UNIVERSITY OF JAMMU

NOTIFICATION
(18/Aug/Adp/54)

It is hereby notified for the information of all concerned that the Vice-Chancellor, in anticipation of the approval of the Competent Bodies, has been pleased to authorize the adoption of the Syllabi and Courses of Studies in the subject of Architecture **(B. Arch. Degree Programme)** for Semester III & IV from the Academic Session 2018-19 as per the details given in the **ANNEXURE (Pages 01 to 23)**

The Syllabi and Courses of Studies B.Arch. are available on the University Website: www.jammuuniversity.in.

Sd/-
DEAN ACADEMIC AFFAIRS

No. F.Acd/III/18/8988-8997
Dated: 24/08/2018

Copy for information & necessary action to:-

1. Special Secretary to the Vice-Chancellor, University of Jammu for the kind information of the Vice-Chancellor please
2. Sr. PA to the Dean Academic Affairs/Registrar/Controller of Examinations
3. Dean Faculty of Mathematical Sciences, University of Jammu
4. Principal, M.A.M. College, Jammu
5. Deputy/Assistant Registrar (Exams/Confidential)
6. Section Officer (Confidential)
7. Incharge Website

Assistant Registrar (Academic)

24/8/18 24/08/18

Revision No. 001
Revised on 01-08-2018

B.ARCH - Syllabus

IInd Year (Foundation Studies)

Semester	Subject	Subject Code	Method	Scheme
Semester 3 ODD	Architecture Design Studio I	FS223ADS1	DS/ CC	S
	History of Architecture III	FS223HOA3	CC	T
	Documentation of Design I	FS223DOD1	DS/ CC	S
	Building Construction & Technology I	FS223BCT1	DS/ CC	T
	Building Materials & Technology I	FS223BMT1	DS/ CC	T
	Building Systems & Management I	FS223BSM1	DS/ CC	T
	Theory of Structures I	FS223TOS1	DS/ CC	T
	Model Making Practices III	FS223MMP3	DS/ CC	S
	Software Systems & Applications II	FS223SSA2	SS	P
Semester 4 EVEN	Architecture Design Studio II	FS224ADS2	DS/ CC	S
	History of Architecture IV	FS224HOA4	CC	T
	Documentation of Design II	FS224DOD2	DS/ CC	S
	Building Construction & Technology II	FS224BCT2	DS/ CC	T
	Building Materials & Technology II	FS224BMT2	DS/ CC	T
	Building Systems & Management II	FS224BSM2	DS/ CC	T
	Theory of Structures II	FS224TOS2	DS/ CC	T
	Model Making Practices IV	FS224MMP4	DS/ CC	S
	Software Systems & Applications III	FS224SSA3	SS	P

Revision No. 001
Revised on 01-08-2018

SYLLABUS FOR DIFFERENT COURSEWORKS (THIRD SEMESTER)

1. Course: ARCHITECTURE DESIGN STUDIO I (FS223ADS1)

Course Intent:
Being the heart and soul of Architecture course on the whole, this course provides the framework to learn essential techniques for the production of spaces as well as important strategies in critical and analytical thinking. The course introduces students to all aspects of design which serve as a common knowledge base critical to the practice of architecture.

A constraint-based process is used to inform a series of both two-dimensional and three-dimensional exercises. Students gain an understanding of the design process; develop an understanding of our relationships to space, form, sequence and the environment; undergo rigorous research and iterative design; and develop strategies for translating concepts into spatial solutions.

Course Outcomes:
Will develop spatial thinking and skills necessary for the analysis and design of architectural space and form
Will help students understand architectural enclosures as mediating between people and the outside world.
Will understand and learn the integration of different aspects of design with an objective of bettering the design solution
Will gain exposure to design thinking processes including envisioning, planning and various forms of analysis all of which help shape a robust problem statement that forward design innovation
Will enable to work cooperatively as part of a team and take a leadership role when required
Will demonstrate basic competence in architectural design

Course Code	Course Semester	Course Scheme	Scheme Pattern	Evaluation Method	Evaluation Pattern	Marks Distribution
FS223ADS1	Semester 3	Studio	SBP/ECA or Combination	Internal	CA	20
					CP	5
					CC	5
					OW	5
					MT	15
			SBP/ECA/EVV or Combination	External	ET	50
TOTAL COURSE MARKS						100

Course Content:
This design studio sequence shall be Human Centered.
It is designed to develop students' abilities and skills for assessing user needs, developing building programs and creating meaningful architectural design solutions. In this course, students solve simple architectural design problems like layouts of KITCHEN/ TOILET/ BEDROOM/ DINING ROOM/ LIVING ROOM, etc. with special focus on ergonomics and anthropometry. The course concentrates on the ways in which basic human factors affect and inform architectural design. Lectures include topics such as ergonomics, anthropometry and behavioral aspects of design and human aspiration.

Revision No. 001
Revised on 01-08-2018

Books to Refer:

1. Architect's Data by Ernst Neufert, Peter Neufert, Johannes Kister
2. Human Dimension and Interior Space: A Source Book of Design Reference Standards by Julius Panero, Martin Zelnik
3. Human Factors and Ergonomics Design Handbook, Third Edition by Barry Tillman, David J. Fitts, Rhonda Rose-Sundholm, Peggy Tillman
4. Architect's Pocket Book of Kitchen Design by Charlotte Baden-Powell
5. Room and Furniture Layout Kit by Muncie Hendler

NOTE FOR COURSE FACULTY/ CO-ORDINATOR:
The Faculty/ Course Co-ordinator is free to conduct the course as per his/ her individual approach which may include but not limited to collaboration with other subject faculty, engaging an additional faculty for assistance, engagement of Industry experts for Lectures, use of Studio-based exercises, Audio-Visual inputs, use of Library, use of Internet, taking students for Field-work and Construction sites, etc. The Faculty/ Course Co-ordinator will ensure that whatever is being taught to the students falls strictly within the purview of "Architecture" and not outside it.
Please note that for all external support, proper permissions have to taken as per the protocol.

NOTE FOR PAPER SETTING AND EVALUATION:
Maximum course marks are 100 to be distributed as:

(A) INTERNAL (50 MARKS)

1. **Class Assignments (CA) – 20 Marks**
   Minimum three assignments are mandatory; the final marking will be done as average of the marks scored by the student in all the assignments. Late submissions will not be accepted without an officially documented excuse. Marks up to **20%** will be deducted for late submission.
2. **Class Presence (CP): 5 Marks**
   This is based purely on the class attendance record of the student. To be marked strictly as per the Evaluation Pattern.
3. **Class Contribution (CC) – 5 Marks**
   Consisting of student's contribution in class work, initiatives and leads during group work, etc. (and *not* attendance). This is based purely on the judgement of the Faculty vis-à-vis daily interaction with the students.
4. **Outstanding Work (OW) – 5 Marks**
   This will be based purely on the judgement of the Faculty vis-à-vis quality of the work as expected by the faculty from the students.
5. **Mid-Term (MT) – 15 Marks**
   Consisting of Studio Based Project/ Exhibition of Class Assignments or Combination thereof to be prepared/ conducted/ assessed by Internal Faculty/ Internal Jury/ Internal Examiner.

The Faculty is free to develop any marking pattern but the final marks awarded shall be strictly as per the prescribed Marks Distribution format.

Revision No. 001
Revised on 01-08-2018

(B) EXTERNAL (50 MARKS)

1. **End-Term (ET) – 50 Marks**
   Consisting of Studio Based Project/ Exhibition of Class Assignments/ External Viva Voce or Combination thereof to be prepared/ conducted/ assessed by External Jury/ External Examiner as approved by the University.

Revision No. 001
Revised on 01-06-2018

2. Course: HISTORY OF ARCHITECTURE III (FS223HOA3)

Course Intent:
This course captures the most important "Architectural Moments" in the historical background. It explores various facets of cultural, religious and traditional rituals that influenced the styles and practice of architecture around the world, although the main focus remains on Indian Architecture.

Course Outcomes:
Will introduce students to the historic background of different cultures and traditions in context to world architecture
Will create awareness about the technological advancements that significantly impacted the architectural development around the world
Will enable students to analyze what was appropriate and what was inappropriate in context with the world architecture

Course Code	Course Semester	Course Scheme	Scheme Pattern	Evaluation Method	Evaluation Pattern	Marks Distribution
FS223HOA3	Semester 3	Theory	MCQ/LAT/SAT or Combination	Internal	CA	20
					CP	5
					CC	5
					OW	5
					MT	15
			MCQ/LAT/SAT/ SBP/ECA/EVV or Combination	External	ET	50
TOTAL COURSE MARKS						100

Course Content:
INDIAN ARCHITECTURE:
Colonial Architecture with backdrop of science and technology, commerce and urbanization during the Industrial Revolution in England; architecture of Victoria Terminus; Cantonments & Bungalows like Raj Bhavan at Kolkata, the Senate House at Baroda University, the Rashtrapati Bhavan at New Delhi, the Gateway of India at Mumbai, Garrison Church of St. Martin at Delhi, Lalbhai House at Mumbai, Bombay Mutual Building, Golconde, Aurobindo Ashram at Pondicherry
Contemporary Architecture with focus on the buildings of Chandigarh like the Secretariat, Assembly & High Court at Chandigarh, Post Graduate Institute of Medical Research & Education, Punjab Engineering College, Tagore Theater; buildings at New Delhi like Sri Ram Center, Rabindra Bhavan, Azad Bhavan, Hall of Nations at Pragati Maidan; Institutional buildings like the Tata Institute of Social Sciences at Mumbai, IIT Kanpur, IIM Ahmedabad, IIM Bangalore; Industrial buildings like R&D Building Semi-Conductor Complex at Chandigarh, Industrial Projects for Escorts at Faridabad, Canteen for Mill workers at Ahmedabad; High rise buildings like Express Tower at Mumbai, Kanchanjunga Apartments at Mumbai, Ashoka Estate at New Delhi. Cultural resonance in Architecture with focus on Vidhan Bhavan at Bhopal; Kalakshetra Theater at Chennai; Vidhan Soudha at Bangalore; Gandhi Smarak Sangrahalaya at Ahmedabad; Sangath at Ahmedabad; Hotel Cida De Goa at Panjim; Asiad Village at Delhi; YMCA Staff Quarters at New Delhi.

Revision No. 001
Revised on 01-06-2018

Books to Refer:

1. Sir Banister Fletcher's A History Of Architecture By Banister Fletcher
2. Concise History Of Modern Architecture In India By Lang, Jon
3. Architecture In India Since 1990 By Rahul Mehrotra
4. Vistara: The Architecture of India, edited by Carmen Kaigal

NOTE FOR COURSE FACULTY/ CO-ORDINATOR:
The Faculty/ Course Co-ordinator is free to conduct the course as per his/ her individual approach which may include but not limited to collaboration with other subject faculty, engaging an additional faculty for assistance, engagement of Industry experts for Lectures, use of Studio-based exercises, Audio-Visual inputs, use of Library, use of Internet, taking students for Field-work and Construction sites, etc. The Faculty/ Course Co-ordinator will ensure that whatever is being taught to the students falls strictly within the purview of "Architecture" and not outside it.
Please note that for all external support, proper permissions have to taken as per the protocol.

NOTE FOR PAPER SETTING AND EVALUATION:
Maximum course marks are 100 to be distributed as:

(A) INTERNAL (50 MARKS)

1. **Class Assignments (CA) – 20 Marks**
   Minimum three assignments are mandatory; the final marking will be done as average of the marks scored by the student in all the assignments. Late submissions will not be accepted without an officially documented excuse. Marks up to **20%** will be deducted for late submission.
2. **Class Presence (CP) – 5 Marks**
   This is based purely on the class attendance record of the student. To be marked strictly as per the Evaluation Pattern.
3. **Class Contribution (CC) – 5 Marks**
   Consisting of student's contribution in class work, initiatives and leads during group work, etc. (and *not* attendance). This is based purely on the judgement of the Faculty vis-à-vis daily interaction with the students.
4. **Outstanding Work (OW) – 5 Marks**
   This will be based purely on the judgement of the Faculty vis-à-vis quality of the work as expected by the faculty from the students.
5. **Mid-Term (MT) – 15 Marks**
   Consisting of Multiple Choice Questions (MCQ)/ Long Answer Type Questions (LAT)/ Short Answer Type Questions (SAT) or Combination thereof.

The Faculty is free to develop any marking pattern but the final marks awarded shall be strictly as per the prescribed Marks Distribution format.

(B) EXTERNAL (50 MARKS)

1. **End-Term (ET) – 50 Marks**
   Consisting of Multiple Choice Questions (MCQ)/ Long Answer Type Questions (LAT)/ Short Answer Type Questions (SAT)/ Studio Based Project/ Exhibition of Class Assignments/ External Viva Voce or Combination thereof to be prepared/ conducted/ assessed by External Jury/ External Examiner as approved by the University.

Revision No. 001
Revised on 01-06-2018

3. Course: DOCUMENTATION OF DESIGN I (FS223DOD1)

Course Intent:
This course enables a better understanding of documentation of design in the form of drawings, specifications and schedules. It also gives insight into bidding procedures and contracts.

Course Outcomes:
To understand the documents required from conception to completion of a design project
To be able to prepare and comprehend the drawings and documents
To be able to write specifications and other contract documents

Course Code	Course Semester	Course Scheme	Scheme Pattern	Evaluation Method	Evaluation Pattern	Marks Distribution
FS223DOD1	Semester 3	Studio	SBP/ECA or Combination	Internal	CA	20
					CP	5
					CC	5
					OW	5
					MT	15
			SBP/ECA/EVV or Combination	External	ET	50
TOTAL COURSE MARKS						100

Course Content:
All about Drawing as communication, Drafting Equipment and its care, Drawing & Drafting Fundamentals, Drawing Classification Systems, Construction Drawings and Documents including Specifications and Contracts, Floor Plans, Roof Plans, Elevations, Sections.
There will be Group Excercises for measuring existing buildings and then documenting it.

Books to Refer:

1. Architectural Working Drawings by Ralph W. Liebing
2. Architectural Drawing by David Derne
3. Architectural Working Drawings: Residential & Commercial Buildings by William P. Spence
4. Commercial Drafting & Detailing by Allen Jefferis & Kenneth D. Smith
5. A Manual of Construction Documentation by Glenn E. Wiggins

NOTE FOR COURSE FACULTY/ CO-ORDINATOR:
The Faculty/ Course Co-ordinator is free to conduct the course as per his/ her individual approach which may include but not limited to collaboration with other subject faculty, engaging an additional faculty for assistance, engagement of Industry experts for Lectures, use of Studio-based exercises, Audio-Visual inputs, use of Library, use of Internet, taking students for Field-work and Construction sites, etc. The Faculty/ Course Co-ordinator will ensure that whatever is being taught to the students falls strictly within the purview of "Architecture" and not outside it.
Please note that for all external support, proper permissions have to taken as per the protocol.

NOTE FOR PAPER SETTING AND EVALUATION:

Revision No. 001
Revised on 01-06-2018

Maximum course marks are 100 to be distributed as:

(A) INTERNAL (50 MARKS)

1. **Class Assignments (CA) – 20 Marks**
   Minimum three assignments are mandatory; the final marking will be done as average of the marks scored by the student in all the assignments. Late submissions will not be accepted without an officially documented excuse. Marks up to **20%** will be deducted for late submission.
2. **Class Presence (CP): 5 Marks**
   This is based purely on the class attendance record of the student. To be marked strictly as per the Evaluation Pattern.
3. **Class Contribution (CC) – 5 Marks**
   Consisting of student's contribution in class work, initiatives and leads during group work, etc. (and *not* attendance). This is based purely on the judgement of the Faculty vis-à-vis daily interaction with the students.
4. **Outstanding Work (OW) – 5 Marks**
   This will be based purely on the judgement of the Faculty vis-à-vis quality of the work as expected by the faculty from the students.
5. **Mid-Term (MT) – 15 Marks**
   Consisting of Studio Based Project/ Exhibition of Class Assignments or Combination thereof to be prepared/ conducted/ assessed by Internal Faculty/ Internal Jury/ Internal Examiner.

The Faculty is free to develop any marking pattern but the final marks awarded shall be strictly as per the prescribed Marks Distribution format.

(B) EXTERNAL (50 MARKS)

1. **End-Term (ET) – 50 Marks**
   Consisting of Studio Based Project/ Exhibition of Class Assignments/ External Viva Voce or Combination thereof to be prepared/ conducted/ assessed by External Jury/ External Examiner as approved by the University.

Revision No. 001
Revised on 01-06-2018

4. Course: BUILDING CONSTRUCTION & TECHNOLOGY I (FS223BCT1)

Course Intent:
This course introduces students to principles and techniques of architectural construction & detailing. It develops an understanding of architectural detailing as an extension of the design process. It also develops an understanding of the significance of architectural detailing to the formal aesthetics of architecture.

Course Outcomes:
To understand the principles and techniques of architectural construction & detailing
To be able to represent construction materials, building components and their connections and assemblies
To be able to produce technically correct and proficient construction details

Course Code	Course Semester	Course Scheme	Scheme Pattern	Evaluation Method	Evaluation Pattern	Marks Distribution
FS223BCT1	Semester 3	Theory	MCQ/LAT/SAT or Combination	Internal	CA	20
					CP	5
					CC	5
					OW	5
					MT	15
			MCQ/LAT/SAT/ SBP/ECA/EVV or Combination	External	ET	50
TOTAL COURSE MARKS						100

Course Content:
GENERAL INTRODUCTION: Built environment, The structure, Primary and secondary elements, Component parts and functions, Construction activities, Construction documents, Construction drawings
SITE WORKS: Site survey, Site investigations, Soil investigation, Soil assessment and testing, Site layout considerations, Site security, Site lighting and electrical supply, Site office accommodation, Materials storage, Materials testing, Protection orders for trees and structures, Locating public utility services, Setting ouT, Levels and angles, Road construction, Tubular scaffolding and scaffolding systems, Shoring systems, Demolition
BUILDER'S PLANT: General considerations, Bulldozers, Scrapers, Graders, Tractor shovels, Excavators, Transport vehicles, Hoists, Rubble chutes and skips, Cranes, Concreting plant

The Faculty will ensure that the Explanatory Studio Drawings are prepared by the students for the underlined Topics above.

Books to Refer:
1. Construction of buildings, London, Vol. 1 to 5 by Barry R.
2. Fundamentals of Building Construction: Materials & Methods by Edward Allen and Joseph Iano.
3. National Building Code, Sp 7, by Bureau Of Indian Standards.

8

4. Mitchell's Advanced Building Construction by Foster, Stroud.
5. McKay's Building Construction by William Barr McKay
6. Fundamental Building Technology by Andrew J. Charlett, Craig Maybery-Thomas.
7. Building Drawing And Detailing by Balagopal T. S Prabhu.
8. Building Construction by B. C. Punmia.
9. Building Construction Engineering by Gurucharan Singh.
10. Building Materials And Construction by Sushil Kumar.

NOTE FOR COURSE FACULTY/ CO-ORDINATOR:
The Faculty/ Course Co-ordinator is free to conduct the course as per his/ her individual approach which may include but not limited to collaboration with other subject faculty, engaging an additional faculty for assistance, engagement of Industry experts for Lectures, use of Studio-based exercises, Audio-Visual inputs, use of Library, use of Internet, taking students for Field-work and Construction sites, etc. The Faculty/ Course Co-ordinator will ensure that whatever is being taught to the students falls strictly within the purview of "Architecture" and not outside it.
Please note that for all external support, proper permissions have to taken as per the protocol.

It is advisable that this course (FS223BCT1) be taught in close co-ordination with FS223BMT1, FS223BSM1 and FS223TOS1 for holistic understanding of the subjects.

NOTE FOR PAPER SETTING AND EVALUATION:
Maximum course marks are 100 to be distributed as:

(A) INTERNAL (50 MARKS)

1. **Class Assignments (CA) – 20 Marks**
   Minimum three assignments are mandatory; the final marking will be done as average of the marks scored by the student in all the assignments. Late submissions will not be accepted without an officially documented excuse. Marks up to **20%** will be deducted for late submission.
2. **Class Presence (CP): 5 Marks**
   This is based purely on the class attendance record of the student. To be marked strictly as per the Evaluation Pattern.
3. **Class Contribution (CC) – 5 Marks**
   Consisting of student's contribution in class work, initiatives and leads during group work, etc. (and *not* attendance). This is based purely on the judgement of the Faculty vis-à-vis daily interaction with the students.
4. **Outstanding Work (OW) – 5 Marks**
   This will be based purely on the judgement of the Faculty vis-à-vis quality of the work as expected by the faculty from the students.
5. **Mid-Term (MT) – 15 Marks**
   Consisting of Multiple Choice Questions (MCQ)/ Long Answer Type Questions (LAT)/ Short Answer Type Questions (SAT) or Combination thereof.

The Faculty is free to develop any marking pattern but the final marks awarded shall be strictly as per the prescribed Marks Distribution format.

(B) EXTERNAL (50 MARKS)

1. **End-Term (ET) – 50 Marks**
   Consisting of Multiple Choice Questions (MCQ)/ Long Answer Type Questions (LAT)/ Short Answer Type Questions (SAT)/ Studio Based Project/ Exhibition of Class Assignments/ External

Viva Voce or Combination thereof to be prepared/ conducted/ assessed by External Jury/ External Examiner as approved by the University.

10

Revision No. 001
Revised on 01-06-2018

5. Course: BUILDING MATERIALS & TECHNOLOGY I (FS223BMT1)

Course Intent:
This course provides an introduction to use of materials in construction. It also explores the roles and relationships of different materials with respect to function, form and performance of a building design.

Course Outcomes:
To gain knowledge of different materials that can be used in building construction
To be able to understand the role of each material in achieving your design goals
To be able to apply gained knowledge in selecting the right materials for the right cause

Course Code	Course Semester	Course Scheme	Scheme Pattern	Evaluation Method	Evaluation Pattern	Marks Distribution
FS223BMT1	Semester 3	Theory	MCQ/LAT/SAT or Combination	Internal	CA	20
					CP	5
					CC	5
					OW	5
					MT	15
			MCQ/LAT/SAT/ SBP/ECA/EVV or Combination	External	ET	50
TOTAL COURSE MARKS						100

Course Content:
CEMENTITIOUS MATERIALS: Types of Cementitious Materials, Portland Cements, Aluminous Cements, Natural Cements, Limes, Low-Temperature Gypsum Derivatives, Oxychloride Cements, Masonry Cements, Fly Ashes, Silica Fume (Microsilica)
AGGREGATES: Normal-Weight Aggregates, Heavyweight and Lightweight Aggregates
ADMIXTURES FOR CONCRETE: Chemical and Mineral Admixtures, Fibers for Concrete Mixes, Miscellaneous Admixtures
MORTARS AND CONCRETES: Mortars, Portland-Cement Concrete, Polymer Concretes, Concrete Masonry Units
BURNED-CLAY UNITS: Brick-Clay or Shale, Structural Clay Tile, Ceramic Tiles, Architectural Terra Cotta
BUILDING STONES: Properties of Building Stones, Freezing and Thawing of Stone
GYPSUM PRODUCTS: Gypsumboard, Gypsum Lath, Gypsum Sheathing Board, Gypsum Partition Tile or Block, Gypsum Plank
GLASS AND GLASS BLOCK: Window Glass, Glass Block
WOOD: Mechanical Properties of Wood, Effects of Hygroscopic Properties of Wood, Commercial Grades of Wood, Destroyers and Preservatives, Glues and Adhesives for Wood, Plywood and Other Fabricated Wood Boards
STEEL AND STEEL ALLOYS: Types of Irons and Steels, Properties of Structural Steels, Heat Treatment and Hardening of Steels, Effects of Grain Size, Steel Alloys, Welding Ferrous Materials, Effects of Steel

11

Production Methods, Effects of Hot Rolling, Effects of Punching and Shearing, Corrosion of Iron and Steel, Steel and Steel Alloy

Books to Refer:

1. Construction of buildings, London, Vol. 1 to 5 by Barry R.
2. Fundamentals of Building Construction: Materials & Methods by Edward Allen and Joseph Iano.
3. National Building Code, Sp 7, by Bureau Of Indian Standards.
4. Building materials by P. C. Vargheses.
5. Building Materials And Construction by Sushil Kumar

NOTE FOR COURSE FACULTY/ CO-ORDINATOR:
The Faculty/ Course Co-ordinator is free to conduct the course as per his/ her individual approach which may include but not limited to collaboration with other subject faculty, engaging an additional faculty for assistance, engagement of Industry experts for Lectures, use of Studio-based exercises, Audio-Visual inputs, use of Library, use of Internet, taking students for Field-work and Construction sites, etc. The Faculty/ Course Co-ordinator will ensure that whatever is being taught to the students falls strictly within the purview of "Architecture" and not outside it.
Please note that for all external support, proper permissions have to taken as per the protocol.

It is advisable that this course (FS223BMT1) be taught in close co-ordination with FS223BCT1, FS223BSM1 and FS223TOS1 for holistic understanding of the subjects.

NOTE FOR PAPER SETTING AND EVALUATION:
Maximum course marks are 100 to be distributed as:

(A) INTERNAL (50 MARKS)

1. **Class Assignments (CA) – 20 Marks**
   Minimum three assignments are mandatory; the final marking will be done as average of the marks scored by the student in all the assignments. Late submissions will not be accepted without an officially documented excuse. Marks up to **20%** will be deducted for late submission.
2. **Class Presence (CP): 5 Marks**
   This is based purely on the class attendance record of the student. To be marked strictly as per the Evaluation Pattern.
3. **Class Contribution (CC) – 5 Marks**
   Consisting of student's contribution in class work, initiatives and leads during group work, etc. (and *not* attendance). This is based purely on the judgement of the Faculty vis-à-vis daily interaction with the students.
4. **Outstanding Work (OW) – 5 Marks**
   This will be based purely on the judgement of the Faculty vis-à-vis quality of the work as expected by the faculty from the students.
5. **Mid-Term (MT) – 15 Marks**
   Consisting of Multiple Choice Questions (MCQ)/ Long Answer Type Questions (LAT)/ Short Answer Type Questions (SAT) or Combination thereof.

The Faculty is free to develop any marking pattern but the final marks awarded shall be strictly as per the prescribed Marks Distribution format.

(B) EXTERNAL (50 MARKS)

1. **End-Term (ET) – 50 Marks**
   Consisting of Multiple Choice Questions (MCQ)/ Long Answer Type Questions (LAT)/ Short Answer Type Questions (SAT)/ Studio Based Project/ Exhibition of Class Assignments/ External Viva Voce or Combination thereof to be prepared/ conducted/ assessed by External Jury/ External Examiner as approved by the University.

Revision No. 001
Revised on 01-06-2018

6. Course: BUILDING SYSTEMS & MANAGEMENT I (FS223BSM1)

Course Intent:
This course provides an overview of technical systems that serve buildings. It enables students to integrate architectural ideas and technical systems in ways that enrich the architecture and lead to a healthier, higher-performing and more sustainable built environment.

Course Outcomes:
To learn the fundamentals of different building systems like vertical transportation, HVAC, fire and life safety systems, etc.
To be able to understand the role of each system in achieving the desired building performance
To be able to apply gained knowledge in integrating the systems into architectural design

Course Code	Course Semester	Course Scheme	Scheme Pattern	Evaluation Method	Evaluation Pattern	Marks Distribution
FS223BSM1	Semester 3	Theory	MCQ/LAT/SAT or Combination	Internal	CA	20
					CP	5
					CC	5
					OW	5
					MT	15
			MCQ/LAT/SAT/ SBP/ECA/EVV or Combination	External	ET	50
TOTAL COURSE MARKS						100

Course Content:
VERTICAL CIRCULATION SYSTEM: Classification of Vertical Circulation Systems, Ramps, Stairs, Escalators, Elevator Installations, Definitions of Elevator Terms, Elevator Hoistways, Elevator Cars, Electric Elevators, Hydraulic Elevators, Planning for Passenger Elevators, Dumbwaiters, Conveyers and Pneumatic Tubes Mail Chutes
HEATING, VENTILATION & AIR CONDITIONING SYSTEM: Definitions of Terms of Heating, Ventilation, and Air Conditioning (HVAC), Heat and Humidity, Major Factors in HVAC Design, Ventilation, Movement of Air with Fans, Duct Design, Heat Losses, Heat Gains
METHODS OF HEATING BUILDINGS: General Procedure for Sizing a Heating Plant, Heating-Load-Calculation Example, Warm-Air Heating, Hot-Water Heating Systems, Steam-Heating Systems, Unit Heaters, Radiant Heating, Snow Melting, Radiators and Convectors, Heat Pumps, Solar Heating
METHODS OF COOLING AND AIR CONDITIONING: Sizing an Air-Conditioning Plant, Refrigeration Cycles, Air-Distribution Temperature for Cooling, Condensers, Compressor-Motor Units, Cooling Equipment-Central Plant Packaged Units, Zoning, Packaged Air-Conditioning Units, Absorption Units for Cooling, Ducts for Air Conditioning, Built-Up Air-Conditioning Units, Variable-Air-Volume (VAV) Systems, Air-Water Systems, Control Systems for Air Conditioning, Heating and Air Conditioning, Control of Computerized HVAC Systems, Direct Digital Control, Industrial Air Conditioning, Chemical Cooling, Year-Round Air Conditioning

14

Revision No. 001
Revised on 01-08-2018

ACOUSTIC SYSTEM: Sound Production and Transmission, Nomenclature for Analysis of Sound, Sound Characteristics and Effects on Hearing, Measurement of Sound, Sound and Vibration Control, Acoustical Performance Data, Acoustical Criteria, Helpful Hints for Noise Control

Books to Refer:

1. Building Services Handbook by Fred Hall.
2. Building Services by Mouafak Zaher
3. Building Services Engineering by David V. Chadderton
4. Plumbing Design And Practice by S. G. Deolalikar
5. Design of Mechanical and Electrical Systems in Buildings by J. Trost, Ifte Choudhury

NOTE FOR COURSE FACULTY/ CO-ORDINATOR:
The Faculty/ Course Co-ordinator is free to conduct the course as per his/ her individual approach which may include but not limited to collaboration with other subject faculty, engaging an additional faculty for assistance, engagement of Industry experts for Lectures, use of Studio-based exercises, Audio-Visual inputs, use of Library, use of Internet, taking students for Field-work and Construction sites, etc. The Faculty/ Course Co-ordinator will ensure that whatever is being taught to the students falls strictly within the purview of "Architecture" and not outside it.
Please note that for all external support, proper permissions have to taken as per the protocol.

It is advisable that this course (FS223BSM1) be taught in close co-ordination with FS223BCT1, FS223BMT1 and FS223TOS1 for holistic understanding of the subjects.

NOTE FOR PAPER SETTING AND EVALUATION:
Maximum course marks are 100 to be distributed as:

(A) INTERNAL (50 MARKS)

1. **Class Assignments (CA) – 20 Marks**
   Minimum three assignments are mandatory; the final marking will be done as average of the marks scored by the student in all the assignments. Late submissions will not be accepted without an officially documented excuse. Marks up to **20%** will be deducted for late submission.
2. **Class Presence (CP): 5 Marks**
   This is based purely on the class attendance record of the student. To be marked strictly as per the Evaluation Pattern.
3. **Class Contribution (CC) – 5 Marks**
   Consisting of student's contribution in class work, initiatives and leads during group work, etc. (and *not* attendance). This is based purely on the judgement of the Faculty vis-à-vis daily interaction with the students.
4. **Outstanding Work (OW) – 5 Marks**
   This will be based purely on the judgement of the Faculty vis-à-vis quality of the work as expected by the faculty from the students.
5. **Mid-Term (MT) – 15 Marks**
   Consisting of Multiple Choice Questions (MCQ)/ Long Answer Type Questions (LAT)/ Short Answer Type Questions (SAT) or Combination thereof.

The Faculty is free to develop any marking pattern but the final marks awarded shall be strictly as per the prescribed Marks Distribution format.

(B) EXTERNAL (50 MARKS)

1. End-Term (ET) – 50 Marks

15

Revision No. 001
Revised on 01-08-2018

Consisting of Multiple Choice Questions (MCQ)/ Long Answer Type Questions (LAT)/ Short Answer Type Questions (SAT)/ Studio Based Project/ Exhibition of Class Assignments/ External Viva Voce or Combination thereof to be prepared/ conducted/ assessed by External Jury/ External Examiner as approved by the University.

Revision No. 001
Revised on 01-08-2018

7. Course: THEORY OF STRUCTURES I (FS223TOS1)

Course Intent:
This course provides an insight into the selection and integration of structural types and practices in architecture. It helps students to understand the performance of structural typologies and consequences of the materials through which they operate.

Course Outcomes:
To learn about various structural systems and typologies
To be aware of the performance and material consequences of various structural systems
To be able to integrate these structural systems and typologies into the architectural designs successfully

Course Code	Course Semester	Course Scheme	Scheme Pattern	Evaluation Method	Evaluation Pattern	Marks Distribution
FS223TOS1	Semester 3	Theory	MCQ/LAT/SAT or Combination	Internal	CA	20
					CP	5
					CC	5
					OW	5
					MT	15
			MCQ/LAT/SAT/ SBP/ECA/EVV or Combination	External	ET	50
TOTAL COURSE MARKS						100

Course Content:
INTRODUCTION: Introduction to Structure and structural forms; natural and man made.
STABILITY & STRENGTH: Definition and meaning of Stability & Strength, their co-relation.
LOADS: Gravity Loads, Lateral Loads, Dynamic Loads, Impact Loads, Load Paths.
STATES OF STRESS: Tension, Compression, Shear, Torsion, Bending.
FORCES, MOVEMENT, LEVERS & MOMENT: Applied and Reactive Forces, Translational Movement, Rotational Movement, Levers, Moment.
STABILITY & EQUILIBRIUM: Introduction, Translational Equilibrium, Rotational Equilibrium, Sign Conventions, Equilibrium Equations, Free Body Diagrams and Familiar Examples of Equilibrium, Introduction to Bending in Beams.
WORKING WITH FORCES: Forces, Vectors and Line of Action, Combining and Resolving Concurrent Forces, Familiar Examples of Concurrent Forces.
SUPPORTS, REACTIONS & RESTRAINT OF MOVEMENT: Roller and Frictionless – Surface Supports, Pinned Supports, Fixed Supports, Hanger Supports, Familiar Examples of Support Conditions – Stable or Unstable.
LOAD DISTRIBUTION: Point Loads, Distributed Loads, Equivalent Point Loads, Uniformly Distributed Loads, Non – Uniformly Distributed Loads.

17

Books to Refer:

1. Tony Hunt's Structure Notebook
2. Understanding Structures by Fuller Moore
3. Building Structures: understanding the basics byy Malcolm Millais
4. Structure & Architecture by Angus J. Macdonald
5. Architect's Pocket Book by Charlotte Baden-Powell
6. Architectural Structures by G. G. Schierle

NOTE FOR COURSE FACULTY/ CO-ORDINATOR:

The Faculty/ Course Co-ordinator is free to conduct the course as per his/ her individual approach which may include but not limited to collaboration with other subject faculty, engaging an additional faculty for assistance, engagement of Industry experts for Lectures, use of Studio-based exercises, Audio-Visual inputs, use of Library, use of Internet, taking students for Field-work and Construction sites, etc. The Faculty/ Course Co-ordinator will ensure that whatever is being taught to the students falls strictly within the purview of "Architecture" and not outside it.

Please note that for all external support, proper permissions have to taken as per the protocol.

It is advisable that this course (FS223TOS1) be taught in close co-ordination with FS223BCT1, FS223BMT1 and FS223BSM1 for holistic understanding of the subjects.

NOTE FOR PAPER SETTING AND EVALUATION:

Maximum course marks are 100 to be distributed as:

(A) INTERNAL (50 MARKS)

1. **Class Assignments (CA) – 20 Marks**
   Minimum three assignments are mandatory; the final marking will be done as average of the marks scored by the student in all the assignments. Late submissions will not be accepted without an officially documented excuse. Marks up to **20%** will be deducted for late submission.
2. **Class Presence (CP): 5 Marks**
   This is based purely on the class attendance record of the student. To be marked strictly as per the Evaluation Pattern.
3. **Class Contribution (CC) – 5 Marks**
   Consisting of student's contribution in class work, initiatives and leads during group work, etc. (and *not* attendance). This is based purely on the judgement of the Faculty vis-à-vis daily interaction with the students.
4. **Outstanding Work (OW) – 5 Marks**
   This will be based purely on the judgement of the Faculty vis-à-vis quality of the work as expected by the faculty from the students.
5. **Mid-Term (MT) – 15 Marks**
   Consisting of Multiple Choice Questions (MCQ)/ Long Answer Type Questions (LAT)/ Short Answer Type Questions (SAT) or Combination thereof.

The Faculty is free to develop any marking pattern but the final marks awarded shall be strictly as per the prescribed Marks Distribution format.

Revision No. 001
Revised on 01-09-2018

(B) EXTERNAL (50 MARKS)

1. **End-Term (ET) – 50 Marks**
   Consisting of Multiple Choice Questions (MCQ)/ Long Answer Type Questions (LAT)/ Short Answer Type Questions (SAT)/ Studio Based Project/ Exhibition of Class Assignments/ External Viva Voce or Combination thereof to be prepared/ conducted/ assessed by External Jury/ External Examiner as approved by the University.

Revision No. 001
Revised on 01-06-2018

8. Course: MODEL MAKING PRACTICES III (FS223MMP3)

Course Intent:
This course encourages students to practice what they learn. It is based on the philosophy of "Learning by Doing". The model making helps students to rectify their mistakes and enhance their level of understanding by practicing their skills.

Course Outcomes:
Will learn how to use modelling equipment and tools properly
Will learn how to make models and inculcate this habit right from the beginning
Will enhance their understanding of design by the technique of Learning by Doing

Course Code	Course Semester	Course Scheme	Scheme Pattern	Evaluation Method	Evaluation Pattern	Marks Distribution
FS223MMP3	Semester 3	Studio	SBP/ECA or Combination	Internal	CA	20
					CP	5
					CC	5
					OW	5
					MT	15
			SBP/ECA/EVV or Combination	External	ET	50
TOTAL COURSE MARKS						100

Course Content:
ARCHITECTURAL MODEL MAKING: Models of Architectural Design being taught in the respective Design Studio.

Books to Refer:
1. Model Making By Megan Werner
2. Studio Craft & Techniques for Architects By Miriam Delaney, Anne Gorman

NOTE FOR COURSE FACULTY/ CO-ORDINATOR:
The Faculty/ Course Co-ordinator is free to conduct the course as per his/ her individual approach which may include but not limited to collaboration with other subject faculty, engaging an additional faculty for assistance, engagement of Industry experts for Lectures, use of Studio-based exercises, Audio-Visual inputs, use of Library, use of Internet, taking students for Field-work and Construction sites, etc. The Faculty/ Course Co-ordinator will ensure that whatever is being taught to the students falls strictly within the purview of "Architecture" and not outside it.
Please note that for all external support, proper permissions have to taken as per the protocol.

20

Revision No. 001
Revised on 01-08-2018

NOTE FOR PAPER SETTING AND EVALUATION:
Maximum course marks are 100 to be distributed as:

(A) INTERNAL (50 MARKS)

1. **Class Assignments (CA) – 20 Marks**
   Minimum three assignments are mandatory; the final marking will be done as average of the marks scored by the student in all the assignments. Late submissions will not be accepted without an officially documented excuse. Marks up to **20%** will be deducted for late submission.
2. **Class Presence (CP): 5 Marks**
   This is based purely on the class attendance record of the student. To be marked strictly as per the Evaluation Pattern.
3. **Class Contribution (CC) – 5 Marks**
   Consisting of student's contribution in class work, initiatives and leads during group work, etc. (and *not* attendance). This is based purely on the judgement of the Faculty vis-à-vis daily interaction with the students.
4. **Outstanding Work (OW) – 5 Marks**
   This will be based purely on the judgement of the Faculty vis-à-vis quality of the work as expected by the faculty from the students.
5. **Mid-Term (MT) – 15 Marks**
   Consisting of Studio Based Project/ Exhibition of Class Assignments or Combination thereof to be prepared/ conducted/ assessed by Internal Faculty/ Internal Jury/ Internal Examiner.

The Faculty is free to develop any marking pattern but the final marks awarded shall be strictly as per the prescribed Marks Distribution format.

(B) EXTERNAL (50 MARKS)

1. **End-Term (ET) – 50 Marks**
   Consisting of Studio Based Project/ Exhibition of Class Assignments/ External Viva Voce or Combination thereof to be prepared/ conducted/ assessed by External Jury/ External Examiner as approved by the University.

21

Revision No. 001
Revised on 01-06-2018

9. Course: SOFTWARE SYSTEMS & APPLICATIONS II (FS223SSA2)

Course Intent:
This course introduces the students to the digital world of architectural designs. It helps the students to understand the value of computer software as a great tool to enhance their skills and utilize the power of computers for providing better design solutions.

Course Outcomes:
Will learn the use of basic software and apply same skills in producing faster and accurate designs
Will create awareness about the field of digitalization and help students in pursuing further studies
Will enable students to produce accurate architectural designs and drawings along with faster co-ordination with different teams

Course Code	Course Semester	Course Scheme	Scheme Pattern	Evaluation Method	Evaluation Pattern	Marks Distribution
FS223SSA2	Semester 3	Practical	PBP/PVV or Combination	Internal	CA	20
					CP	5
					CC	5
					OW	5
					MT	15
			PBP/PVV or Combination	External	ET	50
TOTAL COURSE MARKS						100

Course Content:
Introduction to SKETCHUP, Basic Commands, Advanced Commands with regular excercises for making SKETCHUP models of Architectural Design being taught in the respective Design Studio.

Books to Refer:
1. Introduction to Google SketchUp by Aidan Chopra
2. The D'oh Book for Sketch Up by Rich O' Brien

NOTE FOR COURSE FACULTY/ CO-ORDINATOR:
The Faculty/ Course Co-ordinator is free to conduct the course as per his/ her individual approach which may include but not limited to collaboration with other subject faculty, engaging an additional faculty for assistance, engagement of Industry experts for Lectures, use of Studio-based exercises, Audio-Visual inputs, use of Library, use of Internet, taking students for Field-work and Construction sites, etc. The Faculty/ Course Co-ordinator will ensure that whatever is being taught to the students falls strictly within the purview of "Architecture" and not outside it.
Please note that for all external support, proper permissions have to taken as per the protocol.

Revision No. 001
Revised on 01-08-2018

NOTE FOR PAPER SETTING AND EVALUATION:
Maximum course marks are 100 to be distributed as:

(A) INTERNAL (50 MARKS)

1. **Class Assignments (CA) – 20 Marks**
   Minimum three assignments are mandatory; the final marking will be done as average of the marks scored by the student in all the assignments. Late submissions will not be accepted without an officially documented excuse. Marks up to **20%** will be deducted for late submission.
2. **Class Presence (CP): 5 Marks**
   This is based purely on the class attendance record of the student. To be marked strictly as per the Evaluation Pattern.
3. **Class Contribution (CC) – 5 Marks**
   Consisting of student's contribution in class work, initiatives and leads during group work, etc. (and *not* attendance). This is based purely on the judgement of the Faculty vis-à-vis daily interaction with the students.
4. **Outstanding Work (OW) – 5 Marks**
   This will be based purely on the judgement of the Faculty vis-à-vis quality of the work as expected by the faculty from the students.
5. **Mid-Term (MT) – 15 Marks**
   Consisting of Practical Based Project/ Practical Viva Voce or Combination thereof to be prepared/ conducted/ assessed by Internal Faculty/ Internal Jury/ Internal Examiner.

The Faculty is free to develop any marking pattern but the final marks awarded shall be strictly as per the prescribed Marks Distribution format.

(B) EXTERNAL (50 MARKS)

1. **End-Term (ET) – 50 Marks**
   Consisting of Practical Based Project/ Practical Viva Voce or Combination thereof to be prepared/ conducted/ assessed by External Jury/ External Examiner as approved by the University.

23