning Outcomes	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
PLO1	√	√		
PLO2			√	√

3.4. Assessment Alignment Matrix:

PLO	PO	CLO	Teaching M.	Assessment M.
PLO1	PO1	CLO1	• Lecture • Problem-based Learning	• Midterm Exam • Final Exam
		CLO2	• Lecture • Problem-based Learning	• Midterm Exam • Discussion • Quizzes
PLO2	PO2	CLO3	• Lecture • Tutorials	• Final Exam • Quizzes
		CLO4	• Tutorials • Problem-based Learning	• Midterm Exam • Quizzes • Discussion

Course Coordinator: Ass Prof. Dr. Mohamed Medhat Mousa

Head of Department: Prof. Dr. Zeinab Faisal

Date: 10 / 9 / 2023

Course Specification

1. Basic Information:

Program title	Architectural Engineering Sciences Program			
Department Offering the program	Architectural Engineering Sciences Department			
Department Offering the course	Basic Engineering Sciences Department			
Course Title	Mechanics (1)		**Code**	BES 021
Type	**Compulsory ☒**		**Elective ☐**	
Semester	Level 0-1			
Teaching Hours	**Lec.**	**Tut.**	**Lab.**	**Credit hours**
	2	2	0	3

2. Professional Information:

2.1. Course description:

Fundamental of statics, Types of supports, Vector algebra and applications to mechanics, Statics of particles, Moments of forces and couples in space, Equivalent systems of forces and moments, Equilibrium of rigid bodies, Centroids and centers of gravity, Analysis of structures (Truss and Machines), Friction and its application, Virtual work for a system of connected rigid bodies, Stability of equilibrium configuration.

2.2. Course Objectives (CO):

Program objective		**Course objective**	
PO1	Apply a wide spectrum of engineering knowledge, science, and specialized skills with analytic, critical, and systemic thinking to identify and solve engineering problems in real life situation.	CO1	Analyze the mathematics equilibrium conditions of rest for rigid bodies under the action of various loads.
		CO2	Evaluate the principles of statics as a science for solving the practical problems of engineering applications.

2.3. Course Learning Outcomes (CLO's):

Student Competences	Program Learning Outcomes		Course Learning Outcomes	
A1	PLO1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics	CLO1	predict the statically equilibrium conditions of a particle under the action of forces
			CLO2	Apply the statically equilibrium conditions of a rigid body under the action of various loads.
A2	PLO2	Develop and conduct appropriate experimentation and/or simulation, analyse and interpret data, assess, and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	CLO3	Analyze the forces acting on the members of structures composed of pin-connected members.
			CLO4	Determine the location of the centroid and the moment of inertia for a body of a regular or irregular shape.

2.4. Course Topics:

Course Topics	Week	Course LO's Covered			
		CLO1	CLO2	CLO3	CLO4
Fundamentals of statics, Statics of Particle in space	1,2	√			
Vector algebra and applications to mechanics, Moment of forces and couples in space	3		√		
Equivalent systems of forces and moments	4,5		√		√
Types of supports Equilibrium of Rigid bodies in space	6		√		
Analysis of Structures: Trusses (method of joints)	7			√	
First Mid-Term Exam	8				
Analysis of Structures: Trusses (method of sections)	9			√	
Analysis of Structures: (Machines)	10			√	
Centroids and centers of gravity	11, 12				√
Friction and its application	13	√			
Virtual work for a system of connected rigid bodies	14			√	
Total	**14**				

2.5 Teaching and Learning Methods:

Teaching and Learning Methods:	Course LO's Covered			
Methods	**CLO1**	**CLO2**	**CLO3**	**CLO4**
1. Lecture	√			
2. Tutorials		√		
3. Discussion			√	√

Teaching and Learning Methods for Students with Special Needs:
Methods
1. Discussion Session

2.6 Assessment Methods:

Assessment Methods:		Course LOs Covered			
Methods		**CLO1**	**CLO2**	**CLO3**	**CLO4**
1.Tests	First Mid- Term Exam	√	√		
	Quizzes		√		√
2.Assignments		√	√	√	√
Summative Assessment Method					
3.Final Exam			√	√	√

2.7 Assessment Schedule & Grades Distribution

Assessment Methods		Week	Weighting of Asses.
Formative Assessment Method			
1.Tests	First Mid-term Exam	8th	30%
	Quizzes	6th, 13th,	15%
2.Assignments		5th, 9th, 11th,	15%
Summative Assessment Method			
3.Final exam		Scheduled by the faculty council	40%
Total			**100%**

2.8. List of Reference:

Course Notes:	Vector Mechanics for Engineers: Statics, 12th Edition Ferdinand P. Beer, E. Russell Johnston, 2019
Recommended Books:	Engineering Mechanics, Statics, 14th Edition- Hibbeler, 2018

2.9. Facilities required for Teaching and Learning:

Different Facilities
Lecture Halls
White Boards
Data Show

3. Matrix:

3.1. Program Objectives VS Course Objectives:

Program Objectives	**Course Objective**	
	CO1	**CO2.**
PO1	√	√

3.2. Course Objectives VS Course Learning Outcomes:

Course Objectives	**Course Learning Outcomes**			
	CLO1	**CLO2**	**CLO3**	**CLO4**
CO1	√	√		
CO2			√	√

3.3. Program Learning Outcomes VS Course Learning Outcomes:

Student Competences	Program Learning Outcomes	Course Learning Outcomes			
		CLO1	CLO2	CLO3	CLO4
A1	PLO1	√	√		
A2	PLO2			√	√

3.4. Assessment Alignment Matrix:

Student Competences	PLO	PO	CLO	Teaching M.	Assessment M.
A1	PLO1	PO1	CLO1	• Lectures	• Written Exam • Assignments • Quizzes
			CLO2	• Tutorials	• Written Exa • Assignments
A2	PLO2		CLO3	• Discussion	• • Assignments • Quizzes
			CLO4	• Discussion	• Assignments

Course Coordinator: Dr. Diaa El-Din Khedr Diaa el Din
Head of Department: Prof. Dr. Zeinab Faisal
Date: 10 / 9 / 2023

Course Specification

1. Basic Information:

Program title	Architectural Engineering Sciences Department				
Department Offering the program	Architectural Engineering Sciences Department				
Department Offering the course	Basic Engineering Sciences Department				
Course Title	General Chemistry			**Code**	BES 041
Type	**Compulsory** ☒		**Elective** ☐		
Semester	Level 0-1				
Teaching Hours	**Lec.**	**Tut.**	**Lab.**	**Credit hours**	
	3	1	2	4	

2. Professional Information:

2.1. Course description:

Gases: ideal & real gas laws, kinetic molecular theory - Liquids and solutions - Solids: arrangement of atoms, metallic solids, alloys - Chemical kinetics: reaction rates & order, catalysis – Electrochemistry: electrochemical cells, corrosion– Cements – Polymers – lubricants.

2.2. Course Objectives (CO):

Program objective		Course objective	
PO1	Apply a wide spectrum of engineering knowledge, science, and specialized skills with analytic, critical, and systemic thinking to identify and solve engineering problems in real-life situations.	CO1	Demonstrate knowledge of laboratory safety and to generalize the analytical and quantitative skills gained and apply them in more advanced courses.
		CO2	Recognize the basic fundamentals in engineering chemistry to provide a broad foundation in chemistry that stresses on the concepts of reaction kinetics, redox reaction and understanding polymers, cements, and lubricants,
		CO3	Classify matter and explain the qualitative and quantitative relationships between state of matter and energy involved in chemical or physical processes.

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
A1-PLO1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics	CLO1	Explain gas laws and differentiate between ideal and real gas behavior.
		CLO2	Recognize the intermolecular forces and solutions colligative properties. Familiarizing with basic principle of lubrication and selection of lubricant.
		CLO3	Describe bonding that can be applied to affect the properties of solids. Identify properties of polymers and their characteristics. Specify requirements of clinker, and chemical admixtures used in concrete technology
		CLO4	Identify reaction order to determine rate law. Recognize different factors affecting on it.
A2-PLO2	Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	CLO5	Recognize redox reactions and different types of electrochemical cells. Make stoichiometric calculations for electrolytic processes Recognize corrosion and basic principles to control.
		CLO6	Perform laboratory experiments correctly using appropriate techniques and safety procedures and communicate the results of their experiments via written laboratory reports

2.4. Course Topics:

Course Topics	Week	Course LO's Covered					
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Gas laws & molecular theory, Deviation from ideal gas to real behavior	1-2	✓					
Intermolecular forces& properties of liquids, phase diagrams, Solution process, Colligative properties	3-4		✓				
Structure and bonding in solids, Types of crystalline solids	5			✓			
Reaction rates and the dependence of rate on concentration	6				✓		
Mid Exam	7	✓	✓	✓			
Dependence of reaction rate on concentration, Temperature and catalysis	8				✓		
Oxidation reduction reactions, types of electrochemical cells. corrosion and basic principles to corrosion control	9- 10					✓	
Polymerization reactions, Members of the polymer family	11			✓			
Lubricants	12		✓				
Cement	13			✓			
Experimental exam	14						✓

2.5. Lab Topics:

Lab Topics	Week	Course LO's Covered
		CLO 6
Introduction to lab. safety rules	1	✓
Introduction to lab. glassware	2	✓
Experiment 1: Volumetric determination of NaOH using a standard HCl	3	✓
Experiment 2: Determination of a mixture of carbonate and bicarbonate content of a soda ash sample	4	✓
Experiment 3: Determination of chloride ion concentration	5	✓
Experiment 4: Indirect determination of A mixture of halides.	6	✓
Experiment 5: Determination of ferrous ions in ferrous sulphate using potassium permanganate solution	7	✓
Experiment 6: Titration of ferrous sulphate using potassium dichromate solution	8	✓
Experiment 7: Determination of copper ions in copper sulphate using sodium thiosulphate solution	9	✓
Experiment 8: Determine the consistency of cement using the Vicat apparatus	10	✓
Experimental Test	14	✓
Total	**14**	**14**

2.6 Teaching and Learning Methods:

Teaching and Learning Methods:	Course LO's Covered					
Methods	**CLO1**	**CLO2**	**CLO3**	**CLO4**	**CLO5**	**CLO6**
1. Lecture	✓	✓	✓	✓	✓	
2. Tutorials	✓	✓	✓	✓	✓	
3. Practical-based Learning						✓
4. Problem-based Learning	✓	✓	✓	✓	✓	
5. Interactive learning						✓
Teaching and Learning Methods for Students with Special Needs:						
Methods						
1. Discussion Session						
2. Extra Lectures	✓	✓	✓	✓	✓	✓
3. Provide different levels of books and materials						

2.7 Assessment Methods:

Assessment Methods:		Course LOs Covered					
Methods		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Tests	Mid Exam	✓	✓	✓			
	Practical exam						✓
Assignments							✓
Final Exam		✓	✓	✓	✓	✓	

2.7.1. Assessment Schedule & Grades Distribution:

Assessment Method		Week	Weighting of Asses.
Tests	Mid Exam	7	30%
	Experimental	14	20%
Assignments		Week#2,3,4,9,14	10%
Final Exam		Scheduled by the faculty council	40%
Total			100%

2.8. List of Reference:

Essential Books (Textbooks)	- P. Barnes, J. Bensted, Structure and Performance of Cements, CRC Press, 2nd Edition, 2019. - Jeffrey Gaffney, Nancy Marley, General Chemistry for Engineers (Enhanced Edition), Elsevier; 2018.
Recommended Books	- Brown, Lawrence S. and Holme, Thomas, "Chemistry for Engineering Students, 4th Edition" (2018). Chemistry Books. 1.https://lib.dr.iastate.edu/chem_books/1

2.9. Facilities required for Teaching and Learning:

Different Facilities	
Lecture Hall	✓
Library Usage	✓
laboratory Usage	✓
Data Show	✓
White Board	✓

3. Matrix:

3.1. Program Objectives VS Course Objectives:

Program Objectives	Course Objective		
	CO1	CO2	CO3
PO1	✓	✓	✓

3.2. Course Objectives VS Course Learning Outcomes:

Course Objectives	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
CO1						✓
CO2	✓	✓	✓	✓		
CO3		✓	✓	✓	✓	

3.3. Program Learning Outcomes VS Course Learning Outcomes:

Program Learning Outcomes	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
PLO1	✓	✓	✓	✓		
PLO2					✓	✓

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO1	PO1	1	• Lecture • Tutorials • Problem-based Learning	• Midterm Exam • Final Exam
		2	• Lecture • Tutorials • Problem-based Learning	• Midterm Exam • Final Exam
		3	• Lecture • Tutorials • Problem-based Learning	• Midterm Exam • Final Exam
		4	• Lecture • Tutorials • Problem-based Learning	• Midterm Exam • Final Exam
PLO2		5	• Lecture • Tutorials • Problem-based Learning	• Final Exam
		6	• Experimental-based Learning • Interactive learning	• Experimental Exam

Course Coordinator: Prof. Elsayed Fouad elsayed ali fouda
Head of Department: Prof. Dr. Zeinab Faisal
Date: 10 / 9 / 2023

Course Specification

1. Basic Information:

Program title	Architectural Engineering Sciences Program			
Department Offering the program	Architectural Engineering Sciences Department			
Department Offering the course	Basic Engineering Sciences Department			
Course Title	Physics I		**Code**	BES031
Type	**Compulsory** ☒		**Elective** ☐	
Semester	Level 0-1			
Teaching Hours	**Lec.**	**Tut.**	**Lab.**	**Credit hours**
	2	2	1	3

2. Professional Information:

2.1. Course Description:

Discuss the basic phenomena and theories of mechanical and electromagnetic waves and thermodynamics physics related to engineering applications.

2.2. Course Objectives (CO):

Program objective		Course objective	
PO1	Apply a wide spectrum of engineering knowledge, science, and specialized skills with analytic, critical, and systemic thinking to identify and solve engineering problems in real-life situations.	CO1	Discuss the basic phenomena and theories of mechanical and electromagnetic waves, thermodynamics, heat transfer, and properties of matter physics related to engineering applications.

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
A1-PLO1	Identify, formulate, analyze, and solve complex engineering problems by applying principles of engineering, science, and mathematics.	CLO1	**Explain** the concept of waves, their types and mathematical description, some of their physical phenomena with a few simple applications on mechanical waves.
		CLO2	**Discuss** Young's interference of light, Thin Film, Single Slit Diffraction and Diffraction Grating.
		CLO3	**Explain** the meaning and concept of thermodynamics, its main and principle physical quantities, thermodynamic processes, first law of thermodynamics, ideal gas and its properties, and heat transfer
		CLO4	**Discuss** some of the basic topics on the properties of matter explaining stress and strain and Hooke's law in elasticity and equation of continuity, Bernoulli's equation and its applications, viscosity and surface tension in fluid mechanics.
A2-PLO2	Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	CLO5	**Analyze** the results given from experiments.

2.4. Course Topics:

Course Topics	Week	Course LO's Covered			
		CLO1	CLO2	CLO3	CLO4
Wave Motion	1,2	X			
Sound Waves	3	X			
Superposition of Waves	4	X			
Interference of Light	5		X		
Diffraction of Light	6		X		
Heat and the First Law of Thermodynamics	7			X	
Midterm	8				
Ideal Gas and its Properties	9, 10			X	
Heat Transfer	11			X	
Properties of Matter	12, 13, 14				X
Total	14	3	2	3	1

2.5. Lab Topics:

Lab Topics	Week			Course LO's Covered		
		CLO1	CLO2	CLO3	CLO4	CLO5
Malus' Law						X
Specific Heat						X
Resonance in Air column						X
Single Slit Diffraction						X
Diffraction Grating						X
Hooke's Law						X
Viscosity of a Liquid						X
Surface Tension of Water						X
Total						

2.6 Teaching and Learning Methods:

Teaching and Learning Methods:	Course LO's Covered				
Methods	CLO1	CLO2	CLO3	CLO4	CLO5
1. Lectures	X	X	X	X	
2. Discussion Sessions	X	X	X	X	
3. Practical					X
4. Tutorials	X	X	X	X	

2.7 Assessment Methods:

Assessment Methods:						
Methods		**CLO1**	**CLO2**	**CLO3**	**CLO4**	**CLO5**
Formative Assessment Method						
1.Tests	Quizzes	X				
	Midterm	X	X			
	Quiz 2			X		
	Practical Exam					X
Summative Assessment Method						
2.Final Exam		X	X	X	X	

2.7.1. Assessment Schedule & Grades Distribution:

Assessment Method	Week	Weighting of Asses.
1.Quiz 1	5	5 %
2.Midterm	8	30 %
3.Quiz 2	13	5 %
4.Practical Exam	14	20 %
5.Final Exam	Scheduled by the faculty council	40 %
Total		100%

2.8. List of Reference:

Essential Books (Textbooks):	Physics for Scientists and Engineers, R.A. Serway and J.W. Jewett, 10th Edition, 2018.
Recommended Books:	Physics: Principles and Applications, Douglas C. Giancoli 7th edition, 2022 Fundamentals of physics, Halliday & Resnick, 12th Edition,2021.

2.9. Facilities required for Teaching and Learning:

Different Facilities
Lecture Hall
Library Usage
laboratory Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives:

Program Objectives	Course Objective
	CO1
PO1	X

3.2. Course Objectives VS Course Learning Outcomes:

Course Objectives	Course Learning Outcomes				
	CLO1	CLO2	CLO3	CLO4	CLO5
CO1	X	X	X	X	X

3.3. Program Learning Outcomes VS Course Learning Outcomes:

Program Learning Outcomes	Course Learning Outcomes				
	CLO1	CLO2	CLO3	CLO4	CLO5
PLO1	X	X	X	X	
PLO2					X

3.4. Assessment Alignment Matrix:

PO	PLO	CLO	Teaching M.	Assessment M.
PO1	PLO1	CLO1	• Lectures • Discussion Sessions • Tutorials	• Quiz 1 • Midterm • Final Exam
		CLO2	• Lectures • Discussion Sessions • Tutorials	• Midterm • Final Exam
		CLO3	• Lectures • Discussion Sessions • Tutorials	• Quiz 2 • Final Exam
		CLO4	• Lectures • Discussion Sessions • Tutorials	• Final Exam
	PLO2	CLO5	• Practical	• Practical Exam

Course Coordinator: Associate Prof: Mina Danial Asham Mena.D.
Dr: Ibrahim Sayed Ahmed Ibrahim elsayed
Dr: Walid Soliman selmy walid soliman
Head of Department: Prof. Dr. Zeinab Faisal
Date: 10 / 9 / 2023

Course Specification

1. Basic Information:

Program Title	Architectural Engineering Program			
Department Offering the program	Architectural Engineering Department			
Department Offering the course	Basic Engineering Sciences Department			
Course Title	Engineering Graphics	**Code**	MEC011	
Type	**Compulsory** ☒	**Elective** ☐		
Semester	Level 0-1			
Teaching Hours	**Lec.**	**Tut.**	**Lab.**	**Credit hours**
	0	0	4	2

2. Professional Information:

2.1. Course description:

Engineering drawing techniques and skills. Conventional lettering and dimensioning. Geometric constructions. Theories of view derivation. Orthographic projection of engineering bodies. Derivation of views from isometric drawings and deducing of missing views. Sectioning views: (full, half, offset, partial, revolved, removed, and partial sectioning). Steel construction, Symbols of electrical circuits.

2.2. Course Objectives (CO):

Program objective		Course objective	
PO2	Behave professionally and adhere to engineering ethics and standards and work to develop the profession and community and promote sustainability principles.	CO1	Emphasized the importance of drawing as a language for engineers and developed student's skills in engineering drawing
PO3	Work in and lead a heterogeneous team and display leadership qualities, business administration, and entrepreneurial skills.	CO2	Working in stressful environment within constraints and manage tasks and resources efficiently.

2.3. Course Learning Outcomes (CLO's):

CBE/Program Learning Outcomes		Course Learning Outcomes	
A6-PLO6	Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements.	CLO1	Illustrate the engineering drawing (drawing tools, tangency, projections, isometrics, sections, …)
		CLO2	Define the geometry of engineering objects
A8-PLO8	Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.	CLO3	Evaluate the drawing rules in engineering drawing
		CLO4	Solve problems in the sectioning of engineering objects.

2.4. Course Topics:

Course Topics	Week	Course LO's Covered			
		CLO1	CLO2	CLO3	CLO4
Introduction to Engineering Drawing and its importance	1	√		√	√
Lettering and Lines	2	√	√		
Geometric Constructions	3-4		√		√
Isometric Projection	5-6		√		√
Dimension Isometric Projection	7		√	√	
Mid term	8				
Orthographic Projection – from Isometric	9-10				
Orthographic Projection – missing View	11-13			√	√
Revision	14	√	√	√	√
Total	14	4	6	4	5

2.5 Teaching and Learning Methods:

Teaching and Learning Methods:	Course LO's Covered			
Methods	**CLO1**	**CLO2**	**CLO3**	**CLO4**
1. Lectures.	√	√	√	
2. Design Studio		√	√	√
3. Discussions.	√		√	√
Teaching and Learning Methods for Students with Special Needs:				
Methods				
1. Discussion Session				
2. Extra Lectures				
3. Provide different levels of books and materials				

2.6 Assessment Methods:

Assessment Methods:		Course LOs Covered			
Methods		**CLO1**	**CLO2**	**CLO3**	**CLO4**
Formative Assessment Method					
Tests	Written Exam	√		√	√
Assignments		√	√		√
Summative Assessment Method					
Final Exam		√	√	√	

2.6.1. Assessment Schedule & Grades Distribution:

Assessment Method	Week	Weighting of Asses.
Assignments	An assessment every week	30%
Mid-term exam	Week # 8	30%
Final written exam	Scheduled by the faculty council	40%
Total		**100%**

2.7. List of Reference:

Essential Books (Textbooks):	Reddy, K. V. 2010. Textbook of Engineering Drawing . B.S. Publ., Hyderabad. Xue, Y., Mu, H., Xue, L., & Wang, X. (2023, March). Teaching Innovation and Practice of Mind Mapping Applied to Engineering Drawing Course. In *2023 IEEE 12th International Conference on Educational and Information Technology (ICEIT)* (pp. 156-161). IEEE.
Recommended Books:	French, T. E., Vierch, C. J., Engineering Drawing and Graphic Technology, McGraw-Hill, 11th ed.
Periodicals, Web Sites, … etc:	**www.mechanical drawing google.com**

2.88. Facilities required for Teaching and Learning:

Different Facilities
Lecture Hall
Tutorial activities
Data Show
White Board
Office meetings.
Discussion

3. Matrix:

3.1. Program Objectives VS Course Objectives:

Program Objectives	Course Objective	
	CO1	CO2
PO1	√	
PO4		√

3.2. Course Objectives VS Course Learning Outcomes:

Course Objectives	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
CO1	√	√		
CO2			√	√

3.3. Program Learning Outcomes VS Course Learning Outcomes:

Program Learning Outcomes	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
PLO6	√		√	
PLO8		√		√

3.4. Assessment Alignment Matrix:

PLO	PO	CLO	Teaching M.	Assessment M.
PLO6	PO2	CLO1	• Lectures • Design Studio • Discussion	• Assignments • Written final exam
		CLO2	• Lectures • Design Studio • Discussion	• Assignments • Written final exam
PLO8	PO3	CLO3	• Lectures • Design Studio • Discussion	• Assignments • Written final exam
		CLO4	• Lectures • Design Studio • Discussion	• Assignments • Written final exam

Course Coordinator: DR. Mohamed Shehata
Head of Department: Prof. Dr. Zeinab Faisal
Date: 10 / 9 / 2023

Course Specification

1. Basic Information:

Program Title	Architectural Engineering Sciences Department			
Department Offering the Program	Architectural Engineering Sciences Department			
Department Offering the Course	Basic Engineering Sciences Department			
Course Title	English Language		**Code**	UHS101
Type	**Compulsory** ☒		**Elective** ☐	
Semester	Level 0-1			
Teaching Hours	**Lec.**	**Tut.**	**Lab.**	**Credit hours**
	2	-	-	2

2. Professional Information:

2.1. Course description:

The characteristics of the foreign language (English, Deutsch, French, or any foreign language approved by the academic department council and both the faculty and university councils) - Revision of the language grammar – grammar style and effective sentences and their characteristics – Identification of common errors in writing technical sentences – Building basic paragraphs: types of paragraphs, reading and analyzing of excerpts from books in varies disciplines to develop communication skills.

2.2. Course Objectives (CO):

The students will be able to:

Program objective		Course objective	
PO4	Master self-learning and life - long learning strategies to communicate effectively in academic/professional fields.	CO1	**Use** written and oral communication in a range of situation with an emphasis on academic communication.
		CO2	**Illustrate** the academic terminologies related to their field of specialization

2.3. Course Learning Outcomes (CLO's):

Student Competences	Program Learning Outcomes		Course Learning Outcomes	
A5	PLO5	Practice research techniques and methods of investigation as an inherent part of learning.	CLO1	**Apply** basic research skills through constructing a project related to an engineering or science related situation.
A8	PLO8	Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.	CLO2	**Identify** the appropriate written and oral communication in different situations in English.
			CLO3	**Communicate** efficiently to convey ideas verbally.
			CLO4	**Discuss** the abstract ideas and arguments from a range of texts.
			CLO5	**Use** vocabulary as a key ingredient in developing advanced written skills.
A10	PLO10	Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.	CLO6	**Practice** a range of grammatical structures and vocabulary accurately and effectively.

2.4. Course Learning Outcomes VS Three Domains of Learning:

Cognitive	Psychomotor	Affective
CLO2,4,5,6		CLO1,3

2.5. Course Topics:

Course Topics	Week	Course LO's Covered					
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Introduction to course content	1-2		√		√	√	
Revision of the language grammar	3-4					√	
grammar style	5					√	
effective sentences and their characteristics	6		√	√	√	√	
Identification of common errors in writing technical sentences	7		√		√	√	
Midterm Exam	8						
Identification of common errors in writing technical sentences	9						√
types of paragraphs	10-11	√				√	√
reading and analyzing of excerpts from books in varies disciplines to develop communication skills	12-14	√	√	√			
Total	**14**	**2**	**4**	**2**	**3**	**6**	**2**

2.6. Lab Topics:
(Not Applicable**)**

2.7 Teaching and Learning Methods:

Teaching and Learning Methods:	Course LO's Covered					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
1. Lecture		√		√	√	
2. Discussion			√	√	√	
3. Interactive Learning	√	√	√			√
4. Self- learning	√					√
Teaching and Learning Methods for Students with Special Needs:						
Methods						
1. Discussion Session						
2. Extra Lectures						
3. Provide different levels of books and materials						

2.8 Assessment Methods:

Assessment Methods:		Course LOs Covered					
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Formative Assessment Method							
1. Tests	First Exam		√		√	√	
	Second Exam		√		√	√	
2. Discussions				√		√	
3.Reports		√					√
4.Observation		√		√	√		√
Summative Assessment Method							
Final Exam			√		√	√	

2.8.1. Assessment Schedule & Grades Distribution:

Assessment Method		Week	The weighting of Assessment %
Formative Assessment Method			
1.Tests	Midterm Exam	8	30 %
2.Discussion		6,10,11,13	10%
3.Report		11, 15	6%
4.Observation		6,13-15	4%
Summative Assessment Method			
5.Final Exam		Scheduled by the faculty council	40 %
Total			100 %

2.9. List of References:

Essential Books (Textbooks):	Folse, Keith, April Muchmore-Vokoun and Elena Vestri Solomon. Great Essays. 3rd ed. U.K.: Heinle Cengage Learning, 2010.
Recommended Books:	Murphy, R. and Smalzer, W., 2000. Grammar in use. Cambridge: Cambridge University Press
	EManuel Alvarez-Sandoval, "The Importance of Learning a Foreign Language in a Changing Society", 2005, Universe
Periodicals, Web Sites, … etc.:	http:// www.duolingo.com https://elt.oup.com

2.10. Facilities required for Teaching and Learning:

Different Facilities
Lecture Hall
Data show
White board

3. Matrix:

3.1. Program Objectives VS Course Objectives:

Program Objectives	Course Objective	
	CO1	CO2
PO4	√	√

3.2. Course Objectives VS Course Learning Outcomes:

Course Objectives	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
CO1	√	√	√			
CO2				√	√	√

3.3. Program Learning Outcomes VS Course Learning Outcomes:

Student Competences	Program Learning Outcomes	Course Learning Outcomes					
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
A5	PLO5	√					
A8	PLO8		√	√	√	√	
A10	PLO10						√

3.4. Assessment Alignment Matrix:

SC	PLO	PO	CLO	Teaching M.	Assessment M.
A5	PLO5	PO4	CLO1	Self- learning	Reports
				Interactive Learning	Observation
A8	PLO8		CLO2	Lecture	First, and Second Exams
				Interactive Learning	Observation
			CLO3	Interactive Learning	Observation
				Discussion	Discussions
			CLO4	Lecture	First, and Second Exams
				Discussion	Discussions
			CLO5	Lecture	First, and Second Exams
				Discussion	Discussions
A10	PLO10		CLO6	Self- learning	Reports
				Interactive Learning	Observation

Course Coordinator: Dr. Mohammad Abdelghany Shehata
Head of Department: Prof. Dr. Zeinab Faisal
Date: 10 / 9 / 20

Course Specification

1. Basic Information:

Program Title	Architectural Engineering Program			
Department Offering the program	Architectural Engineering Department			
Department Offering the course	Basic Engineering Sciences Department			
Course Title	Information and Communication Technology	**Code**	UHS 102	
Type	**Compulsory** ☒	**Elective** ☐		
Semester	Level 0-1			
Teaching Hours	**Lec.**	**Tut.**	**Lab.**	**Credit hours**
	2	-	-	2

2. Professional Information:

2.1. Course description:

Concepts and terminologies of information technology – Communication styles in teaching and Learning – The internet and learning – multimedia systems – databases – Virtual Reality – Augmented reality – Internet of Things – Robotics and its classification – Artificial Intelligence – Big data – Cloud Computing.

2.2. Course Objectives (CO):

Program objective		**Course objective**	
PO2	Behave professionally and adhere to engineering ethics and standards and work to develop the profession and community and promote sustainability principles.	**CO1**	Understand what technology and its benefits and challenges in modern societies is.
		CO2	Explore the social dimensions and development according to technology advance and globalization.

2.3. Course Learning Outcomes (CLO's):

CBE/Program Learning Outcomes		Course Learning Outcomes	
A4- **PLO4**	Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.	**CLO1**	**Explain** technology and the advantages and disadvantages of using it.
		CLO2	**Describe** how technology affects our way of thinking and the world.
A10- **PLO10**	Acquire and apply new knowledge, and practice self, lifelong and other learning strategies.	**CLO3**	**Justify** the social impact in design sciences.
		CLO4	**Investigate** the role of technology in achieving sustainable economy

2.4. Course Topics:

Course Topics	Week	Course LO's Covered			
		CLO1	CLO2	CLO3	CLO4
Nature of Technology	1	√			
Technological Advance	2	√			
The Origin of Technologies	3	√			
Embodying the Concept in Physical Form	4		√		
Progress and Social Impact in Design Sciences	5		√		
Models of Engineering Methodology	6		√		
Revolutions in Design Sciences	7		√		
Mid-term Exam	8				
The Three Factors of Quality of Life	9			√	
Technological Systems and Innovation	10			√	
Technology and Social Progress	11			√	
Achieving Eco-Efficiency Through Design For The Environment	12				√
Design Practice	13				√
Toward a Sustainable Economy	14				√
The Social Dimension of Technology	15				√
Total	15	3	4	3	4

2.5 Teaching and Learning Methods:

Teaching and Learning Methods:	Course LO's Covered			
Methods	**CLO1**	**CLO2**	**CLO3**	**CLO4**
1. Lectures	√	√	√	
2. Report	√			√
3. Discussion		√	√	√
4. Self-Learning	√			√
Teaching and Learning Methods for Students with Special Needs:				
Methods				
1. Discussion Session				
2. Extra Lectures				
3. Provide different levels of books and materials				

2.6 Assessment Methods

Assessment Methods:		Course LOs Covered			
Methods		**CLO1**	**CLO2**	**CLO3**	**CLO4**
Formative Assessment Method					
Tests	Mid-term Exam	√	√		√
Report		√		√	√
Summative Assessment Method					
Final Exam		√	√	√	

2.6.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
Mid-term exam	Week # 8	30%
Oral exam	Week # 14	30%
Final written exam	Scheduled by the faculty council	40%
Total		**100%**

2.7. List of Reference:

Essential Books (Textbooks):	The Nature of Technology: What It Is and How It Evolves, W. Bian Arthur, Penguin Books, 2016.
Recommended Books:	Floyd Fuller, Brain Larson, Lisa Bucki, Faithe Wempen, —Computers: Understanding Technology Comprehensive —, 6th edition, 2016, Kendall Hunt Publishing, ISBN-13 : 978-0763870089

2.8. Facilities required for Teaching and Learning

Different Facilities	
Lecture Hall	√
Library Usage	√
Data Show	√
White Board	√

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective	
	CO1	CO2
PO2	√	√

3.2. Course Objectives VS Course Learning Outcomes:

Course Objectives	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
CO1	√	√		
CO2			√	√

3.3. Program Learning Outcomes VS Course Learning Outcomes:

Program Learning Outcomes	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
PLO7	√	√		
PLO10			√	√

3.4. Assessment Alignment Matrix:

PLO	PO	CLO	Teaching M.	Assessment M.
PLO7	PO2	CLO1	• Lectures • Report • Self-Learning	• Mid-term Exam • Report • Final Exam
		CLO2	• Lectures • Discussion	• Mid-term Exam • Final Exam
PLO10	PO2	CLO3	• Lectures • Discussion	• Report • Final Exam
		CLO4	• Report • Discussion • Self-learning	• Mid-term Exam • Report

Course Coordinator: Prof. Dr. Ahmed M. El-Assal

Dr. Osama Hamdy

Head of Department: Prof. Dr. Zeinab Faisal

Date: 10 / 9 / 2023

Course Specification

1. Basic Information:

Program Title	Architectural Engineering Sciences Program				
Department Offering the program	Architectural Engineering Sciences Department				
Department Offering the course	Basic Engineering Sciences Department				
Course Title	**Mathematics II**			**Code**	**BES 012**
Type	**Compulsory** ☒		**Elective** ☐		
Semester	Level 0-2				
Teaching Hours	**Lec.**	**Tut.**	**Lab.**	**Credit hours**	
	2	2	0	3	

2. Professional Information:

2.1. Course description:

Integral Calculus: Indefinite integrals with applications. Methods of integration. Definite integrals with applications (areas, volumes of revolution, lengths of curves and surface area).

Multivariable Calculus (A): Surfaces and curves in three dimensions. Vector functions of one variable. Scalar functions of several variables, partial derivatives. Directional derivatives, total derivatives. Applications (tangent planes and normal lines. Taylor expansions, maxima and minima, Lagrange's multipliers).

2.2. Course Objectives (CO):

Program objective		**Course objective**	
PO1	Apply a wide spectrum of engineering knowledge, science, and specialized skills with analytic, critical, and systemic thinking to identify and solve engineering problems in real-life situations.	CO1	Explain elements of mathematical logic, relations, mappings, real functions and their graphs applications of differentiation, and its applications.
PO2	Behave professionally and adhere to engineering ethics and standards and work to develop the profession and the community and promote sustainability principles.	CO2	Select a suitable item to evaluate applied engineering problems.

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
A1-PLO1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.	CLO1	Identify the basic items of the course.
		CLO2	Explain how to use all items of the course in applied engineering problems
A2-PLO2	Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess, and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	CLO3	Solve the suitable solution methods for various mathematics elements
		CLO4	Analyze the different problems and verifications

2.4. Course Topics:

Course Topics	Week	Course LO's Covered			
		CLO1	CLO2	CLO3	CLO4
Indefinite integrals with applications	1&2	√	√		
Methods of integration	3&4		√		√
Definite integrals with applications	5	√			
Areas and volumes of revolution, lengths of curves and surface area	6&7	√	√		√
Midterm Exam	8				
Surfaces and curves in three dimensions	9	√		√	√
Vector functions of one variable	10	√		√	√
Scalar functions of several variables, partial derivatives	11		√	√	
Directional derivatives, total derivatives	12		√	√	
Tangent planes and normal lines	13		√	√	
Taylor expansions, maxima and minima, Lagrange's multipliers	14	√			√
Total	**14**	**6**	**6**	**5**	**5**

2.6 Teaching and Learning Methods:

Teaching and Learning Methods:	Course LO's Covered			
Methods	**CLO1**	**CLO2**	**CLO3**	**CLO4**
1. Lecture	√	√	√	
2. Tutorials			√	√
3. Problem-based Learning	√	√		√
Teaching and Learning Methods for Students with Special Needs:				
Methods				
1. Discussion Session				
2. Extra Lectures				
3. Provide different levels of books and materials				

2.7 Assessment Methods:

Assessment Methods:		Course LOs Covered			
Methods		**CLO1**	**CLO2**	**CLO3**	**CLO4**
Formative Assessment Method					
1. Tests	Midterm Exam	√	√		√
	Quizzes		√	√	√
2. Discussion			√		√
Summative Assessment Method					
3. Final Exam		√		√	

2.7.1. Assessment Schedule & Grades Distribution:

Assessment Method	Week	Weighting of Asses.
1. Midterm Exam	8	30%
2. Discussion	3,6,9,11	15%
3. Quizzes	4,7,12	15%
4. Final Exam	Scheduled by the faculty council	40%
Total		100%

2.8. List of Reference:

Essential Books (Textbooks):	Howard Anton, "Calculus with analytical geometry", John Wiley & Sons, Last Edition. George B. Thomas, Jr., Maurice D. Weir, Joel Hass, THOMAS' CALCULUS Multivariable (Twelfth Edition), 2010.
Periodicals, Web Sites, … etc.:	1. https://byjus.com 2. https://ncert.nic.in

2.9. Facilities required for Teaching and Learning:

Different Facilities	
Lecture Hall	
Library Usage	
Data Show	
White Board	

3. Matrix:

3.1. Program Objectives VS Course Objectives:

Program Objectives	Course Objective	
	CO1	CO2
PO1	√	
PO2		√

3.2. Course Objectives VS Course Learning Outcomes:

Course Objectives	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
CO1	√	√		
CO2			√	√

3.3. Program Learning Outcomes VS Course Learning Outcomes:

Program Learning Outcomes	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
PLO1	√	√		
PLO2			√	√

3.4. Assessment Alignment Matrix:

PLO	PO	CLO	Teaching M.	Assessment M.
PLO1	PO1	CLO1	• Lecture • Problem-based Learning	• Midterm Exam, • Final Exam
		CLO2	• Lecture • Problem-based Learning	• Midterm Exam • Discussion • Quizzes
PLO2	PO2	CLO 3	• Lecture • Tutorials	• Final Exam • Quizzes
		CLO4	• Tutorials • Problem-based Learning	• Midterm Exam, • Quizzes • Discussion

Course Coordinator: Ass Prof. Dr. Mohamed Medhat Mousa

Head of Department: Prof. Dr. Zeinab Faisal

Date: 10 / 9 / 2023

Course Specification

1. Basic Information:

Program title	Architectural Engineering Program			
Department Offering the program	Architectural Engineering Sciences Department			
Department Offering the course	Basic Engineering Sciences Department			
Course Title	Mechanics (II)		**Code**	BES 022
Type	**Compulsory** ☒		**Elective** ☐	
Semester	Level 0-2			
Teaching Hours	**Lec.**	**Tut.**	**Lab.**	**Credit hours**
	2	2	0	3

2. Professional Information:

2.1. Course description:

Kinematics of particles (rectilinear and curvilinear motion), Kinetics of particles (force and acceleration method – work and energy method – impulse and momentum method), Planar Kinetics of rigid bodies (translation – rotation about a fixed axis – general plane motion), planar kinetics of rigid bodies (force and acceleration method – work and energy method – impulse and momentum method). Moment of area, mass moments of inertia for single body, product of inertia and principal moments of inertia.

2.2. Course Objectives (CO):

Program objective		**Course objective**	
PO1	Apply a wide spectrum of engineering knowledge, science, and specialized skills with analytic, critical, and systemic thinking to identify and solve engineering problems in real life situation.	CO1	Analyze the mathematics equilibrium conditions of motion for rigid bodies under the action of various loads.
		CO2	Evaluate the principals of dynamics as a science for solving the practical problems of engineering applications.

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
A1-PLO1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics	CLO1	Describe the particle motion along different trajectory using different coordinate systems.
		CLO2	Apply the equilibrium conditions of motion for a particle using Newton's second law, the principle of conservation of energy and the principle of conservation of linear momentum.
		CLO3	Analyze the various types of a rigid-body planar motion.
A2-PLO2	Develop and conduct appropriate experimentation and/or simulation, analyse and interpret data, assess, and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	CLO4	Apply the equilibrium conditions of motion for a rigid body using Newton's second law, the principle of conservation of energy and the principle of conservation of linear momentum.
		CLO5	Determine the area and mass moment of inertia for a single body.

2.4. Course Topics:

Course Topics	Week	Course LO's Covered				
		CLO1	CLO2	CLO3	CLO4	CLO5
Kinematics of particles (Rectilinear motion)	1	√				
Kinematics of particles (curvilinear motion)	2,3	√				
Kinetics of particles (force and acceleration method)	4	√	√			
Kinetics of particles (work and energy method)	5		√			
Kinetics of particles (impulse and momentum method)	6		√			
Kinematics of Rigid bodies:(Translation, Rotation, and General plane motion)	7					
First Mid-Term Exam	8					
Kinematics of Rigid bodies:(Translation, Rotation, and General plane motion)	9			√		
Area and mass moment of inertia	10					√
Kinetics of Rigid bodies (Force and acceleration method)	11, 12		√		√	√
Kinetics of Rigid bodies (work and energy method)	13		√		√	√
Kinetics of Rigid bodies (impulse and momentum method)	14		√		√	√
Total	14	4	7	1	4	5

2.5 Teaching and Learning Methods:

Teaching and Learning Methods:	Course LO's Covered				
Methods	**CLO1**	**CLO2**	**CLO3**	**CLO4**	**CLO5**
1. Lecture	√			√	
2. Tutorials		√			√
3. Discussion			√		

Teaching and Learning Methods for Students with Special Needs:
Methods
1. Discussion Session

2.6 Assessment Methods:

Assessment Methods:		Course LOs Covered				
Methods		**CLO1**	**CLO2**	**CLO3**	**CLO4**	**CLO5**
1. Tests	Mid- Term Exam	√	√			√
	Quizzes			√		
2. Assignments		√		√	√	
Summative Assessment Method						
3. Final Exam		√	√		√	√

2.7 Assessment Schedule & Grades Distribution:

Assessment Methods		Week	Weighting of Asses.
Formative Assessment Method			
1. Tests	Mid-term Exam	8th	30%
	Quizzes	6th, 13th,	15%
2. Assignments		5th, 9th, 11th,	15%
Summative Assessment Method			
3. Final exam		Scheduled by the faculty council	40%
Total			**100%**

2.8. List of Reference:

Course Notes:	Vector Mechanics for Engineers: Dynamics, 12th Edition Ferdinand P. Beer, E. Russell Johnston, 2019
Recommended Books:	Engineering Mechanics, Dynamics, 14th Edition- Hibbeler, 2018

2.9. Facilities required for Teaching and Learning:

Different Facilities
Lecture Halls
White Boards
Data Show

3. Matrix:

3.1. Program Objectives VS Course Objectives:

Program Objectives	Course Objective	
	CO1	CO2.
PO1	√	√

3.2. Course Objectives VS Course Learning Outcomes:

Course Objectives	Course Learning Outcomes				
	CLO1	CLO2	CLO3	CLO4	CLO5
CO1	√	√	√		
CO2				√	√

3.3. Program Learning Outcomes VS Course Learning Outcomes:

Student Competences	Program Learning Outcomes	Course Learning Outcomes				
		CLO1	CLO2	CLO3	CLO4	CLO5
A1	PLO1	√	√	√		
A2	PLO2				√	√

3.4. Assessment Alignment Matrix:

Student Competences	PLO	PO	CLO	Teaching M.	Assessment M.
A1	PLO1	PO1	CLO1	• Lectures	• Midterm Exam • Assignments • Final Exam
			CLO2	• Tutorials	• Midterm Exam • Final Exam
			CLO3	• Lectures	• Quizzes • Assignments
A2	PLO2		CLO4	• Discussion	• Final Exam • Assignments
			CLO5	• Tutorials	• Midterm Exam • Final Exam

Course Coordinator: Dr. Diaa El-Din Khedr Diaa el Din

Head of Department: Prof. Dr. Zeinab Faisal

Date: 10 / 9 / 2023

Course Specification

1. Basic Information:

Program title	Architectural Engineering Sciences Program			
Department Offering the program	Architectural Engineering Sciences Department			
Department Offering the course	Basic Engineering Sciences Department			
Course Title	Physics II	**Code**	BES 032	
Type	**Compulsory** ☒	**Elective** ☐		
Semester	Level 0-1			
Teaching Hours	**Lec.**	**Tut.**	**Lab.**	**Credit hours**
	2	2	1	3

2. Professional Information:

2.1. Course description:

Discuss phenomena and theories of electricity and magnetism physics related to engineering application.

2.2. Course Objectives (CO):

Program objective		**Course objective**	
PO1	Apply a wide spectrum of engineering knowledge, science, and specialized skills with analytic, critical and systemic thinking to identify and solve engineering problems in real life situation.	CO1	Create phenomena and theories of electricity and magnetism physics related to engineering application.

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
A1-PLO1	Identify, formulate, analyze, and solve complex engineering problems by applying principles of engineering, science, and mathematics.	CLO1	**Explain** the concepts of charges, electric fields, electric flux, Gauss's law and its application.
		CLO2	**Illustrate** electric potential and capacitors.
		CLO3	**Evaluate** current, resistance and the magnetic field.
		CLO4	Evaluate Ampere's law and its application, the magnetic Gauss's Law, Faraday's Law and Magnetic Induction.
A2-PLO2	Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	CLO5	Analyze the results given from experiment.

2.4. Course Topics:

Course Topics	Week	Course LO's Covered				
		CLO1	CLO2	CLO3	CLO4	CLO5
the electric field	1,2	✓				
gauss's law	3,4	✓				
The Electric Potential	5,6		✓			
the capacitance	7		✓			
Midterm	8					
current and resistance	9			✓		
the magnetic field	10,11			✓		
Sources of Magnetic Field	12				✓	
faraday's law of induction	13				✓	
the inductance	14				✓	
Total	14	2	2	2	3	0

2.5. Lab Topics:

Lab Topics	Week	Course LO's Covered				
		CLO1	CLO2	CLO3	CLO4	CLO5
Kirchhoff's Voltage and Current Laws	2					✓
Ohm's Law	3					✓
Metric Bridge	4					✓
Electric Field Mapping	5					✓
Capacitor Charging	7					✓
Capacitor Discharging	8					✓
The Electric Transformer	9					✓
Faraday's Law	10					✓
Total						**8**

2.6 Teaching and Learning Methods:

Teaching and Learning Methods:	Course LO's Covered				
Methods	**CLO1**	**CLO2**	**CLO3**	**CLO4**	**CLO5**
1. Lectures	✓	✓	✓	✓	
2. Discussion Sessions	✓	✓	✓	✓	
3. Practical					✓
4. Tutorials	✓	✓	✓	✓	
Teaching and Learning Methods for Students with Special Needs:					
Methods					
1. Discussion Session					
2. Extra Lectures					
3. Provide different levels of books and materials					

2.7 Assessment Methods:

Assessment Methods:		Course LOs Covered				
Methods		**CLO1**	**CLO2**	**CLO3**	**CLO4**	**CLO5**
Formative Assessment Method						
1.Tests	Quiz 1	✓				
	Midterm	✓	✓			
	Quiz 2			✓		
	Practical Exam					✓
Summative Assessment Method						
2.Final Exam		✓	✓	✓	✓	

2.7.1. Assessment Schedule & Grades Distribution:

Assessment Method	Week	Weighting of Asses.
Quiz 1	4	5 %
Midterm	8	30 %
Quiz 2	12	5 %
Practical Exam	15	20 %
Final Exam	Scheduled by the faculty council	40 %
Total		100%

2.8. List of Reference:

Essential Books (Textbooks):	Physics for Scientists and Engineers, R.A. Serway and J.W. Jewett, 10th Edition, 2018.
Recommended Books:	Fundamentals of physics, Halliday & Resnick, 12th Edition,2021.

2.9. Facilities required for Teaching and Learning:

Different Facilities
Lecture Hall
Library Usage
laboratory Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives:

Program Objectives	Course Objective
	CO1
PO1	✓

3.2. Course Objectives VS Course Learning Outcomes:

Course Objectives	Course Learning Outcomes				
	CLO1	CLO2	CLO3	CLO4	CLO5
CO1	✓	✓	✓	✓	✓

3.3. Program Learning Outcomes VS Course Learning Outcomes:

Program Learning Outcomes	Course Learning Outcomes				
	CLO1	CLO2	CLO3	CLO4	CLO5
PLO1	✓	✓	✓	✓	
PLO2					✓

3.4. Assessment Alignment Matrix:

PO	PLO	CLO	Teaching M.	Assessment M.
PO1	PLO1	CLO1	• Lectures • Discussion Sessions • Tutorials	• Quiz 1 • Midterm • Final Exam
		CLO2	• Lectures • Discussion Sessions • Tutorials	• Midterm • Final Exam
		CLO3	• Lectures • Discussion Sessions • Tutorials	• Quiz 2 • Final Exam
		CLO4	• Lectures • Discussion Sessions • Tutorials	• Final Exam
	PLO2	CLO5	• Practical	• Practical Exam

Course Coordinator: Associate Prof: Mina Danial Asham Mena.D.
Dr: Ibrahim Sayed Ahmed Ibrahim elsayed
Dr: Walid Soliman selmy walid seliman

Head of Department: Prof. Dr. Zeinab Faisal

Date: 10 / 9 / 2023

Course Specification

1. Basic Information:

Program title	Architectural Engineering Sciences Department			
Department Offering the program	Architectural Engineering Sciences Department			
Department Offering the course	Basic Engineering Sciences Department			
Course Title	Computer Aided Drafting	**Code**	MEC 014	
Type	**Compulsory** ☒	**Elective** ☐		
Semester	Level 0-2			
Teaching Hours	**Lec.**	**Tut.**	**Lab.**	**Credit hours**
	1	0	2	2

2. Professional Information:

2.1. Course Description:

Explore the fundamentals of Computer-Aided Drafting (CAD) with a focus on its historical development, advantages, and limitations. This course delves into the essential principles of graphic communication and CAD techniques, providing students with the skills necessary for the visualization, sketching, and geometric construction of mechanical components.

2.2. Course Objectives (CO):

Program objective		**Course objective**	
PO4	Master self-learning and life -long learning strategies to communicate effectively in academic/professional fields.	CO1	Develop the ability to create accurate and detailed engineering drawings using software
PO5	Solve problems in the areas of integrated mechanics, electronics, computers, and software. systems.	CO2	Create clear and well-organized technical drawings using AutoCAD features such as layers, dimensioning, and text to

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
A4-PLO4	Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles.	CLO1	Identify the capabilities of computer-aided drawing techniques in architectural expression.
		CLO2	Apply basic CAD concepts to develop and construct accurate 2D geometry through the creation of basic geometric constructions.
PLO8	Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.	CLO3	Communicate graphically with the colleagues in the lab.

Cognitive Domain	Psychomotor Domain	Affective Domain
CLO1	CLO2	CLO3

2.4. Course Topics:

Course Topics	Week	Course LO's Covered		
		CLO 1	CLO 2	CLO 3
Introduction to Computer Aided Drawing and Benefits of computer-aided drawing	1	*		
Industry standard for drawing	2		*	
the visualization, sketching, and geometric construction of mechanical components	3,4,5,6	*	*	
Illustrate CAD drawing construction techniques	7	*		*
Mid-Term	8			
graphical communication using the alphabet of lines, orthographic projection, section views, auxiliary views	9,10,11			
creation of assembly and detail mechanical components.	12,13			*
3D drawing of Mechanical Component	14		*	*
Total	14	6	6	3

2.5. Teaching and Learning Methods:

Teaching and Learning Methods:	Course LO's Covered		
Methods	**CLO 1**	**CLO 2**	**CLO 3**
1. Lecture	*	*	
2. Tutorials	*	*	*
Teaching and Learning Methods for Students with Special Needs:			
Methods			
1. Discussion Session			
2. Extra Lectures			
3. Provide different levels of books and materials			

2.6. Assessment Methods:

Assessment Methods		Course LOs Covered		
		CLO 1	**CLO 2**	**CLO 3**
Formative Assessment Method				
1.Tests	Mid-term Exam	*		*
2.Discussions			*	*
3.Assignments		*		
Summative Assessment Method				
4.Final Exam		*	*	

2.6.1. Assessment Schedule & Grades Distribution:

Assessment Methods		Week	Weighting of Asses.
Formative Assessment Method			
1.Tests	Mid-term Exam	7th	30%
	Lab session drawings	9th	5%
2.Discussion		Week #9,13	10%
3.Assignments		Week # 2,3,4,5,6,7,10,11, 12, 13,14	15%
Summative Assessment Method			
4.Final exam		Scheduled by the faculty council	40%
Total			**100%**

2.7. List of Reference:

Essential Books (Textbooks):	William Chalk, Goetsch, "Technical Drawing", Delmar technical graphics series, 6th edition, 2010.
Recommended Books:	Allbert W. Boundy, "Engineering Drawing", McGraw-Hill Australia, 2012

2.8. Facilities required for Teaching and Learning:

Different Facilities
Lecture Hall
Data Show
White Board
Lecture notes (PDF)

3. Matrix:

3.1. Program Objectives VS Course Objectives:

Program Objectives	Course Objective	
	CO 1	CO 2
PO4	*	
PO5		*

3.2. Course Objectives VS Course Learning Outcomes:

Course Objectives	Course Learning Outcomes		
	CLO 1	CLO 2	CLO 3
CO 1	*		*
CO 2		*	

3.3. Program Learning Outcomes VS Course Learning Outcomes:

Program Learning Outcomes	Course Learning Outcomes		
	CLO 1	CLO 2	CLO 3
PLO 4	*	*	
PLO 8			*

3.4. Assessment Alignment Matrix:

PLO	PO	CLO	Teaching M.	Assessment M.
PLO 4	PO 4	CLO 1	• Lecture • Tutorials	• Mid-term Exam • Assignments • Final Exam
		CLO2	• Tutorials	• Discussion • Final Exam
PLO 8	PO 5	CLO 3	• Tutorials	• Mid-term Exam • Discussions

Course Coordinator:

Head of Department: Prof. Dr. Zeinab Faisal

Date: 10 / 9 / 2023

Course Specification

1. Basic Information:

Program Title	Architectural Engineering Program			
Department Offering the program	Architectural Engineering Department			
Department Offering the course	Basic Engineering Sciences Department			
Course Title	Computer Programming Fundamentals		**Code**	ELE 042
Type	**Compulsory** ☒		**Elective** ☐	
Semester	Level 0-2			
Teaching Hours	**Lec.**	**Tut.**	**Lab.**	**Credit hours**
	0	2	2	2

2. Professional Information:

2.1. Course description:

Types of programming languages, Problem solving methods: flowcharts, algorithms, structured programming. Application on a Python Programming language for solving engineering problems with emphasis on assignments of numeric data types, Analysis of errors in numerical computations, Input and output. Selection control structures, Loops and iteration structures, Procedures and functions, Modular program design, Array processing.

2.2. Course Objectives (CO):

At the end of course, the student will be able to:

Program objective		**Course objective**	
PO4	Use techniques, skills, and modern engineering tools necessary for engineering practice.	CO1	Characterize different programming languages and fundamental of python environment
		CO2	Apply programming skills in core Python

2.3. Course Learning Outcomes (CLO's):

CBE/Program Learning Outcomes		Course Learning Outcomes	
A4-PLO4	Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles.	CLO 1	Recognize the basic concepts of python programming with the help of data types, operators and expressions, etc.
		CLO 2	Add control statements for altering the sequential execution of programs in solving problems
		CLO 3	Demonstrate operations on built-in functions and container data types (list, tuple, etc.)
A10-PLO10	Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.	CLO 4	Solve complicated practical and engineering problems using learned tools of python

2.4. Course Topics:

Course Topics	Week	Course LO's Covered			
		CLO1	CLO2	CLO3	CLO4
Introduction to Python	1	✓			
Basic coding skills, working with data types, variables, Expressions, operators, and Strings	2	✓			
Learning Python logic operators and conditional statements	3, 4		✓		
Define loops and iterations in python	5, 6		✓		
Understand and apply string manipulation, guess-and-check, approximations, and bisection methods	7		✓		
Midterm Exam	8				
Learn how to write functions in Python.	9, 10			✓	
Extra examples on learned programming tools in Python	11				✓
Basic skills for working with tuples, lists and their operations	12			✓	
Clarify how to build Python modules and how to read and write files	13			✓	
Pre-exam Revision and discussion	14				✓
Total	14				

2.5. Lab Topics:

Lab Topics	Week	Course LO's Covered			
		CLO1	CLO2	CLO3	CLO4
Introduction to Python	1	✓			
Basic coding skills, working with data types, variables, Expressions, operators, and Strings	2	✓			
Learning Python logic operators and conditional statements	3, 4		✓		
Define loops and iterations in python	5, 6		✓		
Understand and apply string manipulation, guess-and-check, approximations, and bisection methods	7		✓		
Midterm Exam	8				
Learn how to write functions in Python.	9, 10			✓	
Extra examples on learned programming tools in Python	11				✓
Basic skills for working with tuples, lists and their operations	12			✓	
Clarify how to build Python modules and how to read and write files	13			✓	
Pre-exam Revision and discussion	14				✓
Total	14				

2.6 Teaching and Learning Methods:

Teaching and Learning Methods:	Course LO's Covered			
Methods	**CLO1**	**CLO2**	**CLO3**	**CLO4**
1. Computer-based instruction	✓	✓	✓	
2. Problem-based learning				✓
Teaching and Learning Methods for Students with Special Needs:				
Methods				
1. Discussion Session				
2. Extra Lectures				
3. Provide different levels of books and materials				

2.7 Assessment Methods:

Assessment Methods:		Course LOs Covered			
Methods		CLO1	CLO2	CLO3	CLO4
Formative Assessment Method					
1.Tests	Midterm Exam	✓	✓		
	Oral Exam	✓	✓	✓	
2.Assignments					✓
Summative Assessment Method					
3.Final Exam			✓	✓	✓

2.7.1. Assessment Schedule & Grades Distribution:

Assessment Method	Week	Weighting of Asses.
1.Oral Exam	6^{th},11^{th}	20%
2.Midterm exam	8^{th}	30%
3.Assignments	10^{th}	10%
4.Final exam	15^{th}	40%
Total		**100%**

2.8. List of Reference:

Essential Books (Textbooks):	Ashok Kamthane, Amit Kamthane, “Programming and Problem Solving with Python”, McGraw Hill Education (India) Private Limited, 2018
Recommended Books:	Yashavant Kanetkar, Aditya Kanetkar, “Let us Python”, BPB publication, 1st Edition, 2019
Periodicals, Web Sites, … etc.:	https://www.geeksforgeeks.org/python-programming-language/

2.9. Facilities required for Teaching and Learning:

Different Facilities
Library Usage
laboratory Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives:

Program Objectives	Course Objective	
	CO 1	CO 2
PO 4	✓	✓

3.2. Course Objectives VS Course Learning Outcomes:

Course Objectives	Course Learning Outcomes			
	CLO 1	CLO 2	CLO 3	CLO 4
CO 1	✓	✓		
CO 2			✓	✓

3.3. Program Learning Outcomes VS Course Learning Outcomes:

Program Learning Outcomes	Course Learning Outcomes			
	CLO 1	CLO 2	CLO 3	CLO 4
PLO 4	✓	✓	✓	
PLO 10				✓

3.4. Assessment Alignment Matrix:

PLO	PO	CLO	Teaching M.	Assessment M.
PLO 4	PO 4	CLO 1	• Computer-based instruction	• Midterm Exam • Oral Exam
		CLO 2	• Computer-based instruction	• Midterm Exam • Oral Exam Final Exam
		CLO 3	• Computer-based instruction	• Oral Exam • Final Exam
PLO 10	PO 4	CLO 4	• Problem-based learning	• Assignments • Final Exam

Course Coordinator: Dr. Maha Raouf Maha Raouf
Head of Department: Prof. Dr. Zeinab Faisal
Date: 10 / 9 / 2023

Course Specification

1. Basic Information:

Program Title	Architectural Engineering Program				
Department Offering the program	Architectural Engineering Department				
Department Offering the course	Basic Engineering Sciences Department				
Course Title	Production Engineering		**Code**	MEC 012	
Type	**Compulsory** √		**Elective** ☐		
Semester	Level 0-2				
Teaching Hours	**Lec.**	**Tut.**	**Lab.**	**Credit hours**	
	1	-	3	2	

2. Professional Information:

2.1. Course description:

This course is introductory to principles of production, function and planning of workshop, industrial safety, measurements, carpentry tools, engineering materials, metal machining, joining of materials, sheet metal work, metal forming, bench work and filling, foundry and pattern making.

2.2. Course Objectives (CO):

Program objective		**Course objective**	
PO4	Use techniques, skills, and modern engineering tools necessary for engineering practice.	CO1	Apply different branches of production engineering, i.e Manufacturing Technology, Industrial Engineering and Quality Control
PO6	Strengthening students' ability to make decisions, solve problems, and develop architectural and urban solutions to develop and serve the local community.	CO2	Application of particular materials for specific design requirements
		CO3	E valuate basic manufacturing processes and select the appropriate process to produce various products

2.3. Course Learning Outcomes (CLO's):

CBE/Program Learning Outcomes		Course Learning Outcomes	
A4-PLO4	Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles	CLO1	Characterize the knowledge about workshop's equipment and hand tools of different manufacturing processes, and the necessary safety considerations.
		CLO2	Classify the different manufacturing processes definitions, concepts, formulae, characteristics, and capabilities.
		CLO3	Merge the use of principles and concepts to suggest appropriate solutions for engineering problems based on analytical thinking.
A6-PLO6	Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements.	CLO4	Explore skills to carryout measurement tests using the measuring tools and hand tools and workshop equipment.
		CLO5	Apply the experience and hands skills on different trades of engineering like fitting, carpentry, machining, welding, and sheet metal.
		CLO6	Employ the appropriate techniques, skills, and modern engineering tools necessary for engineering practice.

2.4. Course Topics:

Course Topics	Week	Course LO's Covered					
		CLO 1	CLO 2	CLO 3	CLO 4	CLO 5	CLO 6
Introduction and classification, Industrial Engineering (The role of production engineer, production system, Production types, Types of industries)	1	√	√		√		
Industrial Engineering (Factory planning, Production planning and control, Organization for production, Manufacturing costs	2			√		√	
Engineering materials (Composition Structure Properties Production and Applications)	3	√		√			
Quality Control (Specifications and Standards, Dimensioning, Tolerances and fits, Metrology	4				√	√	√
Casting technology	5	√			√		
Powder metallurgy	6		√			√	
Metal forming technology	7			√		√	√
Plastic processing	8		√		√		
Joining technology	9-10			√			√
Metal removal technology, Turning, drilling, milling, shaping, and planning, broaching, sawing, grinding	11	√		√			
Turning technology, machining parameters, machining time, cutting tools, tool life	12-13		√		√		
Non - conventional manufacturing processes	14			√		√	√
Total	14	4	5	7	6	5	5

2.5. Lab Topics:

Lab Topics	Week	Course LO's Covered					
		CLO 1	CLO 2	CLO 3	CLO 4	CLO 6	CLO 6
Carpentry workshop	1-3	√					
Foundry workshop	4-6	√					
plumbing workshop	7-9	√					
lathe workshop	10-12	√					
Total	12						

2.6 Teaching and Learning Methods:

Teaching and Learning Methods:	Course LO's Covered					
Methods	**CLO1**	**CLO2**	**CLO3**	**CLO4**	**CLO5**	**CLO6**
Lectures and slides	√	√	√	√		√
Tutorials		√	√	√		√
Problem-based learning	√	√	√	√	√	√
Discussion	√	√		√	√	
Projects			√	√	√	
Reports			√	√		
Teaching and Learning Methods for Students with Special Needs:						
Methods						
1. Brainstorming						
2. Presentation on case study						

2.7 Assessment Methods:

Assessment Methods:		Course LOs Covered					
Methods		**CLO1**	**CLO2**	**CLO3**	**CLO4**	**CLO5**	**CLO6**
Formative Assessment Method							
1.Tests	Discussion	√		√	√		
	Midterm Exam	√	√			√	√
2.Projects				√	√	√	√
3.Reports		√	√	√		√	√
Summative Assessment Method							
4.Final Exam		√	√	√	√	√	√

2.7.1. Assessment Schedule & Grades Distribution:

Assessment Method		Week	Weighting of Asses.
1.Test	Discussion	8,13	10%
	mid-term exam	8	30%
2.Report of workshop		5,11	10%
3.Project		2,4,6,14	10%
4.Final written examination		Scheduled by the faculty council	40%
Total			**100%**

2.8. List of Reference:

Essential Books (Textbooks):	Galyer, JFC and Shotbolt , CR 1990, Metrology for engineers, 5th edn, Cassell, London
Recommended Books:	Manufacturing: Design, production, Automatic and Integration. New York, NY: Gordon and Breach science publishers,2003. ISBN:9780824742737
	Katsundo Hitomi , Manufacturing Systems Engineering, A Unified Approach to Manufacturing Technology, Production Management and Industrial Economics, Routledge, 2017, doi.org/10.1201/9780203748145
Periodicals, Web Sites, … etc.	Social media: www.youtube.com Free Books Download: search.4shared.com/search.html

2.9. Facilities required for Teaching and Learning:

Different Facilities
Lecture Hall
Library Usage
laboratory Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives:

Program Objectives	Course Objective		
	CO1	CO2	**CO3**
PO4	√		
PO6		√	√

3.2. Course Objectives VS Course Learning Outcomes:

Course Objectives	Course Learning Outcomes					
	CLO1	**CLO2**	**CLO3**	**CLO4**	**CLO5**	**CLO6**
CO1	√			√	√	
CO2	√	√	√		√	√
CO3		√	√	√		√

3.3. Program Learning Outcomes VS Course Learning Outcomes:

Program Learning Outcomes	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
PLO4	√	√	√			
PLO6				√	√	√

3.4. Assessment Alignment Matrix:

PLO	PO	CLO	Teaching M.	Assessment M.
PLO4	PO4	CLO1	• Lecture	• Oral test
			• Discussion	• Experimental
		CLO2	• Practical based learning	• Observation
			• Report	• Report
		CLO3	• Problem based on learning	• Experimental
			• Project based on learning	• observation
PLO6	PO6	CLO4	• Brainstorming	• Observation
			• Presentation	• observation
		CLO5	• Design studies	• Design studies
			• Presentation	• observation
		CLO6	• Reports	• Reports
			• Presentation	• observation

Course Coordinator: Prof Saleh Kaytbay Saleh Kaytbay

Head of Department: Prof. Dr. Zeinab Faisal

Date: 10 / 9 / 2023

Course Specification

1. Basic Information:

Program Title	Architectural Engineering Sciences Program			
Department Offering the Program	Architectural Engineering Sciences Department			
Department Offering the Course	Basic Engineering Sciences Department			
Course Title	Social Issus		**Code**	UHS103
Type	**Compulsory** ☒	**Elective** ☐		
Semester	Level 0-2			
Teaching Hours	**Lec.**	**Tut.**	**Lab.**	**Credit hours**
	2	0	0	2

2. Professional Information:

2.1. Course description:

In this course, the social problems facing societies in the modern era are studied. Topics include problems related to the population issue, citizenship, a culture of tolerance and acceptance of the other, globalization, and violence against women. Social problems will be analyzed from different social perspectives to better understand their possible causes and consequences. Strategies for addressing social problems will be discussed and evaluated.

2.2. Course Objectives (CO):

Program objective		**Course objective**	
PO3	Work in and lead a heterogeneous team and display leadership qualities, business administration, and entrepreneurial skills.	CO1	**Analyze** different social issues and illustrate how to deal with heterogeneous team
PO4	Master self-learning and life-long learning strategies to communicate effectively in academic/professional fields	CO2	**Evaluate** the origins of social problems in the structure of existing social institutions to communicate effectively in professional fields

2.3. Course Learning Outcomes (CLO's):

Student Competences	Program Learning Outcomes		Course Learning Outcomes	
A5	PLO5	Practice research techniques and methods of investigation as an inherent part of learning	CLO1	**Examine** scientific research, various types of research, appropriate methods, technologies, and data that sociologists use to investigate the human condition;
A7	PLO7	Function efficiently as an individual and as a member of multi-disciplinary and multi-cultural teams.	CLO2	**Analyze** different social issues that related with the individual as a member of multi-cultural teams.
A10	PLO10	Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.	CLO3	**Practice** self, learning strategies in different social issues
			CLO4	**Evaluate** competing social scientific theories regarding the origins of social problems using lifelong and other learning strategies.

2.4. Course Learning Outcomes VS Three Domains of Learning

Cognitive	Psychomotor	Affective
	CLO3,4	**CLO1,2**

2.5. Course Topics:

Course Topics	Week	Course LO's Covered			
		CLO1	CLO2	CLO3	CLO4
Introduction in social issues.	1		√		
Recognize the structural, systemic factors which affect the quality of life of persons of different ages, gender, social class, sexual orientation, disability, and racial/ethnic backgrounds;	2,3				√
Problems related to the population issue.	4,5		√		
Problems related to citizenship.	6	√		√	
Problems related to citizenship.	7		√		
Midterm Exam	8				
Problems related to a culture of tolerance and acceptance of the other.	9,10		√		
Problems related to globalization.	11		√		
Problems related to violence against women	13	√		√	
Present alternative explanations or theories of social phenomena	14				√
Total	14	2	7	2	3

2.6. Lab Topics:

(Not Applicable**)**

2.7 Teaching and Learning Methods:

Teaching and Learning Methods:	Course LO's Covered			
	CLO1	CLO2	CLO3	CLO4
1. Lecture				√
2. Report	√	√		
3.Self Learning			√	
4. Hybrid Learning				√
Teaching and Learning Methods for Students with Special Needs:				
Methods				
1. Discussion Session				
2. Extra Lectures				
3. Provide different levels of books and materials				

2.8 Assessment Methods:

Assessment Methods:		Course LOs Covered			
		CLO1	CLO2	CLO3	CLO4
Formative Assessment Method					
1.Test	Midterm Exam		√		√
2.Report		√	√	√	
3.Presentations		√		√	
Summative Assessment Method					
4.Final Exam					√

2.8.1. Assessment Schedule & Grades Distribution:

Assessment Method		Week	The weighting of Assessment %
Formative Assessment Method			
1.Tests	Midterm Exam	8	30
2.Report		6,13	15
3.Presentations		13	15
Summative Assessment Method			
4.Final exam		16	40
Total		16	100

2.9. List of References:

Course Notes:	Lecturer Notes
Essential Books (Textbooks):	Lauer, Robert and Jeanette Lauer. 2016. Social Problems and the Quality of Life, 13th Edition. New York: NY. McGraw Hill w/Connect.
Web Sites	https://beng.bu.edu.eg/item/1739-2022-05-29-11-57-14

2.10. Facilities required for Teaching and Learning:

Different Facilities	
Lecture Hall	√
Data Show	√
White Board	√

3. Matrix:

3.1. Program Objectives VS Course Objectives:

Program Objectives	Course Objective	
	CO1	CO2
PO3	√	
PO4		√

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
CO1	√	√		
CO2			√	√

3.3. Program Learning Outcomes VS Course Learning Outcomes:

Student Competences	Program Learning Outcomes	Course Learning Outcomes			
		CLO1	CLO2	CLO3	CLO4
A5	PLO5	√			
A7	PLO7		√		
A10	PLO10			√	√

3.4. Assessment Alignment Matrix:

SC	PLO	PO	CLO	Teaching M.	Assessment M.
A5	PLO5	PO3	CLO1	Report	Presentations, Report
A7	PLO7		CLO2	Report	Midterm Exam, Report
A10	PLO10	PO4	CLO3	Self - Learning	Presentation, Report
			CLO4	Lecture Hybrid Learning	Midterm Exam, Final Exams

Course Coordinator: Dr. Goda Elsayed

Head of Department: Prof. Dr. Zeinab Faisal

Date: 10 / 9 / 2023

Architectural Engineering Program Level 1

Specification

Course Specification

1. Basic Information:

Program Title	Architectural Engineering Program			
Department Offering the program	Architectural Engineering Department			
Department Offering the course	Architectural Engineering Department			
Course Title	Architecture Design 1		**Code**	ARC 101
Type	**Compulsory** ☒	**Elective** ☐		
Semester	Level 1-1			
Teaching Hours	**Lec.**	**Tut.**	**Lab.**	**Credit hours**
	1	4	0	3

2. Professional Information:

2.1. Course description:

This course is an introduction to the fundamentals of architectural design through the design process, analyses, concepts, development, and presentation. Students will address fundamental lessons of architecture drawing techniques, geometry, proportion, scale and spatial definition with an emphasis on the principles of designing residential buildings. (Zoning and concept development). Drawings will be required for small scale building – final project (plan, elevations, sections, and layout). Physical models are asked to be made to support visualization of ideas in three dimensions.

2.2. Course Objectives (CO):

At the end of course, the student will be able to:

Program objective		Course objective	
PO1	Apply a wide spectrum of fundamentals of the science and specialized skills with analytic, creativity and critical thinking to identify and solve architecture design problems in real life situation.	CO1	Outline the architectural vocabulary and drawings which used in architectural design and architectural presentation.
		CO2	Students will be able to display projection abilities from 3D drawings and vice versa to draw efficiently and accurately according to different scales.
PO7	Create architectural designs that satisfy both aesthetic, technical and meet building users' requirements	CO3	Design innovative simple design projects.

2.3. Course Learning Outcomes (CLO's):

CBE/Program Learning Outcomes		Course Learning Outcomes	
A9-PLO9	Use creative, innovative and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.	CLO1	Generate new design solutions through imagination and creativity
B1-PLO11	Create architectural, urban and planning designs that satisfy both aesthetic and technical requirements, using adequate knowledge of: history and theory, related fine arts, local culture and heritage, technologies and human sciences.	CLO2	Identify principles of architectural design in a simple context, scales and types that satisfy both aesthetic and technical requirements.
		CLO3	Produce all necessary architectural drawings that meet technical requirements.
B2-PLO12	Produce designs that meet building users' requirements through understanding the relationship between people and buildings, and between buildings and their environment; and the need to relate buildings and the spaces between them to human needs and scale.	CLO4	Analyze different similar building design solutions to obtain design criteria.
		CLO5	Criticize physical models of similar buildings.
		CLO6	Design simple architecture design problems that meet users' requirements

Cognitive Domain	Psychomotor Domain	Affective Domain
CLO2	CLO1, CLO3, CLO4, CLO6	CLO5

2.4. Course Topics:

Course Topics	Week	Course LO's Covered					
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Introduction to course content and architecture design	1		*				
Explain how to draw architectural plans	2		*	*			
Explain how to draw architectural sections	3		*	*			
Explain how to draw architectural elevations	4		*	*			
Explain how to draw architectural layout.	5		*	*			
Workshop (architecture presentation)	6		*				
Introduction to 1st project	7	*		*			*
Final Sketch & Physical Model	8	*		*		*	
Diagram of relationships of spaces, shapes of buildings and movements.	9		*		*		
Introduction to 2nd design project	10	*		*		*	*
Introduction to site analysis	11				*		
Similar project analysis (1) & Physical Model	12		*		*	*	
Semi-final Sketch	13	*		*	*		*
Final Sketch & Physical Model	14	*		*		*	*
Total	14	5	8	9	4	4	4

2.5 Teaching and Learning Methods:

Teaching and Learning Methods:	Course LO's Covered					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
1. Lectures		*		*		
2. Design studio	*		*		*	*
3. Problem-based Learning	*			*		
4. Case Study		*		*		
5. Projects	*		*		*	*
6. Discussion	*	*		*		*
7. Modeling					*	*
Teaching and Learning Methods for Students with Special Needs:						
Methods						
1. Discussion Session						
2. Extra Lectures						
3. Provide different levels of books and materials						

2.6 Assessment Methods:

Assessment Methods:	Course LOs Covered					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Formative Assessment Method						
Midterm Exam			*			
Discussions	*	*		*		
Projects	*		*		*	*
Assignments		*	*	*		*
Presentations					*	
Modeling					*	
Summative Assessment Method						
Final Exam	*		*			*

2.6.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
Mid-term Exam	Week # 8	30%
Discussions	Week # 10	5%
Projects	Week # 9,13	10%
Assignments	Week # 2,3,4,5,6,7,	10%
Modeling	Week # 12	5%
Final Exam	Scheduled by the faculty council	40%
Total		100%

2.7. List of Reference:

Essential Books (Textbooks):	R Conway and Roenisch, 1987, Understanding Architecture, Routledge of Keegan, London
Recommended Books:	Ching, F., and Juroszek, S. (2019). Design Drawing. 3 rd ed., Hoboken, NJ: John Wiley & Sons, Inc.
	Karlen, M. and Fleming, R. (2016). Space Planning Basics. Hoboken, NJ: John Wiley & Sons, Inc.
Periodicals, Web Sites, … etc:	http:// www.archnet.org http:// www.greatbuilding.com http:// www.architecture.com

2.8. Facilities required for Teaching and Learning:

Different Facilities
Design studio
Library usage
Data show
White board

3. Matrix:

3.1. Program Objectives VS Course Objectives:

Program Objectives	Course Objective		
	CO1	CO2	CO3
PO1	*	*	
PO7			*

3.2. Course Objectives VS Course Learning Outcomes:

Course Objectives	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
CO1		*		*		
CO2			*			
CO3	*				*	*

3.3. Program Learning Outcomes VS Course Learning Outcomes:

Program Learning Outcomes	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
PLO9	*					
PLO11		*	*			
PLO12				*	*	*

3.4. Assessment Alignment Matrix:

PLO's	PO's	CLO's	Teaching M.	Assessment M.
PLO9	PO1	CLO1	• Design studio • Problem-based Learning • Projects • Discussion	• Discussions • Projects • Final Exam
PLO11	PO7	CLO2 CLO3	• Lectures • Case Study • Discussions • Design studio • Presentations • Projects	• Mid-term Exam • Discussions • Projects • Assignments • Final Exam
PLO12	PO7	CLO4 CLO5 CLO6	• Lectures • Problem-based Learning. • Case Study • Discussion • Design studio • Presentations • Projects • Modeling	• Discussions • Assignments • Projects • Assignments • Modeling • Final Exam

Course Coordinator: Dr. Mona Yehia Shedid

Head of Department: Prof. Dr. Zeinab Faisal

Date: 10 / 9 / 2023

Course Specification

1. Basic Information:

Program Title	Architectural Engineering Program			
Department Offering the program	Architectural Engineering Department			
Department Offering the course	Architectural Engineering Department			
Course Title	Introduction to Building Technology	**Code**	ARC 111	
Type	**Compulsory** ☒	**Elective** ☐		
Semester	Level 1-1			
Teaching Hours	**Lec.**	**Tut.**	**Lab.**	**Credit hours**
	2	3	0	3

2. Professional Information:

2.1. Course description:

This course aims to introduce students the building construction, understanding relation between Architectural designs, building components. It provides a fundamental understanding of how to create the different basic components of the building and provides the students with the basic knowledge of building types, elements foundations, stairs and also internal and external finishing materials.

2.2. Course Objectives (CO): At the end of course, the student will be able to:

Program objective		Course objective	
PO2	Apply analytic critical and systemic thinking to identify, diagnose and solve engineering problems with a wide range of complexity and variation.	CO1	Apply critical analytical thinking to solve engineering problems in a variety of scientific ways
PO3	Behave professionally and adhere to engineering ethics and standards.	CO2	Apply engineering standards and observe professional ethics in construction work
PO4	Use techniques, skills, and modern engineering tools necessary for architectural engineering practice.	CO3	lead the work team for effective presentation at the individual and group levels & Take responsibility, and the use of modern technology to communicate information

2.3. Course Learning Outcomes (CLO's):

CBE/Program Learning Outcomes		Course Learning Outcomes	
A6-PLO6	Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements.	CLO1	Understand the basics of structural engineering drawing and implement them into projects.
		CLO2	Analysis the structural systems of buildings in a simple context, scales and types that meet engineering requirements.
A7-PLO7	Function efficiently as an individual and as a member of multi-disciplinary and multi-cultural team.	CLO3	Study of buildings through group and individual work
B3-PLO13	Generate ecologically responsible, environmental conservation and rehabilitation designs; through understanding of: structural design, construction, technology and engineering problems associated with building designs.	CLO4	Define engineering technologies related to systems of building construction.
		CLO5	Understanding of engineering problems associated with building construction.
		CLO6	Apply construction technologies and materials into different projects.

Cognitive Domain	Psychomotor Domain	Affective Domain
CLO1, 4, 5	CLO2, 6	CLO3

2.4. Course Topics:

Course Topics	Week	Course LO's Covered					
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Introduction to course content	1	*		*		*	
Preliminary operations lecture for construction operations + The start of the guard room project Plan	2	*	*				*
A lecture on primary building materials + project completion and drawing of Elevations + Sections	3		*		*		*
Completion of the pre-construction works lecture + project submission	4	*	*		*		*
Discussion of research group No. (1) Construction systems and construction methods (load-bearing and structural walls)	5	*	*		*	*	
Discussion of research group No. (2) Types of surface foundations and insulation in installations, Types of deep foundations and insulation in structures	6	*			*	*	
Discussion of the research group No. (3) Brick stacks and bonding methods	7			*	*	*	
Mid-term Exam	8			*	*		
Discussion of the research group No. (4) stone stacks and bonding methods	9			*	*	*	
Discussion of research group No. (5) heritage coverage and construction (dome, vault, vault and wood)	10	*		*	*	*	
Large project presentation and drawing (Plan + Elevations + Sections)	11	*	*			*	*
Follow-up of a large project and drawing (Plan + Elevations + Sections)	12		*			*	*
Project Semi Final submission	13		*	*			*
Project Final submission	14		*	*			*
Portfolio submission and general discussion	15	*	*	*	*		*
Total	**15**	**8**	**9**	**9**	**9**	**8**	**8**

2.5 Teaching and Learning Methods:

Teaching and Learning Methods:	Course LO's Covered					
Methods	**CLO1**	**CLO2**	**CLO3**	**CLO4**	**CLO5**	**CLO6**
1. Lectures	*		*	*	*	
2.Tutorials		*	*	*		*
3. Project-based Learning		*	*			*
4. Presentations	*	*		*	*	
5. Brainstorming	*			*	*	
6. Projects	*	*	*			*
7. Discussion		*	*	*	*	
8. Self-Learning	*			*	*	*
9. Modeling		*	*	*		*

Teaching and Learning Methods for Students with Special Needs:
Methods
1. Field visit to historical buildings
2. Discussion Session
3. Extra Lectures
4. Provide different levels of books and materials

2.6 Assessment Methods:

Assessment Methods:		Course LOs Covered					
Methods		**CLO1**	**CLO2**	**CLO3**	**CLO4**	**CLO5**	**CLO6**
Formative Assessment Method							
1. Tests	Midterm Exam			*	*		
	Quizzes	*			*	*	
2. Discussions		*	*				*
3. Projects		*	*			*	
4. Assignments				*	*		*
5. Presentations		*		*	*		*
6. Modeling			*	*	*	*	
7. Portfolio		*	*	*			*
Summative Assessment Method							
8. Final Exam		*	*			*	*

2.6.1. Assessment Schedule & Grades Distribution:

Assessment Method	Week	Weighting of Asses.
1. Mid-term Exam	Week 8	30%
2. Quizzes	Week 2 & 3 & 4 & 5 & 7& 8	2.5%
3. Discussions	Week 5 & 6 & 7 & 9 & 10	2.5%
4. Projects	Week 2& 3 & 4 & 11 & 12 & 13 &14	10%
5. Assignments	Week 2 & 3 & 4 & 5 & 7 & 8 & 9 & 10	5%
6. Presentations	Week 5 & 6 & 7 & 9 & 10	5%
7. Modeling	Week 5 & 6 & 7 & 9 & 10	5%
8- Portfolio	Week 15	10%
9. Final Exam	Scheduled by the faculty council	40%
Total		**100%**

2.7. List of Reference:

Essential Books (Textbooks):	▪ Barry, R. (1999). The Construction of Buildings Vol. 2. 5th Ed. New Delhi: East-West Press.
Recommended Books:	▪ Allen E. & Iano j. (2020), Fundamentals of Building Construction: materials & methods, 6th . Ed. John Wiley & Sons, NJ, USA ▪ Meghashyam, K. K. (2005). Reinforced Concrete Constructions for 21st C. New Delhi :J.M. Jaina
Periodicals, Web Sites, … etc:	http:// www.caps-egypt.com http:// http://www.arcat.com

2.8. Facilities required for Teaching and Learning:

Different Facilities
Lecture Hall
Library Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives:

Program Objectives	Course Objective		
	CO1	CO2	CO3
PO2	*		*
PO3	*	*	
PO4		*	*

3.2. Course Objectives VS Course Learning Outcomes:

Course Objectives	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
CO1					*	*
CO2	*			*		
CO3		*	*			

3.3. Program Learning Outcomes VS Course Learning Outcomes:

Program Learning Outcomes	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
PLO6	*	*				
PLO7			*			
PLO13				*	*	*

3.4. Assessment Alignment Matrix:

PLO	PO	CLO	Teaching M.	Assessment M.
PLO6	PO2	CLO1 CLO2	• Lectures • Tutorials • Project-based Learning • Presentations • Brainstorming • Projects • Discussions • Self-Learning • Modeling	• Midterm Exam • Quizzes • Discussions • Projects • Presentations • Modeling • Portfolio • Final Exam
PLO7	PO3	CLO3	• Lectures • Tutorials • Project-based Learning • Projects • Discussion • Modeling	• Mid-term Exam • Assignments • Presentations • Modeling • Final Exam
PLO13	PO2 PO4	CLO4 CLO5 CLO6	• Tutorials • Lectures • Project-based Learning • Presentations • Projects • Discussion • Self-Learning • Modeling	• Mid-term Exam • Quizzes • Discussions • Projects • Assignments • Presentations • Portfolio • Final Exam • Modeling

Course Coordinator: Dr. Kamal Elgabalawy

Head of Department: Prof. Dr. Zeinab Faisal

Date: 10 / 9 / 2023

Course Specification

1. Basic Information:

Program Title	Architectural Engineering Program			
Department Offering the program	Architectural Engineering Department			
Department Offering the course	Architectural Engineering Department			
Course Title	Theory of Architecture 1		**Code**	ARC 131
Type	**Compulsory ☒**	**Elective ☐**		
Semester	Level 1-1			
Teaching Hours	**Lec.**	**Tut.**	**Lab.**	**Credit hours**
	2	1	0	3

2. Professional Information:

2.1. Course Description:

The course aims to introduce students to the relation between architecture and human life/needs. Topics include design objectives (firmness, commodity, and delight), anthropometric standards, services and circulation spaces, spatial relationships, and zoning. Topics include also evaluating and developing design concept, in addition to theories/principles of building types such as: residential buildings, nurseries, cafeterias/restaurants, schools … etc., covering functional relationships as well as visual and environmental criteria of the studied building types.

2.2. Course Objectives (CO):

At the end of the course, the student will be able to:

Program objective		Course objective	
PO4	Use techniques, skills, and modern engineering tools necessary for architectural engineering practice.	CO1	Classify the impacts of engineering solutions on society & environment.
PO5	Master self-learning and life-long learning strategies to communicate effectively in academic/professional fields.	CO2	Select appropriate solutions for engineering problems based on analytical thinking
PO6	Strengthening students' ability to make decisions, solve problems, and develop architectural and urban solutions to develop and serve the local community	CO3	Combine, exchange, and assess different ideas, views, and knowledge from a range of sources

2.3. Course Learning Outcomes (CLO's):

CBE/Program Learning Outcomes		Course Learning Outcomes	
A5-PLO5	Practice research techniques and methods of investigation as an inherent part of learning.	CLO1	Classify Theories and histories of architecture, planning, urban design, and other related disciplines.
		CLO2	Respect all alternative solutions; changes in original plan of the project, differences in style, culture, experience and treat others with respect.
		ClO3	Select appropriate solutions for engineering problems based on analytical thinking.
B1-PLO11	Create architectural, urban and planning designs that satisfy both aesthetic and technical requirements, using adequate knowledge of history and theory, related fine arts, local culture and heritage, technologies and human sciences.	CLO4	Sketch Manual drafting and freehand sketching.
		ClO5	Discuss, informed opinions appropriate to specific context and circumstances affecting architecture profession & practice
		CLO6	Analyze the range of patterns and traditions that have shaped and sustained cultures and the way that they can inform design process

Cognitive Domain	Psychomotor Domain	Affective Domain
CLO1-CLO2	CLO3-CLO4	CLO5-CLO6

2.4. Course Topics:

Course Topics	Week	Course LO's Covered					
		CLO 1	CLO	CLO 2	CLO	CLO	CLO
Course orientation and discussion about the design project	1		*				
building elements analysis, functional & Circulation elements	2		*	*			
Service, Protection, Ventilation elements	3		*	*			
Structural elements	4		*	*			
elements of beauty	5		*	*			
Design process, Functional Program	6		*				
Function relationships	7			*			*
Mid-term Exam	8			*			
Spatial Analyses	9	*		*		*	
Design Concept	10		*		*		
Forming in 3D	11	*		*		*	*
Forming in 3D	12				*		
Semi Final model	13		*		*	*	
Semi-final sketch	14	*		*			*
Final Sketch & Physical Model	15	*		*		*	*
Total	15	4	8	10	3	4	4

2.5 Teaching and Learning Methods:

Teaching and Learning Methods:	Course LO's Covered					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
1. Lectures		*		*		
2. Design Studio	*		*		*	*
3. Problem-based Learning	*			*		
5. Presentations			*		*	*
6. Projects	*		*		*	*
7. Discussion	*	*		*		*
8. Modeling					*	*
Teaching and Learning Methods for Students with Special Needs:						
Methods						
1. Discussion Session						
2. Extra Lectures						
3. Provide different levels of books and materials						

2.6 Assessment Methods:

Assessment Methods:		Course LOs Covered					
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Formative Assessment Method							
1.Tests	Oral Test	*	*			*	
	Midterm Exam			*			
2. Discussions		*			*		
3. Projects		*		*		*	*
4. Assignments			*	*	*		*
5. Presentations						*	
6. Modeling						*	
Summative Assessment Method							
Final Exam		*		*			*

2.6.1. Assessment Schedule & Grades Distribution:

Assessment Method	Week	Weighting of Asses.
1.Mid-term Exam	Week # 8	30%
2.Oral Test	Week # 13	5%
3.Discussions	Week # 9 & 15	5%
4.Projects	Week # 9 & 15	5%
5.Assignments	Week # 2,3,4,5,6,7,10,11, 12, 13,14	5%
6.Presentations	Week # 9 & 15	5%
7.Modeling	Week # 9 & 15	5%
8.Final Exam	Scheduled by the faculty council	40%
Total		100%

2.7. List of Reference:

Essential Books (Textbooks):	Clark, Roger H. and Michael Pause. Precedents in Architecture: Analytic Diagrams, Formative Ideas, John Wiley & Sons, 2004.
Recommended Books:	Architectural GRAPHIC Standards. NY: John Wiley & Sons, Inc., 1996. 2 Saxon, Richard. The Atrium Comes of Age. Essex: Longman Group (UK) Limited, 2020.
Periodicals, Web Sites, … etc.:	http://www.conceptsindesign.com/

2.8. Facilities required for Teaching and Learning:

Different Facilities
Design studio
Library usage
Data show
White board

3. Matrix:

3.1. Program Objectives VS Course Objectives:

Program Objectives		Course Objective		
	CO1	CO2	CO3	Co4
PO4	*			
PO5			*	
PO6		*		
PO7				*

3.2. Course Objectives VS Course Learning Outcomes:

Course Objectives	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
CO1					*	
CO2			*			
Co3		*				
CO4	*			*		*

3.3. Program Learning Outcomes VS Course Learning Outcomes:

Program Learning Outcomes	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
PLO5	*			*	*	*
PLO11		*	*			

3.4. Assessment Alignment Matrix:

PLOs	PO	CLOs	Teaching M.	Assessment M.
PLO5	PO4 PO5	CLO1 CLO2 CLO3	• 1.Design studio • 2.Problem-based Learning • Projects • 4. Discussion	• Oral Test • Discussions • Projects • 4. Final Exam
PLO11	PO6 PO7	CLO4 CLO5 CLO6	• Lectures • Case Study • Discussions • 4.Design studio • 5.Presentations • 6. Projects	• Mid-term Exam • Oral Test • Discussions • Projects • Assignments • Final Exam

Course Coordinator: Dr. Rasha Ahmed Reyad

Head of Department: Prof. Dr. Zeinab Faisal

Date: 10 / 9 / 2023

Course Specification

1. Basic Information:

Program Title	Architectural Engineering Program			
Department Offering the program	Architectural Engineering Department			
Department Offering the course	Architectural Engineering Department			
Course Title	Visual Design		**Code**	ARC 103
Type	**Compulsory** ☒	**Elective** ☐		
Semester	Level 1-1			
Teaching Hours	**Lec.**	**Tut.**	**Lab.**	**Credit hours**
	2	2	0	3

2. Professional Information:

2.1. Course Description:

The course aims at developing students' skills related to visualization and visual expression of architectural/landscaping forms. It familiarizes students with basic skills, media (pencils, pen & ink, color media), and principles (shades/lights; depth/distance cues; colors/color schemes; rendering techniques; etc.) of drafting communication. Topics also include photography, methods of model making, and principles of composition and aesthetic evaluation such as unity, proportions (Golden section, orders, module, etc.), balance, rhythm, contrast, symmetry, hierarchy, etc.

2.2. Course Objectives (CO):

At the end of course, the student will be able to:

Program objective		**Course objective**	
PO4	Use techniques, skills, and modern engineering tools necessary for architectural engineering practice.	CO1	Analyze, describe, and document site conditions spatially and visually and identify site opportunities and constraints.
PO5	Master self-learning and life -long learning strategies to communicate effectively in academic/professional fields.	CO2	Carry out comprehensive spatial and visual analysis and evaluation of complex urban settings.
PO6	Strengthening students' ability to make decisions, solve problems, and develop architectural and urban solutions to develop and serve the local community	CO3	Analyze, describe and document site conditions spatially and visually and identify site opportunities and constraints.
PO7	Create architectural designs that satisfy both aesthetic, technical and meet building users' requirements	CO4	Employ practical skills and express facts in graphical form including sketching, technical drawings and digital illustrations

2.3. Course Learning Outcomes (CLO's):

CBE/Program Learning Outcomes		Course Learning Outcomes	
A9-PLO9	Use creative, innovative and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.	CLO1	Use different scales of freehand sketching, ranging from interior to landscape details.
		CLO2	Modify Professional techniques of manual presentation using different tools and media.
		Clo3	Solve problems relating building design to nature and the surrounding environment
A10-PLO10	Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.	CLO4	Determine architectural and structural sense of sense and proportions.
		Clo5	Use ideas verbally and visually in clear coherent manner.
B1-PLO11	Create architectural, urban and planning designs that satisfy both aesthetic and technical requirements, using adequate knowledge of history and theory, related fine arts, local culture and heritage, technologies and human sciences.	CLO6	Sketch Manual drafting and freehand sketching.
		CLO7	Create ways to link technology in construction
		CLO8	Create Drawing 3D perspective views with shades and shadows.8

Course LO's covered:

Cognitive Domain	Psychomotor Domain	Affective Domain
CLO1, 4, 5	CLO3, 6, 7, 8	CLO2

2.4. Course Topics:

Course Topics	Week	Course LO's covered							
		CLO 1	CLO	CLO 3	CLO	CLO	Clo6	Clo7	Clo8
Introduction to visual art & design related issue	1	*			*	*			
Presentation of (point - line -planes)	2		*	*			*		
Presentation of basic solids & volumes	3		*		*				
Presentation of irregular solids & volumes	4	*		*		*	*		
Form & shape elements (rhythm - unity)	5		*	*	*				
Scale – Balance - Module - texture – color	6	*		*		*		*	
Midterm exam & photographic skills	7	*	*		*	*			*
Site visit (Buildings biography) (plans - facades - perspectives -….)	8		*		*		*		
Shapes &space organization (radial - grid -…)	9	*		*		*		*	
Compact – chaos - linear ….)	10		*	*		*			*
Optical illusion	11		*		*	*		*	
Colors (relations – priorities)	12		*		*	*			*
Project Architecture (Model with color &textures)	13		*		*	*			*
Semi-final Sketch	14	*		*				*	
Oral Exam & Portfolio	15	*	*		*	*	*		*
Total	15	5	8	10	3	4	4	4	5

2.5 Teaching and Learning Methods:

Teaching and Learning Methods:	Course LO's Covered							
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7	CLO8
1. Lectures		*		*			*	
2. Design studio	*		*		*	*		*
3. Problem-based Learning	*			*				
5. Presentations			*		*	*	*	*
6. Case Study		*		*				*
7. Projects	*		*		*			
8. Discussion	*	*		*		*	*	
9. Modeling					*			*
Teaching and Learning Methods for Students with Special Needs:								
Methods								
1. Discussion Session								
2. Extra Lectures								
3. Provide different levels of books and materials								

2.6 Assessment Methods:

Assessment Methods:		Course LOs Covered							
		CLO1	CLO2	CLO3	CLO4	CLO5	Clo6	Clo7	Clo8
Formative Assessment Method									
1.Tests	Oral Test	*	*			*	*		
	Midterm Exam			*					*
2. Discussions		*			*			*	
3. Projects		*		*		*	*		*
4. Assignments			*	*	*				
5. Presentations						*			*
6. Modeling						*	*		*
Summative Assessment Method									
7.Final Exam		*		*					

2.6.1. Assessment Schedule & Grades Distribution:

Assessment Method	Week	Weighting of Asses.
1.Mid-term Exam	Week # 8	30%
2.Oral Test	Week # 13	5%
3.Discussions	Week # 9 & 15	2.5%
4.Projects	Week # 9 & 15	10%
5.Assignments	Week # 2,3,4,5,6,7,10,11, 12, 13,14	5%
6.Presentations	Week # 9 & 15	2.5%
7.Modeling	Week # 9 & 15	5%
8.Final Exam	Scheduled by the faculty council	40%
Total		100%

2.7. List of Reference:

Essential Books (Textbooks):	Wang Shaoqiang, Sceno graphics Set Design & Paper craft Art, A New Graphic Design Approach, 2015
Recommended Books:	Jennifer Ott & Anna, 1000 Ideas for Colour Shemes, The Ultimate Guide to Making Colours Work, 2019
	Doyle, M. E. (2006). Color Drawing: Design Drawing Skills and Techniques for Architects, Landscape Architects, and Interior Designers. New Jersey: Wiley. ISBN: 978-0471741909
Periodicals, Web Sites, … etc:	http:// www.archnet.org http:// www.greatbuilding.com http:// www.architecture.com

2.8. Facilities required for Teaching and Learning:

Different Facilities
Design studio
Library usage
Data show
White board

3. Matrix:

3.1. Program Objectives VS Course Objectives:

Program Objectives		Course Objective		
	CO1	CO2	CO3	Co4
PO4	*			
Po5				*
Po6			*	
PO7		*		

3.2. Course Objectives VS Course Learning Outcomes:

Course Objectives	Course Learning Outcomes							
	CLO1	CLO2	CLO3	CLO4	CLO5	Clo6	Clo7	Clo8
CO1		*					*	
CO2			*			*		
CO3	*			*	*			
Co4			*					*

3.3. Program Learning Outcomes VS Course Learning Outcomes:

Program Learning Outcomes	Course Learning Outcomes							
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO 6	CLO 7	CLO 8
PLO9	*			*	*			
PLO 10						*	*	
PLO11		*	*					*

3.4. Assessment Alignment Matrix:

PLOs	PO	CLOs	Teaching M.	Assessment M.
PLO9	PO4 PO5	CLO1	• 1.Design studio • 2.Problem-based Learning • Projects • 4. Discussion	• Oral Test • Discussions • Projects • 4. Final Exam
Plo10	PO6	Clo2 Clo3	• Discussions • Design studio • 5.Presentations • 6. Projects	• Mid-term Exam • Oral Test • Discussions • Projects • Assignments • Final Exam
PLO11	PO7	CLO4 CLO6 CLO7 CLO8	• Lectures • Case Study • Discussions • 4.Design studio • 5.Presentations • 6. Projects	• Mid-term Exam • Oral Test • Discussions • Projects • Assignments • Final Exam

Course Coordinator: Dr. Rasha Ahmed Reyad

Head of Department: Prof. Dr. Zeinab Faisal

Date: 10 / 9 / 2023

Course Specification

1. Basic Information:

Program Title	Architectural Engineering Program			
Department Offering the program	Architectural Engineering Department			
Department Offering the course	Civil Engineering Department			
Course Title	Structure Analysis	**Code**	CIV 123	
Type	**Compulsory** ☒	**Elective** ☐		
Semester	Level 1-1			
Teaching Hours	**Lec.**	**Tut.**	**Lab.**	**Credit hours**
	2	2	0	3

2. Professional Information:

Pre-requisites: BES 021

2.1. Course description:

Equilibrium, stability & compatibility. - External & Internal equilibrium of statically determinate plane structures; beams, frames & trusses. - Normal, shear, torsional stresses & combined stresses. - Elastic deformations. - Introduction to the analysis of statically indeterminate structures through consistent deformations & moment distribution. - Buckling of columns. - Introduction to space structures.

2.2. Course Objectives (CO):

Program objective		**Course objective**	
PO1	Apply a wide spectrum of engineering knowledge, science and specialized skills with analytic, critical and systemic thinking to identify and solve engineering problems in real life situation.	CO1	Simulate engineering problem in real life
PO2	Prepare qualified innovative architects who can adhere to architectural engineering ethics and standards and work to develop the profession and the community and promote sustainability principles.	CO2	Solve engineering problem in real life
PO4	Use techniques, skills, and modern engineering tools necessary for architectural engineering practice.	CO3	Identify the different stresses on element

2.3. Course Learning Outcomes (CLO's):

CBE/Program Learning Outcomes		Course Learning Outcomes	
A1-PLO1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.	CLO1	Simulate different support in real life
		CLO2	Simulate members in real life
		CLO3	Evaluate the internal forces for determinate structural elements
B3-PLO13	Generate ecologically responsible, environmental conservation and rehabilitation designs; through understanding of structural design, construction, technology and engineering problems associated with building designs.	CLO4	Evaluate the internal forces for indeterminate structural elements
		CLO5	Evaluate Normal, shear and torsional stresses
		CLO6	Evaluate elastic deformation for structural elements

Cognitive Domain	Psychomotor Domain	Affective Domain
CLO1, 2	CLO3, 4, 5, 6	---

2.4. Course Topics:

Course Topics	Week	Course LO's Covered					
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Load and reaction for simple beams	1	*	*				
Load and reaction for beams with intermediate hinge	2	*	*				
Load and reaction for frames	3	*	*				
Load and reaction for truss	4	*	*				
Load and reaction for beams with link member	5	*	*				
Load and reaction for frames with link member	6	*	*				
Internal forces for simple beams	7	*	*	*			
Midterm exam	8						
Internal forces for beams with intermediate hinge	9	*	*				
Internal forces for frames	10	*	*	*			
Internal forces for beams with link members	11	*	*	*			
Internal forces for frames with link members and elastic deformation	12	*	*	*	*		
Internal forces for frames with link members and elastic deformation	13	*	*	*	*		
Normal, shear, torsional stresses, and elastic deformation	14	*	*	*	*	*	*
Total	**14**	**13**	**13**	**6**	**3**	**1**	**1**

2.5 Teaching and Learning Methods:

Teaching and Learning Methods:	Course LO's Covered					
Methods	**CLO1**	**CLO2**	**CLO3**	**CLO4**	**CLO5**	**CLO6**
1.Lecture	*	*	*			
2. Tutorials	*	*	*			
3. Problem-based Learning			*	*	*	*
4. Discussion				*		
Teaching and Learning Methods for Students with Special Needs:						
Methods						
1. Discussion Session						
2. Extra Lectures						
3. Provide different levels of books and materials						

2.6 Assessment Methods:

Assessment Methods:		Course LOs Covered					
Methods		**CLO1**	**CLO2**	**CLO3**	**CLO4**	**CLO5**	**CLO6**
Formative Assessment Method							
1.Tests	Quizzes	*			*	*	*
	Midterm Exam	*	*				
2.Assignments		*	*	*			
Summative Assessment Method							
3.Final Exam		*	*	*			

2.6.1. Assessment Schedule & Grades Distribution:

Assessment Method	Week	Weighting of Asses.
1.Assignments	2,3,4,5,6,7,9,10,11 &13	15%
2.Quizzes	3,6,13&14	15%
3.Midterm exam	8	30%
4.Final Exam	Scheduled by the faculty council	40%
Total		**100%**

2.7. List of Reference:

Essential Books (Textbooks):	Theory of structures Wagih Mohamed eldakhakhni, 2020 ISBN: 0-7432-02-977-978

2.8. Facilities required for Teaching and Learning:

Different Facilities
Lecture Hall
Library Usage
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives:

Program Objectives	Course Objective		
	CO1	CO2	CO3
PO1	*		
PO2		*	
PO4			*

3.2. Course Objectives VS Course Learning Outcomes:

Course Objectives	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
CO1	*	*				
CO2			*	*		
CO3					*	*

3.3. Program Learning Outcomes VS Course Learning Outcomes:

Program Learning Outcomes	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
PLO1	*	*	*			
PLO13				*	*	*

3.4. Assessment Alignment Matrix:

PLO	PO	CLO	Teaching M.	Assessment M.
PLO1	PO1	CLO1	• Lectures • Tutorials	• Assignments • Quizzes • Midterm Exam • Final Exam
		CLO2	• Lectures • Tutorials	• Assignments • Midterm Exam • Final Exam
PLO13	PO2	CLO3	• Lectures • Tutorials • Problem-based Learning	• Assignments • Final Exam
		CLO4	• Problem-based Learning • Discussion	• Quizzes
	PO4	CLO5	• Problem-based Learning • Discussion	• Quizzes
		CLO6	• Problem-based Learning • Discussion	• Quizzes

Course Coordinator: Dr. Ahmed Abdelsalam Ahmed abd alsalam

Head of Department: Prof. Dr. Zeinab Faisal

Date: 10 / 9 / 2023

Course Specification

1. Basic Information:

Program Title	Architectural Engineering Sciences Department			
Department Offering the Program	Architectural Engineering Sciences Department			
Department Offering the Course	Basic Engineering Sciences Department			
Course Title	Pollution & Industrial Safety		**Code**	BES 141
Type	**Compulsory** ☒	**Elective** ☐		
Semester	Level 1-1			
Teaching Hours	**Lec.**	**Tut.**	**Lab.**	**Credit hours**
	2	0	1	2

2. Professional Information:

2.1. Course description:

Environmental pollution: Air Pollution-Adverse effects -ozone depletion - green house effects- Acid rain and global warming measurement and control methods. Water pollution- constituents of wastewater- primary treatment: various pre-treatment methods, Advanced Treatment: chemical oxidation, precipitation, air stripping.

Industrial safety: Plan and manage construction health and safety, maintain safety issues for construction introduce the foundations on which appropriate health and safety to systems may be built. Occupation health and safety affect all aspects of work. Legal framework for health and safety.

2.2. Course Objectives (CO):

Program objective		**Course objective**	
PO4	Use techniques, skills, and modern engineering tools necessary for engineering practice.	CO1	**Understand** Air Pollution, water pollution. Illustrate Adverse effects -ozone depletion - green house effects- Acid rain and global warming measurement and control methods. Discuss constituents of wastewater- primary treatment: various pre-treatment methods, Advanced Treatment: chemical oxidation, precipitation, air stripping.
PO6	Design of constructions that meet specified needs with appropriate attention to health and safety risks, applicable standards, economic, environmental, cultural, and societal considerations	CO2	**Maintain** safety measures in construction and materials and assess environmental impacts of projects.

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
A4-PLO4	Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles.	CLO1	Describe the primary treatment: various pre-treatment methods, Advanced Treatment: chemical oxidation, precipitation, air stripping for water pollutants
		CLO2	Discuss sources of air pollution and ways for control and adverse effects.

2.4. Course Topics:

Course Topics	Week	Course LOs Covered	
		CLO1	CLO2
introduction to environmental engineering, Environmental Impact Assessment, different types of environmental pollution, characteristics of wastewater	1	*	
	2	*	
primary treatment: various pre-treatment methods,	3	*	
Advanced wastewater Treatment: chemical oxidation, precipitation, air stripping	4		*
	5		*
Occupation health and safety affect all aspects of work. Legal framework for health and safety.	6		*
Nature and sources of air pollution	7		*
Midterm Exam	8		
Ozone depletion - green house effects- Acid rain and global warming measurement and control method, Plan and manage construction health and safety.	9-11		*
maintain safety issues for construction introduce the foundations on which appropriate health and safety to systems may be built	12	*	
	13	*	
	14	*	
Total	**14**	**6**	**5**

2.5. Lab Topics:

Lab Topics	Week	Course LO's Covered			
		CLO1	CLO2	CLO3	CLO4
Air sampling, Water sampling	3-4			*	
Adsorption, Precipitation	5-6			*	
Total	**4**			**2**	

2.6 Teaching and Learning Methods:

Teaching and Learning Methods:	Course LO's Covered			
Methods	**CLO1**	**CLO2**	**CLO3**	**CLO4**
1. Lecture	*	*	*	*
2. Tutorials	*	*	*	*
3. Practical-based Learning				*
Teaching and Learning Methods for Students with Special Needs:				
Methods				
1. Discussion Session				
2. Extra Lectures				
3. Provide different levels of books and materials				

2.7 Assessment Methods:

Assessment Methods:		Course LOs Covered	
Methods		**CLO1**	**CLO2**
Formative Assessment Method			
1.Tests	Quizzes	*	*
	Midterm Exam		*
2.Assignments		*	
Summative Assessment Method			
3.Final Exam		*	*

2.7.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
1.Assignments& Quizzes	2 to 6 & 9 to 13	10 %
2.Midterm Exam	8	30 %
3.Practical Exam	12	20 %
4.Final Exam	Scheduled by the faculty council	40 %
Total		**100 %**

2.8. List of Reference:

Essential Books (Textbooks):	• Peavy, Rowe and Tchobangolous " Environmental Engineering" McGraw Hill • Jeremy Colls, "Air Pollution", second edition, by Spon Press 2012 • Handbook of "Industrial Safety and Health, Trade and Technical Press Ltd. Morden, U.K.1980. S.P. Mahajan, "Pollution Control in Process Industries" Tata McGraw Hill, NewDelhi1985.

2.9. Facilities required for Teaching and Learning:

Different Facilities
Lecture Hall
Library Usage
laboratory Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives:

Program Objectives	Course Objective	
	CO1	CO2
PO4	*	
PO6		*

3.2. Course Objectives VS Course Learning Outcomes:

Course Objectives	Course Learning Outcomes	
	CLO1	CLO2
CO1	*	
CO2		*

3.3. Program Learning Outcomes VS Course Learning Outcomes:

Program Learning Outcomes	Course Learning Outcomes	
	CLO1	CLO2
PLO4	*	*

3.4. Assessment Alignment Matrix:

PLO	PO	CLO	Teaching M.	Assessment M.
PLO4	PO4	CLO1	• Lecture • Tutorials	• Midterm Exam • Quiz • Assignments
		CLO2	• Lecture • Tutorials	• Midterm Exam • Final Exam • Assignments • Quiz

Course Coordinator: Dr. Boosy Samy Aly

Head of Department: Prof. Dr. Zeinab Faisal

Date: 10 / 9 / 2023

Course Specification

1. Basic Information:

Program Title	Architectural Engineering Program			
Department Offering the program	Architectural Engineering Department			
Department Offering the course	Architectural Engineering Department			
Course Title	Architecture Design 2		**Code**	ARC 102
Type	**Compulsory** ☒		**Elective** ☐	
Semester	Level 1-2			
Teaching Hours	**Lec.**	**Tut.**	**Lab.**	**Credit hours**
	1	4	0	3

2. Professional Information:

Pre-requisites: ARC 101

2.1. Course Description:

This course intends to help students further develop their architectural design abilities through the solution of moderately complex multi-functional programs. Emphasis is placed on the use of context, program functional and spatial requirements as a basis for the generation of design solutions as well as the appropriate solution of circulation and integration of structure in design development considering public buildings (commercial, administrative, mixed use, etc.) With the ability to generate creative forms. Drawings will be required for final project and perspective views.

2.2. Course Objectives (CO):

At the end of the course, the student will be able to:

Program objective		**Course objective**	
PO1	Apply a wide spectrum of fundamentals of the science and specialized skills with analytic, creativity and critical thinking to identify and solve architecture design problems in real life situation.	CO1	Outline the architectural vocabulary and drawings used in architectural design and presentation.
PO6	Strengthening students' ability to make decisions, solve problems, and develop architectural and urban solutions to develop and serve the local community.	CO2	Display projection abilities from 3D drawings and vice versa to draw efficiently and accurately according to different scales.
PO7	Create architectural designs that satisfy both aesthetic, technical and meet building users' requirements	CO3	Design innovative simple design projects.

2.3. Course Learning Outcomes (CLO's):

CBE/Program Learning Outcomes		Course Learning Outcomes	
A9-PLO9	Use creative, innovative, and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.	CLO1	Generate new design solutions through imagination and creativity
B1-PLO11	Create architectural, urban and planning designs that satisfy both aesthetic and technical requirements, using adequate knowledge of history and theory, related fine arts, local culture and heritage, technologies and human sciences.	CLO2	Identify principles of architectural design in a simple context, scales and types that satisfy both aesthetic and technical requirement
		CLO3	Produce all necessary architectural drawings that meet technical requirements.
B2-PLO12	Produce designs that meet building users' requirements through understanding the relationship between people and buildings, and between buildings and their environment; and the need to relate buildings and the spaces between them to human needs and scale.	CLO4	Analyze different similar building design solutions to obtain design criteria.
		CLO5	Criticize physical models of similar buildings.
		CLO6	Design simple architecture design problems that meet users' requirements

Cognitive Domain	Psychomotor Domain	Affective Domain
CLO2	CLO1,3,4,5, 6	------

2.4. Course Topics:

Course Topics	Week	Course LO's Covered					
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Introduction to course objectives and outlines. First Project: Introduction, Functional requirements.	1		*				
Lecture: Factors to Be Considered In Architectural Design. -Submission and presentation of research.	2		*		*	*	
Lecture: Context as a basis for architectural design, context analysis. Submission of 1st Sketch - Individual desk critiques.	3	*	*	*			*
Pin-Up Jury: Submission and presentation of 2nd Sketch	4			*			*
Submission of 3rd Sketch - Individual desk critiques.	5			*			*
Pin-Up Jury: Submission and presentation of Semi-Final Sketch	6						
Final Submission of 1st project & Discussion	7	*		*			
Midterm Exam	8			*			*
Second Project: Introduction, Functional requirements.	9		*		*	*	
Lecture: Similar project analysis -Submission and presentation of research.	10		*	*	*	*	*
Submission of 1st Sketch - Individual desk critiques.	11	*					*
Pin-Up Jury: Submission and presentation of 2nd Sketch.	12	*					*
Pin-Up Jury: Submission and presentation of Semi-final Sketch	13	*		*			*
Final Submission & Discussion	14	*		*		*	
Total	14	6	5	8	3	4	8

2.5 Teaching and Learning Methods:

Teaching and Learning Methods:	Course LO's Covered					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
1. Lectures		*		*		
2. Design Studio	*		*		*	*
3. Problem-based Learning	*			*		
4. Case Study		*		*		
5. Projects	*		*		*	*
6. Discussion	*	*		*		*
7. Modeling					*	*
Teaching and Learning Methods for Students with Special Needs:						
Methods						
1. Discussion Session						
2. Extra Lectures						
3. Provide different levels of books and materials						

2.6 Assessment Methods:

Assessment Methods:	Course LOs Covered					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Formative Assessment Method						
1. Oral Exam		*				
2. Midterm Exam	*		*			
3. Discussions	*	*		*		
4. Projects	*		*			
5. Assignments	*		*			*
6. Modeling					*	
Summative Assessment Method						
7. Final Exam	*		*			

2.6.1. Assessment Schedule & Grades Distribution:

Assessment Method	Week	The weighting of Asses.
1. Oral Exam	Week # 7,14	10%
2. Mid-term Exam	Week # 8	10%
3. Discussions	Week # 4, 12	5%
4. Projects	Week # 7 & 14	20%
5. Assignments	Week # 3,4,5,6,7,10,11, 12, 13	20%
6. Modeling	Week # 14	5%
7. Final Exam	Scheduled by the faculty council	30%
Total		100%

2.7. List of References:

Essential Books (Textbooks):	Neufert, E. (2000) Architect's Data– 3rd ed. Oxford: Blackwell.
	De-Chiara, J. (1995) Time Saver Standards for Housing and Residential Development, Berkshire: McGraw Hill
Recommended Books:	Ching, F., and Juroszek, S. (2019). Design Drawing. 3rded., Hoboken, NJ: John Wiley & Sons, Inc.
	Karlen, M. and Fleming, R. (2016). Space Planning Basics. Hoboken, NJ: John Wiley & Sons, Inc.
Periodicals, Web Sites, … etc.:	https://www.archute.com/ https://www.pinterest.com https://www.admiddleeast.com/ https://www.behance.net https://www.desiretoinspire.net/ https://stylebyemilyhenderson.com/design https://www.homeanddesign.com/ https://www.archdaily.com/

2.8. Facilities required for Teaching and Learning:

Different Facilities
Design studio
Library usage
Data show
White board

3. Matrix:

3.1. Program Objectives VS Course Objectives:

Program Objectives	Course Objective		
	CO1	CO2	CO3
PO1	*		
PO6		*	
PO7			*

3.2. Course Objectives VS Course Learning Outcomes:

Course Objectives	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
CO1		*		*		
CO2			*			
CO3	*				*	*

3.3. Program Learning Outcomes VS Course Learning Outcomes:

Program Learning Outcomes	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
PLO9	*					
PLO11		*	*			
PLO12				*	*	*

3.4. Assessment Alignment Matrix:

PLO's	PO's	CLO's	Teaching M.	Assessment M.
PLO9	PO1 PO6	CLO1	1. Design studio 2. Problem-based Learning 3. Projects 4. Discussion	1. Discussions 2. Projects 3. Final Exam
PLO11	PO6 PO7	CLO2 CLO3	1. Lectures 2. Case Study 3. Discussions 4. Design studio 5. Presentations 6. Projects	1. Mid-term Exam 2. Oral Test 3. Discussions 5. Projects 6. Assignments 7. Final Exam
PLO12	PO6 PO7	CLO4 CLO5 CLO6	1. Lectures 2. Problem-based Learning 3. Case Study 4. Discussion 5. Design studio 6. Presentations 7. Projects 8. Modeling	1. Discussions 2. Assignments 3. Oral Test 4. Projects 5. Assignments 7. Modeling 8. Final Exam

Course Coordinator: Prof. Dr. Zeinab Faisal

Head of Department: Prof. Dr. Zeinab Faisal

Date: 10 / 9 / 2023

Course Specification

1. Basic Information:

Program Title	Architectural Engineering Program			
Department Offering the program	Architectural Engineering Department			
Department Offering the course	Architectural Engineering Department			
Course Title	Building Construction 1		**Code**	ARC 112
Type	**Compulsory** ☒		**Elective** ☐	
Semester	Level 1-2			
Teaching Hours	**Lec.**	**Tut.**	**Lab.**	**Credit hours**
	2	3	0	3

2. Professional Information:

Pre-requisites: ARC 111

2.1. Course description:

This course focus on various building materials and construction techniques would be emphasized based on the performing standards and codes, wherein application of each material would be discussed in detail. It focuses on the following topics: Concrete buildings and different types of roofing systems, wooden and steel construction, and introduction to technical Installations.

2.2. Course Objectives (CO):

At the end of course, the student will be able to:

Program objective		Course objective	
PO2	Apply analytic critical and systemic thinking to identify, diagnose and solve engineering problems with a wide range of complexity and variation.	CO1	Identify and classify the basic structural elements of the building (walls, floors and roofs) and their implementation into different kinds of buildings.
		CO2	Figure out the different types, and materials building stairs and their appropriate uses.
PO5	Master self-learning and life - long learning strategies to communicate effectively in academic/professional fields.	CO3	Take responsibility and lead the work team for effective presentation at the individual and group levels, and the use of modern technology to communicate information

2.3. Course Learning Outcomes (CLO's):

CBE/Program Learning Outcomes		Course Learning Outcomes	
A5-PLO5	Practice research techniques and methods of investigation as an inherent part of learning.	CLO1	Discuss the different types of both expansion and settlement joints in buildings by scientific research.
		CLO2	Present information about different finishing materials in buildings.
B3-PLO13	Generate ecologically responsible, environmental conservation and rehabilitation designs; through understanding of structural design, construction, technology and engineering problems associated with building designs.	CLO3	Identify the main elements of concrete, steel, and wood structural systems.
		CLO4	Produce neat drawings for the principal elements and components of concrete, steel, and wood structural systems.
		CLO5	Describe the main elements of steel structural systems.
		CLO6	Design the different types of expansion joints.

Cognitive Domain	Psychomotor Domain	Affective Domain
CLO1, 3, 5	CLO4, 6	CLO2

2.4. Course Topics:

Course Topics	Week	Course LO's Covered					
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Introduction & Course Review	1	*	*	*		*	
R. Concrete Construction	2			*	*		
Pre-Cast Conc. Construction	3			*	*		
Timber Floors & Roofs Construction	4			*	*		
Timber Walls & Columns Construction	5			*	*		
Steel Floors & Roofs Construction	6,7			*	*		
Mid-term Exam	8						
Steel Walls & Columns Construction	9			*	*		
Discussion of 1st research: Different types of both expansion and settlement joints	10	*					
Introduction To RC Stairs	11					*	*
introduction to technical Installations	12,13					*	*
Discussion of 2nd research: Different finishing materials in buildings.	14		*				
Physical Model	15						*
Total	15	2	2	7	6	5	5

2.5 Teaching and Learning Methods:

Teaching and Learning Methods:	Course LO's Covered					
Methods	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
1. Lectures	*		*		*	
2.Tutorials				*		*
3. Problem-based Learning			*	*	*	*
4. Discussion	*	*				
5. Self-Learning	*	*				
Teaching and Learning Methods for Students with Special Needs:						
Methods						
1. Discussion Session						
2. Extra Lectures						
3. Provide different levels of books and materials						

2.6 Assessment Methods:

Assessment Methods:	Course LOs Covered					
Methods	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Formative Assessment Method						
1. Midterm Exam			*	*		
2. Assignments			*	*	*	*
3. Reports	*	*				
4. Presentations	*	*				
5. Modeling						*
Summative Assessment Method						
6. Final Exam				*	*	*

2.6.1. Assessment Schedule & Grades Distribution:

Assessment Method	Week	Weighting of Asses.
1. Midterm Exam	Week 8	30%
2. Assignments	Week 2,3,4,5,6,7,10,11,12,13	10%
3. Reports	Week 9,14	10%
4. Presentations	Week 9,14	5%
5. Modeling	Week 15	5%
6. Final Exam	Scheduled by the faculty council	40%
Total		**100%**

2.7. List of Reference:

Essential Books (Textbooks):	▪ Barry, R. (1999). The Construction of Buildings Vol. 2. 5th Ed. New Delhi: East-West Press.
Recommended Books:	▪ Ching F. 2019, Building Construction Illustrated, 6th. Ed. John Wiley & sons, NJ, USA ▪ MG Shah &CM kale, Principles of Building Drawings, 2017 ▪ حيدر. فاروق عباس,الموسوعة الهندسية في تكنولوجيا تشييد المبانى، الجزء الأول والثاني مركز الدلتا للطباعة، اسبورتنج، الاسكندرية 2014,

2.8. Facilities required for Teaching and Learning:

Different Facilities
Lecture Hall
Library Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective		
	CO1	CO2	CO3
PO2	*	*	
PO5			*

3.2. Course Objectives VS Course Learning Outcomes:

Course Objectives	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
CO1			*	*		
CO2					*	*
CO3	*	*				

3.3. Program Learning Outcomes VS Course Learning Outcomes:

Program Learning Outcomes	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
PLO5	*	*				
PLO13			*	*	*	*

3.4. Assessment Alignment Matrix:

Teaching and Learning Methods:	Course LO's Covered					
Methods	**CLO1**	**CLO2**	**CLO3**	**CLO4**	**CLO5**	**CLO6**
1. Lectures	*		*		*	
2.Tutorials				*		*
3. Problem-based Learning			*	*	*	*
4. Discussion	*	*				
5. Self-Learning	*	*				
Teaching and Learning Methods for Students with Special Needs:						
Methods						
1. Discussion Session						
2. Extra Lectures						
3. Provide different levels of books and materials						

Course Coordinator: Dr. Mona Yehia Shedid
Head of Department: Prof. Dr. Zeinab Faisal
Date: 6 / 9 / 2022

Course Specification

1. Basic Information:

Program Title	Architectural Engineering Program			
Department Offering the program	Architectural Engineering Department			
Department Offering the course	Architectural Engineering Department			
Course Title	History of Architecture 1		**Code**	ARC 132
Type	**Compulsory** ☒		**Elective** ☐	
Semester	Level 1-2			
Teaching Hours	**Lec.**	**Tut.**	**Lab.**	**Credit hours**
	2	1	0	3

2. Professional Information:

2.1. Course description:

The course aims at introducing the students to a comparative analytical study of architecture in different cultures/historical periods including: Prehistoric architecture; Ancient Egyptian architecture (old, middle, and late kingdoms as well as Ptolemaic/Roman period); West Asiatic and Mesopotamia architecture (Babylonian, Assyrian and Persian); Classical architecture (Greek and Roman); and Early Christian and Byzantine architecture with emphasis on selected examples from Egypt (Coptic architecture).

2.2. Course Objectives (CO):

Program objective		**Course objective**	
PO4	Use techniques, skills, and modern engineering tools necessary for architectural engineering practice.	CO1	Apply the use of technology in effective presentation and individual and group discussion to communicate information easily to all
PO5	Master self-learning and life -long learning strategies to communicate effectively in academic/professional fields.	CO2	Applying self-learning through specialized and electronic libraries & The ability to self-learning through field visits
PO6	Strengthening students' ability to make decisions, solve problems, and develop architectural and urban solutions to develop and serve the local community.	CO3	Analysis of historical architectural thought and its use in the development and service of the local community
PO7	Create architectural designs that satisfy both aesthetic, technical and meet building users' requirements	CO4	Solving design problems using historical architectural vocabulary and elements after understanding the design idea

2.3. Course Learning Outcomes (CLO's):

CBE/Program Learning Outcomes		Course Learning Outcomes	
A5-PLO5	Practice research techniques and methods of investigation as an inherent part of learning.	CLO1	Search for information from references and internet.
A10-PLO10	Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.	CLO2	Understand the functions of different historic buildings
		CLO3	Outline different design principles of different historical buildings
		CLO4	Identify the different building types of the different historical civilizations
B1-PLO11	Create architectural, urban and planning designs that satisfy both aesthetic and technical requirements, using adequate knowledge of: history and theory, related fine arts, local culture and heritage, technologies and human sciences.	CLO5	Understanding human requirements and needs through different historic periods.
		CLO6	Determine the technical and aesthetic requirements of the historic buildings.
		CLO7	Analysis the different historic building types.
		CLO8	Compare between building types in different historical civilizations

Cognitive Domain	Psychomotor Domain	Affective Domain
CLO2, 3, 4, 5,6	CLO7, 8	CLO1

2.4. Course Topics:

Course Topics	Week	Course LO's Covered							
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7	CLO8
Introduction to course content - The house in primitive times	1	*	*		*			*	
General introduction to ancient civilizations (civilization / culture / ideology)	2	*		*				*	*
A general introduction to the ancient Egyptian civilization and other civilizations	3		*		*			*	*
Model display (1-dwelling or palace/2-temple/3-cemetery) (4-Models of columns in ancient Egyptian architecture)	4		*	*		*			*
Group No. 1: the ancient Egyptian civilization (temples, tombs, houses or palaces)	5	*			*	*	*		
Model display (1-horizontal temple/2-vertical ziggurat temple/3-residential building model/4-palace model/5-organic residential neighborhood model/6-planned residential neighborhood model) (7- Persian Palace) (8- Models of columns that appeared in the architecture of Mesopotamia and Persia)	6			*			*		*
Group No. 2: Civilization of West Asia and Mesopotamia {Tigris and Euphrates} The most famous of its civilizations (Sumer, Akkad, Babylon, Assyria and Chaldeans)	7	*		*	*		*		
Mid-term Exam	8				*				*
Group No. 3: Persian civilization {Iran}	9	*	*			*	*		*
Group No. 4: Classical (Greek) civilization	10		*		*		*	*	
Group No. 5: Classical Civilization (Roman)	11	*	*		*		*		
Group No. 6: Early Christian architecture	12								
Group No. 7: Byzantine architecture	13		*	*		*			*
Group No. 8: Coptic architecture	14		*	*		*			*
presentation and analysis of a modern inclusive model inside and outside Egypt Portfolio submission and general discussion	15			*		*		*	*
Total	15	6	8	7	7	6	6	5	9

2.5 Teaching and Learning Methods:

Teaching and Learning Methods:	Course LO's Covered							
Methods	**CLO1**	**CLO2**	**CLO3**	**CLO4**	**CLO5**	**CLO6**	**CLO7**	**CLO8**
1. Lectures	*		*	*			*	*
2.Tutorials		*		*		*		*
3. Presentations	*		*		*		*	
4. Brainstorming		*	*		*		*	
5. Discussion			*	*		*		*
6. Self-Learning	*			*	*		*	
7. Modeling		*	*			*		*
Teaching and Learning Methods for Students with Special Needs:								
Methods								
1. Field visit to historical buildings								
2. Discussion Session								
3. Extra Lectures								
4. Provide different levels of books and materials								

2.6 Assessment Methods:

Assessment Methods:		Course LOs Covered							
Methods		**CLO1**	**CLO2**	**CLO3**	**CLO4**	**CLO5**	**CLO6**	**CLO7**	**CLO8**
Formative Assessment Method									
1. Tests	Midterm Exam				*				*
	Quizzes	*	*		*	*		*	
2. Reports		*	*			*			*
3. Discussions				*	*			*	*
4. Assignments			*	*	*			*	*
5. Presentations		*		*	*		*		*
6. Modeling		*	*			*	*	*	
7- Portfolio			*	*	*		*		
Summative Assessment Method									
8- Final Exam		*	*	*		*		*	

2.6.1. Assessment Schedule & Grades Distribution:

Assessment Method	Week	Weighting of Asses.
1. Mid-term Exam	Week 8	30%
2. Quizzes	Week 2 & 3 & 4 & 5 &6	5%
3. Discussions	Week 5 & 7 & 9 & 11 & 13	5%
4. Assignments	Week 2 & 3 & 4 & 7	5%
5. Presentations	Week 5 & 7 & 9 & 11 & 13	5%
6. Modeling	Week 14	5%
7- Portfolio	Week 15	5%
8. Final Exam	Scheduled by the faculty council	40%
Total		**100%**

2.7. List of Reference:

Essential Books (Textbooks):	Lecture Notes
Recommended Books:	John Mansbridge,1999 ,Graphic History of Architecture, Hong Kong. - **د. قبيلة فارس، تاريخ العمارة عبر العصور, دار المناهج للنشر والتوزيع, 2019** - د. توفيق عبد الجواد ، تاريخ العمارة و الفنون فى العصور الأولى ، مكتبة الأنجلو ، ١٩٧٠ - د. توفيق عبد الجواد ، العمارة و حضارات مصر الفرعونية ، مكتبة الأنجلو ، ١٩٨٤ Sir Banister Fletcher's ,AHistory of Architecture , twentieth - edition ,(part one). From www, amazone.com - Zahi Hawas ,Alberto Siliotto ,"The Illustrated Guide to The Pyramids", The American University in Cairo Press, ٢٠٠٣ - Alberto Siliotti, , Luxor, Karnak and the Theban Temples, The American University In Cairo Press, ٢٠٠٢
Periodicals, Web Sites, … etc:	-http//:www. Egyptmyway .com - -http://www.pbs.org -http://www. sis.gov.eg http://www.brynmawr:edu ww. google.com

2.8. Facilities required for Teaching and Learning:

Different Facilities
Lecture Hall
Library Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives:

Program Objectives	Course Objective			
	CO1	CO2	CO3	CO4
PO4	*		*	*
PO5		*	*	
PO6		*		*
PO7	*			*

3.2. Course Objectives VS Course Learning Outcomes:

Course Objectives	Course Learning Outcomes							
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7	CLO8
CO1	*		*			*		*
CO2		*		*			*	
CO3	*			*	*			
CO4		*				*		*

3.3. Program Learning Outcomes VS Course Learning Outcomes:

Program Learning Outcomes	Course Learning Outcomes							
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7	CLO8
PLO5		*	*		*	*		*
PLO10	*	*			*	*	*	
PLO11	*		*	*			*	

3.4. Assessment Alignment Matrix:

PLO	PO	CLO	Teaching M.	Assessment M.
PLO5	PO4 PO5	CLO1	• Lectures • Tutorials • Presentations • Report • Self-Learning • Modeling	• Mid-term Exam • Quizzes • Reports • Assignments • Modeling • Portfolio • Final Exam
PLO10	PO5 PO6	CLO2 CLO3 CLO4	• Lectures • Tutorials • Presentations • Brainstorming • Discussion • Modeling	• Mid-term Exam • Quizzes • Assignments • Modeling • Portfolio • Final Exam
PLO11	PO6 PO7	CLO5 CLO6 CLO7 CLO8	• Lectures • 2.Tutorials • Presentations • Brainstorming • Discussion • Self-Learning • 6. Modeling	• Mid-term Exam • Discussions • Assignments • Presentations • Modeling • Portfolio • Final Exam

Course Coordinator: Dr. Kamal Elgabalawy

Head of Department: Prof. Dr. Zeinab Faisal

Date: 10 / 9 / 2023

Course Specification

1. Basic Information:

Program Title	Architectural Engineering Program			
Department Offering the program	Architectural Engineering Department			
Department Offering the course	Architectural Engineering Department			
Course Title	Perspective and Sociography	**Code**	ARC 104	
Type	**Compulsory** ☒	**Elective** ☐		
Semester	Level 1-2			
Teaching Hours	**Lec.**	**Tut.**	**Lab.**	**Credit hours**
	1	2	0	2

2. Professional Information:

2.1. Course description:

The course presents to student method of perspective drawing (convert two-dimensional vision or drawing into three-dimensional drawing and representation). This course aims to teach the students the shade and shadows of a dot, a line, a surface, and a volume, the shade and shadow of buildings in plans, elevations, layouts and isometric & perspective. And their application in architectural project.

2.2. Course Objectives (CO):

At the end of course, the student will be able to:

Program objective		Course objective	
PO5	Master self-learning and life -long learning strategies to communicate effectively in academic/professional fields.	CO1	Apply analytical thinking to solve engineering problems and deductive reasoning using a variety of scientific methods.
PO6	Strengthening students' ability to make decisions, solve problems, and develop architectural and urban solutions to develop and serve the local community.	CO2	Create perspective snapshots with engineering steps, to find solutions compatible with the development of the local community.
PO7	Create architectural designs that satisfy both aesthetic, technical and meet building users' requirements.	CO3	Designing interior and exterior architectural scenes using shadows with aesthetic standards and functional requirements for users.

2.3. Course Learning Outcomes (CLO's):

CBE/Program Learning Outcomes		Course Learning Outcomes	
A10-PLO10	Acquire and apply new knowledge, and practice self, lifelong and other learning strategies.	CLO1	Understand the basics of drawing shades & shadows, and perspective and implement them in projects.
		CLO2	Outline of shades (point, line, surface and form) through individual work
		CLO3	Analysis of engineering lines for building projections in a simple context, scales and types that meet engineering requirements.
B1-PLO11	Create architectural, urban and planning designs that satisfy both aesthetic and technical requirements, using adequate knowledge of history and theory, related fine arts, local culture and heritage, technologies and human sciences.	CLO4	Apply shade and shadows (Elevations, Lay Outs, Plans and isometrics) for multiple buildings
		CLO5	Create an indoor and outdoor perspective snapshot, with one point & two vanishing points
		CLO6	Designing architectural scenes with aesthetic and human proportions that include projecting shadows on perspective, reflections, and landscapes

Cognitive Domain	Psychomotor Domain	Affective Domain
CLO1, 2, 5	CLO3, 4, 5, 6	-------

2.4. Course Topics:

Course Topics	Week	Course LO's Covered					
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Introduction to course content	1	*		*		*	
Shadow lecture (Surface and forms completion) + applications on Elevations, general location and isometry of a residential building + discussion on a book specialized in shadow and perspective	2	*	*				*
Shadow lecture (Surface and forms) + applications on a general site, Elevations and Isometrics for a religious building, a mosque + discussion on a book specialized in shadows and perspective	3		*		*		*
Shadow Lecture (Surfaces and Rotational Volumes) + Applications on the Model of Horizontal Projection, Interface and Isometry of a Bedroom with Furniture + Discussion on a Book Specializing in Shadow and Perspective	4	*	*		*		*
Lecture on the shadow and perspective of the shapes of the different openings of doors and windows + applications on the model of a Section, an interface and a general location for a crafts center in order to be in line with the architectural design + the beginning of drawing a perspective with two smuggling points + a discussion on a book specialized in shadow and perspective	5	*	*		*	*	
Shadow and perspective lecture (stairs, entrances and minarets) + drawing a two-point perspective of a residential building	6	*		*	*	*	
Completing the shadow and perspective lecture (stairs, entrances and minarets) + drawing a two-point perspective	7			*	*	*	
Mid-term Exam	8			*	*		
Perspective Lecture - Complete the perspective with two points	9			*	*	*	
Perspective Lecture -(One & Two) vanishing point - interior design	10	*		*		*	*
Shadow lecture on perspective through architectural models	11	*	*			*	*
Shadow lecture on perspective with reflection through architectural models	12	*	*			*	*
project Semi Final submission	13		*	*	*		*
project Final submission	14		*	*	*		*
Portfolio submission and general discussion	15		*	*	*	*	
Total	**15**	**8**	**9**	**9**	**10**	**8**	**8**

2.5 Teaching and Learning Methods:

Teaching and Learning Methods:	Course LO's Covered					
Methods	**CLO1**	**CLO2**	**CLO3**	**CLO4**	**CLO5**	**CLO6**
1. Lectures	*			*	*	
2.Tutorials		*	*			*
3. Problem-based Learning		*	*			*
4. Interactive Learning		*	*			
5. Brainstorming	*			*	*	
6. Self-Learning	*			*	*	
Teaching and Learning Methods for Students with Special Needs:						
Methods						
1. Field visit to historical buildings						
2. Discussion Session						
3. Extra Lectures						
4. Provide different levels of books and materials						

2.6 Assessment Methods:

Assessment Methods:		Course LOs Covered					
Methods		**CLO1**	**CLO2**	**CLO3**	**CLO4**	**CLO5**	**CLO6**
Formative Assessment Method							
1. Tests	Midterm Exam			*	*		
	Quizzes	*			*	*	
2. Assignments (class & Home)				*	*		*
3- Portfolio		*	*	*			*
Summative Assessment Method							
4- Final Exam		*	*			*	*

2.6.1. Assessment Schedule & Grades Distribution:

Assessment Method	Week	Weighting of Asses.
1. Mid-term Exam	Week 8	30%
2. Quizzes	Week 2 & 3 & 4 & 5 & 6 & 7 & 9 & 10 & 11 & 12 & 13 & 14	5%
3. Assignments	Week 2 & 3 & 4 & 5 & 6 & 7 & 9 & 10 & 11 & 12 & 13 & 14	25%
4- Portfolio	Week 15	10%
5. Final Exam	Scheduled by the faculty council	40%
Total		**100%**

2.7. List of Reference:

Essential Books (Textbooks):	• Perspective from Basic to Creative, Robert W. Gill, Publisher: Thames and Hudson, 2019. • Ching, Francis D.K. Architectural Graphics. Third Edition. NY: Van Nostrand Reinhold, 1996.
Recommended Books:	▪ كتاب الظل والظلال – جامعة القاهرة ▪ اسكاويان، سدسي وربيع الحرستاوي. فه المنظر والإظهار المعماري. الطبعة الثالثة. بيروت: دار قابس للطباعة والنشر والتنزيع1987
Periodicals, Web Sites, … etc.	https://www.youtube.com/playlist?list=PLitviJPgm9aZC9191D11Pr8KlSLhw0j3x https://arab-ency.com.sy/ency/details

2.8. Facilities required for Teaching and Learning:

Different Facilities
Lecture Hall
Library Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives:

Program Objectives	Course Objective		
	CO1	CO2	CO3
PO5	*		*
PO6	*	*	
PO7		*	*

3.2. Course Objectives VS Course Learning Outcomes:

Course Objectives	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
CO1		*	*			
CO2	*				*	
CO3				*		*

3.3. Program Learning Outcomes VS Course Learning Outcomes:

Program Learning Outcomes	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
PLO10	*	*		*		
PLO11			*		*	*

3.4. Assessment Alignment Matrix:

PLO	PO	CLO	Teaching M.	Assessment M.
PLO10	PO5	CLO1 CLO2 CLO3	• Lectures • Tutorials • Problem-based Learning • Brainstorming • Self-Learning	• Midterm Exam • Quizzes • Assignments • Portfolio • Final Exam
PLO11	PO6 PO7	CLO4 CLO5 CLO6	• Lectures • Tutorials • Interactive Learning • Brainstorming • Self-Learning	• Midterm Exam • Quizzes • Assignments • Portfolio • Final Exam

Course Coordinator: Dr. Kamal Elgabalawy

Head of Department: Prof. Dr. Zeinab Faisal

Date: 10 / 9 / 2023

Course Specification

Course Specification

1. Basic Information:

Program Title	Architectural Engineering Program				
Department Offering the program	Architectural Engineering Department				
Department Offering the course	Architectural Engineering Department				
Course Title	Computer Application 1			**Code**	ARC 142
Type	**Compulsory ☒**		**Elective ☐**		
Semester	Level 1-2				
Teaching Hours	**Lec.**	**Tut.**	**Lab.**	**Credit hours**	
	2	-	2	2	

2. Professional Information:

2.1. Course Description:

This course covers software applications relevant to architectural design. It aims to train the student on how to design using computer drafting techniques. It focuses on 2d and 3D computer techniques, virtual reality techniques, Simulations, decision, and evaluation techniques.

2.2. Course Objectives (CO):

Program objective		**Course objective**	
PO4	Use techniques, skills, and modern engineering tools necessary for architectural engineering practice.	CO1	Develop students' skills in computer presentation in the design phase.
PO7	Create architectural designs that satisfy both aesthetic, technical and meet building users' requirements	CO2	Enhance the student's practical skills in the field of computer-aided design applications.

2.3. Course Learning Outcomes (CLO's):

CBE/Program Learning Outcomes		Course Learning Outcomes	
A4-PLO4	Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles.	CLO1	Identify the capabilities of computer-aided drawing techniques in architectural expression.
		CLO2	Apply basic CAD concepts to develop and construct accurate 2D geometry through the creation of basic geometric constructions.
A8-PLO8	Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.	CLO3	Communicate graphically with the colleagues in the lab.
B1-PLO11	Create architectural, urban and planning designs that satisfy both aesthetic and technical requirements, using adequate knowledge of history and theory, related fine arts, local culture and heritage, technologies and human sciences.	CLO4	Use appropriate computer-aided drawing techniques to Present architectural projects.
		CLO5	Produce professional workshop and technical drawings using computer-aided drawing techniques

Cognitive Domain	Psychomotor Domain	Affective Domain
CLO1	CLO2,5	CLO3,4

2.4. Course Topics:

Course Topics	Week	Course LO's Covered				
		CLO 1	CLO 2	CLO 3	CLO 4	CLO 5
Introduction	1	*				
Basic Geometric Objects	2	*	*			
Modify Commands	3	*	*			
Layers & Text	4	*	*			
Dimensioning & Plotting	5	*	*			
3D Modeling & Project	6		*	*	*	
Project Submission	7	*			*	
Mid-term Exam	8					
Introduction To Photoshop	9	*				*
Tools and Layers	10	*				*
(layout + section) presentation	11	*				*
Poster Presentation	12		*	*		*
Master pen Tool	13		*			*
Essential Filters	14	*				*
Revision	15	*				*
Total	15	11	7	2	2	7

2.5 Teaching and Learning Methods:

Teaching and Learning Methods:	Course LO's Covered				
	CLO1	CLO2	CLO3	CLO4	CLO5
1. Lectures	*	*			
2. Computer-based Instruction		*		*	*
3. Projects	*	*	*	*	*
4. Discussion	*	*	*	*	*
Teaching and Learning Methods for Students with Special Needs:					
Methods					
1. Discussion Session					
2. Extra Lectures					
3. Provide different levels of books and materials					

2.6 Assessment Methods:

Assessment Methods:	Course LOs Covered				
	CLO1	CLO2	CLO3	CLO4	CLO5
Formative Assessment Method					
1. Tests: Midterm Exam		*			*
2. Discussions	*		*		
3. Projects		*	*	*	*
4. Assignments	*	*		*	*
Summative Assessment Method					
Practical Exam		*		*	*

2.6.1. Assessment Schedule & Grades Distribution:

Assessment Method	Week	Weighting of Asses.
Mid-term Exam	Week # 8	30%
Discussions	Week #9,13	5%
Projects	Week # 9 & 15	10%
Assignments	Week # 2,3,4,5,6,7,10,11, 12, 13,14	15%
Practical Exam	Scheduled by the faculty council	40%
Total		100%

2.7. List of References:

Essential Books (Textbooks):	CADArtifex, Willis J., Dogra S., "AutoCAD 2020 for Architectural Design: A Power Guide for Beginners and Intermediate Users", 2020.

2.8. Facilities required for Teaching and Learning:

Different Facilities
Computer Lab
Library usage
Data show
Whiteboard

3. Matrix:

3.1. Program Objectives VS Course Objectives:

Program Objectives	Course Objective	
	CO1	CO2
PO4	*	
PO7		*

3.2. Course Objectives VS Course Learning Outcomes:

Course Objectives	Course Learning Outcomes				
	CLO1	CLO2	CLO3	CLO4	CLO5
CO1	*	*	*		
CO2				*	*

3.3. Program Learning Outcomes VS Course Learning Outcomes:

Program Learning Outcomes	Course Learning Outcomes				
	CLO1	CLO2	CLO3	CLO4	CLO5
PLO4	*	*			
PLO8			*		
PLO11				*	*

3.4. Assessment Alignment Matrix:

PLOs	PO	CLOs	Teaching M.	Assessment M.
PLO4	PO1	CLO1	• Lectures • Projects • Discussion	• Discussions • Assignments
		CLO2	• Lectures • Computer-based Instruction • Projects • Discussion	• Tests: Midterm Exam • Projects • Assignments • Final Exam
PLO8	PO1	CLO3	• Projects • Discussion	• Projects • Discussion
PLO11	PO7	CLO3	• Computer-based Instruction • Projects • Discussion	• Projects • Assignments • Final Exam
		CLO4	• Computer-based Instruction • Projects • Discussion	• Tests: Midterm Exam • Projects • Assignments • Final Exam

Course Coordinator: Prof. Dr. Zeinab Faisal

Head of Department: Prof. Dr. Zeinab Faisal

Date: 10 / 9 / 2023

Course Specification

1. Basic Information:

Program Title	Architectural Engineering Program			
Department Offering the program	Architectural Engineering Department			
Department Offering the course	Architectural Engineering Department			
Course Title	Environmental Control & Design		**Code**	ARC 152
Type	**Compulsory** ☒		**Elective** ☐	
Semester	Level 1-2			
Teaching Hours	**Lec.**	**Tut.**	**Lab.**	**Credit hours**
	2	1	--	2

2. Professional Information:

2.1. Course description:

The course provides students with environmental conscious design, sustainable development and environmental Studies, integrated environmental assessment (IEA), traditional and renewable energy sources.

2.2. Course Objectives (CO):

At the end of course, the student will be able to:

Program objective		Course objective	
PO2	Prepare qualified innovative architects who can adhere to architectural engineering ethics and standards and work to develop the profession and the community and promote sustainability principles.	CO1	Use the different and recent sustainable systems.
PO4	Use techniques, skills, and modern engineering tools necessary for architectural engineering practice.	CO2	Determine the different construction techniques matching with environment.
PO6	Strengthening students' ability to make decisions, solve problems, and develop architectural and urban solutions to develop and serve the local community.	CO3	The students will be able to make decisions in the architectural issues.

2.3. Course Learning Outcomes (CLO's):

CBE/Program Learning Outcomes		Course Learning Outcomes	
A3-PLO3	Transform design concepts into buildings and integrate plans into overall planning within the constraints of project financing, project management, cost control and methods of project delivery; while having adequate knowledge of industries, organizations, regulations, and procedures involved.	CLO1	Identify the principles of environmental conservation
		CLO2	Discus the different sustainable concepts of design projects
		CLO3	Identify the principles of rehabilitation designs
		CLO4	Determine the different and recent sustainable materials
B3-PLO13	Generate ecologically responsible, environmental conservation and rehabilitation designs; through understanding of structural design, construction, technology and engineering problems associated with building designs.	CLO5	Determine the different principles of project financing.
		CLO6	Outline the principles of cost control and methods of project delivery

Cognitive Domain	Psychomotor Domain	Affective Domain
CLO1,2,3,4,5	CLO6	------

2.4. Course Topics:

Course Topics	Week	Course LO's Covered					
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Introduction to course content	1	*		*			*
Explain environment types	2,3,4	*		*		*	
Explain the types of adaptation	5,6,7		*		*		*
Mid-term Exam	8						
Explain the sustainability	9	*	*		*		
Explain the green architecture	10,11			*		*	*
Explain the green cities & green projects	12.13.14, 15	*	*		*	*	
Total	**15**	**9**	**8**	**6**	**8**	**9**	**6**

2.6 Teaching and Learning Methods:

Teaching and Learning Methods:	Course LO's Covered					
Methods	**CLO1**	**CLO2**	**CLO3**	**CLO4**	**CLO5**	**CLO6**
1.Lecture	*		*	*		
2.Tutorials	*				*	*
3.Presentation		*		*		
4.Discussion	*		*		*	
5.Brainstorming	*	*				*

Teaching and Learning Methods for Students with Special Needs:				
Methods				
1. Discussion Session				
2. Extra Lectures				
3. Provide different levels of books and materials				

2.7 Assessment Methods:

Assessment Methods:		Course LOs Covered					
Methods		**CLO1**	**CLO2**	**CLO3**	**CLO4**	**CLO5**	**CLO6**
Formative Assessment Method							
1.Tests	Oral Test	*		*			
	Midterm Exam	*			*		
2.Reports			*			*	
3.Presentations			*				*
Summative Assessment Method							
4.Final Exam		*	*		*		

2.7.1. Assessment Schedule & Grades Distribution:

Assessment Method	Week	Weighting of Asses.
1.Mid-term Exam	Week # 8	30%
2.Oral Test	Week # 13	10%
3.Report	Week#10	10%
4.Presentations	Week # 9 & 14	10%
5.Final Exam	Scheduled by the faculty council	40%
Total		100%

2.8. List of Reference:

Essential Books (Textbooks):	التصـميم المعماري الصـديق للبيئة، نحو عمارة خضـراء، ييى وزيري، مكتبة الاسره، 2019
Recommended Books:	Lechner N. 2015. Heating, Cooling, Lighting: Sustainable Design Methods for Architects. 4 th . Ed. John Wiley & Sons, NY, USA
	Ching F. 2019, Building Construction Illustrated, 6th. Ed. John Wiley & sons, NJ, USA.
Periodicals, Web Sites, … etc.:	http:// www.greatbuilding.com http:// www.architecture.com

2.9. Facilities required for Teaching and Learning:

Different Facilities
Lecture Hall
Library Usage
laboratory Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives:

Program Objectives	Course Objective		
	CO1	CO2	CO3
PO2	*		
PO4		*	
PO6			*

3.2. Course Objectives VS Course Learning Outcomes:

Course Objectives	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
CO1	*		*			*
CO2		*		*		
CO3		*			*	

3.3. Program Learning Outcomes VS Course Learning Outcomes:

Program Learning Outcomes	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
PLO3	*					
PLO13		*	*	*		

3.4. Assessment Alignment Matrix:

PLO	PO	CLO	Teaching M.	Assessment M.
PLO3		CLO1	• Lectures • Tutorials • Brainstorming • Discussion	• Midterm exam. • Oral Test • Final exam
		CLO2	• Lectures • Tutorials • Brainstorming • Presentation	• Reports. • Presentation • Final exam
		CLO3	• Lectures • Tutorials • Brainstorming • Presentation	• Reports. • Presentation
		CLO4	• Lectures • Tutorials • Brainstorming • Presentation	• Reports. • Presentation
PLO13		CLO5	• Lectures • Tutorials • Brainstorming • Discussion	• Midterm exam. • Oral Test • Final exam
		CLO6	• Lectures • Tutorials	• Oral Test • Final exam

Course Coordinator: Dr Ahmed Elsaadany

Head of Department: Prof. Dr. Zeinab Faisal

Date: 10 / 9 / 2023

Course Specification

1. Basic Information:

Program Title	Architectural Engineering Program			
Department Offering the program	Architectural Engineering Department			
Department Offering the course	Civil Engineering Department			
Course Title	Construction Survey	**Code**	CIV 149	
Type	**Compulsory** ☒	**Elective** ☐		
Semester	Level 1-2			
Teaching Hours	**Lec.**	**Tut.**	**Lab.**	**Credit hours**
	2	0	2	3

2. Professional Information:

Pre-requisites: BES 012

2.1. Course description:

To introduce the student to basic elements of surveying and their architectural applications. Plotting scales, verniers, linear of angular and simple angular measurement devices. - Chain surveying, levelling & theodolites. - Map drawing. - photogrammetry and its architectural applications.

2.2. Course Objectives (CO):

Program objective		**Course objective**	
PO1	Apply a wide spectrum of engineering knowledge, science, and specialized skills with analytic, critical and systemic thinking to identify and solve engineering problems in real life situation.	CO1	**Apply** wide sets of surveying knowledge, with analytic, critical, and systemic thinking to identify and **solve** a plane surveying problem in real-life situations.
PO4	Use techniques, skills, and modern engineering tools necessary for architectural engineering practice.	CO2	**Use** techniques, and modern engineering tools that are necessary for surveying projects

2.3. Course Learning Outcomes (CLO's):

CBE/Program Learning Outcomes		Course Learning Outcomes	
A1-PO1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.	CLO1	**Identify** the basic principles of a plane and topographic survey.
		CLO2	**Determine** horizontal and vertical angles, horizontal distance, and reduced level of points.
		CLO3	**Calculate** the coordinate of the traverse, adjust it.
A2-PLO2	Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess, and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions	CLO4	**Use a** surfer software for drawing a contour map and calculating the volumes of the project
B3-PLO13	Generate ecologically responsible, environmental conservation and rehabilitation designs; through understanding of: structural design, construction, technology and engineering problems associated with building designs.	CLO5	**Predict** the area and the volume for the architectural project.
		CLO6	**Discuss** the benefits of photogrammetry in architectural applications

2.4. Course Learning Outcomes VS Three Domains of Learning:

Cognitive Domain	Psychomotor Domain	Affective Domain
CLO1, 6	CLO2,3, 4, 5	-------

2.5. Course Topics:

Course Topics	Week	Course LO's Covered					
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Introduction to Surveying	1,2	*					
Angular Measurement & Theodolite	3	*	*				
Calculate the H.D using tacheometry.	4	*	*				
Traversing **computation**	5			*			
Traversing **adjustment**	6			*			
Levelling	7	*	*				
Midterm exam	8	*	*	*			
Levelling	9	*	*				
Areas & Volumes Computation	10,11				*	*	
Photogrammetry	12,13,14						*
Total	**14**	**6**	**4**	**2**	**2**	**2**	**3**

2.6 Teaching and Learning Methods:

Teaching and Learning Methods:	Course LO's Covered					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
1.Lecture	*	*	*		*	
2. Tutorials	*	*	*		*	
3. Computer-based Instruction				*		
4. Discussion						*
Teaching and Learning Methods for Students with Special Needs:						
Methods						
1. Discussion Session						
2. Extra Lectures						
3. Provide different levels of books and materials						

2.7 Assessment Methods:

Assessment Methods:		Course LOs Covered					
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Formative Assessment Method							
1.Tests	Midterm Exam	*	*	*			
2.Assignments					*		
3.Oral Exam							*
Summative Assessment Method							
4.Final Exam		*	*	*		*	

2.7.1. Assessment Schedule & Grades Distribution:

Assessment Method	Week	Weighting of Asses.
1.Midterm exam	8	30
2.Assignments	10	10%
3.Oral Exam	14	20%
4.Final Exam	Scheduled by the faculty council	40%
Total		**100%**

2.9. List of Reference:

Essential Books (Textbooks):	• Surveying for Civil and Mine Engineers Theory, Workshops, and Practicals-John Walker Joseph L. Awange- **2019**-ISBN 978-3-319-53128-1- ISBN 978-3-319-53129-8 (eBook)
Recommended Books:	• Elementary Surveying - An Introduction to Geomatics - Thirteenth Edition-2012-CHARLES D. GHILANI-ISBN-13: 978-0-13-255434-3- ISBN-10: 0-13-255434-8 • Surveying Engineering & Instruments- Valeria Shank-First Edition-2012- ISBN 978-81-323-4403-2

2.9. Facilities required for Teaching and Learning

Different Facilities
Lecture Hall
Library Usage
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives:

Program Objectives	Course Objective	
	CO1	CO2
PO1	*	
PO4		*

3.2. Course Objectives VS Course Learning Outcomes:

Course Objectives	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
CO1	*	*	*			
CO2				*	*	*

3.3. Program Learning Outcomes VS Course Learning Outcomes:

Program Learning Outcomes	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
PLO1	*	*	*			
PLO2				*		
PLO13					*	*

3.4. Assessment Alignment Matrix:

PLO	PO	CLO	Teaching M.	Assessment M.
PLO1	PO1	CLO1	• Lectures • Tutorials	• Midterm Exam • Final Exam
		CLO2	• Lectures • Tutorials	• Midterm Exam • Final Exam
		CLO3	• Lectures • Tutorials	• Midterm Exam • Final Exam
PLO2	PO4	CLO4	• Computer-based Instruction	• Assignments
PLO13		CLO5	• Lectures • Tutorials	• Final Exam
		CLO6	• Discussion	• Oral Exam

Course Coordinator: Dr. Rasha Mohey Al-Deen Rasha Mohey Aldeen

Head of Department: Prof. Dr. Zeinab Faisal

Date: 10 / 9 / 2023

Architectural Engineering Program
Level 2
Course Specification

Course Specification

1. Basic Information:

Program Title	Architectural Engineering Program			
Department Offering the program	Architectural Engineering Department			
Department Offering the course	Architectural Engineering Department			
Course Title	Architecture Design 3		**Code**	ARC 201
Type	**Compulsory** ☒	**Elective** ☐		
Semester	Level 2-1			
Teaching Hours	**Lec.**	**Tut.**	**Lab.**	**Credit hours**
	1	4	-	3

2. Professional Information:

Pre-requisites: ARC 102

2.1. Course description:

This course targets designing projects at an intermediate level, focusing on the ways in which the nature of structural systems and building materials affect and influence architectural design. Students begin by researching basic structural systems. The students should be able to select building materials as well as design projects with sound structural systems, to satisfy the requirements of building programs as an integral part of the design (Museums, hospital, hotel, etc.) Focusing on form and function.

2.2. Course Objectives (CO): At the end of course, the student will be able to:

Program objective		**Course objective**	
PO1	Apply a wide spectrum of fundamentals of the science and specialized skills with analytic, creativity and critical thinking to identify and solve architecture design problems in real life situation.	CO1	Apply the variety of architectural design standards on different scales and contexts.
		CO2	Apply the principals of technologies, construction and materials and identify their impact on the design process.
PO6	Strengthening students' ability to make decisions, solve problems, and develop architectural and urban solutions to develop and serve the local community.	CO3	Design projects that compose of two buildings
PO7	Create architectural designs that satisfy both aesthetic, technical and meet building users' requirements	CO4	Manage appropriate solutions to provide innovative architectural designs compatible with sustainability.

2.3. Course Learning Outcomes (CLO's):

CBE/Program Learning Outcomes		Course Learning Outcomes	
A9-PLO9	Use creative, innovative, and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.	CLO1	Design robust architectural projects with creativity and technical mastery.
		CLO2	Criticize physical models of similar buildings.
B1-PLO11	Create architectural, urban and planning designs that satisfy both aesthetic and technical requirements, using adequate knowledge of: history and theory, related fine arts, local culture and heritage, technologies and human sciences.	CLO3	Demonstrate knowledge of sustainability, climate change and the impact of that on a building.
		CLO4	Produce all necessary architectural drawings that meet technical requirements.
B2-PLO12	Produce designs that meet building users' requirements through understanding the relationship between people and buildings, and between buildings and their environment; and the need to relate buildings and the spaces between them to human needs and scale.	CLO5	Analyze different similar building design solutions to obtain design criteria.
		CLO6	Create simple architecture design problems that meet users' requirements

Cognitive Domain	Psychomotor Domain	Affective Domain
CLO3	CLO1,2,4,5, 6	------

2.4. Course Topics:

Course Topics	Week	Course LO's Covered					
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Course orientation and discussion about the design project	1		*				
First project (multi- purpose building): School Sketch design of concept and design ideas, layout analysis Research about the project elements, structural systems, and examples of other similar projects	2		*	*			
Sketch design of master ground floor	3		*	*			
Sketch design of second and third floor	4		*	*			
Sketch design of master section	5		*	*			
Sketch design of perpendicular section	6		*				
Mid-term Exam	8						
Sketch design of Elevations	9	*		*		*	
Sketch design of development of Elevations	10		*		*		
Sketch design of Layout	11	*		*		*	*
Sketch design of 3d perspective for the final project	12				*		
Similar project analysis (1) & Physical Model	13		*		*	*	
Semi-final Sketch	14	*		*			*
Final Sketch & Physical Model	15	*		*		*	*
Total	15	5	8	9	3	4	3

2.5 Teaching and Learning Methods:

Teaching and Learning Methods:	Course LO's Covered					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
1. Lectures		*		*		
2. Design studio	*		*		*	*
3. Problem-based Learning	*			*		
5. Presentations			*		*	*
6. Case Study		*		*		
7. Projects	*		*		*	*
8. Discussion	*	*		*		*
9. Modeling					*	*
Teaching and Learning Methods for Students with Special Needs:						
Methods						
1. Discussion Session						
2. Extra Lectures						
3. Provide different levels of books and materials						

2.6 Assessment Methods:

Assessment Methods:		Course LOs Covered					
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Formative Assessment Method							
1.Tests	Oral Test	*	*			*	
	Midterm Exam			*			
2. Discussions		*			*		
3. Projects		*		*		*	*
4. Assignments			*	*	*		*
5. Presentations						*	
6. Modeling						*	
Summative Assessment Method							
7.Final Exam		*		*			*

2.6.1. Assessment Schedule & Grades Distribution:

Assessment Method	Week	Weighting of Asses.
1.Mid-term Exam	Week # 8	30%
2.Discussions	Week # 9 & 15	2.5%
3.Projects	Week # 9 & 15	10%
4.Assignments	Week # 2,3,4,5,6,7,10,11, 12, 13,14	10%
5.Presentations	Week # 9 & 15	2.5%
6.Modeling	Week # 9 & 15	5%
7.Final Exam	Scheduled by the faculty council	40%
Total		100%

2.7. List of Reference:

Essential Books (Textbooks):	Szokolay, S. (2012), Introduction to Architectural Science; Basis for Sustainable Design, Oxford: Architectural Press.
Recommended Books:	Nuefert Architects' Data, 5th Edition, SBN: 978-1-119-28435-2 August 2019 Wiley Blackwell.
	Architecture: Form, space, and order, FDK Ching - 2015 - John Wiley & Sons
Periodicals, Web Sites, … etc.:	http:// www.archnet.org http:// www.greatbuilding.com http:// www.architecture.com

2.8. Facilities required for Teaching and Learning:

Different Facilities
Design studio
Library usage
Data show
White board

3. Matrix:

3.1. Program Objectives VS Course Objectives:

Program Objectives		Course Objective		
	CO1	CO2	CO3	Co4
PO1	*	*		
PO6			*	
PO7				*

3.2. Course Objectives VS Course Learning Outcomes:

Course Objectives	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
CO1		*			*	
CO2			*			
CO3	*			*		*

3.3. Program Learning Outcomes VS Course Learning Outcomes:

Program Learning Outcomes	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
PLO9	*					
PLO11		*	*			
PLO12				*	*	*

3.4. Assessment Alignment Matrix:

PLOs	PO	CLOs	Teaching M.	Assessment M.
PLO9	PO1 PO6	CLO1	• 1.Design studio • Problem-based Learning • Projects • Discussion	• Oral Test • Discussions • Projects • Final Exam
PLO11	PO6 PO7	CLO2 CLO3	• Lectures • Case Study • Discussions • Design studio • Presentations • Projects	• Mid-term Exam • Oral Test • Discussions • Projects • Assignments • Final Exam
PLO12	PO6 PO7	CLO4 CLO5 CLO6	• Lectures • Problem-based Learning • Case Study • Discussion • Design studio • Presentations • Projects • Modeling	• Discussions • Assignments • Oral Test • Projects • Assignments • Presentations • Modeling • Final Exam

Course Coordinator: Dr. Rasha Ahmed Reyad

Head of Department: Prof. Dr. Zeinab Faisal

Date: 10 / 9 / 2023

Course Specification

1. Basic Information:

Program Title	Architectural Engineering Program			
Department Offering the program	Architectural Engineering Department			
Department Offering the course	Architectural Engineering Department			
Course Title	Building Construction 2		**Code**	ARC 211
Type	**Compulsory** ☒		**Elective** ☐	
Semester	Level 2-1			
Teaching Hours	**Lec.**	**Tut.**	**Lab.**	**Credit hours**
	2	3	0	3

2. Professional Information:

Pre-requisites: ARC 112

2.1. Course description:

This course provides an understanding of the different elements of staircase, the relation between Tread and Riser, and the different types and construction details of staircase. It provides also an introduction to doors, windows, sliding and folding doors and windows in timber.

2.2. Course Objectives (CO):

At the end of course, the student will be able to:

Program objective		**Course objective**	
PO2	Apply analytic critical and systemic thinking to identify, diagnose and solve engineering problems with a wide range of complexity and variation.	CO1	Identify and classify the basic structural elements of building openings.
		CO2	Figure out the different types, and materials building stairs and their appropriate uses.
PO5	Master self-learning and life -long learning strategies to communicate effectively in academic/professional fields.	CO3	Take responsibility and lead the work team for effective presentation at the individual and group levels, and the use of modern technology to communicate information

2.3. Course Learning Outcomes (CLO's):

CBE/Program Learning Outcomes		Course Learning Outcomes	
A5-PLO5	Practice research techniques and methods of investigation as an inherent part of learning.	CLO1	Discuss the different types of doors, windows, sliding and folding doors and windows in timber.
		CLO2	Present information about different finishing materials in buildings.
B3-PLO13	Generate ecologically responsible, environmental conservation and rehabilitation designs; through understanding of structural design, construction, technology and engineering problems associated with building designs.	CLO3	Identify the different parts of building openings (doors, windows).
		CLO4	Produce neat drawings for the principal elements and components of building openings (doors, windows).
		CLO5	Describe the different stairs types and its various elements.
		CLO6	Design the suitable stair type for a specific use.

Cognitive Domain	Psychomotor Domain	Affective Domain
CLO1, 3, 5	CLO4, 6	CLO2

2.4. Course Topics:

Course Topics	Week	Course LO's Covered					
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Introduction & Course Review	1	*	*	*		*	
Introduction To RC Stairs	2					*	*
Introduction to Cantilevered Staircase design	3					*	*
Introduction to Precast Concrete Stairs	4					*	*
Introduction to Steel Stair System	5					*	*
Discussion of 2nd research: Different finishing materials in buildings.	6		*				
Physical Model: RC Stair System	7						*
Mid-term Exam	8						
Introduction to building openings	9	*		*	*		
Introduction to wooden paneled and hollow core doors	10	*		*	*		
Introduction to sliding doors and their different details	11	*		*	*		
Introduction to folding doors and their different details	12	*		*	*		
Introduction to singing doors and their different details	13	*		*	*		
Introduction to windows and their different details	14	*		*	*		
Revision	15		*		*	*	
Total	15	7	3	7	6	6	5

2.5 Teaching and Learning Methods:

Teaching and Learning Methods:	Course LO's Covered					
Methods	**CLO1**	**CLO2**	**CLO3**	**CLO4**	**CLO5**	**CLO6**
1. Lectures	*		*		*	
2.Tutorials				*		*
3. Problem-based Learning			*	*	*	*
4. Discussion	*	*				
5. Self-Learning	*	*				
Teaching and Learning Methods for Students with Special Needs:						
Methods						
1. Discussion Session						
2. Extra Lectures						
3. Provide different levels of books and materials						

2.6 Assessment Methods:

Assessment Methods:	Course LOs Covered					
Methods	**CLO1**	**CLO2**	**CLO3**	**CLO4**	**CLO5**	**CLO6**
Formative Assessment Method						
1. Midterm Exam			*	*		
2. Assignments			*	*	*	*
3. Reports	*	*				
4. Presentations	*	*				
5. Modeling						*
Summative Assessment Method						
6. Final Exam				*	*	*

2.6.1. Assessment Schedule & Grades Distribution:

Assessment Method	Week	Weighting of Asses.
1. Midterm Exam	Week 8	30%
2. Assignments	Week 2,3,4,5,6,7,10,11,12,13	10%
3. Reports	Week 9,14	10%
4. Presentations	Week 9,14	5%
5. Modeling	Week 15	5%
6. Final Exam	Scheduled by the faculty council	40%
Total		**100%**

2.7. List of Reference:

Essential Books (Textbooks):	▪ Barry, R. (1999). The Construction of Buildings Vol. 2. 5th Ed. New Delhi: East-West Press.
Recommended Books:	▪ Ching F. 2019, Building Construction Illustrated, 6th. Ed. John Wiley & sons, NJ, USA ▪ MG Shah &CM kale, Principles of Building Drawings, 2017 ▪ حيدر. فاروق عباس,الموسوعة الهندسية في تكنولوجيا تشييد المبانى، الجزء الأول والثاني ,مركز الدلتا للطباعة، اسبورتنج، الاسكندرية 2014
Periodicals, Web Sites, … etc.:	------

2.8. Facilities required for Teaching and Learning:

Different Facilities
Lecture Hall
Library Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives:

Program Objectives	Course Objective		
	CO1	CO2	CO3
PO2	*	*	
PO5			*

3.2. Course Objectives VS Course Learning Outcomes:

Course Objectives	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
CO1			*	*		
CO2					*	*
CO3	*	*				

3.3. Program Learning Outcomes VS Course Learning Outcomes:

Program Learning Outcomes	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
PLO5	*	*				
PLO13			*	*	*	*

3.4. Assessment Alignment Matrix:

Teaching and Learning Methods:	Course LO's Covered					
Methods	**CLO1**	**CLO2**	**CLO3**	**CLO4**	**CLO5**	**CLO6**
1. Lectures	*		*		*	
2.Tutorials				*		*
3. Problem-based Learning			*	*	*	*
4. Discussion	*	*				
5. Self-Learning	*	*				
Teaching and Learning Methods for Students with Special Needs:						
Methods						
1. Discussion Session						
2. Extra Lectures						
3. Provide different levels of books and materials						

Course Coordinator: Dr. Mona Yehia Shedid
Head of Department: Prof. Dr. Zeinab Faisal
Date: 10 / 9 / 2023

Course Specification

1. Basic Information:

Program Title	Architectural Engineering Program			
Department Offering the program	Architectural Engineering Department			
Department Offering the course	Architectural Engineering Department			
Course Title	Theory of Architecture 2		**Code**	ARC 231
Type	**Compulsory** ☒	**Elective** ☐		
Semester	Level 2-1			
Teaching Hours	**Lec.**	**Tut.**	**Lab.**	**Credit hours**
	2	1	0	2

2. Professional Information:

Pre-requisites: ARC 131

2.1. Course description:

The course aims at enhancing students' abilities for developing creative design ideas and solving architectural problems. It also aims at increasing their knowledge of elements of architectural composition, including: primary elements/forms, properties of form, regular and irregular forms, form transformation (dimensional, additive, and subtractive), elements of space, space treatment, space organization, spatial relationships, spatial continuity, etc. Topics include also architectural program and theories/principles of designing public facilities including: office buildings, commercial buildings, transportation terminals, etc.

2.2. Course Objectives (CO):

Program objective		**Course objective**	
PO4	Use techniques, skills, and modern engineering tools necessary for architectural engineering practice.	CO1	Use different techniques and methods in effective presentation and individual and group discussions.
PO5	Master self-learning and life -long learning strategies to communicate effectively in academic/professional fields.	CO2	Apply self-learning through field visits and the ability to find information through specialized and electronic libraries.
PO6	Strengthening students' ability to make decisions, solve problems, and develop architectural and urban solutions to develop and serve the local community.	CO3	Analysis of architectural theories after understanding and using them in the development and service of the local community.
PO7	Create architectural designs that satisfy both aesthetic, technical and meet building users' requirements	CO4	Solve design problems using design standards and study similar local and international projects.

2.3. Course Learning Outcomes (CLO's):

CBE/Program Learning Outcomes		Course Learning Outcomes	
A5-PLO5	Practice research techniques and methods of investigation as an inherent part of learning.	CLO1	Search for information from references and internet.
		CLO2	Understand the functions of different public buildings.
		CLO3	Develop different design principles for public buildings.
		CLO4	Identify the different types of public buildings by studying similar architectural models.
B1-PLO11	Create architectural, urban and planning designs that satisfy both aesthetic and technical requirements, using adequate knowledge of history and theory, related fine arts, local culture and heritage, technologies and human sciences.	CLO5	Understand human requirements and needs across the multiple public building.
		CLO6	Determine the technical and aesthetic requirements for public functional buildings.
		CLO7	Analysis of different types of public buildings through local and international projects.
		CLO8	Compare the different types of buildings used by the public.

Cognitive Domain	Psychomotor Domain	Affective Domain
CLO2,4,5,6	CLO7,8	CLO1

2.4. Course Topics:

Course Topics	Week	Course LO's Covered							
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7	CLO8
Introduction and general definition of the course of theories of architecture - educational buildings / tourist and hotel buildings / libraries / theaters / museums / sports buildings and social and entertainment centers / health care and hospitals / banks, stock exchanges and financial markets / commercial buildings and shopping centers / buildings of artistic culture and others	1	*	*				*		*
Lecture on educational buildings (schools)	2	*	*			*			*
Topic No. (1) Discussion and Presentation of Educational Buildings Research + Lecture on Hotel Tourist Buildings.	3			*	*	*	*	*	
Topic No. (2) Discussion and Presentation of Hotel Tourist Buildings Research + Libraries Lecture.	4	*	*			*			*
Topic No. (3) Discussion and Presentation of Libraries Research + Lecture (Theatres/Opera/Cinema/Circus).	5	*			*			*	
Topic No. (4) Discussion and Presentation of Theaters Research + Museums Lecture.	6	*	*			*	*		
Topic No. (5) Discussion and Presentation of Museums Research + Lecture of Recreational Clubs (Sports - Social - Water - Youth Centers).	7		*	*	*	*		*	
Mid-term Exam	8	*	*		*		*		
Topic No. (6) Discussion and presentation of sports and entertainment buildings research + health care and hospitals lecture.	9		*	*	*		*	*	
Topic No. (7) Discussion and Presentation of Health Care and Hospitals Research + Lecture on Banks, Stock Exchange and Financial Markets.	10	*	*	*		*		*	
Topic No. (8) Discussion and Presentation of Banks, Stock Exchange and Financial Markets Research + Lecture on Commercial Buildings and Shopping Centers.	11	*		*	*				*
Topic No. (9) Discussion and presentation of commercial buildings and shopping centers + lecture of cultural and artistic buildings (exhibitions - conference halls - parliament) or courts / airports / stations.	12		*	*	*		*	*	
Topic No. (10) Discussion and presentation of the research of cultural and artistic centers (exhibitions - conference halls - parliament) or courts / airports / stations + a lecture on some other buildings (airports / train stations ... and so on)	13	*		*		*	*		*
Completing some topics on public buildings + presenting the graduation projects of teaching assistants	14	*		*			*	*	
Portfolio submission and general discussion	15		*	*	*	*	*		*
Total	**15**	**10**	**10**	**9**	**8**	**8**	**9**	**7**	**6**

2.5 Teaching and Learning Methods:

Teaching and Learning Methods:	Course LO's Covered							
Methods	**CLO1**	**CLO2**	**CLO3**	**CLO4**	**CLO5**	**CLO6**	**CLO7**	**CLO8**
1. Lectures	*		*	*				*
2.Tutorials		*		*		*	*	
3. Presentations	*		*		*			*
4. Brainstorming			*		*		*	
5. Discussion			*	*		*		
6. Self-Learning	*			*	*			*
7. Modeling	*	*	*				*	
Teaching and Learning Methods for Students with Special Needs:								
Methods								
1. Field visit to historical buildings								
2. Discussion Session								
3. Extra Lectures								
4. Provide different levels of books and materials								

2.6 Assessment Methods:

Assessment Methods:		Course LOs Covered							
Methods		**CLO1**	**CLO2**	**CLO3**	**CLO4**	**CLO5**	**CLO6**	**CLO7**	**CLO8**
Formative Assessment Method									
1. Tests	Midterm Exam	*	*		*		*		
	Quizzes	*	*			*			*
2. Discussions				*	*		*		*
3. Assignments				*	*		*		
4. Presentations		*	*			*		*	
5. Modeling		*		*			*		*
6- Portfolio			*	*	*	*		*	
Summative Assessment Method									
7- Final Exam				*		*		*	*

2.6.1. Assessment Schedule & Grades Distribution:

Assessment Method	Week	Weighting of Asses.
1. Mid-term Exam	Week 8	30%
2. Quizzes	Week 2 & 3 & 4 & 5	5%
3. Discussions	Week 7 & 9 & 10 & 11 & 12	5%
4. Assignments	Week 2 & 3 & 4 & 5 & 7	5%
5. Presentations	Week 7 & 9 & 10 & 11 & 12	5%
6. Modeling	Week 14 & 13	5%
7- Portfolio	Week 15	5%
8. Final Exam	Scheduled by the faculty council	40%
Total		**100%**

2.7. List of Reference:

Course Notes:	Lecture Notes
Essential Books (Textbooks):	- Neufert. E. (2000). Neufert Architects' Data, 4th edition. New Jersey: Wiley-Blackwell. ISBN: 978-1405192538 - Roth L. M. and Clark A. C. 2019, Understanding Architecture: Its Elements, History, and Meaning, 3rd. Ed., New York London: Routledge. - Ching. F. 2020, Architecture: Form, Space, and Order, 4th. John Wiley & Sons Inc. New York, united states. - Ching F. & Eckler James F. 2015, Introduction to Architecture. Canada: WILE.
Recommended Books:	- Principles in Design- W. H. Mayall-1979 - Architecture of Skidmore, Owings & Merrill1963 - 1973 SOM- Arthur Drexler-1974 - Harold Linton, Color Model Environments: Color and Light in Three-Dimensional Design, Harold Linton, 1985 - Owen Cappleman. Michel Jack Jordan, Foundation in Architecture: An Annotated Anthology of Beginning Design Projects, Van Nostrand Reinhold, 1993 - Time Saver Standards for Architectural Design Data-John Hancock-Callender-1974 - Elements of Design - Donald M. Anderson -1961 - Theory and Practice of Design- An Advanced Text - Book on Decorative Art - Frank G. Jackson - Principles in Design- W. H. Mayall-1979 - Architecture of Skidmore, Owings & Merrill1963 - 1973 SOM- Arthur Drexler-1974 - Harold Linton, Color Model Environments: Color and Light in Three-Dimensional Design, Harold Linton, 1985 - Owen Cappleman. Michel Jack Jordan, Foundation in Architecture: An Annotated Anthology of Beginning Design Projects, Van Nostrand Reinhold, 1993 - محمد محمود عويضة – تطور الفكر المعمارى فى القرن العشرين – دار النهضة العربية للطباعة و النشر – بيروت 1989 - على رأفت : ثلاثية الإبداع المعمارى : الإبداع الفنى فى العمارة الطبعة الأولى ، مركز أبحاث إنتر كونسلت – 1997 - محمد ماجد خلوصى- موسوعة المعمارية للتصميم المعماري– التعليم/ التجارية/ الفنادق/ المحاكم/ المستشفيات والمراكز الصحية - 2000
Periodicals, Web Sites, … etc:	https://www.pinterest.com https://www.archdaily.com

2.8. Facilities required for Teaching and Learning:

Different Facilities
Lecture Hall
Library Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives:

Program Objectives	Course Objective			
	CO1	CO2	CO3	CO4
PO4	*	*		
PO5		*		*
PO6			*	*
PO7	*		*	*

3.2. Course Objectives VS Course Learning Outcomes:

Course Objectives	Course Learning Outcomes							
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7	CLO8
CO1		*		*		*		*
CO2	*		*		*		*	
CO3	*			*	*		*	
CO4		*	*			*		*

3.3. Program Learning Outcomes VS Course Learning Outcomes:

Program Learning Outcomes	Course Learning Outcomes							
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7	CLO8
PLO5	*		*		*		*	*
PLO11		*	*	*		*		

3.4. Assessment Alignment Matrix:

PLO	PO	CLO	Teaching M.	Assessment M.
PLO5	PO4 PO5	CLO1	• Lectures • Tutorials • Presentations • Report • Self-Learning • Modeling	• Mid-term Exam • Quizzes • Reports • Assignments • Modeling • Portfolio • Final Exam
PLO11	PO6 PO7	CLO5 CLO6 CLO7 CLO8	• Lectures • 2.Tutorials • Presentations • Brainstorming • Discussion • Self-Learning • Modeling	• Mid-term Exam • Discussions • Assignments • Presentations • Modeling • Portfolio • Final Exam

Course Coordinator: Dr. Kamal Elgabalawy

Head of Department: Prof. Dr. Zeinab Faisal

Date: 10 / 9 / 2023

Course Specification

1. Basic Information:

Program Title	Architectural Engineering Program			
Department Offering the program	Architectural Engineering Department			
Department Offering the course	Architectural Engineering Department			
Course Title	Introduction to Urban Planning	**Code**	ARC 221	
Type	**Compulsory** ☒	**Elective** ☐		
Semester	Level 2-1			
Teaching Hours	**Lec.**	**Tut.**	**Lab.**	**Credit hours**
	2	2	0	3

2. Professional Information:

2.1. Course description:

This course will give students how cities are organized. It will look at the history of planning from the early 1800s to the present day, and the processes that shape growth and development and the major socio-politico-economic forces that define the social and constructed environments inside cities. The major theories, models, and methodological techniques that planners use to explain the function and structure of urban places.

2.2. Course Objectives (CO):

At the end of course, the student will be able to:

Program objective		Course objective	
PO3	Work in and lead a heterogeneous team and display leadership qualities, business administration, and entrepreneurial skills	CO1	Determine the urban planning theories, concepts, the various elements of urban form and the principles that shape the cities.
		CO2	Classify the various analytic tools of urban planning projects that consists of multi-planning units such as districts and cities, as well as their centers.
PO6	Strengthening students' ability to make decisions, solve problems, and develop architectural and urban solutions to develop and serve the local community.	CO3	Apply the theoretical knowledge to real world cases in class assignments and project.

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
B1-PLO13	Create architectural, urban and planning designs that satisfy both aesthetic and technical requirements, using adequate knowledge of: history and theory, related fine arts, local culture and heritage, technologies and human sciences. Use creative, innovative and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.	CLO1	Identify the different theories and concepts that shape the cities.
		CLO2	Analyze different elements of urban form to obtain design criteria.
		CLO3	Apply the urban planning concepts on a selected area to create new solutions though team work groups
A10-PLO10	Acquire and apply new knowledge; and practice self, lifelong and other learning Strategies.	CLO4	Prepare and present technical report
B3-PLO13	Generate ecologically responsible, environmental conservation and rehabilitation designs; through an understanding of: structural design, construction, technology, and engineering problems	CLO5	Analyze urban planning theories into urban spaces while having adequate knowledge of environmental conservation.

Cognitive Domain	Psychomotor Domain	Affective Domain
CLO1,2	CLO3,5	CLO4

2.4. Course Topics:

Course Topics	Week	Course LO's Covered				
		CLO1	CLO2	CLO3	CLO4	CLO5
Introduction to course content	1	*				
Definitions & Terminologies	2	*		*		
Urban Settlements	3	*	*	*		
Planning Schools and theories 1	4		*	*	*	
Planning Schools and theories 2	5	*	*	*		
Urban Planning Methodologies	6	*		*		
Introduction to Land use planning 1	7		*	*	*	
Mid-term Exam	8					
Introduction to Land use planning 2	9		*		*	*
Services planning	10	*			*	
Regional planning 1	11		*		*	
Regional planning 2	12				*	
Project follow up	13		*		*	*
Semi-final Sketch	14		*		*	*
Final discussion for the project	15		*		*	*
Total		7	10	6	10	4

2.5 Teaching and Learning Methods:

Teaching and Learning Methods:	Course LO's Covered				
	CLO1	CLO2	CLO3	CLO4	CLO5
1. Lectures	*		*		
2. Tutorials		*			*
3. Presentations				*	*
4. Projects	*	*		*	*
5. Discussion				*	*
Teaching and Learning Methods for Students with Special Needs:					
Methods					
1. Discussion Session					
2. Extra Lectures					
3. Provide different levels of books and materials					

2.6 Assessment Methods:

Assessment Methods:	Course LOs Covered				
	CLO1	CLO2	CLO3	CLO4	CLO5
Formative Assessment Method					
1. Midterm Exam	*	*		*	
2. Discussions				*	*
3. Projects	*	*		*	*
4. Assignments		*	*		
5. Presentations			*		*
Summative Assessment Method					
Final Exam	*		*		*

2.6.1. Assessment Schedule & Grades Distribution:

Assessment Method	Week	Weighting of Asses.
Mid-term Exam	Week # 8	30%
Discussions	Week # 9 & 15	5%
Projects	Week # 15	10%
Assignments	Week # 2,3,4,5,7	10%
Presentations	Week # 9 & 15	5%
Final Exam	Scheduled by the faculty council	40%
Total		100%

2.7. List of Reference:

Essential Books (Textbooks):	John Julius Norwich, Cities that shaped the ancient world, The British Library, 2019
	Hall ,Peter ,Urban and Regional Planning , 6th Edition , Routledge,2020
	تخطيط المدن – د/ خالد علام 2019
Recommended Books:	---------
Periodicals, Web Sites, … etc:	----------

2.8. Facilities required for Teaching and Learning:

Different Facilities
Lecture Hall
Library usage
Data show
White board

3. Matrix:

3.1. Program Objectives VS Course Objectives:

Program Objectives		Course Objective	
	CO1	CO2	CO3
PO3	*	*	
PO6			*

3.2. Course Objectives VS Course Learning Outcomes:

Course Objectives	Course Learning Outcomes				
	CLO1	CLO2	CLO3	CLO4	CLO5
CO1		*	*		*
CO2			*		
CO3	*			*	*

3.3. Program Learning Outcomes VS Course Learning Outcomes:

Program Learning Outcomes	Course Learning Outcomes				
	CLO1	CLO2	CLO3	CLO4	CLO5
PLO11	*	*	*		
PLO13					*
PLO10				*	

3.4. Assessment Alignment Matrix:

PLOs	PO	CLOs	Teaching M.	Assessment M.
PLO11	PO6	CLO1 CLO2 CLO3	• Lecture • Projects • Tutorials	• Midterm Exam • Projects • Assignments • Presentations • Final Exam
PLO13	PO6	CLO5	• Tutorials • Presentations • Projects • Discussion	• Discussion • Project • Final Exam • Presentations
PLO10	PO3	CLO4	• Presentations Projects • Discussions	• Mid-term Exam • Discussions • Projects

Course Coordinator: Associate.Prof. Ayman Abd El Hamid
Head of Department: Prof. Dr. Zeinab Faisal

Course Specification

1. Basic Information:

Program Title	Architectural Engineering Program			
Department Offering the program	Architectural Engineering Department			
Department Offering the course	Architectural Engineering Department			
Course Title	Technical Installation		**Code**	ARC 213
Type	**Compulsory** ☒	**Elective** ☐		
Semester	Level 2-1			
Teaching Hours	**Lec.**	**Tut.**	**Lab.**	**Credit hours**
	2	---	2	3

2. Professional Information:

2.1. Course description:

This course provides its students the required knowledge and experience in the field of technical installations. The course will support its students to become familiar with the disciplines of installation and maintenance of technical installations. Specifically, it provides the scientific and practical background in the areas of plumbing, heating ventilation and air-conditioning (HVAC) equipment, and renewable energy technologies.

2.2. Course Objectives (CO):

Program objective		**Course objective**	
PO5	Master self-learning and life -long learning strategies to communicate effectively in academic/professional fields.	CO1	**Explore** various technical information of the specialized departments (assumptions, Criteria, and standards) on different building types, scales and contexts.

2.3. Course Learning Outcomes (CLO's):

CBE/Program Learning Outcomes		Course Learning Outcomes	
A5-PLO5	Practice research techniques and methods of investigation as an inherent part of learning.	CLO1	**Apply** self-learning through specialized and electronic libraries & the ability to self-learning through research
B5-PLO15	Prepare design project briefs and documents and understand the context of the architect in the construction industry, including the architect's role in the processes of bidding, procurement of architectural services and building production.	CLO2	**Propose** preliminary design and solutions in design report.

Cognitive Domain	Psychomotor Domain	Affective Domain
---	CLO2	CLO1

2.4. Course Topics:

Course Topics	Week	Course LO's Covered	
		CLO1	CLO2
Course Introduction & 1st lecture water supply (cold water)	1	*	
2nd lecture water supply (hot water)	2	*	*
Drainage and sewerage	3	*	*
Research	4	*	
Electrical installations and artificial lighting (In door lighting)	5	*	*
Outdoor lighting and Smart lighting	6		*
Research	7	*	*
Mid-Term Exam	8	*	*
Air conditioning	9	*	*
Fire fighting	10		*
Research	11	*	*
Acoustic design	12	*	*
Waste Management	13	*	*
Research	14	*	*
Revision	15		
Total	**15**	**12**	**12**

2.5 Teaching and Learning Methods:

Teaching and Learning Methods:	Course LO's Covered	
Methods	**CLO1**	**CLO2**
1. Lectures	*	*
2. Problem-based Learning	*	*
3. Presentations	*	*
4. Brainstorming	*	
5. Discussion	*	*
6. Self-Learning		*
Teaching and Learning Methods for Students with Special Needs:		
Methods		
1. Discussion Session		
2. Extra Lectures		
3. Provide different levels of books and materials		

2.6 Assessment Methods:

Assessment Methods:		Course LOs Covered	
Methods		**CLO1**	**CLO2**
Formative Assessment Method			
1. Tests	Midterm Exam	*	*
2. Discussions		*	
3. Assignments		*	*
4. Presentations		*	*
5- Portfolio			*
Summative Assessment Method			
6- Final Exam		*	*

2.6.1. Assessment Schedule & Grades Distribution:

Assessment Method	Week	Weighting of Asses.
1.Mid-term Exam	Week # 8	30 %
2.Discussions	Week #4 &7&11&14	5 %
3.Research	Week #4 &7&11&14	5 %
4.Assignments	Week #2,3,5,6 ,9 ,10, 12,13	10 %
5.Presentations	Week #4 &7&11&14	5 %
6.Modeling	Week #4 &7&11&14	5 %
7.Final Exam	Scheduled by the faculty council	40%
Total		100%

2.7. List of Reference:

Essential Books (Textbooks):	▪ Waste Management: Management of Solid, Liquid and Gaseous Wastes", Environmental Pollution, Retrieved 22-4-2017. Edited. ▪ "Waste management", Science Clarified, Retrieved 21-4-2019. Edited
Recommended Books:	▪ الكود المصري لاسس تصميم وشروط التنفيذ لهندسة التركيبات الصحية للمبانى ▪ الكود المصري لتصميم وتنفيذ خطوط المواسير لشبكات مياة الشرب والصرف الصحي ▪ الكود المصرى لاسس تصميم الاعمال الكهربائية ▪ الكود المصرى للحريق

2.8. Facilities required for Teaching and Learning:

Different Facilities
Library usage
Data show
White board

3. Matrix:

3.1. Program Objectives VS Course Objectives:

Program Objectives	Course Objective	
	CO1	CO2
PO5	*	*

3.2. Course Objectives VS Course Learning Outcomes:

Course Objectives	Course Learning Outcomes	
	CLO1	CLO2
CO1	*	*

3.3. Program Learning Outcomes VS Course Learning Outcomes:

Program Learning Outcomes	Course Learning Outcomes	
	CLO1	CLO2
PLO5	*	
PLO15		*

3.4. Assessment Alignment Matrix:

PLOs	PO	CLOs	Teaching M.	Assessment M.
PLO5	PO5	CLO1	• Lectures • Problem-based Learning • Presentations • Brainstorming • Discussion	Midterm Exam • Discussions • Assignments • Presentations • Final Exam
PLO15		CLO2	• Lectures • Problem-based Learning • Presentations • Discussion • Self-Learning	Midterm Exam • Assignments • Presentations • Portfolio • Final Exam

Course Coordinator: Assoc. Prof. Ayman Abdel Hamid

Head of Department: Prof. Dr. Zeinab Faisal

Date: 10 / 9 / 2023

Course Specification

1. Basic Information:

Program Title	Architectural Engineering Program				
Department Offering the program	Architectural Engineering Department				
Department Offering the course	Architectural Engineering Department				
Course Title	Computer Applications 2			**Code**	ARC 241
Type	**Compulsory ☒**		**Elective ☐**		
Semester	Level 2-1				
Teaching Hours	**Lec.**	**Tut.**	**Lab.**	**Credit hours**	
	2	0	2	3	

2. Professional Information:

Pre-requisites: ARC 142

2.1. Course Description:

This course aims to develop the ideas with computers, and to facilitate the development of analytical, critical, and integrative thinking to help students to initiation, planning, execution and presentation of design computing projects or research thesis. It also encourages the students to examine, discuss, question and debate issues of computing and information technology in design.

2.2. Course Objectives (CO):

Program objective		**Course objective**	
PO4	Use techniques, skills, and modern engineering tools necessary for architectural engineering practice.	CO1	Implement Ideas and Architecture designs using computer applications.
PO7	Create architectural designs that satisfy both aesthetic, technical and meet building users' requirements	CO2	Enhance the presentation of design projects to visualize better design tools for the future.

2.3. Course Learning Outcomes (CLO's):

CBE/Program Learning Outcomes		Course Learning Outcomes	
A4-PLO4	Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles.	CLO1	Integrate different forms and ideas to develop design solutions
		CLO2	Produce multi-dimensional drawings using appropriate computer applications.
A8-PLO8	Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.	CLO3	Communicate graphically with the colleagues in the lab.
B1-PLO11	Create architectural, urban and planning designs that satisfy both aesthetic and technical requirements, using adequate knowledge of: history and theory, related fine arts, local culture and heritage, technologies and human sciences.	CLO4	Express three-dimensionally and engage images of places and time with innovation and creativity in the exploration of design
		CLO5	Present architectural projects using computer applications

Cognitive Domain	Psychomotor Domain	Affective Domain
-----	CLO1,2,4	CLO3,5

2.4. Course Topics:

Course Topics	Week	Course LO's Covered				
		CLO1	CLO2	CLO3	CLO4	CLO5
Introduction &User interface	1	*				
Object creation and viewports	2	*	*			
Extended Primitives	3	*	*			
Shapes &Edit spline	4	*	*			
Edit Poly	5	*	*			
Modifier List	6		*		*	
Modifier List	7	*			*	
Mid-term Exam	8					
Organic	9	*				*
Parametric	10	*				*
Material	11	*				*
Project announcement	12		*	*		*
Lighting	13		*			*
Rendering	14	*		*		*
Project Submission	15	*		*		*
Total	15	12	7	3	2	8

2.5 Teaching and Learning Methods:

Teaching and Learning Methods:	Course LO's Covered				
	CLO1	CLO2	CLO3	CLO4	CLO5
1. Lectures	*				
2. Computer-based Instruction	*	*			*
3. Projects	*	*	*	*	*
4. Discussion	*	*	*	*	*
Teaching and Learning Methods for Students with Special Needs:					
Methods					
1. Discussion Session					
2. Extra Lectures					
3. Provide different levels of books and materials					

2.6 Assessment Methods:

Assessment Methods:	Course LOs Covered				
	CLO1	CLO2	CLO3	CLO4	CLO5
Formative Assessment Method					
1. Tests: Midterm Exam		*			*
2. Discussions	*		*	*	
3. Projects	*	*	*		*
4. Assignments	*	*		*	*
Summative Assessment Method					
5.Final (Practical) Exam		*			*

2.6.1. Assessment Schedule & Grades Distribution:

Assessment Method	Week	Weighting of Asses.
1.Mid-term Exam	Week # 8	30%
2.Discussions	Week #9,13	10%
3.Projects	Week # 9 & 15	10%
4.Assignments	Week # 2,3,4,5,6,7,10,11, 12, 13,14	10%
5.Practical Exam	Scheduled by the faculty council	40%
Total		100%

2.7. List of References:

Essential Books (Textbooks):	Kelly L. Murdock's Autodesk 3ds Max 2020 Complete Reference Guide 1st Edition.
Recommended Books:	N/A
Periodicals, Web Sites, … etc:	N/A

2.8. Facilities required for Teaching and Learning:

Different Facilities
Computer Lab
Library usage
Data show
Whiteboard

3. Matrix:

3.1. Program Objectives VS Course Objectives:

Program Objectives	Course Objective	
	CO1	CO2
PO4	*	
PO7		*

3.2. Course Objectives VS Course Learning Outcomes:

Course Objectives	Course Learning Outcomes				
	CLO1	CLO2	CLO3	CLO4	CLO5
CO1	*	*	*		
CO2				*	*

3.3. Program Learning Outcomes VS Course Learning Outcomes:

Program Learning Outcomes	Course Learning Outcomes				
	CLO1	CLO2	CLO3	CLO4	CLO5
PLO4	*	*			
PLO8			*		
PLO11				*	*

3.4. Assessment Alignment Matrix:

PLOs	PO	CLOs	Teaching M.	Assessment M.
PLO4	PO1	CLO1	• Lectures • Computer-based Instruction • Projects • Discussion	• Discussions • Projects • Assignments
		CLO2	• Computer-based Instruction • Projects • Discussion	• Tests: Midterm Exam • Projects • Assignments • Final Exam
PLO8	PO1	CLO3	• Projects • Discussion	• Projects • Discussion
PLO11	PO7	CLO4	• Projects • Discussion	• Discussions • Assignments
		CLO5	• 1Computer-based Instruction • Projects • Discussion	• Tests: Midterm Exam • Projects • Assignments • Final Exam

Course Coordinator: Prof. Dr. Zeinab Faisal
Head of Department: Prof. Dr. Zeinab Faisal
Date: 10 / 9 / 2023

Course Specification

1. Basic Information:

Program Title	Architectural Engineering Program			
Department Offering the program	Architectural Engineering Department			
Department Offering the course	Civil Engineering Department			
Course Title	Design of RC Structures		**Code**	CIV 259
Type	**Compulsory** ☒		**Elective** ☐	
Semester	Level 2-1			
Teaching Hours	**Lec.**	**Tut.**	**Lab.**	**Credit hours**
	2	1	0	2

2. Professional Information:

Pre-requisites: CIV 129

2.1. Course description:

Design of Concrete Structures: Fundamentals of reinforced concrete structures - Analysis and design of sections subjected to bending - Loads and load distribution - Reinforcement details of beams - Solid slabs - Columns - stairs - Statically determinate frames - Ribbed and hollow block slabs - Paneled Beam slabs - Flats slabs - Connections of precast concrete structural elements.

2.2. Course Objectives (CO):

Program objective		**Course objective**	
PO1	Apply a wide spectrum of fundamentals of the science and specialized skills with analytic, creativity and critical thinking to identify and solve architecture design problems in real life situation.	CO1	Plan and design the Concrete Structures geometrically & structure
PO2	Prepare qualified innovative architects who can adhere to architectural engineering ethics and standards and work to develop the profession and the community and promote sustainability principles.	CO2	Prepare qualified innovative architects who can adhere to architectural engineering
PO4	Master self-learning and life -long learning strategies to communicate effectively in academic/professional fields.	CO3	communicate effectively in academic/professional fields.

2.3. Course Learning Outcomes (CLO's):

CBE/Program Learning Outcomes		Course Learning Outcomes	
A2-PLO2	Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	CLO1	Develop Fundamentals of reinforced concrete structures –design and Analysis of sections subjected to bending According to ECP203-2020.
		CLO2	Evaluate Loads and load distribution - Evaluate Reinforcement details of beams. According to ECP203-2020.
		CLO3	Design Solid slabs - Design Columns – stairs. According to ECP203-2020.
B3-PLO13	Generate ecologically responsible, environmental conservation and rehabilitation designs; through understanding of structural design, construction, technology and engineering problems associated with building designs.	CLO4	Design hollow block slabs. According to ECP203-2020.
		CLO5	Design paneled beam slabs. Design flats slabs. According to ECP203-2020.
		CLO6	Explain Statically determinate frames.

Cognitive Domain	Psychomotor Domain	Affective Domain
CLO6	CLO1,2,3,4,5	---

2.4. Course Topics:

Course Topics	Week	Course LOs Covered					
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
- Fundamentals of reinforced concrete structures	1	*					
- Analysis and design of sections subjected to bending	2	*					
- Calculate Loads and load distribution	3		*				
- Reinforcement details of beams	4		*				
- Design Solid slabs	5			*			
- Design Columns	6			*			
- Design stairs	7			*			
-Midterm exam	8						
- Design Ribbed and hollow block slabs	9				*		
	10				*		
- Design Paneled Beam slabs	11					*	
- Design Flats slabs	12					*	
	13					*	
- Statically determinate frames	14						*
-Revision	15						
Total	15	2	2	3	2	3	1

2.5 Teaching and Learning Methods:

Teaching and Learning Methods:	Course LO's Covered					
Methods	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
1. Lecture	*	*	*	*	*	*
2. Tutorials	*	*	*	*	*	*
3. Project-based Learning		*	*			
Teaching and Learning Methods for Students with Special Needs:						
Methods						
1. Discussion Session						
2. Extra Lectures						
3. Provide different levels of books and materials						

2.6 Assessment Methods:

Assessment Methods:		Course LOs Covered					
Methods		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Formative Assessment Method							
1.Tests	Oral Test	*	*	*	*	*	*
	Midterm Exam	*	*				
2.Projects	Mini Projects		*	*			
3.Assignments		*	*	*	*	*	*
Summative Assessment Method							
4.Final Exam		*	*	*	*	*	*

2.6.1. Assessment Schedule & Grades Distribution:

Assessment Method	Week	Weighting of Asses.
1.Assignments	2 to 6 & 9 to 13	10 %
2.Midterm exam	8	30 %
3.Mini Projects	7	10 %
4.Oral	15	10 %
5.Final exam	Scheduled by the faculty council	40 %
Total		**100 %**

2.7. List of Reference:

Essential Books (Textbooks):	• Shaker elbehary handbook. • ECP203-2020. • Design of RC Structure halls – DR.M. Hilal
Recommended Books:	• Design of RC Structure - V. 2 - DR. Mashhour A. Ghoneim.

2.8. Facilities required for Teaching and Learning:

Different Facilities
Lecture Hall
Library Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective		
	CO1	CO2	CO3
PO1	*		
PO2		*	
PO4			*

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
CO1	*	*				
CO2			*	*		
CO3					*	*

3.3. Program Learning Outcomes VS Course Learning Outcomes

Program Learning Outcomes	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
PLO2	*	*	*			
PLO13				*	*	*

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO2	PO1	CLO1	• Lecture • Tutorials • Project-based Learning	• Written Exam • Mini Projects • Assignments • Oral Test
	PO2	CLO2	• Lecture • Tutorials	• Written Exam • Assignments • Oral Test
		CLO3	• Lecture • Tutorials	• Written Exam • Assignments • Oral Test
PLO13	PO4	CLO4	• Lecture • Tutorials	• Written Exam • Assignments • Oral Test
		CLO5	• Lecture • Tutorials	• Written Exam • Assignments • Oral Test
		CLO5	• Lecture • Tutorials	• Written Exam • Assignments • Oral Test

Course Coordinator: Ass. Prof. Dr. Mohamed Makhlouf M. Makhlouf

Head of Department: Prof. Dr. Zeinab Faisal

Date: 10 / 9 / 2023

Course Specification

1. Basic Information:

Program Title	Architectural Engineering Program			
Department Offering the program	Architectural Engineering Department			
Department Offering the course	Architectural Engineering Department			
Course Title	Architectural Design 4		**Code**	ARC 202
Type	**Compulsory** ☒		**Elective** ☐	
Semester	Level 2-2			
Teaching Hours	**Lec.**	**Tut.**	**Lab.**	**Credit hours**
	1	4	---	3

2. Professional Information:

Pre-requisites: ARC 201

2.1. Course description:

This course extends students' understanding of how buildings are generated from a specific location. The course aims to enrich students with a greater understanding of physical context (character and style) and cultural context (social and behavioural environment) and the relationship between them. A project on a real piece of land respecting the legislative constraints of the surrounding area with studying the architecture integral elements of it. Focusing residential building to study uniform building code.

2.2. Course Objectives (CO):

Program objective		**Course objective**	
PO1	Apply a wide spectrum of fundamentals of the science and specialized skills with analytic, creativity and critical thinking to identify and solve architecture design problems in real life situation.	CO1	**Identify** various architectural design (assumptions, Criteria and standards) on different building types, scales and contexts.
PO6	Strengthening students' ability to make decisions, solve problems, and develop architectural and urban solutions to develop and serve the local community.	CO2	**Apply** theories of design of various public buildings and sustainable concepts by both: Passive & Active design solutions through design project.
PO7	Create architectural designs that satisfy both aesthetic, technical and meet building users' requirements	CO3	**Design** innovative and appropriate solutions for architectural design problems.

2.3. Course Learning Outcomes (CLO's):

CBE/Program Learning Outcomes		Course Learning Outcomes	
A9-PLO9	Use creative, innovative and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.	CLO1	**Analyze** similar projects/ buildings design solutions to obtain design criteria & standards.
		CLO2	**Propose** multiple architectural solutions to be evaluated.
B1-PLO11	Create architectural, urban and planning designs that satisfy both aesthetic and technical requirements, using adequate knowledge of: history and theory, related fine arts, local culture and heritage, technologies and human sciences.	CLO3	**Apply** the knowledge of: Technology and Sustainability and their impact of that on a building design.
		CLO4	**Create** of modern buildings with functional, technical and aesthetic requirements.
B2-PLO12	Produce designs that meet building users' requirements through understanding the relationship between people and buildings, and between buildings and their environment; and the need to relate buildings and the spaces between them to human needs and scale.	CLO5	**Produce** an appropriate architecture design solution for complex problems that meet users' needs within the urban context.
		CLO6	**Design** a futuristic architecture design that considers users, context and environment

Cognitive Domain	Psychomotor Domain	Affective Domain
CLO3	CLO1,2,4,5, 6	------

2.4. Course topics:

Course Topics	Week	Course LO's Covered					
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Course Introduction & first Project Discussions/Research orientation	1	*		*			
First Project: Project Lecture /Briefing/ Analytical Research/3D Conceptual approach	2	*	*				
Site / Project Analysis &3D study model	3		*	*		*	
Master plan/ Piazza Design development	4			*	*		
Upper floors Design development	5				*		
Conceptual sections Design development	6			*			
Layout – Master/upper plans & Conceptual sections designs **(Criticism)**	7	*			*	*	*
Mid-Term Exam	8						
Technical sections Design development	9				*		
Facades & 3D Design development	10						
3D Model development & 2D feedback	11						*
Final full design sketch (Criticism)	12	*	*		*	*	*
Rendering First project& follow up	13			*	*	*	*
Rendering First project& follow up	14	*	*		*		
First project jury & Evaluation &	15			*	*	*	*
Total		5	4	5	8	5	5

2.5 Teaching and Learning Methods:

Teaching and Learning Methods:	Course LO's Covered					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
1. Lectures			*			*
2.Design studio			*	*	*	
3.Problem-based Learning	*				*	
4. Presentations		*		*		*
5. Case Study	*		*			
6. Projects	*		*		*	*
7. Discussion	*	*				*
8. Modeling		*				*
Teaching and Learning Methods for Students with Special Needs:						
Methods						
1. Discussion Session						
2. Extra Lectures						
3. Provide different levels of books and materials						

2.6 Assessment Methods

Assessment Methods:	Course LOs Covered					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Formative Assessment Method						
1.Midterm Exam				*	*	*
2. Discussions	*	*				*
3. Projects					*	*
4. Assignments			*	*		
5. Presentations	*	*	*			*
6. Modeling		*			*	
Summative Assessment Method						
7.Final Exam				*	*	*

2.6.1. Assessment Schedule & Grades Distribution:

Assessment Method	Week	Weighting of Asses.
1.Mid-term Exam	Week # 8	30 %
2.Discussions	Week #2& 15	2.5 %
3.Projects	Week # 15	10 %
4.Assignments	Week # 2,3,4,5,6,7,9 ,10,11, 12	10 %
5.Presentations	Week #12 &15	5 %
6.Modeling	Week # 2 &115	2.5 %
7.Final Exam	Scheduled by the faculty council	40%
Total		100%

2.7. List of Reference:

Essential Books (Textbooks):	▪ Time saver: for Building types, 4th. Edition, De Chiara & M.Crosbie, Mc G.Hill, NY.USA, 2001 ▪ Architecture: Form, space, and order, FDK Ching - 2014 ,John Wiley & Sons ▪ The architectural concept book, James Tait, Thames &Hudson, 2019, USA. ▪ Architecture Competitions Annual series I, II, .IIV, Archiworld, 2016:2020, HongKong.
Recommended Books:	▪ Nufert Architects' Data, 5th Edition, SBN: 978-1-119-28435- 2019 Wiley Blackwell. ▪ Sustainable Building Design, Miles Keeping, Wiley, 2018, USA. ▪ Commercial buildings Aesthetics:Analysis of Commercial buildings, space, 2019, China
Periodicals, Web Sites, … etc:	http:// www.archnet.org http:// www.Foster+partners.org http:// www.big.dk http:// www.architecture digist.com http:// www.architecture.com

2.8. Facilities required for Teaching and Learning:

Different Facilities
Design studio
Library usage
Data show
White board

3. Matrix:

3.1. Program Objectives VS Course Objectives:

Program Objectives	Course Objective		
	CO1	CO2	CO3
PO1	*		
PO6		*	
PO7			*

3.2. Course Objectives VS Course Learning Outcomes:

Course Objectives	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
CO1	*	*		*		
CO2			*		*	
CO3		*				*

3.3. Program Learning Outcomes VS Course Learning Outcomes:

Program Learning Outcomes	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
PLO9	*	*				
PLO11			*	*		
PLO12					*	*

3.4. Assessment Alignment Matrix:

PLOs	PO	CLOs	Teaching M.	Assessment M.
PLO9	PO1	CLO1	• 1.Problem-based Learning • Case study • Projects • Discussion	• Discussions • Presentation
		CLO2	• 1.Presentation • Discussions • Modeling	• Modeling • Discussions • Presentation
PLO11	PO6	CLO3	• Lectures • Design studio • Case Study • Projects	• Presentation • Assignments
		CLO4	• Design studio • Presentation	• Midterm Exam • Assignments
PLO12	PO7	CLO5	• Design studio • 2.Problem-based Learning • Projects	• Discussions • Assignments • Projects • Assignments • Presentations • Modeling • Final Exam
		CLO6	• Lectures • Presentation • Projects • Discussion • Modeling	• Midterm Exam • Discussions • Projects • Presentations

Course Coordinator: Assoc. Prof. Ayman Abdel Hamid

Head of Department: Prof. Dr. Zeinab Faisal

Date: 10 / 9 / 2023

Course Specification

1. Basic Information:

Program Title	Architectural Engineering Program			
Department Offering the program	Architectural Engineering Department			
Department Offering the course	Architectural Engineering Department			
Course Title	Working Drawing 1		**Code**	ARC 212
Type	**Compulsory** ☒		**Elective** ☐	
Semester	Level 2-2			
Teaching Hours	**Lec.**	**Tut.**	**Lab.**	**Credit hours**
	1	4	0	3

2. Professional Information:

Pre-requisites: ARC 211

2.1. Course description:

This course imparts students the knowledge on various types of floors, flooring material, partitions, various surface finishes, and modes of vertical transportation to equip students with the advances in the building construction methods and their applications. It provides students with a comprehensive knowledge of the construction documentation, construction drawings, quantities and specifications, structures, as well as implementation methods. Students are required to carry out the preparation of complete working drawings for a medium scale building project.

2.2. Course Objectives (CO):

Program objective		**Course objective**	
PO2	Prepare qualified innovative architects who can adhere to architectural engineering ethics and standards and work to develop the profession and the community and promote sustainability principles.	CO1	**Classify** sustainable building engineering systems, materials, and techniques.
PO4	Use techniques, skills, and modern engineering tools necessary for architectural engineering practice.	CO2	**Compare** among modern finishing materials in building construction and spaces fit-out.
PO5	Master self-learning and life-long learning strategies to communicate effectively in academic/professional fields.	CO3	**Apply** modern strategies of finishing systems, materials, techniques (in / out-doors) in project model.

2.3. Course Learning Outcomes (CLO's):

CBE/Program Learning Outcomes		Course Learning Outcomes	
A5-PLO5	Practice research techniques and methods of investigation as an inherent part of learning.	CLO1	**Collect** data in scope of course topics within an interdisciplinary group and elaborate with others.
		CLO2	**Assess** modern finishing systems, techniques, and materials for suitable use within the building.
B3-PLO13	Generate ecologically responsible, environmental conservation and rehabilitation designs; through understanding of: structural design, construction, technology and engineering problems associated with building designs.	CLO3	**Apply** sustainable concepts and use of sustainable finishing materials and techniques by both: Passive & Active through project design.
		CLO4	**Select** suitable treatments and appropriate finishing materials for building envelope and inner spaces according to building activities.
		CLO5	**Solve** the connections between different finishing systems, materials in both (In / Out-door).
		CLO6	**Produce** comprehensive execution drawings with chosen finishing (systems/ materials) with different connections through project model.

Cognitive Domain	Psychomotor Domain	Affective Domain
CLO4	CLO2,3,5, 6	CLO1

2.4. Course Topics:

Course Topics	Week	Course LO's Covered					
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Introduction & Course presentation	1	*		*			
Project Orientation & working Drawing Annotations review	2		*	*			
Flooring systems: Stones (Granite- Marble- lime/sandstone- slates…)	3	*		*	*		
Wooden floor systems: (Panels – parquets-Tiles)	4			*		*	
Industrial floors (Ceramics-Porcine – Vinyl – HPL–HDF–….) – Raised floors.	5		*			*	*
Walling systems: plastering & Painting	6	*	*				
Dry wall systems: (Gypsum – Cement – Wooden– Engineered) partitions.	7				*	*	
Midterm Exam	8		*		*	*	
Cladding systems: (Plastering – Half mechanical – Mechanical) Cladding	9			*	*	*	
Cladding systems: (Plastering – Half mechanical – Mechanical) Cladding	10		*		*		*
Curtain wall systems:(standard – semi-structural – Structural – Spider) systems.	11	*	*		*	*	*
Glass blocks – Glazed partitions – Wcs. Cubicles	12	*	*			*	
Ceiling systems: Grid panels systems	13	*			*		
Boarding systems – 3D system	14		*			*	*
Jury & Project presentation	15		*	*	*	*	*
Total		6	9	6	8	9	5

2.5 Teaching and Learning Methods:

Teaching and Learning Methods:	Course LO's Covered					
Methods	**CLO1**	**CLO2**	**CLO3**	**CLO4**	**CLO5**	**CLO6**
1.Lecture		*	*	*		
2.Tutorials			*		*	*
3.Project-based Learning	*	*				*
4. Projects			*	*	*	*
5. Report	*	*				
6. Presentation	*	*	*			
Teaching and Learning Methods for Students with Special Needs:						
Methods						
1. Discussion Session						
2. Extra Lectures						
3. Provide different levels of books and materials						

2.6 Assessment Methods:

Assessment Methods:		Course LOs Covered					
Methods		**CLO1**	**CLO2**	**CLO3**	**CLO4**	**CLO5**	**CLO6**
Formative Assessment Method							
Tests	Oral Test	*	*		*		
	Midterm Exam		*		*	*	
	Quizzes		*	*		*	
Reports		*	*				
Projects					*	*	*
Assignments				*	*	*	
Presentations		*					*
Summative Assessment Method							
Final Exam				*	*	*	*

2.6.1. Assessment Schedule & Grades Distribution:

Assessment Method	Week	Weighting of Asses.
Mid-term Exam	Week # 8	30 %
Oral Test	Week # 15	2.5 %
Discussions	Week # 9 & 15	5 %
Projects	15	10 %
Assignments	Week # 2,3,4,5,6,7,9,10,11, 12, 13,14	10 %
Presentations	Week # 14 & 15	2.5 %
Final Exam	Scheduled by the faculty council	40 %
Total		100%

2.7. List of Reference:

Essential Books (Textbooks):	▪ Building Construction Illustrated, Ching, FDK Ching - ,John Wiley & Sons, 2016 NY,USA. ▪ Fundamentals of Building Constructions-7th. Edition, Edward Allen & J.Iano, Wiley, 2019, NY,USA. ▪ Fcade Construction Manual,3rd..edition,Thomas H, Roland K., Edition Detail,2018,Gmbh ▪ Building Systems for Interior design, 2nd. Edition, Corky B., Jhon Wiely&Sons,2017,USA. ▪ التصميمات التنفيذية، هشام علي حسن، دار المعرفة، القاهرة ، ▪ 2010محمد أحمد عبد الله. 2004.الرسومات التنفيذية والتفاصيل المعمارية. مكتبة الأنجلو المصرية. مصر.
Recommended Books:	▪ Construction Materials-Reference Book, 2nd. Edition, D.K. Doran, Rutledge ,2018,UK ▪ Building construction, Barry,2010,
Periodicals, Web Sites, … etc:	http:// www.sweets.construction.com http:// www. Knauf.com http:// www. Detail-online.com http:// www.greatbuilding.com http:// www.architecture.com

2.8. Facilities required for Teaching and Learning:

Different Facilities
Lecture Hall
Library Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives:

Program Objectives	Course Objective		
	CO1	CO2	CO3
PO2	*		
PO4		*	
PO5			*

3.2. Course Objectives VS Course Learning Outcomes:

Course Objectives	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
CO1	*	*	*			
CO2		*	*	*		
CO3				*	*	*

3.3. Program Learning Outcomes VS Course Learning Outcomes:

Program Learning Outcomes	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
PLO5	*	*				
PLO13			*	*	*	*

3.4. Assessment Alignment Matrix:

PLO	PO	CLO	Teaching M.	Assessment M.
PLO 5	PO2	CLO1	• Project based learning • Projects • Group research	• Oral Test • Reports • Presentation
		CLO2	• Lectures • Project based learning • Reports • Group research	• Oral Test • Midterm. • quizzes • Reports
PLO13	PO4 & PO5	CLO3	• Lectures • Tutorials • Projects • Group research	• quizzes • Assignments • Final exam
		CLO4	• Lectures • Projects	• Oral Test • Midterm. • Projects • Assignments • Final exam
		CLO5	• Tutorials • Projects	• Midterm. • quizzes • Projects • Assignments • Final exam
		CLO6	• Tutorials • Project based learning. • Projects	• Projects • Presentation • Final exam

Course Coordinator: Dr.Almoataz bellah Gamal eldien

Head of Department: Prof. Dr. Zeinab Faisal

Date: 10 / 9 / 2023

Course Specification

1. Basic Information:

Program Title	Architectural Engineering Program			
Department Offering the program	Architectural Engineering Department			
Department Offering the course	Architectural Engineering Department			
Course Title	History of Architecture 2		**Code**	ARC 232
Type	**Compulsory** ☒		**Elective** ☐	
Semester	Level 2-2			
Teaching Hours	**Lec.**	**Tut.**	**Lab.**	**Credit hours**
	2	1	0	2

2. Professional Information:

Pre-requisites: ARC 132

2.1. Course description:

The course aims at introducing the students to a comparative analytical study of architecture in different cultures/historical periods with examples from religious and secular architecture that include Romanesque architecture; Gothic architecture; Renaissance architecture; and Islamic architecture (Umayed, Abbasid, Tulunid, Fatimid, Ayyubid, Mamluk and Ottoman eras with emphasis on selected examples from Egypt)

2.2. Course Objectives (CO):

Program objective		**Course objective**	
PO4	Use techniques, skills, and modern engineering tools necessary for architectural engineering practice.	CO1	Use different technologies in effective presentation and individual and group discussion.
PO5	Master self-learning and life -long learning strategies to communicate effectively in academic/professional fields.	CO2	Apply self-learning through specialized and electronic libraries & the ability to self-learning through field visits
PO6	Strengthening students' ability to make decisions, solve problems, and develop architectural and urban solutions to develop and serve the local community.	CO3	Analysis of historical architectural thought and its use in the development and service of the local community
PO7	Create architectural designs that satisfy both aesthetic, technical and meet building users' requirements	CO4	Solve design problems using historical architectural vocabulary and elements after understanding the design idea

2.3. Course Learning Outcomes (CLO's):

CBE/Program Learning Outcomes		Course Learning Outcomes	
A5-PLO5	Practice research techniques and methods of investigation as an inherent part of learning.	CLO1	Search for information from references and internet.
A10-PLO10	Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.	CLO2	Understand the functions of different historic buildings
		CLO3	Outline different design principles of different historical buildings
		CLO4	Identify the different building types of the different historical civilizations
B1-PLO11	Create architectural, urban and planning designs that satisfy both aesthetic and technical requirements, using adequate knowledge of: history and theory, related fine arts, local culture and heritage, technologies and human sciences.	CLO5	Understanding human requirements and needs through different historic periods.
		CLO6	Determine the technical and aesthetic requirements of the historic buildings.
		CLO7	Analysis the different historic building types.
		CLO8	Compare between building types in different historical civilizations

Cognitive Domain	Psychomotor Domain	Affective Domain
CLO2,3,4,5,6	CLO7,8	CLO1

2.4. Course Topics:

Course Topics	Week	Course LO's Covered							
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7	CLO8
Introduction to course content	1	*	*				*		*
Early Christian Architecture	2	*	*			*			*
Church models from the beginning of Christianity	3			*	*	*	*	*	
Byzantine Architecture	4	*	*			*			*
Show models of Byzantine-style churches	5	*			*			*	*
Romanesque Churches Architecture - Presentation of the Italian, French and German Romantic style	6		*	*	*	*		*	
Gothic Church Architecture - View architectural elements and the most important works that reflect the style	7	*	*	*		*	*		*
Mid-term Exam	8				*		*		
Architecture of Baroque Churches - Design Principles with mention of the most important works that express Baroque	9	*		*	*				*
Architectural composition and mosque design in the architecture of Islamic culture through the ages	10	*			*		*		*
Characteristics of Islamic architecture and display models of heritage movement paths through maps	11		*	*		*			*
(palaces and houses) In the architecture of Islamic culture	12	*			*		*		
(Madrasa, sabil and kutab, Qubba, khanqah and Takiyya)	13	*	*			*		*	
(hammam, wikala, Bimaristan, troughs or basins (hod)) In the architecture of Islamic culture	14	*			*		*		*
Group No. 4: Structural system, climate treatments and decorations In the architecture of Islamic culture	15			*	*		*	*	
Total	**15**	**9**	**9**	**9**	**8**	**8**	**9**	**7**	**7**

2.5 Teaching and Learning Methods:

Teaching and Learning Methods:	Course LO's Covered							
Methods	**CLO1**	**CLO2**	**CLO3**	**CLO4**	**CLO5**	**CLO6**	**CLO7**	**CLO8**
1. Lectures	*		*	*				*
2.Tutorials		*		*		*	*	
3. Presentations	*		*		*			*
4. Report	*	*				*	*	
5. Brainstorming			*		*		*	
6. Discussion			*	*		*		
7. Self-Learning	*			*	*			*
8. Modeling	*	*	*				*	
Teaching and Learning Methods for Students with Special Needs:								
Methods								
1. Field visit to historical buildings								
2. Discussion Session								
3. Extra Lectures								
4. Provide different levels of books and materials								

2.6 Assessment Methods:

Assessment Methods:		Course LOs Covered							
Methods		**CLO1**	**CLO2**	**CLO3**	**CLO4**	**CLO5**	**CLO6**	**CLO7**	**CLO8**
Formative Assessment Method									
1. Tests	Midterm Exam				*		*		
	Quizzes	*	*			*			*
2. Reports		*	*					*	
3. Discussions					*		*		*
4. Assignments				*	*		*		
5. Presentations		*	*			*		*	
6. Modeling		*		*			*		*
7- Portfolio			*	*		*		*	
Summative Assessment Method									
8- Final Exam		*		*		*		*	*

2.6.1. Assessment Schedule & Grades Distribution:

Assessment Method	Week	Weighting of Asses.
1. Mid-term Exam	Week 8	30%
2. Quizzes	Week 2 & 3 & 4 & 5 &6	5%
3. Reports	Week 6	5%
4. Discussions	Week 7 & 9 & 10 & 11 & 12	5%
5. Assignments	Week 2 & 3 & 4 & 5 & 7	5%
6. Presentations	Week 7 & 9 & 10 & 11 & 12	5%
7. Modeling	Week 14 & 13	5%
8. Final Exam	Scheduled by the faculty council	40%
Total		**100%**

2.7. List of Reference:

Course Notes:	Lecture Notes - د. قبيلة فارس، تاريخ العمارة عبر العصور, دار المناهج للنشر والتوزيع, 2019
Essential Books (Textbooks):	Wilson, Christopher (2005). *The Gothic Cathedral Architecture of the Great Church*. Thames and Hudson. ISBN 9780500276815. Moore, Charles (1890). *Development & Character of Gothic Architecture*. Macmillan and Co. ISBN 1410207633. Tonazzi, Pascal (2007) *Florilège de NotreDame de Paris (anthologie)*, Editions Arléa, Paris, ISBN 2869597959
Recommended Books:	1. Beck. H.G.. Kirche und theologische Literatur im byzantinischen Reich. Munich. 1977. 2. Bekker. I.. izd.. Corpus scriptorum historiae byzantinae. Bonn 1838. 3. Deno John Geanakoplos. Constantinople and the West. Essays on the Late Byzantine (Paleologan) and Italian Renaissances and the Byzantine and Roman Churches. Madison. Wsc. 1989. 4. Ehrhard. A.. Ueberlieferung und Bestand der hagiographischen und homiletischen Literatur der griechischen Kirche. 3 sveska. Tedžte und Untersuchungen zur Geschichte der altchristlichen Literatur. Leipzig 1937-1952. 5. Friedlaender. Paul. Johannes von Gaza. Paulus Silentiarius. Kunstbeschreibungen justinianischer Zeit. Berlin-Leipzig 1912 (reprinted faximile: Hildesheim-New York 1969). 6. Grabar. A.. L'empereur dans l'art byzantin. Strasbourg 1936 (London 1971). Hunger. H.. Die hochsprachliche profane Literatur der Byzantiner I. Muenchen 1978. Jenkins. R. J. H.. The Hellenistic Origins of Byzantine Literature. Dumbarton Oaks Papers. 17. Dumbarton Oaks 1963. 7. Junecke. Hans. Die wohlbemessene Ordnung. Pythagoreische Proportionen in der historischen Architektur. Berlin 1982. 8. Korać Vojislav. Marica Šuput. Arhitektura vizantijskog sveta. Beograd 1999. 9. Kustas G. L. . Studies in Byzantine Rhetoric. Salonika 1973. 10. Maguire. Henry. Art and Eloljuence in Byzantium. Princeton. W 1981.-. Truth and Convention in Byzantine Descriptions of Works of Art. Dumbarton Oaks Papers. 28. Dumbarton Oaks 1974.Meridier. L.. L'influence de la seconde sophistiljue sur l'oeuvre de Gregoire de Nysse. Paris 1906. 11. Pevsner. Nikolaus. Studies in Art. Architecture and Design. 2 sveska. London 1968.Procopius. Prokop. Opera. III. 2. izd. J. Haury. Leipzig 1913: Procopius. izd. H. B. Dewing. Glanville Downey. svezak VII (Loeb Classical Library). London-Cambridge. Mass. 1940. 12. Richter. Jean Paul. Wuellen zur byzantinischen Kunstgeschichte. Wien 1897. Silentiarius. Paulus. Εκφρασις του ναου της Αγιας Σοφιας(ekfrazis) u: Paul Friedlaender. Johannes von Gaza. Paulus Silentiarius. Kunstbeschreibungen justinianischer Zeit. Berlin-Leipzig 1912 (faksimil ponovo štampan: Hildesheim-New York 1969). 13. Unger. Friedrich Wilhelm. Wuellen zur byzantinischen Kunstgeschichte. Wien1878. 14. Viljamaa. T.. Studies in Greek Encomiastic Poetry of the Early Byzantine Period. Helsinki 1968. 15. Weitzmann. K.. The Survival of Mythological Representations in Early Christian and Byzantine Art and Their Impact on Christian Iconography. Dumbarton Oaks Papers. 14. Dumbarton Oaks 1960.
Periodicals, Web Sites, … etc.:	http://lena-arch.blogspot.com/p/byzantine-architecture.html http://historyofarchitecture.weebly.com/byzantine.html https://prezi.com/nzbm2vwoelmm/early-christian-architecture/# http://www.slideshare.net/CarlaFaner/hoa1-lecture-6-early-christian-architecture?related=6 http://www.victorianweb.org/art/architecture/byzantine/bf1.html https://vi.scribd.com/doc/46345527/Early-Christian-Byzantine-and-Romanesque-Architecture

2.8. Facilities required for Teaching and Learning:

Different Facilities
Lecture Hall
Library Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives:

Program Objectives	Course Objective			
	CO1	CO2	CO3	CO4
PO4	*	*		
PO5		*		*
PO6			*	*
PO7	*		*	*

3.2. Course Objectives VS Course Learning Outcomes:

Course Objectives	Course Learning Outcomes							
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7	CLO8
CO1		*		*		*		*
CO2	*		*		*		*	
CO3	*			*	*		*	
CO4		*	*			*		*

3.3. Program Learning Outcomes VS Course Learning Outcomes:

Program Learning Outcomes	Course Learning Outcomes							
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7	CLO8
PLO5	*		*		*		*	*
PLO10	*	*			*	*	*	
PLO11		*	*	*		*		

3.4. Assessment Alignment Matrix:

PLO	PO	CLO	Teaching M.	Assessment M.
PLO5	PO4 PO5	CLO1	• Lectures • Tutorials • Presentations • Report • Self-Learning • Modeling	• Mid-term Exam • Quizzes • Reports • Assignments • Modeling • Final Exam
PLO10	PO5 PO6	CLO2 CLO3 CLO4	• Lectures • Tutorials • Presentations • Brainstorming • Discussion • Modeling	• Mid-term Exam • Quizzes • Assignments • Modeling • Final Exam
PLO11	PO6 PO7	CLO5 CLO6 CLO7 CLO8	• Lectures • 2.Tutorials • Presentations • Brainstorming • Discussion • Self-Learning • Modeling	• Mid-term Exam • Discussions • Assignments • Presentations • Modeling • Final Exam

Course Coordinator: Dr. Kamal Elgabalawy

Head of Department: Prof. Dr. Zeinab Faisal

Date: 10 / 9 / 2023

Course Specification

1. Basic Information:

Program Title	Architectural Engineering Program			
Department Offering the program	Architectural Engineering Department			
Department Offering the course	Architectural Engineering Department			
Course Title	Smart Buildings Design		**Code**	ARC 252
Type	**Compulsory** ☒		**Elective** ☐	
Semester	Level 2-2			
Teaching Hours	**Lec.**	**Tut.**	**Lab.**	**Credit hours**
	2	1	--	2

2. Professional Information:

Pre-requisites: ARC 152

2.1. Course description:

This course provides the students the different definitions, theories and concepts of intelligent architecture and buildings, to provide the principles of building automation systems, and to provide basic knowledge of the construction and installation of the structured smart system in buildings.

2.2. Course Objectives (CO):

At the end of course, the student will be able to:

Program objective		**Course objective**	
PO2	Prepare qualified innovative architects who can adhere to architectural engineering ethics and standards and work to develop the profession and the community and promote sustainability principles.	CO1	Realize and understand the different elements that compose sustainable (Green)/ Smart buildings.
PO4	Use techniques, skills, and modern engineering tools necessary for architectural engineering practice.	CO2	Determine the different construction techniques matching with environment.
PO6	Strengthening students' ability to make decisions, solve problems, and develop architectural and urban solutions to develop and serve the local community.	CO3	Design a Green / Smart building and integrate all required elements and systems.

2.3. Course Learning Outcomes (CLO's):

CBE/Program Learning Outcomes		Course Learning Outcomes	
B3-PLO13	Generate ecologically responsible, environmental conservation and rehabilitation designs; through understanding of: structural design, construction, technology and engineering problems associated with building designs.	CLO1	Identify the basics of smart buildings
		CLO2	Define the factors affecting smart buildings developments
		CLO3	Outline the various strategies for smart buildings in advanced countries
		CLO4	Analyze the factors affecting smart building requirements.
		CLO5	Assess the impact of smart systems on behaviors and performance.
		CLO6	Apply techniques related to smart building and systems.

Cognitive Domain	Psychomotor Domain	Affective Domain
CLO1,2,3	CLO4,5,6	------

2.4. Course Topics:

Course Topics	Week	Course LO's Covered					
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Introduction to course content	1	*					
International & regional experience of sustainable & smart buildings	2		*	*			
Importance of smart buildings in 21st Century	3		*	*			
Smart buildings and sustainability international cases of sustainable & smart bldgs.	4		*	*			
Green and smart cities: factors and elements Smart cities worldwide	5		*		*		
Elements & components of smart buildings	6,7	*					
Mid-term Exam	8						
Low-tech smart system vs. High-tech smart systems Smart Systems: Energy – Cooling & case Studies	9				*	*	*
Smart system: HTS Smart Envelop and Smart Glass	10				*	*	*
Smart System: Solar Water Heating (SWH)	11					*	*
Understanding Energy consumption & Occupancy Patterns of a multi-purpose academic building	12,13				*	*	*
Selected cases studies: Smart & Sustainable buildings	14						*
Total	14	3	4	3	5	5	6

2.6 Teaching and Learning Methods:

Teaching and Learning Methods:	Course LO's Covered					
Methods	**CLO1**	**CLO2**	**CLO3**	**CLO4**	**CLO5**	**CLO6**
1. Lecture	*	*	*			
2. Tutorials				*	*	*
3. Presentation		*				*
4. Discussion	*		*	*	*	
5.Brain Storming	*	*				*
Teaching and Learning Methods for Students with Special Needs:						
Methods						
1. Discussion Session						
2. Extra Lectures						
3. Provide different levels of books and materials						

2.7 Assessment Methods:

Assessment Methods:		Course LOs Covered					
Methods		**CLO1**	**CLO2**	**CLO3**	**CLO4**	**CLO5**	**CLO6**
Formative Assessment Method							
1.Tests	Oral Test	*		*			
	Midterm Exam	*			*		
2.Reports			*	*		*	*
3.Presentations			*			*	*
Summative Assessment Method							
4.Final Exam		*	*		*		

2.7.1. Assessment Schedule & Grades Distribution:

Assessment Method	Week	Weighting of Asses.
1.Mid-term Exam	Week # 8	30%
2.Oral Test	Week # 13	10%
3.Report	Week#10	10%
4.Presentations	Week # 9 & 14	10%
5.Final Exam	Scheduled by the faculty council	40%
Total		100%

2.8. List of Reference:

Essential Books (Textbooks):	التصـميم المعماري الصـديق للبيئة، نحو عمارة خضـراء، يبى وزيري، مكتبة الاسره، 2019
Recommended Books:	Sinopoli, J., Advanced Technology for Smart Buildings, Artech House, 2017
	Jadhav, Y., Green and Smart Buildings: Advanced Technology Options, Springer, 2016
Periodicals, Web Sites, … etc.:	http:// www.greatbuilding.com http:// www.architecture.com

2.9. Facilities required for Teaching and Learning:

Different Facilities
Lecture Hall
Library Usage
laboratory Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives:

Program Objectives	Course Objective		
	CO1	CO2	CO3
PO2	*		
PO4		*	
PO6			*

3.2. Course Objectives VS Course Learning Outcomes:

Course Objectives	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
CO1	*	*	*			
CO2		*		*		
CO3					*	*

3.3. Program Learning Outcomes VS Course Learning Outcomes:

Program Learning Outcomes	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
PLO13	*	*	*	*	*	*

3.4. Assessment Alignment Matrix:

PLO	PO	CLO	Teaching M.	Assessment M.
PLO13	PO2 PO4 PO6	CLO1	• Lectures • Brainstorming • Discussion	• Midterm exam. • Oral Test
		CLO2	• Lectures • Brainstorming • Presentation	• Reports. • Presentation • Final exam
		CLO3	• Lectures • Lectures • Discussion	• Reports. • Oral Exam
		CLO4	• Tutorials • Discussion	• Midterm exam. • Final exam
		CLO5	• Tutorials • Discussion	• Reports • Presentation
		CLO6	• Tutorials • Presentation • Brainstorming	• Reports • Presentation

Course Coordinator: Dr Ahmed Elsaadany

Head of Department: Prof. Dr. Zeinab Faisal

Date: 10 / 9 / 2023

Course Specification

1. Basic Information:

Program Title	Architectural Engineering Program			
Department Offering the program	Architectural Engineering Department			
Department Offering the course	Architectural Engineering Department			
Course Title	Introduction to Housing		**Code**	ARC 222
Type	**Compulsory** ☒		**Elective** ☐	
Semester	Level 2-2			
Teaching Hours	**Lec.**	**Tut.**	**Lab.**	**Credit hours**
	2	2	0	3

2. Professional Information:

2.1. Course Description:

To learn how to create a land use plan for a specific housing area. Recognize and classify elements of dwelling structures, as well as their functions. Consider the functional programmer, communication services, spatial composition, connections with service centers, and green areas while designing the spatial structure of housing complexes. An introduction to housing studies, architectural styles and preferences, residential construction methods and components.

2.2. Course Objectives (CO):

Program objective		**Course objective**	
PO2	Prepare qualified innovative architects who can adhere to architectural engineering ethics and standards and work to develop the profession and the community and promote sustainability principles.	CO1	Analyze housing problem in any society and how to provide solutions to it.
PO6	Strengthening students' ability to make decisions, solve problems, and develop architectural and urban solutions to develop and serve the local community.	CO2	Design innovative and appropriate solutions of housing problems.
PO7	Create architectural designs that satisfy both aesthetic, technical and meet building users' requirements.	CO3	Apply the theoretical base of studying by the most important theories and trends of urban form and housing.

2.3. Course Learning Outcomes (CLO's):

CBE/Program Learning Outcomes		Course Learning Outcomes	
A7-PLO7	Function efficiently as an individual and as a member of multi-disciplinary and multi-cultural teams.	CLO1	Define the concept of Housing, Quality of life and human needs
		CLO2	Follow the effective collaboration within multidisciplinary team
B1-PLO11	Create architectural, urban and planning designs that satisfy both aesthetic and technical requirements, using adequate knowledge of history and theory, related fine arts, local culture and heritage, technologies and human sciences.	CLO3	Recall the basic concepts, schools, trends and definitions of housing.
		CLO4	Analyze different housing projects solutions to obtain design criteria.
		CLO5	Apply the housing indicators through different case studies
B2-PLO12	Produce designs that meet building users' requirements through understanding the relationship between people and buildings, and between buildings and their environment; and the need to relate buildings and the spaces between them to human needs and scale.	CLO6	Classify housing prototypes due to different socio-economic groups.
		CLO7	Criticize physical models and housing projects to study the relationship between buildings and their environment.
		CLO8	Create innovative designs of housing projects.

Cognitive Domain	Psychomotor Domain	Affective Domain
CLO1, 3	CLO4,5, 7,8	CLO2

2.4. Course Topics:

Course Topics	Week	Course LO's Covered							
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7	CLO8
Introduction & Course Review	1	*		*			*		
Definition & Housing Concept	2			*					
The neighborhood; A Residential Environment	3&4			*	*				
Discussion of 1st research: Quality of Life and human needs in Urban Areas	5	*	*						
Housing Prototypes & Principles of Residential Units	6&7					*	*	*	
Mid-Term Exam	8								
Introduction to Project	9					*		*	*
Principles and design of Residential Buildings	10					*	*		
Analysis of similar housing projects	11								
Follow up the Housing Project	12				*				
Similar project analysis (1) & Physical Model	13				*			*	
Semi-final Sketch	14					*			*
Final Sketch & Physical Model	15		*			*		*	*
Total		2	2	3	3	5	3	4	3

2.5 Teaching and Learning Methods:

Teaching and Learning Methods:	Course LO's Covered							
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7	CLO8
1. Lectures	*		*			*		
2. Tutorials				*	*		*	*
3. Presentations		*			*		*	*
4. Case Study				*				
5. Projects		*			*		*	*
6. Discussion	*		*			*		
7. Modeling							*	
Teaching and Learning Methods for Students with Special Needs:								
Methods								
1. Discussion Session								
2. Extra Lectures								
3. Provide different levels of books and materials								

2.6 Assessment Methods:

Assessment Methods:	Course LOs Covered							
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7	CLO8
Formative Assessment Method								
1. Midterm Exam			*			*		
2. Discussions	*		*			*		
3. Projects		*			*		*	*
4. Assignments				*	*			*
5. Presentations	*			*				
6. Modeling							*	
7. Reports	*	*						
Summative Assessment Method								
8.Final Exam			*			*		*

2.6.1. Assessment Schedule & Grades Distribution:

Assessment Method	Week	Weighting of Asses.
1.Mid-term Exam	Week # 8	30%
2.Discussions	Week # 5 & 7	2.5%
3.Projects	Week # 15	10%
4.Assignments	Week # 10, 11,12, 13, 14	5%
5.Presentations	Week # 5	2.5%
6.Modeling	Week # 7 & 15	5%
7.Reports	Week # 5	5%
8.Final Exam	Scheduled by the faculty council	40%
Total		100%

2.7. List of Reference:

Essential Books (Textbooks):	Adams, Thomas, The Design of Residential Areas: Basic Considerations, Principles, and Methods Forgotten Books publisher, 2017.
	Carmona ,Matthew,Public Places Urban Spaces :The Dimensions of Urban Design ,2021 ,Routledge
	نسمات عبد القادر، سيد التوني، اشكالية النسيج والطابع، 1997
Recommended Books:	David F., William A. V. & Kenneth G., The SAGE Handbook of Housing Studies, SAGE Publications Ltd, 2012
Periodicals, Web Sites, … etc:	----------

2.8. Facilities required for Teaching and Learning:

Different Facilities
Lecture Hall
Library usage
Data show
White board

3. Matrix:

3.1. Program Objectives VS Course Objectives:

Program Objectives	Course Objective		
	CO1	CO2	CO3
PO2	*		
PO6		*	
PO7			*

3.2. Course Objectives VS Course Learning Outcomes:

Course Objectives	Course Learning Outcomes							
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7	CLO8
CO1			*	*		*		
CO2		*					*	*
CO3	*				*			

3.3. Program Learning Outcomes VS Course Learning Outcomes:

Program Learning Outcomes	Course Learning Outcomes							
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7	CLO8
PLO7	*	*						
PLO11			*	*	*			
PLO12						*	*	*

3.4. Assessment Alignment Matrix:

PLO's	PO	CLO's	Teaching M.	Assessment M.
PLO7	PO2	CLO1 CLO2	1. Lecture 2. Discussion 3. Presentations 4. Projects	1. Discussion 2. Presentations 3. Reports 4. Projects
PLO11	PO7	CLO3 CLO4 CLO5	1. Lecture 2. Discussion 3. Tutorials 4. Case Study 5. Presentations 6. Projects	1. Midterm Exam 2. Discussions 3. Final Exam 4. Assignments 5. Presentations 6. Projects
PLO12	PO6	CLO6 CLO7 CLO8	1. Lecture 2. Discussion 3. Tutorials 4. Presentations 6. Projects 7. Modeling	1. Midterm Exam 2. Discussions 3. Final Exam 4. Projects 5. Modeling 6. Assignments

Course Coordinator: Dr. Mona Yehia Shedid

Head of Department: Prof. Dr. Zeinab Faisal

Date: 10 / 9 / 2023

Course Specification

1. Basic Information:

Program Title	Architectural Engineering Program			
Department Offering the program	Architectural Engineering Department			
Department Offering the course	Architectural Engineering Department			
Course Title	Profession Practice &Building Legislation		**Code**	ARC 214
Type	**Compulsory ☒**	**Elective ☐**		
Semester	**Level 2-2**			
Teaching Hours	**Lec.**	**Tut.**	**Lab.**	**Credit hours**
	2	1	0	2

2. Professional Information:

2.1. Course Description:

The course introduces building legislations, in addition to types of contracts, bidding, construction supervision, and guarantee against construction flaws. It also introduces the Professional practice, designer and supervisors' responsibilities, quality and quality control, contractor and owner responsibilities, actors' relations, and roles.

2.2. Course Objectives (CO):

At the end of the course, the student will be able to:

Program objective		**Course objective**	
PO4	Use techniques, skills, and modern engineering tools necessary for architectural engineering practice.	CO1	Develop the student's knowledge and awareness regarding the different roles he/she will play in his future professional practice
Po6	Strengthening students' ability to make decisions, solve problems, and develop architectural and urban solutions to develop and serve the local community	Co2	Develop the student's knowledge and awareness regarding the duties and rights ofdifferent parties of the project life cycle: Client, Contractor, and Architect.
PO7	Create architectural designs that satisfy both aesthetic, and technical and meet building users' requirements	CO3	Apply "building law bylaw", "building safety code", and "Egyptian Engineers Syndicate" bylaws for fee estimation

2.3. Course Learning Outcomes (CLO's):

CBE/Program Learning Outcomes		Course Learning Outcomes	
A4-PLO4	Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles.	CLO1	Analyze the architectural project legality in light of local building codes and legislations
		CLO2	Evaluate construction contracts agreement and guarantee against construction flaws.
B4-PLO14	Transform design concepts into buildings and integrate plans into overall planning within the constraints of: project financing, project management, cost control and methods of project delivery; while having adequate knowledge of industries, organizations, regulations and procedures involved	CLO3	Evaluate a correct consultation contract between the client and the architect in light of the needed scope of work.
		ClO4	Calculate the architect's fee based on the needed scope of work according to the Egyptian Engineers Syndicate bylaws.
B5-PLO15	Prepare design project briefs and documents and understand the context of the architect in the construction industry, including the architect's role in the processes of bidding, procurement of architectural services and building production.	ClO5	Applying "Building Law No.119 Est. 2008" and its bylaw in design projects.
		ClO6	Apply fire safety requirements in design projects.

Cognitive Domain	Psychomotor Domain	Affective Domain
Clo1	Clo2-clo3-clo4	Clo5-clo6

2.4. Course Topics:

Course Topics	Week	Course LO's Covered					
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Course Orientation	1		*				
Planning Codes	2		*	*			
Planning Codes	3		*	*			
Building Codes	4		*	*			
Building Codes	5		*	*			
Building fire protection Codes	6		*				
Building fire protection Codes	7			*			*
Mid-term Exam	8						
Client/ Consultant relation; Consultation Contracts	9	*		*		*	
Client/ Consultant relation; Consultation Contracts	10		*		*		
introduction; Professional practice, and legislations roles	11	*		*		*	*
Professional practice, and legislations roles	12				*		
Professional practice, and legislations roles	13		*		*	*	
Professional practice, and legislations roles	14	*		*			*
Final discussion	15	*		*		*	*
Total	15	4	8	9	3	4	4

2.5 Teaching and Learning Methods:

Teaching and Learning Methods:	Course LO's Covered					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
1. Lectures		*	*	*		
2. Problem-based Learning	*			*		
3. Presentations			*		*	*
4. Discussion	*	*		*	*	*
Teaching and Learning Methods for Students with Special Needs:						
Methods						
1. Discussion Session						
2. Extra Lectures						
3. Provide different levels of books and materials						

2.6 Assessment Methods:

Assessment Methods:		Course LOs Covered					
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Formative Assessment Method							
1.Tests	Oral Test	*	*			*	
	Midterm Exam			*			
2. Discussions		*			*		
3. Assignments			*	*	*		*
4. Presentations						*	
Summative Assessment Method							
Final Exam		*		*			*

2.6.1. Assessment Schedule & Grades Distribution:

Assessment Method	Week	Weighting of Asses.
Mid-term Exam	Week # 8	30%
Oral Test	Week # 13	5%
Discussions	Week # 9 & 15	5%
Assignments	Week # 2,3,4,5,6,7,10,11, 12, 13,14	10%
Presentations	Week # 9 & 15	10%
Final Exam	Scheduled by the faculty council	40%
Total		100%

2.7. List of Reference:

Essential Books (Textbooks):	Egyptian Engineers Syndicate´ bylaws regarding the architecture profession
Recommended Books:	Nassar; Gamal EI-Din, Arabic translation of conditions of contract for construction for building and engineering works designed by the employer, guidance for the preparation of particular conditions, forms of letter of tender, contract agreement and dispute adjudication board, 2021 Nigel Ostime,Riba Architect's Job Book, 9th Edition, RIBA Publications, 2013.
Periodicals, Web Sites, … etc:	https://www.diwanarch.com https://mof.gov.eg https://www.lob.gov

2.8. Facilities required for Teaching and Learning:

Different Facilities
Design studio
Library usage
Data show
White board

3. Matrix:

3.1. Program Objectives VS Course Objectives:

Program Objectives		Course Objective	
	CO1	CO2	CO3
PO4	*		
PO6		*	
PO7			*

3.2. Course Objectives VS Course Learning Outcomes:

Course Objectives	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
CO1	*				*	
CO2			*	*		
CO3		*				*

3.3. Program Learning Outcomes VS Course Learning Outcomes:

Program Learning Outcomes	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
PLO4	*					*
PLO14		*		*		
PLO 5			*		*	

3.4. Assessment Alignment Matrix:

PLOs	PO	CLOs	Teaching M.	Assessment M.
PLO4	Po4 Po6	CLO1 ClO2	• Design studio • Problem-based Learning • Projects • Discussion	• Oral Test • Discussions • Final Exam
PLO14	Po6 Po7	CLO3 CLO4	• Lectures • Case Study • Discussions • Presentations	• Mid-term Exam • Oral Test • Discussions • Projects • Assignments • Final Exam
Plo15	PO7	Clo5 Clo6	• Problem-based Learning • Projects • Discussion	• Discussions • Projects • Assignments • Final Exam

Course Coordinator: Dr. Rasha Ahmed Reyad

Head of Department: Prof. Dr. Zeinab Faisal

Date: 10 / 9 / 2023

Course Specification

1. Basic Information:

Program Title	Architectural Engineering Program			
Department Offering the program	Architectural Engineering Department			
Department Offering the course	Civil Engineering Department			
Course Title	Design of Steel Structures		**Code**	CIV 229
Type	**Compulsory** ☒	**Elective** ☐		
Semester	Level 2-1			
Teaching Hours	**Lec.**	**Tut.**	**Lab.**	**Credit hours**
	2	1	0	2

2. Professional Information:

Pre-requisites: CIV 129

2.2. Course Objectives (CO):

Program objective		**Course objective**	
PO1	Apply a wide spectrum of fundamentals of the science and specialized skills with analytic, creativity and critical thinking to identify and solve architecture design problems in real life situation.	CO1	Plan and design the Steel Structures geometrically & structure
PO2	Prepare qualified innovative architects who can adhere to architectural engineering ethics and standards and work to develop the profession and the community and promote sustainability principles.	CO2	Prepare qualified innovative architects who can adhere to architectural engineering
PO4	Master self-learning and life -long learning strategies to communicate effectively in academic/professional fields.	CO3	Communicate effectively in academic/professional fields.

2.3. Course Learning Outcomes (CLO's):

CBE/Program Learning Outcomes		Course Learning Outcomes	
A2-PLO2	Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	CLO1	Develop Fundamentals of steel structures –design and Analysis of sections.
		CLO2	Integrate theoretical studies with practical reality.
		CLO3	Produce structural analysis for steel structures.
B3-PLO13	Generate ecologically responsible, environmental conservation and rehabilitation designs; through understanding of structural design, construction, technology and engineering problems associated with building designs.	CLO4	Identify steel sections properties.
		CLO5	Analysis basic steel structure
		CLO6	Improve creative problem solving and decision making faculties.

Cognitive Domain	Psychomotor Domain	Affective Domain
CLO6	CLO1,2,3,4,5	---

2.4. Course Topics:

Course Topics	Week	Course LOs Covered					
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
- Course Introduction	1	*	*				
- Fundamentals of steel structures	2	*			*		
- Introduction to Steel material behavior	3		*		*		
- Layout out of wind bracing	4		*		*	*	
- Analysis and design of sections	5,6	*				*	
- Calculate Loads and load distribution (part 1)	7		*				
- Midterm exam	8						
- Calculate Loads and load distribution (part 2)	9		*				
- Design of axially loaded tension members	10				*		
- Design of axially loaded compression members	11			*		*	
- Design of ordinary bolted connections and their details	12			*			*
- Design of ordinary welded connections and their details	13			*			*
- Revision	14						*
Total	**14**	**4**	**5**	**3**	**4**	**3**	**3**

2.5 Teaching and Learning Methods:

Teaching and Learning Methods:	Course LO's Covered					
Methods	**CLO1**	**CLO2**	**CLO3**	**CLO4**	**CLO5**	**CLO6**
1. Lecture	*	*		*	*	*
2. Tutorials	*		*	*	*	*
3. Project-based Learning		*	*			
Teaching and Learning Methods for Students with Special Needs:						
Methods						
1. Discussion Session						
2. Extra Lectures						
3. Provide different levels of books and materials						

2.6 Assessment Methods

Assessment Methods:		Course LOs Covered					
Methods		**CLO1**	**CLO2**	**CLO3**	**CLO4**	**CLO5**	**CLO6**
Formative Assessment Method							
1.Tests	Oral Test	*		*	*	*	
	Midterm Exam	*	*				
2.Projects	Mini Projects		*	*			
3.Assignments		*	*	*	*	*	*
Summative Assessment Method							
4.Final Exam		*			*	*	*

2.6.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
1.Assignments	2 to 6 & 9 to 13	10 %
2.Midterm exam	8	30 %
3.Mini Projects	7	10 %
4.Oral	15	10 %
5.Final exam	Scheduled by the faculty council	40 %
Total		**100 %**

2.7. List of Reference:

Essential Books (Textbooks):	• Shaker elbehary handbook.
Recommended Books:	• Jay Shen, Bulent Akbas , Onur Seker , Design of Steel Structures, McGraw Hill, 2021

2.8. Facilities required for Teaching and Learning:

Different Facilities
Lecture Hall
Library Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives:

Program Objectives	Course Objective		
	CO1	CO2	CO3
PO1	*		
PO2		*	
PO4			*

3.2. Course Objectives VS Course Learning Outcomes:

Course Objectives	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
CO1	*	*				
CO2			*	*		
CO3					*	*

3.3. Program Learning Outcomes VS Course Learning Outcomes:

Program Learning Outcomes	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
PLO2	*	*	*			
PLO13				*	*	*

3.4. Assessment Alignment Matrix:

PLO	PO	CLO	Teaching M.	Assessment M.
PLO2	PO1	CLO1	• Lecture • Tutorials • Project-based Learning	• Oral Test • Midterm Exam • Assignments • Final Exam
	PO2	CLO2	• Lecture • Project-based Learning	• Assignments • Mini Project • Midterm Exam
		CLO3	• Tutorials • Project-based Learning	• Mini Project • Assignments • Oral Test
PLO13	PO4	CLO4	• Lecture • Tutorials	• Final Exam • Assignments • Oral Test
		CLO5	• Lecture • Tutorials	• Final Exam • Assignments • Oral Test
		CLO6	• Lecture • Tutorials	• Final Exam • Assignments

Course Coordinator: Ass. Prof. Dr. Mohamed Makhlouf M. Makhlouf

Head of Department: Prof. Dr. Zeinab Faisal

Date: 10 / 9 / 2023

Architectural Engineering Program
Level 3
Course Specification

Course Specification

1. Basic Information:

Program Title	Architectural Engineering Program				
Department Offering the program	Architectural Engineering Department				
Department Offering the course	Architectural Engineering Department				
Course Title	Senior Design Project-1			**Code**	ARC 361
Type	**Compulsory** ☒		**Elective** ☐		
Semester	Level 3-1				
Teaching Hours	**Lec.**	**Tut.**	**Lab.**	**Credit hours**	
	1	3	0	2	

2. Professional Information:

2.1. Course description:

The course targets preparing the students to: Exploring and proposing new (philosophical /conceptual) approaches to deals with actual, real (Urban/Architectural) current and futuristic problems and locations in local/ regional contexts, compromising with a whole sustainable development (Egypt Vision 2030& 2050), interweaving all means of available sciences and technologies with all previous accumulative conceptual and architectural skills obtained by the four studying years. Achieving that, methodology of Graduation Project depends on two subsequent stages.

2.2. Course Objectives (CO):

Program objective		**Course objective**	
PO1	Apply a wide spectrum of fundamentals of the science and specialized skills with analytic, creativity and critical thinking to identify and solve architecture design problems in real life situation.	CO1	**Explore and Study** roots of [Social– Cultural – Environmental– Economic – Urban] potentials/attributes of a proposed graduation project theme(s) each year (Individually/ in groups).
PO2	Prepare qualified innovative architects who can adhere to architectural engineering ethics and standards and work to develop the profession and the community and promote sustainability principles.	CO2	**Analyze** [Site, Social, Architectural needs and Urban givens/ potentials] for Similar Mega projects, to extract innovative/philosophical conceptual approach to proposed graduation project.
PO4	Use techniques, skills, and modern engineering tools necessary for architectural engineering practice.	CO3	**Propose,** a detailed Functional Briefing (Program) for graduation project by (Areas/volumes), which compromises all [Social– Cultural – Environmental– Economic – Urban] Recent and Futuristic needs, and suites a multi-purpose usage.
PO6	Strengthening students' ability to make decisions, solve problems, and develop architectural and urban solutions to develop and serve the local community.	CO4	**Generate** proper design ideas /Concepts/ Proposals that integrates and assimilates of all types of knowledge gained in previous years; [theories /history of architecture, structure, construction technology, environmental design, and humanities].
PO7	Create architectural designs that satisfy both aesthetic, technical and meet building users' requirements	CO5	**Design** Solutions for Architectural/Urban design problems and solve real human problems which meet their recent & future needs.

2.3. Course Learning Outcomes (CLO's):

CBE/Program Learning Outcomes		Course Learning Outcomes	
A3-PLO3	Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical, and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.	CLO1	**Analyze** Mega projects/ buildings design Concepts/solutions to **Conclude** design guidelines, criteria & standards, individually or in groups.
		CLO2	**Propose** multiple architectural/Urban Approaches/Concepts to be evaluated from (Social- Cultural – Environmental –Technological –Economic - …) points of views.
A6-PLO6	Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements.	CLO3	**Study**, site analysis for project location
		CLO4	**Propose,** a detailed Project Briefing depends on a comprehensive study of (functional –human –Economic) Recent and future needs.
A9-PLO9	Use creative, innovative, and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.	CLO5	**Apply** the knowledge of: Technology and Sustainability and their impact of that on a project design.
		CLO6	**Design** all necessary architectural drawings that meet functional, technical and aesthetics requirements.
B2-PLO12	Produce designs that meet building users' requirements through understanding the relationship between people and buildings, and between buildings and their environment; and the need to relate buildings and the spaces between them to human needs and scale.	CLO7	**Generate**, futuristic architectural project that consider functional requirements, future needs, and modern technology, using sufficient knowledge of the following: (history/theories of architecture, culture, arts, local heritage, humanities, and advanced technologies).
B3-PLO13	Generate ecologically responsible, environmental conservation and rehabilitation designs; through understanding of structural design, construction, technology and engineering problems associated with building designs.	CLO8	**Design** project that meets users' Requirements by studying the relationship among (users- project - urban/social– context and environment); then connecting buildings and spaces by studying human needs.

2.4. Course Topics:

Course Topics	Week	Course LO's Covered							
		CLO 1	CLO 2	CLO 3	CLO 4	CLO 5	CLO 6	CLO 7	CLO 8
Course Introduction & first Project Discussions/ Egypt Vision 2030- Research orientation.	1	*							
Graduation project orientation I:(concept – objectives – examples)	2	*							
Graduation project orientation II: (concept – objectives – examples)	3	*	*						
Open discussions (approaches – Concepts)	4								
	5	*	*						
First stage: (Presentation) (3) Different Proposals for Real /Existing Architectural /Urban problems , Need a solutions , compromises with Egypt Vision 2030	6		*						
Development of previous stage	7		*	*					
Mid-Term Exam:	8								
Second stage: (Presentation)	9		*	*					
Development of previous stage	10		*	*					
Third stage: (Presentation)	11			*	*		*	*	*
Development of previous stage	12			*	*				
Conceptual Context Study Model	13			*	*	*			
Fourth Stage: (Final Studies pres): Final Presentation with:	14		*	*	*	*	*	*	*
Total		**4**	**7**	**7**	**4**	**1**	**3**	**3**	**3**

2.5 Teaching and Learning Methods:

Teaching and Learning Methods:	Course LO's Covered							
	CLO 1	CLO 2	CLO 3	CLO 4	CLO 5	CLO 6	CLO 7	CLO 8
1. Lectures	*	*						
2.Design studio			*		*	*	*	
3.Problem-based Learning	*	*						
5. Presentations				*				
6. Case Study	*							
7. Projects	*	*				*	*	*
8. Discussion		*					*	
9. Modeling		*	*					*
Teaching and Learning Methods for Students with Special Needs:								
Methods								
1. Discussion Session								
2. Extra Lectures								
3. Provide different levels of books and materials								

2.6 Assessment Methods:

Assessment Methods:		Course LOs Covered							
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO 7	CLO 8
Formative Assessment Method									
1.Tests	Oral Test	*	*		*				
	1st Term submissions	*		*	*				
2. Discussions			*						
3. Projects			*			*	*	*	*
4. Assignments / Stages							*		
5. Presentations		*				*			*
6. Modeling				*					*
Summative Assessment Method									
7.Final Jury				*		*	*	*	*

2.6.1. Assessment Schedule & Grades Distribution:

Assessment Method	Week	Weighting of Asses.	
1. First Semester : (Project Studies)			
First stage	6	10%	**50%**
Second stage	9	10%	
Third stage	11	10%	
Fourth stage	14	20%	
Total		**50 %**	

2.7. List of Reference:

Essential Books (Textbooks):	▪ Time saver: for Building types, 4th. Edition, De Chiara &M.Crosbie, McG.Hill,NY.USA, 2001 ▪ Architecture: Form, space, and order, FDK Ching - 2014 ,John Wiley & Sons ▪ The architectural concept book, James Tait, Thames &Hudson,2019, USA. ▪ Architecture Competitions Annual series I,II,….IIV, Archiworld, 2016:2020,HongKong.
Recommended Books:	▪ Process + Diagram, Archi-lab press, 2020. ▪ Annual Competition A awards parts (8,9&10), archiworld, Seoul, 2018,2019,2020. ▪ Nufert Architects' Data, 5th Edition, SBN: 978-1-119-28435- 2019 Wiley Blackwell.
Periodicals, Web Sites, … etc:	http:// www.archnet.org http:// www.Foster+partners.org

2.8. Facilities required for Teaching and Learning:

Different Facilities
Design studio
Library usage
Data show
Site visit (Optional)
White board

3. Matrix:

3.1. Program Objectives VS Course Objectives:

Program Objectives	Course Objective				
	CO1	CO2	CO3	CO4	CO5
PO1	*				
PO2		*			
PO4			*		
PO6				*	
PO7					*

3.2. Course Objectives VS Course Learning Outcomes:

Course Objectives	Course Learning Outcomes							
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7	CLO8
CO1	*		*					
CO2			*		*			
CO3		*		*				
CO4							*	
CO5						*		*

3.3. Program Learning Outcomes VS Course Learning Outcomes:

Program Objectives	Course Learning Outcomes							
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7	CLO8
PLO3	*	*						
PLO6			*	*				
PLO9					*	*		
PLO12							*	
PLO13								*

3.4. Assessment Alignment Matrix:

PLOs	PO	CLOs	Teaching M.	Assessment M.
PLO 3:	PO1	CLO1	• 1.Problem-based Learning • Case study • Projects • Discussion	• Oral Test • Discussions • Presentation
		CLO2	• Presentation • Discussions • Modeling	• Modeling • Discussions • Presentation
PLO 6:	PO2	CLO3	• Lectures • Design studio • Case Study • Projects	• Presentation • Assignments
		CLO4	• Design studio • Presentation	• Assignments
PLO 9:	PO4	CLO5	• Design studio • Problem-based Learning • Projects	• Discussions • Assignments • Projects • Assignments • Presentations • Modeling
		CLO6	• Lectures • Presentation • Projects • Discussion • Modeling	• Discussions • Projects • Presentations
PLO12:	PO7	CLO7	• Design studio • Presentation • Projects • Discussion	• assignments • Presentation • Discussions
PLO13:		CLO8	• Design studio • Presentation • Projects • Discussion • 5. Modeling	• Presentation • Discussions

Course Coordinator: Dr.Almoataz bellah Gamal eldien
Head of Department: Prof. Dr. Zeinab Faisal
Date: 10 / 9 / 2023

Course Specification

1. Basic Information:

Program Title	Architectural Engineering Program				
Department Offering the program	Architectural Engineering Department				
Department Offering the course	Architectural Engineering Department				
Course Title	Working Drawing 2			**Code**	ARC 311
Type	**Compulsory** ☒		**Elective** ☐		
Semester	Level 3-1				
Teaching Hours	**Lec.**	**Tut.**	**Lab.**	**Credit hours**	
	1	4	0	3	

2. Professional Information:

Pre-requisites: ARC 212

2.1. Course description:

The course introduces preparation of integrated execution documents for projects, preparation of working drawings of a pre-designed large-scale project, the writing of specifications documents presented with working drawings, structures, quantities, and specifications, plumbing and sanitary systems, electrical and mechanical systems, and shop and as built drawings.

2.2. Course Objectives (CO):

At the end of course, the student will be able to:

Program objective		**Course objective**	
PO2	Prepare qualified innovative architects who can adhere to architectural engineering ethics and standards and work to develop the profession and the community and promote sustainability principles.	CO1	Apply different sustainable finishing materials in working drawings.
PO4	Use techniques, skills, and modern engineering tools necessary for architectural engineering practice.	CO2	Identify different techniques and modern engineering tools of construction.
PO6	Strengthening students' ability to make decisions, solve problems, and develop architectural and urban solutions to develop and serve the local community.	CO3	Recognize the different engineering ethics and standards.

2.3. Course Learning Outcomes (CLO's):

CBE/Program Learning Outcomes		Course Learning Outcomes	
B3-PLO13	Generate ecologically responsible, environmental conservation and rehabilitation designs; through understanding of: structural design, construction, technology and engineering problems associated with building designs.	CLO1	Outline principles of environmental structure
		CLO2	Identify all necessary construction, technology and working drawings that meet technical requirements.
B4-PLO14	Transform design concepts into buildings and integrate plans into overall planning within the constraints of project financing, project management, cost control and methods of project delivery; while having adequate knowledge of industries, organizations, regulations and procedures involved.	CLO3	Determine the constraints of: project financing,
		CLO4	Understand the context of the architect in the construction industry, including the architect's role in the processes of bidding, procurement of architectural services and building production.
B5-PLO15	Prepare design project briefs and documents and understand the context of the architect in the construction industry, including the architect's role in the processes of bidding, procurement of architectural services and building production.	CLO5	Identify the constraints of: project management,
		CLO6	Outline the constraints of: cost control and methods of project delivery

Cognitive Domain	Psychomotor Domain	Affective Domain
CLO1,3,5	CLO2,6	CLO4

2.4. Course Topics:

Course Topics	Week	Course LO's Covered					
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Introduction to course content	1	*		*			*
Explain how to draw working plans with large scale	2,3,4		*	*		*	
Explain how to draw working sections with large scale	5,6,7	*	*		*		
Mid-term Exam	8					*	
Explain how to draw working elevations with large scale	9	*	*				*
Explain how to draw working layout with large scale	10,11	*	*				*
Explain how to draw shop drawing	12	*		*	*		
Explain how to draw working advanced details	13			*	*	*	
Final project	14,15			*	*	*	*
Total		8	9	9	7	7	6

2.6 Teaching and Learning Methods:

Teaching and Learning Methods:	Course LO's Covered					
Methods	**CLO1**	**CLO2**	**CLO3**	**CLO4**	**CLO5**	**CLO6**
1. Lecture	*			*	*	*
2. Tutorials		*	*		*	*
3. Project-based Learning	*	*				
4. Projects	*			*		
5. Report			*		*	
6. Self-Learning			*	*		*
Teaching and Learning Methods for Students with Special Needs:						
Methods						
1. Discussion Session						
2. Extra Lectures						
3. Provide different levels of books and materials						

2.6 Assessment Methods:

Assessment Methods:		Course LOs Covered					
Methods		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Formative Assessment Method							
1.Tests	Oral Test	*				*	
	Midterm Exam	*					*
	Quizzes			*			*
2.Reports				*			
3.Projects	Projects	*	*		*		
	Mini Projects			*	*		
4.Assignments				*		*	
5.Presentations		*	*		*		
Summative Assessment Method							
6.Final Exam			*	*	*		

2.7.1. Assessment Schedule & Grades Distribution:

Assessment Method	Week	Weighting of Asses.
1.Mid-term Exam	Week # 8	30%
2.Oral Test	Week # 13	5%
3.Discussions	Week # 9 & 15	2.5%
4.Projects	Week # 9 & 15	10%
5.Assignments	Week # 2,3,4,5,6,7,10,11, 12, 13,14	10%
6.Presentations	Week # 9 & 15	2.5%
7.Final Exam	Scheduled by the faculty council	40%
Total		100%

2.8. List of Reference:

Essential Books	محمد أحمد عبد الله 2018.الرسومات التنفيذية والتفاصيل المعمارية. مكتبة الأنجلو المصرية.
Recommended Books:	R Conway and Roenisch, 1987, Understanding Architecture, Routledge of Keegan, London Allen E. & Iano j. (2020), Fundamentals of Building Construction: materials & methods, 6th . Ed. John Wiley & Sons, NJ, USA Meghashyam, K. K. (2005). Reinforced Concrete Constructions for 21st C. New Delhi :J.M. Jaina
Periodicals, Web Sites, … etc.:	http:// www.greatbuilding.com http:// www.architecture.com

2.9. Facilities required for Teaching and Learning:

Different Facilities
Lecture Hall
Library Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives:

Program Objectives	Course Objective			
	CO1	CO2	CO3	CO4
PO2	*	*		
PO4			*	
PO6				*

3.2. Course Objectives VS Course Learning Outcomes:

Course Objectives	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
CO1	*		*			
CO2		*			*	
CO3						*
CO4				*		

3.3. Program Learning Outcomes VS Course Learning Outcomes:

Program Learning Outcomes	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
PLO13	*	*				
PLO14			*		*	
PLO15				*		*

3.4. Assessment Alignment Matrix:

PLO	PO	CLO	Teaching M.	Assessment M.
PLO13	PO2	CLO1 CLO2	• Lectures • Tutorials • Reports • Brain storming • Self learning • Discussion	• Mid term. • Reports • Projects • Assignments
PL014	PO4	CLO3	• Lectures • Tutorials • Project based learning • Projects • Reports	• Reports • Projects • Final exam
PLO15	PO6	CLO4 CLO5 CLO6	• Lecture. • Projects • Self - learning	• Projects • Mini Projects • Presentation • Final exam

Course Coordinator: Dr Ahmed Elsaadany

Head of Department: Prof. Dr. Zeinab Faisal

Date: 10 / 9 / 2023

Course Specification

1. Basic Information:

Program Title	Architectural Engineering Program			
Department Offering the program	Architectural Engineering Department			
Department Offering the course	Architectural Engineering Department			
Course Title	Quantities & Specifications	**Code**	ARC 313	
Type	**Compulsory** ☒	**Elective** ☐		
Semester	Level 3-1			
Teaching Hours	**Lec.**	**Tut.**	**Lab.**	**Credit hours**
	2	2	0	3

2. Professional Information:

2.1. Course description:

The course enhances Students' awareness of accuracy in respect of estimating needs of materials, construction elements, equipment's, or techniques whether quantitatively or qualitatively. It helps students to consider the impact of estimating quantities and deciding the specifications on the design and execution of buildings. The students are able to understand the process of generating, bidding, and performing construction contracts, components of direct and indirect construction costs, work breakdown, contingency and risk.

2.2. Course Objectives (CO):

At the end of course, the student will be able to:

Program objective		Course objective	
PO1	Apply a wide spectrum of engineering knowledge, science, and specialized skills with analytic, critical, and systemic thinking to identify and solve engineering problems in real life situation.	CO1	Recognize the types and the cost of finishing materials.
PO4	Use techniques, skills, and modern engineering tools necessary for architectural engineering practice.	CO2	Identify advanced techniques of modern engineering construction tools

2.3. Course Learning Outcomes (CLO's):

CBE/Program Learning Outcomes		Course Learning Outcomes	
A6-PLO6	Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements.	CLO1	Identify supervising monitoring the implementation of engineering projects.
		CLO2	Identify advanced technologies that meet technical requirements.
B4-PLO14	Transform design concepts into buildings and integrate plans into overall planning within the constraints of: project financing, project management, cost control and methods of project delivery; while having adequate knowledge of industries, organizations, regulations and procedures involved.	CLO3	Identify the constraints of: more complicated projects financing, project management, cost control
		CLO4	Describe the constraints of project delivery; while having adequate knowledge of industries, organizations, regulations
B5-PLO15	Prepare design project briefs and documents and understand the context of the architect in the construction industry, including the architect's role in the processes of bidding, procurement of architectural services and building production.	CLO5	demonstrate the advanced constraints of cost control
		CLO6	Interpret the constraints of the methods of project delivery.

Cognitive Domain	Psychomotor Domain	Affective Domain
CLO1,2,3,4	CLO5,6	---

2.4. Course Topics:

Course Topics	Week	Course LO's Covered					
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Introduction to course content and the main purpose of the course.	1	*		*			*
Explain some expressions in the field	2,3,4		*	*			
Explain how to plan the work in the field	5,6	*	*			*	*
Mid-term Exam	8	*					
Explain Excavation and backfilling	9	*	*			*	
Explain the concrete	10,11	*	*		*		*
Explain the finishing materials and stairs	12,13, 14	*		*	*	*	
Total	14	10	8	7	6	6	5

2.6 Teaching and Learning Methods:

Teaching and Learning Methods:	Course LO's Covered					
Methods	**CLO1**	**CLO2**	**CLO3**	**CLO4**	**CLO5**	**CLO6**
1. Lecture	*			*		
2. Tutorials			*	*	*	
3. Project-based Learning		*				*
4. Projects	*					
5.Report			*		*	
6.Self-Learning			*			*
Teaching and Learning Methods for Students with Special Needs:						
Methods						
1. Discussion Session						
2. Extra Lectures						
3. Provide different levels of books and materials						

2.7 Assessment Methods:

Assessment Methods:		Course LOs Covered					
Methods		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Formative Assessment Method							
1.Tests	Oral Test	*			*	*	*
	Midterm Exam	*					
	Quizzes			*			*
2.Reports				*			
3.Projects	Projects	*	*				
	Mini Projects			*			
4.Assignments				*	*	*	
5.Presentations		*	*		*	*	*
Summative Assessment Method							
3.Final Exam			*	*			*

2.7.1. Assessment Schedule & Grades Distribution:

Assessment Method	Week	Weighting of Asses.
1.Mid-term Exam	Week # 8	30%
2.Oral Test	Week # 13	5%
3.Discussions	Week # 9 & 15	5%
4.Projects	Week # 9 & 15	10%
5.Assignments	Week # 2,3,4,5,6,7,10,11, 12, 13,14	5%
6.Presentations	Week # 9 & 15	5%
7.Final Exam	Scheduled by the faculty council	40%
Total		100%

2.8. List of Reference:

Essential Books (Textbooks):	حســـاب الكميات والمواصـــفات، أحمد أبو عوده، مكتبة المجتمع العربي للنشـــر والتوزيع السلسلة: الهندسة المدنية، يناير 2014
Recommended Books:	الكميات والمواصفات، ماجد خلوصي، مكتبة المجتمع العربي للنشر والتوزيع السلسلة: الهندسة المعمارية، 2020
Periodicals, Web Sites, … etc.	http:// www.greatbuilding.com http:// www.architecture.com

2.9. Facilities required for Teaching and Learning:

Different Facilities
Lecture Hall
Library Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives:

Program Objectives	Course Objective	
	CO1	CO2
PO1	*	
PO4		*

3.2. Course Objectives VS Course Learning Outcomes:

Course Objectives	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
CO1	*	*				
CO2			*	*	*	*

3.3. Program Learning Outcomes VS Course Learning Outcomes:

Program Learning Outcomes	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
PLO6	*	*				
PLO14			*	*		
PLO15					*	*

3.4. Assessment Alignment Matrix:

PLO	PO	CLO	Teaching M.	Assessment M.
PLO6	PO1	CLO1 CLO2	• Lectures • Tutorials • Reports • Brainstorming • Self-learning • Discussion	• Mid-term. • Reports • Projects • Assignments
PL014	PO4	CLO3 CLO4	• Lectures • Project based learning. • Projects	• Reports • Projects • Final exam
PLO15	PO4	CLO5 CLO6	• Tutorials • Reports • Project based learning. • Self-learning	• Oral Test • Quizzes • Assignments • Presentation

Course Coordinator: Dr Ahmed Elsaadany

Head of Department: Prof. Dr. Zeinab Faisal

Date: 10 / 9 / 2023

Course Specification

1. Basic Information:

Program Title	Architectural Engineering Program			
Department Offering the program	Architectural Engineering Department			
Department Offering the course	Architectural Engineering Department			
Course Title	Introduction to Urban Design		**Code**	ARC 321
Type	**Compulsory** ☒		**Elective** ☐	
Semester	Level 3-1			
Teaching Hours	**Lec.**	**Tut.**	**Lab.**	**Credit hours**
	2	2	0	3

2. Professional Information:

2.1. Course description:

This course targets preparing the students to consider engineering inside an urban setting and features the situation of urban design regarding various degrees of preparation and plan. It includes models of urban analysis, contemporary theories of urban design and implementation strategies, supplemented by the illustration of methods of urban design practice. The course includes different urban analysis exercises and small-scale projects, which could deal with the design of a specific public space.

2.2. Course Objectives (CO):

Program objective		**Course objective**	
PO6	Strengthening students' ability to make decisions, solve problems, and develop architectural and urban solutions to develop and serve the local community.	CO1	Design innovative and appropriate solutions of urban problems.
PO7	Create architectural designs that satisfy both aesthetic, technical and meet building users' requirements	CO2	Apply the theoretical base of studying by the most important theories and trends, urban fabric, visual perception, appearance of urban formation.

2.3. Course Learning Outcomes (CLO's):

CBE/Program Learning Outcomes		Course Learning Outcomes	
B1-PLO11	Create architectural, urban and planning designs that satisfy both aesthetic and technical requirements, using adequate knowledge of: history and theory, related fine arts, local culture and heritage, technologies and human sciences.	CLO1	Recall the basic concepts, schools, trends and definitions of urban design.
		CLO2	Analyze different urban design solutions to obtain design criteria.
		CLO3	Use the different dimensions of urban design.
B2-PLO12	Produce designs that meet building users' requirements through understanding the relationship between people and buildings, and between buildings and their environment; and the need to relate buildings and the spaces between them to human needs and scale.	CLO4	Criticize urban projects to study the relationship between buildings and their environment.
		CLO5	Create innovative designs of urban spaces projects.

Cognitive Domain	Psychomotor Domain	Affective Domain
CLO1	CLO2,3,4,5	-----

2.4. Course Topics:

Course Topics	Week	Course LO's Covered				
		CLO1	CLO2	CLO3	CLO4	CLO5
Introduction to course content & urban design	1&2	*		*		
Traditions of thought in urban design	3	*	*	*		
The city image and its elements	4		*	*	*	
Form and space: quality of perception	5	*	*	*		
Urban morphology	6	*		*		*
Urban tissue & Introduction to project	7		*	*	*	
Mid-term Exam	8	*	*		*	
Introduction to environmental psychology	9	*		*	*	
How to study public life	10		*		*	*
Analysis of urban design projects	11	*			*	*
Similar project analysis	12		*		*	*
Semi-final Sketch	13.14		*		*	*
Final Sketch	15		*		*	*
Total		8	10	8	10	7

2.5 Teaching and Learning Methods:

Teaching and Learning Methods:	Course LO's Covered				
	CLO1	CLO2	CLO3	CLO4	CLO5
1. Lectures	*		*		
2. Tutorials		*			*
3. Problem-based Learning		*			*
5. Presentations				*	*
6. Case Study		*	*		
7. Projects	*	*		*	*
8. Discussion				*	*
Teaching and Learning Methods for Students with Special Needs:					
Methods					
1. Discussion Session					
2. Extra Lectures					
3. Provide different levels of books and materials					

2.6 Assessment Methods:

Assessment Methods:	Course LOs Covered				
	CLO1	CLO2	CLO3	CLO4	CLO5
Formative Assessment Method					
1. Midterm Exam	*	*		*	
2. Discussions				*	*
3. Projects	*	*		*	*
4. Assignments		*	*		
5. Presentations			*		*
Summative Assessment Method					
Final Exam	*		*		*

2.6.1. Assessment Schedule & Grades Distribution:

Assessment Method	Week	Weighting of Asses.
Mid-term Exam	Week # 8	30%
Discussions	Week # 9 & 15	5%
Projects	Week # 15	10%
Assignments	Week # 2,3,4,5,7	10%
Presentations	Week # 9 & 15	5%
Final Exam	Scheduled by the faculty council	40%
Total		100%

2.7. List of Reference:

Essential Books (Textbooks):	Gehl, J., Svarre, B., How to Study Public Life, Island Press, 2013
	Carmona ,Matthew,Public Places Urban Spaces :The Dimensions of Urban Design ,2021 ,Routledge
	Lang ,Jon Lang Urban Design: A Typology of Procedures and ProductsBy.2017
Recommended Books:	Lynch, K., The Image of the City, MIT Press, 1960.
Periodicals, Web Sites, … etc:	----------

2.8. Facilities required for Teaching and Learning:

Different Facilities
Lecture Hall
Library usage
Data show
White board

3. Matrix:

3.1. Program Objectives VS Course Objectives:

Program Objectives	Course Objective	
	CO1	CO2
PO6	*	
PO7		*

3.2. Course Objectives VS Course Learning Outcomes:

Course Objectives	Course Learning Outcomes				
	CLO1	CLO2	CLO3	CLO4	CLO5
CO1		*		*	*
CO2	*		*		

3.3. Program Learning Outcomes VS Course Learning Outcomes:

Program Learning Outcomes	Course Learning Outcomes				
	CLO1	CLO2	CLO3	CLO4	CLO5
PLO11	*	*	*		
PLO12				*	*

3.4. Assessment Alignment Matrix:

PLO's	PO	CLO's	Teaching M.	Assessment M.
PLO11	PO6 PO7	CLO1 CLO2 CLO3	• Lecture • Projects • Tutorials • Problem-based Learning • Case Study	• Midterm Exam • Projects • Assignments • Presentations • Final Exam
PLO12	PO6 PO7	CLO4 CLO5	• Presentations • Projects • Discussions • Tutorials • Problem-based Learning	• Mid-term Exam • Discussions • Projects • Final Exam • Presentations

Course Coordinator: Dr. Mona Yehia Shedid

Head of Department: Prof. Dr. Zeinab Faisal
Date: 10 / 9 / 2023

Course Specification

1. Basic Information:

Program Title	Architectural Engineering Program			
Department Offering the program	Architectural Engineering Department			
Department Offering the course	Civil Engineering Department			
Course Title	Soil Mechanics & Foundations	**Code**	CIV 339	
Type	**Compulsory** ☒	**Elective** ☐		
Semester	Level 3-1			
Teaching Hours	**Lec.**	**Tut.**	**Lab.**	**Credit hours**
	2	0	2	3

2. Professional Information:

Pre-requisites: CIV 259

2.1. Course Description:

To study soil characteristics and mechanics, and the selection and design of foundations. Soil properties - Soil classification - Soil compaction - Stresses in soil - Soil compressibility - Theory of consolidation - Lateral earth pressure - Design of shallow foundations - Pile foundations - Retaining walls - Site investigations and selection of suitable foundations.

2.2. Course Objectives (CO):

Program objective		Course objective	
PO2	Behave professionally and adhere to engineering ethics and standards and work to develop the profession and the community and promote sustainability principles.	CO1	Apply the laws and engineering sciences learned through understanding the behavior of soil and the use of analytical and critical thinking to solve the surrounding realistic engineering problems and study the soil-structure interaction to reach the best design conditions.
PO4	Use techniques, skills, and modern engineering tools necessary for engineering practice.	CO2	Design the different types of shallow foundations and deep foundations taking into consideration the safety risks, applicable standards, and economics.

2.3. Course Learning Outcomes (CLO's):

CBE/Program Learning Outcomes		Course Learning Outcomes	
A2-PLO2	Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess, and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	CLO1	Evaluate the variable soil parameters according to the knowledge of soil properties.
		CLO2	Analyze the index properties of soils and soil classification of the different types of soils.
		CLO3	Evaluate the stresses on soil due to different loads and the theory of consolidation and soil compressibility.
B3-PLO13	Select appropriate and sustainable technologies for construction of buildings, infrastructures, and water structures; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics.	CLO4	Design of the shallow foundation, taking into consideration the selection of the most appropriate construction methods.
		CLO5	Design of the pile foundation and the retaining walls, taking into account the selection of the most appropriate and sustainable technologies and implementation methods to reduce the cost.

Cognitive Domain	Psychomotor Domain	Affective Domain
CLO1	CLO2, 3,4	CLO5

2.4. Course Topics:

Course Topics	Week	Course LO's Covered				
		CLO1	CLO2	CLO3	CLO4	CLO5
Soil Properties	1	*				
Soil Properties	2	*				
Index properties of soils and soil classification	3		*			
Index properties of soils and soil classification	4		*			
Index properties of soils and soil classification	5		*			
Stresses in Soil	6			*		
Theory of consolidation and soil compressibility.	7			*		
Midterm exam	8	*	*	*		
Site investigations and selection of suitable foundations	9				*	
Design of shallow foundations	10				*	
Design of shallow foundations	11				*	
Pile foundations	12					*
Pile foundations	13					*
Retaining walls 1	14					*
Retaining walls 2	15					*
Total	**15**	**3**	**4**	**3**	**3**	**4**

2.5 Teaching and Learning Methods:

Teaching and Learning Methods:	Course LO's Covered				
Methods	**CLO1**	**CLO2**	**CLO3**	**CLO4**	**CLO5**
1. Lecture	*	*	*	*	
2. Tutorials		*	*	*	*
3. Discussion					*
Teaching and Learning Methods for Students with Special Needs:					
Methods					
1. Discussion Session					
2. Extra Lectures					
3. Provide different levels of books and materials					

2.6 Assessment Methods:

Assessment Methods:		Course LOs Covered				
Methods		CLO1	CLO2	CLO3	CLO4	CLO5
Formative Assessment Method						
1.Tests	Midterm Exam	*	*	*		
	Oral Exam		*		*	
2.Assignments		*		*	*	*
3.Discussion						*
Summative Assessment Method						
4.Final Exam			*	*	*	*

2.6.1. Assessment Schedule & Grades Distribution:

Assessment Method	Week	Weighting of Asses.
1.Assignments	2 to 6 & 9 to 13	5 %
2.Midterm exam	8	30 %
3.Oral Exam	5&11	20 %
4.Discussion	13	5%
5.Final exam	Scheduled by the faculty council	40%
Total		

2.7. List of References:

Essential Books (Textbooks):	• El-Kasaby, E. A., Soil Mechanics, Dar Al-Kutub Al-Almia, Cairo, 5th Ed., (21371/2013), ISBN 978 – 977 – 726 – 041 – 1, 2014. • El-Kasaby, E. A., Engineering of Surface Foundations, Dar Al-Kutub Al-Almia, Cairo, 5th Ed., (19440/2015), ISBN 978 – 977 – 726 – 139 – 5, 2015. • El-Kasaby, E. A., Design and Construction of Deep and Special Foundations, Dar Al-Kutub Al-Almia, Cairo, 4th Ed., (10651/2016), ISBN 978 – 977 – 726 – 168 – 5, 2016. • Hemed a, Advances in Soil Mechanics and Foundation Engineering, IntechOpen, London ISBN: 978-1-78984-290-6, 2020.
Recommended Books:	• Bowles, J., Foundation Analysis and Design, McGraw - Hill, 5th. Ed., ISBN 978 – 007 - 912 – 247 – 7, 2009.

2.8. Facilities required for Teaching and Learning

Different Facilities
Lecture Hall
Library Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives:

Program Objectives	Course Objective	
	CO1	CO2
PO2	*	
PO4		*

3.2. Course Objectives VS Course Learning Outcomes:

Course Objectives	Course Learning Outcomes				
	CLO1	CLO2	CLO3	CLO4	CLO5
CO1	*	*	*		
CO2				*	*

3.3. Program Learning Outcomes VS Course Learning Outcomes:

Program Learning Outcomes	Course Learning Outcomes				
	CLO1	CLO2	CLO3	CLO4	CLO5
PLO2	*	*	*		
PLO13				*	*

3.4. Assessment Alignment Matrix:

PLO	PO	CLO	Teaching M.	Assessment M.
PLO2	PO2	CLO1	• Lecture • Tutorials	• Written Exams • Assignments
		CLO2	• Lecture • Tutorials	• Written Exams • Oral Exam
		CLO3	• Lecture • Tutorials	• Written Exams • Assignments
PLO13	PO4	CLO4	• Lecture • Tutorials	• Written Exams • Assignments • Oral Exam
		CLO5	• Tutorials • Discussion	• Written Exams • Assignments • Discussion

Course Coordinator: Dr. Mohab Roshdy Ahmed

Dr. Mahmoud Awaad Gomaa

Head of Department: Prof. Dr. Zeinab Faisal

Date: 10 / 9 / 2023

Course Specification

1. Basic Information:

Program Title	Architectural Engineering Program				
Department Offering the program	Architectural Engineering Department				
Department Offering the course	Architectural Engineering Department				
Course Title	Senior Design Project-2			**Code**	ARC 362
Type	**Compulsory** ☒		**Elective** ☐		
Semester	Level 3-2				
Teaching Hours	**Lec.**	**Tut.**	**Lab.**	**Credit hours**	
	2	4	0	4	

2. Professional Information:

Pre-requisites: ARC 361

2.1. Course description:

This course represents complementary 2nd. Stage of the (Final Senior Design graduation project), it is the creative and application part of the course, which deals with (Urban & Architectural) design development, then evaluating the design proposal (s)/Appraisal(s) – to get the optimum (Urban &Architectural) solution, depending upon well strategic understanding by another engineering disciplines (Structural -MEP-Traffic- Landscape…), then presenting the solution graphically and by aids of I.T. available tools.

2.2. Course Objectives (CO):

Program objective		**Course objective**	
PO1	Apply a wide spectrum of fundamentals of the science and specialized skills with analytic, creativity and critical thinking to identify and solve architecture design problems in real life situation.	CO1	**Explore and Study** roots of [Social– Cultural – Environmental– Economic – Urban] potentials/attributes of a proposed graduation project theme(s) each year (Individually/ in groups).
PO2	Prepare qualified innovative architects who can adhere to architectural engineering ethics and standards and work to develop the profession and the community and promote sustainability principles.	CO2	**Analyze** [Site, Social, Architectural needs and Urban givens/ potentials] for Similar Mega projects, to extract innovative/philosophical conceptual approach to proposed graduation project.
PO4	Use techniques, skills, and modern engineering tools necessary for architectural engineering practice.	CO3	**Propose,** a detailed Functional Briefing (Program) for graduation project by (Areas/volumes), which compromises all [Social– Cultural – Environmental– Economic – Urban] Recent and Futuristic needs, and suites a multi-purpose usage.
PO6	Strengthening students' ability to make decisions, solve problems, and develop architectural and urban solutions to develop and serve the local community.	CO4	**Generate** proper design ideas /Concepts/ Proposals that integrates and assimilates of all types of knowledge gained in previous years; [theories /history of architecture, structure, construction technology, environmental design, and humanities].
PO7	Create architectural designs that satisfy both aesthetic, technical and meet building users' requirements	CO5	**Design** Solutions for Architectural/Urban design problems and solve real human problems which meet their recent & future needs.

2.3. Course Learning Outcomes (CLO's):

CBE/Program Learning Outcomes		Course Learning Outcomes	
A3-PLO3	Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical, and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.	CLO1	**Analyze** Mega projects/ buildings design Concepts/solutions to **Conclude** design guidelines, criteria & standards, individually or in groups.
		CLO2	**Propose** multiple architectural/Urban Approaches/Concepts to be evaluated from (Social- Cultural – Environmental – Technological –Economic - …) points of views.
A6-PLO6	Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements.	CLO3	**Study**, site analysis for project location
		CLO4	**Propose,** a detailed Project Briefing depends on a comprehensive study of (functional –human –Economic) Recent and future needs.
A9-PLO9	Use creative, innovative, and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.	CLO5	**Apply** the knowledge of: Technology and Sustainability and their impact of that on a project design.
		CLO6	**Design** all necessary architectural drawings that meet functional, technical and aesthetics requirements.
B2-PLO12	Produce designs that meet building users' requirements through understanding the relationship between people and buildings, and between buildings and their environment; and the need to relate buildings and the spaces between them to human needs and scale.	CLO7	**Generate**, futuristic architectural project that consider functional requirements, future needs, and modern technology, using sufficient knowledge of the following: (history/theories of architecture, culture, arts, local heritage, humanities, and advanced technologies).
B3-PLO13	Generate ecologically responsible, environmental conservation and rehabilitation designs; through understanding of structural design, construction, technology, and engineering problems associated with building designs.	CLO8	**Design** project that meets users' Requirements by studying the relationship among (users- project - urban/social– context and environment); then connecting buildings and spaces by studying human needs.

2.4. Course Topics:

Course Topics	Week	Course LO's Covered							
		CLO 1	CLO 2	CLO 3	CLO 4	CLO 5	CLO 6	CLO 7	CLO 8
"Conceptual Form Generation" (Form – Context – Technology – Environment – Examples).	1				*	*			
"3D Zoning & Design process" (Form – Piazza – Technology)	2		*	*		*			
Studio work development: [Concept – 3D study Model / Visualization].	3					*	*		
Studio work development: [Concept –Lay-out – 3D study Model/ Visualization].	4	*		*		*	*		
Studio work development: [Lay-out – Master/upper plans – Conceptual sections].	5					*	*		
Studio work development: [Master/upper plans – sections design].	6					*	*		
First stage:(Presentation / Criticism)	7	*				*	*		
Studio work development: [Technical sections Design – Facades].	8						*		
Mid-Term Exam:	9								
Studio work development: [Technical sections Design – Facades - Piazza].	10	*	*	*			*	*	
Second stage:(Presentation/ Criticism) [Lay-out – Master/upper plans –Sections – Facades – 3D Visualization].	11				*	*		*	
Studio work development: Feedback [Technical sections Design – Facades – Piazza– 3D Visualization].	12	*					*	*	
Studio work development: Feedback [Technical sections Design – Facades – Piazza– 3D Visualization].	13			*			*	*	
Third stage:(Presentation / Criticism) [3D Technical section –Lay-out – Master/upper plans – Sections – Facades – 3D Visualization].	14			*				*	*
Technical studies & Final feed back	15							*	*
Final stage :(General Presentation / Internal Jury Criticism) [3D Technical section –Lay-out – Master/upper plans – Sections – Facades – 3D Visualization].	16	*				*	*	*	*
Flow up	17						*		
Flow up	18					*		*	*
Start of Final Submission (Last two days for Projects delivery & installation + Final Model)	19								
	20	*	*	*					
Final External jury	21					*	*	*	*

2.5 Teaching and Learning Methods:

Teaching and Learning Methods:	Course LO's Covered							
	CLO 1	CLO 2	CLO 3	CLO 4	CLO 5	CLO 6	CLO 7	CLO 8
1. Lectures	*	*						
2.Design studio			*		*	*	*	
3.Problem-based Learning	*	*						
5. Presentations				*				
6. Case Study	*							
7. Projects	*	*				*	*	*
8. Discussion		*					*	
9. Modeling		*	*					*
Teaching and Learning Methods for Students with Special Needs:								
Methods								
1. Discussion Session								
2. Extra Lectures								
3. Provide different levels of books and materials								

2.6 Assessment Methods:

Assessment Methods:		Course LOs Covered							
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO 7	CLO 8
Formative Assessment Method									
1.Tests	Oral Test	*	*		*				
	1st Term submissions	*		*	*				
2. Discussions			*						
3. Projects			*			*	*	*	*
4. Assignments / Stages							*		
5. Presentations		*				*			*
6. Modeling				*					*
Summative Assessment Method									
7.Final Jury				*		*	*	*	*

2.6.1. Assessment Schedule & Grades Distribution:

Assessment Method	Week	Weighting of Asses.	
1.Discussions	Week # 7 &12	5%	**25%**
2.Projects	Week # 2,3,4 (1.St. Sem.)	5 %	
3.Assignments / Flow ups	Week # 2,3,4,5,6,9 ,10,11, 14	5 %	
4.Presentations (Stages)	Week # 7 ,11,14 & 16	5%	
5.Modeling	Week # 2,3,4&12(1.St. Sem.)	5%	
6.Final jury	Scheduled by the faculty council	25%	**25%**
Total		**50 %**	

2.7. List of Reference:

Essential Books (Textbooks):	▪ Time saver: for Building types, 4th. Edition, De Chiara &M.Crosbie, McG.Hill,NY.USA, 2001 ▪ Architecture: Form, space, and order, FDK Ching - 2014 ,John Wiley & Sons ▪ The architectural concept book, James Tait, Thames &Hudson,2019, USA. ▪ Architecture Competitions Annual series I,II,….IIV, Archiworld, 2016:2020,HongKong.
Recommended Books:	▪ Process + Diagram, Archi-lab press, 2020. ▪ Annual Competition A awards parts (8,9&10), archiworld, Seoul, 2018,2019,2020. ▪ Nufert Architects' Data, 5th Edition, SBN: 978-1-119-28435- 2019 Wiley Blackwell. ▪ Panel layout, (4, 5&6), Damdi , 2018. ▪ The design of small projects(Public, Education, Culture &sports),Archiworld,2020
Periodicals, Web Sites, … etc.:	http:// www.archnet.org http:// www.Foster+partners.org http:// www.big.dk http:// www.architecture digist.com http:// www.architecture.com

2.8. Facilities required for Teaching and Learning:

Different Facilities
Design studio
Library usage
Data show
Site visit (Optional)
White board

3. Matrix:

3.1. Program Objectives VS Course Objectives:

Program Objectives	Course Objective				
	CO1	CO2	CO3	CO4	CO5
PO1	*				
PO2		*			
PO4			*		
PO6				*	
PO7					*

3.2. Course Objectives VS Course Learning Outcomes:

Course Objectives	Course Learning Outcomes							
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7	CLO8
CO1	*		*					
CO2			*		*			
CO3		*		*				
CO4							*	
CO5						*		*

3.3. Program Learning Outcomes VS Course Learning Outcomes:

Program Objectives	Course Learning Outcomes							
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7	CLO8
PLO3	*	*						
PLO6			*	*				
PLO9					*	*		
PLO12							*	
PLO13								*

3.4. Assessment Alignment Matrix:

PLOs	PO	CLOs	Teaching M.	Assessment M.
PLO 3:	PO1	CLO1	• Problem-based Learning • Case study • Projects • Discussion	• Oral Test • Discussions • Presentation
		CLO2	• Presentation • Discussions • Modeling	• Modeling • Discussions • Presentation
PLO 6:	PO2	CLO3	• Lectures • Design studio • Case Study • Projects	• Presentation • Assignments
		CLO4	• Design studio • Presentation	• Assignments
PLO 9:	PO4	CLO5	• Design studio • Problem-based Learning • Projects	• Discussions • Assignments • Projects • Assignments • Presentations • Modeling
		CLO6	• Lectures • Presentation • Projects • Discussion • Modeling	• Discussions • Projects • Presentations
PLO12:	PO7	CLO7	• Design studio • Presentation • Projects • Discussion	• assignments • Presentation • Discussions
PLO13:		CLO8	• Design studio • Presentation • Projects • Discussion • Modeling	• Presentation • Discussions

Course Coordinator: Dr.Almoataz bellah Gamal eldien

Head of Department: Prof. Dr. Zeinab Faisal

Date: 10 / 9 / 202

Course Specification

1. Basic Information:

Program Title	Architectural Engineering Program			
Department Offering the program	Architectural Engineering Department			
Department Offering the course	Architectural Engineering Department			
Course Title	Working Drawing 3		**Code**	ARC 312
Type	**Compulsory** ☒		**Elective** ☐	
Semester	Level 3-2			
Teaching Hours	**Lec.**	**Tut.**	**Lab.**	**Credit hours**
	1	4	0	3

2. Professional Information:

Pre-requisites: ARC 311

2.1. Course description:

The course introduces preparation of integrated execution documents for projects, preparation of working drawings of a pre-designed large-scale project, the writing of specifications documents presented with working drawings, structures, quantities, and specifications, plumbing and sanitary systems, electrical and mechanical systems, and shop and as built drawings.

2.2. Course Objectives (CO):

At the end of course, the student will be able to:

Program objective		Course objective	
PO2	Prepare qualified innovative architects who can adhere to architectural engineering ethics and standards and work to develop the profession and the community and promote sustainability principles.	CO1	Apply different sustainable finishing materials in working drawings.
PO4	Use techniques, skills, and modern engineering tools necessary for architectural engineering practice.	CO2	Identify different techniques and modern engineering tools of construction.
PO6	Strengthening students' ability to make decisions, solve problems, and develop architectural and urban solutions to develop and serve the local community.	CO3	Recognize the different engineering ethics and standards.

2.3. Course Learning Outcomes (CLO's):

CBE/Program Learning Outcomes		Course Learning Outcomes	
B3-PLO13	Generate ecologically responsible, environmental conservation and rehabilitation designs; through understanding of: structural design, construction, technology and engineering problems associated with building designs.	CLO1	Outline principles of environmental structure
		CLO2	Identify all necessary construction, technology and working drawings that meet technical requirements.
B4-PLO14	Transform design concepts into buildings and integrate plans into overall planning within the constraints of: project financing, project management, cost control and methods of project delivery; while having adequate knowledge of industries, organizations, regulations and procedures involved.	CLO3	Determine the constraints of: project financing,
		CLO4	Understand the context of the architect in the construction industry, including the architect's role in the processes of bidding, procurement of architectural services and building production.
B5-PLO15	Prepare design project briefs and documents, and understand the context of the architect in the construction industry, including the architect's role in the processes of bidding, procurement of architectural services and building production.	CLO5	Identify the constraints of: project management,
		CLO6	Outline the constraints of: cost control and methods of project delivery

Cognitive Domain	Psychomotor Domain	Affective Domain
CLO1,3,5	CLO2,6	CLO4

2.4. Course Topics:

Course Topics	Week	Course LO's Covered					
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Introduction to course content	1	*		*			*
Explain how to draw working plans with large scale	2,3,4		*	*		*	
Explain how to draw working sections with large scale	5,6,7	*	*		*		
Mid-term Exam	8					*	
Explain how to draw working elevations with large scale	9	*	*				*
Explain how to draw working layout with large scale	10,11	*	*				*
Explain how to draw shop drawing	12	*		*	*		
Explain how to draw working advanced details	13			*	*	*	
Final project	14,15			*	*	*	*
Total		**8**	**9**	**9**	**7**	**7**	**6**

2.6 Teaching and Learning Methods:

Teaching and Learning Methods:	Course LO's Covered					
Methods	**CLO1**	**CLO2**	**CLO3**	**CLO4**	**CLO5**	**CLO6**
1. Lecture	*			*	*	*
2. Tutorials		*	*		*	*
3. Project-based Learning	*	*				
4. Projects	*			*		
Report			*		*	
Self-Learning			*	*		*
Teaching and Learning Methods for Students with Special Needs:						
Methods						
1. Discussion Session						
2. Extra Lectures						
3. Provide different levels of books and materials						

2.6 Assessment Methods

Assessment Methods:		Course LOs Covered					
Methods		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Formative Assessment Method							
1.Tests	Oral Test	*				*	
	Midterm Exam	*					*
	Quizzes			*			*
2.Reports				*			
3.Projects	Projects	*	*		*		
	Mini Projects			*	*		
4.Assignments				*		*	
5.Presentations		*	*		*		
Summative Assessment Method							
6.Final Exam			*	*	*		

2.7.1. Assessment Schedule & Grades Distribution:

Assessment Method	Week	Weighting of Asses.
1.Mid-term Exam	Week # 8	30%
2.Oral Test	Week # 13	5%
3.Discussions	Week # 9 & 15	5%
4.Projects	Week # 9 & 15	15%
5.Assignments	Week # 2,3,4,5,6,7,10,11, 12, 13,14	10%
6.Presentations	Week # 9 & 15	5%
7.Final Exam	Scheduled by the faculty council	40%
Total		100%

2.8. List of Reference:

Essential Books (Textbooks):	محمد أحمد عبد الله 2018.الرســـومات التنفيذية والتفاصـــيل المعمارية. مكتبة الأنجلو المصرية. مصر.
Recommended Books:	R Conway and Roenisch, 1987, Understanding Architecture, Routledge of Keegan, London Allen E. & Iano j. (2020), Fundamentals of Building Construction: materials & methods, 6th . Ed. John Wiley &,USA Meghashyam, K. K. (2005). Reinforced Concrete Constructions for 21st C. New Delhi :J.M. Jaina
Periodicals, Web Sites, … etc:	http:// www.greatbuilding.com http:// www.architecture.com

2.9. Facilities required for Teaching and Learning:

Different Facilities
Lecture Hall
Library Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives:

Program Objectives	Course Objective			
	CO1	CO2	CO3	CO4
PO2	*	*		
PO4			*	
PO6				*

3.2. Course Objectives VS Course Learning Outcomes:

Course Objectives	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
CO1	*		*			
CO2		*			*	
CO3						*
CO4				*		

3.3. Program Learning Outcomes VS Course Learning Outcomes:

Program Learning Outcomes	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
PLO13	*	*				
PLO14			*		*	
PLO15				*		*

3.4. Assessment Alignment Matrix:

PLO	PO	CLO	Teaching M.	Assessment M.
PLO13	PO2	CLO1 CLO2	• Lectures • Tutorials • Reports • Brainstorming • Self-learning • Discussion	• Midterm. • Reports • Projects • Assignments
PL014	PO4	CLO3	• Lectures • Tutorials • Project based learning. • Projects • Reports	• Reports • Projects • Final exam
PLO15	PO6	CLO4 CLO5 CLO6	• Lecture. • Projects • Self - learning	• Projects • Mini Projects • Presentation • Final exam

Course Coordinator: Dr Ahmed Elsaadany

Head of Department: Prof. Dr. Zeinab Faisal

Date: 10 / 9 / 2023

Course Specification

1. Basic Information:

Program Title	Architectural Engineering Program			
Department Offering the program	Architectural Engineering Department			
Department Offering the course	Architectural Engineering Department			
Course Title	Theory of Architecture 3		**Code**	ARC 334
Type	**Compulsory ☒**	**Elective ☐**		
Semester	Level 3-2			
Teaching Hours	**Lec.**	**Tut.**	**Lab.**	**Credit hours**
	2	1	0	2

2. Professional Information:

Pre-requisites: ARC 231

2.1. Course Description:

The course introduces the students to the overall perspective of modern and contemporary architecture through the review, analysis and criticism of their concepts, philosophies, and ideologies such as: The Bauhaus and Modernism; International Styles; Organic architecture; Expressionism, Romanticism, Post modernism; Eclecticism, De-constructivism, etc. Topics also include formulation and analysis of architectural program together with theories/principles of designing community facilities such as, cultural, health, recreational, touristic, etc. buildings.

2.2. Course Objectives (CO):

At the end of the course, the student will be able to:

Program objective		**Course objective**	
PO4	Use techniques, skills, and modern engineering tools necessary for architectural engineering practice.	CO1	Classify the impacts of engineering solutions on society & environment.
Po5	Master self-learning and life-long learning strategies to communicate effectively in academic/professional fields.	CO2	Select appropriate solutions for engineering problems based on analytical thinking
Po6	Strengthening students' ability to make decisions, solve problems, and develop architectural and urban solutions to develop and serve the local community	CO3	Combine, exchange, and assess different ideas, views, and knowledge from a range of sources
PO7	Create architectural designs that satisfy both aesthetic, technical and meet building users' requirements	CO4	Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems

2.3. Course Learning Outcomes (CLO's):

CBE/Program Learning Outcomes		Course Learning Outcomes	
A5-PLO5	Practice research techniques and methods of investigation as an inherent part of learning.	CLO1	Discuss, informed opinions appropriate to specific context and circumstances affecting architecture profession & practice.
		CLO2	Sketch Manual drafting and freehand sketching.
B1-PLO11	Create architectural, urban and planning designs that satisfy both aesthetic and technical requirements, using adequate knowledge of history and theory, related fine arts, local culture and heritage, technologies and human sciences.	CLO3	Study Theories and histories of architecture, planning, urban design, and other related disciplines
		CLO4	Analyze the range of patterns and traditions that have shaped and sustained cultures. and the way that they can inform design process
		CLO5	Select appropriate solutions for engineering problems based on analytical thinking.

Cognitive Domain	Psychomotor Domain	Affective Domain
CLO3	CLO1- CLO4-CLO5	CLO2

2.4. Course Topics:

Course Topics	Week	Course LO's Covered				
		CLO1	CLO2	CLO3	CLO4	CLO5
Introduction and general definition of the subject of theories of architecture - architecture in the 19-20th century	1			*		
Introduction and general definition of the subject of theories of architecture - architecture in the 19-20th century	2			*		
Prevailing architectural trends and schools during the nineteenth century	3					*
Prevailing architectural trends and schools during the twentieth century	4					*
Modernism (first and second generation of architects)	5			*	*	*
The third generation of architects and the postmodern trend	6		*	*		
Hi-tech direction	7				*	*
Mid-term Exam	8					*
Deconstructionism (Frank Gehry - Zaha Hadid)	9	*		*		*
Aga Khan Award	10		*			
(Pritzker Prize (Nobel Architecture)	11	*		*	*	
Folk Arts and Architecture in Egypt (Hassan Fathy - Ramses Wissa Wasef	12		*			
The architects Mario Botta - Rasem Badran - Abdel Halim Ibrahim - Abdel Wahed El Wakeel	13	*	*		*	
Semi-final sketch	14		*	*		*
Final Sketch & Physical Model	15	*		*	*	*
Total	15	4	5	8	5	8

2.5 Teaching and Learning Methods:

Teaching and Learning Methods:	Course LO's Covered				
	CLO1	CLO2	CLO3	CLO4	CLO5
1. Lectures		*	*		
2. Design studio	*		*	*	*
3. Problem-based Learning		*	*		
4. Presentations	*	*		*	*
5. Projects	*	*	*	*	*
6. Discussion		*	*	*	
7. Modeling	*			*	
Teaching and Learning Methods for Students with Special Needs:					
Methods					
1. Discussion Session					
2. Extra Lectures					
3. Provide different levels of books and materials					

2.6 Assessment Methods:

Assessment Methods:		Course LOs Covered				
		CLO1	CLO2	CLO3	CLO4	CLO5
Formative Assessment Method						
1.Tests	Oral Test	*		*		
	Midterm Exam					*
2. Discussions			*	*		
3. Projects		*	*		*	*
4. Assignments			*		*	*
5. Presentations		*				
6. Modeling		*				
Summative Assessment Method						
7.Final Exam				*	*	*

2.6.1. Assessment Schedule & Grades Distribution:

Assessment Method	Week	Weighting of Asses.
1.Mid-term Exam	Week # 8	30%
2.Oral Test	Week # 13	5%
3.Discussions	Week # 9 & 15	5%
4.Projects	Week # 9 & 15	5%
5.Assignments	Week # 2,3,4,5,6,7,10,11, 12, 13,14	5%
6.Presentations	Week # 9 & 15	5%
7.Modeling	Week # 9 & 15	5%
8.Final Exam	Scheduled by the faculty council	40%
Total		100%

2.7. List of Reference:

Essential Books (Textbooks):	عمارة القرن العشرين، تأليف: عرفان سامي(مؤلف) ; اللغة: عربي ; النشر: القاهرة (مصر):دار نافع للطباعة و النشر 1979 ; المكان: غزة-المكتبة المركزية-مراجع ع طلاب
Recommended Books:	الأتجهات المعمارية المعاصرة, أ.د. ايمان محمد عيد, دار الفكر العربى, الفاهرة, 2020 Banister Fletcher and Dan Cruickshank, Sir Banister Fletcher's History of Architecture, Arch. Press 20th edition ,1996.
Periodicals, Web Sites, … etc.:	http://www.conceptsindesign.com/

2.8. Facilities required for Teaching and Learning:

Different Facilities
Design studio
Library usage
Data show
White board

3. Matrix:

3.1. Program Objectives VS Course Objectives:

Program Objectives		Course Objective		
	CO1	CO2	CO3	Co4
PO4	*			
PO5			*	
PO6		*		
PO7				*

3.2. Course Objectives VS Course Learning Outcomes:

Course Objectives	Course Learning Outcomes				
	CLO1	CLO2	CLO3	CLO4	CLO5
CO1	*		*		*
CO2			*	*	*
CO3		*		*	
CO4	*	*			

3.3. Program Learning Outcomes VS Course Learning Outcomes:

Program Learning Outcomes	Course Learning Outcomes				
	CLO1	CLO2	CLO3	CLO4	CLO5
PLO5	*	*			
PLO11			*	*	*

3.4. Assessment Alignment Matrix:

PLOs	PO	CLOs	Teaching M.	Assessment M.
PLO5	PO4 PO5	CLO1 CLO2	• 1.Design studio • Problem-based Learning • Projects • Discussion • Lectures • Presentation • Modeling	• Oral Test • Presentation • Projects • Modeling • Discussion • Assignments
PLO11	PO6 PO7	CLO3 CLO4 CLO5	• Lectures • 2Design studio • Problem-based Learning • Discussion • Presentations • Projects • Modeling	• Oral Test • Discussions • Final Exam • Projects • Assignments • Midterm Exam

Course Coordinator: Dr. Rasha Ahmed Reyad
Head of Department: Prof. Dr. Zeinab Faisal
Date: 10 / 9 / 2023