Program Guide

Department of Architectural Engineering
College of Engineering
Najran University

1437 / 1438

PREFACE

The Government of the Custodian of the Two Holy Mosques has done all efforts to ensure the welfare of its citizens and placed them in a position among highly civilized and cultural nations.

As a first priority, great efforts have been exerted to propose development plans for the improvement of our beloved kingdom to meet the needs of the citizens. According to the governmental policies, the demands of the developmental plans and the Saudi nationwide renaissance, educational institutions have carried the responsibilities to build, educate and develop the generations who are the bases of development in all fields. As part of them, Najran University has set its plans to graduate qualified students in various fields of knowledge.

College of Engineering, as one of the other fourteen colleges of the University, was established in 1431 AH according to the recommendation of the University Council to meet the needs of Najran Region. In its strategic plan, the college has established six scientific departments. They are: Electrical Engineering, Civil Engineering, Architectural Engineering, Mechanical Engineering, Chemical Engineering, and Industrial Engineering. We are grateful to Allah, that some batches have been graduated from three departments (Electrical Engineering, Civil Engineering and Architectural Engineering).

The College endeavors to provide an integrated learning environment to achieve the plans of its programs which have been built according to the latest international standards and to keep up with the standards of the Saudi National Center for Academic Accreditation and Evaluation (NCAAE) and the American Accreditation Board for Engineering and Technology (ABET)

These have been done through the following:

1- Providing classrooms with the best modern technologies in education to give the student the opportunity of receiving information in more than one way of learning in the classroom. Therefore, students can use the programs of laptops /computers, the applications of tablets and cell devices to synchronize them with the smart projector in the classroom. In addition, they can use other social media applications and E-learning provided by the university.

2 - Preparing laboratories for all departments of the faculty and providing them with the latest international modern equipment that are compatible with advanced engineering technologies.

3 – Recruiting highly qualified academic members.

4 - Establishing research units in engineering sciences and sustainability so that students can enrich their knowledge by receiving additional courses, implementing their graduation projects and keeping up with the new researches in various fields of engineering such as the use of IOT, Energy Efficiency, and Green Buildings.

The College of Engineering at Najran University is aware of the goals of the kingdom 2030 vision, so the faculty has adopted two initiatives that have been accredited by the office of Vision Achievement in the Ministry of Education. They are:

- Automating the measurement of learning outcomes in university education;
- Providing dual degree programs in engineering in collaboration with international engineering colleges.

Dr. Abdullah Alwadie
Dean, College of Engineering
Najran University

MESSAGE FROM THE HEAD OF AED

It gives me great pleasure to welcome you all to the Student's Handbook of the Architectural Engineering Department (AED). AED is the third department to be established within the College of Engineering in 1433 H. The main concern of the department is the integration of the main building domains, which are the structural, mechanical, architectural and the construction techniques and the construction management into architectural designs.

The Architectural Engineering Program does take up the concept of sustainable buildings as an ultimate goal and thus tailor every pit and pieces to achieve the set goals. The need for this specialty has been dictated by the rapid escalation of the construction industry and the technological boom in the modern Saudi Arabia. The program includes 135 credit hours after the preparatory year.

Finally, we hope that you will find all the necessary information about our department on this handbook. You are always welcome to visit us in the new university campus to meet our faculty members and ARE students to provide you with any further information.

Dr. Nedhal Al-Tamimi
Department's Coordinator
College of Engineering
Najran University

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INTRODUCTION

The Architectural Engineering Department was established in the year 2012 as one of the major departments of the university and has been actively engaged in teaching in different specialization of Architectural Engineering.

Architectural Engineering department offers bachelor degree in Architectural Engineering. In the meantime, the program is for males only. Staff members of the College of engineering teach all courses for students in this program. The program will have its first graduates in this January 2017.

The program gives emphasis mainly on teaching basic skills, theoretical knowledge and practical experiences necessary for practicing the profession of Architectural Engineering. In addition, Architectural Engineering department assists the students to be familiar with local and global engineering application trend. In turn, qualified engineers would graduate with great knowledge in structural systems, architectural and lighting systems, air conditioning systems, and construction and construction management.

The department has a computer laboratory that is equipped with many sets of personal computers; it has also digital plotters, and photocopying services for the use of students.

DEPARTMENT VISION AND MISSION

Vision

Leading department in Architectural engineering education, applied research and community services.

Mission

Architectural engineering program is committed to:

- Provide students with an accredited Architectural Engineering education of high quality standards.
- Generate graduates possessing excellent knowledge and strong competent skills and uphold professional attitudes necessary in fulfilling his responsibilities towards Almighty and society and meet the industry's expectations.
- Conduct high quality of Architectural Engineering research using the best modern technology.
- Provide innovative solutions for Architectural Engineering problems, which contribute to the sustainable development.
- Build knowledge-based society nationally and internationally.

PROGRAM OFFERED

The Department of Architectural Engineering offers Bachelor of Architectural Engineering after completion of 135 credit hours along with non-credit summer training.

Program Objectives

The graduates of ARE program are prepared to achieve the following program objectives:

1. Technically competent in their respective fields and conceiving, designing and executing broad range of architectural engineering tasks locally and globally.

2. Meet industry expectations in architectural engineering with excellent communication and leadership skills.

3. Contribute to the society through providing innovative solutions for architectural engineering problems and function on multi-disciplinary teams.

4. Able to develop themselves through self-learning and be able to pursue post-graduate studies in architectural engineering.

5. Uphold professional and social ethics necessary in fulfilling responsibilities towards the Almighty, clients and the society and contribute to the sustainable development of the kingdom.

Program Outcomes

a) Apply knowledge of mathematics, sciences and engineering in architectural engineering problems.
b) Design and conduct experiments, as well as to analyze and interpret data required for solving architectural engineering projects.
c) Design optimum building system/component to meet desired needs with realistic constraints, such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
d) Function effectively in multi-disciplinary architectural engineering teams.

e) Identify, formulate, and solve architectural engineering problems to evaluate and synthesize information in order to provide best alternative solutions.
f) Act professionally and ethically and recognize the impact of liability issues in architectural engineering projects.
g) Communicate effectively, prepare professional written materials, graphical communications and deliver professional oral and written presentations.
h) Recognize the broad education necessary to understand the impact of architectural engineering solutions to economic, environmental and society to improving quality of life.
i) Recognize the need in life-long learning and to engage in continuing education of professional/engineering skills.
j) Recognize the knowledge of contemporary issues in architectural engineering.
k) Use techniques, skills, and modern engineering tools necessary for architectural engineering practices.

THE ACADEMIC PLAN

The academic plan of Architectural engineering program is shown in Table 1. Students admitted to Architectural engineering program complete the two semester (level 1 and level 2) in the preparatory year program, which consists of 27 credit hours including 6 credit hours in math courses, in addition to other courses. Table (1) shows the course curriculum of Architectural engineering program. The curriculum consists of 135 credit hours. The curriculum covers 6 courses as university requirements as the first type, see table (2), which is in total 12 credit hours. These are Arabic language and Islamic studies. The second type is college requirements, which consists of 11 courses, see table (3). These courses cover basic science, such as, math, math based physics, chemistry, together with geological science and fundamental engineering subjects. The third type features completely the requirements of Architectural engineering program, see table (4), which are 39 subjects. In addition, there is one course on co-operative field training of zero credit hours.

Figure (1) shows the distribution of curriculum by percentage and figure (2) shows the same but by credit hour.

Table 1 Curriculum of Architectural Engineering Program

Requirements Types	No. of Courses	No. of Credit Hrs.	Issues	Weight %

University Requirements	**6**	**12** credit hours	Islamic, humanities, and skills courses	**8.9%**
College Requirements	**11**	**33** credit hours	Math, Basic Science, and Fundamental Engineering	**24.5%**
Department Requirements	**38**	**90** credit hours	Compulsory core courses and advance courses related to building design	**66.6%**
Total	**55 Course**	**135 Credit Hrs.**		**100%**

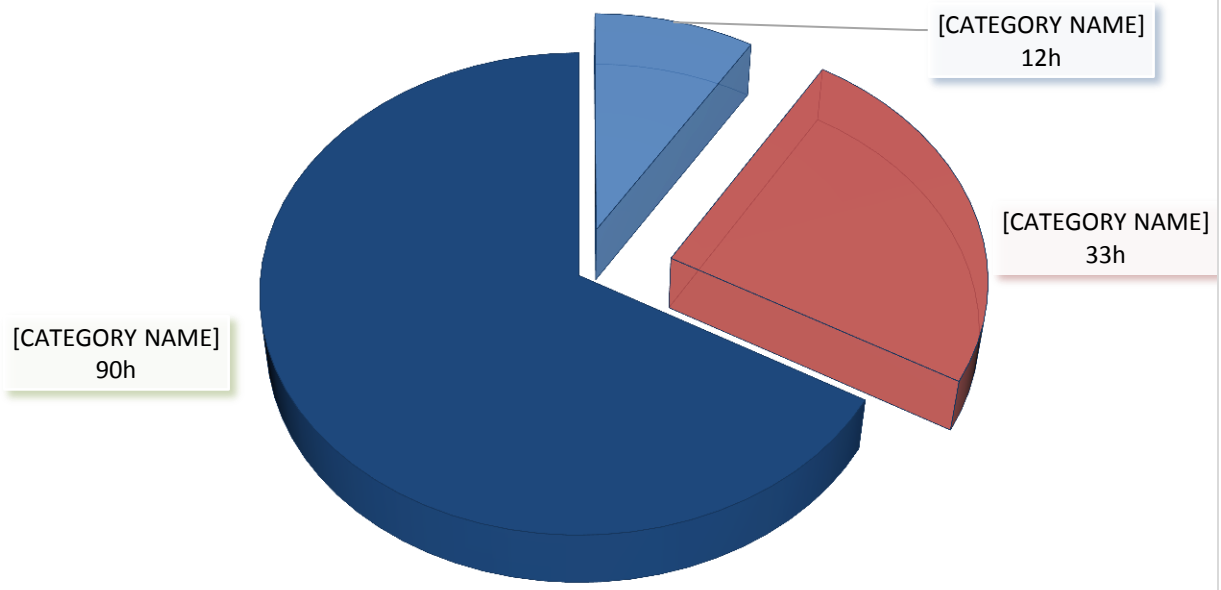

FIGURE (1) THE DISTRIBUTION OF CURRICULUM BY CREDIT HOUR

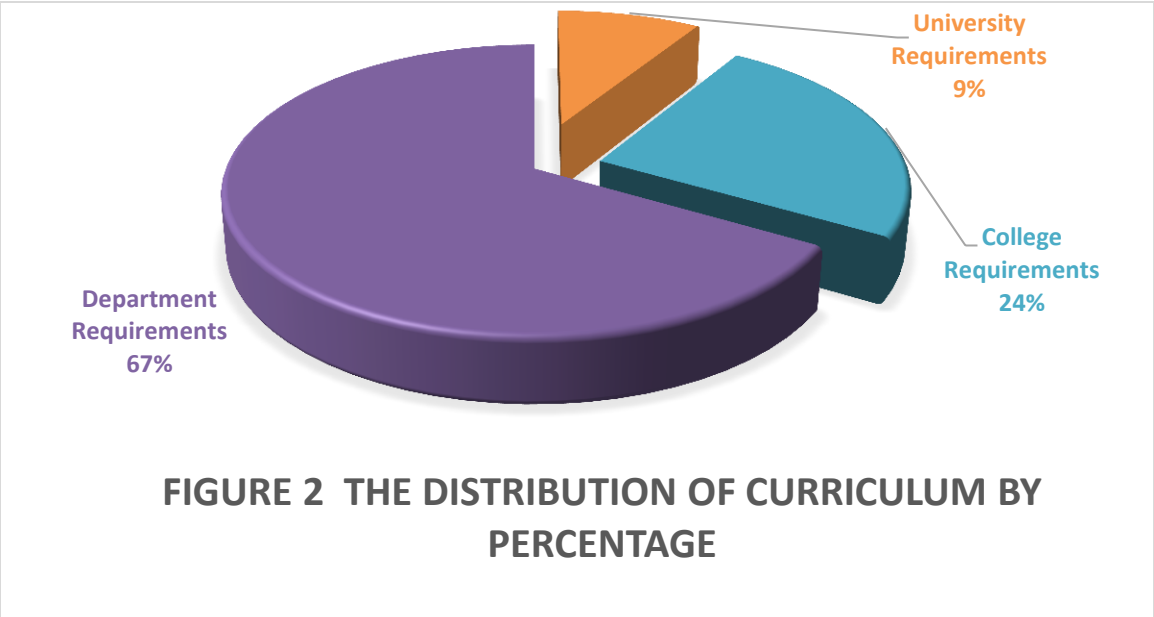

FIGURE 2 THE DISTRIBUTION OF CURRICULUM BY PERCENTAGE

Table 2. University Requirements

Level	Code No.	Course Title	Credit Hours				Pre-Requisite
				Th	La	To	
Semester 3	ARAB 201-2	Language Skills	2	(2	0	0)	Preparatory Year
Semester 4	IC 111-2	Introduction to Islamic Culture	2	(2	0	0)	
Semester 6	IC 112-2	Islamic Culture (2)	2	(2	0	0)	
Semester 7	IC 113-2	Islamic Culture (3)	2	(2	0	0)	
Semester 8	ARAB 202-2	Arabic Writing	2	(2	0	0)	
Semester 9	IC 114-2	Islamic Culture (4)	2	(2	0	0)	
Total Credit Hours			**12**				

Table 3. College Requirements

				Th	La	To	
Semester 3	CHEM 101-3	General Chemistry	3	(3	0	1)	Preparatory Year
	MATH 106-3	Introduction to Integral Calculus	3	(3	0	1)	
	PHYS 104-4	Principles of Physics	4	(3	2	0)	
Semester 4	MATH 107-3	Algebra and Analytical Geometry	3	(3	0	1)	
	PHYS 105-4	Advanced Physics	4	(3	2	0)	PHYS 104-4
Semester 5	MATH 203-3	Calculus for Engineering Students	3	(3	0	1)	MATH 106-3
Semester 6	MATH 204-3	Differential Equations	3	(3	0	1)	MATH 203-3
Semester 7	MATH 254-3	Numerical Methods	3	(3	0	1)	MATH 204-3
Semester 8	GE 306-2	Engineering Economics	2	(2	0	0)	MATH 203-3
Semester 9	STAT 324-3	Engineering Statistics and Probabilities	3	(3	0	0)	MATH 204-3
Semester 10	GE 407-2	Management of Engineering Projects	2	(2	0	0)	GE 306-2
Total Credit Hours			**33**				

Table 4. Department Requirements in each Semester

Level	Code No.	Course Title	Credit Hours				Pre-Requisite
			Ch	Th	La	To	
Semester 3	121 ARE -2	Architectural Drawing and Presentation	2	(0	4	1)	Preparatory Year
	122 ARE -1	Free Hand Sketching	1	(0	2	1)	
	111 ARE -3	Basic Architectural Design Studio	3	(1	4	1)	
Semester 4	131 ARE -2	History of Architecture	2	(2	0	0)	
	123 ARE -2	Shadow and Perspective	2	(1	2	1)	121 ARE -2
	141 ARE -2	Building Construction (1)	2	(1	2	1)	121 ARE -2

	112 ARE -3	Architectural Design Studio (1)	3	(0	6	2)	111 ARE -3 121 ARE -2
Semester 5	232 ARE -2	Theory of Architecture (1)	2	(2	0	0)	
	281 ARE -2	Drawing by Computer (1)	2	(1	2	1)	121 ARE -2
	242 ARE -2	Building Construction (2)	2	(1	2	1)	141 ARE -2
	213 ARE -3	Architectural Design Studio (2)	3	(0	6	2)	112 ARE -3
	271 ARE -3	Engineering Mechanics	3	(3	0	0)	MATH 106-3
	CE 342-3	Properties and Testing of Materials	3	(3	0	0)	
Semester 6	233 ARE -2	Theory of Architecture (2)	2	(2	0	0)	232 ARE -2
	282 ARE -2	Drawing by Computer (2)	2	(1	2	1)	281 ARE -2
	214 ARE -3	Architectural Design Studio (3)	3	(0	6	2)	213 ARE -3
	272 ARE -3	Structural Mechanics	3	(3	0	0)	MATH 106-3
	243 ARE -3	Geotechnical Engineering	3	(3	0	0)	
Semester 7	351 ARE -2	Urban Planning	2	(1	2	1)	
	344 ARE -2	Working Drawings	2	(0	4	1)	242 ARE -2
	315 ARE -3	Architectural Design Studio (4)	3	(0	6	2)	214 ARE -3
	373 ARE -2	Thermo- and Fluid Mechanics	2	(2	0	0)	PHYS 105-4
	CE 261-3	Surveying (1)	3	(2	2	0)	
Semester 8	334 ARE -2	History of Islamic Architecture	2	(2	0	0)	131 ARE -2
	352 ARE -2	Climatic Design	2	(2	0	1)	PHYS 105-4
	345 ARE -2	Working Drawing designs	2	(0	4	2)	344 ARE -2
	316 ARE -3	Architectural Design Studio (5)	3	(0	6	2)	315 ARE -3
	374 ARE -2	Architectural Systems in Buildings	2	(2	0	1)	PHYS 105-4
	CE 371-3	Sanitary Engineering	3	(3	0	0)	373 ARE -2
Semester 9	453 ARE -2	Housing	2	(1	2	0)	351 ARE -2
	454 ARE -2	Illumination and Acoustics	2	(2	0	1)	374 ARE -2
	491 ARE -2	Graduation Project (1)	2	(0	4	0)	316 ARE -3
	475 ARE -2	Mechanical installations in buildings	2	(1	2	0)	373 ARE -2
	CE 352-3	Reinforced Concrete (1)	3	(3	0	1)	272 ARE -3

Semester 10	461 ARE -2	Contracts, Quantities and Specifications	2	(1	2	1)	345 ARE -2
	462 ARE -1	Professional Practice	1	(1	0	0)	
	492 ARE -4	Graduation Project (2)	4	(0	8	0)	491 ARE -2
	CE 355-3	Steel Structure	3	(3	0	1)	272 ARE -3
Training	493 ARE-0	Field-work Training	0				Completion of 90 Cr.H.
Total Credit Hours			**90**				

DESCRIPTION OF COURSES

1. University Courses

111ISL-2 Introduction to Islamic Culture 2 (2,0,0)

The meaning of Islamic creed, its most important terminology and characteristics. Moderation of the people of Sunnah. Explanation of different ranks of the Islamic religion: Islam, Faith and charity. Belief in the Oneness of the lordship (Divinity) of ALLAH, Belief in the Oneness of the worship of ALLAH. Testimony that there is no god but ALLAH: its meaning, its term, its pillars, and its invalidator. Worship: definition, types, its terms and its pillars. Belief in the Oneness of the Names and the Attributes of ALLAH: Its meaning and the pathway of the people of Sunnah, and examples of some divine attributes, and the benefits of faith in Names and attributes. Warning on invalidators of belief in Oneness of ALLAH: GREAT shirk great disbelief, and rules on clear disbelief, and signs of disbelief, and the dangers of disbelief. Great hypocrisy and signs of hypocrites. Explanation of adulterators of belief in oneness of ALLAH: Lesser associating partners (Shirk) to of ALLAH, lesser disbelief and lesser hypocrisy. Innovation in Islamic Religion: definition, judgement, types, and examples. Definition of Loyalty an Enmity:judgement and manifestations of sanctioned loyalty, and forbidden loyalty, and the rules pertaining dealing with the disbelievers.

112ISL-2 Islamic Culture 2 2 (2,0,0)

Believes based on scientific basis and methodologies deduced from the Holy Qur'an, Biography of Prophet Muhammad, Peace be upon him (PBUH), and other well-known Islamic references. The concept of ethics in Islam. The rules of Islam in dealing with instincts through ethics and moral rules.

The Islamic ethics and values necessary for their daily life. Explain that Islam is a religion that takes care of both daily life and the hereafter through solid historical examples. The Islamic solutions for daily life problems. Explain the effect of applying the Islamic ethics and values on community.

201ARAB-2 Language Skills 2 (2,0,0)

تعريف الكلمة: لغة واصطلاحا. أقسام الكلمة: اسم، وفعل، وحرف. علامات الاسم: (أل) التعريف، التنوين، والحديث عنه. أقسام الاسم من حيث الإعراب والبناء: معرب، ومبني. أقسام الفعل: ماض، وأمر، ومضارع. العلامة التي يعرف بها كل فعل، وحكمه من حيث الإعراب والبناء. تعريف الكلام. صور ائتلاف الكلام ست. تعريف الإعراب، وبيان أنواعه، مع بيان ما يشترك فيه الاسم والفعل، وما يختص به كل واحد منهما، وبيان العلامات الأصول والفروع. مما خرج عن الأصل في إعرابه سبعة أبواب:

خمسة في الأسماء:

الأسماء الستة، المثنى وما ألحق به، جمع المذكر السالم وما ألحق به، الجمع بالألف والتاء المزيدتين وما ألحق به في حالة النصب، الممنوع من الصرف في حالة الجر.

واثنان في الأفعال:

الأفعال الخمسة، الفعل المضارع المعتل الاخر في حالة الجزم. الصرف: الميزان الصرفي–المجرد والمزيد. المعاجم: طريقة الكشف في المعاجم العربية المختلفة. الأدب والنصوص: من القرآن لكريم سورة الحجرات من أولها إلى آخر الآية رقم(12)

من الحديث الشريف: خطبة الوداع، أو بعض الأحاديث المختارة ذات التوجيه الاجتماعي والسلوكي. من الشعر والنثر: مختارات شعرية ونثرية تمثل الأدب العربي.

113ISL-2 Islamic Culture 3 2 (2,0,0)

Believes based on scientific basis and methodologies deduced from the Holy Qur'an, Biography of Prophet Muhammad, Peace be upon him (PBUH), and other well-known Islamic references. The concept of ethics in Islam. The rules of Islam in dealing with instincts through ethics and moral rules.

The Islamic ethics and values necessary for their daily life. Explain that Islam is a religion that takes care of both daily life and the hereafter through solid historical examples. The Islamic solutions for daily life problems. Explain the effect of applying the Islamic ethics and values on community.

202ARAB-2 Arabic Writing

اصطلاحا. أقسام الكلمة: اسم، وفعل. وحرف تعريف الكلمة: لغة، علامات الاسم:) ال (التعريف، التنوين، والحديث عنه. أقسام الاسم من حيث الاعراب والبناء: معرب، ومبني. أقسام الفعل: ماض، وأمر، ومضارع. العالمة التي يعرف بها كل فعل، وحكمه من حيث الاعراب والبناء. تعريف الكلام صور ائتلاف الكلام ست. تعريف الاعراب، وبيان أنواعه، مع بيان ما يشترك فيه الاسم والفعل، وما يختص به كل واحد منهما، وبيان العالمات الاصول والفروع. مما خرج عن الاصل في إعرابه سبعة أبواب : خمسة في الاسماء الستة المثنى وما ألحق به جمع المذكر السالم وما ألحق به الجمع بالألف والتاء المزيدتين وما ألحق به في

حالة النصب الممنوع من الصرف في حالة الجر .واثنان في الافعال :الافعال الخمسة الفعل المضارع المعتل الاخر في حالة الجزم .الصرف: الميزان الصرفي المجرد والمزيد –المعاجم: طريقة الكشف في المعاجم العربية المختلفة .الادب والنصوص: من القرآن الكريم سورة الحجرات من أولها إلى آخر الآية رقم 22 من الحديث الشريف: خطبة الوداع، أو بعض الأحاديث المختارة ذات التوجيه الاجتماعي والسلوكي .من الشعر والنثر: مختارات شعرية ونثرية تمثل الادب العربي.

114ISL-2 Islamic Culture 4 **2 (2, 0, 2)**

Believes based on scientific basis and methodologies deduced from the Holy Qur'an, Biography of Prophet Muhammad, Peace be upon him (PBUH), and other well-known Islamic references. The concept of ethics in Islam. The rules of Islam in dealing with instincts through ethics and moral rules.

The Islamic ethics and values necessary for their daily life. Explain that Islam is a religion that takes care of both daily life and the hereafter through solid historical examples. The Islamic solutions for daily life problems. Explain the effect of applying the Islamic ethics and values on community

2. General College Courses

This section contains the descriptions of the fundamental engineering courses that are required by the College of Engineering. Each course has its own code, the number of credit hours and a brief description.

CHEM 101-3 (General Chemistry) **3 Credit Hours**

Stoichiometry Chemical Arithmetic. Gaseous state - The liquid state – Solutions - properties of the combined solutions - Chemical equilibrium - Introduction to organic chemistry: History of organic chemistry, Chemistry of carbons, homologs series, functional groups, Hydrocarbons.

MATH 106-3 (Introduction to Integral Calculus) **3 Credit Hours**

Integration: indefinite integral (definition, geometric meaning, basic properties). Techniques of integral: integration by parts, trigonometric substitutions, partial fractions, quadratic expressions,…etc . Integration of certain classes of trigonometric functions. Definite integral: Riemann integral - Upper and lower sums, geometric meaning of definite integral, some properties of definite integral. Intermediate value theorem for integrals. Fundamental theorem of Calculus. Applications of the definite integral: area, volume, work, arc length. Approximations by the Trapezoidal and Simpson rules.

PHYS 104-4 (Principles of Physics) **4 Credit Hours**

Vectors, Newton's Laws of Motion, Work and Energy, properties of mater, and their flow, principles of heat, Static and Dynamic electricity, Sound and Optics.

MATH 107-3 (Algebra and Analytical Geometry) **3 Credit Hours**

Systems of linear equations, matrices, types of matrices, algebraic of matrecis, inverse of matrices, determinants, Cramers rule. Vectors in two and three dimensions and properties of vectors, scalar (dot) and cross products. Distance formula, gradient (or slope), positive and negative slopes, Inclination, parallel and perpendicular lines, straight line general formula, perpendicular distance from a point to a line, the general formula of circle. Conic sections: the parabola, the ellipse, the hyperbola. Rectangular, polar and spherical coordinates; curves in polar coordinates. Equations of lines and planes in space, surfaces.

PHYS 105-4 (Advanced Physics) **4 Credit Hours**

Atomic structure: electronics configuration, classification of elements, energy levels. Crystal structure: lattice, symmetry, space group, examples for simple structure. Architectural properties of materials and electricity: classification of materials. Magnetic properties of materials and magnetism. Thermal properties of materials: thermal energy, thermoelectric power (Seebeck Effect). Mechanical properties of matter (Young's modulus, tensile materials).

MATH 203-3 (Calculus for Engineering Students) **3 Credit Hours**

Infinite Sequences, Infinite series, convergence and divergence of infinite series, integral test, ratio test, root test and comparison test. Conditional convergence and absolute convergence, alternating series test. Power Series, Taylor and Maclaurin series, Vector valued functions, their limits, continuity, derivatives and integrals. Motion of particle in space, tangential and normal components of acceleration. Function in two or three variables, their limits, continuity, partial derivatives, chain Rule, directional derivatives, tangent planes and normal lines to equations, Extrema of Functions of Several Variables, Lagrange Multipliers, Double integral and its applications to area, volume, moments and center of mass. Double integrals in polar coordinates, triple integral in rectangular, cylindrical and spherical coordinates and applications to volume, the moment and center of mass. Vector fields, line integrals, surface integrals, Green’s theorem, and the divergence theorem. Stoke’s theorem.

MATH 204-3 (Differential Equations) **3 Credit Hours**

Introduction and classification, solutions of first order differential equations and their applications, (Growth and decay problems and linear motion problems). Solutions of higher order linear differential equations and their applications (spring problem and projectile problems). Laplace transforms and its applications, linear systems of differential equations. Series solutions of differential equations. Fourier series.

MATH 254-3 (Numerical Methods) **3 Credit Hours**

Types of errors, errors analysis. Numerical solutions of nonlinear equations of single variables: fixed point iteration method, bisection method, false position method, Newton-Raphson method, secant method. Numerical solutions of a system of linear equations: Gauss-Jordon iterative method. Gauss-Jordon iterative method with partial and complete pivoting. Interpolation: Lagrange interpolation formula, divided differences, Newton interpolation, Numerical differentiation. Numerical integration. Introduction to numerical solutions of ordinary differential equations.

GE 306-2 (Engineering Economics) **2 Credit Hours**

Introduction to Engineering economics. Interest formulas and equivalence. Bases for comparison of alternatives. Decision making among alternatives. Evaluating replacement alternatives. Break even and minimum cost analysis. Cost accounting. Depreciation. Economic analysis of operations. Economic analysis of public projects. Basic management process approach, strategies and planning methods, project planning and scheduling, Bar chart, critical path methods, PERT method, resource leveling and allocation, time cost trade off. Construction and organizational approaches, leadership elements and decision-making, computer applications.

STAT 324-3 (Engineering Statistics and Probabilities) **3 Credit Hours**

Concepts of statistics and its applications in science and engineering, measure of central tendency, measure of dispersion, regression, correlation, and their applications. Concepts of probability and its applications in science and engineering, probability axioms, conditional probability, independent probability for events, some probability distributions and random variables: discrete and continuous random variables, distributions for applications in engineering such as Poison and Weibull distributions and other probability distributions are important for engineers, time series, and computer applications using statistical software.

GE 407-2 (Management of Engineering Projects) **2 Credit Hours**

Characteristics of Construction Industry; project delivery systems; the design and construction process; construction contracting; construction planning; project control, conceptual cost estimation; and Quality and Safety Management.

CE 342-3 (Properties and Testing of Materials) **3 Credit Hours**

Methods of sieve analysis, density, absorption, and abrasion of sand and concrete aggregates. Normal consistency, setting times, compressive and tensile strengths of cements. Design and testing of concrete mixes for required workability, compressive, tensile, flexure strength and modulus of elasticity at various ages. Strength tests: on concrete cores, using Schmidt hummer and ultrasonic waves. Tensile test for reinforcing steel, and calculation of elastic modulus. Tests on isotropic and anisotropic materials and use of dial and architectural strain gages. Finding the Brinley Hardness Number of various materials. Tension tests on ductile and brittle materials. Nondestructive testing on concrete.

CE 261-3 (Surveying (1)) **3 Credit Hours**

Introduction to the basic surveying theory and practice; Units of measurements and conversions; Error analysis; Distance measurements by taping; Leveling; Angle measurements; Traversing and traverse computations; Topographic surveying and mapping; Area and volume computations; Circular curves; Use of surveying software such as Wolfpack and Surfer.

CE 371-3 (Sanitary Engineering) **3 Credit Hours**

Source of water supply; quantity of water and wastewater; quality of water supply; drinking water standard; water treatment system; coagulation-flocculation; sedimentation; filtration; disinfection; softening; iron and manganese removal; taste and odor removal; collection and distribution of water; characteristics of wastewater; effluent standard; wastewater collection; wastewater treatment processes.

CE 352-3 (Reinforced Concrete (1)) **3 Credit Hours**

Fundamentals and design theories based on ultimate strength design and elastic concept using ACI code. ACI Code requirements. Load factors. Analysis and design of reinforced concrete members subject to flexure, shear and diagonal tension in accordance to ACI strength method. Development length of reinforcement, deflection and crack controls in reinforced concrete members.

CE 355-3 (Steel Structure) **3 Credit Hours**

Analysis and design of roof trusses. Design of tension and compression members, columns under eccentric loadings, column bases and footings. Design of beams, welded and bolted connections. Different loads on different steel bridges. Design of steel bridges beams using Influence lines.

3. Architectural Engineering Department Courses

121 ARE -2 (Architectural Drawing and Presentation) **2 Credit Hours**

This course is concerned with architectural drawing techniques of different presentation methods including instrument used, types of line, drawing scales, architectural lettering, projections for different bodies, isometric drawings. However, the main concept of the course is to teach students the different symbols used by architects to recognize, indicate and represent architectural plans, elevations sections and architectural projects.

122 ARE -1 (Free Hand Sketching) **1 Credit Hour**

This course seeks to develop the "thinking hand of the designer" through explorations in freehand sketching. Students will be introduced to freehand drawing conventions and techniques through weekly assignments and record their individual growth in a required sketchbook. Methods of representation will include narrative storyboard perspectives, conceptual diagramming, plan/section/elevation linkage, landform, site and planted form representation and axonometric projection. Sketching opportunities through in-class field-trips to contemporary houses of interest, one-on-one instruction and peer review discussion will structure the learning.

111 ARE -3 (Basic Architectural Design Studio) **3 Credit Hours**

The course is an introduction to basic design and basic concepts of beauty in the context of architectural engineering. Through a series of studies and exercises students can learn, understand, analyse and apply basic principles and elements of design and architecture. Subsequently the student could express the function in a small-scale project.

131 ARE -2 (History of Architecture) **2 Credit Hours**

The course covers prehistoric architecture, Egyptian, Mesopotamian, Greek, Romans and Byzantines architecture. It also covers the middle ages, the renaissance era and the modern architecture.

123 ARE -2 (Shadow and Perspective) **2 Credit Hours**

This course focuses on teaching the techniques of drawing different types of perspectives e.g bird eye view, normal eye view, warm eye view and interior perspectives. It also covers the techniques of casting shadows on elevations, on site plans and on 3D presentation. This will be covered through weekly exercises.

141 ARE -2 (Building Construction (1)) 2 Credit Hours

The aim of this course is to teach the students the building construction stages, basic building components and the different structural systems. Emphasis is to be placed on frame and load bearing structures. Different types of stair cases are to be studied in detail also working drawings for the mentioned topics are to be drawn.

112 ARE -3 (Architectural Design Studio (1)) 3 Credit Hours

The architectural design in this course is to be for a simple project e.g. a flat, a house, or an art studio. Concentration is to be placed on the building functions, building materials and construction techniques.

232 ARE -2 (Theory of Architecture (1)) 2 Credit Hours

This course covers the study of the beginning of architecture and how it was developed and influenced by different factors. Emphasis is to be placed on building elements and the process of functional design of buildings, such as hotels, restaurants and office buildings etc.

281 ARE -2 (Drawing by Computer (1)) 2 Credit Hours

This course provides an introduction to Computer-Aided Design (CAD). It also introduces drafting concepts pertaining to CAD in general, and in particular to selected drafting packages. Throughout this course, the emphasis is to be placed on two-dimensional drawing techniques.

242 ARE -2 (Building Construction (2)) 2 Credit Hours

The aim of this course is to teach the students the building components in detail e.g. foundations, roofs, construction joints, doors and windows, building finishing materials and different modern construction techniques. The theoretical lessons are to be supported by working drawings for a two level building.

213 ARE -3 (Architectural Design Studio (2)) 3 Credit Hours

The architectural design in this course is to be for a project more complicated than that of the design (1) e.g. a primary school, a health center. Concentration is to be placed on the building

form, on natural cooling, and day-lighting in buildings.

271 ARE -3 (Engineering Mechanics) **3 Credit Hours**

Basic concepts and principles of statics. Vector operations. Equilibrium of particles in two and three dimensions. definition of moment and couple; reduction of systems forces; equilibrium of rigid bodies; statically determinate structures including beams, trusses, frames, and machines; internal forces; shear force and bending moment diagrams in beams; friction and its applications, centroid and centre of gravity of lines, areas, and volumes; moment of inertia and radius of gyration.

233 ARE -2 (Theory of Architecture (2)) **2 Credit Hours**

This course includes a review of different architectural trends from modern architecture through late-modernism up to the incorporation of sustainability in architecture. This course focuses mainly on the development of the concept of sustainability in architecture and the ways that the sustainability has been applied to building designs. The rating systems of the sustainability in architecture, such as LEED, is also studied.

282 ARE -2 (Drawing by Computer (2)) **2 Credit Hours**

This course covers the basics of 3D architectural modelling and presentation packages through sharing drawing files created by AutoCAD 3D with other presentation programs such as 3D-Max, Rivet, Sketch-Up and Photoshop. Computer-Aided Design and its implementation skills to advanced 3D architectural concepts are also covered through hands-on experience, including 3D modelling, rendering, and Image processing.

214 ARE -3 (Architectural Design Studio (3)) **3 Credit Hours**

The architectural design in this course is to be for a project more complicated than that of the design (2) e.g. a factory with one production line, sport center. Concentration is to be placed on the artificial ventilation, cooling and lighting of buildings and on structural system alternative.

272 ARE -3 (Structural Mechanics) **3 Credit Hours**

Mechanical behaviour of the solid materials (e.g. Steel bars, purlins, beams) under different loads. The relationship between exerted loads and their reactions. Shear force and victors operation. Friction lows, Material resistance, Twisting victors. Flexibility curve and bending beams. Equilibrium laws. Equations of motion, Work and energy, Impulse momentum and vibrations.

243 ARE -3 (Geotechnical Engineering) **3 Credit Hours**

Introduction to geotechnical engineering, soil formation, engineering properties of soils, stress distribution in soils, consolidation of soils, settlement of structures. Types and design of foundations and retaining structures.

351 ARE -2 (Urban Planning) **2 Credit Hours**

The explanation of the theories, strategies and regulations of the urban planning at the local, regional and national levels coupled by a practical exercise on an urban site within Najran city.

344 ARE -2 (Working Drawings) **2 Credit Hours**

The explanation of the contents of working drawings and terminologies used. The preparation of the basic set of working drawings (architectural, sewage and waste disposal systems and sanitary fittings, and electromechanical) for a multi- story building.

315 ARE -3 (Architectural Design Studio (4)) **3 Credit Hours**

The architectural design in this course is to be for a project more complicated than that of the design (3) e.g. a Commercial center, civic center. Concentration is to be placed on the electromechanical systems in buildings, on sewage disposal systems and on water and electricity supplies.

373 ARE -2 (Thermo- and Fluid Mechanics) **2 Credit Hours**

The course is a combination of three major topics correlated together, i.e. Thermodynamics, Fluid Mechanics and Heat Transfer. Students should learn and understand the basic science of such topics and acquire the importance of thermal energy in the daily life. Moreover, students are required to understand the transfer of thermal energy through the fluids of liquids and gases and they also should know the concept of energy conservation.

334 ARE -2 (History of Islamic Architecture) **2 Credit Hours**

The course covers the architecture during the time of the Prophet and his caliphates, Umayyad and the Abbasid era, Architecture in Al Andalusia, Architecture in Fatimid, Ayobi, Seljuk, Muslims Architecture in Persia, in Indian subcontinent, and Ottoman empire.

352 ARE -2 (Climatic Design) **2 Credit Hours**

This course explores the effect of climatic factors on buildings, and thermal comfort and its effect on the human productivity.the course Also covers the passive concept and energy efficiency in building design. A case study to cover the above-mentioned topics is to be executed for a building in the hot arid region of the KSA.

345 ARE -2 (Working Drawing Designs) **2 Credit Hours**

The preparation of designed working drawings for chosen architectural details of specific building.

316 ARE -3 (Architectural Design Studio (5)) **3 Credit Hours**

The architectural design in this course is to be for a project more complicated than that of the design (4) e.g. A local airport and 250-bed general hospital, etc. Concentration is to be placed on the alarm and firefighting systems, garbage disposal, and the MBS systems.

374 ARE -2 (Architectural Systems in Buildings) **2 Credit Hours**

This course describes and introduces students to architectural engineering and architectural technology in buildings. It will provide the students with the basics in electricity, electric circuits, electric generation, architectural distribution systems and the architectural equipment. In addition, the student will learn how to read architectural plans, how to perform basic calculations for architectural installation systems. Finally, the students are introduced to architectural system protection and fire warning systems.

493 ARE -0 (Field Training) **0 Credit Hours**

The duration of the field training is around Eight weeks in a relevant industry under the supervision of a faculty member. Each student must submit a technical report on his achievements during the training and to fulfil any other requirements as assigned by the department.

453 ARE -2 (Housing) **2 Credit Hours**

The explanation of the housing variables. Housing issues i.e. economic, socio-cultural, and environmental ones. Housing regulations, policies and strategies at the national and international levels. Also alternative applications for housing projects and rectification methods. This will be supported by a case study for an existing housing project.

454 ARE -2 (Illumination and Acoustics) **2 Credit Hours**

This course covers the concepts of lighting and acoustics. Daylighting, lighting measurements, instruments and methods. Architectural light sources, lighting system, and design methods, quantity and quality of illumination. Acoustical properties of materials and constructions. Room

acoustics and noise control. Measuring method and equipment. Acoustic design of auditoria. Impact of acoustical and lighting system on Architectural design. Computer applications.

491 ARE -2 (Graduation Project (1)) **2 Credit Hours**

The graduation project should be of medium complication proposed by the student and approved by a committee nominated by the department council. Concentration is to be placed -beside a high standard of an architectural design and a comprehensive professional report- on the knowledge of the mechanical systems, the architectural systems, the structural systems and the construction management for the architectural design.

475 ARE -2 (Mechanical Installations in Buildings) **2 Credit Hours**

The course will explore the fundamentals of HVAC systems, the understanding of psychrometrics, which deals with the properties of moist air and the presentation of air conditioning processes in the psychrometric chart. This course addresses some of the common basic elements of HVAC systems and the types of systems that are used to meet the requirements of different building types and economic considerations. Since HVAC is used to maintain not only an acceptable level of thermal comfort within a space but also a healthy environment, the conditions that provide a comfortable and healthy indoor environment for humans are introduced.

461 ARE -2 (Contracts, Quantities and Specifications) **2 Credit Hours**

The different types of construction contracts, project preparation stages, measurement of quantities in all works, detailed description and specifications of all works need to accomplish the architectural job.

462 ARE -1 (Professional Practice) **1 Credit Hours**

This course contains the study of the different fields of the architectural engineering practice, professional ethics and the rules and the regulation that organize the profession.

492 ARE -4 (Graduation Project (2)) **4 Credit Hours**

This course is a continuation of graduation project 1. A mechanical system, an architectural system, a structural system and a construction management system should be designed. A complete set of drawings which include the architectural, mechanical, architectural, structural and construction management details should be prepared together with a detailed research report on the chosen field of specialization.

121 ARE -2 (Architectural Drawing and Presentation) **2 Credit Hours**

This course is concerned with architectural drawing techniques of different presentation methods including instrument used, types of line, drawing scales, architectural lettering, projections for different bodies, isometric drawings. However, the main concept of the course is to teach students the different symbols used by architects to recognize, indicate and represent architectural plans, elevations sections and architectural projects.

122 ARE -1 (Free Hand Sketching) **1 Credit Hour**

This course seeks to develop the "thinking hand of the designer" through explorations in freehand sketching. Students will be introduced to freehand drawing conventions and techniques through weekly assignments and record their individual growth in a required sketchbook. Methods of representation will include narrative storyboard perspectives, conceptual diagramming, plan/section/elevation linkage, landform, site and planted form representation and axonometric projection. Sketching opportunities through in-class field-trips to contemporary houses of interest, one-on-one instruction and peer review discussion will structure the learning.

111 ARE -3 (Basic Architectural Design Studio) **3 Credit Hours**

The course is an introduction to basic design and basic concepts of beauty in the context of architectural engineering. Through a series of studies and exercises students can learn, understand, analyse and apply basic principles and elements of design and architecture. Subsequently the student could express the function in a small-scale project.

131 ARE -2 (History of Architecture) **2 Credit Hours**

The course covers prehistoric architecture, Egyptian, Mesopotamian, Roman, Greek. the era of Renaissance, as well as architecture of the twentieth century in Europe and North America.

123 ARE -2 (Shadow and Perspective) **2 Credit Hours**

This course focuses on teaching the foundations and techniques of perspective and different kinds of angles and points of view and different foundations and techniques bring down the shade on the three-dimensional architectural drawings and applied through various exercises on the topics scheduled in the studio.

141 ARE -2 (Building Construction (1)) **2 Credit Hours**

The aim of this course is to teach the students the building construction stages, basic building components and the different structural systems, emphasis is to be placed on frame and load bearing structures. Different types of stair cases are to be studied in detail also working drawings

for the mentioned topics are to be drawn.

112 ARE -3 (Architectural Design Studio (1)) **3 Credit Hours**

To design simple architectural schemes for example (Artist studio, a small housing unit) This scheme should cover all design aspects with emphasis on functional design.

232 ARE -2 (Theory of Architecture (1)) **2 Credit Hours**

To study the beginning of Architecture and it was developed, and the factors that influenced it. Emphasis is to be placed on building elements and the basic functional design of buildings. Application of functional design on building such as hotels, restaurants and office buildings.

281 ARE -2 (Drawing by Computer (1)) **2 Credit Hours**

This course provides an introduction to Computer-Aided Design (CAD). The course introduces drafting concepts pertaining to CAD in general, and those that are particular to a selected drafting package. Throughout the course, the emphasis is placed on two-dimensional drawing techniques. The course is primarily based on developing and enhancing 2D computer modeling skills through hands-on experience.

242 ARE -2 (Building Construction (2)) **2 Credit Hours**

The aim of this course is to teach the students the complementary secondary building components (chosen important elements) and building finishing materials and the basic of their implementation. The theoretical lessons are to be supported by working drawings for two level frame structural building drawn by students.

213 ARE -3 (Architectural Design Studio (2)) **3 Credit Hours**

To design slightly complicated architectural schemes for example (intermediate school, health centre, technical institute---etc) This scheme should cover all design aspects with emphasis on architectural composition.

271 ARE -3 (Engineering Mechanics) **3 Credit Hours**

Introduction to engineering mechanics, Victor operations, Force system resultant. Equilibrium of a practical, Equilibrium of rigid body, Equilibrium of a particle in two and three dimensions. Structural analysis including methods of joint and method of sections, Friction, Moment of inertia.

233 ARE -2 (Theory of Architecture (2)) **2 Credit Hours**

This course is concerned with Western architectural movements from the pre-modernism (19th century) through the modern movement, post modernism to the Late-Modernism architecture. This study will be conducted through the work of the high-tech and de-construction movements pioneers. The concept of sustainability and green buildings will be addressed.

282 ARE -2 (Drawing by Computer (2)) **2 Credit Hours**

This course covers the basics of 3D architectural modeling and presentation packages through sharing drawing files created by AutoCAD 3D with other presentation programs such as 3D Max/Rivet/SketchUp and Photoshop. Computer-Aided Designand its implementation skills to advanced 3D architectural concepts are covered through hands-on experience, including 3D modeling, rendering, and Image processing.

214 ARE -3 (Architectural Design Studio (3)) **3 Credit Hours**

To design moderately complicated architectural schemes for example (sport centre, factory with one production line....etc.) This scheme should cover all design aspects with emphasis on using wide span roofs.

272 ARE -3 (Structural Mechanics) **3 Credit Hours**

Mechanical behaviour of the solid materials (e.g. Steel bars, purlins, beams) under different loads. The relationship between exerted loads and their reactions. Shear force and victors operation. Friction lows, Material resistance, Twisting victors. Flexibility curve and bending beams. Equilibrium laws. Equations of motion, Work and energy, Impulse momentum and vibrations.

243 ARE -3 (Geotechnical Engineering) **3 Credit Hours**

Introduction to geotechnical engineering, soil formation, engineering properties of soils, stress distribution in soils, consolidation of soils, settlement of structures. Types and design of foundations and retaining structures.

351 ARE -2 (Urban Planning) **2 Credit Hours**

The explanation of the theories, strategies and regulations of the urban planning at the local,

regional and national levels coupled by a practical exercise on an urban site within Najran city.

344 ARE -2 (Working Drawings) **2 Credit Hours**

The explanation of the contents of working drawings and terminologies used. The preparation of the basic set of working drawings (architectural, sewage and waste disposal systems and sanitary fittings, and electromechanical) for a multi- story building.

315 ARE -3 (Architectural Design Studio (4)) **3 Credit Hours**

The design of an urban project and to design a complicated architectural scheme for example (civic centre, Commercial and residential complex...etc.) within the urban centre. This scheme should cover all design aspects with emphasis on the surrounding urban entities.

373 ARE -2 (Thermo- and Fluid Mechanics) **2 Credit Hours**

An introduction of the basic concepts of thermo-fluid mechanics. Fluid properties, Nature of ideal and real fluid flow in pipes. The pressure and fluid statics in immerged surfaces. Analysis and design of pipe network and loses of pipe flow. Physical and thermo-physical properties of fluids. Testing the choice and performance of pumps.

334 ARE -2 (History of Islamic Architecture) **2 Credit Hours**

This course covers the following titles: Architecture in the era of Prophet Mohammad and the Caliphs, Architecture in the Umayyad and the Abbasid era, Architecture in Al Andalos, Architecture in Fatimid Ayoubi, Architecture in Seljuk and Ottoman era, Architecture valuable Persia, Architecture in the Indian subcontinent, and the Architecture in the Eastern Asia.

352 ARE -2 (Climatic Design) **2 Credit Hours**

This course explores aspects of climate relevant to building design, and applies passive design concepts and methods to energy efficiency and environmentally responsible building design. Topics include climate and thermal comfort parameters, passive design strategies, energy systems, and environmental implications of building. Emphasizes practical applications for environmental and structural design with respect to the KSA hot arid climate.

345 ARE -2 (Working Drawing Designs) **2 Credit Hours**

The preparation of designed working drawings for chosen architectural details of specific building.

316 ARE -3 (Architectural Design Studio (5)) **3 Credit Hours**

The design of a complicated architectural scheme for example (General or specialised 250-bed-Hospital, International Airport...etc.) This scheme should cover all design aspects with emphasis on the Landscape, the overall aesthetic values.

374 ARE -2 (Architectural Systems in Buildings) **2 Credit Hours**

The aim of this course is to present basic principles of electricity and magnetism as necessary for an understanding of the application of architectural services in buildings; to introduce students to the applications of these principles to architectural distribution in buildings; to outline the principles of electric motors, transformers and switchboard design. The types and use of cables and enclosures in and around buildings; methods of assessment of loads and cable sizes; principles of operation of transformers and motors and the design of switchboards and earthing, emergency evacuation lighting and early warning information systems; and Anti-Lighting System. Also, this course introduces the fundamental principles of lighting design for interior and exterior applications; and a basic understanding of data transmission via copper wire and optical fiber.

493 ARE -0 (Field Training) **0 Credit Hours**

Eight weeks training in a relevant industry under the supervision of a faculty member. Each student must submit a technical report about his achievements during the training in addition to fulfilling any other requirements as assigned by the department.

453 ARE -2 (Housing) **2 Credit Hours**

The explanation of the housing variables. Housing issues ie: economic, socio-cultural, and environmental ones. Housing regulations, policies and strategies at the national and international levels. Also alternative applications for housing projects and rectification methods. This will be supported by a case study for an existing housing project.

454 ARE -2 (Illumination and Acoustics) **2 Credit Hours**

This course contents of two parts. The first part covers: Concept of light, vision, and colour. Luminaries and lamps, Lighting system design procedures, calculation and measurement techniques, evaluation of interior lighting quality, and daylighting analysis and design. Therefore, the second part of this course covers: noise control criteria and regulations, instrumentation, noise sources, room acoustics, walls, barriers and enclosures, acoustical materials and structures, vibration and noise control systems for buildings.

491 ARE -2 (Graduation Project (1)) 2 Credit Hours

The course concentrates on the applications of design and drawing skills of architectural engineering projects that are chosen according to the practical need in the local market. This course represents the resultant of all what the students learnt as far as architectural design, technical solutions, working drawings for engineering projects is concern. Technical reports should be written by students. This project is a supervised work preceded by set of specialized lectures.

475 ARE -2 (Mechanical Installations in Buildings) 2 Credit Hours

Introduction to basic concepts, terminology and design methods for building mechanical systems. Thermal comfort, building thermal performance, and heating & cooling load calculation procedures. Fire protection systems and smoke control. Water supply and distribution systems; Waste and drainage systems. Vertical transportation systems. Computer applications.

461 ARE -2 (Contracts, Quantities and Specifications) 2 Credit Hours

The different types of construction contracts, project preparation stages, measurement of quantities in all works, detailed description and specifications of all works need to accomplish the architectural job.

462 ARE -1 (Professional Practice) 1 Credit Hours

This course contains the study of the different fields of the architectural engineering practice, professional ethics and the rules and the regulation that organize the profession.

492 ARE -4 (Graduation Project (2)) 4 Credit Hours

This course is a continuation of the previous course (ARE 491-2). Here a high standard of design and drawing skills is required. Perfect design, environmental and technical solutions are expected to be studied. Student have to perform a research project on each of the following areas: structural systems, Architectural systems and lighting, Mechanical systems or construction and construction

management. This research project are performed under the supervision of the department staff.

STAFF MEMBERS

The Architectural Engineering Department has staff number of high caliber All of them have Ph.D. degree in different specialization in architectural Engineering. Their names with their specialties are shown below:

Chairman

Dr. Nedhal Ahmed Al-Tamimi

Table 5: Department Members

a) Associate Professors

No	Name	Specialty	Degree	University Name & Country	Graduation Year
1	Omer Abdulla Abu Elzein Mohamed	Environmental Building Design	Ph.D	University of Cardiff, U.K	1993

b) Assistant Professors

No	Name	Specialist	Scientific	University	Graduated

			Degree	Name & Country	Year
1	Abdultawab Mohammed Qahtan	Sustainable Design	Ph.D	UM University (Malaysia)	2012
2	Esam Salah Said Abdelmagid	Architectural Design	Ph.D	Assiut University Egypt	2009
3	Mohamad Abdulgader Algamadi	Interior Design	Ph.D	Ebn Altofail University Morocco	2010
4	Mohamed Magdy Hamed Hammoda	Cost Control	Ph.D	Alazhar University	1996
5	Nedhal Ahmed Al-Tamimi	Energy Efficient Design	Ph.D	USM University (Malaysia)	2012
6	Yaser Khaled A. Al.Sakkaf	Building Technology	Ph.D	USM University (Malaysia)	2009
7	Saad Mohammed Alqahtani	Urban planning and design	Ph.D	University of Texas at Arlington	2017
8	Abdalla Babiker Mustafa	Architecture Design and Planning	Ph.D	Alnielain University	2013

No	Name	Specialty	Degree	University Name & Country	Graduation Year
9	Bdar Alotabi	Environmental building design	MSc	UK	Not yet
10	Mohamed Abuhussain	Environmental building design	MSc	UK	Not yet
11			MSc	US	Not yet

c) Teaching Assistants

No	Name	Specialist	Scientific Degree	University Name & Country	Graduated Year

1	Abdulrahman Al Majadiah	Architecture Design	BSc	US	Not yet
2	Khalid Al Mazam	Architecture Design	BSc	US	Not yet
3	Omer Humaidan	Architecture Design	BSc	US	Not yet
4	Osama Asiri	Architecture Design	BSc	US	Not yet
5	Salah Al Mazmomi	Architecture Design	BSc	US	Not yet
6	Salih Nusair	Architecture Design	BSc	US	Not yet

LABORATORY AND DESIGN STUDIO FACILITIES

The Department is equipped with drawing studios and modern laboratory facilities supported by the faculty members and staffs. It comprises the following laboratories.

1. Two Computer laboratories.
2. Printing and photocopying room.

Drawing Studio

Computer laboratory (1)

Computer laboratory (2)

The Printing and Photocopying Office

The Printing and Photocopying Office

DEPARTMENT COMMITTIEES & UNITS

The department has several committees and units each of which is composed of a convener and at least two faculty members to assist in managing academic and administrative affairs of the department, see thee table depicted below.

Table 6. Illustrates Department Of Architectural Engineering Committees

NO.	COMMITTEE NAME	MEMBERS
1	Registration and examination committee	Dr. Yaser Khaled A. Al.Sakkaf
		Dr. Mohamed Magdy Hamed
2	Curricula and equalization committee	Dr. Omer Abdulla Abu Elzein
		Dr. Nedhal Ahmed Al-Tamimi
		Dr. Esam Salah Said Dr. Abdalla Babiker Dr. Mohamed Magdy Hamed
3	Quality Assurance committee	Dr. Abdultawab Mohammed Qahtan
		All Department Members
4	Facilities and safety committee	Dr. Mohamed Magdy Hamed

		Dr. Saad Mohammed Alqahtani Osama Asiri
5	Hiring, promotion and scholarship committee	Dr. Nedhal Ahmed Al-Tamimi
		Dr. Saad Mohammed Alqahtani Dr. Mohamad Abdulgader Algamadi
		Dr. Mohamed Magdy Hamed
6	Questionnaires committee	Dr. Yaser Khaled A. Al.Sakkaf
		Dr. Esam Salah Said Khalid Al Mazam
7	Field training and graduation project committee	Dr. Omer Abdulla Abu Elzein
		Dr. Nedhal Ahmed Al-Tamimi
		Dr. Abdultawab Mohammed Qahtan
8	Academic adviser committee	Dr. Mohamad Abdulgader Algamadi
		Dr. Abdalla Babiker Mustafa
		Omer Humaidan
9	Students activities committee	Dr. Mohamad Abdulgader Algamadi
		Osama Asiri
10	Scientific Research and Social Service committee	Dr. Yaser Khaled A. Al.Sakkaf Osama Asiri Salih Nusair

ADMISSION REQUIREMENTS & REGULATIONS FOR THE BACHELOR PROGRAMS

Admission Requirements of the college

Students who are admitted to architectural engineering program in Najran University should satisfy the general and special requirements as follow-

General Requirement

The general requirements are listed as follow-

1. The students shall only be admitted to the university upon the calculation of his average on 30% in general aptitude, 30% in achievement test and 40% in general secondary education, if the students wishes to enrol in preparatory year.
2. The students should obtain the general secondary certificate or its equivalent from the kingdom or abroad.

3. Not more than two academic years should have elapsed from the date of his obtaining such certificate or its equivalent.
4. The students should have a good conduct and proper behavior.
5. The students should successfully pass exam or personal interview (when conducted).
6. The students should be medically fit.
7. The students should obtain approval from his authority to pursue his studies if he works for any governmental or private body.
8. The students should not have been expelled from Najran University or any other university for academic or disciplinary reasons.
9. After the students is admitted, if it turns out that he has already been expelled for disciplinary or academic reasons, his admission shall be considered as void.
10. Students fulfilling all the requirements should present the stipulated documents to the deanship of admission and registration of the university.
11. The enrolled student cannot be enrolled for another degree at the same university or at any other university and should not have already obtained such degree.
12. The files of students shall be ruled out if it is found that he is late for admission tests. .
13. The files of students shall be ruled out if it is found that he is late for personal interviews and unable to present a genuine reason.
14. Students who are late in carrying out the admission procedures within the deadline set by the university and do not present an acceptable excuse to the deanship of admission and registration shall not be admitted.

The admission procedures are regulated by the "Education and Examination Regulations" available at URL
http://www.nu.edu.sa/en/admission-requirements;jsessionid=3B5F1C1672251709F4F35BA799549E70.s2?p_p_id=82&p_p_lifecycle=1&p_p_state=normal&p_p_mode=view&_82_struts_action=%2Flanguage%2Fview&_82_redirect=%2Fen%2Fadmission-requirements&languageId=ar_SA

Transfer Students and Transfer Courses

Transfer of students to architectural engineering program at Najran University can be done through three different channels as follows:

Transfer from Other Universities

General Requirements: With the consent of the administrator in charge, students may transfer from other universities in conformity with the rules adopted by the student affairs committee and according to the following general guidelines:

- The student must be enrolled at an accredited college or university.
- The student must not have been dismissed from that university for educational or disciplinary reasons.
- The student must meet the requirements of admission transfer.
- The transferred students are required to complete more than 60% of the total required credit hours in Najran University. The college council is responsible for equating the courses studied at other universities to the equivalent courses of the department and accordingly a recommendation is forwarded to the department council. The equated courses are then credited and applied to the student's academic record, but not be applied to the cumulative GPA.
- The transfer procedure should be completed within the period specified by the dean of admission and registration, provided that the period does not exceed end of the second week from the beginning of the academic semester. After the fulfilment of all requirements, the student receives a transfer notice allowing him to attend courses after the issuance of a university ID.
- The enrolment is considered void in the case of coming out that the student had been previously dismissed from a university due to disciplinary or educational reasons.

These requirements and process for accepting transfer students are governed by the Article #15.1 of the Policy on Regulations of Study and Examinations.

Additional Requirement: In addition to the above mentioned general requirements, few more requirements are set by the council of architectural engineering program. These requirements may be changed each year by the approval of program council. Currently these requirements are:

- Assure the students finish successfully the Preparatory Year Program or equivalents.
- Verify the condition of specialization in Najran University.
- Transfer from the similar engineering program.
- The student should have a minimum cumulative GPA of 3.5 (out of 5.0) or equivalent from a reputed college. This is complemented with other conditions developed by the College Council on a yearly basis.

Internal Transfer from Other Colleges within the University

General Requirements: With the consent of the administrator in charge, students may transfer from one college to another within the university in conformity with the regulations adopted by the Student Affairs Committee, and according to the following guidelines:

- The Student's grade point average (GPA) should not be less than 2.0.
- The Student must not have been previously transferred during his study at the university.
- The academic period remaining must be sufficient for the completion of the graduation requirements
- The student should apply to the dean of admission and registration about his transfer from one college to another by completing the appropriate form. Upon completion of the transfer procedures, the student will receive a notification allowing him to study at the college in which they are transferred to.
- All the transfer procedures are completed within the period determined by the office of dean of admission and registration, provided that the period does not exceed the first week after beginning of an academic semester.
- All the completed courses that are transferred from one college to another are academically recorded including semester grades, and grade point average (GPA) throughout his study in the university

Additional Requirements: Few additional requirements are set by the council of architectural engineering program beside the above mentioned general requirements. These requirements could be changed each year with the approval of program council. These requirements are:

- Students can apply for transfer only after studying at least one semester in the college they are registered. (Summer semester is not counted).
- Transfer from any non-science college to any college of engineering is not allowed.
- Transfer from any college that does not require preparatory year, is not allowed.

The minimum GPA for transferring from other colleges of the University to architectural engineering program is illustrated in Table below.

Table 7. The condition for transfer of student within the University

From	To	Minimum CGPA	Number of students
College of Medicine	Architectural Engineering Program College of Engineering	4	According to the capacity of the department which is decided each year by the department council
College of	Architectural	4	According to the capacity of the

Dentistry	Engineering Program College of Engineering		department which is decided each year by the department council
Applied Medical Sciences	Architectural Engineering Program College of Engineering	4	According to the capacity of the department which is decided each year by the department council
College of Computer Science and Information Systems	Architectural Engineering Program College of Engineering	4	According to the capacity of the department which is decided each year by the department council

Transfer from Any Other Program to Architectural Engineering within the College

General Requirements: With the consent of the administrator in charge, students may transfer from any other program of the college to Architectural engineering within the university in conformity with the regulations adopted by the student affairs committee, and according to the following guidelines:

- The student must have spent at least one semester in their major.
- The student is not entitled to be transferred within the same college from one major to another for more than twice during their tenure in the university.
- The academic period remaining must be sufficient for completion the graduation requirements.
- All the studied courses that are transferred from one major to another are mentioned in their academic record, including any awards, semester grades, and grade point averages GPA throughout their tenure in the university.

Additional Requirements:

The minimum GPA for transferring student within the University to Architectural engineering program is illustrated in table below.

Table 8. Transfer to Architectural Engineering Program from any other program of the College.

From	To	Minimum CGPA	Max number of students allowing to transfer per semester
Department of Civil Engineering	Department of Architectural Engineering	3.8	According to the capacity of the department which is decided each year by the department council
Department of Electrical Engineering	Department of Architectural Engineering	3.8	According to the capacity of the department which is decided each year by the department council

Visiting Student of Architectural Engineering to Other Universities

A student from the program (ARE) is entitled to complete some courses in another university upon the fulfillment of the following conditions:

- The student should be regular in their academic record and apply using a prescribed form available on the website: http://www.nu.edu.sa/web/engineering-college/70
  The college should receive the application at least two semesters earlier from their enrolment as a visitor student.
- The student must receive a prior consent from their academic institution permitting him to study as a visitor student along with the courses to be studied. The col
- lege is responsible to stipulate the equivalence of courses between two programs. The student would be given official letter from the Dean of Admission and Registration Affairs enabling them to begin registration.
- The studied courses must be completed at an accredited college or university.
- The courses, studied by the student outside the university, are made equivalent by considering all of its contents and the assigned credit hours must not be less than any courses included in the graduation requirements.
- The maximum number of credit hours that can be counted from other university should be less than 20% of the total credit hours required to graduate at Najran University.
- The equivalent courses for the visiting student are not considered in calculating their cumulative GPA.
- The student must provide the obtained grades to the office of dean of admission and registration within two weeks of the beginning of the academic semester. If the student fails to submit their grades, they are considered as non-attending.

Visiting Student from Other Universities to Architectural Engineering Department

The student at another university is entitled to study in Najran University as a visiting student under the following conditions-

- The student should have an academic record of at least two semesters from their current university.
- The student must not have been dismissed due to disciplinary or educational reasons.
- The student must obtain a prior written consent and enlisted courses to be studied from the deanship of admission and registration of his current university in order to study as a visitor in Najran University.
- The maximum limit of academic semesters that the student is allowed to study as a visitor is 2 semesters.
- The courses the student wishes to study should be registered in accordance with the registration requirements.
- The visiting student does not receive any grants by Najran University.
- By the end of his study, the student is provided with the results obtained in the courses studied by a transcript demonstrating the attained grades.

Transfer credit

Courses, taken by the students outside the Najran University, may be transferred upon the approval from the college council. Architectural engineering department or the concern department recommends on the approval of the equivalent courses along with its corresponding credit hours. The transferred equivalent courses are recorded in the student's academic profile. The equivalent credit hours are approved for only those courses in which the students has obtained a letter grade of 'C' or above. But the points of the equivalent courses are not used in the computation of CGPA of the student.

The transferred student submit an application asking for equivalent credits to the chairman of Architectural engineering department along with the original academic record and certified detailed description of the courses taken outside Najran University. The chairman of Architectural engineering department refers the application to the concerned academic advisor and curriculum committee for evaluation of equivalent credit. This evaluation is performed on a case-by-case basis. This evaluation is considered according to the following circumstances:

a) The credit hour of the course is equal or more than that of the equivalent course in Najran University.
b) The grade of the course obtained is 'C' or above.
c) The content of the course matches at least 80% of the same in Najran University.

After the department approves the credit transfer, the department applies for getting approval of the college council using the equivalency evaluations. After college council approves the application, it is sent to the deanship of admission and registration. The requirements and process for courses equivalency and credit transfer are governed by Article #43 of the Policy on Regulations of Study and Examinations.