KINGDOM OF SAUDI ARABIA, MINISTRY OF EDUCATION
JAZAN UNIVERSITY, COLLEGE OF ENGINEERING

UNDERGRADUATE BULLETIN

FOR COLLAGE OF ENGINEERING

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Bachelor of Science in

Architecture Engineering Program

Preface

In the view of satisfying the essential needs of the industries and the government of Kingdom of Saudi Arabia, the Bachelor of Science in Architecture Engineering (BSAE) Program is introduced at the College of Engineering in Jazan University .

In the face of the progressive developments, the Architecture Engineering Department has maintained a strong commitment to provide high quality programs and services by conscientiously evaluating priorities and efficiencies of educational functions. Continuous revisions in curriculum have been updated based on the requirements of industries with respect to the recent technological developments. The revisions and modifications with reference to the standards of International Universities provided an opportunity to self evaluate effectiveness of educational procedures and practices. The redesigned program consists of sequential and progressive courses. These courses provide the students with the fundamental knowledge of mathematical and scientific subjects with the basics of Architecture Engineering. The curriculum consists of a broad range of subjects that form the foundation of the Architecture engineering discipline including the importance of engineering design.

The developed program is prepared to satisfy the university, college, and department requirements. The university requests different topics and highlight different needs, while the college requests involve basic science and other related engineering courses. The department requests include core courses in different Architecture engineering disciplines. For the sake of quality assessment and academic accreditation, the BSAE program is designed according to both *"The National Commission for Academic Accreditation and Assessment* (*NCAAA*)*"* and *"Accreditation Board for Engineering and Technology* (*ABET*), *Inc*.".

1. The Bachelor of Science in Architecture Engineering Program

The Bachelor of Science in Architecture Engineering (BSAE) Program at the College of Engineering in Jazan University started in the academic year of (1431-1432H). The program focuses on the progressive development in the Architecture field in Kingdom of Saudi Arabia, and the continuous development in the Architecture engineering field. During the redesign of the program and its curriculum, programs of similar ranked engineering institutes, either in the Kingdom of Saudi Arabia or over the world, are reviewed as a term of reference.

1.1 BSAE Program Vision

The vision of the Bachelor of Science in Architecture Engineering Program at the College of Engineering in Jazan University is to ensure a high quality education experiences to Achieve Architecture engineering education standards and “Insure that it is one of the leading programs Which contribute to achieving the vision of the Kingdom of Saudi Arabia 2030”.

1.2 BSAE Program Mission

The mission of the Architectural Engineering program is to "educate students with high standards that meet the needs of the international and local labor market. Qualify students to complete their postgraduate in the fields of architecture Engineering and architectural Engineering design, by providing the graduate with advanced skills which Enhance lifelong career development.", especially in the fields of Architecture Design, sustainability, building technology, and building information modeling.
Source : https://www.jazanu.edu.sa/ar/colleges/college-engineering/architectural-engineering

1.3 BSAE Program Objectives

The main strategic objectives of the BSAE Program at the College of Engineering in

PEO 1: Perform and practice Advanced Architecture engineering science like sustainable Design, building technology and building information modelling;

PEO 2: Practicing the design of building systems, managing building projects and solving related problems based on sound engineering principles, and ethics as demanded by the work and the profession.

PEO 3: Qualification to meet the challenges of working in a multi-disciplinary environment and assuming leadership responsibilities in diverse areas of the profession.

PEO 4: develop their communication skills (computer applications, English language, Oral and written skills) so that they are aware of developments in the fields of architecture Engineering

PEO 5: Enhance their professional skills to qualify them for enrolling in postgraduate studies, actively in workshops and join professional societies.

The BSAE Program educational objectives will be measured through the satisfaction of the following NCAAA and ABET student outcomes:

Outcome a: Students shall have an ability to apply knowledge of mathematics, science, and fundamental engineering to Architecture engineering problems.

Outcome b: Students shall have an ability to design and conduct experiments to study different Architecture engineering systems and analyze and interpret data.

Outcome c: Students shall have an ability to design Architecture building, to meet desired realistic constrains such as economic, environmental, social, political, ethical, health and safety, and sustainability.

Outcome d: Students shall have an ability to work effectively in multidisciplinary teams, to solve engineering problems relevant to Architecture engineering.

Outcome e: Students shall have an ability to identify, formulate, and solve practical Architecture engineering problems.

Outcome f: Students shall have an understanding of the professional and ethical responsibilities of Architecture engineers.

Outcome g: Students shall have an ability to communicate effectively in written, oral, and graphical forms, including the use of professional-quality visual aids.

Outcome h: Students shall have an understanding of the impact of Architecture engineering on the society, environment, and global economy.

Outcome i: Students shall have recognition of the need to engage in lifelong learning.

Outcome j: Students shall have an ability to continuously update their knowledge and skills related to contemporary issues.

Outcome k: Students shall have an ability to use modern tools, techniques and skills necessary for practicing Architecture engineering, including computational tools, and instrumentation.

2. The Bachelor of Science in Architecture Engineering Program Plan

The studying plan of the BSAE Program at the College of Engineering in Jazan University involves different requirements for the university, the college, and the department, as well as courses which satisfy these requirements. The study plan also includes the credit units for all courses and the distribution of these credit units on the ten studying levels (terms).

2.1 BSAE Program Plan Requirements

The study plan for the Architecture engineering department is designed to satisfy three main needs. The first one is the university requirement which includes different topics highlighting different needs in the academic and real life. The second is the college requirement involves the basic science courses and other courses related to Architecture and other engineering fields. The last one is the department requirement which includes the core courses in the Architecture engineering filed with its different disciplines. Table (1) displays a general prospective of the study plan illustrating all requests, courses, credit units, and contact hours for these requirements.

Table (1) Requirements, Credit units, and contact hours

Requirement		Courses	Credit Units		Contact Hours
		Number	Number	%	Number
University		7	15	9.38	16
College	English Language	3	15	9.38	39
	Computer Science	1	3	1.87	4
	Mathematics and Basic Science	11	35	21.87	40
	Engineering Courses	4	10	6.25	16

University and College	26	78	48.75	115
Department	33 conv.	82	51.25	144
	30 co-op	82	51.25	132
Total	59 conv.	160		259
	56 co-op	160		247

2.2 BSAE Program Credit Units-Levels-Requirements

Table (2) illustrates the distribution of the credit units for the university, college and department requirements on the ten studying levels. This table includes the summer training with 2 credit units.

Table (2) Distribution of the credit units on the plan levels

Req. / Level	University	College	Department	Level Sum	Year Sum
First	5	9	0	14	**29**
Second	2	13	0	15	
Third	2	15	0	17	**36**
Fourth	2	9	8	19	
Fifth	2	6	9	17	**34**
Sixth	2	3	12	17	
Seventh	0	3	15	18	**35**
Eighth (Conventional)	0	5	12	17	
Eighth (Co-op)	0	5	13	18	36
Summer Term	0	0	Summer Training	2	**2**
	0	0	Co-op begins	-	**-**
Ninth (Conventional)	0	0	12	12	**24**
Tenth (Conventional)	0	0	12	12	
Ninth (Co-op)	0	0	9	9	25
Tenth (Co-op)	0	0	16	16	
Total	**15**	**63**	**82**	**160**	

2.3 Course Coding System

The course code is composed of two to four letters and three digits. The letters indicate the major of the course. The first digit indicates the year, 1, 2, 3, or 4. The second digit between 1 and 9 displays the discipline in the major. Table (3) shows the disciplines in Architecture engineering. The third digit is the course sequence in each discipline.

Table (3): Disciplines of Architecture Engineering

Disciplines	The second Digit
Architecture design Courses	1
Assistance Studies Courses	3
Building construction Courses	4
Building technology Courses	5
Training and Senior Projects	9

The following figure shows the courses coding system that obeyed throughout the studying plan.

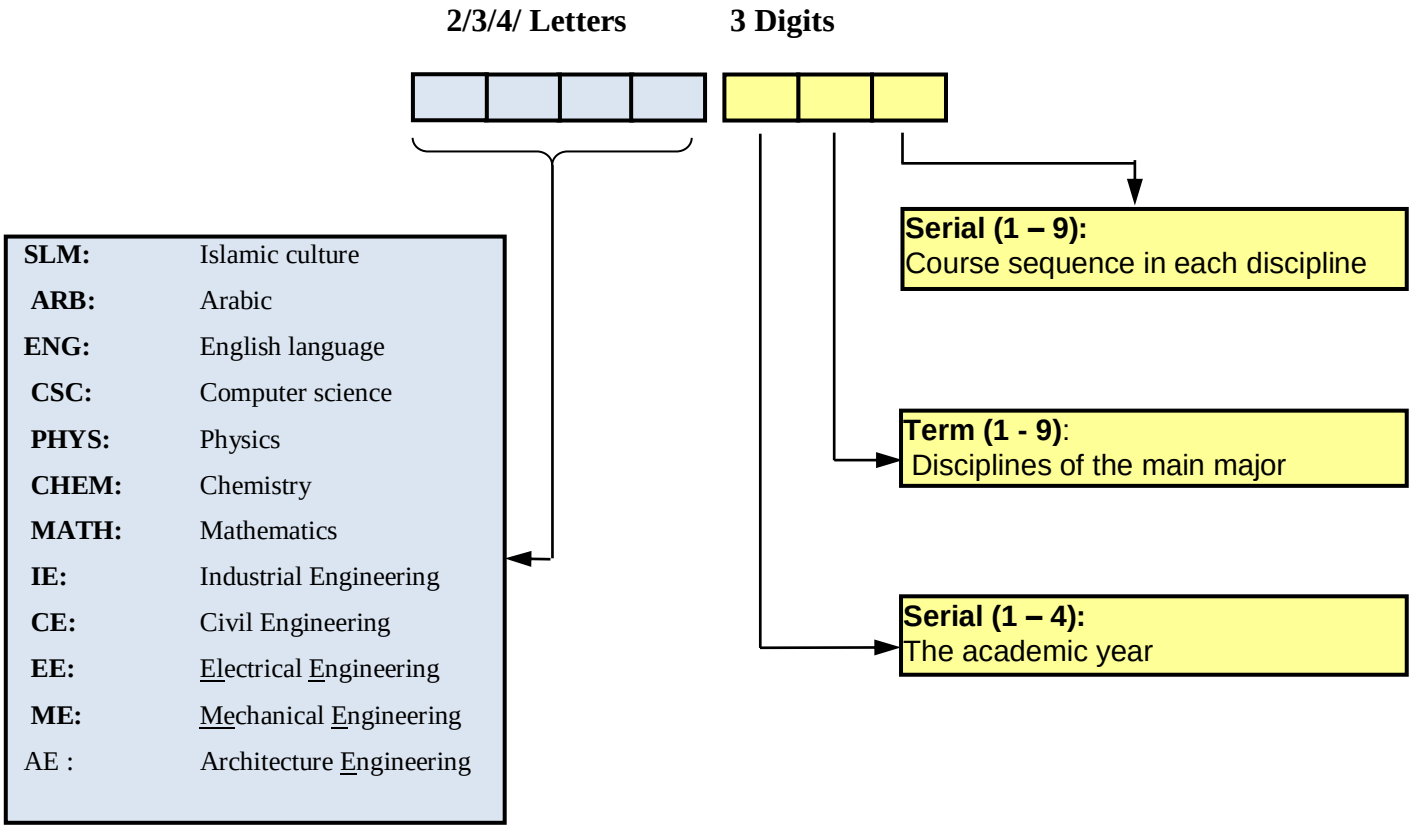

Figure (1) Courses coding system

This coding system is applied to the courses taught by collage of engineering departments only, and other courses belonging to other colleges coding system.

2.4 BSAE Program Courses

Tables (4), (5), (6) and (7) illustrate the courses, their credit units and weekly contact hours for the university, college, and department. The core courses are classified according to the discipline in the Architecture engineering. The distribution of the courses includes; 15 credit units for the university requirements, 63 credit units for the college requirements, and 82 credit units as requirements for the Architecture engineering. The total credit units for the BSAE are 160.

Table (4): The University Requirements

Discipline	No.	Course code	Course Name	Credit Units	Contact Hours
University Requirements	1	SLM 101	Islamic Culture (1)	2	2
	2	SLM 102	Islamic Culture (2)	2	2
	3	SLM 103	Islamic Culture (3)	2	2
	4	SLM 104	Islamic Culture (4)	2	2
	5	ARB 101	Arabic Language Skills	2	2
	6	ARB 102	Arabic Editing	2	2
	7	CSC 101	Introduction to Computer	3	4
Total	**7 Courses**			**15**	**16**

Table (5): The College Requirements

Discipline	No.	Course Code	Course Name	Credit Units	Contact Hours
English Language	1	ENG101	English Language (1)	6	18
	2	ENG102	English Language (2)	6	18
	3	ENG 357	Technical Writing	3	3
	3 Courses			**15**	**39**
Computer Science	1	CSC 111	Programming Language	3	4
	1 Courses			**3**	**4**
Mathematics & Basic Science	1	MATH 101	Mathematics	3	3
	2	MATH 211	Calculus (1)	3	3
	3	MATH 228	Calculus (2)	3	3
	4	MATH 319	Calculus (3)	3	3
	5	MATH 336	Differential equations	3	3
	6	MATH 410	Numerical methods	3	3
	7	STAT 354	Statistics and probability	3	3
	8	CHEM 101	General Chemistry	4	5
	9	CHEM 102	Chemistry (2)	3	4
	10	PHYS 101	General Physics	4	5
	11	PHYS 203	Physics (2)	3	5
	11 Courses			**35**	**40**
Engineering Courses	1	ME 131	Engineering drawing	2	5
	2	ME 132	Engineering Design	3	4
	3	IE 346	Engineering Economy	2	2
	4	EE 111	Fundamentals of Electrical Engineering	3	5
	4 Courses			**10**	**16**
Total	**19 Courses**			**63**	**99**

Table (6) Architecture Engineering Requirements (Conventional Approach) Based on Disciplines

Discipline	No.	Course Code	Course Name	Credit Units	Contact Hours
Civil Engineering	1	CE 111	Statics	3	4
	2	CE 213	Strength of Materials	3	5
	3	CE 281	Surveying	2	4
	4	CE 215	Structural Analysis (1)	3	4
	5	CE 317	Reinforced Concrete (1)	3	4
	6	CE 434	Soil and foundation engineering	3	4
	6 Courses			**17**	**25**
Architecture design	1	AE 111	Fundamental of Design and drawing	3	6
	2	AE 212	Introduction to Architecture design	3	6
	3	AE 213	Architecture design (1)	3	6
	4	AE 314	Architecture design (2)	3	6
	5	AE 315	Architecture design (3)	3	6
	6	AE 416	Architecture design (4)	3	6
	6 Courses			**18**	**36**
Assistance Studies	1	AE 131	Computer Applications in Architecture (1)	2	4
	2	AE 232	Theories and development of Architecture	2	4
	3	AE 233	Energy in buildings	2	4
	4	AE 234	Environmental Control systems	2	3
	4 Courses			**8**	**15**
Building construction	1	AE 141	Building construction (1)	2	4
	2	AE 242	Building construction (2)	2	4
	3	AE 243	Building construction (3)	2	4
	4	AE 344	Design and Working Drawings (1)	3	5
	5	AE 345	Design and Working Drawings (2)	3	6
	6	AE 446	Workshop Drawings	3	6
	6 Courses			**15**	**29**
Building **technology**	1	AE 351	Acoustics and Lighting in Architecture	2	3
	2	AE 352	Construction management	2	3
	3	AE 353	Mechanical and Air Conditioning systems in buildings	3	5
	4	AE 454	Building industry	2	3
	5	AE 455	Specifications and Quantities	2	3
	5 Courses			**11**	**17**
Graduation Project	1	AE 496	Summer training	2	-
	2	AE 498	Senior Design project (1)	1	3
	3	AE 499	Senior Design project (2)	3	7
	3 Courses			**6**	**10**
	1	AE 491	Elective (1)	3	4

Elective Courses	2	AE 492	Elective (2)	2	4
	3	AE 493	Elective (3)	2	4
	3 Courses			**7**	**12**
Total	**33 Courses**			**82**	**144**

Discipline	No.	Course Code	Course Name	Credit Units	Contact Hours
Structural	1	CE 111	Statics	3	4
	2	CE 213	**Strength of Materials**	3	5
	3	CE 281	Surveying	2	4
	4	CE 215	Structural Analysis (1)	3	4
	5	CE 317	Reinforced Concrete (1)	3	4
	6	CE 434	Soiland foundationengineering	3	4
	6 Courses			**17**	**25**
Architecture design	1	AE 111	Fundamental of Design and drawing	3	6
	2	AE 212	Introduction to Architecture design	3	6
	3	AE 213	Architecture design (1)	3	6
	4	AE 314	Architecture design (2)	3	6
	5	AE 315	Architecture design (3)	3	6
	6	AE 416	Architecture design (4)	3	6
	7	AE 131	Computer Applications in Architecture (1)	2	4
		AE 232	Theories and development of Architecture (1)	2	4
	6 Courses			**22**	**44**
Sustainable	1	AE 233	Energy in Building	2	4
	2	AE 234	Environmental Control systems	2	3
	4 Courses			**4**	**7**
Building construction	1	AE 141	Building construction (1)	2	4
	2	AE 242	Building construction (2)	2	4
	3	AE 243	Building construction (3)	2	4
	4	AE 344	Design andWorking Drawings (1)	3	5
	5	AE 345	Design andWorking Drawings (2)	3	6
	6	AE 446	Workshop Drawings	3	6
	6 Courses			**15**	**29**
Building technology	1	AE 351	Acoustics and Lightingin Architecture	2	3
	2	AE 352	Construction management	2	3
	3	AE 353	Mechanicaland Air Conditioning systemsin buildings	3	5
	4	AE 454	Building industry	2	3
	5	AE 455	Specifications and Quantities	2	3
	5 Courses			**11**	**17**
Graduation Project	1	AE 496	Summer training	2	-
	2	AE 498	Senior Design project (1)	1	3
	3	AE 499	Senior Design project (2)	3	7
	3 Courses			**6**	**10**
Elective Courses	1	AE 491	Elective (1)	3	4
	2	AE 492	Elective (2)	2	4
	3	AE 493	Elective (3)	2	4
	3 Courses			**7**	**12**
Total	**33 Courses**			**82**	**144**

Table (7) Architecture Engineering Requirements (Co-op Approach) Based on Disciplines

Discipline	No.	Course code	Course Name	Credit Units	Contact Hours
Civil Engineering	1	CE 111	Statics	3	4
	2	CE 213	Strength of Materials	3	5
	3	CE 281	Surveying	2	4
	4	CE 215	Structural Analysis (1)	3	4
	5	CE 317	Reinforced Concrete (1)	3	4
	6	CE 434	Soil and foundation engineering	3	4
	6 Courses			**17**	**25**
Architecture design	1	AE 111	Fundamental of Design and drawing	3	6
	2	AE 212	Introduction to Architecture design	3	6
	3	AE 213	Architecture design (1)	3	6
	4	AE 314	Architecture design (2)	3	6
	5	AE 315	Architecture design (3)	3	6
	6	AE 416	Architecture design (4)	3	6
	6 Courses			**18**	**36**
Assistance Studies	1	AE 131	Computer Applications in Architecture (1)	2	4
	2	AE 232	Theories and development of Architecture	2	4
	3	AE 233	Energy in buildings	2	4
	4	AE 234	Environmental Control systems	2	3
	4 Courses			**8**	**15**
Building construction	1	AE 141	Building construction (1)	2	4
	2	AE 242	Building construction (2)	2	4
	3	AE 243	Building construction (3)	2	4
	4	AE 344	Design and Working Drawings (1)	3	5
	5	AE 345	Design and Working Drawings (2)	3	6
	6	AE 446	Workshop Drawings	3	6
	6 Courses			**15**	**29**
Building **technology**	1	AE 351	Acoustics and Lighting in Architecture	2	3
	2	AE 352	Construction management	2	3
	3	AE 353	Mechanical and Air Conditioning systems in buildings	3	5
	4	AE 454	Building industry	2	3
	5	AE 455	specifications and Quantities	2	3
	5 Courses			**11**	**17**
Graduation Project	1	AE 497	CO-OP training	9	-
	2	AE 498	Senior Design project (1)	1	3
	3	AE 499	Senior Design project (2)	3	7
	3 Courses			**13**	**10**
Total	**30 Courses**			**82**	**132**

2.5 BSAE Program Curriculum

Following is the BSAE program curriculum of the Architecture engineering department. The BSAE is accomplished in five academic years (**all are in English language)** having two levels an academic year. The five academic years involve one preparatory year with no core courses and four years in the Architecture engineering field. The curriculum presents the credit units and weekly contact hours, either for lectures or for practical work for all courses. The curriculum also presents summer training which starts at the end of the eighth level, and senior project which begins at the ninth level and continues to the end of the tenth level.

Also, the program presents the concept of conventional and co-op approaches and the distribution of courses after the seventh level for both approaches. The main difference between the two approaches is that the co-op approach training cover 9 credits in 24 weeks of training and the student of this path start the senior project in the eight level.

FIRST YEAR

First Level							
Course Code	**Course Name**	**Prerequisites**	**Credit Units**	**Weekly Contact Hours**			
				Lec	**Lab**	**Tut**	**Sum**
SLM 101	Islamic Culture (1)	----	2	2	--	--	2
ENG 101	English Language (1)	----	6	12	6	--	18
MATH 101	Mathematics	----	3	3	--	--	3
CSC 101	Introduction to Computer	---	3	2	2	--	4
Sum	**4 Courses**		**14**	**19**	**8**	**-**	**27**
Second Level							
Course Code	**Course Name**	**Prerequisites**	**Credit Units**	**Weekly Contact Hours**			
				Lec	**Lab**	**Tut**	**Sum**
SLM 102	Islamic Culture (2)	----	2	2	--	--	2
ENG 102	English Language (2)	ENG 101	6	12	6	--	18
MATH 211	Calculus (1)	MATH 101	3	3	--	--	3
PHYS 101	General Physics	---	4	3	2	--	5
Sum	**4 Courses**		**15**	**20**	**8**	**-**	**28**
Total	**8 Courses**		**29**	**39**	**16**	**-**	**55**

SECOND YEAR

Third Level							
Course Code	**Course Name**	**Prerequisites**	**Credit Units**	**Weekly Contact Hours**			
				Lec	**Lab**	**Tut**	**Sum**
ARB 101	Arabic Language Skills	----	2	2	--	--	2
CHEM 106	General Chemistry	-----	4	3	2	--	**5**
MATH 228	Calculus (2)	MATH 211	3	3	-	-	3
ME 131	Engineering Drawing	------	2	-	5	-	5
PHYS 203	Physics (2)	PHYS 101	3	2	2	1	5
EE 111	Fundamental of Electrical Engineering	PHYS 101	3	2	2	1	5
Sum	**6 Courses**		**17**	**12**	**11**	**2**	**25**
Fourth Level							
Course Code	**Course Name**	**Prerequisites**	**Credit Units**	**Weekly Contact Hours**			
				Lec	**Lab**	**Tut**	**Sum**
SLM 103	Islamic Culture (3)	----	2	2	--	--	2
CHEM 206	Chemistry (2)	CHEM 106	3	2	-	2	4
MATH 319	Calculus (3)	MATH 228	3	3	-	-	3
CE 111	Statics	PHYS 101	3	2	-	2	4
AE 111	Fundamental of Design and drawing	ME 131	3	1	1	4	6
ME 132	Engineering Design	ME 131	3	2	2	-	4

AE 141	Building construction (1)	ME 131	2	1	1	2	4
Sum	**7 Courses**		**19**	**13**	**4**	**10**	**27**
Total	**13 Courses**		**36**	**25**	**15**	**12**	**52**

Third YEAR

Fifth Level

Course Code	Course Name	Prerequisites	Credit Units	Weekly Contact Hours			
				Lec	Lab	Tut	Sum
ARB 102	Arabic Editing	----	2	2	--	--	2
MATH 336	Differential Equations	MATH 319	3	3	-	-	3
CSC 111	Programming Language	CSC 101	3	2	2	-	4
AE 131	Computer Applications in Architecture (1)	CSC 101 + ME 131	2	1	1	2	4
AE 212	Introduction to Architecture design	AE 111	3	1	1	4	6
AE 242	Building construction (2)	AE 141	2	1	1	2	4
AE 232	Theories and development of Architecture	AE 111	2	1	1	2	4
Sum	**7 Courses**		**17**	**11**	**6**	**10**	**27**

Sixth Level

Course Code	Course Name	Prerequisites	Credit Units	Weekly Contact Hours			
				Lec	Lab	Tut	Sum
SLM 104	Islamic Culture (4)	----	2	2	--	--	2
STAT 354	Statistics and Probability	MATH 211	3	3	-	-	3
AE 213	Architecture design (1)	AE 212	3	-	1	5	6
AE 243	Building construction (3)	AE 242	2	1	1	2	4
AE 233	Energy in buildings	AE 232	2	1	1	2	4
AE 234	Environmental Control systems	AE 111	2	2	-	1	3
CE 213	Strength of Materials	CE 111	3	2	1	2	5
Sum	**7 Courses**		**17**	**11**	**4**	**12**	**27**
Total	**14 Courses**		**34**	**22**	**10**	**22**	**54**

FOURTH YEAR

Seventh Level

Course Code	Course Name	Prerequisites	Credit Units	Weekly Contact Hours			
				Lec	Lab	Tut	Sum
ENG 357	Technical Writing	ENG 102	3	3	-	-	3
AE 314	Architecture design (2)	AE 213	3	-	1	5	6
AE 344	Design and Working Drawings (1)	AE 243	3	1	1	3	5
AE 351	Acoustics and Lighting in Architecture	AE 242	2	2	-	1	3
AE 352	Construction management	AE 243	2	2	-	1	3
CE 281	Surveying (1)	MATH 228	2	1	2	1	4
CE 215	Structural Analysis (1)	CE 213	3	2	-	2	4

Sum	**7 Courses**		**18**	**11**	**4**	**13**	**28**

Conventional Path

Eighth Level							
Course Code	**Course Name**	**Prerequisites**	**Credit Units**	**Weekly Contact Hours**			
				Lec	**Lab**	**Tut**	**Sum**
MATH 410	Numerical Methods	MATH 228 + CSC111	3	3	-	-	3
IE 346	Engineering Economics	MATH 228	2	2	-	-	2
AE 315	Architecture design (3)	AE 314	3	-	1	5	6
AE 345	Design and Working Drawings (2)	AE 344	3	1	1	4	6
AE 353	Mechanical and Air Conditioning systems in buildings	AE 242	3	2	2	1	5
CE 317	Reinforced Concrete (1)	CE 215	3	2	-	2	4
Sum	**6 Courses**		**17**	**10**	**4**	**12**	**26**
Total	**13 Courses**		**35**	**21**	**8**	**25**	**54**

Summer Term

Course Code	**Course Name**	**Prerequisites**	**Credit Units**
AE 496	**Summer training**	**ENG 357 Department Approval**	**2**

FIFTH YEAR

Ninth Level							
Course Code	**Course Name**	**Prerequisites**	**Credit Units**	**Weekly Contact Hours**			
				Lec	**Lab**	**Tut**	**Sum**
AE 416	Architecture design (4)	AE 315	3	-	1	5	6
AE 446	Workshop Drawings	AE 345	3	1	1	4	6
AE 454	Building industry	AE 243	2	2	-	1	3
AE 491	Elective (1)	According to each course	3	2	-	2	4
AE 498	Senior Design Project (1)	ENG 357 AE 344 + AE 314 + AE 234	1	-	3	-	3
Sum	**5 Courses**		**12**	**5**	**5**	**12**	**22**
Tenth Level							
Course Code	**Course Name**	**Prerequisites**	**Credit Units**	**Weekly Contact Hours**			
				Lec	**Lab**	**Tut**	**Sum**
CE 434	Soil and foundation engineering	CE 317	3	2	-	2	4
AE 455	Specifications and Quantities	AE 344	2	2	-	1	3
AE 492	Elective (2)	According to each course	2	1	1	2	4
AE 493	Elective (3)	According to each course	2	1	1	2	4
AE 499	**Senior Design project (2)**	AE 498	3	-	7	-	7
Sum	**5 Courses**		**12**	**6**	**9**	**7**	**22**
Total	**10 Courses**		**24**	**11**	**14**	**19**	**44**

Elective Courses

Architecture design							
Course Code	**Course Name**	**Prerequisites**	**Credit Units**	**Weekly Contact Hours**			
				Lec	**Lab**	**Tut**	**Sum**
AE 491	**Elective (1)**						
AE 417	Computer Applications in Architecture (2)	AE 315	3	2	-	2	4
AE 492	**Elective (2)**						
AE 418	Theories in contemporary architecture	AE 417	2	1	1	2	4
AE 419	Landscape	AE 417	2	1	1	2	4
AE 493	**Elective (3)**						
AE 421	Visual design	AE 417	2	1	1	2	4
AE 422	Sustainable solutions for housing	AE 417	2	1	1	2	4

Building technology							
Course Code	**Course Name**	**Prerequisites**	**Credit Units**	**Weekly Contact Hours**			
				Lec	**Lab**	**Tut**	**Sum**
AE 491	**Elective (1)**						
AE 455	**Building technology**	AE 345	3	2	-	2	4
AE 492	**Elective (2)**						
AE 456	Noise in buildings	AE 455	2	1	1	2	4
AE 457	Smart building	AE 455	2	1	1	2	4
AE 493	**Elective (3)**						
AE 458	Building economics	AE 455	2	1	1	2	4
AE 459	Sanitary Engineering	AE 455	2	1	1	2	4

Co-op Path

Eighth Level							
Course Code	**Course Name**	**Prerequisites**	**Credit Units**	**Weekly Contact Hours**			
				Lec	**Lab**	**Tut**	**Sum**
MATH 410	Numerical Methods	MATH 228 + CSC111	3	3	-	-	3
IE 346	Engineering Economics	MATH 228	2	2	-	-	2
AE 315	Architecture design (3)	AE 314	3	-	1	5	6
AE 345	Design and Working Drawings (2)	AE 344	3	1	1	4	6
AE 353	Mechanical and Air Conditioning systems in buildings	AE 242	3	2	2	1	5
CE 317	Reinforced Concrete (1)	CE 215	3	2	-	2	4
AE 498	Senior Design Project (1)	ENG 357 AE 344 + AE 314 + AE 234	1	-	3	-	3
Sum	**7 Courses**		**18**	**10**	**7**	**12**	**29**
Total	**14 Courses**		**36**	**21**	**11**	**25**	**57**

Summer Term

Course Code	Course Name	Prerequisites	Credit Units
AE 497	**Co-op**	**ENG 357 Department Approval**	**9**

FOURTH YEAR

Ninth Level		
Course Code	**Course Name**	**Remark**
AE 497	Co-op	Continuation for the Co-op Program

Tenth Level							
Course Code	**Course Name**	**Prerequisites**	**Credit Units**	**Weekly Contact Hours**			
				Lec	**Lab**	**Tut**	**Sum**
AE 416	Architecture design (4)	AE 315	3	-	1	5	6
AE 446	Workshop Drawings	AE 345	3	1	1	4	6
AE 454	Building industry	AE 243	2	2	-	1	3
CE 434	Soil and foundation engineering	CE 317	3	2	-	2	4

AE 455	Specifications and Quantities	AE 344	2	2	-	1	3
AE 499	**Senior Design project (2)**	AE 498	3	-	7	-	7
Sum	**6 Courses**		**16**	**7**	**9**	**13**	**29**
Total	**7Courses**		**25**	**7**	**9**	**13**	**29**

The following statistics can be drawn from the BSAE program curriculum. Table (8) shows the distribution of the number of courses, credit units, and weekly contact hours in each level and academic year.

Table (8)The Distribution of the Courses

Academic Year	Level	No. of Courses		Credit Units		Weekly Contact Hours			
		Level	Year	Level	Year	Lec.&Tut.	Lab.	Level Sum	Year Sum
First	1	4	8	14	29	19	8	27	55
	2	4		15		20	8	28	
Second	3	6	13	17	36	14	11	25	52
	4	7		19		23	4	27	
Third	5	7	14	17	34	21	6	27	54
	6	7		17		23	4	27	
Fourth	7	7	13	18	35	24	4	28	54
	8 conv.	6		17		22	4	26	
	8 co-op	7	14	18	36	22	7	29	57
Summer Training					2				
Co-op					-				
Fifth	9 conv	5	10	12	24	17	5	22	44
	10 conv	5		12		13	9	22	
	9 Co-op	-		9	25	-	-	-	29
	10 Co-op	6		16		20	9	29	
Total	**conv.**	**60**		**160**		**196**	**63**	**259**	
	co-op	**57**				**186**	**61**	**247**	

ACADEMIC COURSES

Architecture Engineering

Course Code	AE 111			
Course Title	Fundamental of Design and drawing			
Year/Level	**2/4**			
Hours	**Credit**	**Lec.**	**Lab.**	**Tut.**
	3	1	1	4
Prerequisites	ME 131			
Course Description	This course aims at Defining the different basis technologies in drawing: techniques of using the pencil – ratios – isometric and hatching – Values and degrees and measurement of degrees – Front planes – middle and posterior planes – Outlining buildings and their details – Study of nature and outlining trees – Studying the factors that lead to the technical success of rough sketches – Pencil and ink drawing of the different visual – audio and architectural elements both in drawing rooms and in the open field – studying the different architectural models, teaching the student to define and imaging a three dimensional objects – teaching student basic hatching principles, of points, planes and bulk objects, The objectives of this course are those of improving graphic communication and initiation into design. Elementary projects are carried out which explore spatial thinking in basic structural forms and shapes. This course introduces the architectural design process, including issues of concept making, and design development. .			
Textbook	Ching, Francis, & Steven Juroszek. Design Drawing. 1998.			

Course Code	AE 141			
Course Title	Building construction (1)			
Year/Level	**2/4**			
Hours	**Credit**	**Lec.**	**Lab.**	**Tut.**
	2	1	1	2
Prerequisites	ME 131			
Course Description	This course aims at teaching students the theoretical and practical basics of building materials and its different uses – technical installation symbols and terminology of architecture and construction materials – Basic requirement of building works (rock – block – concrete - steel) – stairs – insulation methods (sound – heat - water) – Foundation .			
Textbook	Barry, R., The Construction of Buildings , Granada. 1998.			

Course Code	AE 131			
Course Title	Computer Applications in Architecture (1)			
Year/Level	**3/5**			
Hours	**Credit**	**Lec.**	**Lab.**	**Tut.**
	2	1	1	2
Prerequisites	CSC 101 + ME 131			
Course Description	This course aims to introduce the capabilities of the computer and its applications in the field of architecture, tools, techniques and applications that can be used in preparing drawings and designs for two- and three-dimensional architecture, as well as advanced programs that help the student in preparing project drawings in various courses such as AutoCAD, Revit, etc. or any new computer programs Advances in the field of architecture			
Textbook	• Schmitl G, Information Architecture : Basis and Future of CAPD, Birkhauser, 1999 . • Mitehell , Willicim J - & McCullagh , Malcolm, Digital Design Media, Willy & sons, 1994 . • Sankrd Ken , The Digital Architect. Willy &sons, 1995.			

Course Code	AE 212			
Course Title	Introduction to Architecture design			
Year/Level	**3/5**			
Hours	**Credit**	**Lec.**	**Lab.**	**Tut.**
	3	1	1	4
Prerequisites	AE 111			
Course Description	This course aims at Developing the student imaginative spatial capabilities, teaching the student to define and imaging a three dimensional objects – teaching student basic hatching principles, of points, planes and bulk objects – the inverted isometric – Computer aided drawing of isometrics – training the student to draw isometrics of space – Bulk bodies – Building using oriented isometric – Angular isometric – three-Dimensional isometrics, introducing the design process with all it variables to the students – studying the correct distribution of the different basic functions and its co-relation with the mobile factors – studying the space of the different activities with regards to quality and quantity – Studying the different openings and outlooks of every space – Correlating the human, climatic and usage requirements – Studying the simple construction of small buildings – Training the student to solve simple design problems.			
Textbook	Ching, Francis, & Steven Juroszek. Design Drawing. 1998.			

Course Code	AE 242			
Course Title	Building construction (2)			
Year/Level	**3/5**			
Hours	**Credit**	**Lec.**	**Lab.**	**Tut.**
	2	1	1	2
Prerequisites	AE 141			
Course Description	This course aims at teaching the student the theoretical and practical basics of architecture construction – basics steps of architecture construction – Types of building (skeletal buildings – wall bearings) – stairs , arch, frame, Truss, Space truss, Joints construction, Study wrenches for the construction work, The sequence of steps to implement the project construction process, application study.			
Textbook	Barry, R., the Construction of Buildings (Vol. 1, 2, 3 &4), Granada, 1998.			

Course Code	AE 232			
Course Title	Theories and development of Architecture			
Year/Level	**3/5**			
Hours	**Credit**	**Lec.**	**Lab.**	**Tut.**
	2	1	1	2
Prerequisites	AE 111			
Course Description	The course study Main basis of Functional design different architectural units. Design private and public use, service units for individuals and material processing and infrastructure, distribution units vertical and horizontal. Architectural trends in the nineteenth century and architectural trends and transformations during the twentieth century - a comparative analysis of the architecture and the arts from Ancient Egypt to the 19th century			
Textbook	Fletcher's, S., A History of Architecture.			

Course Code	AE 213			
Course Title	Architecture design (1)			
Year/Level	**3/6**			
Hours	**Credit**	**Lec.**	**Lab.**	**Tut.**
	3	--	1	5
Prerequisites	AE 212			
Course Description	This course aims at Identifying the design process and its variable dimensions – Studying the distribution of main uses and how to connect them using circulation elements – Studying qualitative and quantitative space needs for different activities – Studying elevations and openings required for different spaces – Linking among human, climatic and functional needs – Studying simple structure for small buildings – Training the student to solve simple design problems **(Library – School – clinic …)**			
Textbook	Ching, Francis, & Steven Juroszek. Design Drawing. 1998.			

Course Code	AE 243			
Course Title	Building construction (3)			
Year/Level	**3/6**			
Hours	**Credit**	**Lec.**	**Lab.**	**Tut.**
	2	1	1	2
Prerequisites	AE 242			
Course Description	This course aims at Anatomy of different architectural and structure members – Load transfer and loading methods, traditional construction methods, connections between different architectural and structural members – Complementary items (suspended ceilings, curtain walls, light weight partitions) – Reinforced concrete, steel, wooden wide span structures – new construction methods, site plotting of buildings – Construction plans**,** Principle of Sanitary drawings**,** Introduction to the working drawings for projects**.**			
Textbook	Alan Jefferis, David A. Madsen "Architectural Drafting and Design, Sixth Edition", Delmar, Cen gage learning. 2011			

Course Code	AE 233			
Course Title	Energy in buildings			
Year/Level	**3/6**			
Hours	**Credit**	**Lec.**	**Lab.**	**Tut.**
	2	1	1	2
Prerequisites	AE 232			
Course Description	This course aims at The inefficient use of energy in contemporary architecture – the efficiency of energy use in traditional architecture of different climatic regions – Utilization of passive solar energy applications – Energy conservation concepts and recycling – Modern architectural trends and the efficient use of energy in the light of energy consumption rationalization concerns.			
Textbook	Nesbitt, Kate, ed., Theorizing Anew Agenda for Architecture, Princeton Architectural Press. 1996			

Course Code	AE 234			
Course Title	Environmental Control systems			
Year/Level	**3/6**			
Hours	**Credit**	**Lec.**	**Lab.**	**Tut.**
	2	2	--	1
Prerequisites	AE 111			
Course Description	This course aims at Understanding Building as a mediator between Human / Users and the surrounding environment and through the study of thermal environment: components of climate, parameters that affect the site climate, climatic data and representations – thermal comfort chart – solar radiation – sun path charts – shading devices and its design – Heat transfer between building and the environment – ventilation and air movement – openings and orientation – design goals of environmental control – design methods and architectural treatments of thermal environment. This course aims at Understanding Building as a mediator between Human / Users and the surrounding environment and through the study of thermal environment: components of climate, parameters that affect the site climate, climatic data and representations – thermal comfort chart – solar radiation – sun path charts – shading devices and its design – Heat transfer between building and the environment – ventilation and air movement – openings and orientation – design goals of environmental control – design methods and architectural treatments of thermal environment.			
Textbook	Allan Konya, Design Primer For Hot Climate, Architectural Press London.			

Course Code	AE 314			
Course Title	Architecture design (2)			
Year/Level	**4/7**			
Hours	**Credit**	**Lec.**	**Lab.**	**Tut.**
	3	--	1	5
Prerequisites	AE 213			
Course Description	This course aims at Developing and orienting the student abilities to treat architectural design as a creation process to solve spatial problems on different levels of design (from the context and the layout to masses and spaces) – Emphasizing the importance of construction in the formulation of inner spaces, and the architectural shape as a framework for the functional, social and culture needs – Architectural projects that cover different programs and concepts – Architectural program – Architectural form within the different concepts of spaces - Understanding the dynamic of inner and outer spaces – Architectural character and its urban, environmental, structural and symbolic references – Dealing with structure as a constraint for the inner space and architectural form. As well as studying its organic, cultural and functional references in central-function buildings. Application study (Museum - Agency – station railway…..)			
Textbook	Ernest Neufert, Architects' data , 2nd , New York 1980.			

Course Code	AE 344			
Course Title	Design and Working Drawings (1)			
Year/Level	**4/7**			
Hours	**Credit**	**Lec.**	**Lab.**	**Tut.**
	3	1	1	3
Prerequisites	AE 243			
Course Description	This course aims at Developing the Initial Project into a complete and detailed working project. In-depth study of various methods and materials of covering wide span spaces and its details – Cladding of skeleton buildings – Different metal sections and their use in openings and partitions design – stair types, different designs and materials – Architectural working drawings and detailing of different projects – Sanitary and electrical drawings			
Textbook	Alan Jefferis, David A. Madsen "Architectural Drafting and Design, Sixth Edition", Delmar, Cen gage learning. 2011			

Course Code	AE 351			
Course Title	Acoustics and Lighting in Architecture			
Year/Level	**4/7**			
Hours	**Credit**	**Lec.**	**Lab.**	**Tut.**
	2	2	--	1
Prerequisites	AE 242			
Course Description	This course aims at Introducing Architectural Acoustics, Room acoustics, and noise sources, measurements, and control. Acoustical properties of materials and room shapes. Sound absorption and transmission. Computer applications in room acoustics simulation. Introducing different lighting systems. Lighting requirements under different working conditions. Detailed understanding of artificial lighting sources. Quantity and quality of light for various architectural spaces. Polar curves for various artificial lighting sources. Design of artificial lighting systems for avoiding glare. Artificial lighting design of outdoor spaces, Computer applications.			
Textbook	William, J.C. & Joseph, A.W., "Architectural Acoustics", McGraw-hill book company New York, USA, 1989.			

Course Code	AE 352			
Course Title	Construction management			
Year/Level	**4/7**			
Hours	**Credit**	**Lec.**	**Lab.**	**Tut.**
	2	2	--	1
Prerequisites	AE 243			
Course Description	Introduction to project management : aims and importance, distribution of work tasks on individuals logic activities, follow-up network, critical path networks, linear tables, general basis for managing construction projects, implementation programs (labour, materials, equipment), financing and the required cash flow for the projects – Methods and stages of decision making : steps of taking decision, measures, evaluation methods of stating the relative importance of these measures, using network evaluation, field applications			
Textbook	Daniel W. Halpin, "Construction Management", 3rd Edition, John Wiley & Sons, New York, 2006.			

Course Code	AE 315			
Course Title	Architecture design (3)			
Year/Level	**4/8**			
Hours	**Credit**	**Lec.**	**Lab.**	**Tut.**
	3	--	1	5
Prerequisites	AE 314			
Course Description	This course aims at designing the Architectural complex, wide span buildings – Data collection and analysis – Design of projects with multiple buildings emphasizing internal and external spatial relationships between different buildings and with the surroundings – Issues of natural illumination and ventilation – Artificial lighting and ventilation techniques and its application to relevant buildings – model making**,** Application Study (Entertainment centre – Culture centre – Hotel….)			
Textbook	Ching, Francis, & Steven Juroszek. Design Drawing. 1998.			

Course Code	AE 345			
Course Title	Design and Working Drawings (2)			
Year/Level	**4/8**			
Hours	**Credit**	**Lec.**	**Lab.**	**Tut.**
	3	1	1	4
Prerequisites	AE 344			
Course Description	This course aims at Developing the Initial Project into a complete and detailed working project. In-depth study of various methods and materials of covering wide span spaces and its details – Cladding of skeleton buildings – Different metal sections and their use in openings and partitions design – stair types, different designs and materials – Architectural working drawings and detailing of different projects – Sanitary and electrical drawings.			
Textbook	Alan Jefferis, David A. Madsen “Architectural Drafting and Design, Sixth Edition", Delmar, Cen gage learning. 2011			

Course Code	AE 353			
Course Title	Mechanical and Air Conditioning systems in buildings			
Year/Level	**4/8**			
Hours	**Credit**	**Lec.**	**Lab.**	**Tut.**
	3	2	2	1
Prerequisites	AE 242			
Course Description	This course aims at Introducing energy and the thermal field – environmental influences – thermal transfer, storage, and insulation – Air conditioning and ventilation – mechanical ventilation – heating system – equipment selection, duct design and layout, vision mechanisms, costs, maintenance, and systems integration – basic of elevator installation and its architectural requirements – Hydraulic services – problems and solutions – Fire fighting requirement – architectural applications. Introducing Basic concepts, terminology and design methods for building mechanical systems. Water supply and distribution systems; Waste and drainage systems. Vertical transportation systems. Computer applications			
Textbook	G. Hendy, A. trot and T. Welch "Refrigeration and Air Conditioning" fifth edition McGraw Hill (1990)			

Course Code	AE 496			
Course Title	**Summer training**			
Year/Level	**4/8**			
Hours	**Credit**	**Lec.**	**Lab.**	**Tut.**
	2	--	--	--
Prerequisites	**ENG 357- Department Approval**			
Course Description	8 weeks of training in the industry under the supervision of a faculty member. Each student presents a report on work carried out by during the training period, in addition to any other requirements assigned to him by the administration.			
Textbook	----------			

Course Code	AE 416			
Course Title	Architecture design (4)			
Year/Level	**5/9**			
Hours	**Credit**	**Lec.**	**Lab.**	**Tut.**
	3	--	1	5
Prerequisites	AE 315			
Course Description	This course aims at Detailing in-depth training for student to broaden and deepen their architectural knowledge by conducting a series of field design works covering all the branches and options of projects both residential and industrial to achieve an urban and architectural building mass using the most suitable and available options – Applying the existing building laws and regulations – Projects with compound solutions with urban directions linked with the construction site – Different methods of editing and finalizing College - Embassy - International Airport, Hospital ….)			
Textbook	Duerk , Donna . Architectural Programming Management for Design, 1993 .			

Course Code	AE 446			
Course Title	Workshop Drawings			
Year/Level	**5/9**			
Hours	**Credit**	**Lec.**	**Lab.**	**Tut.**
	3	1	1	4
Prerequisites	AE 345			
Course Description	This course aims at Developing the Initial Project into a complete - detailed working project and shop drawing details for all elements of project. such as floors, ceilings and outstanding partitions and cladding ,curtain wall and Doors, windows and elements of counter and other complementary elements			
Textbook	Alan Jefferis, David A. Madsen "Architectural Drafting and Design", Sixth Edition", Delmar, Cen gage learning. 2011			

Course Code	AE 454			
Course Title	Building industry			
Year/Level	**5/9**			
Hours	**Credit**	**Lec.**	**Lab.**	**Tut.**
	2	2	--	1
Prerequisites	AE 243			
Course Description	This course provides an overview of the construction industry. The course is organized into three main sections. Section one discusses the construction industry, lifecycle of construction projects and roles of the various project participants. The second section focuses on engineering economics as it relates to practical construction industry problems. The final portion of the course focuses on construction project management issues including estimating, scheduling and project controls.			
Textbook	Guise, D. ,"Design and Technology in Architecture" Revised Edition, Van No strand Reinhold, New York, (1991).			

Course Code	AE 498			
Course Title	Senior Design Project (1)			
Year/Level	**5/9**			
Hours	**Credit**	**Lec.**	**Lab.**	**Tut.**
	1	--	3	--
Prerequisites	ENG 357 + AE 344 + AE 314 + AE 234			
Course Description	Scheduled sheds light on the study of how to set up a program for the graduation project in the field of Architecture engineering through the design depends on application of fundamental theories to practical Architecture engineering operations studied in previous years and what the student gained from the training field factories.			
Textbook	To be determined by the supervisor according to the project topics			

Course Code	AE 499			
Course Title	Senior Design Project (2)			
Year/Level	**5/10**			
Hours	**Credit**	**Lec.**	**Lab.**	**Tut.**
	3	--	7	--
Prerequisites	AE 498			
Course Description	The student graduation project implementation which have been set up in his ninth level (to fulfill the requirements of the project specifications point of academic accreditation)			
Textbook	To be determined by the supervisor according to the project topics			

Course Code	AE 455			
Course Title	Specifications and Quantities			
Year/Level	**5/10**			
Hours	**Credit**	**Lec.**	**Lab.**	**Tut.**
	2	2	--	1
Prerequisites	AE 344			
Course Description	Contracts: definitions, formatting and types – Component of contracts (main points) - tendering procedure - Relationship between concerned people in construction projects – Stages project preparation – tender documents – Calculations of quantities: Excavation and filling quantities – Calculation of plain and reinforced concrete and steel reinforcement Quantities – Calculation of brick walls quantities – Calculation of isolation quantities – Cost Estimate – Final invoice – Specifications: Types of specifications – specifications items and their uses – Methods of formatting the specifications for different Works (brickwork, concrete, isolation, insulation) – Types of contracts and judgment, Saudi standard public works contract.			
Textbook	Daniel W. Halpin, "Construction Management", 3rd Edition, John Wiley & Sons, 2006.			

Course Code	AE 417			
Course Title	Computer Applications in Architecture (2)			
Year/Level	**5/9**			
Hours	**Credit**	**Lec.**	**Lab.**	**Tut.**
	3	2	--	2
Prerequisites	AE 315			
Course Description	Expanding the use of mixed media into the translation of ideas, this course brings practical presentation principles, layout and comprehensive media techniques to the field of graphic design. Computer software, using industry standard illustration, paint, and page layout, new technologies and traditional composition are addressed.			
Textbook	Sankrd Ken , The Digital Architect. Willy &sons, 1995.			

Course Code	AE 418			
Course Title	Theories in contemporary architecture			
Year/Level	**5/10**			
Hours	**Credit**	**Lec.**	**Lab.**	**Tut.**
	2	1	1	2
Prerequisites	AE 417			
Course Description	Aims to study the evolution of philosophies and trends and architectural transformations during the twentieth century - Pre-International - the direction of New Art and Architecture Member - Architecture International in Germany, France and the Netherlands - the stage between the two wars - the stage of scientific advancement and technology after World War II - the humanitarian phase - environmental architecture in the world and the Kingdom of Saudi Arabia - the primitive and popular trends in formal and historical - post-modern architecture - the future expectations			
Textbook	Fletcher's, S., A History of Architecture, 19 Edition, London: The Butterworth Group, 1987.			

Course Code	AE 421			
Course Title	Visual design			
Year/Level	**5/10**			
Hours	**Credit**	**Lec.**	**Lab.**	**Tut.**
	2	1	1	2
Prerequisites	AE 417			
Course Description	Identify aesthetics in Arch through the study of theories of beauty in art and driveways intellectual - creativity in the process of design - the visual perception of the formations stereochemistry - CPU visual in the formation of Urban Spaces and elements of design and design standards and regulations - the foundations of design and visual perception.			
Textbook	Moughtin, J.C. Urban Design: Method and Techniques, Architectural Press 1990.			

Course Code	AE 422			
Course Title	Sustainable solutions for housing			
Year/Level	**5/10**			
Hours	**Credit**	**Lec.**	**Lab.**	**Tut.**
	2	1	1	2
Prerequisites	AE 417			
Course Description	This course provides an introduction to housing theory, socio-economic aspects, Related to housing, alternative approaches to housing policy and housing problems in developing countries, with particular attention to traditional housing settlements in Saudi Arabia. Exploration of current issues in the formulation and implementation of housing programs is carried out. This covers an analysis of Housing Design, classification of housing types, data gathering on housing, neighborhood theory as a housing concept, design procedure of a housing community, structure of housing areas as acriteria for the design of housing, construction technologies, materials, costs, climatic conditions and code issues. Then Apply it in Housing Project, with Consideration of Sustainable Project.			
Textbook	Vadan, Joseph, the development of housing in Saudi Arabia during the period from 1950 – 1983			

Course Code	AE 419			
Course Title	Landscape			
Year/Level	**5/10**			
Hours	**Credit**	**Lec.**	**Lab.**	**Tut.**
	2	1	1	2
Prerequisites	AE 417			

Course Description	This Course provides for students Principals, theories and Historical background of Landscape, then provides the student skills and knowledge to design, Create A Concept and implementation Landscape Element (soft & hard) for projects. At the end of the course, the student applies his knowledge and skills to Design or Redesign landscape project.
Textbook	Harris C.& Dines. Time Saver Standard for Landscape Architecture. New York: McGraw-Hill, 1997.

Course Code	AE 455			
Course Title	Building technology			
Year/Level	**5/9**			
Hours	**Credit**	**Lec.**	**Lab.**	**Tut.**
	3	2	--	2
Prerequisites	AE 345			
Course Description	The course aims at identifying advanced building systems and their applications, studying the techniques of in-site and in-factory industrialization, studying the economics of application and execution of different construction systems (traditional, developed, industrialized and pre-cast) - Basics of selecting construction systems – Possibilities of interfering among systems – design – Manufacturing and execution – Economic of design and preparing documents – Feasibility – Flexibility of design – Finishing – Economic of contracting and alternatives of put project into execution – Building economics			
Textbook	Guise, D. ,"Design and Technology in Architecture" Revised Edition, Van No strand Reinhold, New York, (1991).			

Course Code	AE 456			
Course Title	Noise in buildings			
Year/Level	**5/10**			
Hours	**Credit**	**Lec.**	**Lab.**	**Tut.**
	2	1	1	2
Prerequisites	AE 455			
Course Description	Noise sources and their effect. Transmission of noise in buildings; air-borne and structure-borne noise. Sound isolation and sound insulating construction. Mechanical systems noise and vibration. Noise control techniques. Computer applications			
Textbook	Osama A B Hassan "Building Acoustics and Vibration" world scientific, ISBN: 978-981-283-833-9, 2009			

Course Code	AE 457			
Course Title	Smart building			
Year/Level	**5/10**			
Hours	**Credit**	**Lec.**	**Lab.**	**Tut.**
	2	1	1	2
Prerequisites	AE 455			
Course Description	This course introduces some main issues of buildings performance. It focuses on two main topics. The first one is the smart building information systems. It aims to Exploring the Humanities: Introduction to modes of thought found within humanities and social sciences. The second topic is about building control and diagnostics. It concentrates on the empirical evaluation of the built environment (building components and systems, interactions between building, occupants and environmental conditions) in view of multiple performance criteria (thermal, visual and acoustic performance). All this will be achieved through the use of computation tools in all processes of building design, construction and operating.			
Textbook	Fathy, H- Natural Energy and Vernacular Architecture. Chicago, 1989.			

Course Code	AE 458			
Course Title	Building economics			
Year/Level	**5/10**			
Hours	**Credit**	**Lec.**	**Lab.**	**Tut.**
	2	1	1	2
Prerequisites	AE 455			
Course Description	Basic concepts of building economics: initial cost, life cost in use, cost and benefit ratio analysis, and control of cost and depreciation. Cost estimating, including determination of materials, labor, equipment, overhead, profit, and other construction costs.			
Textbook	Daniel W. Halpin, "Construction Management", 3rd Edition, John Wiley & Sons, New York, 2006.			

Course Code	AE 459			
Course Title	Sanitary Engineering			
Year/Level	**5/10**			
Hours	**Credit**	**Lec.**	**Lab.**	**Tut.**
	2	1	1	2
Prerequisites	AE 455			
Course Description	This course aims to study the sanitary work of buildings, study of water sources, methods of treatment, methods of feeding the buildings with water from the external network and how to feed the elements of the building with water through ground and the upper reservoirs or external networks directly, the definition of feeding and sanitation tubes, health services for buildings, the different types and methods of installation, the various drainage systems inside the building and the external drainage systems as well as sanitation in remote areas			
Textbook	S.K. Garg," Water supply and Sanitary Engineering" Kanna publishers, Delhi 5th Edition , 2001.			

NOTICE

Basic science courses and others courses from different colleges and department Syllabi and Description will be taken from the colleges.

References

1- The National Commission for Academic Accreditation and Assessment (NCAAA), www.ncaaa.org.sa/

2- Accreditation Board for Engineering and Technology (ABET), Inc., www.abet.org/

3- The Bachelor of Science in Architecture Engineering, Architecture Engineering Department, College of Engineering, Jazan University, KSA, www.jazanu.edu.sa/

4-The Bachelor of Science in Architecture Engineering, King Fahd University of Petroleum & Minerals, KSA, www.kfupm.edu.sa/

5- The Bachelor of Science in Architecture Engineering, College of Engineering, Oklahoma University.

8- The Bachelor of Science in Architecture Engineering, College of Engineering, Pennsylvania State University, College of Engineering.