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Total no of credits required for the award of the degree 75

### List of Electives- M. Arch (Digital Architecture)

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L- Lecture    T- Tutorial    P- Practical / S- Studio    C- Credits
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**Total no of credits required for the award of the degree** 75

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**L** - Lecture   **T** - Tutorial   **P** - Practical / **S** - Studio   **C** - Credits
**DG8101**  
**VISUALIZATION STUDIO**  
**L T P/S C**  
**2 0 6 5**

**OBJECTIVES:**
- To explain and inform the students on the importance of visualization as a tool in the interpretation of design data.
- To introduce the role of computer graphics as a design generation tool.

**UNIT I  
BASICS OF 3DS MAX**  
10

**UNIT II  
MATERIAL APPLICATION, LIGHTING AND CAMERA**  
10
Material editor - Various material types available in 3DS MAX, mapping materials – Types of lights and lighting systems – cameras – target and free camera.

**UNIT III  
DYNAMICS**  
25
Dynamics – Particle systems, forces and deflectors in 3DS MAX – exercise involving the above.

**UNIT IV  
ANIMATION**  
25

**UNIT V  
3DS MAX SCRIPT**  
20

**TOTAL: 90 PERIODS**

**OUTCOME:**
- To make the students equip with digital visualization tool at exploring the design development

**REFERENCES:**

**AA8151**  
**CONTEMPORARY PROCESSES IN ARCHITECTURAL DESIGN I**  
**L T P/S C**  
**3 0 0 3**

**OBJECTIVES:**
- To investigate the contemporary theories of media and their influence on the perception of space and architecture.
- To provide an overview of various contemporary design processes and its relation to computation.

**UNIT I  
INTRODUCTION**  
6

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**Attested**  
**DIRECTOR**  
Centre For Academic Courses  
Anna University, Chennai-600 025
UNIT II ASPECT OF DIGITAL ARCHITECTURE

UNIT III CONTEMPORARY PROCESS
Overview of various Contemporary design process and it relation to computation: Diagrams – Diagrammatic Reasoning – Diagrams and Design Process – Animation and Design – Digital Hybrid Design Protocols – Concept of Emergence - Introduction to Cellular Automata and Architectural applications – Genetic algorithms and Design Computation

UNIT IV GEOMETRIES AND SURFACES
Fractal Geometry and their properties – Architectural applications - Works of Zvi Hecker— Shape Grammar - Shapes, rules and Label - Shape Grammar as analytical and synthetic tools- Combining Shape grammar and Genetic algorithm to optimize architectural solutions - Hyper Surface– Introduction to Hyper surface and concepts of Liquid architecture.

UNIT V CASE STUDIES
Case studies- Study, understanding and analysis of known examples at the national and international levels which demonstrates the contemporary theories of media and their influence on the perception of space and architecture, contemporary design processes and its relation to computation.

TOTAL:45 PERIODS

OUTCOMES:
• Understanding of the effect of contemporary theories of media on contemporary architectural design.
• Understanding of various contemporary design process and their relation to computation

REFERENCES:
1. Peter Eisenmann, Diagram: An Original Scene of Writing, Diagram Diaries
2. MOVE, UN Studio

AA8152 URBAN DESIGN STUDIO

OBJECTIVES:
• To introduce and identify the issues/ aspects of contemporary urban form through study of history of urbanism, contemporary urban theories, urbanism and urban design precedents.
• To intervene through design, addressing the effects of some of these aspects/ issues
UNIT I   INTRODUCTION
Introduction to origin and evolution of cities and urbanism- historic review of the development of the urban design discipline and principles- introduction to various issues and aspects that impinge on the urban condition today such as globalisation, digital revolution, contemporary processes, sustainability, splintering urbanism through changes in information and communication networks and transportation.

UNIT II   READING THE URBAN FABRIC
Introduction to different ways of reading of the urban fabric- ways of interpreting the city such as type, phenomenology, etc.,- tools of mapping

UNIT III   SUSTAINABLE DEVELOPMENT
Sustainable development– Sustainable Cities Program - Revitalization of brown field sites- Transit Metropolis- Case Studies

UNIT IV   RESTRUCTURING THE CITY
Contemporary Processes in Urban Design- Place making in the Digital Age – reconfiguring public realm – Urbanisation and Excursions on density

UNIT V   APPLICATION OF DIGITAL TECHNIQUES IN URBAN DESIGN
Depiction of Urban Spaces in Digital Media - Role of Digital Media in Reconfiguring Urban Space – Case studies – Application of Geographic Information Systems, diagramming and 3D Modeling tools in Urban Design - Digital Media as a facilitator for participatory, sustainable urban design.

TOTAL:120 PERIODS

OUTCOMES:
- The students would become aware of the determinants of contemporary urban form and ways to understand their effects.
- The students would learn to address issues of contemporary urban form through planning and design using appropriate tools.

REFERENCES :
2. William J. Mitchell, City of Bits: Space, Place and the infobahn, MIT Press, 1996
3. Charles Correa, Housing and Urbanisation, Thames and Hudson, 1999
7. Donald Appleyard, Kevin Lynch, John R. Myer, The View from the Road, MIT Press 1965
OBJECTIVES:
- To introduce the idea of architecture as enmeshed in the society and a product of larger socio-cultural issues and practices, and not as an autonomous object determined by a hermetically sealed discipline.
- To introduce the various interdisciplinary critical theories and explain their interpretation of architecture.

UNIT I INTRODUCTION

UNIT II POWER AND BUILT ENVIRONMENT
Definition of power- Forms of power- Power in the built environment at various scales- ideas of power and society, power-knowledge - Colonialism in India as a form of dominance- introduction to architecture and urbanism of colonialism in India- Production of Indo-Saracenic architecture- New Delhi as a part of imperial vision- Case studies of the architecture and urbanism of power in the modern world.

UNIT III PLACE AND ARCHITECTURE
Critical reactions to modernity/ modernism with reference to the concept of context/ place - Critical Regionalism and architectures of resistance- Place and phenomenology in architecture

UNIT IV SEMIOTICS AND ARCHITECTURE
Architecture as communication and representation- introduction to linguistic concepts of semiotics, structuralism, post structuralism and deconstruction- brief over view of postmodern and deconstructivist architecture with reference to these concepts

UNIT V CONTEMPORARY ISSUES IN ARCHITECTURE
Conditions of late capitalism and postmodern society- Society of spectacle- Architecture as spectacle and seduction- Theme parks and shopping malls-privatisation of public spaces-aesthetisation of architectural issues- influence of globalisation and digital revolution on architectural processes-debates of heritage- gender and space

TOTAL: 45 PERIODS

OUTCOMES:
- The students would gain an understanding of architecture as an integral production of society as well as engage in critical thinking to interpret architecture.
- The students' awareness through this course would inform their practice/research.

REFERENCES:
5. Thomas Metcalf Imperial vision, Oxford, 2002
8. Neil Leach, Anaesthetics of Architecture, MIT Press 1999,
OBJECTIVES:
- This course provides a detailed exposure to students regarding the design & application in the field of life safety, electronic security & services automation requirements.
- To expose the students to the mandatory and inevitable integration of building management systems in building construction.

UNIT I  SAFETY SYSTEMS – FIRE ALARM & PUBLIC ADDRESS SYSTEM  9
Objective of a Fire Alarm System, essential components of a Fire Alarm System, Type of detection technology currently in use and Statutory Standards to be followed in design. Explanation of the essential Clauses of the the codes, and various types of Technologies employed in the Fire Alarm System, basic knowledge on how a Fire Alarm system works, designed and installed.

Objective of a Public Address System, essential components of a Public Address System, various types of technologies currently in use and design guidelines to be followed and basic knowledge on how a Public Address System works, is designed and installed.

UNIT II  SAFETY SYSTEMS – FIRE SUPPRESSION SYSTEM  9
Objective of a Fire Suppression System, Explanation on Fire triangle, Essential Components of a Fire Suppression System, different type of Fire Suppression Systems, detailed design criteria for Hand held extinguishers Wet Riser, Sprinkler Systems and various gas Based Fire Suppression System, and Type of Statutory Standards followed in Suppression, Explanation on the essential Clauses and Basic Knowledge on how a Fire Suppression System works, is designed and installed.

UNIT III  SECURITY SYSTEMS – ACCESS CONTROL SYSTEM AND INTRUDER ALARM SYSTEM  9
Introduction to Access Control, Intruder Alarm, Essential Components of each System, and Various types of Technologies employed in the system, Basic knowledge as how they work, are designed and installed.

UNIT IV  SECURITY SYSTEMS – CCTV AND PERIMETER PROTECTION  6
Introduction to CCTV, Perimeter protection system, Essential Components of each System, and Various types of Technologies employed in the system, Basic knowledge as how they work, are designed and installed.

UNIT V  INTEGRATED BUILDING MANAGEMENT SYSTEM  12
The objective of the Integrated Building Management System (IBMS), the list of utility, safety & security systems that are generally monitored & controlled through IBMS, the various components of IBMS, types of integration with the utility, Safety & security systems, explanation in detail on how each utility, safety & security system is integrated to IBMS, details of various parameters that can be monitored & controlled on each utility, safety & security system and the basic knowledge on how they work, are designed and installed.

TOTAL: 45 PERIODS

OUTCOME:
- To ensure that every architect understands & designs the buildings that facilitates safe, code compliant, secure & comfortable buildings for the occupants.
REFERENCES:
2. The Principles and Practice of Closed Circuit Television, Mike Constant & Peter Turnbull
4. CCTV Surveillance, Herman Kruegle.

DG8201 DIGITAL DESIGN STUDIO I

OBJECTIVES:
- This course focuses in understanding various Contemporary processes and translating them into architecture.
- To compute the methods of quantifying architecture and developing Design from codified data.

The project involves in developing Design prototype to explore various contemporary processes and ideas using shape grammar, fractal, parametric models, and Biometric etc. using major software used in design and video making.

OUTCOME:
- Students will develop the skill to develop architectural project based on process driven architecture through computational tool and physical model.

REFERENCES:

DG8202 VISUAL DESIGN THROUGH ALGORITHMS

OBJECTIVES:
- To introduce the students to the method or technique to translate the visual configuration of Design by geometric data structure and abstraction modeling.
- To learn and comprehend the application of digital-based model system in generation and performance of architectural design solution.

UNIT I LINEAR ALGORITHMS
Introduction to algorithms- finite element methods-application in 3d interface design, including sketch modeling-translation of architecture models into geometric data structures, structural abstraction such as nodes, elements, modeling forces and restraints- applications such as unified user interface.

UNIT II GENETIC ALGORITHMS
Introduction to genetic algorithms –evolutionary art- application of evolutionary principles of genetic algorithms in configuration design of complex structures- synthesis of topology, geometry and component properties of a structure using genetic algorithm- genetic algorithm application in site design, architectural design and modeling, structural design.
UNIT III  BASICS OF NEURAL NETWORKS
Introduction to neural networks basics, computational models and application areas- identification of generic problem areas in building design suitable for neural network application- pre processing of data and capabilities of neural networks- selection of neural network model characteristics for a given application- learning algorithms for widely used neural network models.

UNIT IV  APPLICATIONS OF NEURAL NETWORKS
Application of neural network models in architectural design and advanced modeling including acoustic design, diagnosis and forecasting, maintenance and control, building performance evaluation etc.

UNIT V  FRACTALS
Introduction to Fractals- types of fractals- fractal creation, generators and initiators, direction and proportion – generating fractals based on spatial design and application in architectural design.

OUTCOMES:
- The students will be able to identify and differentiate algorithm tools, its characteristics and the application technique.
- The students will develop the ability to compute and apply the tools /technique in Design process to generate, differentiate and evaluate its composition and spatial analysis.

REFERENCES:

AA8251   CONTEMPORARY PROCESSES IN ARCHITECTURAL DESIGN II
L T P/S C
3 0 0 3

OBJECTIVES:
- To provide an overview of various contemporary architects in terms of their works, design philosophies and processes.
- To investigate the effect of various digital technologies on architecture in the real and virtual realms

UNIT I  QUALITIES OF VIRTUAL ARCHITECTURE
Discussing the differences between the real and virtual space. Virtual space as the potential space. Qualities of the new space: Disconnection of the body, new laws of proximity and increased automatism and its influence on architectural form and space
UNIT II MEDIA AND ARCHITECTURE 9
Visions unfolding/ Media Architecture as desirable/ Films as a space for virtual architecture

UNIT III ISSUES 9
Towards new paradigm – A myth or a promise. / Need versus desire/ anxiety of new/ identity and Fashion.

UNIT IV IDEAS AND WORKS OF CONTEMPORARY ARCHITECTS 12

UNIT V SEMINAR PRESENTATION 6
Students presentation on the ideas and works of architects known for process oriented approach to architecture. Topics to be discussed with course faculty prior to presentation. TOTAL: 45 PERIODS

OUTCOMES:
• The student will learn about various design methodologies employed by contemporary architects.
• The student will be acquainted with the use of computation and digital technologies in contemporary architectural design.
• The student will learn to investigate the influence of various media, especially films, on architecture and vice versa.

REFERENCES:

DG8251 PERFORMANCE EVALUATION OF BUILDINGS L T P/S C 2 0 2 3

OBJECTIVE:
• To investigate the simulation and audit techniques for assessing the energy performance, environmental response and impact of built form.

UNIT I INTRODUCTION TO BUILDING PERFORMANCE EVALUATION 3
Emerging role of performance evaluation in building design and master planning- Performance audit and rating systems- GRIHA, LEED IGBC and BREAM – Architectural Computation and performance audit- Introduction to ECOTECT.

UNIT II PRINCIPLES OF SUSTAINABLE DESIGN 12
E’s of sustainability – Integrated approach to environmental design - Case studies – Comparative analysis of green rating systems, LEED, BREAM and GRIHA – Cognitive, analytical and simulated modeling and design of buildings. Zero Carbon Footprint Building.

UNIT III ENVIRONMENTAL ASSESSMENT METHODS AND MODELING FOR PASSIVE SYSTEMS. 12
Modelling and experimental techniques for building assessment/ evaluation and design – Basics of thermal comfort, solar shading/access/ control, day lighting, acoustics air movement etc. – issues and opportunities with current assessment modes/ evaluation tools- Evaluation and assessment based on Building type/ function and program – Building performance with respect to function, program, micro climate, urban planning, envelope design, material – Computer studio and simulation-Mathematical models of heat and mass transfer phenomena through building components: transfer function
methods and numerical methods – Models of radiative and convective heat transfer phenomena within buildings

UNIT IV ADVANCE ECOTECT AND ENERGY MODELLING 12
Integration of ECOTECT with BIM, RAPID ENERGY MODELLING - Modelling and performance simulation of existing buildings – residential-institutional- design of a new residential building with ECOTECT

UNIT V SEMINAR AND CASE STUDY PRESENTATION 6
Case study presentation of students on performance evaluation of a building identified by them and approved by the course faculty – Seminar on topics approved by the course faculty.

TOTAL: 45 PERIODS

OUTCOMES:
- The students will gain knowledge on environmental assessment methods, audit and simulation techniques.
- Will add value to architectural design processes and equip students with energy modeling skills.

REFERENCES:

DG8301 ADVANCED DIGITAL DESIGN STUDIO II

OBJECTIVE:
- To train students in using advanced Digital media involving complex situations that require handling of multiple information and algorithmic principles.

This course investigates how digital media can be employed as a generative tool for derivation of form and its transformation. This course takes designers beyond the limits of the commercial digital tools. By applying algorithmic principles, computer programs can be used for form generation. The design projects will focus on parametric modeling and proceed towards complex form generation. Students will develop a brief for a design or a product and through generative process develop complex forms.

TOTAL: 180 PERIODS

OUTCOME:
- The students will develop the aptitude to use Digital Media as a medium to generate complex forms.

REFERENCES:
OBJECTIVES:

- To outline various Digital Production tool to build artifacts as part of the creative design process.
- To utilize the Prototyping and Modeling as a design medium that supports the full spectrum of digital design as a paperless process.

This course focuses on advanced 3d modeling tools with Computer numerically controlled production processes. It aims to develop prototypes that will enhance design learning. Complex virtual 3d-models would be converted to tactile models through Prototyping. This is to achieve by combining lectures on fabrication technology, exercises on CNC machines and prototyping interfaces.

Working with Stereo Lithography: Machines: Introduction to the stereo lithography tools Procedures to transfer solid model into a tessellated surface file. Using Polymer resin to produce prototypes. Practical exercise will be given to model simple objects.

TOTAL: 120 PERIODS

OUTCOME:

- The students will be able to translate the design process through Digital Prototype or Model attribute.

REFERENCES:


DG8303 DISSEMINATION

OBJECTIVES:

- To promote research in Digital architecture and
- Train the students in collecting, critically analyzing and presenting information in a logical sequence.

Students will identify research topics and in depth explore either the theoretical issue or develop mathematical models/ algorithms. While it is not mandatory, the students subsequently carry both the findings and research into the project work. The topic has to be approved by the supervisor and periodic reviews will be held to assess the progress of the work and also facilitate exchange of ideas. The final oral submission has to be accompanied by a CD and report submission.

TOTAL: 90 PERIODS

OUTCOME:

- Student will be skilled to collect, process and present relevant information in their research topic.

Attested

SALIM
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Centre For Academic Courses
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OBJECTIVES:
- To make the students to distinguish various theoretical ideologies influencing the philosophy and values of architecture.
- To establish the sense of systematic inquiry in students mind to analyze and infer the issues and aspects relating to Architecture.

UNIT I INTRODUCTION
Basic research issues and concepts- orientation to research process- types of research: historical, qualitative, co-relational, experimental, simulation and modeling, logical argumentation, case study and mixed methods- illustration using research samples

UNIT II RESEARCH PROCESS
Elements of Research process: finding a topic- writing an introduction- stating a purpose of study- identifying key research questions and hypotheses- reviewing literature- using theory- defining, delimiting and stating the significance of the study, advanced methods and procedures for data collection and analysis- illustration using research samples

UNIT III RESEARCHING AND DATA COLLECTION
Library and archives- Internet: New information and the role of internet; finding and evaluating sources- misuse- test for reliability- ethics
Methods of data collection- From primary sources: observation and recording, interviews structured and unstructured, questionnaire, open ended and close ended questions and the advantages, sampling- Problems encountered in collecting data from secondary sources-

UNIT IV REPORT WRITING
Research writing in general- Components: referencing- writing the bibliography- developing the outline- presentation; etc.

UNIT V CASE STUDIES
Case studies illustrating how good research can be used from project inception to completion- review of research publications

OUTCOMES:
- The student will develop the skill to identify, decipher and interpret the issues relating to Architecture, based on research enquiry methods.
- The student will widen the information and will prepare the students for scientific method of researching and research process.

REFERENCES:
1. Linda Groat and David Wang; Architectural Research Methods;
2. Wayne C Booth; Joseph M Williams; Gregory G. Colomb; The Craft of Research, 2nd Edition; Chicago guides to writing, editing and publishing;
4. Ranjith Kumar; Research Methodology- A step by step guide for beginners; Sage Publications; 2005
5. John W Creswell; Research design: Qualitative, Quantitative and Mixed Methods Approaches; Sage Publications; 2002
UNIT I  INTRODUCTION TO WEB DESIGN  15
Basics of web design – Introduction to software used for web design – ADOBE IMAGE READY, DREAMWEAVER, FLASH etc.

UNIT II  STATIC PAGES  15
Slice – URL in ADOBE IMAGEREADY. Creation and Editing of site map – layer, tables, frameset, - CSS style – Forms – tools like insert, roll over etc., in DREAMWEAVER

UNIT III  ANIMATION IN FLASH  15
Introduction to MACROMEDIA FLASH, importing other file formats to Flash- saving and exporting Flash files, Frame by frame animation – Motion Tweening – Shape Tweening

UNIT IV  INTRODUCTION TO SCRIPTING  15
Using Timeline – Frames – Key frames- Creating and using Symbols- Simple scripting in flash – Publishing SWF files

UNIT V  DEVELOPING A WEB SITE  30
Using the skills and concepts learnt with the ADOBE IMAGEREADY,DREAMWEAVER, FLASH softwares . students will develop their portfolio in the form of web pages. These pages have to be uploaded in free public domains.

TOTAL: 90 PERIODS

REQUIRED READING

REFERENCES

DG8411  THESIS  L T P/S C
0 0 22 11

OBJECTIVE:
- To develop a prototype or express theoretical issues using Digital Media in the final design project.

Students will submit a detailed proposal on their topic of interest. The proposal will focus on the development of a product design/ building form/ developing interfaces between modeling and machining or between two graphic modeling tools/ building automation/ developing intelligent building controls. The project will be oriented towards developing prototypes and theoretical issues could be exhausted in the dissertation section. The Proposal has to be approved by the committee and the supervisor. There would be periodic reviews of the project. The final presentation will focus at developing and demonstrating a prototype.

TOTAL: 330 PERIODS
OUTCOME:
- The student will be competent to define creative problems within his/her field of design, including research and synthesis of technical, aesthetic, and conceptual knowledge.

DG8001 HIGH END 3D MODELLING

OBJECTIVE:
- To allow the students to comprehend and prepare Digital design solution using advance High end modeling and animation.

This course will train students on the high end-3D modeling and animation. This course would specifically focus on MAYA - The state of art modeling software. The training will look at the following sections Hypergraph Modeling: Nurb Modeling/ Polygon Modeling / Organic Modeling Animation: Working with Key frames and Breakdowns/ Deformers/ Character setup/ Rendering: Lighting/ Shading/ Texture Advanced Effects and MEL Scripting Language.

OUTCOME:
- The student will be able to Identify the basic elements in the process of creating a 3D scene and construct 3D models using well proven techniques;

REFERENCES:

DG8002 INTRODUCTION TO ALGORITHMS

OBJECTIVE:
- This course introduces basic methods for the design and analysis of efficient algorithms emphasizing methods useful in practice.

UNIT I THE ‘C’ LANGUAGE AND CONTROL FLOW STRUCTURES 12

UNIT II ARRAYS, STRING FUNCTIONS AND POINTERS 12

UNIT III FUNCTIONS AND STRUCTURES 12
User defined functions – Function categories – Storage classes. Introduction to structures – Arrays of Structures – Structures and functions – Exercises and solutions using the above said utilities.

UNIT IV FILE HANDLING AND FILE I/O 8
Introduction to files – Character I/O from files – Line I/O with Files - Writing records onto files – Reading records from files – Exercises and solutions using the above said utilities.
UNIT V DATA STRUCTURES, STACKS, QUEUES AND BINARY TREES


TOTAL: 60 PERIODS

OUTCOME:
- The student will be proficient in analysis and design of algorithms and recurrences and techniques to solve them.

REFERENCES:
1. Thinking in C++ second edition Vol. one, Bruce Eckel
2. Thinking in C++ second edition Vol. two, Bruce Eckel & Chunk Allison
3. The C++ programming language (3rd edition) by Bjarne Stroustrup

DG8003 INTRODUCTION TO SCRIPTING

OBJECTIVES:
- To deepen the understanding of a range of programming languages and its features.
- To convey the idea of scripting language as a medium between software and create a large systems.

UNIT I INTRODUCTION TO SCRIPTING
Definition and purpose of scripting – Introduction to programming language and software used for scripting.

UNIT II BASICS OF JAVA

UNIT III JAVA APPLICATIONS AND APPLETS

UNIT IV DIRECTOR
Director Basics – Element of Animation – Time line – Simple presentation using Director

UNIT V DIRECTOR LINGO

TOTAL: 60 PERIODS

OUTCOME:
- To develop student’s concern of the role of different programming paradigms in configuring /managing system.

REFERENCES:
1. The Java Class Libraries, Volume 1 & Volume 2 by Patrick Chan, Rosanna Lee, Douglas Kramer
2. JavaScript: The Definitive Guide by David Flanagan
4. Director 7 and Lingo Bible by Robert Martin, John R. Nyguist, Jonathan P. Bacon
DG8004 VIRTUAL SOCIETY L T P/S C 3 0 0 3

OBJECTIVE:
- To sensitize the student on the evolution, aspects and characteristics of Virtually Society and its role in Digital architecture in graphic representation and visualizing social structures, etc.

UNIT I CULTURAL BASIS 6
Social visualisation through readings, drawn from sociology / Psychology and interface design.

UNIT II ISSUES OF REPRESENTATIONS IDENTITY AND EXPRESSION 12
Meaning through association - subjective - transitory - cross cultural meanings ascribed to an object / Cultural phenomena in virtual objects: nature of identity in an immaterial and intangible environment / Issues of identity deception

UNIT III COMMODIFICATION, COMMERCE AND FASHION 6
Globalization, e-com and marketing - Fashion, identity and marketing - Machines as part of fashion - Role of Fashion and status in the virtual world.

UNIT IV COMMUNICATION AND PEDAGOGY 12
Virtual education and issues of Commodification/ virtual classrooms/ universities Virtual organisational existence / Society of Audience / online social world / Chat rooms / news groups and mailing lists

UNIT V CITY AND ONLINE WORLD 9
City as a metaphor for online world/ city as a hub of information/ place of strange fears/crime and doubtful morality/surveillance and security

TOTAL: 45 PERIODS

OUTCOME:
- The students develop an insight into virtual society for students to know, interact and visualize through specific social media in order to pursue mutual interests or goals.

REFERENCES:
1. Nicholas Negroponte, Being Digital. 1995
5. McCracken. Culture and Consumption.
6. Judith Donath. Identity and Deception in the Virtual Community

AA8071 GIS MODELLING IN URBAN PLANNING L T P/S C 3 0 0 3

OBJECTIVE:
- To examine the role and application of Geographic Information Systems in environmental design, community charities and other urban design projects.

UNIT I INTRODUCTION 6
GIS – Spatial data, non Spatial data, Plan, Map, Scale, Map Projection, GPS, GCP collection, Spectral signature curve, Image processing – Geo coding / Geo referencing, GIS software, Two tier architecture, Three tier architecture, Thin client, Thick client
UNIT II DATABASE CONCEPTS
Data structures, Databases, Files, Types of Tables, Table operations, Creating a Table, Accessing Records in a Table, Manipulating records in a Table, Modifying Table structure, Reports, Advantages of database, Primary key and data access, Composite primary key, Defining a primary key, Sorting, Indexing, Master Detail relationships, Types of relationships, Foreign key, Deleting, updating and adding records to linked tables, ER Diagram, Data Model – Physical, logical and conceptual.

UNIT III SPATIAL DATA

UNIT IV INTRODUCTION TO GIS SOFTWARE
Arc Info – Coverage – Arc, Node, Tics, Add, get, put, Map extent, edit, Topology creation – Clean, Build, Tables – Creating tables, updating tables, join, drop item, Export, Import, overlay, union, intersection, buffer.

UNIT V MODELLING GIS PROJECTS FOR URBAN AREAS
Preparation of Land use map, Land use suitability analysis, Screen design, Visual Basic application using Map objects.

OUTCOMES:
- The student will increase the knowledge on GIS and the various characteristics of Data.
- The student will accept the potential of GIS and develop integrated practice of using the GIS application with architecture.

REFERENCES:
1. Information systems for Urban Planning – Robert Laurini
2. Modelling our world – ESRI Press
3. An Introduction to Data base Systems – C.J.Date
4. Fundamentals of Data base Management System by Elmasri & Navethi
5. ESRI (1992) Understanding GIS, The Arc Info Methods, ESRI, USA

AA8252 SERVICES IN HIGH RISE BUILDINGS

OBJECTIVES:
- This course will examine various services in high rise buildings.
- Understand how services integration can translate into an intelligent and energy efficient system which will enable sustainability of the structure.

UNIT I INTRODUCTION
Standards of high Rise buildings- Indian Standards and Global Standards on High Rise Buildings; Introduction to various services; their significance with regards to High Rise Buildings; Some examples of Buildings and services used in them A brief on evolution of High Rise Buildings. Aspects and Integration of services - Concepts of Intelligence Architecture and Building Automation.

Attended

Sajith

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UNIT II  WATER SUPPLY AND WASTE DISPOSAL  9
Water supply and waste water collection systems- water storage and distribution systems- Planning and Design- Selection of pumps- rain water harvesting – Sewage collection systems and recycling of water- solid waste disposal . “Some latest Trends Observation, NBC’s recommendations. in these areas can be included.

UNIT III  HVAC, ELECTRICAL AND MECHANICAL SYSTEMS  15
Natural and Mechanical Ventilation systems- Air conditioning systems and load estimation- Planning and design for efficiency-Basic concepts - Automation and Energy Management- concepts. Natural lighting systems- Energy efficiency in lighting systems- load and distribution- Planning and Design for energy efficiency- Automation- basic concepts , Glass and Glazing system for natural lighting. Types of elevators, systems and services- Lobby design- Escalators- safety principles, Some latest Trends, NBC’s recommendations

UNIT IV  SAFETY AND SECURITY  6

UNIT V  CASE STUDIES  12
Case Studies of High Rise buildings and skyscrapers through appropriate examples- Norman Foster; Ove Arup; Ken Yeang, etc.

TOTAL: 45 PERIODS

OUTCOME :
- Students can apply some or all of these services in one of their design projects.

REFERENCES:

AA8451  BUILDING INFORMATION MODELING  L T P/S C
0 0 6 3

OBJECTIVE:
- To equip students with skills and information to build comprehensive Building Information Models (BIM) using appropriate Digital software and Media.

UNIT I  INTRODUCTION TO THE FUNDAMENTALS  10
Key concepts of BIM - reading and manipulating the software Interface - navigating within views - selection methods - the importance of levels and grids- creating walls, doors, windows, and components - working with essential modification commands and load family. Creating floors, ceilings, and stairs - working with type and instance parameters - importing CAD drawings - understanding the project browser and type properties palettes - adding sheets - inserting views onto sheets - adding dimensions and text to the mode and plotting
UNIT II ADVANCED MODELING –FAMILY TYPES AND TOPOSURFACE MODELLING
Creating curtain walls, schedules, details, a custom family, and family types - “flex” a family with family types and work with reference planes - creating rooms and an area plan - tag components - customize existing wall styles. Create and edit a toposurface, add site and parking components - draw label contours - work with phasing - understand groups and links - work with stacked walls - and learn the basics of rendering and create a project template.

UNIT III RENDERING AND MATERIAL APPLICATION
Creating custom walls, floors, and roofs - keynoting - working with mass elements - enhancing rendering with lighting - producing customized materials - Using sun and shadow settings - Walkthrough technique - adding decals - working with design options and worksets - and calculating energy analysis - managing revisions

UNIT IV BIM FOR COST ESTIMATING, PROJECT PHASING AND ADMINISTRATION

UNIT V BIM FOR BUILDING ENERGY SIMULATION
Energy simulation for conceptual BIM models using massing- Detailed modeling using design elements- Rapid energy modeling and simulation with Autodesk® Revit® Conceptual Energy Analysis features to simulate performance from within Revit Architecture -Use Autodesk® Green Building Studio® to produce energy consumption, carbon neutrality and renewable potential reports.

TOTAL : 90 PERIODS

OUTCOMES:
- This is a project-based course where students gain knowledge on the implementation of BIM concepts throughout the lifecycle of a building, from planning and design, to construction and operations.
- The students will learn about how to use BIMs for building energy performance simulation, construction administration

REFERENCES:

LN8153 URBAN LANDSCAPE DESIGN L T P/S C 3 0 0 3
OBJECTIVE:
- To expand the students knowledge on landscape within urban areas and open spaces in Urban context.

UNIT I INTRODUCTION
City and pattern – hierarchy of streets and squares – spatial organization and land use – road networks and basic services. Open spaces with in urban environment.
UNIT II  URBAN SPACES
Cultural, social and aesthetic value of urban spaces and its perception, Imageability, Townscape elements. Urban space enhancement.

UNIT III  OPEN SPACE SYSTEM

UNIT IV  ELEMENTS IN URBAN LANDSCAPE
Design of public parks, roads, green ways, parkways, promenade and plaza. Public art. Plant selection criteria, furnishings and lighting of public space, maintenance and management of public spaces and parks

UNIT V  CASE STUDIES
Contemporary urban landscape issues. Case studies-Study, understanding and analysis of known examples at the national and international levels.

TOTAL: 45 PERIODS

OUTCOMES:
- Types, characteristics and elements of urban open spaces.
- Case studies of urban landscapes.

REFERENCES:
8. Tom turner, city as landscape, Eand FN spon, 1996.