V Semester (CBGS) For batches admitted in July,19 (w.e.f. July, 2019)

S. No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional						
1.	AR311	Architectural Design – V	DC- 11	100	30	20	50	50	250	7	2	3	2(1.5)	**8**

PURPOSE: to develop the creativity in terms of built form. Design with application of principles and theory of Architectural design and philosophies of contemporary architects.

COURSE OUTCOME:-

After completion of this course student will be able to-

To develop imaginativeforms
To develop one's own language and philosophy of architecture to guide towards exploring alternative building forms for different activities which help in understanding the relationship of structure and possibilities in building forms.

DESIGN PROBLEMS:-

- It should include problems of simple and complex nature i.e. temple, gathering places, exhibition pavilion, clubs, cafe, community hall, museums, art gallery, pavilion, sport complexes, nursing homes.
- Emphasis shall be given more on three dimensional studies to develop an understanding for man and space relationship and also relevant building bye-laws.
- There should be variety of problems in the studio work with changing focus for each problem from theory to construction techniques (local) and site layouts,covering organization and detailing of open spaces with the aim to learn to work with practical limitations.
- One group exercise of making measure drawings of a building for documentation.

Minimum one time problem is to be attempted in class, of 18 hrs duration.

Note: Sessional should be done in the form of drawing sheets and reports for the design projects. Assessment shall be done on the basis of regular reviews.

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				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional						
2.	AR312	Building Construction -V	BSAE - 13	50	30	20	20	30	150	5	2	1	2(1.5)	**6**

COURSE OUTCOME:-

After completion of this course student will be able to-

1. Classify the types of corrosion of ferrous and non-ferrous metals and respective preventive measures.
2. Outline rural and contemporary materials and their construction techniques**.**
3. To study more about doors, windows, different types of materials and their use in construction.
4. They also focus on the different water proofing, damp proofing materials& technology available & their application.
5. Also to expose the students to the security arrangement,designing& detailing.

Content

UNIT1.Design and Constructional details of sliding, sliding folding, revolving doors, swing doors and sliding windows in timber.

UNIT 2. Design and construction details of fix glazing, side hung doors in aluminum, fully glass door, rolling shutter and collapsible shutter.

UNIT 3. Study of metal and aluminum sectioned curtain wall.

UNIT 4. Study of compound wall (advanced type) with security arrangement, study of wicket gate and large entrance gates rolling on wheels.

UNIT 5. Study of water proofing and roof light.

Note:

i) There should be regular site visits to buildings under construction or constructed to explain the above topics. Use of audio-visuals should be stressed.
ii) Minimum 8 sheets shall be prepared out of which two may be in sketch form (scaled).

List Of Text And Reference Books:

1. W.B. Mckay, “Building Construction Vol.1to Iv, Orient Longman.
2. R. Chudley, :Building Construction Handbook Vol. 1 To 4 “British Library Catalouging In Publication Data 1990.
3. Dr. B.C. Punamia, “Building Construction”, A. Sauraby& Co. Pvt. Ltd.
4. R. Berry, “Construction Of Buildings”. The English Language Book Society London 1976.
5. Mitchel, “ Advance Building Construction”, Allied Publishers Pvt. Ltd.

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				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional						
3.	AR313	Building Services-II	BSAE- 14	50	30	20	-	-	100	3	2	1	-	**3**

COURSE OUTCOME:-

After completion of this course student will be able to-

1. Learn about the aspects of electrical wiring and air conditioning in a building,
2. learn about various equipment and fittings available in the market
3. prepare basic design lay out for various services and typical details.

Course Content:

SECTION-A: ELECTRICAL

1. Fundamentals of electricity, Principles of wiring.
2. Fitting and accessories used in electrical installation of buildings including water proof and spark proof installation. Schematic diagrams of installation for different building types, lighting conductors, earthing, distribution & calculation of loads.
3. Brief study of electrical appliances, Sub-station, location and space requirement, relevant electricity board rules for various types of buildings.
4. Illumination: Laws of illumination. Direct, indirect and semi direct lighting, reflectors, decorative lighting. Flood lighting and use of artificial lighting as an element in architectural schemes particularly in exhibition, cinemas, theaters, concert, concerts halls and stadiums.
5. Rules and layout for telephone wiring & connection with EPBX.

SECTION - B: MECHANICAL

1. The fundamentals of psychometric and heat transfer. Physiological effects of air conditioning.
2. Air conditioning methods, systems, types and equipment to maintain the atmosphere at required temperature, humidity and cleanliness.
3. A.C. duct designing, detailing and layout. (No calculations required)
4. Lifts, moving walkways and escalators, layout of lifts and or escalators in buildings.
5. Apparatus and system of alarms, firefighting equipments, fire fightingbye-laws governing various types of public buildings. Fire escape staircases.

Notes: Sessionals will be in the form of notes, home assignments, drawings/layout exercises showing the electrical and mechanical services details and case studies if required.

LIST OF TEXT AND REFERENCE BOOKS:

ELECTRICAL SERVICES

1. “Specification year Book”
2. B. L. THAREJA “Text book of Electrical Technology”, S. Chand and Co.
3. UPPAL, “Text Book of Electrical Technology”, Khanna Publishers.
4. “National Building Code”.
5. FRANK R. DAGOSTINO, “Mechanical and Electrical systems in construction and Arch” Reston Pub. Virginia U.S.A.

MECHANICAL SERVICES

1. “Specification year Book”.
2. S.C. ARORA AND A. DOMKUNDWAR, “Refrigeration and Air conditioning”, Dhanpat Rai & Sons.
3. HERBERT. W. STANFORD, “Heating Ventilation and A.C. systems”, Prentice Hall.
4. “National Building Code”.

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				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional						
4.	AR314	Specification	PAEC- 3	50	30	20	-	-	100	3	2	1	-	**3**

COURSE OUTCOME:-

After completion of this course student will be able to-

1. understand the importance of specification of various materials used in construction.
2. Understand the effect of specification on estimate
3. write specifications of materials along with emphasis on the quality of materials & proper sequence of construction work should be brought out.

A) SPECIFICATIONS OF MATERIALS:

1. Importance of specifications in the building activities, method of writing correct order and sequence of use of materials, use of Indian Standard Specifications and P.W.D. specifications.
2. Primary consideration for selection of materials for various applications. Specifications of basic materials required in residential buildings, such as bricks,
stones, concrete, RCC, plastering and various finishes, roofing material timber work, flooring materials, glazing, metals such as steel, brass, aluminum etc.

(B) SPECIFICATIONS OF WORKS:

3. Specifications of works for a residential building of load bearing type and or RCC/framed type.
4. Specifications of works of construction of steel and RCC structures, ceiling and partitions, paneling, insulation and water proofing.
5. Specifications for services such as drainage, water supply, electrical installations

LIST OF TEXT AND REFERENCE BOOKS:

AR324 – SPECIFICATIONS, ESTIMATING & COSTING

1. “Bombay P.W.D. Specification 1962.
2. Specification year book.
3. P.W.D. Hand book.
4. B. N. DUTTA, “Estimating and costing in civil Engineering”, U.B.S. Pub.
5. M. Chakraborti, “Estimating and costing in Civil Engineering”, “Bhaktivedanta Book Trust, Sreemayapor.
6. C.P.W.D. Hand book

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				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional						
5.	AR315	Adv.Graphics	SEC- 6	-	-	-	50	50	100	6	2	-	4	**4**

COURSE OUTCOME:-

After completion of this course student will be able to-

1. Introduce the fundamental concepts of computer systems, hardware and software and to develop basic skills in programming, Application of Information Technology tools and technical in Architecture
2. Produce operation and critical parameters and presentations for large gatherings, corporate clients-using CAD drawings, pictures, 3D images, text etc.

CONTENTS:

Introduction

Introduction of various software available for Architectural application, like Auto CAD, Architectural desktop, Revit, Micro station etc. Stress should be given on Auto CAD.

Basic commands for 2-D AutoCAD

Learning basic 2D commands their function and application.
Working on layers and colors.
Understanding of Text, and dimension styles etc, supported with suitable exercise. Understanding complex commands like Pline, spline, x-refs, Attributes, Model space & Paper space etc.
At least one working plan, elevation and section should be completed.

Basic commands for 3D

Introduction of basic 3D commands.
Different types of modeling in Auto CAD.
Exercise on wire mesh modeling.

MEASUREMENT DRAWING WITH THE HELP OF CAD

Exercise will be a group activity; to measure and draw the floor plan along with the plot boundaries, four side elevations, four sections, block plan, site plan of a large building or a settlement with the help of CAD. In addition to this drawing shall be prepared based on examples of buildings by giving a sketchdesign. Drawings shall be detailed enough to explain thecomplete design.

Note: Exercises of measurement drawings may be clubbed with study tour.

LIST OF TEXT AND REFERENCE BOOKS:

1. Auto CAD reference manual – Autodesk UNC, 1998
2. Auto CAD architectural users guide – Autodesk Inc. 1998
3. Sham Tickoo, Advance Technique in Auto CAD Re.14 – 1977 6. Sham Tickoo, Understanding Auto CAD – 14 (windows) – 1977

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				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional						
6.	AR316	Elective –I *	DE- 1	-	-	-	50	50	100	3	1	-	2	**2**

Elective –I * : 1) Interior Design 2) Product Design 3) Film Set Design

COURSE OUTCOME:-

After completion of this course student will be able to-

1. Develop visual perception of interior spaces,
2. Understand the importance ofanthropometrics and ergonomics in design.
3. Explore Modern interior materials and theirapplications.
4. Analyse the utility ,fuction of any product.
5. Give solution(alternative) to any product.
6. Learn about the types of film set,stage .

1. Understanding the need for design of interiors. Effect of build spaces/interior spaces on human psyche. Historical background of interior design and international perspective.
2. Interior space character, classification categories and quality. Elements of interior space. The built environment, the living interiors in today's context.
3. Space, form, color, abstract, spatial expression. The base lane, the overhead plane, the verticals, the intermediates. Visual aspects, visual control, illusions. Visual art appreciation: A brief look of Major Art Movements that have affected design.
4. Interior climate, orientation of interior space with respect to outdoor climatic forces. Outdoor climate study, study of micro climate. Spatial layout for best comfort in doors with respect to natural climate. Air movement, natural illumination, natural heating/cooling, artificial interior environment artificial illumination, artificial climate, air conditioning etc.
5. Elements of interior design: A study of the latest available, materials, furniture/fittings, past, present and future and international perspective. Water and plants in interior design. Drainage, plant species, plant care etc. Sound modulation in interior spaces. Practical examples and exercise for all the above.

Note: Design problems in interior design to bring out the originality, innovativeness, and the best of imagination from the students, preparation of scrap books.

List Of Text And Reference Books: Ar-424 Elective – I

1. (Interior Design)

- T.S.S. for Interior design.
- Ahmed A. Kasur, "Interior Design", Iqura Pub.
- John Cullen, "The lighting handbook" Pelham Books.

2. Product Design: Course Topics

- Product Design Cycle
- Identification of Customer Needs and Market Research Essentials
- Concept Generation
- Technology and Market Assessment
- Introduction to Industrial Design and Human Factors
- Estimation of Manufacturing Costs
- Introduction to Business Plans
- Introduction to Intellectual Property and the Patent Process

Reference Textbooks:

- Product Design and Development by Karl T. Ulrich and Steven D. Eppinger, 5th Edition 2011
- The Art of the Start by Guy Kawaski, 2004

3. Film/Set Design

1) Introduction and literature case study of various types of 'stage'.
2) Introduction to different forms of dramatics and the requirement of set design suitable to various forms eg. Historical, mythological, social plays to experimental theatre.
3) Live case study of different performing art theaters and its presentation of various aspects.
4) Lecture and interaction with same stage artiste.
5) Thought process and design process of set design.
6) Types of sets, box stage, revolving or sliding stage and symbolic stage craft.
7) Designing, Execution, erection and dismantling, transformational sets, materials etc.

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7.	AR317	Modern Structural Systems	BSAE 15	50	30	20	-	-	100	3	2	1	-	**3**

COURSE OUTCOME:-

After completion of this course student will be able to-

1. Design long span structures,
2. Design of footings.

COURSE CONTENT:

Unit1 Design of Flat Slab

Unit2. Design of continuous and isolated footings

Unit3. Design of combined footing: - types of combined footing, design of combined footing (rectangular and trapezoidal only)

Unit4. Appropriate methods for an analysis for frames by portal method, cantilever method (horizontal forces only)

Unit5study of long span structure Dome,shells,tensile structure diagrid structures and pile foundation

NOTE:
i) I.S code 456 is permitted in examination.
ii) Sessional work should include the analysis and design of simple elements along with the drawings.

List of Text and Reference Books:
1. Salvadori, " Structures In Architecture".
2. Salvadori, " Structural Design In Architecture".
3. Robert, E. Fischer, "New Structure", Mcgraw Hill Co.
4. Wolfgang Schueller, "The Design Of Building Structures".