SYLLABUS 2010-11
(UNDERGRAUATES)

DEPARTMENT OF ARCHITECTURE,
SCHOOL OF APPLIED SCIENCES AND TECHNOLOGY,

SHAHJALAL UNIVERSITY OF SCIENCE AND TECHNOLOGY,
SYLHET, BANGLADESH.

Department of Architecture

Syllabus 2010-11

First Year: *Semester I*

		Hours/Week Theory + Lab/Studio	Credit	Courses
ARC 111	Art and Architecture I (Ancient civilizations)	2 + 0	2 + 0	-
ARC 112	Design Studio I	0 + 9	0 + 4.5	-
ARC 119	Aesthetics and Design	2 + 0	2 + 0	-
ARC 114	Architectural Graphics I	0 + 6	0 + 2	-
ENG 101	English Language	2 + 0	2 + 0	-
ENG 102	English Language Lab & Viva-Voce	0 + 2	0 + 1	-
MAT101H	Mathematics	2 + 0	2 + 0	-
PHY 111A	Physics for Architects	3 + 0	3 + 0	-
	Optional Courses			
CEE 101	Environmental Ecology for Architects	2 + 0	2 + 0	-
	Total	**13 + 17 = 30**	**13+7.5=20.5**	

First Year: *Semester II*

Course No.	Course Title	*Hours/Week* Theory + Lab/Studio	Credit	Prerequisite Courses
ARC 121	Art and Architecture II (Medieval Period of Europe)	2 + 0	2 + 0	-
ARC 122	Design Studio II	0 + 9	0 + 4.5	ARC 112
ARC 123	ED I: Climate and Design	2 + 0	2 + 0	-
ARC 124	Architectural Graphics II	0 + 6	0 + 2	ARC 114
ARC 125	Art Appreciation	2 + 0	2 + 0	-
ARC 126	Computer Application I	0 + 3	0 + 2	-
ECO 103	Principles of Economics	4 + 0	4 + 0	-
	Optional Courses			
ENG 103	Advanced English	2 + 0	2 + 0	-
ENG 104	Advanced English (Lab & Viva-Voce)	0 + 2	0 + 1	-
	Total	**12 + 20 = 32**	**12+9.5=21.5**	

Second Year: *Semester I*

Course No.	Course Title	*Hours/Week* Theory + Lab/Studio	Credit	Prerequisite Courses
ARC 211	Art and Architecture III (South Asian Architecture: Buddhist & Hindu Period)	2 + 0	2 + 0	-
ARC 212	Design Studio III	0 + 12	0 + 6	ARC 122 ARC 124
ARC 213	Basic Physical Planning	2 + 0	2 + 0	-
ARC 214	Computer Application II	0 + 6	0 + 2	-
ARC 215	Building and Finish Material	2 + 0	2 + 0	-
ARC 217	ED II: Visual and Sonic Environment	2 + 0	2 + 0	-
CEE 207A	Structure I- Mechanics	2 + 0	2 + 0	-
	Optional Courses			
ARC 218	Idea Conception	0 + 3	1.5 + 0	ARC 119
	Total	**10 + 21 = 31**	**11.5+8=19.5**	

Second Year: *Semester II*

Course No.	Course Title	*Hours/Week* Theory + Lab/Studio	Credit	Prerequisite Courses
ARC 221	Art and Architecture IV (South Asian Architecture: Islamic Period)	2 + 0	2 + 0	-
ARC 222	Design Studio IV	0 + 12	0 + 6	ARC 212
ARC 223	Construction Methods and Details	2 + 0	2 + 0	-
ARC 224	Photography and Reproduction	0 + 3	0 + 1.5	-
ARC 225	ED III: Climate and Design II	2 + 0	2 + 0	ARC 123
ARC 226	Graphic Art and Sculpture	0 + 3	0 + 1.5	-
ARC 228	Field Work (Contemporary)	7 days	0 + 1	-
CEE 209A	Structure II- Basics Mechanics of Solids	2 + 0	2 + 0	-
CEE 203A	Building Services I – Plumbing	2 + 0	2 + 0	-
	Total	**10 + 18 = 28 + 7 days**	**10+10=20**	

Third Year: *Semester I*

Course No.	Course Title	*Hours/Week* Theory + Lab/Studio	Credit	Prerequisite Courses
ARC 311	Art and Architecture V (Modern Period)	2 + 0	2 + 0	-
ARC 312	Design Studio V	0 + 12	0 + 9	ARC 222
ARC 314	Working drawing I	0 + 6	0 + 1.5	-
CEE 309A	Cost Estimation	2 + 0	2 + 0	-
CEE 305A	Structure III – Mechanics of Solids	2 + 0	2 + 0	-
IPE 309	Building Services II - Mechanical	2 + 0	2 + 0	-
SOC 101C	Sociology	2 + 0	2 + 0	-
	Optional Courses			
ARC 313	Philosophy	2 + 0	2 + 0	-
	Total	**12 + 18 = 30**	**12+10.5=22.5**	

Third Year: *Semester II*

Course No.	Course Title	*Hours/Week* Theory + Lab/Studio	Credit	Prerequisite Courses
ARC 321	Art and Architecture VI (Contemporary Period)	2 + 0	2 + 0	-
ARC 322	Design Studio VI	0 + 12	0 + 9	ARC 312
ARC 323	Urban Design	2 + 0	2 + 0	ARC 213
EEE 305	Building Services III - Electrical	2 + 0	1.5 + 0	-
CEE 304A	Construction Workshop Material Lab	0 + 3	0 + 1.5	-
CEE 307A	Structure IV – Steel and Timber Structure	2 + 0	2 + 0	-
	Total	**8 + 15 = 23**	**7.5+10.5=18**	

Fourth Year: *Semester I*

Course No.	Course Title	*Hours/Week* Theory + Lab/Studio	Credit	Prerequisite Courses
ARC 411	Society and Bengal Architecture I	2 + 0	2 + 0	-
ARC 412	Design Studio VII	0 + 15	0 + 12	ARC 322
ARC 413	Interior Design	2 + 0	2 + 0	-
ARC 414	Interior Design Studio	0 + 6	0 + 1.5	-
CEE 403A	Structure V –Reinforced Concrete Design	2 + 0	2 + 0	-
	Optional Courses			
ARC 416	Field Work (Bengal)	7 days	0 + 1	-
BAN 401	Accounting	2 + 0	2 + 0	-
	Total	**8 +21 = 29+ 7 days**	**8+14.5=22.5**	

Fourth Year: *Semester II*

Course No.	Course Title	*Hours/Week* Theory + Lab/Studio	Credit	Prerequisite Courses
ARC 421	Society and Bengal Architecture II	2 + 0	2 + 0	ARC 411
ARC 422	Design Studio VIII	0 + 15	0 + 12	ARC 412
ARC 423	Landscape Design	2 + 0	2 + 0	-
ARC 424	Landscape Design Studio	0 + 6	0 + 1.5	-
ARC 425	Housing	2 + 0	2 + 0	-
CEE 405A	Structure VI - Elements of Building Structure	2 + 0	2 + 0	-
	Optional Courses			
ARC 427	Psychology	2+0	2 + 0	-
	Total	**10 + 21 = 31**	**10+13.5=23.5**	

Fifth Year: *Semester I*

Course No.	Course Title	*Hours/Week* Theory + Lab/Studio	Credit	Prerequisite Courses
ARC 511	Survey Technique and Analytic Method	2 + 0	2 + 0	-
ARC 512	Design Studio IX	0 + 18	0 + 15	ARC 422
ARC 513	Research Methodology	0 + 3	0 + 1.5	-
	Optional Courses			
ARC 513	Specification	2 + 0	2 + 0	ARC 314
	Total	**4 + 21 = 25**	**4+16.5=20.5**	

Fifth Year: *Semester II*

Course No.	Course Title	*Hours/Week* Theory + Lab/Studio	Credit	Prerequisite Courses
ARC 521	Professional Practice	2 + 0	2 + 0	-
ARC 522	Design Studio X - Thesis	0 + 18	0 + 15	ARC 512
ARC 524	Dissertation - Thesis	0 + 3	0 + 1.5	ARC 512
ARC 526	Professional Training	4 weeks	0 + 1	-
	Optional Courses			
CEE 501A	Construction Management	2 + 0	2 + 0	-
	Total	**4 + 21 = 25 + 4 weeks**	**4+17.5=21.5**	

Total Credits: 210

Degree Requirement

Credit requirement for B. ARCH degree at SUST is **200.** (A student must take minimum 10 credits from optional courses.)

Program Accreditation

Department of architecture, SUST is accredited by Institute of Architects Bangladesh (IAB).

Detailed Syllabus

Courses offered by Dept. of Architecture:

ARC 111 ART AND ARCHITECTURE I (Ancient Civilizations)
2 Hours/Week, 2 Credits

Course Objectives:

1. To facilitate basic knowledge about the evolutionary process of early human society and architecture.
2. To provide the knowledge of different political regimes and religious philosophy that influence development ancient civilizations.
3. Acquaint students with the major drivers behind shaping any civilization and their influence of art and architecture development.
4. Helping the students to develop skill towards art & architecture appreciation where students could identify architectural styles with relevance to age, time and location.

Course Contents:
Overview of the perceptual process of evolution in the Art and Architecture of ancient civilizations. Critical evaluation of ancient architecture and settlement design of major four river valley civilizations: the Nile river valley (Ancient Egypt), the Tigris/Euphrates river valley (Ancient Mesopotamia), the Indus river valley (Ancient India) and the Huang He river valley (Ancient China).

Introduction to classical architecture of Greece and Rome; Critical evaluation of the classical Architecture of Greece and Rome from political, social and philosophical point of view. Study of the potentiality of classical architecture in formation of the ordering principles.The Aegean and the Etruscan influence on development of Greek and Roman architecture.

References:

Fletcher.B	A History of Architecture. Architectural Press; 20 edition (21 Sep 1996)
Fazio.M	A World History of Architecture, Publisher: McGraw-Hill Professional; 2nd Rev ed.
Cole.E	The Grammar of Architecture, Bulfinch

ARC 112 DESIGN STUDIO I
9 Hours/Week, 4.5credits

Course Objectives:
1. Helping the students to understand the elements and principles of basic design as the building blocks of creative design through exercises that will develop the originality, expression, skill and creative thinking.
2. To introduce basic design principles to develop basic 2-dimensional visual compositions.
3. Understanding of architectural design aesthetic through simple projects
4. To introduce a series of exercises which will help the students to experiment with form and volume
5. To involve students in a series of exercises which will look at graphic and abstract representations of art.

Course Contents:
Study of human senses and their relationship to design. Exercises in two-dimensional basic composition with points, straight and curved lines and pure geometric shapes. Study of scale, order, balance, proportion, Rhythm, axis, solid-void relationship, symmetry, movement, flexibility, harmony, hierarchy, datum etc. in various media. Introduction of colour schemes. Understanding of forms in nature; Study of nature to understand the basic principles of design.

ARC 119 AESTHETICS AND DESIGN
2 Hours/Week, 2 Credits.

Course Objectives:
1. To motivate and inspire on what human and space does mean, what aesthetics and design holds power and what architecture/ architects can do for the society and human being.
2. To develop awareness on human and behavior, aesthetics and psychology, function and needs, space and architecture.
3. Acquaint students with the continuous process of design and thinking.
4. To make students competent to apply the basic design elements, color and texture.

Course Contents:
Introduction to the subject matter and purpose of aesthetics; Aesthetics in the realm of art and design, its relation to the common people. Aesthetics and the act of creation, Aesthetic knowledge as a system; Methods of aesthetics; Aesthetic activity, Essence and principal forms of aesthetics, Theoretical models of Aesthetics; Aesthetics as meta category - the Mood, Rasa and the Style; Psychology of perception and creation; Developments of ideas and their trends in the field of aesthetic activity, the concept and the architectural concept, theory of criticism.

Introduction; Definition of design; Basic theories of design related to use of point, line, plane, form, volume and space. Overview of theories and application of design proportion, scale and composition. Principles of spatial and formal organization.The source, generation and transformation of design elements, forms and spaces. Architectural design; Design methods; Design in nature; Man and design; Principles of Design; Elements of design, Architectural form, space, scale and proportioning system in relation to human perception and experiences.

References:

EuriBorev	Aesthetics
Colin Lyas	Aesthetics
Scranton Roger	The Aesthetics of Architecture
Anne Shultz	Aesthetics, An Introduction to the Philosophy of Art
Ranjon K Ghosh	Aesthetic theory and Art
J Palmer and M Dodson (ed)	Design and Aesthetics.

ARC 114 ARCHITECTURAL GRAPHICS I
6 Hours/Week, 2 Credits.

Course Objectives:
1. Acquaint students with the basic principles and medium of fundamental graphical representation.
2. Helping students to understand 2-dimensional architectural presentation drawings.
3. Apply the knowledge of graphical representations to produce basic architectural drawing.

Course Contents:
Line drawing quality; Study of scale; Lettering; Execution of plan, elevation and section; Execution of oblique, isometric and diametric drawings; Introduction to mechanical perspective.

References:

Ching, F.D.K.	Architectural Graphics
Gill,R.W	Rendering With Pen & Ink

ARC 121 ART AND ARCHITECTURE II (Medieval period of Europe)
2 Hours/Week, 2 credits

Course Objectives:
1. Aims to understand the chronological changes in society and belief in European nations after Roman era and continuity through
2. Helping the students to study the spread of Christianity as a religion and influence on architectural development through Europe focusing on church architecture.
3. Acquaint students with the construction techniques, structural evolution, material culture through different style of European medieval architecture.

Course Contents:
A critical evaluation of the architecture of Western civilization. Its roots in Etruscan and Roman architecture which developed through the ages of Early Christian, Byzantine and Romanesque periods resulting in the Gothic style. Revival of classical thoughts in the Renaissance period. Moorish architecture in Spain. Climatic, geographical, religious and social influences on the architecture in these periods. Structural innovations and construction systems adopted in different periods. Comparative study of the development of architectural styles in different periods to understand their development and changes.

References:

Fletcher.B	A History of Architecture, Architectural Press; 20th edition (21 Sep 1996)
Fazio.M	A World History of Architecture, Publisher: McGraw-Hill Professional;2nd Rev ed.
Cole.E	The Grammar of Architecture, Bulfinch
Harvey. J. H.	The Gothic World 1100-1600, London, 1950.
Murray, P.	Architecture of the Renaissance, New York, 1971.
Million, Henry, A. (ed)	The Triumph of the Baroque Architecture in Europe 1600-1750, London, 1999.
Minor, V. H.	Baroque and Rococo Art and Culture, London, 1999.

ARC 122 DESIGN STUDIO II
9 Hours/Week, 4.5 Credits.

Course Objectives:
1. To introduce the elements and principles of basic design as the building blocks of creative design through exercises that will develop the originality, expression, skill and creative thinking.
2. To introduce basic design principles to create visual composition by using 3-dimensional form.
3. Make the students understand simple space design issues with understanding of color, material, material and texture.
4. To involve students in a series of exercises which will look at graphic and abstract representations of art.
5. To teach student techniques of designing simple functional space in small scale.

Course Contents:
Relationship of Form and Space in three dimensions. Basic composition with colour schemes; Lines, planes, primary forms and other geometric forms. Introduction to the process of form making. Interaction of Form and Space. Exposure to the domain of architecture with simple functions. Study of a simple Architectural space.

ARC 123 ED-I, CLIMATE AND DESIGN I
2 Hours/Week, 2 credits

Course Objectives:
1. To introduce students with the fundamental knowledge about Climate and Tropical Climate.

2. Introduce students to the relevance of environmental control (climatic essentially) considerations in the design activities with special emphasis on principles of thermal design, natural ventilation and other climatic factors.
3. Understanding of the interplay of Man-Shelter-Climate in architectural design processes.
4. To help students to identify and analyze climatic problems in the design process.

Course Contents:
Solar Geometry; Introduction to Design with Climate; Human and his response to climate; Elements of climate and their influence on the built form; Built-environment design in various climatic zones; Tropical climate; Site climate.

Principles of thermal design and means of thermal control; Relationships between built form and sun, wind, precipitation etc.; Design methods and procedures of passive climatic control.

References:

Koenigsberger, Ingersoll, Mayhew, Szokolay	Climate Design Manual of tropical climate
Norbert Lechner	Heating, Cooling, Lighting

ARC 124 ARCHITECTURE GRAPHICS II
6 Hours/Week, 2 Credits.

Course Objectives:
1. To help the students understanding the principles and media of advanced graphical representation.
2. To introduce and exercise 3D architectural presentation drawings.

Course Contents:
Execution of mechanical perspective; Introduction to shades, shadows and reflections; Presentation & rendering.

Execution of single view drawings such as Axonometric drawings, mechanical perspectives; Introduction to shades, shadows and reflections; Presentation & rendering. Presentation techniques in various media.

References:

Ching, Francis.D.K	Architectural Graphics
Gill,Robart.W	Rendering With Pen & Ink

ARC 125 ART APPRECIATION
2Hours/Week, 2 credits

Course Objectives:
1. To introduce the basic languages of appreciation and criticism.
2. To teach to appreciate and evaluate various form of art in a wide range of boundary conditions.
3. To enable students to relate to the vast world of Art and Architecture while working on creative projects in the design studio sessions.

Course Contents:
Criticism and Appreciation. Definition of art; Relationship between art & science; Art as social phenomenon; Function of art; The method of art; Branches of art; Evolution of different art forms; Introduction to concept, perception and development of art in different context.

Understanding of all media of art like music, poetry, theatre, film etc. Characteristics of various forms of art, meaning of art, art as experience and expression, the language of visual art, typology of visual art, analysis of the work of art; theory of criticism (this is a complementary course to ARCH 119: Aesthetics & Design).

References:

Faulkner, R., Ziegfeld, E., and Smagula, H.	Art Today (sixth edition); Holt, Rinehart and Winston, Inc. 1987
Lyas, C.	Aesthetics; Routledge; London.2003
Nelson, R.S. and Shiff, R.	Critical Terms for Art History (second edition) 2003
Read, H.	The Meaning of Art; Penguin Books Ltd., London. 2003
Bore, Yuri	Aesthetics (Sociological Aspect)
Lies ,Colin	Aesthetics (Philosophical Aspect)
Herbert Read	The Art of Sculpture (Sculpture)
Planet Drum	Micky Hert (Origin of Music)
Ashok Mitra	Poschim Europer Chitrakala, Chobika k bola, Europe er vashkarjo.
Dheman Das Gupta	Composition, Cinemar image (Form Appreciation)
Shattajit Roy	Bishoy Chalochitra (Film Appreciation)

ARC 126 COMPUTER APPLICATION I
3 Hours/Week, 2 Credits

Course Objectives:

1. To introduce computer operation principles and explore image editing through computer graphics software like Photoshop, Illustrator, Corel draw etc.
2. To expose the students to image making and vector graphics illustration through visual compositions using graphics applications.
3. To introduce students with technical aspects (Image size, resolution, printing, scanning, file management, color mode, output format etc.) of computer aided two-dimensional graphics for digital, web and print format.
4. Helping the students to conduct graphic design projects applying digital tools.

Course Contents:

Basic computer application; Architectural design graphics, Photo-shop, CorelDraw etc. Using suitable Computer Aided Design through Design project.

ARC 202C AUTOCAD FOR CIVIL & ENVIRONMENTAL ENGINEERS
3 Hours/Week, 1.50 Credits

Basic notion about AutoCAD for civil & environmental engineering profession. Two-dimensional (2D) design by using AutoCAD tools. Relationship between 2D & 3D design. Methods for a presentable drawing.

ARC 211 ART AND ARCHITECTURE III (South Asian Architecture: Buddhist & Hindu Period)
2 Hours/Week, 2 Credits

Course Objectives:

1. To introduce students to the chronological development of Indian sub-continental architecture after Indus-valley civilization and continuity.
2. Acquaint students with development of Vedic culture, Buddhism and Hinduism as a cultural force on architectural development through the sub-continent focusing on religious architecture.
3. Accumulate ideas about construction techniques, structural evolution, material cultural through different style of Indian ancient and medieval architecture with emphasis on architectural elements. (Roof, window, floor, ornament)

Course Contents:

The course will include the basic essence of south Asian Architecture associating chronological development in the early age. Study of art and Architecture in the South Asia with special emphasis on the styles of the Vedic, Buddhist and Hindu periods up to the 17th century.

Reference:

Grover, S.	Buddhist and Hindu Architecture in India.
Brown, P.	Indian Architecture (Buddhist and Hindu Period), Taraporevara & Sons, Bombay, 1965.
Thapar, R.	A History of India
Edwards, M.	Indian Temples and Palace, Paul Hamlyn, London, 1959.
Nehru, J.	The Discovery of India, Meridian Books, London, 1946.
Piggot, S.	Pre-historic India, Penguin Books, Harmondsworth, 1966.
Rawlinson, H. G.	India: A Short Cultural History, The Cresset Press, London, 1937

ARC 212 DESIGN STUDIO III
12 Hours/Week 6 Credits.

Course Objectives:

1. To develop skills to formulate different spatial organizations.
2. To provide the knowledge of ergonomics and its application on architecture.
3. Helping the students to understand the relation between functional space and formal vocabulary.
4. Helping the students to develop ability to transform preliminary concepts into final design.

Course Contents:

Consideration of human being as the basis of architectural design; Study of anthropometry and ergonomics; Study of relationship between man – space – form – function. Introduction to scale and proportion in architecture; Understanding of environmental features interacting in shaping the architecture.

ARC 213 BASIC PHYSICAL PLANNING
2 Hours/Week, 2.00 Credits

Course Objectives:

1. To provide the knowledge on the chronological development of cities since the beginning of the earliest human settlements to the contemporary megalopolises, and beyond.
2. Helping the students to understand the social-cultural and political forces that influenced the growth of the cities throughout centuries.

3. Help them conceptualize basic theories in physical planning in relation to the study of architecture.
4. Foster the analytical and critical thinking in understanding various physical environments in terms of their social-cultural, environmental and technological correspondents.

Course Contents:
Origin and evolution of settlements and cities. City planning during ancient, classical medieval, neo-classical and modern periods.Industrial revolution and changes in the character of cities.New thoughts and ideas in planning after the industrial revolution.

The spatial structure of cities: concentric zone theory, sector theory, multiple nuclei theory, Christaller theory of size, spacing and distribution of central places. Rank-size rule.

Reference:

Doxiadis, C.A.	Ekistics: An Introduction to the Science of Human Settlements, Hutchinson and Co.Ltd.,London. 1968
All, P.	Urban and Regional Planning (third edition), Routledge, London. 1992
Gakkion, A.B. & Eisner, S.	The Urban Pattern: City Planning and Design, CBS Publishers and Distributors, New Delhi. 2000
Strayter, J.R. & Gatzke, H.W.	The Mainstream of Civilization (third edition), Harcourt Brace Jovanovich, Inc. New York. 1979
Bourne L.S. (ed.)	Internal Structure of the City: Readings on Space and Environment, Oxford University Press, Inc.. NY. 1971

ARC 214 COMPUTER APPLICATION II
6 Hours /week, 3 Credits

Course Objectives:
1. To introduce the students with the 3-d modelling and rendering tools and techniques.
2. Acquaint students with the basic applications of simulation-based software.

Course Contents:
Computer graphics and its basics. 2-D and 3-D graphics with the help of computer software (like Auto-Cad, 3D studio Max, Sketch-up). To understand and to use graphic software in Architectural presentation and design.

ARC 215 BUILDING & FINISH MATERIALS
2 Hours/Week, 2 Credits.

Course Objectives:
1. To facilitate necessary knowledge about the properties, characteristics, strength, manufacture, processing and application of materials.
2. Make the students understand the advantages and limitations of material according to types of building.

Course Contents:
Classification of different types to building materials. Preparation, manufacturing, use and application of brick, cement, sand, concrete, steel, timber, etc.

Classification of different types to finish materials. Preparation, use and application of glass, plastic, tiles, paint, roofing insulation, etc. Detail sketches.

Reference:

Aziz, M. A.	Engineering Materials
Smith, R. C.	Materials of Construction
Anders, C. K.	Manufactures Manuals and Brochures

ARC 217 ED-II, VISUAL & SONIC ENVIRONMENT
2 Hours/Week, 2 Credits.

Course Objectives:
1. To introduce basic principles of design considering different aspects of visual and sonic environment.
2. Acquaint students with the properties and application of natural and artificial light.
3. To facilitate necessary knowledge about the issues related to sound control and space planning.

Course Contents:
Visual: The environment, physical nature of the lighting environment, human responses to environmental vision factors. Daylight in Architecture, prediction tools and techniques of supplementary and artificial lighting, designing

for daylight in the tropics. Lighting and indoor space quality.

Sonic: The concepts and problems related to Architectural acoustics; properties of sound; the fundamental s of sound perception, generation and propagation; Behavior of sound in enclosed spaces. Principles of acoustic design of rooms for speech. Music and multi-purpose use. The concept of noise and noise and control; criteria for noise control design and acoustical measurements.

Reference:

Egan, M.D	Concept in Lighting for Architecture
Egan, M.D	Architectural Acoustics.
Koenigsberger, O.H	Manual of Tropical Housing & Building
Muktadir, M.A	Designing Buildings in the Tropic
Robbesis, Claude L	Day Lighting; Design and analysis

ARC 218 IDEA CONCEPTION
3 Hours/Week, 1.5 Credits.

Course Objectives:

1. To introduce the students with the theories of different design processes and their development phases.
2. Help the students to conceptualize basic theories in developing ideas and generating concepts in architecture.

Course Contents:
Idea projects based on Criticism. Idea generation. Concept formulation and application of design consideration.

ARC 221 ART AND ARCHITECTURE IV (South Asian Architecture: Islamic Period)
2 Hours/Week, 2 Credits

Course Objectives:

1. To introduce students to the chronological development of Indian sub-continental architecture during Delhi Sultanate and continuity.
2. Acquaint students with development of Islam as a cultural force on architectural development through the sub-continent focusing on religious architecture.
3. Accumulate ideas about construction techniques, structural evolution, material cultural through different style of Indian ancient and medieval architecture with emphasis on architectural elements. (Roof, window, floor, ornament)

Course Contents:
The emphasis will be laid on the medieval developments in continuation to its earlier roots. Critical evaluation of the art and architecture under the Muslim rule in South Asia. The course will conclude with Sources of Muslim Architecture in South Asia Region; Imperial style; Sur or Pathan period; Mughal period.

Reference:

Grover, S.	Islamic Architecture in India
Brown, P.	Indian Architecture (Islamic Period)
Koch, E.	Mughal Architecture
Shahnawaz, A.K.M	History of Indian Sub-continent – Sultan Period
Shahnawaz, A.K.M	History of Indian Sub-continent – Mughal Period

ARC 222 DESIGN STUDIO IV
12 Hours/Week, 6 Credits.

Course Objectives:

1. To provide the knowledge of climate-responsive design and its application on architecture.
2. To introduce the students with passive climatic controlling devices and methods.
3. Applying the knowledge to determine the building orientation with respect to cardinal directions.
4. Helping the students to understand context-based design and circulation design.

Course Contents:
Case studies to comprehend the underlying relationship among function, form, space and technology in architecture. Analysis of function in order to formulate architectural program to generate site specific architectural form in three dimensions. Understanding of basic concepts of architectural forms and identification of spaces in term of exterior-interior; served-service; activity-circulation etc. Report writing based on literature survey and field studies. Design of buildings with simple functions.

ARC 223 CONSTRUCTION METHODS & DETAILS
2 Hours/Week, 2 Credits.

Course Objectives:

1. To expose the students to the construction methods of several components of a structure such as foundation, brick work, floor, stair, door and windows etc.
2. To enable the students to learn detailing of both structural and finishing works of a construction.
3. Getting idea about the behavior of different elements of construction systems in relation to properties of materials.
4. To make students familiar with detailed illustrations and specifications related to construction details and techniques.

Course Contents:

Types of foundations, their methods and techniques of construction. Masonry works, different types of brick bond and their procedure, partition walls and cavity walls. Construction technique of lintels and arches. Method of damp proofing and its treatment.Types of floor and their construction system.

Stairs of different materials and construction technique. Carpentry joints, door-window and their classification. Classification and construction technique of roof.Plastering system. Application of paint, varnishes and other finishes.

Reference:

Kumar, Susil	Building Construction
Singh, Gurucharan	Building Construction
Punmia, B. C.	Building Construction
Francis D. K. Ching	Building Construction Illustrated

ARC 224 PHOTOGRAPHY AND GRAPHIC REPRODUCTION
3 Hours/Week, 1.50 Credits.

Course Objectives:

1. To develop skills to examine the chronological development of photography as a technology and an independent branch in art.
2. To help the students understanding the technical aspects, modes and methods of photography and photographic reproduction.
3. Apply the knowledge to incorporate photography as a tool and representational technology in architecture.
4. Helping the students to develop ability to integrate visual communication skills based on creative aptitude of the learners.

Course Contents:

Introduction to photography- photography as a representation art and as an independent art media, basic conception of image, Importance of photography in Architectural study and documentation. Operations of camera, types of camera, lenses, films, pixel. Understanding exposure, depth of field. Photography projects: typical exercises starting with under-over-optimum exposure, depth of field, etc. and continuing with landscape- panorama, micro, night-time, profile-portrayal, modelling, theme photography; photography of architecture (interior-exterior) and its mock-up models. Dark room techniques in black and white, basic instructions about computer manipulated photo prints.

ARC 225 ED-III, CLIMATE AND DESIGN II
2 Hours/Week, 2 Credits.

Course Objectives:

1. Make the students understand the geographical influence on climatic zones.
2. Getting clearer idea about design interpretation of climatic data.
3. Apply the knowledge to integrate the climatic aspects and design development stages.

Course Contents:

Relationship to the environment and response to climate. Geo-physical forces and built form; Passive means of controlled environment; Solar land planning and development; Use of building materials, utilization of natural and other resources and local construction skills. Communication and transmission of knowledge of indigenous building systems and techniques.

Innovative use of indigenous technologies in the built environment design. Passive means of climatic control in the built-environment. Design response in specific climatic regions (this is an advanced course of ARCH 123: Climate and Design-I).

References:

Koenigsberger	Climate Design
Ingersoll, M.S.	Manual of tropical climate.

ARC 226 GRAPHIC ART & SCULPTURE
3 Hours/Week, 1.50 Credits.

Course Objectives:
1. To introduce the students with different graphics design media.
2. To demonstrate them the application of graphical tools and instruments.
3. To develop skills of visual communication using software.
4. To make them competent with product design and sculpture making.

Course Contents:
Selection of drawing instruments, surfaces, typography. Graphic reproduction techniques and the pros and cons of the different systems to achieve the most effective presentation.

Sketching as an essential technique to record design ideas during conceptualization. Graphic design of posters, products, display, portfolio. Study and analysis of Sculpture. Exercises based on the use of different types of materials.

ARC 228 FIELD WORK (Contemporary)
7 days, 1 Credits.

Course Objectives:
1. Acquaint students with the influences of Bengal heritage on the development of contemporary Bengal architecture.
2. Helping the students to acquire practical experience of the contemporary landmark projects of Bengal architecture.
3. To facilitate the students with a scope to meticulously explore the service design and construction details of the high-density buildings.
4. To provide the students an opportunity to visit renowned architectural firms in Bangladesh.

Course Contents:
Students will visit contemporary buildings in Bangladesh to acquire practical knowledge on building service, performance and the context. So, they can get practical knowledge on sustainable buildings & can apply different ideas to their design. Students have to submit a report based on their fieldwork experience.

ARC 311 ART AND ARCHITECTURE IV (Modern Period)
2 Hours/Week, 2 Credits.

Course Objectives:
1. To introduce the students with various society and culture of modern era, and their architectural styles and thoughts
2. To provide the knowledge of the forces behind the movement as well as analyze the factors that lead the movement towards declination
3. Helping the students to study, compare and realize this complex movement on different perspective
4. Acquaint students with the remarkable architecture and notable pioneer architects of the modern era
5. To facilitate necessary knowledge to apply the knowledge to develop interest and consciousness for further study and investigation

Course Contents:
Overview of the formative strands of Modern Architecture: Neoclassical architecture, The Bauhaus. Cubism and the new conception of space. Critical appreciation of different forms of Art and Architecture in the 19th and 20th centuries. 19th Century Realism. Impressionism, Post Impressionism, Fauvism, Expressionism, Cubism, Purism, Orphism, Futurism and Vorticism. The New Collectivity: Art and architecture in the Soviet Union.

The Ideal Community, Alternatives to the Industrial City. The International Style. Monumentality. Modern Architecture in the USA, Europe, Latin America, Australia and Japan. Modernity, Tradition and Identity in the developing World. Pluralism in the 1970's. Modern Architecture and Memory: New perception of the post. The Vicissitude of ideology: CIAM and Team X. International theory and practice since 1962. (Reference be made on the Art & Architecture of SAARC countries).

References:
1. Kenneth Frampton: Modern Architecture: A Critical History.
2. William J. Curtis: Modern Architecture since 1900.
3. Manfredo Tafuri: Modern Architecture.

ARC 312 DESIGN STUDIO V
12 Hours/Week, 9 Credits.

Course Objectives:
1. To provide the knowledge of climate-responsive design and its application on architecture.
2. To introduce the students with passive climatic controlling devices and methods.
3. Applying the knowledge to determine the building orientation with respect to cardinal directions.

4. Helping the students to understand context-based design and circulation design.

Course Contents:
The principles and process behind generating architectural forms. Understanding the relationship of form and space to accentuate experiential qualities in architecture. Introduction of the basic relationship between structural logic and formal expression. Influence of technology in function, form and space.

ARC 314 WORKING DRAWING
6 Hours/Week, 1.5 Credits.

Course Objectives:
1. To make students capable to know the detail treatment of a building.
2. To inspire student to design in a module for better spatial, structural, material-based design.
3. To make students capable to prepare all necessary detail and easily readable drawing for civil construction works of a building.

Course Contents:
Design and drawings specifying materials and instructions for construction, Understanding construction process and techniques. The construction drawing will include preparation of working and detail drawings of all building components. Details of drainage, plumbing features, damp-proofing and insulation. Bathroom and kitchen layouts. Application of building codes and by-laws.

Design and drawings specifying materials and instructions to manufacturers of building elements, components, fittings and fixtures which are industrially produced understanding manufacturing process to generate creative design. The production drawing will include designing with variety of materials and manufacturing process of a range of building components like door, window, fitting and fixture of functional and decorative nature.

References:
1. Ralph W. Liebing: Architectural Working Drawings
2. Annette Spiro (Ed) & David Ganzoni (Ed): The Working Drawing: The Architect's Tool
3. Ralph W. Liebing: Handbook of Detailing: The Graphic Anatomy of Construction

ARC 313 PHYLOSOPHY
2 Hours/Week, 2Credits

Course Objectives:
1. To introduce the students with various notions, attributes of basic terms and definition of philosophy
2. Acquaint students with the geo-political context and philosophical thoughts of different human civilizations.
3. Helping the students to study, compare and realize the various school of thoughts, from east to west, from ancient to modern era.

Course Contents:
Introduction to philosophy, definition of philosophy, purpose of philosophy. Fundamental of philosophy; Nature of philosophical enquiry; Relationship of philosophy to science, history, politics, religion and specially to architecture. Cognitive psychology, learning, thinking and creativity, Environmental psychology and phenomenology of space, social psychology and architecture; Social logic of space.

ARC 321 ART AND ARCHITECTURE VI (Contemporary Architecture)
2 Hours/Week, 2 Credits.

Course Objectives:
1. To introduce the students with various notion and attribute of contemporary era, and their language and expression.
2. To facilitate necessary knowledge about geopolitical context and philosophical thought that shaped this era.
3. Helping the students to develop ability to study, compare and realize this complex movement on different paradigm.

Course Contents:
Crisis of Modernism in the society and in the field of literature, art and architecture; High modernism; Postmodernism as a reaction to Modernism. Theories and Manifestos of architecture, Deconstruction; Architecture and Disjunction, Eco-tech and hi-tech.

Recent developments in the fields of architecture around the world, with special reference to South Asian region, by the influence of new technology including seismic issues and changes in contemporary social vocabulary. Impact of globalization and open market system in architecture; Study of Architectural identity and regionalism in architecture; Contemporary Architecture of Bangladesh.

ARC 322 DESIGN STUDIO VI
12 Hours/Week, 9 Credits

Course Objectives:
1. To provide the knowledge of different types of structural system and their application on architecture.
2. Helping the students to understand the relation between functional space and structural expression.
3. Accumulate basic ideas about the advantages and limitations of various structural system and their combination on special cases.

Course Contents:
Comprehensive design exercise to understand the underlying complexity of building forms by exploring the characteristics of materials, structural systems, construction methods, building services and environmental requirements in relation to their creative formal expression. Creative / innovative response to site and surrounding landscape and built-forms. Architectural design of multistoried buildings for gravity and lateral loads on earthquake resilient design.

ARC 323 URBAN DESIGN
2 Hours/Week, 2 Credits

Course Objectives:
1. To introduce students with the evolution of cities urban forms, and urban spaces.
2. To develop skills to identify the element of city and their role in order to perceive the context.
3. Helping the students to realize the scope and nature of urban design current context.
4. Make the students to comprehend the design guidelines and principles in the field of urban design.
5. Acquaint students with the current practice of urban design and their various dimensions for sustainable urban future.

Course Contents:
Definition of urban design, its aims and objective. Global view and Context; Development of urban spaces through history; Modern concepts in urban design; Elements and domains of urban design; Perception and meaning of urban spaces-Scale, form, order and time space relationships.

Urban renewal, redevelopment, conservation etc. and development control. Principles and techniques of urban design, Analysis of physical pattern, Framework for development, Responsive environment – Connectivity, permeability, variety, legibility, appropriateness, richness and personalization. Contemporary concepts, context and trends.

Reference:

Spreiregen, P. D.	Urban Design: The Architecture of Towns and Cities, Mcgraw-hill Book Company.
Geddes, S.P.	Cities in evolution, Earnest Benn, Ltd., Benn Bros., Ltd., London 1946.
Howard, S.E	Garden Cities of Tomorrow, Faber &Feber, Ltd., London, 1946.
Rodwin, L.	The British New Town Policy, Harvard University Press, Cambridge, Mass., 1956.
Sittie, C.	The Art of Building Cities, Reinhold Publishing Corporation, New York, 1945.
Bowra,S.M.	Golden Ages of the Great Cities, Introduction by Sir Earnest Barker, Thames Hadson, London, 1952.

ARC 411 SOCIETY AND ARCHITECTURE OF BENGAL I
2 Hours/ week, 2 Credits

Course Objectives:
1. Helping the students to understand the chronological changes in the society of Bengal and their belief.
2. To facilitate necessary knowledge about the cultural history of human development in different areas of this region.
3. To develop skills to study cultural force on architectural development through Bengal focusing on religious architecture.

Course Contents:
Study of society, culture and Architecture of Bengal through the ages: Mauryan, Pala, Sena, Sultanate and Mughal periods. Language, custom, art and literature, and their relevance to Architecture and planning. Indigenous architecture of Bengal as a response to soci-cultural and geo-climatic forces.

Reference:

Nazimuddin Ahmed	Monuments of Bangladesh
Asiatic Society	Cultural Survey of Bangladesh
A B M Hossain	Architecture (Asiatic Society)

ARC 412 DESIGN STUDIO VII
15 Hours/Week, 12 Credits

Course Objectives:

1. Make the students understanding the scale of urban projects.
2. To develop skills to communicate with stakeholders directly.
3. Helping the students to develop ability in making sustainable design proposals for urban spaces.
4. To help them realizing the importance of conservation for the collective memory.
5. Acquaint students with methodologies involved in urban survey and design.

Course Contents:

Perception of urban context and the emergent forces that shape a city; Understanding urban activities, movement and environmental aspects to attain livability in cities and quality of life; Understanding urban design process – from program formulation to urban design interventions. Designing spaces between the buildings vis-à-vis urban masses I response to human needs and scale. Articulation of architecture into the public realm through design of building complexes at urban scale.

ARC 413 INTERIOR DESIGN
2 Hours/Week, 2 Credits.

Course Objectives:

1. To help them conceptualize basic theories of interior design and find out the scope of design.
2. Make the students understand the vocabulary and principles of interior design.
3. To help them to realize the environmental entities of interior space that plays significant role in interior design.
4. To develop professional skills to work in a team.
5. Helping the students to understand and maintain the professional ethics and design code during working process.

Course Contents:

Definition of Interior Space and Interior Design, relation between interior & exterior of a built form, Principles of interior design, interior design vocabulary, interior building elements – wall, ceiling, floor, door, window and their construction, articulation, operation.

Design of various interior spaces in relation to occupancy and environmental factors. Artificial lighting and acoustics of interior, Functional separation of spaces and interior furniture, mechanized ventilation. Finish materials and furniture details.

Reference:

John E. Flynn et al: Architectural Interior Systems; Lighting, Acoustics, Air
Francis D. K. Ching, Corky Binggeli: Interior Design Illustrated
Joseph De Chiara, Julius Panero, and Martin Zelnik: Time-Saver Standards for Interior Design and Space Planning
Flynn J: Conditioning
Ladau R: Color in Interior Design and Architecture

ARC 414 INTERIOR DESIGN STUDIO
3 Hours/Week, 1.5 Credits.

Course Objectives:

1. Acquaint students with the scope of interior design and basic theories about interior design.
2. Helping the students to develop ability in applying the design method and principal of interior design based on contextual issues.
3. Apply the knowledge of the method of local practice and resource available for interior design.
4. To develop the skill of verbal and technological representation of the interior design project.

Course Contents:

Preparation of interior design drawings for different types of spaces such as office, studio, bank, restaurant, club and shop. Detailed specifications of finish materials for floor, ceiling and wall. Natural and artificial lighting and ventilation. Fixed and movable furniture, decorative element, upholstery, drapery, art work, interior plantation, fountain, automation device.

ARC 416 FIELD WORK (Bengal)
7 days, 1 Credits.

Course Objectives:

1. Acquaint students with the influences of heritage, religion, culture, politics and climate on the development of Bengal architecture.
2. Helping the students to acquire practical experience of the heritage building sites of Bengal.
3. To facilitate the students with a scope to meticulously explore construction details of the heritage buildings..

Course Contents:

Students will visit historical buildings and archaeological sites in Bangladesh relevant to the course. Through the field

work students will be engaged with activities relating with historic building documentation and analysis to get practical knowledge on heritage conservation and apply different ideas to their design. Students are required to submit a report / travel blog after finishing the trip.

ARC 421 SOCIETY AND ARCHITECTURE OF BENGAL II
2 Hours/ week, 2 Credits

Course Objectives:
1. To develop skills to study cultural force on architectural development through Bengal focusing on secular architecture.
2. To provide the knowledge of construction techniques, structural evolution, material cultural through different age of Bengal architecture with emphasis on architecture and their planning.
3. Acquaint students with the influence of Bengal heritage on development art and architecture in Modern era and their practices.

Course Contents:
Study of society, culture and Architecture of Bengal through the ages: Colonial and post-colonial Bengal. Language, custom, art and literature, and their relevance to Architecture and planning. Contemporary architecture of Bangladesh – analyzing the roots and global forces.

Reference:

Nazimuddin Ahmed	Monuments of Bangladesh
A. H Dani	Muslim Architecture of Bengal,
A B M Hossain	Architecture (Asiatic Society)

ARC 422 DESIGN STUDIO VIII
15 Hours/Week, 12 Credits

Course Objectives:
1. Make the students understand the meaning of urban spaces through practicing various process of urban design.
2. To develop skills to realize the real problem of the city and find out the problem-solving strategy.
3. Help them conceptualize basic theories in housing in current context and to compare between housing and house.
4. To help the students to understand the process and guideline for designing a housing in local and international context.
5. Acquaint students with the methodology to investigate a community for creating a new housing for them.

Course Contents:
Study of city image, people perception of urban environment, physical development and municipal services through simulation, mapping and physical investigation. Projects focusing on urban renewal, regeneration, conservation, redevelopment and rehabilitation for urban areas. Investigation, analysis and design of housing/ communities with specific themes and their impact on the social, cultural and natural environment. Architecture of spiritual and emotional content.

ARC 423 LANDSCAPE DESIGN
2 Hours/Week, 2 Credits

Course Objectives:
1. Help them conceptualize basic theories in landscape design.
2. Make the students understand the concept and demand of out-door space.
3. To help them systematically analyze context of the landscape (i.e., social, cultural, and environmental).
4. To introduce landscape design tools for different out-door scales.
5. Acquaint students with the design process, focusing on site scale problems in a regional context.

Course Contents:
Landscape Architecture and its necessity in the built environment. Historical references. Biosphere and eco- system. Organization of various outdoor spaces. Environment and design. Site development. Location and sequence of outdoor activity. Circulation and linkages.

Introduction to plant and materials and their uses to enrich the built environment. Planting and gardening. A study of site selection, plane surveying, site development, topography, soils, grading, drainage, site utilities, landscaping, and planting will be used towards the assessment of buildings and site design.

References:

Simonds, J.O.	Landscape Architecture.
Catherine, D.	Form & Fabric in Landscape Architecture.

ARC 424 LANDSCAPE DESIGN STUDIO
3 Hours/Week, 1.5 Credits

Course Objectives:

1. Help them conceptualize basic theories in landscape design.
2. To develop skills to apply the concept and demand of out-door space.
3. To help them systematically analyze context of the landscape (i.e., social, cultural, and environmental).
4. To familiarize the students with landscape design tools for different out-door scales.
5. To introduce the design process, focusing on site scale problems in a regional context.

Course Contents:

Study of landscape natural and man-made elements, drawings and reports on outdoor elements and environment, Site analysis. Landscape graphics; Application of the principles and techniques of landscape design through design exercises of site planning and area development. Design of utility, maintenance and services.

ARC 425 HOUSING
2 Hours/Week, 2 Credits

Course Objectives:

1. Acquaint students with the local and global context, culture, spatial qualities, problems and policies of housing, the impacts on human and environment.
2. To aware the students on national and international housing legislations and regulations, limitations and possibilities, system of SWOT analysis.
3. To make students competent to apply the latest housing technologies respecting market scenario and context to face the necessary demands of housing in different levels (high, middle and low).
4. To develop leadership and cooperative qualities to work with all types of housing entrepreneurs and housing finance system.

Course Contents:

Housing policy and Planning; Housing and Community; Their influence on individuals, societies and their environment, Physical, social, economic and technical aspects of housing problems in Bangladesh. Legislations and regulations;

Low-cost and low-income group housing; Role of private and public sectors in housing; PPP; housing finance, space standards, housing infrastructure and other design requirements. Current housing technologies and market scenario.

References:

Adams,T. The Design of Residential Area, Harvard University Press, 1934.

Aldersons,S. Housing, Penguin, 1962,

Ameen, S. & Rahman,M. Transformation Properties in Shelter Generation: Study of a Government Built Low-Cost Housing Development Scheme, (Housing Development and Management, Canter for Built Environment, 1996, ISBN-86699.00-7)

Turner, C.J. Housing Priorities, Settlement Pattern and Urban Development in Modernizing Countries, 1968.

Wittkauer,R. Architectural Principles and the Age of Humanism, Tiranti, 1952.

ARC 511 SURVEY TECHNIQUE AND ANALYTIC METHODS
2 Hours/Week, 2 Credits

Course Objectives:

1. Acquaint the students with different surveying tools and methods.
2. Helping them to identify and apply appropriate methods for analytical data interpretation and understand the importance of analysis in research.

Course Contents:

Chain survey, traverse survey, plane table survey, levels and levelling, contours and layout surveys. Plan and Interpretations.

Analytic Methods and Social survey; Designing the research- purpose and goal, variables and universal, selection of methods. Planning of social survey-test, pilot / reconnaissance survey, population, universe etc. Methods of collecting information. Sampling; Questionnaire and interviews; Data processing. Documentation.

References:

M.A. Aziz, Surveying

Groat, L.N. and Wang, D.: Architectural Research Methods

London, K. and Ostwald, M.: Architectural Research Methods

ARC 512 DESIGN STUDIO IX
18 Hours/Week, 15 Credits

Course Objectives:
1. To prepare students with the practical and professional manner to deal a complex building project.
2. To make students capable to analyze FAR and to prepare Project Contract Proposal for the given project.
3. To develop skills to integrate project feasibility, program, architect-client ambitions and concept in a single frame with satisfaction and perfection.
4. To make students capable to design following the structural and brick module to decrease investment cost for construction.
5. To enable to prepare RAJUK Approval Sheet, Fire Safety Approval Sheet and Working (construction) Drawing.
6. To develop student's network and communication skill to deal with multi-professionals and project management.

Course Contents:
Exercise on professionally comprehensive work including all design phases from formulation of architectural program to preparation of working drawings; Identifying design task to specific realistic problems; applying the existing codes and bylaws, and concentrating on the most significant contemporary environmental and professional challenges.

ARC 513 SPECIFICATION
2 Hours/Week, 2 Credits

Course Objectives:
1. To introduce with the standards for specifications and rate schedule.
2. To acquaint them with common building and finishing materials and their specifications.

Course Contents:
Specification of common building materials and simple construction. Study and use of standard specification issued by engineering department in Bangladesh. Specification for special finishes, advanced/new building materials and direct construction elements.

Written details and documentations. Answering what, where, when, how in relation to drawn details for building construction. Specifying materials and methods of installation and precautions. EOI, TOR, RFP, Detail estimation, BOQ, Tender drawings, Shop drawings.

ARC 514 RESEARCH METHODOLOGY
3 Hours/Week, 1.5 Credits.

Course Objectives:
1. To introduce with the standards for specifications and rate schedule.
2. To acquaint them with common building and finishing materials and their specifications.

Course Contents:
Writing skills and Referencing, as well as Verbal and Written presentation skills and techniques would be assessed throughout the semester. The course would begin with Architectural project selection. Research design, Data collection, analysis and decision-making process. Research methods in architecture. Literature review, case studies and surveys. Lessons learned from past failures and success stories.

Reference:

Groat, L.N. and Wang, D.	Architectural Research Methods
London,K. and Ostwald,M.	Architectural Research Methods
Sanoff, H.	Methods of Architectural Programming

ARC 521 PROFESSIONAL PRACTICE
2 Hours/Week, 2 Credits

Course Objectives:
1. Make the students conscious of the duties and responsibilities of a professional architect.
2. Enhancing the Professional ethics.
3. Providing clearer idea about law and regulatory systems in the professional field.

Course Contents:
The role of the Architect in the building industry and process; duties, responsibilities and obligations of the Architect; general conditions of contract; owner-Architect relationship; Architectural services; the Architect and the public; legal responsibilities of the Architect; Architects code of Conduct. Ethics.

The Architect's office; administration of construction; Competitions; the Architect and his consultants; official correspondence; professional organizations: local and international. The regulatory system: planning and design controls, building code and approval process. Management principles and practices for the range of architectural practice.

Reference:

Namavati, R.	Principles of Professional Practice
IAB	Code of Ethics and Professional Conduct

ARC 522 DESIGN STUDIO X: THESIS
18 Hours/Week, 15 Credits

Course Objectives:

1. To help the students to learn different phases of thesis development methods for design projects.
2. To develop skills to address basic research question through architectural design.
3. To develop skills to evaluate site and context in relation with proposed program to inform the design process.
4. To enable them to deal with broader design problems in perspective of society, economy and environment using deeper research.
5. Make the students understanding Architecture as Multifaceted Multi-disciplinary discipline.

Course Contents:
Identification of viable projects of significance as thesis projects. Preparation of complete design solution based on investigation and analysis of the physical and contextual aspects of the problem, and on the understanding of design considerations of material, structure and form. Stress is given on the objective analysis of the related factors and in transforming them into a tangible Architectural solution of professionally acceptable quality. Design exercises of realistic complexities emphasizing professional level of competence. Formulation of Architectural programs for given projects. Preparation of design solution and development through the various phases.

ARC 524 DISSERTATION: THESIS
3 Hours/Week, 1.5 Credits

Course Objectives:

1. To introduce the students with the process of documentation and writing a thesis dissertation.
2. To develop skills to write a thesis dissertation.
3. To provide the knowledge about ethics associated with the dissertation writing process.

Course Contents:
Approach to report writing. Preparation of report to supplement the various aspects of the thesis project of Arc 522. Design Studio X. The report should reflect the student's research in areas related of the thesis, comparative analysis and case studies. This should lead to the formation of criteria and conceptual approaches, design program and guidelines for design of the thesis in Arc 522: Design Studio X (Thesis)

Reference:

Iain Borden	The Dissertation: An Architecture Student's Handbook, 2006

ARC 526 PROFESSIONAL TRAINING
4 Weeks (28 days), 1 credit

Course Objectives:

1. To motivate and to prepare students with the practical and professional manner.
2. To make students capable to understand professionalism and management.
3. To help them integrate project client dealings, design development, project management, execution and site supervision.

Course Contents:
The student is required to work in an Architectural firm under an authorized Architect/s for a minimum of 4 weeks to gain practical experience. After completing 90 credits, a student may opt to acquire professional experience on part time basis under a member of Institute of Architects. The student shall submit a portfolio of his professional works at his convenience before final term to be evaluated by a board of examiners for a satisfactory certificate.

Courses offered by other departments

ENG 101 ENGLISH LANGUAGE
2Hours/Week, 2 Credits.

1. Problems with: (a) Main Verbs; (b) Tense; (c) Modals and Modal-related patterns; (d) Causatives; (e) Conditionals; (f) Subjunctives; (g) Infinitives; (h) Have + Participle; (i) Auxiliary Verbs; (j) Pronouns, Relative Pronouns, Nouns and Adjectives, Nouns functioning as Adjectives and other Parts of Speech; (k) Determiners; (l) Comparatives; (m) Prepositions and prepositional idioms; (n) Point of View for Syntactical Pattern; (o) Agreement of verbs; (p) Introductory verbal; Modifiers; (q) Sentences and Clauses; (r) Word Choice—Vocabulary—Antonym, Synonym, Homonym, Homograph, Homophone; (s) Wh. Questions; (t) Punctuations: Full stop, comma, colon, semi colon, apostrophe, capital letter, hyphen, quotation marks, titles etc.; (u) Proofreading
2. Reading Comprehension
3. Composition (Argumentative Essay as per IELTS structure)

Recommended Books:

Barron's TOEFL
Allen, W. Stannard. Living English Structure
Cambridge IELTS series
Any other standard grammar book of Instructor's choice

ENG 102 ENGLISH LANGUAGE LAB & VIVA-VOCE
2Hours/Week, 1 Credit.

This course attempts to enhance students' listening and speaking abilities through learner-centered diverse skills and techniques in the forms of interactive sessions like pair works, group works, discussions, etc.

For testing student's skill in speaking English, four students will be called in at a time to viva board and interviewers will judge their skill in spoken English

MAT 101A MATHEMATICS
2Hours/Week, 2 Credits.

Course Objectives:

1. To give students fundamental knowledge of mathematical problem-solving skill.
2. To teach importance and relevance of mathematics for architectural education and knowledge.
3. To ensure a multidisciplinary approach for architecture education

Course Contents:

Differential Calculus: Function; limit; continuity; differentiation; successive and partial differentiation; Rolle's theorem; mean value theorem; maxima and minima. Integral Calculus: Integration by various methods; standard integrals; definite integrals; length of curves; area bounded by plane curves; volumes and surface areas of solids of revolution. Coordinate Geometry of Two Dimensions: Coordinate systems; pair of straight lines; circle; tangent and normal at a point on a circle; general equation of second degree. Coordinate Geometry of Three Dimensions: Distance between points; angle between two straight lines; plane through three points; angle between two planes; straight line through two points.

Books Recommended:

Thomas and Finney: Calculus and Analytic Geometry
E. W Swokowski: Calculus with Analytic Geometry
H. Anton: Calculus
Rahman and Bhattacharjee: Co-ordinate geometry of two and three dimensions
Loney, S. L.: Coordinate Geometry of Two dimensions
Smith, C.: The Analytical Geometry of Conic Sections

PHY 111A PHYSICS FOR ARCHITECTS
3 Hours/week, 3 Credits

Course Objectives:

1. To provide basic idea about physics in relation with architectural design.
2. To introduce concepts of temperature, heat, heat engines, laws of thermodynamics.
3. Teach theory of lights and its characteristics and relation with architectural lighting.

Course Contents:

Light: Photometry and illumination, measurements and units; Theories of light and its characteristics, Lamps, diffraction and polarization; defect of images. Sound: Simple harmonic motion, wave motion, transmission and intensity of sound waves, reflection, refraction and absorption of sound; units of sound intensity; building acoustics.

Books Recommended:

The Architect's office; administration of construction; Competitions; the Architect and his consultants; official correspondence; professional organizations: local and international. The regulatory system: planning and design controls, building code and approval process. Management principles and practices for the range of architectural practice.

Reference:

Namavati, R.	Principles of Professional Practice
IAB	Code of Ethics and Professional Conduct

ARC 522 DESIGN STUDIO X: THESIS
18 Hours/Week, 15 Credits

Course Objectives:

1. To help the students to learn different phases of thesis development methods for design projects.
2. To develop skills to address basic research question through architectural design.
3. To develop skills to evaluate site and context in relation with proposed program to inform the design process.
4. To enable them to deal with broader design problems in perspective of society, economy and environment using deeper research.
5. Make the students understanding Architecture as Multifaceted Multi-disciplinary discipline.

Course Contents:
Identification of viable projects of significance as thesis projects. Preparation of complete design solution based on investigation and analysis of the physical and contextual aspects of the problem, and on the understanding of design considerations of material, structure and form. Stress is given on the objective analysis of the related factors and in transforming them into a tangible Architectural solution of professionally acceptable quality. Design exercises of realistic complexities emphasizing professional level of competence. Formulation of Architectural programs for given projects. Preparation of design solution and development through the various phases.

ARC 524 DISSERTATION: THESIS
3 Hours/Week, 1.5 Credits

Course Objectives:

1. To introduce the students with the process of documentation and writing a thesis dissertation.
2. To develop skills to write a thesis dissertation.
3. To provide the knowledge about ethics associated with the dissertation writing process.

Course Contents:
Approach to report writing. Preparation of report to supplement the various aspects of the thesis project of Arc 522. Design Studio X. The report should reflect the student's research in areas related of the thesis, comparative analysis and case studies. This should lead to the formation of criteria and conceptual approaches, design program and guidelines for design of the thesis in Arc 522: Design Studio X (Thesis)

Reference:

Iain Borden	The Dissertation: An Architecture Student's Handbook, 2006

ARC 526 PROFESSIONAL TRAINING
4 Weeks (28 days), 1 credit

Course Objectives:

1. To motivate and to prepare students with the practical and professional manner.
2. To make students capable to understand professionalism and management.
3. To help them integrate project client dealings, design development, project management, execution and site supervision.

Course Contents:
The student is required to work in an Architectural firm under an authorized Architect/s for a minimum of 4 weeks to gain practical experience. After completing 90 credits, a student may opt to acquire professional experience on part time basis under a member of Institute of Architects. The student shall submit a portfolio of his professional works at his convenience before final term to be evaluated by a board of examiners for a satisfactory certificate.

Courses offered by other departments

ENG 101 ENGLISH LANGUAGE
2Hours/Week, 2 Credits.

Halliday and Resnick: Physics I and II.
Brijlal : Heat and Thermodynamics.
Brijlal : A text book of sound.
Brijlal : Optics.

CEE 101 ENVIRONMENTAL ECOLOGY FOR ARCHITECTS
2 Hours/Week, 2 credits

Course Objectives:

1. Acquaint students with the importance of natural balance of the eco-system.
2. To develop skills to study, compare and understand the biodiversity of nature.
3. Help the students understanding the impact of urbanization over the environment.
4. To provide the knowledge about reduction and prevention of environmental pollution.
5. To facilitate necessary knowledge about the new approaches in environmental technology and practices to improve our living environment.

Course Contents:

Definition; Habitat, Bio-geographical distribution and abundance; Evolution and adaptation; Inter specific interactions, Trophic levels and energy flow. Bio-diversity, Law of interdependence, study of ecological communities. Relationship of eco-systems with built-environment. Sustainable Development Goals.

Environmental problems in built-environment. Concepts of ecological conservation; Environmental pollution and mitigation measures. Concepts in ecological design i.e bio mimicry, cradle to cradle design, industrial ecology, landscape ecology.

Books Recommended:

Peter D. Stiling : Ecology
H.D. Kumar : Modern Concepts of Ecology
Eugene P. Odum and Gray W. Barret: Fundamentals of Ecology

ECO 105A PRINCIPLES OF ECONOMICS
4 Hours/Week, 4 Credits

Course Objectives:

1. Helping the students to understand economics as a forceful factor of architectural development.
2. To acquaint students with the principles of micro-economics and how demand and supply have impact on market economy
3. To develop skills to measure microeconomics indicators.
4. To provide the knowledge of the impact of GDP, growth and development, socio-economic development on building industry in Bangladesh.

Course Contents:

1. Introduction to Microeconomics: Definition and scope; basic concepts and tools—PPF and circular flow model; fundamental economic problems and solution systems; Concepts of demand, supply and equilibrium; concepts of total and marginal utility; concepts of production, cost and profit, characteristics of different types of markets.
2. Introduction to Macroeconomics: Key macroeconomic indicators and their performance measurement - GNP, GDP, inflation, unemployment; money, functions of money, function of commercial and central bank, monetary policy; fiscal policy and structure of govt. budget.
3. Development and related issues: Growth and development; concept of poverty and poverty measures; HDI; key human-socio-economic development indicators of Bangladesh.

Recommended Books:

Arnold, R A: Economics, South Western Publishing Company, Eleventh Edition
Bangladesh Economic Review relevant issues.
Mankiw, N G: Principles of Economics, Thomson South Western Publishing, Sixth Edition
Parkin, Michael, Economics, 12th ed.
Samuelson, P A and W D Nordhaus: Economics, McGraw-Hill USA, Nineteenth Edition.
Todaro M P and S C Smith: Economics of Development in the Third World.

ENG 103 ADVANCED ENGLISH
2Hours/Week, 2 Credits.

Part A:

1. IPA Symbols

2. Writing Composition (Essay, Paragraph and Report)
3. Letter Writing: Formal and Informal, Business Letters, Letters of opinion, Application, CV Writing, Fax, Email, Memo, etc.

Part B:

1. Short Story: 'Tolerance' by E.M. Forster
2. 'Dacca Gauzes' by Aga Shahid Ali

Recommended Books:

Barron's TOEFL
Cambridge IELTS series
Any other standard grammar book of Instructor's choice

ENG 104 ADVANCED ENGLISH (LAB & VIVA-VOCE)
1Hours/Week, 1 Credit.

1. Wide discussion on how to prepare a Seminar or Research paper) according to MLA Handbook, 7th edition) on either the short story or the poem taught in ENG 103.
2. Individual and group discussion in the stories (in the form of both lecture and interrogation) in the class.
3. Viva-voce

CEE 207A STRUCTURE I - MECHANICS
2 Hours/Week, 2 credits

Course Objectives:

1. To introduce the students with principles of loads, structural materials and transmissibility of force with examples.
2. Helping the students to understand the fundamental principles and structural behavior of concrete buildings in withstanding gravity, lateral (seismic and wind), and other environmental forces.
3. Make students aware of the impact of the environment on structural form.
4. To facilitate necessary knowledge about the meaning of a structure, its function, form, and relationship to architecture.

Course Contents:

Force; Equilibrium, Free body diagrams; Resultants and components; Coplanar concurrent forces; Moments and parallel coplanar forces; Centroid; Moment of inertia of areas; Maximum and minimum forces; Friction; Flexible chord; Calculation of bar forces for simple trusses.

Books Recommended:

Martin Bechthold, Daniel L Schodek: Structures, PHI Learning Private limited, sixth edition
Mario Salvadori: Structure in Architecture- the building of buildings
G. G. Schierle: Structure and Design
R K Bansal, Sanjay Bansal: Engineering Mechanics, Laxmi publications, New Delhi,3rd edition
Ferdinand L Singer: Engineering Mechanics, Harper Collins publications, 3rd edition
V. M. Faires: Analytic Mechanics

CEE 209A STRUCTURE II - BASIC MECHANICS OF SOLIDS
2.0 Credits, 2 Hours/Week

Course Objectives:

1. To introduce the students with applied mechanics as an important subject for architecture.
2. To enable students to understand various principles of strength of materials especially in the case of beams, columns and trusses.

Course Contents:

Fundamental concepts of stress and strain; Mechanical properties of materials; Stresses and strains in members subjected to tension and compression; Joints- welded and riveted; Shear force and bending moment diagrams for statically determinate beams and frames.

Flexural and shearing stresses in beams; Principal stresses; Slopes and deflections in statically determinate beams. Indeterminate beam analyses. Buckling of columns.

Books Recommended:

Mario Salvadori: Structure in Architecture, the building of buildings
G. G. Schierle: Structure and Design
R K Bansal: Strength of Materials, Laxmi Publications, New Delhi
FL Singer: Engineering Mechanics

CEE 203A BUILDING SERVICES I - PLUMBING
2.0 Credits, 2 Hours/Week

Course Objectives:
1. To introduce the students with the process of plumbing system in complex buildings.
2. To enable them to calculate the capacity and requirement of water supply.

Course Contents:
Introduction to Plumbing, Water requirements, Water resources, Water supply and distribution in buildings. Sewage and sewer system, Building plumbing of multi-storied buildings, rural sanitation programmes in Bangladesh.

Books Recommended:
Plumbing: M.A. Aziz

CEE 309A COST ESTIMATION
2.0 Credits, 2 Hours/Week

Course Objectives:
3. To introduce the students with the process of cost estimation of building construction.
4. To introduce with the standards for specifications and rate schedule.

Course Contents:
Study of modes of measurement adopted in Bangladesh context, various methods for cost estimation of buildings. Calculation of Plinth area and cubic contents including estimation and their bases for different buildings. Calculating quantities for earth work building items, abstracting of quantities and item rate.

Preparation of tender documents, rules, regulations and obligations. Determination of cost of construction. Cost analysis of the various items of construction, Preparation of schedules, Controls of cost, Case studies.

Books Recommended:
B.N. Dutta : Estimating and Costing.
P.L. Basin : Quantity Surveying.
G.H. Cooper: Building Construction and Estimating.

CEE 305A STRUCTURE III - MECHANICS OF SOLIDS
2.0 Credits, 2 Hours/Week

Course Objectives:
1. Helping the students to understand advanced knowledge on different systems of forces and their equilibrium and that a building is a system of forces in equilibrium.
2. To introduce transmissibility of forces & reactions and to basic structural system of beams and columns.

Course Contents:
Flexural and shearing stresses in beams; Principal stresses; Slopes and deflections in statically determinate beams. Indeterminate beam analyses. Buckling of columns.

Books Recommended:
Mario Salvadori: Structure in Architecture, the building of buildings
G. G. Schierle: Structure and Design
R K Bansal: Strength of Materials, Laxmi Publications, New Delhi
FL Singer: Engineering Mechanics

IPE 309 BUILDING SERVICES II – MECHANICAL
2.0 Credits, 2 Hours/Week

Course Objectives:
1. Helping the students to develop ability to describe, using proper terminology, the integrated design process and how it varies from the conventional design process.
2. Make the students understand the basic components of mechanical systems and terminology.
3. Helping the students to understand the basic concepts of mechanical systems design.
4. To enable the students to list all aspects of the mechanical design process, recognize proper.
5. To develop skills to do documentation of mechanical systems, and identify field-installed components.

Course Contents:

Thermodynamics: Introduction: Definition and applications of thermodynamics, Basic Concept and Definition: Systems and control volume, state and equilibrium, processes and cycles, thermodynamic properties, forms of energies; Laws of thermodynamics. Psychrometry: Definition, Psychrometric properties, Psychometric chart and its applications; Air-conditioning: Definition, importance and application of air-conditioning, Air-conditioning system, Basic refrigeration cycle: Basic concept, Vapor compression cycle for air cooling; Air-conditioning equipment, Cooling load calculation; Duct System Design: Concept of duct system, Importance and objectives of duct system design, Air handling and distribution: Different types of supply and return duct systems, Duct design methods; Fire hazards, Firefighting methods; Vertical transportation: Types of elevators, Determination of size and quality of elevators, Incoming and outgoing traffic handling, Escalators and moving ramps.

Books Recommended:

Grondzik, Kwok, Stein and Reynolds. Mechanical and Electrical Equipment for Buildings 11th Edition (Basic Books, 2009)

SOC 101C SOCIOLOGY
2Hours/Week, 2 Credits.

Course Objectives:

1. To introduce the background and building blocks of sociological subject matters.
2. To familiarize students with the concepts of scientific research and techniques.
3. To give emphasis on the evaluation of societies, culture and various social institutions.
4. Helping the students to understand different sociological theories on stratification, religion and so on.

Course Contents:

What is Sociology? Nature and scope of sociology: Origin and development of sociology as a separate discipline Doing Sociology: Scientific method and techniques for sociological investigation. Primary concepts: Society, Community, Community forestry, Association, Institution, Culture; Components of culture; Norms, values, folkways, mores, Cultural unity and diversity, Types of Society: From early hunting gathering to industrial development and globalization. Social Institutions: Family, Religion, Functionalist and Conflict Perspectives of institutions. Social Stratification and class structure: Systems of Stratification, Functionalist and Conflict Perspectives of Stratification, social mobility, Population and Environment: Population Growth, Ecological Balance, Ecosystem, Threats to global environment, the environment: A sociological issue. Social Change: Change and its factors, theories of social change. Collective Movement: Group, Crowd and Mob.

Recommended Books:

R.T. Schaefer and R.P. Lamm: Introducing Sociology
M.S. Bassis, R.J. Gelles and Levine: Sociology
Vander Zanden:Sociology: The Core
E.C. Cuff, W. Sharrock and D.W. Francis: Perspectives in Sociology
T.B. Bottomore:Sociology: A guide to problems and literature
Metta Spencer:Foundation of Modern Sociology
G. T. Miller:Living in the Environment

EEE 305 BUILDING SERVICES III – ELECTRICAL
2Hours/Week, 1.5 Credits.

Course Objectives:

1. Help the students understand basic theories in conception of electrical units and standards.
2. Make the students understand electrical drawing system, layout and estimation.
3. To develop skills to design illumination and lighting System.

Course Contents:

Electrical units and standards, Ohm's law, KVL and KCL, Basics of AC circuits, Introduction to electrical wiring, wiring system design, Fitting and Fixture layout, Conduit layout, drafting, and estimation. Design for illumination and lighting. Design for intercom, public address systems, telephone system and LAN. Design of security systems including CCTV, fire Alarm, smoke detector, burglar alarm, and sprinkler system. A design problem on a single/multi-storied building/structure.

Recommended Books:

Electrical Wiring Estimating and Costing by S.L. Uppal and G.C.Grag

CEE 304A CONSTRUCTION WORKSHOP MATERIAL LAB
1.5 Credits, 3 Hours/Week

Course Objectives:

1. To make students familiar with the properties, characteristics, and performance of building materials.
2. Acquaint students with the Construction Specifications Institute Master Format and its role in specifying materials for construction.
3. To provide an understanding of construction methods relating to major building materials.
4. To develop ability to realize the importance of environmental concerns in the selection of materials.
5. Apply the knowledge to emphasize the connection between design and the materials and tools that gives it presence.

Course Contents:

Introducing different types of engineering materials and their basic properties, Sieve analysis of sand, Compressive strength of cement, Compressive strength of concrete, Tensile strength of mild steel.
Introducing structural components of different types of buildings; Field trips to under- construction buildings; Building layout in the field (house setting); Cost estimation of a low-rise RCC building.

CEE 307A STRUCTURE IV – STEEL AND TIMBER STRUCTURE
2.0 Credits, 2 Hours/Week

Course Objectives:

1. To familiarize students with role and concept of steel structure in built environment.
2. To teach students with load distribution techniques in steel structure buildings.
3. To introduce different types of steel structures.
4. To gain fundamental knowledge of timber design

Course Contents:

Introducing steel structures. Allowable stresses, different types of trusses, wind and static load analysis of trusses, design of truss sections, design of steel beams, columns, different types of timber structures and their application.

Recommended Books:

Jr. Edwin H. Gaylord, Charles N. Gaylord: Design of steel structures, 2nd Edition
Mario Salvadori: Structure in Architecture, the building of buildings

CEE 307A STRUCTURE V –REINFORCED CONCRETE DESIGN
2.0 Credits, 2 Hours/Week

Course Objectives:

1. To familiarize students with role and concept of structure in built environment.
2. To teach students with load distribution techniques in building.
3. To introduce different types of structures.
4. To gain fundamental knowledge of RCC design.

Course Contents:

RCC: Fundamentals of reinforced concrete design; Design of concentric reinforced concrete columns; Design of reinforced concrete beams by USD; Design of slabs; Introducing flat slabs, flat plated, waffle slabs, ribbed slabs; Introduction to Ultimate Strength Design (USD).

Recommended Books:

Arthur H. Nilson et al: Design of Concrete Structures (13th ed.)
Mario Salvadori: Structure in Architecture, the building of buildings

BAN401 ACCOUNTING
2.0 Credits, 2 Hours/Week

Introduction to Cost Accounting, Concept of Cost, Objectives and importance of Cost accounting, Cost Concepts and Cost classification, Material Costing, Store-keeping and Inventory Control, Valuation of Inventory, Labor cost accounting, Chargeable expenses, Manufacturing and Non-manufacturing Overheads, Statement of Cost Production.

Recommended Books:

Charles T. Horngern, Management Accounting
Garrison, Managerial Accounting
G.L. Raybum, Principles of Cost Accounting: Managerial Application

CEE 307A STRUCTURE VI – ELEMENTS OF BUILDING STRUCTURE
2.0 Credits, 2 Hours/Week

Course Objectives:

1. To familiarize students with concept of advanced structural elements in built environment.
2. To teach students with load distribution techniques of different structural elements in building.
3. To introduce different types of structural elements.

Course Contents:

Introducing deferent types of structures (truss, arch, dome, shell, folded plate, shear wall etc.). Reinforced concrete columns, stocky and long. Vierendeel truss. Folded plates. Classifications of shells. Introducing pre-stressed concrete: Introduction, analysis and preliminary design of beam sections.

Recommended Books:

Arthur H. Nilson et al; Design of Concrete Structures (13th ed.)
Mario Salvadori; Structure in Architecture, the building of buildings

CEE 501A CONSTRUCTION MANAGEMENT
2.0 Credits. 2 Hours/Week

Course Objectives:

1. To introduce the students with the construction planning, scheduling, and estimating.
2. Acquaint students with the role of the architect in construction process.
3. To teach construction project management terminology.
4. To teach construction process communication and monitoring tools.

Course Contents:

Principles of management; Principles of construction management; Contract and specification; Construction planning and scheduling; PERT, CPM, Organization, Resource scheduling; Cost accounting management; Inventory control; Project planning and evaluation; Quantity surveying; Management for architects and engineers; Feasibility report and cash flow; Pay back periods; Cost-benefit ratio; Construction and Environmental project management.

Ordinance for Semester System for Bachelor's Degree**

1. Student Admission

1.1 Bachelors Degree:

The admission committee as per the rules of the university will conduct the admission process for Bachelor's degree. The student will be admitted in the first semester of an academic year in the individual discipline of different schools. A student will be eligible for re-admission in the first year first semester of the subsequent session if s/he was present in at least 25% of the classes or appeared at the semester final examination and his/her admission/semester fees was clear in the past semester session. Readmitted students will always be assigned the original Registration Number.

1.2 Student's Advisor:

After admission every student will be assigned to a student Advisor from the teacher of his/her discipline to guide him/her through the semester system. The advisor will maintain a student card containing complete academic records of the student, a duplicate of which will be supplied to the student every semester.

2. Academic Calendar

2.1 Number of Semesters:

There will be two semesters (1st Semester and 2nd Semester) in an academic year. The beginning and end of each semester will be announced in an academic calendar at the beginning of every academic year.

2.2 Duration of Semesters:

The duration of each semester will be as follows:

Classes	12 weeks
Recess before final Examination	2 weeks
Final Examination, grading etc.	5 weeks
Total	**19 weeks**

These 19 weeks may not be contiguous to accommodate various holidays.

3. Course Pattern:

The entire Bachelor's degree program is covered through a set of theoretical, practical and seminar courses and a short description of every course will be published by the syllabus committee of each discipline.

Course Development:

Major and Non-Major Courses: Every discipline will develop all the courses of the respective subject that will be offered by that particular discipline. These include major subjects for the respective discipline as well as non-major subjects for other disciplines. Courses for non-major subjects will be developed with close cooperation of disciplines concerned keeping into consideration the need of the students.

Syllabus: Syllabus committee will select and approve the courses from major courses of the discipline as well as non-major courses offered by other disciplines to develop the complete syllabus.

Course Instruction: The course instructor has to supply a copy of the detailed plan of the course instruction with information about the number of lectures per topic, number and type of assignments, number and dates of mid-semester examinations, suggested date of final examination, name of text material at the end of the course to submit to the syllabus committee.

Course Identification System: Each course is designated by a three-letter symbol for discipline abbreviation followed by a three-digit number to characterize the course. An extra letter may be used after the three digits to specify the department taking the non-major course.

Discipline Identification: The three-letter symbol will identify a discipline as follows:

(a) School of Applied Sciences and Technology:

ARC	Architecture
BMB	Department of Biochemistry and Molecular Biology
CEP	Chemical Engineering and Polymer Science
CEE	Civil and Environmental Engineering
CSE	Computer Science and Engineering

EEE	Department of Electrical and Electronic Engineering, 2010-11
FET	Department of Food Engineering and Tea Technology 2010-2011
IPE	Industrial and Production Engineering
PGE	Petroleum and Georesources Engineering

(b) School of Life Sciences

BEB	Department Genetic Engineering and Biotechnology

(c) School of Physical Sciences:

CHE	Chemistry
MAT	Mathematics
PHY	Physics
STA	Statistics
GEE	Department of Geography and Environment

(d) School of Social Sciences

ANP	Anthropology
BNG	Bangla
ECO	Economics
ENG	English
PSS	Political Studies
PAD	Public Administration
SCW	Social Work
SOC	Sociology

(e) School of Agriculture and Mineral Science

FER	Forestry

(f) School of Management and Business Administration

BAN	Business Administration

Course Number: The three-digit number will be used as follows:

(a) First Digit: The first digit of the three digit number will correspond to the year intended for the course recipient.

(b) Second Digit: The second digit will be reserved for the discipline to identify the different areas within a discipline. A discipline may use the number 0 and 1 to identify a course designed for non-major courses and the number 2-9 may be used for major courses.

(c) Third Digit: The third digit will be used to identify a course within a particular discipline. This digit can be used sequentially to indicate a follow up course.

Course Title and Credit: Every course will have a short representative course title and a number indicating the total credit as well as reference to prerequisite course if any.

Theory and Lab Course: If a single course has Theory and Lab then the course must be split into two courses and Theory and Lab courses should have separate course number.

Assignment of Credits:

Theoretical: One lecture per week per semester will be considered as one credit.

Practical Classes: Minimum two classes hour of a practical class will be considered as one credit.

Seminar, Projects, Fieldwork etc.: Will be assigned by the respective discipline.

Classification of the Courses:

Bachelor's Degree Courses: The Bachelor's degree courses will be classified into several groups and the syllabus committee will finalize the curricula selecting courses from the groups shown below.

a) **Major Courses:** In every discipline a number of courses will be identified as core courses and every student of a particular discipline will be required to take those courses. A student has to take at least 60% courses from his/her discipline.

b) **Non-Major Courses:** Every student is required to take at least 20% courses from related disciplines. These courses will be designed, offered and graded by the related disciplines.

c) **Other Courses:** To fulfill the requirement a student may take few other courses not directly related to his/her discipline. However, as per the university regulations s/he has a mandatory language courses.

4. Course Registration

Registration:
A student has to register for his/her courses and pay necessary dues within the first two weeks of every semester. Departmental student advisor will advise every student about his/her courses and monitor his/her performances.

Incomplete Courses:
A student to register his/her incomplete courses, if offered, from proceeding semesters before s/he can register courses from current or successive semester, otherwise s/he takes the courses when the desired course is offered next time. A student will not be allowed to take 100 and 300 level and 200 and 400 level courses simultaneously. 100 level courses mean courses of 1st and 2nd semesters, 200 level courses mean courses of 3rd and 4th semesters and so on.

Course Withdrawal:
A student can withdraw a course by a written application to the Head of the discipline through his/her course advisor on or before the last day of instruction. The Head of the discipline will inform it to the Chairman of the Examination Committee and the Controller of Examinations. The Controller of Examinations will send the revised registration list to the disciplines before the examination.

5. Graduation Criteria:

Bachelor's Degree:

Total Credits: No syllabus will have less than 140 credit hours in 8 (eight) semesters but a student has to complete for graduation all the credits prescribed by the syllabus committee for the session s/he is registered.

Total Years: A student will be given 4(four) extra semesters in addition to 8 semesters to complete his/her degree; however, his/her admission will be terminated if his/her remaining credits can not be acquired in his/her allowed time frame with the maximum allowable credits per semester.

Minimum and Maximum Credit: A student, if s/he is not a clearing graduate, has to register for at least 12 credits minimum and 30 credits maximum every semester.

Minimum Credit for a Clearing Graduate: For a clearing graduate (8th and subsequent semesters) condition for maximum and minimum credit requirements may be relaxed.

Course Repetition:
If a student has to repeat a course and that course is not offered and more s/he may take an equivalent course defined by the syllabus committee.

6. Examination System

A student will be evaluated continuously in the courses system, for theoretical classes s/he will be assessed by class participation, assignments, and quizzes, mid-semester examinations and final examination. For laboratory work s/he will be assessed by observation of the student at work, viva-voce during laboratory works, from his/her written reports and grades of examinations designed by the respective syllabus/examination committee.

Distribution of Marks: The marks of a given course will be as follows:

Class participation:	10%
Assignments and mid-semester examinations:	20%
Final examination:	70%

6.1.1 Class participation: The marks for class participation will be as follows:

Attendance	Marks
95% and above	10
90% to 94%	9
85% to 89%	8
80% to 84%	7
75% to 79%	6
70% to 74%	5
65% to 69%	4
60% to 64%	3
Less than 60%	0

A student will not be allowed to appear at the examination of a course if his/her class attendance in that course is less than 50%.

6.1.2 Assignments and Mid-Semester Examinations: There should be at least two mid-semester examinations/assignments but not more than three for every course. The course teacher may decide the relative marks distribution between the assignments, tutorial and mid-semester examinations. The answer script should be returned to the students as it is valuable to their learning process.

6.1.3 Final Examination: The final examination procedure will be as follows:

(a) External Examination: The examination committee will assign an external examiner either from the discipline or from outside for the final examination. The questions for the final examination will be prepared by the course instructor and by the external examiner. The examination committee will select/moderate the questions for the final examination.* The course instructor and the external examiner will examine and mark the answer scripts separately. The two marks will be averaged by the examination committee. If the marks by the two examiners differ by 20% or more the concerned answer scripts will be examined by a third examiner (recommended by the examination committee) and the highest two close marks among the three will be averaged by the examination committee. The marks (class participation, mid-semester and final examination) will be added together to get the final grade.

(b) Duration of the Final Examination: For all semesters there should be a 3-hour final examination for every course of 3 credits or more after the 14th week. For smaller courses the duration should be proportional to the credit hours.

7. Grading System

Letter Grade and Grade Point: Letter Grade and corresponding Grade-Point will be awarded as follows:

Numerical Grade	Letter Grade	Grade Point
80% and above	A+	4.00
75% to less than 80%	A	3.75
70% to less than 75%	A-	3.50
65% to less than 70%	B+	3.25
60% to less than 65%	B	3.00
55% to less than 60%	B-	2.75
50% to less than 55%	C+	2.50
45% to less than 50%	C	2.25
40% to less than 45%	C-	2.00
Less than 40%	F	0.00

7.2.1 GPA: Grade Point Average (GPA) is the weighted average of the grade points obtained in all the courses completed by a student in a semester.

7.2.2 CGPA: Cumulative Grade Point Average (CGPA) will be calculated by the weighted average of previous CGPA and current GPA.

7.2.3 F Grades: If a student obtains an 'F' grade his grade will not be counted for GPA and s/he has to repeat the course. If the same course is not available then the Head of the discipline will assign an equivalent course. An 'F' grade will be in his/her record permanently and s/he will not be eligible for honours or Distinction.

7.2.4 Improvement: A student will not be allowed to repeat a course for improvement if his/her grade is C- or better.

8. Distinction and Honours

Distinction: Candidates for four year B.A., B.Sc. and B.S.S. Honours degree will be awarded the degree with distinction if his/her overall GPA is 3.75 or above and s/he does not have any 'F' grade.

Honours: Candidates for four years Bachelor's of Engineering/Architecture degree will be awarded the degree with honours if his/her overall GPA is 3.75 or above and s/he does not have any 'F' grades.

***For the School of applied Sciences and Technology:** The committee will divide the questions in two equal parts/groups and every student has to answer from each part/group equally in separate answer scripts. The course instructor will grade the answer script of one part/group and the external examiner will grade the answer script of the other part/group. The marks will be added together to get the final grade.

** Ref: As per resolution of 89th Academic Council, dated 27th March 2006 and Emergency Academic Council, dated 21st March 2007.