

DAYANANDA SAGAR ACADEMY OF TECHNOLOGY & MANAGEMENT



CURRICULUM

Scheme and Syllabus III and IV Semester

Outcome Based Education
(Academic Year 2024-2025)
School of Architecture
3rd & 4th Semester B Arch

ABOUT THE INSTITUTE

Dayananda Sagar Academy of Technology and Management- DSATM was established in 2011 with 5 UG Programmes and 1 PG Program, the programmes are approved by All India Council for Technical Education (AICTE) New Delhi, Affiliated to Visvesvaraya Technological University (VTU), Belagavi and DSATM is an autonomous institute from 2023-2024.

The Dayananda Sagar Institutions is one of pioneer institutions in India and abroad with six decades of excellence in Academic and Research. The newer campuses were necessary to accommodate the growing need of the technology and innovation.

DSATM nurtures the students in academic, research, sports, cultural and extracurricular activities.

- Creating an academic environment to nurture and develop competent entrepreneurs, leaders and professionals who are socially sensitive and environmentally conscious.
- Integration of Outcome Based Education and cognitive teaching and learning strategies to enhance learning effectiveness.
- Developing necessary infrastructure to cater to the changing needs of Business and Society.
- Optimum utilization of the infrastructure and resources to achieve excellence in all areas of relevance.
- Adopting learning beyond curriculum through outbound activities and creative assignments.
- Imparting contemporary and emerging techno-managerial skills to keep pace with the changing global trends.
- Facilitating greater Industry-Institute Interaction for skill development and employability enhancement.
- Establishing systems and processes to facilitate research, innovation and entrepreneurship for holistic development of students.
- Implementation of Quality Assurance System in all Institutional processes.

VISION OF THE INSTITUTE

To strive at creating the institution a centre of highest calibre of learning, so as to create an overall intellectual atmosphere with each deriving strength from the other to be the best of engineers, scientists with management & design skills.

MISSION OF THE INSTITUTE

- To serve its region, state, the nation and globally by preparing students to make meaningful contributions in an increasing complex global society challenges.
- To encourage, reflection on and evaluation of emerging needs and priorities with state-of-the-art infrastructure at institution.
- To support research and services establishing enhancements in technical, economic, human and cultural development.
- To establish interdisciplinary centre of excellence, supporting/ promoting student's implementation.
- To increase the number of Doctorate holders to promote research culture on campus.
- To establish IIPC, IPR, EDC, innovation cells with functional MOU's supporting student's quality growth.

QUALITY POLICY

Dayananda Sagar Academy of Technology and Management aims at achieving academic excellence through continuous improvement in all spheres of Technical and Management education. In pursuit of excellence cutting – edge and contemporary skills are imparted to the utmost satisfaction of the students and the concerned stakeholders.

ABOUT THE DEPARTMENT

School of Architecture (SOA) was established in the year 2012. Now a days we cannot imagine the world without Electronics & Communication Engineering that has become an essential and inevitable part of our daily lives in almost all the fields. The Department focus is to train our students to get strong academic knowledge in the frontier areas of both Electronics & Communication engineering and also to make the students ready to meet real-world challenges. The Department has always been on a high growth path and has a rich blend of young and highly-experienced regular faculty members, most of them holding PhD from reputed universities.

The faculty members display a high level of dedication and enthusiasm towards both teaching and state-of-the-art research with strong commitment to engineering education who work with zeal and enthusiasm to provide a vibrant and optimum learning environment. The Department has been accredited by NBA and NAAC for providing high standards of education. To impart quality education by establishing research and learning environment to meet global needs and industrial standards is our department vision.

VISION OF THE DEPARTMENT

The vision of School of Architecture, DSATM is to enhance, consolidate & revitalize the thought process of architectural design, thus evolving strong knowledge base that is progressive and dynamic and which is more relevant to the evolving socio-economic and geographical context.

MISSION OF THE DEPARTMENT

The mission of this school in continuation with the vision statement is to educate the future leaders of the architectural practice with emphasis on the relationship between intellectual development and creative activity, by facilitating the acquisition of lifelong learning skills.

OBJECTIVES OF THE DEPARTMENT:

To inculcate and enhance 'Critical Design Thinking' as part of the pedagogy. to explore concepts ' Make n Meaning' and 'Build n Learn'

To create a knowledge base to meet all academic challenges faced by students, faculty and research scholars, in the world of ever evolving technological advancements.

To create physical ambience that facilitates the learning environment among students and faculty.

To offer an array of creative choice of multidisciplinary vocations that encourages excellence, diversity and growth surpassing the traditional boundaries of disparate disciplines.

PROGRAM EDUCATION OBJECTIVES (PEO'S):

PEO1. A graduate will apply the Architectural knowledge gained during the course towards solving broad range of Architectural & Construction related problems.

PEO2. A Graduate will have the perspective of lifelong learning for continuous improvement of knowledge in Architecture & Engineering, Advanced Studies & Research.

PEO3. A Graduate will be able to respond to local, national and international issues by imparting his/her knowledge of Architecture & Engineering (Construction, Services, Structures etc) in Educational, Government, Financial and Private sectors.

PROGRAM OUTCOMES (PO's)

PO1. **Architectural knowledge:** A graduate will be able to apply their creativity, skill knowledge to meet the ever-changing needs of the society.

PO2. **Problem Analysis:** A graduate will demonstrate his/her knowledge in History of Architecture, Theory of Architecture, Sociology and Economics & Professional Practice for architectural design problems for local as well as global community.

PO3. **Design & Development:** A graduate will be able to use his skill in freehand sketching, graphics, model making and services to develop design solutions.

PO4. Conduct Investigation of Complex Problems: A graduate will be able to investigate client & user needs of space, furniture & equipment's requirements and analyze site conditions, by laws in relation to site, climate & design development.

PO5. Modern Tool Usage: A graduate will be able to apply the knowledge of digital techniques & other supporting tools for the architectural and other design projects.

PO6. An Architect & Society: A graduate will be able to apply reasoning informed by the contextual knowledge, to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional Architectural practices.

PO7. Environment and Sustainability: Understand the impact of the professional Architectural solution in societal and environmental contexts and demonstrate the knowledge of and the need for sustainable development.

PO8. Ethics: Apply ethical principles and commit to professional ethics, responsibilities and norms of the Architectural practice.

PO9. Individual and Teamwork: Function effectively as an individual and as a member or leader in diverse teams and in multidisciplinary settings.

PO10. Communication: The graduate will be able to identify and communicate effectively, the critical issues involved in the solutions of architectural design problems.

PO11. Project Management and Finance: A graduate will be able to demonstrate the understanding of HR, Finance and Contract Management for the profession individually or as a team member.

PO12. Life-long Learning: Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological

PROGRAM SPECIFIC OUTCOMES (PSO's)

PSO1: A graduate shall be able to apply critical design thinking through hands on experience (Make 'n' Meaning, Build 'learn).

PSO2: A graduate shall have the knowledge of an array of creative choice of multi-disciplinary vocations that encourages excellence, diversity, and growth surpassing the traditional boundaries of different disciplines.

PSO3: A graduate shall have the knowledge base that meet all professional challenges in the world of ever evolving technological advancements using digital tools and innovative techniques.



Dayananda Sagar Academy of Technology & Management
(Autonomous Institute under VTU)

Affiliated to **VTU**
Approved by **AICTE**
Accredited by **NAAC** with **A+** Grade
6 Programs Accredited by **NBA**
(CSE, ISE, ECE, EEE, MECH, CV)

PROPOSED UG CREDIT STRUCTURE IN ALIGNMENT WITH VTU

Sl.No	Semester	No. of Credits
1	1 st Semester	26
2	2 nd Semester	27
3	3 rd Semester	28
4	4 th Semester	29
5	5 th Semester	30
6	6 th Semester	30
7	7 th Semester	30
8	8 th Semester	30
9	9 th Semester	18
10	10 th Semester	13
Total Credits		261

PROPOSED UG SCHEME – 3rd Semester

Sl. No	Course Category	BOS	TD	Teaching Hours/Week					Credits
				Lecture	Tutorial	Practical	Studio	Total	
				L	T	P	S	(Hrs/week)	
1	PCC	ARCH	ARCH				8	8	8
2	BSAE	ARCH	ARCH	1			3	4	4
3	BSAE	ARCH	ARCH	3				3	3
4	PCC	ARCH	ARCH	3				3	3
5	BSAE	ARCH	ARCH	3				3	3
6	BSAE	ARCH/CIVIL	ARCH/CIVIL	3				3	3
7	HSMC	HUM	HUM	1				1	1
8	PEC	ARCH	ARCH	2				2	2
9	AEC	ANY DEPT	ANY DEPT	1				1	1
10	NCMC	ARCH	ARCH			1		1	
				17	-	1	11	29	28

PROPOSED UG SCHEME – 4th Semester

Sl. No	Course Category	BOS	TD	Teaching Hours/Week					Credits
				Lecture	Tutorial	Practical	Studio	Total	
				L	T	P	S	(Hrs/week)	
1	PCC	ARCH	ARCH				8	8	8
2	BSAE	ARCH	ARCH	1			3	4	4
3	PCC	ARCH	ARCH	3				3	3
4	BSAE	ARCH	ARCH	3				3	3
5	BSAE	ARCH/CIVIL	ARCH/CIVIL	1			2	3	3
6	HSMC	HUM	HUM	1	1			2	1
7	SEC	ARCH	ARCH			4		4	4
8	PEC	ARCH	ARCH	2				2	2
9	HSMC	ANY DEPT	ANY DEPT	1				1	1
				12	1	4	13	30	29

Percentage of Mapping– Theory & Practical - Scheme & Syllabus- 3rd Semester

Sl. No	Course Category	Component			
		Theory	Practical	Studio	Social Connect
1	PCC	--	--	100%	--
2	BSAE	30%	20%	50%	--
3	BSAE	60%	20%	20%	--
4	PCC	70%	15%	15%	--
5	BSAE	80%	--	20%	--
6	BSAE	--	100%	--	--
7	HSMC	100%	--	--	--
8	PEC	10%	90%	-	--
9	AEC	--	--	--	100%
10	NCMC			20%	80%
Total Percentage		36%	24%	23%	17%

Percentage of Mapping– Theory & Practical - Scheme & Syllabus - 4th Semester

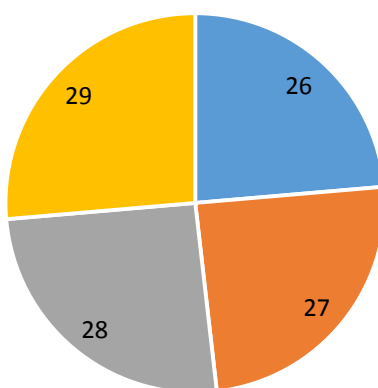
Sl. No	Course Category	Component			
		Theory	Practical	Studio	Social Connect
1	PCC	--	--	100%	--
2	BSAE	30%	20%	50%	--
3	PCC	80%	-	20%	--
4	BSAE	70%	15%	15%	--
5	BSAE	40%	--	60%	--
6	HSMC	100%	-	--	--
7	SEC	20%	80%	--	--
8	PEC	30%		70%	--
9	HSMC	100%	--	--	-
Total Percentage		52%	13%	35%	-

Scheme Distribution for 1st to 4th Semester (Credits : 110)

School of Architecture

Course Component	Credits	% of Credits
PCC - Professional Core Course	55	50
BSAE – Building Service and Applied Engineering Course	36	33
HSMC – Humanity Sciences and Management Courses	06	05
SEC – Skill Enhancement Course	07	06
PEC – Professional Elective Courses	03	03
AEC – Ability Enhancement Course	03	03
NCMC – Non Credit Mandatory Course	00	00
Total	110	100

Scheme-Credit Distribution
Plot the pie-chart



■ 1st Sem ■ 2nd Sem ■ 3rd Sem ■ 4th Sem

SEMESTER WISE CREDIT DISTRIBUTION FOR B Arch DEGREE CURRICULUM

BATCH 2023-2028

Course Category	Semester										Total Credits
	1 st	2 nd	3 rd	4 th	5 th	6 th	7 th	8 th	9 th	10 th	
PCC - Professional Core Course	17	16	11	11							
BSAE – Building Service and Applied Engineering Course	4	9	13	10							
HSMC – Humanity Sciences and Management Courses	1	1	1	3							
SEC – Skill Enhancement Course	3	-	-	4							
PEC – Professional Elective Courses	-	-	2	1							
AEC – Ability Enhancement Course	1	1	1	-							
NMC – Non Credit Mandatory Course	-	-	-	-							
Total Credits	26	27	28	29	30	30	30	30	18	13	261



Dayananda Sagar Academy of Technology & Management

(Autonomous Institute under VTU)

Semester	:	3rd			
Course Title	:	ARCHITECTURAL DESIGN - III			
Course Code	:	23ARC31			
Course Type	:	Studio			
Category	:	PCC (Professional Core Courses)			
Stream	:	Architecture			
Total Hours/week (L: T:P:S)	:	0:0:0:8	CIE	:	100 Marks
Total Hours/semester	:	120 hrs.	SEE	:	100 Marks
Credits	:	08	SEE Duration	:	Viva-Voce

Course Learning Objectives: Students will be able

Sl. No	Course Objectives
1	To Understand the fundamental concepts related to space and place and apply the contextual analysis techniques to assess the physical, cultural, and environmental factors influencing a site.
2	To analyse and evaluate how the various contextual elements impact the design and functionality of architectural spaces and help in creating meaningful place.
3	To design and develop architectural projects that successfully transform space into place, reflecting a deep understanding of contextual influences.

Teaching-Learning Process-

Pedagogy (General Instructions):

These are sample Strategies; which teachers can use to accelerate the attainment of the various course outcomes

1. The contents of the courses shall be taught in an application-oriented manner on a scientific and design basis. The course contents shall be taught and learned in lectures, seminars, workshops, studio exercises and design projects, etc.
2. In-studio exercises the teachers shall take the lead to provide tasks and offer guidance for solutions finding. The students shall work either individually or in groups.
3. In design studios, the students contribute to the processing, analysis and solving of problems of direct professional practice, attended by faculty(s) entitled to conduct the studio and examine. The results shall be defended through drawings; models and reports and evaluated through periodic assessment and finally by a jury or panel, and finally, evaluated through periodic assessment and an end semester examination or viva voce.
4. **Auto-CADD, could be used as final drawings presentation mode.**

COURSE OF STUDY –

The main objective of the studio is transforming spaces into meaningful places. Therefore, it is crucial to thoroughly identify and analyze contextual elements and factors that influence the built environment

KEYWORDS – site/situation, neighborhood, memory, identity, belonging, defining characteristics/particularity of place (activity, need, function, scale, hierarchy, perception).

MODE OF STUDY

• EXPERIENCE

- The attempt of this studio is to understand the experience of a space that can enable a person to define its particularities as a place. An understanding of being "inside" that particular place, versus "outside" it, needs to be explored. The interrelation and interface of formally designed spaces and informal spaces must also be included since both in tandem make up our built environment. (Space making to be portrayed for both formal and informal spaces (along with respective field studies) through different typologies of spaces - markets, settlements, worship places, eateries, etc.
- The idea is to explicitly make students understand that the built environment consists of formal architecture, built by architects with legal rights to land but a major part of it consists of informal spaces which crop up due to societal and spatial circumstances. Since both cannot be observed in singularity, they should be studied parallelly to have a holistic understanding of the world.
- Visits to different places, public and semipublic spaces entrance places, transitional places, dwelling places, neighborhood built-open social spaces, informal space architecture, informal settlements, etc. Students need to experience and study 2 different types (including an informal space) of places, and what differentiates these from others.

• EXPLORATION

- Studies of how scale, proportions, physicality (including exposure of walls, roofs, windows to the sun), direction of winds and breeze climate, local ecology (animal and plant life), relationships with local water bodies and groundwater, materiality, and surrounding context, affect a place and how it is perceived.
- Sketches, models, drawings, photographs, collages, short films, that can illustrate the specificity of the given place. Their architectural representation is an important conclusion of this exploration.

• DESIGN TASKS

2 design projects (minor & major) that address the study, exploration, and expression of the Sense of Place in all its aspect (suggested projects may include but not limited to temporary shelters, pavilions, informal social open spaces, context specific community driven built forms like health canters).

Example: Place: The front entrance of dwellings. Visit to a traditional neighborhood, and a contemporary neighborhood. What is the nature of this place? What are the moments of transience?

What is the character of space before and after the front? What special characteristics place has?

Example: Space: The social spaces within an informal settlement and planned residential neighborhood, The organic space utility at a roadside tea stall and a cafe. What is the character and spirit of the place? What are the elements and forces that create the space. How does the community/people self-organize themselves?

After careful study, a design task based on the sense of place in the same context can be formulated. An emphasis on the translating of one's observations well - primarily in architectural drawing as well as in other methods that support it.

List of suggested Exercises:

"Placemaking" is a multifaceted approach to the planning, design, and management of public spaces, aiming to create vibrant, meaningful places that promote people's health, happiness, and well-being.

Students can create public spaces with very strong context, that are not only functional and aesthetically pleasing but also, vibrant, and meaningful places that foster community engagement and give a sense of belonging.

Suggested exercise is: Market place, public library, pavilions community centers, recreational spaces, police stations etc.

NOTES:

- The DESIGN TASKS should be interspersed with the experience and exploration of the idea of Sense of Place, and not necessarily attempted separately.
- Minor and Major projects can be interlinked.
- **Auto-CADD could be used during progressive development and final drawings presentation mode.**
- The scale of the study area must be smaller. Also, the scale of the major project must be small to medium (site size should not exceed 1 acres)
- Discussions, book reading as well as writing, seminars, field trips, and group as well as individual study are important for the development of the architecture student's understanding of essential concepts such as that of a Sense of Place.

Reference Books	
Books (Title of the Book/Name of the author/Name of the publisher/Edition and Year)	
1	Edward Relph , "Place and Placelessness", Sage Publications, 2008
2	David Seamon , "Life Takes Place", Routledge , 2018
3	Yi Fu Tuan , "Space And Place: The Perspective of Experience", Univ Of Minnesota Press , 2001
4	Gaston Bachelard , "The Poetics of Space", French university publishing , 1958
5	D'Arcy Wentworth Thompson , "On Growth and Form", Cambridge University Press, 1917.
6	Martin Heidegger, "Building, Dwelling, Thinking, (Poetry, Language, Thought), 1951
7	Tim Cresswell , "Place: An Introduction", John Wiley & Sons, 2014
8	Marc Auge , "Non-Places: An Introduction to Supermodernity" , Verso, 1995
9	Peter Zumthor, Brigitte Labs-Ehlert "Atmospheres: Architectural Environments. Surrounding Objects", Birkhauser, 2006
10	Christian Norberg Schulz, "Genius Loci: Towards a Phenomenology of Architecture", New York : Rizzoli , 1979
11	Christopher Alexander, "The Timeless Way of Building", Oxford University Press , 1979
12	Doreen Massey, "For Space", Sage Publications , 2005

1	https://www.youtube.com/watch?v=zJJEplCOa24
2	https://www.completecommunitiesde.org/planning/inclusive-and-active/placemaking-intro/
3	https://www.youtube.com/watch?v=IBOChA1LJM4
4	https://www.youtube.com/watch?v=sw9zph717ts
5	https://www.youtube.com/watch?v=pBJprhsBUrg
6	https://www.youtube.com/watch?v=4VxDoVuURNE
13	Christian Norberg Schulz, "Architecture: Presence, Language, Place", 1996

Course Outcomes: At the end of the course, the student will be able to:

CO	Course Outcomes	RBT Level	Level Indicator
CO1	To Understand the fundamental architectural concepts and terminology related to space and place	L1, L2	Remember and understand
CO2	To apply contextual analysis techniques to assess the physical, cultural, and environmental factors influencing a site.	L3	Apply
CO3	To analyze how the various contextual elements impact the design and functionality of architectural spaces	L4	Analyze
CO4	To evaluate different design approaches and solutions for their effectiveness in creating meaningful places.	L5	Evaluate
CO5	To design and develop architectural projects that successfully transform space into place, reflecting a deep understanding of contextual influences.	L6	Design

Mapping of Course Outcomes to Program Outcomes:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1						3									
CO2	3				2				2					1	
CO3		3		3		3	2			2					
CO4						2									
CO5			3			3	2						2		

Assessment Pattern (Both CIE and SEE)

6 Credit Course								
Assessment Method	Component	Type of Assessment	Assessment Type used	Max. Marks	Evaluation Details	Reduced Marks	Min. Marks	Total
CIE	Studio Assessment	AAT	Progressive Work- (Sheets)	50	Regular on time discussion + Incorporation of changes in design + Presentation skills, Accuracy, Details, Architectural Drawings.	25	12.5	25
			Group Work	20	Case study + Site analysis	15	7.5	15
			Site Visits	10	Presentation skill and coordination			
			Progressive Models	20	Pre-session, Materials and Scale.	10	5	10
			Intermediate reviews	20	Completion of work, Presentation skills, Communication of ideas, Design	10	5	10
	Total CIE Studio						30	60
Panel Review	Viva Voce	Review	50	Presentation skills, Communication of ideas, Design	25	12.5	40	
		Final Portfolio +Models	30	Site Presentation, Accuracy, Details, Architectural Drawings. etc, presentation	15	7.5		
Total CIE Review						20	40	
CIE							50	100
SEE	External Viva Voce			100	Portfolio + Model + Review		40	100
CIE+SEE							100	200

NOTE: The Minimum Marks to be secured in CIE to appear for SEE shall be 50 (50% of Maximum marks – 100) in the Studio Assessment and 40 (40% of Maximum Marks -100) in the External Viva Voce. The total of CIE + SEE shall be a minimum of 100 (50% of Maximum Marks -200).

Course Contents and Lecture Schedule:

Si.No.	Topics	No. of Lecture Hrs.
1	Introductory assignment/holiday assignment	8 Hrs.
2	Minor Project	28 Hrs.
3	Review- Minor project	8 Hrs.
4	Study Model	8 Hrs.
5	Major Project (including case study & literature study)	60 Hrs.
6	Final external Review	8 Hrs.
Total		120 Hrs.

Assessment Details (both CIE and SEE)

(methods of CIE need to be defined topic wise i.e.- Studio discussions, Reviews, Time problems, test, Seminar or micro project)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The student has to obtain a minimum of 50% marks individually both in CIE and 40 % marks in SEE to pass. Semester End Exam (SEE) is conducted for 100 marks (Viva-voce). Based on this grading will be awarded.

Continuous Internal Evaluation:

Methods suggested:

1. Studio discussions, Reviews, Time problems, Seminar or minor project, report writing etc.
2. The subject teacher has to decide the topic for the Design and Seminars if any, in the beginning only. The teacher has to announce the methods of CIE for the subject in advance in writing.

Semester End Examination:

1. The student needs to submit his/her works done throughout the semester, including rough sheets for the Viva examination, at least one day prior to the Viva work examination to the course teacher/ coordinator.
2. The Viva-voce will be evaluated by an external teacher appointed by the University along with Course teacher or an internal examiner.
3. The SEE marks list generated is to be signed by both internal and external examiners and submitted to examination department in the sealed cover through the HOD of the Department.



Dayananda Sagar Academy of Technology & Management
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Semester	:	3rd			
Course Title	:	MATERIALS AND METHODS IN BUILDING CONSTRUCTION -III			
Course Code	:	23ARC32			
Course Type	:	Integrated			
Category	:	B^SA^E (Building Science & Applied Engineering Courses)			
Stream	:	Architecture			
Total Hours/week (L: T:P:S)	:	1:0:0:3	CIE	:	50 Marks
Total Hours/semester	:	60 Hrs.	SEE (Theory)	:	100 Marks
Credits	:	04	SEE Duration	:	4 Hrs.

Course Learning Objectives: Students will be able

Sl. No	Course Objectives
1	Understand various types of RCC slabs, as well as a qualitative grasp of its thermal properties and its suitability for energy-efficient design in hot climates.
2	To impart an understanding of vaults and domes, their design, construction methods and analysing their qualitative influence on a building's interaction with solar heat and ventilation.
3	To acquaint a wide range of various paints, floor finishes, varnishes, distempers, plastering methods and paving materials.
4	Study of plastering and wet cladding techniques in stone, marble, toilet cladding and alternative roofing techniques to R C C, as well as low-cost roofing materials and their health impacts in informal households.

Teaching-Learning Process:

Pedagogical Initiatives:

These are sample Strategies; which teachers can use to accelerate the attainment of the various course outcomes.

- 1. Integration of Theory and Practice:** Emphasize the practical application of theoretical knowledge by incorporating hands-on activities, case studies, and site visits to enhance understanding of building materials and construction methods.
- 2. Demonstration and Visual Aids:** Utilize visual aids, such as diagrams, illustrations, and multimedia presentations, to enhance the understanding of different building materials, construction techniques, and structural elements.
- 4. Real-life Examples and Case Studies:** Incorporate real-life examples and case studies to demonstrate the relevance and practicality of the concepts covered in the modules.
- 5. Practical Exercises and Simulations:** Provide opportunities for students to engage in practical exercises and simulations related to bricklaying, stone masonry, concrete block construction, and other relevant activities to develop practical skills and reinforce theoretical knowledge.
- 6. Assessment through Market Survey and Presentations:** Assign topics for market survey and give presentations on their analysis regarding different products of the same typology.
- 7. Continuous Feedback and Assessment:** Provide regular feedback and assessment to students throughout the learning process to monitor their progress and address any misconceptions or gaps in understanding.
- 8. Encouraging Research and Exploration:** Encourage students to explore additional resources, conduct research, and stay updated with the latest advancements in building materials and construction methods, fostering a sense of curiosity and lifelong learning.



SATM

Scheme of Teaching and Examinations for BE Programme -2024-25
Outcome Based Education and Choice Based Credit System (CBCS)
(Effective from the Academic Year 2024-25)

COURSE CURRICULUM

Module No.	Topics	Hours
1	<p>Introduction to RCC Slabs: one-way, two-way slabs, cantilever slabs, sloping RCC roof, one way continuous, and two ways continuous.</p> <p>RCC one way slab and one-way continuous slabs: Principles and methods of construction.</p> <p>RCC two-way slab and two-way continuous slabs: Principles and methods of construction.</p> <p>RCC cantilever slabs and sloping slab: Principles and methods of construction.</p> <p>RCC: Qualitative understanding of basic thermal properties such as conduction, insulation, thermal mass and the material's appropriateness and/or demerits for hot climates.</p>	15
Pedagogy	<p>Conduct interactive lectures through visual aids Engage students in hands-on activities, such as constructing small-scale RCC slab. Minimum one plate on each construction topic. Site visits to be arranged by studio teachers. This is for progressive marks. Auto-CADD, could be used as mode of presentation for atleast one plate.</p>	
2	<p>Vaults & domes: Principles and methods of construction including techniques and details of form-work. Construction of Masonry & RCC Vaults and Domes – Concepts of Reinforced Concrete Domes and Vaults.</p> <p>Qualitative influence of domes and vaults on building's interaction with solar heat and ventilation.</p>	12
Pedagogy	<p>Conduct interactive lectures through visual aids and examples of iconic structures. Include hands-on activities to demonstrate Construction Vaults and Domes Minimum one plate on each construction topic. Site visits to be arranged by studio teachers. This is for progressive marks. Auto-CADD, could be used as mode of presentation for atleast one plate.</p>	
3	<p>Introduction to Floor finishes including Toilet flooring: Mud flooring, Murrum flooring, and Stone flooring in marble, granite, tandur/kota stone, other flooring in mosaic, terrazzo, ceramic tiles, wooden flooring and polished concrete, low embodied (grey) energy and sustainable flooring: Laying, Fixing and Finishes.</p> <p>Introduction to Paving: Cast in situ concrete including vacuum dewatered flooring, concrete tiles, interlocking blocks, clay tiles, brick and stone.</p>	10
Pedagogy	<p>Lectures with the aid of ICT visuals. Group presentations on market survey and analysis regarding the above-mentioned materials. This is for progressive marks.</p>	
4	<p>Introduction paint finishes: Materials – Paints, varnishes, distempers, emulsions, cement-based paints, external reflective paints, and natural paints. Constituents of oil paints, characteristics of good paints, types of paints and process of painting different surfaces. Types of varnish, methods of applying varnish and French polish and melamine finish.</p>	10
Pedagogy	<p>Lectures with the aid of ICT visuals for explaining the application paints. Group presentations on market survey and analysis regarding the above-mentioned materials. This is for progressive marks.</p>	

5	<p>Method of plastering (Internal and External): smooth, rough, textured, grit plaster etc. Use of various finishes viz., lime, cement, plaster of Paris, buffing etc.</p> <p>Introduction to wet Cladding: wet cladding in stone, marble, etc. including toilet cladding.</p> <p>Alternative roofing: Jack Arch, Madras terrace, stone slab roof, inverted earthen-pot roof, 'Guna' roof (burnt clay vaulted roof), GI/tin sheet roofing, cement corrugated sheets, etc. (low-cost roofs and materials in Informal households and health issues)</p>	13
Pedagogy	<p>Lectures with the aid of ICT visuals with examples.</p> <p>Group presentations on market survey and analysis regarding alternative roofing materials available. This is for progressive marks.</p>	

List of Programs:

Sl. No.	Exercises	COs
1	RCC one way slab and one-way continuous slabs	CO1
2	RCC two-way slab and two-way continuous slabs	CO1 & CO4
3	RCC cantilever slabs and sloping slab	CO1
4	Vaults	CO1
5	Domes	CO1
6	Hands-on workshop on Domes/Vaults	CO3 & CO4
7	Floor finishes (presentation on market survey)	CO1 & CO3
8	Paving details (Quiz)	CO1
9	Paint finishes (presentation on market survey)	CO1 & CO3
10	Method of plastering (Internal and External)	CO1 & CO3
11	Wet Cladding (Quiz)	CO1
12	Alternative roofing (presentation on market survey)	CO1 & CO3

Reference Books

1	Francis K. Ching 'Building construction', Wiley; 5 edition (February 17, 2014)
2	R. Barry, "Construction of Buildings" Vol 1., 1999 by Wiley-Blackwell
3	Roy Chudley, "Construction Technology", 3rd Edition, Longman, 1999
4	W.B. McKay, "Building Construction", Donhead, 2005
5	Building Construction by Rangwala, 33rd Edition 2019
6	Building Construction by Sushil Kumar

Course Outcomes: At the end of the course, the student will be able to:

CO	Course Outcomes	RBT Level	RBT Level Indicator
CO1	Remember & understand the principles and methods that are governing the construction of various Roofing slabs, plastering, flooring with various materials as well as the key aspects of thermal properties in RCC along with innovative and sustainable solutions.	L1, L2	Remember, understand
CO2	Apply the concepts and construction methods learned to solve practical construction challenges related to various types of roofing, plastering and flooring.	L3	Apply
CO3	Analyze the concepts and construction methods of roofing, critically evaluating the details of formwork techniques involved in their construction.	L4	Analyse
CO4	Evaluate the qualitative influence of roofing, plastering, painting and cladding on a building's interaction with solar heat and ventilation, considering their impact on energy efficiency.	L5	Evaluate

Mapping of Course Outcomes to Program Outcomes:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1											2			
CO2			2												
CO3			3		2				3	2				2	
CO4			3							2					

Weblinks and Video Lectures (e-Resources)

1	https://ndl.iitkgp.ac.in
2	https://www.youtube.com/watch?v=13RxiXvaVKU
3	https://www.youtube.com/watch?v=LynqzAYluZs
4	https://www.youtube.com/watch?v=VFuw5Q5Innk
5	https://www.youtube.com/watch?v=z7K99RUlfv/k&t=5s
6	https://www.youtube.com/watch?v=APc0EXTw2KQ&t=1112s
7	https://www.youtube.com/watch?v=2NChfTsiOG4
8	https://www.youtube.com/watch?v=vT6JJGlrZyU

Assessment Pattern (both CIE and SEE)

4 Credit Course

Assessment Method	Component	Type of Assessment	Assessment Type used	Max. Marks	Evaluation Details	Reduced Marks	Min. Marks	Total
CIE	Studio	Continuous Assessment Tool	Sheet work/ Portfolio and Models	40	Accuracy and Completeness of Construction Drawing Sheets (20 marks) Documentation and Portfolio (10 marks) Quality and Presentation of Construction Models (10 marks)	15	7.5	15
			Internal Assessment test	IAT 1	50	Internals paper	20	10
		IAT 2	50	Internals paper				
	Theory	AAT	Seminar/ Market Study Presentations	10	Understanding & Analysis (6 marks) Presentation Skills (3 marks) Engagement and Interaction (1 mark)	10	5	10
			MCQ/Quiz	10	--	05	2.50	05
Total CIE Marks							25	50
SEE				100	SEE Exam is Theory exam, conducted for 100 marks reduced to 50 marks	100	40	100
CIE+SEE							50 +100	150

NOTE: The Marks of Continuous Internal Evaluation (CIE) is 50 and for Semester End Exam (SEE) is 100marks. The student has to obtain a minimum of 50% of the maximum marks of CIE and 40 % of maximum marks of SEE to pass. The passing percentage shall not be less than the 50% in aggregate for a course (i.e. CIE and SEE (put together). Based on the marks scored in CIE+SEE grading will be awarded for this course.

CIE- Continuous Internal Evaluation (50 Marks)

Bloom's Category	Studio		Theory	
	Continuous Assessment Tool	Internal Assessment Tool (IAT)	Alternative Assessment Tool (AAT)	
	Sheet Work and portfolio	Internal Papers	Seminar/ Market Study Presentations	MCQ/Quiz
	15 Marks	20 Marks	10 Marks	5 Marks
Remember	2	5	2	2
Understand	2	5	2	2
Apply	3	3	3	1
Analyse	5	4	3	-
Evaluate	3	3	-	-

CIE Internal Assessment Test Plan

CO's	Marks Distribution					Total Marks	Weightage
	IAT-1			IAT-2			
	Module-1	Module-2	Module-3	Module-4	Module-5		
CO1	3	3	2	2	2	12	24%
CO2	2	3	3	3	3	14	28%
CO3	3	3	2	2	2	12	24%
CO4	1	2	3	3	3	12	24%
Total	12	14	16	16	17	50	100 %

SEE- Semester End Examination (100 Marks)

Bloom's Category	SEE Marks
Remember	15
Understand	15
Apply	25
Analyse	35
Evaluate	10

SEE Course Plan

CO's	Marks Distribution					Total Marks	Weightage
	Module-1	Module-2	Module-3	Module-4	Module-5		
CO1	6	6	6	6	6	30	30%
CO2	6	6	6	6	6	30	30%
CO3	4	4	4	4	4	20	20%
CO4	4	4	2	4	4	20	20%
Total	20	20	20	20	20	100	100%

Course Contents and Lecture Schedule:

Si.No.	Topics	No. of Lecture Hrs.
1	RCC Slabs	15 Hrs.
2	Domes & Vaults	12 Hrs.
3	Floor finishes	10 Hrs.
4	Paints	10 Hrs.
5	Plastering & Alternate roofing	13 Hrs.
	Total	60 Hrs.



Dayananda Sagar Academy of Technology & Management

(Autonomous Institute under VTU)

Semester	:	3 rd		
Course Title	:	CLIMATOLOGY		
Course Code	:	23ARC33		
Course Type	:	Theory		
Category	:	BSAE (Building Science & Applied Engineering Courses)		
Stream	:	Architecture		
Total Hours/week (L:T:P:S)	:	3:0:0:0	CIE	: 50 Marks
Total Hours/semester	:	42 Hrs.	SEE (Theory)	: 50 Marks
Credits	:	03	SEE Duration	: 3 Hrs.

Course Learning Objectives:

Sl.No	Course Objectives
1	Students shall Understand elements and classification of climate, related terminology, and relationship of climate with architecture.
2	Students shall describe different parameters of human thermal comfort and formulate strategies for its achievement in built environment.
3	Students shall analyse and evaluate Sun path and wind direction of different locations and articulate in built environment in the form of day lighting, shading devices, and natural ventilation.
4	Students shall explain and apply different parameters of thermal performance of buildings in various climatic zones.

Teaching-Learning Process

Pedagogy (General Instructions):

These are sample Strategies; which teachers can use to accelerate the attainment of the various course outcomes are listed below:

1. Adopt different teaching methods to attain the course outcomes.
2. Include videos to demonstrate various concepts in Climatology.
3. Encourage collaborative (Group) Learning to encourage team building.
4. Ask at least three **HOTS (Higher-order Thinking Skills)** module-wise questions to promote critical thinking.
5. Adopt **Problem-Based Learning (PBL)**, which fosters students' analytical skills, and develops thinking skills such as evaluating, generalizing, and analyzing information rather than simply recalling it.
6. Show different ways to solve a problem and encourage the students to come up with creative and optimal solutions.
7. Discuss various case studies to map with real-world scenarios and improve the understanding.
8. Devise innovative pedagogy to improve **Teaching-Learning Process (TLP)**.
9. Individual teachers can devise innovative pedagogy to improve teaching-learning.



DSATM

**Scheme of Teaching and Examinations for BE Programme -2023-24
Outcome Based Education and Choice Based Credit System (CBCS)
(Effective from the Academic Year 2023-24)**

COURSE SYLLABUS

Module No.	Contents of the Module	Hours
1	<p>Introduction to Climate-1: The Climate-built form interaction; some examples. Elements of climate, measurement and representations of climatic data. Classifications and Characteristics of tropical climates.</p> <p>Introduction to Climate-2: Major climatic zones of India. Site Climate: Effect of landscape elements on site/micro climate. Interrelation between the human built environment and the natural environment: Historical trajectory of environmental degradation and climate change as a function of humankind's architectural and industrial interventions.</p> <p>Introduction to the current Climate crisis and targets- Documentation of changes in climate, environmental conditions over time and their ramifications on the built environment and the roles and responsibilities of the profession of architecture. Develop a climate change timeline.</p> <p>Thermal comfort-1: Thermal balance of the human body, basic understanding of psychrometric chart and related parameters (dry-bulb temperature, wet-bulb temperature, absolute humidity, relative humidity, enthalpy, specific volume), psychrometric basis of human thermal comfort, thermal comfort factors (including mean radiant temperature and air speed), Thermal Comfort Indices (Effective temperature, corrected effective temperature, bioclimatic chart, tropical summer index by CBRI Roorkee), Indian Model of Adaptive Comfort (IMAC) and comparison with global thermal comfort models, Measuring indoor air movement: Kata-thermometer, and measuring indoor radiation: Globe thermometer.</p>	10
Pedagogy	Lectures and Presentations, Case Studies, Climate Data Analysis, Field Trips, Interactive Climate Maps, Group Discussions, Mapping Exercises, Landscape Design Projects, Role-Playing, Document Analysis,	
2	<p>Thermal comfort-2: Uses of psychrometric chart for climate analysis, Calculation of Overheated and under heated period (based on air temperature only) for locations in Climatic zones and their optimization in terms of solar heating and Passive cooling desired.</p> <p>Sun-path diagram: Solar geometry & design for orientation and use of solar charts in climatic design.</p> <p>Thermal performance of building elements: Effect of thermo-physical properties of building materials and elements on indoor thermal environment. Convection, Radiation, concept of Sol-air temperature and Solar Gain factor. Thermal properties and performance of different materials used in construction such as Mud, Wood, Bamboo, RCC, Steel, Glass, Gl, Tin, etc and relating it to Thermal Stress. Assessment of passive cooling possibilities and natural night-sky radiation of roofing materials and retrofitted radiant-barrier materials.</p>	6
Pedagogy	Lectures and Presentations, Case Studies & Comparative Analysis, Hands-on Experiments and Simulations, Interactive Workshops and Design Projects, Digital Tools and Software (GIS, CAD, Total station, BIM)	

3	Thermal Heat gain or loss: Steady state and periodic heat flow concepts (conduction, convection and radiation), conductivity, resistivity, diffusivity, emissivity, thermal capacity, time lag and 'U' value. Calculation of U value for multi-layered walls and Roof, Temperature Gradient, Inference of time lags from Graphs for walls and Roof. Construction techniques for improving thermal performance of walls and roofs. (Effect of density, Insulation, and Cavity).	6
Pedagogy	Lecture and videos, hands on and physical testing, digital tools (equest,ecotect), live testing of materials, case studies	
4	Shading devices: Optimizing Design of Shading devices effective for overheated periods while allowing solar radiation for under heated periods for different wall orientations. Natural ventilation: Functions of natural ventilation, Stack effect due to thermal force and wind velocity. Air movements around buildings, Design considerations and effects of openings and external features on internal air flow and Wind shadows. Natural/passive cooling: Introduction to passive techniques of cooling such as evaporative cooling (including basic assessment of its cooling potential using the psychrometric chart for various climatic zones), earth tubing, wind scoops, roof ponds, shaded courtyards etc.	10
Pedagogy	Design Studios and Practical Workshops, Computer Simulations and Digital Tools, Field Trips and Site Analysis, Case Studies and Comparative Analysis, Interactive Lectures and Discussions	
5	Day Lighting: Nature of natural light, its transmission, reflection, diffusion, glare. Advantages and limitations in different climatic zones, North light, Daylight factor, components of Daylight devices. Climatic Design considerations 1: Literature study of relevant traditional and contemporary building examples. Climatic Design considerations 2: Two or more Indian case studies, including an informal settlement, example Dharavi or more local instances and one international for each climatic zone. Climatic Design considerations 3: Keeping in mind the current climatic scenario and how it is changing rapidly. Understanding how design tools can help in the making of climate-friendly and resilient designs.	10
Pedagogy	Interactive Workshops, Hands-on Experiments, Simulations, Data Analysis, Interactive Discussions, Digital Tools and Software (GIS, CAD, Total station, BIM), Online Platforms (LMS), Collaborative Projects, Field Studies, Visual Aids (Diagrams, Charts, Videos), Demonstration	

List of Experiments or Programs

Sl.No	Exercises	COs
1	Designing Adjustable Shading Devices Objective: Design shading devices that are effective for both overheated and underheated periods. Activity: 1. Choose a building with different wall orientations (north, south, east, west). 2. Design adjustable shading devices (e.g., louvers, retractable awnings) for each orientation. 3. Use simulation software to model and analyze the effectiveness of the shading devices in different seasons. 4. Present the designs and simulations, discussing how they optimize solar gain and shading.	CO2 & CO3
2	Psychrometric Chart Workshop (Group Activity) Objective: Understand the psychrometric chart and its parameters.	CO2, CO3

	Activity: 5. Conduct a workshop on reading and interpreting the psychrometric chart. 6. Provide exercises to plot various conditions and analyze comfort levels.	
3	Sun-Path Diagram Construction & Designing Adjustable Shading Devices Objective: Understand solar geometry, design for orientation using solar charts and Design shading devices that are effective for both overheated and underheated periods Activity: 1. Teach students how to construct and read sun-path diagrams for different latitudes. 2. Use these diagrams to determine optimal building orientation and window placement. 3. Design shading devices based on sun-path data for different times of the year.	CO5
4	Calculating U-Value for Multi-Layered Walls and Roofs Objective: Calculate the U-value for walls and roofs with multiple layers. Activity: <ul style="list-style-type: none"> • Provide the thermal properties (conductivity, thickness) of each layer in a wall or roof assembly. • Calculate the R-value (resistance) for each layer and then determine the overall U-value (1/R_{total}). Compare the U-values of different assemblies to evaluate their thermal performance.	CO4
5	Evaporative Cooling Potential Assessment Objective: Assess the potential of evaporative cooling using the psychrometric chart. Activity: Choose a location and collect climatic data (temperature, humidity). Use the psychrometric chart to determine the potential cooling effect of evaporative cooling. Design an evaporative cooling system (e.g., water walls, misting systems) for a building in the selected location. Present the design and cooling potential analysis.	CO5

Reference Books

1	Koenigsberger, Manual of Tropical Housing & Buildings (Part-II), Orient Longman, Bombay, 1996.
2	Martin Evans; Housing, Climate, and Comfort; Architectural Press (1 March 1980)
3	Baruch Givoni; Passive and Low Energy Cooling of Buildings; John Wiley & Sons (1 July 1994).
4	Energy Conservation Building Code (ECBC) 2007; Bureau of Energy Efficiency, Ministry of Power, Government of India.
5	Mili Majumdar (Editor); Energy Efficient Buildings in India; The Energy and Resources Institute, TERI (28 February 2009)
6	Donald Watson and Kenneth Labs; Climatic Building Design - Energy-Efficient Building Principles and Practice; McGraw-Hill Book Company, 1983.
7	Arvind Krishan, Baker & Szokolay, Climate Responsive Architecture, Tata McGraw Hill, 2002.

Weblinks and Video Lectures (e-Resources)	
1	https://ndl.iitkgp.ac.in
2	https://youtube.com/watch?v=6D4ow2WuIVA
3	https://www.youtube.com/watch?v=8wweKGJDoG0
4	https://www.youtube.com/watch?v=yEWT_XmqCtQ
5	https://www.youtube.com/watch?v=SwZ1FEgangE
6	https://www.youtube.com/watch?v=Ouvk9t5T9X4
7	https://www.youtube.com/watch?v=BgOy3U34muY
8	https://www.youtube.com/watch?v=pCrZEJATeKQ
9	https://www.youtube.com/watch?v=fnhhj4vTzPQ
10	https://www.youtube.com/watch?v=YbigQjL6oKo

Course Outcomes: At the end of the course, the student will be able to:

CO	Course Outcomes	RBT Level	Level Indicator
CO1	Understand the elements of weather and climate, thermal comfort, phenomenon of heat flow inside building, and the concept of solar shading and day lighting in a built environment.	Remember and understand	L1, L2
CO2	Apply the knowledge of different materials, ventilation techniques and day lighting concepts, for achieving thermal comfort in a various climatic zone.	Apply	L3
CO3	Analyzing different techniques of passive design technologies in the building.	Analyze	L4
CO4	Investigate the traditional and contemporary techniques used in various climatic zones.	Evaluate	L5
CO5	Develop the climate responsive design guidelines for construction of any buildings in a particular climate zone through analyzation of various studies and implement in the design projects.	Design	L6

Mapping of Course Outcomes to Program Outcomes:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2						2					2		3	
CO2	2			2	2		3								
CO3			3			2				2			2		
CO4															
CO5					2				2						

Assessment Pattern (both CIE and SEE)

3 Credit Course – BSAE

Assessment Method	Component	Type of Assessment	Assessment Type used	Max. Marks	Evaluation Details	Reduced Marks	Min. Marks	Total
CIE	IA exams	Theory exam	IA1	50	(50+50)/2	20	10	20
			IA2	50				
	Total CIE Theory							10

	ASSIGNMENTS (AAT)	AAT	Considering all the module activities	50	50 (reduced to 15)	30	15	30
Total CIE Activities							15	30
Total CIE							25	50
SEE	SEE Exam will be Theory exam			100	SEE Exam will be Theory exam (100 Marks)	50	20	50
CIE+SEE							50% of total marks	100

NOTE: The Minimum Marks to be secured in CIE to appear for SEE shall be 25 (50% of Maximum marks – 50). The Minimum Marks to be secured in SEE shall be 20 (40% of Maximum marks – 50). The design activities will be assessed through only CIE. The passing percentage shall not be less than the 50% in aggregate for a course (i.e. CIE and SEE (put together). Based on the marks scored in CIE+SEE grading will be awarded for this course.

CIE- Continuous Internal Evaluation (50 Marks)

Bloom's Category	Internal Assessments	Assignments (AAT)
	20 Marks	30 Marks
Remember	IA 1 & 2	
Understand		
Apply	IA 1 & 2	
Analyse	IA 1 & 2	Module wise activities
Evaluate		Module wise activities
Create		Module wise activities

CIE Course Assessment Plan

CO's	Marks Distribution					Total Marks	Weightage
	Module-1	Module-2	Module-3	Module-4	Module-5		
CO1	5	5	5			15	15
CO2	5	5	5	5	5	25	25
CO3	5	5	5	5	5	25	25
CO4		5	5	5	10	25	25
CO5				10		10	10
Total	15	20	20	25	25	100	100%

SEE- Semester End Examination (50 Marks)

Bloom's Category	SEE Marks (Theory exam of 100 marks to reduce to 50)
Remember	20%
Understand	20%
Apply	20%
Analyse	20%
Evaluate	20%
Create	-

SEE Course Plan

CO's	Marks Distribution					Total Marks	Weightage
	Module-1	Module-2	Module-3	Module-4	Module-5		
CO1						25	50%
CO2						15	15%
CO3						10	0%
CO4							
CO5							
Total	10	10	10	10	10	50	100%



Dayananda Sagar Academy of Technology & Management

(Autonomous Institute under VTU)

Semester	:	3rd			
Course Title	:	History of Architecture III			
Course Code	:	23ARC34			
Course Type	:	Theory			
Category	:	PCC (Professional Core Courses)			
Stream	:	Architecture			
Total Hours/week (L:T:P:S)	:	3:0:0:0	CIE	:	50 Marks
Total Hours/semester	:	42 Hrs.	SEE (Theory)	:	50 Marks
Credits	:	03	SEE Duration	:	3 Hrs.

Course Learning Objectives: Students will be taught

SI.No	Course Objectives
1	To provide an understanding of the evolution of Islamic Architecture in India in its various stylistic modes, characterized by technology, ornamentation and planning practices.

Teaching-Learning Process

Pedagogy (General Instructions):

These are sample Strategies; which teachers can use to accelerate the attainment of the various course outcomes.

1. Lecture method (L) does not mean only the traditional lecture method, but a different type of teaching method may be adopted to develop the outcomes.
2. Show Video/animation films to explain the infrastructures and the mechanism involved in the principle.
3. Encourage collaborative (Group) Learning in the class.
4. Ask at least three HOT (Higher-order Thinking) questions in the class, which promotes critical thinking.
5. Adopt Problem Based Learning (PBL), which fosters students' Analytical skills, develop thinking skills such as the ability to evaluate, generalize, and analyze information rather than simply recall it.
6. Topics will be introduced in multiple representations.
7. Show the different ways to solve the same problem and encourage the students to come up with their own creative ways to solve them.
8. Discuss how every concept can be applied to the real world - and when that's possible, it helps improve the students' understanding.
9. Individual teachers can device innovative pedagogy to improve teaching-learning.



Scheme of Teaching and Examinations for BE Programme -2023-24
Outcome Based Education and Choice Based Credit System (CBCS)
(Effective from the Academic Year 2023-24)

DSATMD

COURSE SYLLABUS

Module No.	Contents of the Module	Hours
1	1. Islamic Architecture – Early phase; It's emergence in 11th century AD in India. General characteristics of Indian Islamic Style. 2. Early Phase –I: – Slave and Khilji phase – a) Monumental: Quawat UI Islam, mosque and tomb of Iltumish , Qutub Minar , Alai Minar. b) Civic space: Alai Darwaza. 3. Early Phase –II: - Tugluq , Sayyid & Lodi dynasties – Architectural character- a) Monumental arch: Tomb of Ghia–Suddin Tugluq, Tomb of Firoz shah Tugluq, Shish Gumbad. b) Civic Space: Khirkhi masjid Delhi, Firoz Shah kotla – public and private space, madrassa design with Firoz shah's tomb	10
Pedagogy	1) The teacher can use PPTs, Videos to discuss the buildings, style of architecture. 2) The students need to sketch the buildings for its unique qualities. 3) Quizzes, models, seminars from students can be encouraged.	
2	4. Provincial style – I – Jaunpur and Bengal – Architectural character a) Monumental arch: Atala and Jami masjid Bengal – Adina masjid Pandua, Ek Lakhi Tomb b) Civic Space: Elements like entrance pylon: Jaunpur, Dakhil – Darwaza at Gaur. 5. Provincial style – II – Ahmedabad and Bijapur – Architectural characteristics- a) Monumental arch: Ahmedabad- Sarkhej complex, Bijapur- Gol gumbaz, Ibrahim Rauza, b) Civic space: Ahmedabad-, Vavs of Gujarat, Teen darwaza. Bijapur- Bauli (Water tank).	10
Pedagogy	1) The teacher can use PPTs, Videos to discuss the buildings, style of architecture. 2) The students need to sketch the buildings for its unique qualities. 3) Quizzes, models, seminars from students can be encouraged	
3	6. Provincial style – III- Bidar and Gulbarga-General Character. a) Monumental: Bidar-Jami masjid. Gulbarga-Jami masjid. b) Domestic: Bidar-Madrassa of Mond, Gawan. 7. Moghul Architecture-I –Architectural Character. a) Monumental arch: Humayun's tomb, Fatehpursikri layout, Jami masjid, Diwan-l-khas, Tomb of Salim chisti. b) Civic space- Buland darwaza, Garden(Humayun's tomb). c) Domestic- Fatehpursikri, Birbal's house, Jodhabai's palace.	10
Pedagogy	1) The teacher can use PPTs, Videos to discuss the buildings, style of architecture. 2) The students need to sketch the buildings for its unique qualities. 3) Quizzes, models, seminars from students can be encouraged	
4	8. Mughal Architecture-II – a) Monumental arch: Akbar's tomb, Taj mahal, Itmaud Daula b) Civic space: Mughal Gardens, Diwan-l-am, Red Fort, Meena bazaar, Red Fort, Guesthouse (Taj mahal complex) c) Domestic: Public elements like 'Serai'-traveler's shelters, Nobles' houses etc. 9. Colonial Architecture-I – Early phase-Establishment of forts, warehouses etc- Building typologies and general architectural character of Colonial Indian Architecture. 10. Colonial Architecture-II – Study of Examples	6

	a) Monumental- Governor's house, Calcutta, Town hall, Victoria Terminus (Chhatrapati Shivaji Station) Mumbai,	
Pedagogy	1) The teacher can use PPTs, Videos to discuss the buildings, style of architecture. 2) The students need to sketch the buildings for its unique qualities. 3) Quizzes, models, seminars from students can be encouraged	
5	11. Colonial Architecture-III – a) Design of New Capital of Delhi- Contributions of Edward Lutyens, Herbert Baker (Rashtrapati Bhavan), Layout of New Delhi, Parliament House, North Block and South Block at Rashtrapathi Bhavan. b) Monumental: Civic space-Rajpath, Janpath, India Gate etc. 12. Colonial Architecture-IV – Examples from Goa-Se Cathedral, Cathedral of Bom Jesus (Monumental Architecture). Architecture From Pondicherry-Indian and French Quarters (Domestic Architecture). Brief summary of Dutch and Danish settlements.	6
Pedagogy	1) The teacher can use PPTs, Videos to discuss the buildings, style of architecture. 2) The students need to sketch the buildings for its unique qualities. 3) Quizzes, models, seminars from students can be encouraged	

Reference Books

Books (Title of the Book/Name of the author/Name of the publisher/Edition and Year)

1	Bannister Fletcher , "History of Architecture", CBS Publishers, 1992
2	"Indian Architecture, Islamic" by Brown, Percy
3	"Architecture of India – Islamic" by Grover Satish

Course Outcomes: At the end of the course, the student will be able to:

CO	Course Outcomes	RBT Level	Level Indicator
CO1	To understand the evolution of Islamic Architecture through different dynasties	L1	R & U
CO2	To apply the knowledge of Islamic and Colonial Architecture to recognize, classify and evaluate different architecture monuments.	L2	A
CO3	To analyze the historic monuments in terms of their planning, form, functions, method of construction, materials used, planning techniques, ornamentation etc.,	L3	An
CO4	To evaluate the chronological stylist developments of Islamic and Colonial Architectural Styles.	L4	E
CO5	To design/create spaces/products inspired from the Islamic and Colonial Architectural monuments	L5	C

Weblinks and Video Lectures (e-Resources)

1	https://ndl.iitkgp.ac.in
2	https://youtu.be/OjY4FuULhes
3	https://youtu.be/QJNf9clKo7M
4	https://youtu.be/9qX5wTj4sX4

Mapping of Course Outcomes to Program Outcomes:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1													2		
CO2	2											2			
CO3		2	2				2		2					2	
CO4						2									
CO5							2								

Assessment Pattern (both CIE and SEE)

3 Credit Course

Assessment Method	Component	Type of Assessment	Assessment Type used	Max. Marks	Evaluation Details	Reduced Marks	Min. Marks	Total	
CIE	Theory	AAT	Pedagogical Initiatives	50	Any two assessment Methods as per modules.	30	15	30	
		Test-1	Theory	50		(50+50)/2	20	10	20
		Test-2	Theory	50	Total CIE Theory		25	50	
SEE				100	SEE Exam is Theory Exam, conducted for 100 Marks.	50	20	50	
CIE+SEE							50	100	

NOTE: The Minimum Marks to be secured in CIE to appear for SEE shall be 25 (50% of Maximum marks – 50). The Minimum Marks to be secured in SEE shall be 20 (40% of Maximum marks – 50). The design activities will be assessed through only CIE. The passing percentage shall not be less than the 50% in aggregate for a course (i.e. CIE and SEE (put together)). Based on the marks scored in CIE+SEE grading will be awarded for this course.

CIE- Continuous Internal Evaluation (50 Marks)

Bloom's Category	Continuous Assessment Tests		Theory
			Alternative Assessment Tool (AAT) (Activity+Assignment)
	Test-1 (50 marks)	Test-2 (50 marks)	50 Marks
Remember			
Understand	15	15	
Apply	15	15	
Analyse	20	20	
Evaluate	-	-	30
Create	-	-	20

CIE Internal Assessment Test Plan

CO's	Marks Distribution					Total Marks	Weightage
	Test-1		Test-2				
	Module-1	Module-2	Module-3	Module-4	Module-5		
CO1	10	10	10	10	5	45	45%
CO2							
CO3		10	10	10	10	30	30%
CO4	5				10	15	15%
Total	15	20	20	20	25	100	100%

SEE- Semester End Examination (50 Marks)

Bloom's Category	SEE Marks (100% Theory)
Remember	20%
Understand	20%
Apply	20%
Analyse	20%
Evaluate	20%
Create	-

SEE Course Plan

CO's	Marks Distribution					Total Marks	Weightage
	Module-1	Module-2	Module-3	Module-4	Module-5		
CO1	5	5	5	5	5	25	25%
CO2	5	5	5	5	5	25	25%
CO3	10	5	5	5	5	30	30%
CO4		5	5	5	5	20	20%

Course Contents and Lecture Schedule

Module No.	Topics	No. of Lecture Hrs.
1	Islamic Architecture – <ul style="list-style-type: none"> Early phase; It's emergence in 11th century AD in India. General characteristics of Indian Islamic Style. 	3
1	<ul style="list-style-type: none"> Early Phase –I: – Slave and Khilji phase – Monumental: Quawat UI Islam, mosque 	4
1	<ul style="list-style-type: none"> Early Phase –II: - Tugluq, Sayyid & Lodi dynasties – Architectural character- 	3
2	<ul style="list-style-type: none"> Provincial style – I – Jaunpur and Bengal – Architectural character 	3
2	<ul style="list-style-type: none"> Provincial style – II – Ahmedabad and Bijapur – Architectural characteristics- 	3
2	<ul style="list-style-type: none"> Provincial style – III- Bidar and Gulbarga-General Character. 	4
3	<ul style="list-style-type: none"> Moghul Architecture-I –Architectural Character. a) Monumental arch: Humayun's tomb, Fatehpur sikri layout 	4
3	<ul style="list-style-type: none"> Mughal Architecture-II –a) Monumental arch: Akbar's tomb, Taj mahal, Itmaud Daula 	4
	<ul style="list-style-type: none"> Colonial Architecture-I – Early phase-Establishment of forts, warehouses etc- 	2
4	<ul style="list-style-type: none"> Colonial Architecture-II – Study of Examples a) Monumental- Governor's house, Calcutta, Town hall, Victoria Terminus (Chhatrapati Shivaji Station) Mumbai, Madras Club 	4
4	<ul style="list-style-type: none"> Civic spaces: Parade Ground, MG Road, Bangalore, Bangalore and Mysore Railway Stations, Administrative Buildings etc 	3
5	<ul style="list-style-type: none"> Colonial Architecture-III Design of New Capital of Delhi- Contributions of Edward Lutyens, Herbert Baker (Rashtrapati Bhavan), Layout of New Delhi 	3
5	<ul style="list-style-type: none"> Colonial Architecture-IV Examples from Goa-Se Cathedral, Cathedral of Bom Jesus (Monumental Architecture). Architecture From Pondicherry-Indian 	4
Total		42 Hrs



Dayananda Sagar Academy of Technology & Management (Autonomous Institute under VTU)

Semester	:	3rd			
Course Title	:	BUILDING SERVICES - I			
Course Code	:	23ARC35			
Course Type	:	Theory			
Category	:	BSAE (Building Science & Applied Engineering Courses)			
Stream	:	Architecture			
Total Hours/week (L:T:P:S)		3:0:0:0	CIE	:	50 Marks
Total Hours/semester	:	42 Hrs.	SEE (Theory)	:	50 Marks
Credits	:	03	SEE Duration	:	3 Hrs.

Course Learning Objectives:

SI.No	Course Objectives
1	To impart the knowledge and skills required for understanding the role of essential services of water supply, sanitation and solid waste management and their integration with architectural design.
2	To understand sustainability issues of water supply and sanitation systems.
3	To create awareness and share knowledge on sustainable practices of rain water harvesting, solar water heaters and recycle of waste.

Teaching-Learning Process

Pedagogy (General Instructions):

These are sample Strategies; which teachers can use to accelerate the attainment of the various course outcomes.

1. Lecture method (L) does not mean only the traditional lecture method, but a different type of teaching method may be adopted to develop the outcomes.
2. Show Video/animation films to explain the infrastructures and the mechanism involved in the principle.
3. Encourage collaborative (Group) Learning in the class.
4. Ask at least three HOT (Higher-order Thinking) questions in the class, which promotes critical thinking.
5. Adopt Problem Based Learning (PBL), which fosters students' Analytical skills, develop thinking skills such as the ability to evaluate, generalize, and analyze information rather than simply recall it.
6. Topics will be introduced in multiple representations.
7. Show the different ways to solve the same problem and encourage the students to come up with their own creative ways to solve them.
8. Discuss how every concept can be applied to the real world - and when that's possible, it helps improve the students' understanding.
9. Individual teachers can device innovative pedagogy to improve teaching-learning.



Scheme of Teaching and Examinations for BE Programme -2023-24
Outcome Based Education and Choice Based Credit System (CBCS)
(Effective from the Academic Year 2023-24)

DSATM

COURSE SYLLABUS

Module No.	Contents of the Module	Hours
1	<p>Water Supply – Importance of access to clean water, effects of water pollution, water borne and water related disease and epidemic.</p> <p>Municipal water supply – Sources - surface and ground water source; Intakes, pumping and transportation. Quality of water for different uses as per national standards; Quantity of water for different usages - Domestic, Commercial, Industrial, fire demand, public use, losses; Assessment of requirement for different uses. Treatment of water – sedimentation, filtration, softening, disinfection. Storage and pumping – gravity system, pumping system and combined; Distribution of water – distribution patterns; House service connections; Design of overhead and underground water tank for residence.</p>	10
Pedagogy	<p>1) Visit to a water treatment plant 2) Quizzes, crossword, debates on the various concepts, design and issues of water supply.</p>	
2	<p>Sanitation - History of Sanitation with respect to human civilization, Conservancy to water carriage system, Rural sanitation systems – soak pits, aqua privy.</p> <p>Sewerage System - Assessment of sewage generated, Collection of sewage / wastewater from all sources, types and collection network schematic diagram, Conveyance of sewage – materials of sewer and Sewer appurtenances – traps, chambers and manholes. Objective of Sewage treatment, type of treatment, aerobic, anaerobic, Ventilation of STP, Space requirements. Septic tank design and space calculation. Study about other decentralised methods of sewage treatment for housing society or campus planning.</p>	10
Pedagogy	<p>1) Visit to a sewage treatment plant at a city level 2) Quizzes, crossword, debates or extempore on the various concepts, design and issues of sanitation.</p>	
3	<p>Plumbing - Water supply piping – single stack, double stack, hot and cold-water plumbing, flushing water, Piping in sunken areas, false ceiling areas, sprinklers, shaft sizes, Drainage – floor traps, drains, P-trap, bottle traps, cross venting, fixture venting, Materials and fittings used in plumbing; Flow control Valves – Gate valve, Globe valves, butterfly valves, Pressure Reducing valves & station, Pipe supports, hangers, fixing. Detail plumbing of small houses. Water Supply to High Rise Buildings, Problems encountered and Systems adopted.</p> <p>Fixtures and Fittings - Soil appliances – Water closets, Bidet, urinals, Cisterns, Flush valve, Waste appliances – wash basin, sink, dishwasher, washing machine. Hot water system – Geysers, boilers, heat pump, solar water heater. Bath & water fixtures – Taps, mixers, single lever, quarter turn, bathtub, multi-jet bath, rain showers, health faucets, Wellness products : Sauna bath, steam bath, Jacuzzi.</p>	10
Pedagogy	<p>1) Visit to a construction site for various works of plumbing installations. 2) Market survey, materials and study for various fixtures and installations.</p>	
4	<p>Storm water Management: Assessment, quantification of rainfall, flood control measures, Drainage system – piped drains, open drains, Recharging of storm water, Harvesting of roof top water, first flush, pre-treatment, Drainage of basements, podium, paved areas, Collection, Reuse of water within the project, reduction of the load on municipal system, landscape drainages and Rainwater harvesting. Municipal laws norms and incentive</p>	6

	regarding rainwater harvesting. Design of RWH system for residence or housing society.	
Pedagogy	4. Visit to a rain water harvesting site. 5. Documenting importance of RWH and its various methods through collage, photography, videos and hand-outs. 6. Case studies of various RWH sites	
5	Solid Waste Management: Assessment of waste, segregation, collection, transportation, treatment and disposal of various types of Municipal waste. Waste collection methods for multi-storey buildings. Waste to wealth concept – organic waste composting and applications; Inorganic waste recycling and reusing applications. Special requirements: Central LPG Supply System, Medical Gases Supply systems, Central Vacuum and Waste Collection.	6
Pedagogy	1. Case study presentations on waste to wealth application.	

List of Experiments or Programs

Sl.No	Exercises	COs
1	Visit to rain water harvesting park	CO1, CO2
2	Visit to a campus or housing society to understand space requirement and design of STP, RWH, and plumbing, OHT, sump and other building services.	CO1, CO2, CO4
3	Design of detail plumbing drawing of a residence with Solar water heater supply	CO5
4	Market survey for plumbing fittings and fixtures	CO1, CO3
5	Case study on waste to wealth application. Or mini project design on waste to wealth concept.	CO5

Reference Books

1	Deshpande, RS. A Text Book of Sanitary Engineering, Vol:1, United Books, Pune, 1959.
2	Birdie, G. S. and Birdie J. S. Water Supply and Sanitary Engineering, DhanpatRai Publications, 2010

Weblinks and Video Lectures (e-Resources)

1	https://ndl.iitkgp.ac.in
2	https://www.youtube.com/watch?v=0_ZcCqqpS2o
3	https://www.youtube.com/watch?v=FvPakzqM3h8
4	https://www.youtube.com/watch?v=CdnZXvE4SKc
5	https://www.youtube.com/watch?v=LBy9Oulayjc
6	https://www.youtube.com/watch?v=KMP9-49I1U4

Course Outcomes: At the end of the course, the student will be able to:

CO	Course Outcomes	RBT Level	Level Indicator
CO1	Understand the basic systems and processes of water supply, sanitation, rain water harvesting and solid waste management in cities.	Remember and understand	L1, L2
CO2	Apply the knowledge of plumbing layout and RWH in any architectural projects.	Apply	L3
CO3	Analyze the water supply and sewerage system demand and problems and suggest sustainable solutions.	Analyze	L4
CO4	Evaluate various materials, fittings, fixtures and technologies available in market for its application in architectural projects.	Evaluate	L5
CO5	Design plumbing and drainage system for an architectural project and develop design model for waste recycling.	Design	L6

Mapping of Course Outcomes to Program Outcomes:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1															
CO2	3														
CO3						1	2			1				2	2
CO4			2	3		3									
CO5									2						

Assessment Pattern (both CIE and SEE)

3 Credit Course – BSAE

Assessment Method	Component	Type of Assessment	Assessment Type used	Max. Marks	Evaluation Details	Reduced Marks	Min. Marks	Total	
CIE	IA exams	Theory exam	IA exams	50	passing in 2 internal assessments	20	10	20	
	Total CIE Theory						10	20	
	Continuous Comprehensive Assessment (CCA)	CCA 1	quiz, crossword, reports, Market survey, field visit, case studies		50	Answering assignment questions, Quiz activities and Conduction of market surveys, case study presentation and field visit reports.	15	7.5	15
		CCA 2	Design Activities (as mentioned in each module)		50	Plumbing dwg. of a 2 bhk house which includes: OHT, RWH, STP and other plumbing connections.	15	7.5	15
Total CIE Practical / Activities							15	30	
SEE	SEE Exam will be Theory exam			100	SEE Exam will be Theory exam	50	20	50	
CIE+SEE							50	100	

NOTE: The Minimum Marks to be secured in CIE to appear for SEE shall be 25 (50% of Maximum marks – 50). The Minimum Marks to be secured in SEE shall be 20 (40% of Maximum marks – 50). The design activities will be assessed through only CIE. The passing percentage shall not be less than the 50% in aggregate for a course (i.e. CIE and SEE (put together). Based on the marks scored in CIE+SEE grading will be awarded for this course.

CIE- Continuous Internal Evaluation (50 Marks)

Bloom's Category	IA Theory	Practical
	20 Marks	30 Marks
Remember	IA 1 & 2	
Understand	IA 1 & 2	
Apply	IA 1 & 2	
Analyse		Market survey
Evaluate		Case study
Create		Plumbing drawings and design activities

CIE Internal Assessment Test Plan

CO's	Marks Distribution						Total Marks	Weightage
	Test-1			Test-2				
	Module-1	Module-2	Module-3	Module-4	Module-4	Module-5		
CO1	10	10	10	10	10	10	60	40%
CO2	10	20	10	10	-	10	60	40%
CO3	-	-	10	-	10	10	30	20%
CO4	-	-	-	-	-	-	-	-
CO5	-	-	-	-	-	-	-	-
Total	30	20	30	20	20	30	150	100%

SEE- Semester End Examination (50 Marks)

Bloom's Category	SEE Marks (Theory exam of 100 marks to reduce to 50)
Remember	20%
Understand	20%
Apply	20%
Analyse	20%
Evaluate	-
Create	-

SEE Course Plan

CO's	Marks Distribution					Total Marks	Weightage
	Module-1	Module-2	Module-3	Module-4	Module-5		
CO1	10	10	10	10	-	40	60%
CO2	10	10	10	10	-	40	20%
CO3	-	-	-	10	10	20	20%
CO4	-	-	-	-	-		
CO5	-	-	-	-	-		
Total	20	20	20	30	10	100	100%

Course Contents and Lecture Schedule

Module No.	Topics	No. of Lecture hrs.
1	Importance of WSS services and need of its provision by the municipality	1
1	Water supply – sources, Intakes and transportation and Quality of water	2
1	Quantity and demand estimation – requirement for different uses	2
1	Water treatment	3
1	Water distribution and house connection	1
1	OHT design and space estimation	1
2	History of sanitation and rural sanitation systems	1
2	Assessment and Collection of wastewater from all sources	1
2	Conveyance and material of sewers	1
2	Sewer apparauntuce	1
2	Sewage treatment plant and methods	3
2	Septic tank design and space estimation	2
2	Decentralised methods of waste water treatment	1

3	Plumbing – single stack, double stack, hot water and cold water	2
3	Traps and valves	2
3	Fitting and materials of plumbing	1
3	Sanitary fixtures	2
3	Market survey	2
3	Solar water heaters and plumbing concerns in multi storey buildings	1
4	Storm water Management - Assessment, flood control measures, Drainage system	1
4	Rain water harvesting – ground recharge, roof top collection and design, rural methods of rain water harvesting	2
4	Site visit and case study	2
4	Policies, norms and incentives for RWH and recycling of water	1
5	Solid waste management – types, segregation, collection and conveyance	1
5	Treatment of Solid waste	1
5	Waste recycling – organic and inorganic	1
5	Waste to wealth – concept , case study and design	2
5	Special service requirements	1
Total		42 Hrs.



Dayananda Sagar Academy of Technology & Management (Autonomous Institute under VTU)

Semester	:	3rd			
Course Title	:	BUILDING STRUCTURE II			
Course Code	:	23ENG36			
Course Type	:	Theory			
Category	:	BSAE (Building Science & Applied Engineering Courses)			
Stream	:	Civil/Architecture			
Total Hours/week (L:T:P:S)	:	3:0:0:0	CIE	:	50 Marks
Total Hours/semester	:	42 Hrs.	SEE (Theory)	:	50 Marks
Credits	:	03	SEE Duration	:	3 Hrs.

Course Learning Objectives: Students will be taught

Sl.No	Course Objectives
1	Introduction to principles of mechanics, structural material & different force system on structural elements.

Teaching-Learning Process

Pedagogy (General Instructions):

These are sample Strategies; which teachers can use to accelerate the attainment of the various course outcomes.

1. Lecture method (L) does not mean only the traditional lecture method, but a different type of teaching method may be adopted to develop the outcomes.
2. Show Video/animation films to explain the infrastructures and the mechanism involved in the principle.
3. Encourage collaborative (Group) Learning in the class.
4. Ask at least three HOT (Higher-order Thinking) questions in the class, which promotes critical thinking.
5. Adopt Problem Based Learning (PBL), which fosters students' Analytical skills, develop thinking skills such as the ability to evaluate, generalize, and analyze information rather than simply recall it.
6. Topics will be introduced in multiple representations.
7. Show the different ways to solve the same problem and encourage the students to come up with their own creative ways to solve them.
8. Discuss how every concept can be applied to the real world - and when that's possible, it helps improve the students' understanding.
9. Individual teachers can device innovative pedagogy to improve teaching-learning.



Scheme of Teaching and Examinations for BE Programme -2023-24
Outcome Based Education and Choice Based Credit System (CBCS)
(Effective from the Academic Year 2023-24)

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COURSE SYLLABUS

Module No.	Contents of the Module	Hours
1	<p>Simple Stresses & Strains: Basic concept of simple stress and compound stress, deformation Definition and discussion on Simple stress, deformation, strain, elasticity, ductility, brittleness, Hooke's law, fatigue and factor of safety.</p> <p>Numerical problems on calculation of simple stress and deformation in bars of uniform and varying c/s subjected to tensile and compressive loads.</p>	10
Pedagogy	<p>The teacher can use PPTs, Videos to discuss stresses acting on a building component. The students need to sketch the stresses acting on building elements for its unique qualities. Quizzes, models, seminars from students can be encouraged.</p>	
2	<p>Modulus of Elasticity (E), Modulus of Rigidity (C), and Bulk modulus (K), Poisson's ratio, relationship between elastic constants, Temperature effects on Structures</p> <p>Numerical problems on calculation of elastic constants, deformation of composite bars subjected to compressive and tensile loads</p>	8
Pedagogy	<p>The teacher can use PPTs, Videos to discuss topics and load acting on various building components. The students need to sketch the forces acting on building components and typical solutions in a simple building. Quizzes, models, seminars from students can be encouraged.</p>	
3	<p>Elastic Stability of Columns</p> <p>Column- Strut -length of column-Effective length of column-slenderness ratio- short column and long column-failure of short column - failure of long column- Critical load or Crippling load on long column- Euler's theory of Long columns with assumptions and formula for Critical load- concept of safe load.</p> <p>Numerical problems on calculation of critical load and safe load using Euler's-Formula for long columns of solid and hollow circular and rectangular c/s.</p>	8
Pedagogy	<p>The teacher can use PPTs, Videos to discuss stability of columns. The students need to sketch the stresses acting on building components and typical solutions in a simple building. Quizzes, models, seminars from students can be encouraged.</p>	
4	<p>Shear Force diagram SFD and Bending moment diagram BMD</p> <p>Concept of shear force and bending moment in a beam subjected to external loads- sign convention-pure bending-point of contra flexure - point of zero shear</p> <p>Numerical problems on drawing SFD and BMD for Cantilever , Simply supported and overhanging beams subjected to concentrated load and uniformly distributed load (u d l) , location of point of contra flexure.</p>	8
Pedagogy	<p>The teacher can use PPTs, Videos to discuss SFD and BMD. The students need to sketch columns to understand slenderness ratio. Quizzes, models, seminars from students can be encouraged.</p>	
5	<p>Stresses in Beams</p> <p>Concept of bending stress and Shear stress developed in beams subjected to bending - Simple bending equation with assumptions -Neutral Axis-Section</p>	

	modulus, Equation for calculation of shear stress. Numerical problems on Calculation and sketching of variation of bending stress and shear stress across the c/s of beam. (Rectangular, T , I sections)	8
Pedagogy	The teacher can use PPTs, Videos to discuss stresses in Beams. The students need to sketch various types of beams to understand stresses and deflection. Quizzes, models, seminars from students can be encouraged.	

Reference Books

Books (Title of the Book/Name of the author/Name of the publisher/Edition and Year)

1	B.S.Basavarajiah & P. Mahadevappa, "Strength of Materials", Universities Press, 3rd editn. 2010.
2	Dr. S. Ramamrutham & R. Narayan "Strength of Materials", Dhanpat Rai Publ., 8th edi. 2014.
3	William A. Nash, "Strength of Materials", McGraw-Hill Education; 6th edition, 2013.
4	R.K.Bansal, "Strength of Materials", Laxmi Publications; 6th edition (2017).
5	R.S.Khurmi & N. Khurmi, " Strength of Materials", S Chand Pub., revised edition 2006

Course Outcomes: At the end of the course, the student will be able to:

CO	Course Outcomes	RBT Level	Level Indicator
CO1	Remember & Understand the concepts of stress & strain, modulus of elasticity, rigidity & Poisson's Ratio, elastic stability of columns, Euler's formula, SFD & BMD for the structural elements	R&U	1&2
CO2	To apply the concepts of structural behaviour to solve real time problems.	Apply	3
CO3	To analyze the forces & reactions of the structural members.	Analyse	4
CO4	To investigate and demonstrate the real time project like Beams	Analyse	4

Mapping of Course Outcomes to Program Outcomes:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-
CO3	3	-	-	-	-	-	-	-	2	-	-	-	-	-	1
CO4	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Weblinks and Video Lectures (e-Resources)

1	https://ndl.iitkgp.ac.in
2	https://www.youtube.com/watch?v=arr_xwk-JsM
3	https://www.youtube.com/watch?v=WWkv4D2LHtk

Assessment Pattern (both CIE and SEE)

3 Credit Course

Assessment Method	Component	Type of Assessment	Assessment Type used	Max. Marks	Evaluation Details	Reduced Marks	Min. Marks	Total
CIE	Theory	AAT	2 -Activity	50	(50+50)/2	30	15	30
			2-Assignments	50				
		Test-1	Theory	50	Average of 2 Internal Assessment Tests each of 50 Marks	20	10	20
		Test-2	Theory	50				
		Total CIE Theory						
Total CIE Theory marks							25	50
SEE				100	SEE Exam is Theory Exam, conducted for 100 Marks,	50	20	50
CIE+SEE							50	100

Note: The minimum passing mark for the CIE is 50% of the maximum marks (50 marks). A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each subject/ course if the student secures not less than 40% (40 Marks out of 100)in the semester-end examination(SEE), and a minimum of 50% (50 marks out of 100) in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.

CIE Course Assessment Plan

CO's	Marks Distribution					Total Marks	Weightage
	TEST 1			TEST 2			
	Module-1	Module-2	Module-3	Module-4	Module-5		
CO1	05	05	05			15	15%
CO2	05	05	05	05	05	25	25%
CO3	05	05	10	10	10	40	40%
CO4				10	10	20	20%
Total	15	15	20	25	25	100	

SEE- Semester End Examination

Bloom's Category	SEE Marks (100% Theory)
Remember	20
Understand	20
Apply	20
Analyse	20
Evaluate	20
Create	

SEE Course Plan

CO's	Marks Distribution(100)					Total Marks	Weightage
	Module-1	Module-2	Module-3	Module-4	Module-5		
CO1	05	05	05	05	05	25	25%
CO2	05	05	05	05	05	25	25%
CO3	05	05	05	05	05	25	25%
CO4	05	05	05	05	05	25	25%
Total	25	25	25	25	25	100	100

Course Contents and Lecture Schedule

Module No.	Topics	No. of Lecture Hrs.
1	Simple Stresses & Strains -Introduction, Basic concept of simple stress and compound stress	03
1	Deformation Definition and discussion on Simple stress, deformation, strain, elasticity, ductility, brittleness, Hooke's law, fatigue and factor of safety.	02
1	Numerical problems on calculation of simple stress and deformation in bars of uniform and varying c/s subjected to tensile and compressive loads.	03
2	Modulus of Elasticity (E) , Modulus of Rigidity (C), and Bulk modulus (K), Poisson's ratio	03
2	Temperature effect on Structures Numerical problems on calculation of elastic constants	02
2	Numerical problems on calculation of deformation of composite bars subjected to compressive and tensile loads	03
3	Elastic Stability of Columns Column- Strut -length of column-Effective length of column-slenderness ratio- short column and long column-failure of short column - failure of long column	03
3	Critical load or Crippling load on long column- Euler's theory of Long columns with assumptions and formula for Critical load- concept of safe load.	03
3	Numerical problems on calculation of critical load and safe load using Euler's-Formula for long columns of solid and hollow circular and rectangular c/s.	03
4	Shear Force diagram SFD and Bending moment diagram BMD Concept of shear force and bending moment in a beam subjected to external loads- sign convention-pure bending-point of contra flexure - point of zero shear	03
4	Numerical problems on drawing SFD and BMD for Cantilever, Simply supported	02
4	Numerical problems on drawing SFD and BMD for overhanging beams subjected to concentrated load and uniformly distributed load ($u d l$), location of point of contra flexure.	03
5	Stresses in Beams Concept of bending stress and Shear stress developed in beams subjected to bending - Simple bending equation with assumptions	04
5	Neutral Axis-Section modulus, Equation for calculation of shear stress.	02
5	Numerical problems on Calculation and sketching of variation of bending stress and shear stress across the c/s of beam. (Rectangular, T, I sections)	03
Total		42 Hrs



Dayananda Sagar Academy of Technology & Management
(Autonomous Institute under VTU)

Semester	:	3 rd ಸೆಮಿಸ್ಟರ್		
Course Title	:	ಬಳಕೆ ಕನ್ನಡ		
Course Code	:	23KSK37		
Course Type	:	Theory		
Category	:	HSMC (Humanity Sciences and Management Courses)		
Stream	:	Humanities		
Total Hours/week (L: T:P:S)	:	1:0:0:0	CIE	: 50 Marks
Total Hours/semester	:	15 Hrs.	SEE	-
Credits	:	01	SEE Duration	-

Course Learning Objectives: Students will be taught

Sl.No	Course Objectives
1	To create the awareness regarding the necessity of learning local language for comfortable and healthy life.
2	To enable learners to listen understand the Kannada language properly.
3	To speak read and write Kannada language as per requirement.
4	To train the learners for correct and polity conservation.
5	To know about Kannada state and its language, literature and general information about this state.

Teaching-Learning Process

Pedagogy (General Instructions):

These are sample Strategies; which teachers can use to accelerate the attainment of the various course outcomes.

1. Lecture method (L) does not mean only the traditional lecture method, but a different type of teaching method may be adopted to develop the outcomes.
2. Show Video/animation films to explain the infrastructures and the mechanism involved in the principle.
3. Encourage collaborative (Group) Learning in the class.
4. Ask at least three HOT (Higher-order Thinking) questions in the class, which promotes critical thinking.
5. Adopt Problem Based Learning (PBL), which fosters students' Analytical skills, develop thinking skills such as the ability to evaluate, generalize, and analyse information rather than simply recall it.
6. Topics will be introduced in multiple representations.
7. Show the different ways to solve the same problem and encourage the students to come up with their own creative ways to solve them.
8. Discuss how every concept can be applied to the real world - and when that's possible, it helps improve the students' understanding.
9. Individual teachers can device innovative pedagogy to improve teaching-learning.



DSATM

Scheme of Teaching and Examinations for BE Programme -2023-24
Outcome Based Education and Choice Based Credit System (CBCS)
(Effective from the Academic Year 2023-24)

COURSE SYLLABUS

Module No.	Contents of the Module	Hours
1	<p>1) Introduction , necessity of learning a local language. Methods to learn the kannada language.</p> <p>2) easy learning of a kannada language : a few tips hints for correct and polite conversation . listening and speaking activities, key to transcription .</p> <p>3) ವೈಯಕ್ತಿಕ ಸ್ವಾಮ್ಯಸೂಚಕ/ಸಂಬಂಧಿತ ಸಾರ್ವಭೌಮಗಳು ಮತ್ತು ಪ್ರಶ್ನಾರ್ಥಕ ಪದಗಳು – Personal Pronouns, Possessive Forms, Interrogative words.</p>	
Pedagogy	<p>1) ಬಳಕೆ ಕನ್ನಡವನ್ನು ತರಗತಿಯಲ್ಲಿ ಶಿಕ್ಷಕರು ಬೋಧಿಸಲು ವಿ.ಟಿ.ಯು ಸೂಚಿಸಿರುವ ಪಠ್ಯ ಪುಸ್ತಕವನ್ನು ಉಪಯೋಗಿಸಬೇಕು.</p> <p>2) ಪ್ರಮುಖ ಅಂಶಗಳ ಚಾರ್ಟ್‌ಗಳನ್ನು ತಯಾರಿಸಲು ವಿದ್ಯಾರ್ಥಿಗಳನ್ನು ಉತ್ತೇಜಿಸುವುದು ಮತ್ತು ತರಗತಿಯಲ್ಲಿ ಅವುಗಳನ್ನು ಚರ್ಚಿಸಲು ಅವಕಾಶ ಮಾಡಿಕೊಡುವುದು.</p> <p>3) ಪ್ರತಿ ವಿದ್ಯಾರ್ಥಿ ಪುಸ್ತಕವನ್ನು ತರಗತಿಯಲ್ಲಿ ಬಳಸುವಂತೆ ನೋಡಿಕೊಳ್ಳುವುದು ಮತ್ತು ಪ್ರತಿ ಪಾಠ ಮತ್ತು ಪ್ರವಚನಗಳ ಮೂಲಾಂಶಗಳಿಗೆ ಸಂಬಂಧಪಟ್ಟಂತೆ ಪೂರಕ ಚಟುವಟಿಕೆಗಳಿಗೆ ತೊಡಗಿಸುತ್ತಿದ್ದು.</p> <p>4) ಡಿಜಿಟಲ್ ತಂತ್ರಜ್ಞಾನದ ಮುಖಾಂತರ ಇತ್ತೀಚೆಗೆ ಡಿಜಿಟಲೀಕರಣ ಗೊಂಡಿರುವ ಬಾಷೆ ಕಲಿಕೆಯ ವಿಧಾನಗಳನ್ನು ಪಿಪಿಟಿ ಮತ್ತು ದೃಷ್ಟ್ಯಮಾಧ್ಯಮದ ಮುಖಾಂತರ ಚರ್ಚಿಸಲು ಕ್ರಮ ಕೈಗೊಳ್ಳುವುದು. ಇದರಿಂದ ವಿದ್ಯಾರ್ಥಿಗಳನ್ನು ತರಗತಿಯಲ್ಲಿ ಹೆಚ್ಚು ಏಕಾಗ್ರತೆಯಿಂದ ಪಾಠ ಕೇಳಲು ಮತ್ತು ಅಧ್ಯಯನದಲ್ಲಿ ತೊಡಗಲು ಅನುಕೂಲವಾಗುತ್ತದೆ.</p> <p>5) ಭಾಷಾ ಕಲಿಕೆಯ ಪ್ರಯೋಗಾಲಯದ ಮುಖಾಂತರ ಬಹು ಬೇಗ ಕನ್ನಡ ಭಾಷೆಯನ್ನು ಕಲಿಯಲು ಅನುಕೂಲವಾಗುವಂತೆ ಕಾರ್ಯ ಚಟುವಟಿಕೆಗಳನ್ನು ಮತ್ತು ಕ್ರಿಯಾ ಯೋಜನೆಗಳನ್ನು ರೂಪಿಸುವುದು.</p>	
2	<p>1) ನಾಮಪದಗಳ ಸಂಬಂಧಾರ್ಥಕ ರೂಪಗಳು , ಸಂದೇಹಾಸ್ಪದ ಪ್ರಶ್ನೆಗಳು ಮತ್ತು ಸಂಬಂಧವಾಚಕ ನಾಮ ಪದಗಳು – Passive voice forms of nouns, dubitive questions and relative nouns.</p> <p>2) ಗುಣ, ಪರಿಮಾಣ ಮತ್ತು ವರ್ಣಬಣ್ಣ, ವಿಷೇಶಣಗಳು, ಸಂಖ್ಯಾವಾಚಕಗಳು – Qualitative, Quantitative and colour adjective Numerals.</p> <p>3) ಕಾರಕ ರೂಪಗಳು ಮತ್ತು ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯಗಳು – ಸಪ್ತಮಿ ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯ – (ಆ, ಅದು , ಅವು, ಅಲ್ಲಿ)- Predictive forms, Locative case.</p>	
Pedagogy	<p>1) ಬಳಕೆ ಕನ್ನಡವನ್ನು ತರಗತಿಯಲ್ಲಿ ಶಿಕ್ಷಕರು ಬೋಧಿಸಲು ವಿ.ಟಿ.ಯು ಸೂಚಿಸಿರುವ ಪಠ್ಯ ಪುಸ್ತಕವನ್ನು ಉಪಯೋಗಿಸಬೇಕು.</p> <p>2) ಪ್ರಮುಖ ಅಂಶಗಳ ಚಾರ್ಟ್‌ಗಳನ್ನು ತಯಾರಿಸಲು ವಿದ್ಯಾರ್ಥಿಗಳನ್ನು ಉತ್ತೇಜಿಸುವುದು ಮತ್ತು ತರಗತಿಯಲ್ಲಿ ಅವುಗಳನ್ನು ಚರ್ಚಿಸಲು ಅವಕಾಶ ಮಾಡಿಕೊಡುವುದು.</p> <p>3) ಪ್ರತಿ ವಿದ್ಯಾರ್ಥಿ ಪುಸ್ತಕವನ್ನು ತರಗತಿಯಲ್ಲಿ ಬಳಸುವಂತೆ ನೋಡಿಕೊಳ್ಳುವುದು ಮತ್ತು ಪ್ರತಿ ಪಾಠ ಮತ್ತು ಪ್ರವಚನಗಳ ಮೂಲಾಂಶಗಳಿಗೆ ಸಂಬಂಧಪಟ್ಟಂತೆ ಪೂರಕ ಚಟುವಟಿಕೆಗಳಿಗೆ ತೊಡಗಿಸುತ್ತಿದ್ದು.</p> <p>4) ಡಿಜಿಟಲ್ ತಂತ್ರಜ್ಞಾನದ ಮುಖಾಂತರ ಇತ್ತೀಚೆಗೆ ಡಿಜಿಟಲೀಕರಣ ಗೊಂಡಿರುವ ಬಾಷೆ ಕಲಿಕೆಯ ವಿಧಾನಗಳನ್ನು ಪಿಪಿಟಿ ಮತ್ತು ದೃಷ್ಟ್ಯಮಾಧ್ಯಮದ ಮುಖಾಂತರ ಚರ್ಚಿಸಲು</p>	

	<p>ಕ್ರಮ ಕೈಗೊಳ್ಳುವುದು. ಇದರಿಂದ ವಿದ್ಯಾರ್ಥಿಗಳನ್ನು ತರಗತಿಯಲ್ಲಿ ಹೆಚ್ಚು ಏಕಾಗ್ರತೆಯಿಂದ ಪಾಠ ಕೇಳಲು ಮತ್ತು ಅಧ್ಯಯನದಲ್ಲಿ ತೊಡಗಲು ಅನುಕೂಲವಾಗುತ್ತದೆ.</p> <p>5) ಭಾಷಾ ಕಲಿಕೆಯ ಪ್ರಯೋಗಾಲಯದ ಮುಖಾಂತರ ಬಹು ಬೇಗ ಕನ್ನಡ ಭಾಷೆಯನ್ನು ಕಲಿಯಲು ಅನುಕೂಲವಾಗುವಂತೆ ಕಾರ್ಯ ಚಟುವಟಿಕೆಗಳನ್ನು ಮತ್ತು ಕ್ರಿಯಾ ಯೋಜನೆಗಳನ್ನು ರೂಪಿಸುವುದು.</p>
3	<p>1) ಚತುರ್ಥಿ ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯದ ಬಳಕೆ ಮತ್ತು ಸಂಖ್ಯಾವಾಚಕಗಳು - Dative Cases And Numerals .</p> <p>2) ಸಂಖ್ಯಾಗುಣವಾಚಕಗಳು ಮತ್ತು ಬಹುವಚನ ನಾಮರೂಪಗಳು – Ordinal Numerals And Plural Markers</p> <p>3) ನ್ಯೂನ/ ನಿಷೇಧಾರ್ಥಕ ಕ್ರಿಯಾಪದಗಳು & ವರ್ಣ ಗುಣವಾಚಕಗಳು- Defective / Negative Verbs & Colour Adjectives</p>
Pedagogy	<p>1) ಬಳಕೆ ಕನ್ನಡವನ್ನು ತರಗತಿಯಲ್ಲಿ ಶಿಕ್ಷಕರು ಬೋಧಿಸಲು ವಿ.ಟಿ.ಯು ಸೂಚಿಸಿರುವ ಪಠ್ಯ ಪುಸ್ತಕವನ್ನು ಉಪಯೋಗಿಸಬೇಕು.</p> <p>2) ಪ್ರಮುಖ ಅಂಶಗಳ ಚಾರ್ಟ್‌ಗಳನ್ನು ತಯಾರಿಸಲು ವಿದ್ಯಾರ್ಥಿಗಳನ್ನು ಉತ್ತೇಜಿಸುವುದು ಮತ್ತು ತರಗತಿಯಲ್ಲಿ ಅವುಗಳನ್ನು ಚರ್ಚಿಸಲು ಅವಕಾಶ ಮಾಡಿಕೊಡುವುದು.</p> <p>3) ಪ್ರತಿ ವಿದ್ಯಾರ್ಥಿ ಪುಸ್ತಕವನ್ನು ತರಗತಿಯಲ್ಲಿ ಬಳಸುವಂತೆ ನೋಡಿಕೊಳ್ಳುವುದು ಮತ್ತು ಪ್ರತಿ ಪಾಠ ಮತ್ತು ಪ್ರವಚನಗಳ ಮೂಲಾಂಶಗಳಿಗೆ ಸಂಬಂಧಪಟ್ಟಂತೆ ಪೂರಕ ಚಟುವಟಿಕೆಗಳಿಗೆ ತೊಡಗಿಸುತ್ತಿದ್ದು.</p> <p>4) ಡಿಜಿಟಲ್ ತಂತ್ರಜ್ಞಾನದ ಮುಖಾಂತರ ಇತ್ತೀಚೆಗೆ ಡಿಜಿಟಲೀಕರಣ ಗೊಂಡಿರುವ ಬಾಷೆ ಕಲಿಕೆಯ ವಿಧಾನಗಳನ್ನು ಪಿಪಿಟಿ ಮತ್ತು ದೃಷ್ಟ್ಯಮಾಧ್ಯಮದ ಮುಖಾಂತರ ಚರ್ಚಿಸಲು ಕ್ರಮ ಕೈಗೊಳ್ಳುವುದು. ಇದರಿಂದ ವಿದ್ಯಾರ್ಥಿಗಳನ್ನು ತರಗತಿಯಲ್ಲಿ ಹೆಚ್ಚು ಏಕಾಗ್ರತೆಯಿಂದ ಪಾಠ ಕೇಳಲು ಮತ್ತು ಅಧ್ಯಯನದಲ್ಲಿ ತೊಡಗಲು ಅನುಕೂಲವಾಗುತ್ತದೆ.</p> <p>5) ಭಾಷಾ ಕಲಿಕೆಯ ಪ್ರಯೋಗಾಲಯದ ಮುಖಾಂತರ ಬಹು ಬೇಗ ಕನ್ನಡ ಭಾಷೆಯನ್ನು ಕಲಿಯಲು ಅನುಕೂಲವಾಗುವಂತೆ ಕಾರ್ಯ ಚಟುವಟಿಕೆಗಳನ್ನು ಮತ್ತು ಕ್ರಿಯಾ ಯೋಜನೆಗಳನ್ನು ರೂಪಿಸುವುದು.</p>
4	<p>1) ಅಪ್ಪಣೆ / ಒಪ್ಪಿಗೆ, ನಿರ್ದೇಶನ, ಪ್ರೋತ್ಸಾಹ ಹಾಗೂ ಒತ್ತಾಯ ಅರ್ಥ ರೂಪ ಪದಗಳು ಮತ್ತು ವಾಕ್ಯಗಳು . Permission, Commands, Encouraging and Urging words (Imperative words and sentence)</p> <p>2) ಸಾಮಾನ್ಯ ಸಂಭಾಷಣೆಗಳಲ್ಲಿ ದ್ವಿತೀಯ ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯಗಳು ಮತ್ತು ಸಂಭವನೀಯ ಪ್ರಕಾರಗಳು. Accusative Cases and potential forms used in general communication.</p> <p>3) "ಇರು ಮತ್ತು ಇರಲ್ಲ " ಸಹಾಯಕ ಕ್ರಿಯಾಪದಗಳು, ಸಂಭಾವ್ಯ ಸೂಚಕ ಮತ್ತು ನಿಷೇಧಾರ್ಥಕ ಕ್ರಿಯಾ ಪದಗಳು . Helping verbs " iru and irallaa" Corresponding Future and Negative Verbs.</p> <p>4) ಹೋಲಿಕೆ (ತರತಮ) ಸಂಬಂಧ ಸೂಚಕ, ವಸ್ತುಸೂಚಕ ಪ್ರತ್ಯಯಗಳು, ನಿಷೇಧಾರ್ಥಕ ಪದಗಳ ಬಳಕೆ. Comparitive Rlation ship Identification and Negative words</p>
Pedagogy	<p>1) ಬಳಕೆ ಕನ್ನಡವನ್ನು ತರಗತಿಯಲ್ಲಿ ಶಿಕ್ಷಕರು ಬೋಧಿಸಲು ವಿ.ಟಿ.ಯು ಸೂಚಿಸಿರುವ ಪಠ್ಯ ಪುಸ್ತಕವನ್ನು ಉಪಯೋಗಿಸಬೇಕು.</p> <p>2) ಪ್ರಮುಖ ಅಂಶಗಳ ಚಾರ್ಟ್‌ಗಳನ್ನು ತಯಾರಿಸಲು ವಿದ್ಯಾರ್ಥಿಗಳನ್ನು ಉತ್ತೇಜಿಸುವುದು ಮತ್ತು ತರಗತಿಯಲ್ಲಿ ಅವುಗಳನ್ನು ಚರ್ಚಿಸಲು ಅವಕಾಶ ಮಾಡಿಕೊಡುವುದು.</p> <p>3) ಪ್ರತಿ ವಿದ್ಯಾರ್ಥಿ ಪುಸ್ತಕವನ್ನು ತರಗತಿಯಲ್ಲಿ ಬಳಸುವಂತೆ ನೋಡಿಕೊಳ್ಳುವುದು ಮತ್ತು</p>

	<p>ಪ್ರತಿ ಪಾಠ ಮತ್ತು ಪ್ರವಚನಗಳ ಮೂಲಾಂಶಗಳಿಗೆ ಸಂಬಂಧಪಟ್ಟಂತೆ ಪೂರಕ ಚಟುವಟಿಕೆಗಳಿಗೆ ತೊಡಗಿಸುತ್ತಿದ್ದು.</p> <p>4) ಡಿಜಿಟಲ್ ತಂತ್ರಜ್ಞಾನದ ಮುಖಾಂತರ ಇತ್ತೀಚೆಗೆ ಡಿಜಿಟಲೀಕರಣ ಗೊಂಡಿರುವ ಬಾಷೆ ಕಲಿಕೆಯ ವಿಧಾನಗಳನ್ನು ಪಿಪಿಟಿ ಮತ್ತು ದೃಷ್ಟ್ಯಮಾಧ್ಯಮದ ಮುಖಾಂತರ ಚರ್ಚಿಸಲು ಕ್ರಮ ಕೈಗೊಳ್ಳುವುದು. ಇದರಿಂದ ವಿದ್ಯಾರ್ಥಿಗಳನ್ನು ತರಗತಿಯಲ್ಲಿ ಹೆಚ್ಚು ಏಕಾಗ್ರತೆಯಿಂದ ಪಾಠ ಕೇಳಲು ಮತ್ತು ಅಧ್ಯಯನದಲ್ಲಿ ತೊಡಗಲು ಅನುಕೂಲವಾಗುತ್ತದೆ.</p> <p>5) ಭಾಷಾ ಕಲಿಕೆಯ ಪ್ರಯೋಗಾಲಯದ ಮುಖಾಂತರ ಬಹು ಬೇಗ ಕನ್ನಡ ಭಾಷೆಯನ್ನು ಕಲಿಯಲು ಅನುಕೂಲವಾಗುವಂತೆ ಕಾರ್ಯ ಚಟುವಟಿಕೆಗಳನ್ನು ಮತ್ತು ಕ್ರಿಯಾ ಯೋಜನೆಗಳನ್ನು ರೂಪಿಸುವುದು.</p>
5	<p>1) ಕಾಲ ಮತ್ತು ಸಮಯದ ಹಾಗೂ ಕ್ರಿಯಾಪದಗಳ ವಿವಿಧ ಪ್ರಕಾರಗಳು- Different types of tense, time and verbs</p> <p>2) ದ್, - ತ್, -ತು, -ಇತು, - ಆಗಿ, -ಅಲ್ಲ, -ಗ್, -ಕ್, ಇದೆ, ಕ್ರಿಯಾ ಪ್ರತ್ಯಯಗಳೊಂದಿಗೆ ಭೂತ, ಭವಿಷ್ಯತ್ ಮತ್ತು ವರ್ತಮಾನ ಕಾಲ ವಾಕ್ಯ ರಚನೆ - Formation of post ZFuture and Present Tense Sentences with verb forms.</p> <p>3) Kannada Vocabulary List : ಸಂಭಾಷಣೆಯಲ್ಲಿ ದಿನೋಪಯೋಗಿ ಕನ್ನಡ ಪದಗಳು – Kannada Words in Conversation.</p>
Pedagogy	<p>1) ಬಳಕೆ ಕನ್ನಡವನ್ನು ತರಗತಿಯಲ್ಲಿ ಶಿಕ್ಷಕರು ಬೋಧಿಸಲು ವಿ.ಟಿ.ಯು ಸೂಚಿಸಿರುವ ಪಠ್ಯ ಪುಸ್ತಕವನ್ನು ಉಪಯೋಗಿಸಬೇಕು.</p> <p>2) ಪ್ರಮುಖ ಅಂಶಗಳ ಚಾರ್ಟ್‌ಗಳನ್ನು ತಯಾರಿಸಲು ವಿದ್ಯಾರ್ಥಿಗಳನ್ನು ಉತ್ತೇಜಿಸುವುದು ಮತ್ತು ತರಗತಿಯಲ್ಲಿ ಅವುಗಳನ್ನು ಚರ್ಚಿಸಲು ಅವಕಾಶ ಮಾಡಿಕೊಡುವುದು.</p> <p>3) ಪ್ರತಿ ವಿದ್ಯಾರ್ಥಿ ಪುಸ್ತಕವನ್ನು ತರಗತಿಯಲ್ಲಿ ಬಳಸುವಂತೆ ನೋಡಿಕೊಳ್ಳುವುದು ಮತ್ತು ಪ್ರತಿ ಪಾಠ ಮತ್ತು ಪ್ರವಚನಗಳ ಮೂಲಾಂಶಗಳಿಗೆ ಸಂಬಂಧಪಟ್ಟಂತೆ ಪೂರಕ ಚಟುವಟಿಕೆಗಳಿಗೆ ತೊಡಗಿಸುತ್ತಿದ್ದು.</p> <p>4) ಡಿಜಿಟಲ್ ತಂತ್ರಜ್ಞಾನದ ಮುಖಾಂತರ ಇತ್ತೀಚೆಗೆ ಡಿಜಿಟಲೀಕರಣ ಗೊಂಡಿರುವ ಬಾಷೆ ಕಲಿಕೆಯ ವಿಧಾನಗಳನ್ನು ಪಿಪಿಟಿ ಮತ್ತು ದೃಷ್ಟ್ಯಮಾಧ್ಯಮದ ಮುಖಾಂತರ ಚರ್ಚಿಸಲು ಕ್ರಮ ಕೈಗೊಳ್ಳುವುದು. ಇದರಿಂದ ವಿದ್ಯಾರ್ಥಿಗಳನ್ನು ತರಗತಿಯಲ್ಲಿ ಹೆಚ್ಚು ಏಕಾಗ್ರತೆಯಿಂದ ಪಾಠ ಕೇಳಲು ಮತ್ತು ಅಧ್ಯಯನದಲ್ಲಿ ತೊಡಗಲು ಅನುಕೂಲವಾಗುತ್ತದೆ.</p> <p>5) ಭಾಷಾ ಕಲಿಕೆಯ ಪ್ರಯೋಗಾಲಯದ ಮುಖಾಂತರ ಬಹು ಬೇಗ ಕನ್ನಡ ಭಾಷೆಯನ್ನು ಕಲಿಯಲು ಅನುಕೂಲವಾಗುವಂತೆ ಕಾರ್ಯ ಚಟುವಟಿಕೆಗಳನ್ನು ಮತ್ತು ಕ್ರಿಯಾ ಯೋಜನೆಗಳನ್ನು ರೂಪಿಸುವುದು.</p>

List of Experiments or Program

Reference Books	
Books (Title of the Book/Name of the author/Name of the publisher/Edition and Year)	
1	ಬಳಕೆ ಕನ್ನಡ - ಡಾ. ಎಲ್.ತಿಮ್ಮೇಶ್
2	ಡಾ. ಪಿ. ಪಾಂಡುರಂಗ ಬಾಬು
3	ಡಾ.ಹೆಚ್. ಎಸ್. ದಯಾನಂದ
4	ಪ್ರೊಫೆಸರ್ ವಿ. ಕೇಶವಮೂರ್ತಿ
5	ಡಾ. ಮಹಾಂತೇಶ್ ನಾ.ಬಿರ್ಜೆ

Course Outcomes: At the end of the course, the student will be able to:

CO	Course Outcomes	RBT Level	Level Indicator
CO1	To understand the Necessity of learning of local language for comfortable life.	Remembering	L-2
CO2	To Speak Read and Write Kannada language as per Requirement	Understanding	L-2
CO3	To communicate (Converse) in Kannada language in their daily life with Kannada speakers.	Remembering	L-1
CO4	To listen and understand the Kannada Language properly.	Understanding	L-1
CO5	To Speak in Polite Conversation	Understanding	L-2

Mapping of Course Outcomes to Program Outcomes:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1									1	2		2		
CO2									2	2		2		
CO3									2	1		1		
CO4									2	1		1		
CO5									1	2		2		

Weblinks and Video Lectures (e-Resources)

1	https://youtu.be/Zsm4tUuA1ow
2	https://youtu.be/jpLTFHJVTxl
3	https://youtu.be/30WuuPQyFNU
4	https://youtu.be/ZaN7GVxLH5s
5	https://youtu.be/zrS08LYJZFo

Assessment Pattern

1 Credit Course

Assessment Method	Component	Type of Assessment	Assessment Type used	Max. Marks	Evaluation Details	Reduced Marks	Min. Marks	Total
CIE	Theory	AAT	Pedagogical Initiatives	25	Any two assessment Methods as per VTU Clause 22OB4.2 of regulations (If assessment is Project Based Learning, then one assessment method may be adopted).	25	12.5	25
		Test-1	Theory	25	Average of two Internal Assessment Tests each of 25 Marks	25	12.5	25
		Test-2	Theory	25				
Total CIE						25	12.5	50

CIE- Continuous Internal Evaluation (50 Marks)

Bloom's Category	Theory		
	Continuous Assessment Tests		Alternative Assessment Tool (AAT)
	Test-1	Test-2	
	25 Marks	25 Marks	10 Marks
Remember	15	13	5
Understand	10	12	5
Apply			
Analyse			
Evaluate			
Create			

CIE Course Assessment Plan

CO's	Marks Distribution					Total Marks	Weightage
	Test-1			Test-2			
	Module-1	Module-2	Module-3	Module-4	Module-5		
CO1	1	2	2	2	3	10	20%
CO2	3	3	2	3	4	15	30%
CO3	2	3	2	1	2	10	20%
CO4	2	1	2	3	2	10	20%
CO5	0	1	1	1	2	5	10%
Total	8	10	9	10	13	50	100%

Course Contents and Lecture Schedule

Module No.	Topics	No. of Lecture Hrs.
1	Introduction, necessity of learning a local language. Methods to learn the Kannada language.	1
2	easy learning of a Kannada language: a few tips hints for correct and polite conversation. listening and speaking activities, key to transcription.	1
3	ವೈಯಕ್ತಿಕ ಸ್ವಾಮ್ಯಸೂಚಕ/ಸಂಬಂಧಿತ ಸಾರ್ವಭೌಮಗಳು ಮತ್ತು ಪ್ರಶ್ನಾರ್ಥಕ ಪದಗಳು - Personal Pronouns, Possessive Forms, Inteeogative words	1
4	ನಾಮಪದಗಳ ಸಂಬಂಧಾರ್ಥಕ ರೂಪಗಳು , ಸಂದೇಹಾಸ್ಪದ ಪ್ರಶ್ನೆಗಳು ಮತ್ತು ಸಂಬಂಧವಾಚಕ ನಾಮ ಪದಗಳು - Passive voice forms of nouns, dubitive questions and relative nouns.	1
5	ಗುಣ, ಪರಿಮಾಣ ಮತ್ತು ವರ್ಣಬಣ್ಣ, ವಿಷೇಶಣಗಳು, ಸಂಖ್ಯಾವಾಚಕಗಳು - Qualitative, Quantitative and colour adjective Numerals.	1
6	ಕಾರಕ ರೂಪಗಳು ಮತ್ತು ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯಗಳು - ಸಪ್ರಮಿ ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯ - (ಆ, ಅದು , ಅವು, ಅಲ್ಲಿ)- Predictive forms, Locative case	1
7	ಚತುರ್ಥಿ ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯದ ಬಳಕೆ ಮತ್ತು ಸಂಖ್ಯಾವಾಚಕಗಳು - DATIVE Cases And Numerals .	1
8	ಸಂಖ್ಯಾಗುಣವಾಚಕಗಳು ಮತ್ತು ಬಹುವಚನ ನಾಮರೂಪಗಳು - Ordinal Numerals and Plural Markers	1
9	ನ್ಯೂನ/ ನಿಷೇಧಾರ್ಥಕ ಕ್ರಿಯಾಪದಗಳು & ವರ್ಣ ಗುಣವಾಚಕಗಳು- Defective / Negative Verbs & Colour Adjectives	1
10	ಅಪ್ಪಣೆ / ಒಪ್ಪಿಗೆ, ನಿರ್ದೇಶನ, ಪ್ರೋತ್ಸಾಹ ಹಾಗೂ ಒತ್ತಾಯ ಅರ್ಥ ರೂಪ ಪದಗಳು ಮತ್ತು ವಾಕ್ಯಗಳು .	1

	Permission, Commands, Encouraging and Urging words (Imperative words and sentence)	
11	ಸಾಮಾನ್ಯ ಸಂಭಾಷಣೆಗಳಲ್ಲಿ ದ್ವಿತೀಯ ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯಗಳು ಮತ್ತು ಸಂಭವನೀಯ ಪ್ರಕಾರಗಳು. Accusative Cases and potential forms used in general communication.	1
12	“ಇರು ಮತ್ತು ಇರಲ್ಲ ” ಸಹಾಯಕ ಕ್ರಿಯಾಪದಗಳು, ಸಂಭಾವ್ಯ ಸೂಚಕ ಮತ್ತು ನಿಷೇಧಾರ್ಥಕ ಕ್ರಿಯಾ ಪದಗಳು . Helping verbs “ iru and irallaa” Corresponding Future and Negative Verbs.	½
13	ಹೋಲಿಕೆ (ತರತಮ) ಸಂಬಂಧ ಸೂಚಕ, ವಸ್ತುಸೂಚಕ ಪ್ರತ್ಯಯಗಳು, ನಿಷೇಧಾರ್ಥಕ ಪದಗಳ ಬಳಕೆ. Comparitive Rlation ship Identification and Negative words	½
14	ಕಾಲ ಮತ್ತು ಸಮಯದ ಹಾಗೂ ಕ್ರಿಯಾಪದಗಳ ವಿವಿಧ ಪ್ರಕಾರಗಳು- Different types of tense, time and verbs	1
15	ದ್, - ತ್, -ತು, -ಇತು, - ಆಗಿ, -ಅಲ್ಲ, -ಗ್, -ಕ್, ಇದೆ, ಕ್ರಿಯಾ ಪ್ರತ್ಯಯಗಳೊಂದಿಗೆ ಭೂತ, ಭವಿಷ್ಯತ್ ಮತ್ತು ವರ್ತಮಾನ ಕಾಲ ವಾಕ್ಯ ರಚನೆ - Formation of post ZFuture and Present Tense Sentences with verb forms.	1
16	Kannada Vocabulary List: ಸಂಭಾಷಣೆಯಲ್ಲಿ ದಿನೋಪಯೋಗಿ ಕನ್ನಡ ಪದಗಳು - Kannada Words in Conversation.	1
Total		15 Hrs



Dayananda Sagar Academy of Technology & Management (Autonomous Institute under VTU)

Semester	:	3rd			
Course Title	:	Elective I – Architectural Photography			
Course Code	:	23ARC38a			
Course Type	:	Integrated			
Category	:	PEC (Professional Elective Courses)			
Stream	:	Architecture			
Total Hours/week (L:T:P:S)		2:0:0:0	CIE	:	50 Marks
Total Hours/semester	:	28 Hrs.	SEE	:	-
Credits	:	02	SEE Duration	:	-

Course Learning Objectives:

Sl.No	Course Objectives
1	To impart the skills of taking aesthetically appealing and creative architectural photographs through the use of appropriate cameras/ lenses and lighting conditions.

Teaching-Learning Process

Pedagogy (General Instructions):

These are sample Strategies; which teachers can use to accelerate the attainment of the various course outcomes.

1. Lecture method (L) does not mean only the traditional lecture method, but a different type of teaching method may be adopted to develop the outcomes.
2. Show Video/animation films to explain the infrastructures and the mechanism involved in the principle.
3. Encourage collaborative (Group) Learning in the class.
4. Ask at least three HOT (Higher-order Thinking) questions in the class, which promotes critical thinking.
5. Adopt Problem Based Learning (PBL), which fosters students' Analytical skills, develop thinking skills such as the ability to evaluate, generalize, and analyze information rather than simply recall it.
6. Topics will be introduced in multiple representations.
7. Show the different ways to solve the same problem and encourage the students to come up with their own creative ways to solve them.
8. Discuss how every concept can be applied to the real world - and when that's possible, it helps improve the students' understanding.
9. Individual teachers can device innovative pedagogy to improve teaching-learning.



DSATM

Scheme of Teaching and Examinations for BE Programme -2023-24
Outcome Based Education and Choice Based Credit System (CBCS)
(Effective from the Academic Year 2023-24)

COURSE SYLLABUS

S.N.	Course Outline	Hours
1	Introduction to architectural photography. Various types of compositions, framing, silhouette photography.	1
2	Use of various cameras, lenses and accessories, handling of equipment. 2. SLR,DSLR cameras, lenses for different focal lengths for various contexts 3. Use of wide angle, normal, tele, zoom, macro, close up lenses. 4. Filters- UV, Skylight, colour filters, special effect filter.	2
3	Shutter speeds- slow, normal and high and their various applications.	1
4	Apertures- use of various apertures to suit different lighting conditions and to enhance depth of fields.	4
5	Selection of ISO rating to match various lighting conditions.	1
6	Optimizing selection of shutter speed, aperture and ISO.	1
7	Twilight and night photography.	4
8	Various uses of photography- documentation, presentations, competitions, lectures, etc.	4
9	Creative photography/ photo renderings, for special effects using software	4
10	Play of light and shadows to achieve dramatic pictures.	2
11	Effects of seasons, inclusion of greenery, foliage, clouds, human scale etc.	2
12	Architectural photography as a profession, law on photography.	2
TOTAL Hours		28

List of Activities

Sl.No	Exercises	COs
1	Demonstration on various cameras	CO1
2	Visit to a photo Studio	CO1, CO2
3	Night photography exercise	CO3
4	Workshop on photography for documentation, presentations and competitions	CO1
5	Photo rendering and editing software – hands on workshop	CO2
6	Field activity on landscape and architectural photography	CO2, CO3

Reference Books

1	Schulz, Adrian. Architectural Photography: Composition, Capture, and Digital Image Processing, Rocky Nook, 2012.
2	McGrath, Norman . Photographing Buildings Inside and Out, Watson-Guptill Publications, 1993.

Course Outcomes: At the end of the course, the student will be able to:

CO	Course Outcomes	RBT Level	Level Indicator
CO1	Understand the types of cameras and their operations in different contexts.	Understand	L1, L2
CO2	Apply the photography knowledge for their portfolio making	Apply	L3
CO3	Analyse photography through different case studies of projects	Analyse	L4
CO4	Evaluate the light intensity, composition, shadow, colour and textures as tools to enhance the photography skill.	Evaluate	L5
CO5	Create Architectural photography album and document about their study tours and program courses.	Create	L6

Mapping of Course Outcomes to Program Outcomes:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3													
CO2			2											
CO3				2	1									
CO4									2					2
CO5		3							2					

Assessment Pattern

Assessment Method	Component	Type of Assessment	Max. Marks	Evaluation Details	Min. Marks	Total
CIE	Assignments	Hands on activities	30	Night photography landscape photography Architectural photography photography with light and shadow	15	30
		Portfolio making	10	Composition and rendering of photos through software for internship portfolio	5	10
		Documentation	10	Study tour documentation through photo album	5	10
Total					25	50

Note: this course shall be conducted through an expert in Architectural Photography. The exercises and assessment system can be devised as per the expert's knowledge and student's capacity of producing application-based outcomes.



Dayananda Sagar Academy of Technology & Management (Autonomous Institute under VTU)

Semester	:	3rd			
Course Title	:	Elective 1 – Vernacular Architecture			
Course Code	:	23ARC38b			
Course Type	:	Integrated			
Category	:	PEC (Professional Elective Courses)			
Stream	:	Architecture			
Total Hours/week (L:T:P:S)		2:0:0:0	CIE	:	50 Marks
Total Hours/semester	:	28 Hrs.	SEE	:	-
Credits	:	02	SEE Duration	:	-

Course Learning Objectives:

SI.No	Course Objectives
1	To inculcate an appreciation of vernacular architecture; as an expression of local identity and indigenous traditions of the culture. Vernacular architecture and environment are deeply interconnected, studying vernacular methods through the environmental responsiveness view point.

Teaching-Learning Process

Pedagogy (General Instructions):

These are sample Strategies; which teachers can use to accelerate the attainment of the various course outcomes.

1. Lecture method (L) does not mean only the traditional lecture method, but a different type of teaching method may be adopted to develop the outcomes.
2. Show Video/animation films to explain the infrastructures and the mechanism involved in the principle.
3. Encourage collaborative (Group) Learning in the class.
4. Ask at least three HOT (Higher-order Thinking) questions in the class, which promotes critical thinking.
5. Adopt Problem Based Learning (PBL), which fosters students' Analytical skills, develop thinking skills such as the ability to evaluate, generalize, and analyze information rather than simply recall it.
6. Topics will be introduced in multiple representations.
7. Show the different ways to solve the same problem and encourage the students to come up with their own creative ways to solve them.
8. Discuss how every concept can be applied to the real world - and when that's possible, it helps improve the students' understanding.
9. Individual teachers can device innovative pedagogy to improve teaching-learning.



DSATM

**Scheme of Teaching and Examinations for BE Programme -2023-24
Outcome Based Education and Choice Based Credit System (CBCS)
(Effective from the Academic Year 2023-24)**

COURSE SYLLABUS

S.N.	Course Outline	Hours
1	Introduction to the approaches and concepts to the study of vernacular architecture, history and organisation of vernacular buildings of different regions in the Indian context; with an understanding of forms, spatial planning, cultural aspects, symbolism, colour, art, materials of construction and construction techniques. Study of factors that shape the architectural character and render the regional variations of vernacular architecture - geographic, climatic, social, economic, political and religious aspects, local materials and skills available in the region etc.	4
2	Methods of observation, recording, documenting and representing vernacular architecture with examples.	6
3	Study and documentation of vernacular architecture of selected building typologies. Rigorous documentation, accuracy in measuring, collating the recorded information and drawing them up in specified formats and scales are part of this module.	4
4	A critical review of the relevance and application of vernacular ideas in contemporary times. An appraisal of architects who have creatively innovated and negotiated the boundaries of 'tradition' while dynamically responding to the changing aspirations and lifestyles of the world around.	4
5	Case Study of how vernacular materials can help ease climatic challenges.	4
6	Design Activity - design an informal settlement using vernacular elements. Mapping old vernacular materials and how they have evolved (different contexts) and thus how it can be applied for informal settlements today.	6
Total Hours :		28

List of Activities

Sl.No	Exercises	COs
1	Group Work: Literature study about different style of vernacular architecture based on different regional geographic, climatic zones.	CO1
2	Onsite Group Work: Documenting the selected building vernacular elements by on site sketches, taking measurements, photography, recording about its purpose and representation of regional tradition and social connections.	CO1
3	Group Work: Study the modern lifestyle and trendy materials influences the vernacular architecture settlements and evolution of contemporary styles which modified the vernacular elements.	CO2
4	Group Work: Study the vernacular building materials and methods of construction.	CO3
5	Individual Work: Redesign the previous semester architectural design project by implementing the vernacular elements, materials and techniques based on selective regional geographic, climatic zones.	CO5

Reference Books

1	Carter, T., & Cromley, E. C. Invitation to Vernacular Architecture: A Guide to the Study of Ordinary Buildings and Landscapes. Knoxville: The University of Tennessee Press 2005.
2	Cooper, I. Traditional buildings of India. Thames and Hudson Ltd, London, 1998.
3	Oliver, P. Encyclopaedia of Vernacular Architecture of the World, Cambridge University Press, 1997.

Course Outcomes: At the end of the course, the student will be able to:

CO	Course Outcomes	RBT Level	Level Indicator
CO1	Understand the evaluation of vernacular architecture by reflecting its history, tradition, social values based on regional geographic, climatic zones.	Understand	L1, L2
CO2	Apply the architectural knowledge to work against appropriate methodologies and tools for recording, document the vernacular building.	Apply	L3
CO3	Analyse the methodologies and tools for recording, document the vernacular building.	analyse	L4
CO4	Evaluate and assess the vernacular components and apply suitable methodology with reference to given context.	Evaluate	L5
CO5	Creating the architectural design by implementing the vernacular elements, materials and techniques to given context.	Create	L6

Mapping of Course Outcomes to Program Outcomes:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3													
CO2			2											
CO3				2	1									
CO4									2					2
CO5			3											

Assessment Pattern

Assessment Method	Component	Type of Assessment	Assessment Type used	Max. Marks	Evaluation Details	Min. Marks	Total
CIE	Studio Assessment	Continuous Assessment Tool	Group Work	10	5.Presentation about different vernacular architecture. 6.Selection of vernacular building. 7.Date collection about heritage site.	5	10
	Field work	AAT	On Site Group Work	10	8.Measured drawing. 9.Sketches. 10. Photography. 11. Material & method of construction study.	5	10
	Studio Assessment	Documentat ion & Report	Group Work	10	12. Preparation of documentation drawings. 13. Preparation of analysis report of vernacular material & method of construction.	5	10
	Studio Assessment	Continuous Assessment Tool	Individual Work	20	14. Preparation of design & detail drawings. 15. Preparation of portfolio.	10	20
Total						25	50

Note: The exercises and assessment system can be devised as per the Subject teacher's knowledge and student's capacity of producing application-based outcomes.



Dayananda Sagar Academy of Technology & Management (Autonomous Institute under VTU)

Semester	:	3 rd		
Course Title	:	SOCIAL CONNECT & RESPONSIBILITIES		
Course Code	:	23UH39		
Course Type	:	INTEGRATED		
Category	:	AEC (Ability Enhancement Course)		
Stream	:	Any Dept.		
Total Hours/week (L:T:P:S)		1:0:0:0	CIE	: 50 Marks
Total Hours/semester	:	15 Hrs.	SEE	: -
Credits	:	01	SEE Duration	: -

Course Learning Objectives: Students will be taught

Sl.No	Course Objectives
1	Enable the student to do a deep dive into societal challenges being addressed by NGO(s), social enterprises & the government and build solutions to alleviate these complex social problems through immersion, design & technology
2	Provide a formal platform for students to communicate and connect to their surroundings
3	Enable to create of a responsible connection with society

Teaching-Learning Process

Pedagogy (General Instructions):

These are sample Strategies; which teachers can use to accelerate the attainment of the various course outcomes.

- **Project-based learning:** Each module will involve a project where students will research, implement, and document a sustainability initiative. This fosters critical thinking, problem-solving, and teamwork skills.
- **Experiential learning:** Field trips, heritage walks, and visits to local farms will provide students with firsthand experience of sustainability challenges and solutions.
- **Community engagement:** Collaboration with neighboring villages and local craftspeople will encourage students to connect with their community and understand local practices.
- **Creative expression:** Documentary filmmaking or photo blogging allows students to document their learning visually and engage a wider audience.
- **Organisation Building:** Social immersion with NGOs/social sections will be a key part of the course. Will all lead to the course project that will address the needs of the social sector?



**Scheme of Teaching and Examinations for BE Programme -2023-24
Outcome Based Education and Choice Based Credit System (CBCS)
(Effective from the Academic Year 2023-24)**

DSATM

COURSE SYLLABUS

Module No.	Contents of the Module	Hours
1	Plantation and adoption of a tree: Plantation of a tree that will be adopted for four years by a group of B Arch. students. They will also make an excerpt either as a documentary or a photo blog describing the plant's origin, its usage in daily life, and its appearance in folklore and literature.	4
Pedagogy	<ul style="list-style-type: none"> • Guest lectures by botanists or environmentalists. • Field trip to a nursery or botanical garden. • Research on the chosen tree species origin, uses, and cultural significance. • Group discussions and presentations on folklore and literature. • Documentation through filming or photo blogging. 	
2	Heritage walks and crafts corner: Heritage tour, knowing the history and culture of the city, connecting to people around through their history, knowing the city and its craftsman, photo blog and documentary on evolution and practice of various craft forms.	4
Pedagogy	<ul style="list-style-type: none"> • Guided heritage walks by a local historian or resident. • Interviews with craftspeople to understand traditional techniques and materials. • Workshops on specific crafts (optional). • Collaborative research on the evolution of crafts. • Photo blog or documentary creation showcasing the learning experience. 	
3	Organic farming and waste management: Usefulness of organic farming, wet waste management in neighbouring villages, and implementation in the campus.	3
Pedagogy	<ul style="list-style-type: none"> • Field visits to organic farms or composting facilities. • Interactive workshops on organic farming techniques and waste management. • Collaboration with local villages to implement waste management solutions in the campus. • Reflection papers on the importance of organic farming and waste management. 	
4	Water Conservation: Knowing the present practices in the surrounding villages and implementation in the campus, documentary or photo blog presenting the current practices.	2
Pedagogy	<ul style="list-style-type: none"> • Case studies on water conservation practices in villages. • Guest lectures by water management experts. • Design and implementation of water conservation measures in the college campus • Students monitor water usage and create a documentary or photo blog highlighting current practices and implemented solutions. 	
5	Food Walk City's culinary practices, food lore, and indigenous materials of the region used in cooking.	2
Pedagogy	<ul style="list-style-type: none"> • Guided tour of local food markets or historical sites related to food culture. • Interactions with street vendors and traditional cooks. • Research on the region's culinary practices, food lore and indigenous ingredients. • Documentation through photos, videos, or blog posts showcasing the food walk experience. 	

List of Experiments or Programs

Sl.No	Experiments/Programs	COs
1	Presentation on ancient water systems, different species, farming	CO1
2	Understanding waste management systems and water conservation methods	CO2
3	Heritage walk to craft villages and historical towns	CO2
4	Skit/Role play about social responsibilities	CO2
5	Visit to organic farms	CO3
6	Organising Traditional food festival and competitions	CO3
7	Photo and video documentation of cultural practices	CO4
8	Lake rejuvenation	CO5
9	Plantation Drive	CO5

Reference Books

Books (Title of the Book/Name of the author/Name of the publisher/Edition and Year)

1	The World's Great Cities by Paul Oliver
2	The Hidden Life of Trees: What They Feel, How They Communicate by Peter Wohlleben:
3	https://hriday.org.in/project/
4	"Water Wise: How to Save Money, Help the Environment, and Enjoy a Better Shower" by Peter H. Gleick:
5	"Green Building: Principles and Practices in Residential Construction" by Mick W. Hackett:

Course Outcomes: At the end of the course, the student will be able to:

CO	Course Outcomes	RBT Level	Level Indicator
CO1	Understand the social responsibility	L1, L2	understand
CO2	Apply their knowledge to their surrounding and build an effective society	L3	Apply
CO3	Analyze the connection between deforestation and climate change	L4	Analyse

Weblinks and Video Lectures (e-Resources)

1	https://www.usgbc.org/resources/we-overview .
2	https://www.wwfca.org/en/our_work/water/ .
3	https://www.grihaindia.org/griha-existing-building
4	https://www.tclf.org/ .
5	https://www.nationaltrust.org.uk/visit/houses-buildings .

Mapping of Course Outcomes to Program Outcomes:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1						2								
CO2							2							
CO3									2					
CO4														
CO5														

Assessment Pattern (both CIE and SEE)

1 Credit Course – AEC

Assessment Method	Component	Type of Assessment	Assessment Type used	Max. Marks	Evaluation Details	Reduced Marks	Min. Marks	Total
CIE	Studio	Continuous Assessment Tool	Presentations/Participations/Design	20	Creativity and Abstraction (5 marks) Presentation and communicating given subject using digital tool (2.5 marks) Quality, completeness, clarity and legibility in model making (2.5 marks)	10	5	10
		AAT	Portfolio	20	Quality of portfolio (10 Marks)	10	5	15
		AAT	Participation in all events	40	Knowledge and understanding (6 marks) Presentation (4 marks) Engagement and Interaction (10 mark)	20	10	30
		AAT	Skit/ Role Play	20	Narration (5 Marks) Performance (5Marks)	10	5	15
Total CIE Practical							25	50

The Marks of Continuous Internal Evaluation (CIE) is 50. The student has to obtain a minimum of 50% (i.e 25 marks out of 50 marks) to pass in CIE.

CIE- Continuous Internal Evaluation (50 Marks)

Bloom's Category	Continuous Assessment Tests			
	Seminar	Participation	Portfolio	Role Play
	10 Marks	20 Marks	10 Marks	10 Marks
Remember	2	2	2	2
Understand	2	2	2	1
Apply	4	-	1	2
Analyse	2	3	-	-
Evaluate	-	3	-	-
Create	-	10	5	5

Course Contents and Lecture Schedule

Module No.	Topics	No. of Lecture Hrs.
1	Presentation on ancient water systems, different species, farming	2
1	Field trip to a nursery or botanical garden.	2
2	Heritage walks to craft villages and historical towns	2
3	Understanding waste management systems and water conservation methods	2
3	Skit/Role play about social responsibilities	3
4	Presentation on ancient water systems,	2
5	Presentation on food culture	2
Total		15 Hrs.



Dayananda Sagar Academy of Technology & Management

(Autonomous Institute under VTU)

Semester	:	4th		
Course Title	:	ARCHITECTURAL DESIGN - IV		
Course Code	:	23ARC41		
Course Type	:	Studio		
Category	:	PCC (Professional Core Courses)		
Stream	:	Architecture		
Total Hours/week (L: T:P:S)	:	0:0:0:8	CIE	: 100 Marks
Total Hours/semester	:	120 hrs.	SEE (Viva-Voce)	: 100 Marks
Credits	:	08	SEE Duration	: -

Course Learning Objectives: Students will be able to

Sl. No	Course Objectives
1	From space to dwelling: An understanding of what it means to dwell in a space/s and to further explore as to why and how people choose to dwell together.
2	This semester follows on the heels of the past one, where students have attempted to understand the nature of places with shared memories and purposes.

Teaching-Learning Process

Pedagogical Initiatives:

Some sample strategies to accelerate the attainment of various course outcomes are listed below:

1. Adopt different teaching methods to attain the course outcomes.
2. Include videos to demonstrate various concepts in C.
3. Encourage collaborative (Group) Learning to encourage team building.
4. Ask at least three **HOTS (Higher-order Thinking Skills)** to promote critical thinking.
5. Adopt **Problem-Based Learning (PBL)**, which fosters students' analytical skills, and develops thinking skills such as evaluating, generalizing, and analyzing information rather than simply recalling it.
6. Show different ways to design a space and encourage the students to come up with creative and optimal solutions.
7. Discuss various case studies to map with real-world scenarios and improve the understanding.
8. Devise innovative pedagogy to improve **Teaching-Learning Process (TLP)**.



Scheme of Teaching and Examinations for BE Programme -2024-25
Outcome Based Education and Choice Based Credit System (CBCS)
(Effective from the Academic Year 2024-25)

DSATM

COURSE CURRICULUM

Module No.	Topics	Hours
A	<p>MINOR PROJECT - The Dwelling: How spaces change when people stake claim over them, and what boundaries are drawn between what is private and the many stages between that and the common public space.</p> <p>What it means to arrive "home", and what is the nature of that feeling of belonging that one gets when we "arrive" and are welcomed in to a familiar space.</p> <p>We enquire into the nature of a dwelling space, and what is the nature of spaces outside them? Common rangolis, porches, verandas, balconies, paths, pavements, plinths, wells, washing areas, vrindavanas, backyards, parking spaces for carts, cattle, and vehicles. We need to enquire in the nature of the spaces in-between these.</p> <p>Picking from memories, can we recollect and draw spaces that endure, ones that recall the same feelings and create similar expectations as before, Which spaces and behaviours have changed, and which remain. Which are in transition.</p>	12
Pedagogy	<p>Vacation Assignment Students have to study their own House and street (group of housing) to understand the architectural aspects through pin up board discussion</p>	
B	<p>Dwelling Together:</p> <p>Explore as to why people live together, and how we have lived together in the past. Questions to be addressed here are:</p> <ul style="list-style-type: none"> • How do we make common decisions? • What do we share, and when, where and how does it change to the more intimate, personal space? • Which spaces are "designed"? What is the meaning of "organic" growth? What is the meaning of Vernacular Architecture? • What is the meaning of the term "sustainable"? 	12
Pedagogy	<p>Vacation Assignment Students have to study their own House and street (group of housing) to understand the architectural aspects through pin up board discussion and model.</p>	
Assignment-1	<p>SITE VISITS – Physical Case Study</p> <ul style="list-style-type: none"> • Two site visits to observe, discuss and document existing residential settlements (formal and informal), housing projects. • The emphasis should be on both conceptual understanding and accurately measured drawing. However, scale and proportion need to be observed carefully, as a method of understanding buildings. • Attention should be given to community spaces/common areas, the kind of materials, quality of environment and the emergent grouping of individual dwellings. • Sketches and documentation should show observations and inferences from the studies. 	12
Pedagogy	Physical Case study – Presentation with Models.	
Assignment-2	<p>SEMINARS – Literature Study</p> <ul style="list-style-type: none"> • To understand the architect as the facilitator: the architect's role in the process of building a dwelling community. • To understand some issues related to group housing/dwelling or 	12

	<p>settlements like basic services [lighting, ventilation & water supply] and building regulation.</p> <p>3) To explore the character of community spaces and their significance in housing projects [points of discussion could include different ways of occupying land: rentals, ownership, temporary squatting, organic settlements, and informal urban settlements].</p> <p>Indigenous building technologies, Post-Independence Housing: Otto Koenigsberger.</p> <p>4) Studying housing projects in India [Laurie Baker, BV Doshi, Charles Correa, MN Ashish Ganju, Raj Rewal, Shilpa Sindoor, Revathi Karnath] and other contemporary housing projects from around the world.</p>	
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Pedagogy	Online Case study (Literature Study) – Presentation with Models
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Assignment- 3	<p>MAJOR PROJECT</p> <p>One major project (from formal apartment settlements be taken as design project) (Activity) and one time problem (looking at an informal settlement or vernacular parts of the city or rural setting for settlement/ community study and design) assignment to be tackled in the semester. Project work could be done in the following four stages of activity interspersed with seminars.</p> <ul style="list-style-type: none"> • Introduction to the initial design parameters which include choice of: <ul style="list-style-type: none"> • Geography/situation (context), • Understanding the dwellers, their lifestyle, and social context, and the materials used locally • Exploring ways in which dwellers come together to live in a small community. • Sustainable design principles and sustainable services (eg. Storm water harvesting, waste water reuse, solar power, etc.) Integration • Explore issues of community, public and private realms, edge conditions, communication and connectedness. • Enquire into individual and family/user group needs and aspirations. • The emphasis in the studio has to be on inclusion and integration of differences in age, gender, mobility, health, economic status. In today's world, there is a need to make buildings equitable to all at the outset, and we should begin with our dwellings. <p>5. Suggested plot size: From 4500 - 8500 sqm</p>	72
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Pedagogy	<p>Pin Up Board Discussion</p> <p>Site Analysis - Data Collection, Physical Model</p> <p>Concept Development, Zonal Regulations, Program, Area Statement</p> <p>Bubble diagram, Zoning and Design.</p> <p>ALL ARCHITECTURAL DRAWINGS</p> <p>(Case study + Literature study+ Site Analysis + Concept+ Master plan+ section+ elevation+ double line plans ETC)</p>
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<p>Course outcome (Course Skill Set)</p> <p>the student will be able to:</p> <ul style="list-style-type: none"> • Get an introduction into the field of Architectural Design viz. a viz. the duality & the tension that exists between the form and function of a space. • Make responsible choices for design development • Get a perspective on design of spaces in formal and informal settlements.
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<p>Activity Based Learning (Suggested Activities in Class)/ Practical Based learning</p> <p>the class be divided into groups to study on the formal housing (apartment for Middle-income groups) and the Informal settlement (rehabilitation/redesign/retrofitting for low-income groups - affordable housing)</p>

List of Exercises:

Sl. No.	Experiments/Programs	COs
1	Minor Project –The Dwelling and Dwelling together – Analysis and Interpretation	CO1, CO2, CO3
2	Major Project – Case study & Literature Study	CO1, CO3, CO4
3	Major Project – Site Analysis	CO1, CO3
4	Major Project – Concept Development, Program, Area Statement, Zonal Regulations	CO1, CO2, CO3
5	Major Project - Design	CO4, CO5

Reference Books

Books (Title of the Book/Name of the author/Name of the publisher/Edition and Year)

1	Amos Rapoport, "House Form and Culture", Prentice-Hall, 1969
2	Christopher Alexander, "Pattern Language", Oxford University Press, 1977
3	Christopher Alexander, "A Timeless Way of Building", Oxford Uni. Press, 1979
4	Gautam Bhatia, "Laurie Baker, Life, Work, Writings", Viking, 1991
5	Dick Van Gameren & Rohan Verma, "Designs for Housing: Charles Correa", 2018
6	Atul Deulgaonkar, "Laurie Baker, Truth in Architecture", Jyotsna Prakashan, 2015
7	Otto Koenigsberger, "Manual of Tropical Housing and Building", 1975
8	Geoffrey Bawa, The Complete Works, 2002

Weblinks and Video Lectures (e-Resources)

1	https://ndl.iitkgp.ac.in
2	https://www.youtube.com/watch?v=ly8orBNiNQM
3	https://www.youtube.com/watch?v=k4dVgbuxBAw

Course Outcomes: At the end of the course, the student will be able to:

CO	Course Outcomes	RBT Level	RBT Level Indicator
CO1	To understand the spaces of House, Housing of different typologies.	L1, L2	Remember and understand
CO2	To apply the knowledge gained to study physical case studies and Literature studies on House, Housing.	L3	Apply
CO3	To analyze spaces of the typologies of House and Housing with different methods, technologies.	L4	Analyse
CO4	To evaluate functional, Structural, aesthetical, spatial aspects of House and Housing.	L5	Evaluate
CO5	To design/create the House and Housing with Context analysis, Site physical constraints, Climate of the place etc.,	L6	Design

Mapping of Course Outcomes to Program Outcomes:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO3	-	3	-	-	-	2	-	-	-	-	-	-	-	-	-
CO4	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-
CO5	-	-	3	-	2	-	2	-	-	2	-	-	2	-	2

Assessment Pattern (both CIE and SEE)

8 Credit Course –										
Assessment Method	Component	Type of Assessment	Assessment Type used	Max. Marks	Evaluation Details	Reduced Marks	Min. Marks	Total		
CIE	Studio Assessment	AAT	Individual Discussion	50	Regular on time discussion + Incorporation of changes in design + Presentation skills.	25	12.5	25		
			Group Work	20	Observations at site + Group Co-ordination + Analysis	15	7.5	15		
			Models	20	Precession, Materials and Scale.	10	5	10		
			Sheets	20	Presentation, Accuracy, Details, Architectural Drawings.	10	5	10		
			Total CIE Studio						30	60
			Panel Review	Viva Voce	Review	50	Presentation skills, Communication of ideas, Design	25	12.5	40
					Portfolio + Models	30	Sheet Presentation, Accuracy, Details, Architectural Drawings. etc, presentation	15	7.5	
Total CIE Review						20	40			
SEE	External Viva Voca			100	Portfolio + Model + Review	-	40	100		
CIE+SEE							100	200		

The Minimum Marks to be secured in CIE to appear for SEE shall be 50 (50% of Maximum marks - 100) in the Studio Assessment and Internal Review and 40 (40% of Maximum Marks -100) in the External Viva Voce. The total of CIE + SEE shall be a minimum of 100 (50% of Maximum Marks -200).

Course Contents and Lecture Schedule

ModuleNo	Topics	No. of Lecture Hrs.
A & B	Minor Project - Vacation Assignment Students have to study their own House and street (group of housing) to understand the architectural aspects through pin up board discussion	16 Hrs
Review - 1		8 Hrs
Assignment 1	Site Visit - Case Study	8 Hrs
Assignment 2	Seminars - Literature Study	8 Hrs
Review - 2		8 Hrs
Assignment 3	Major Project – Site Visit & Analysis - Site Model	8 Hrs
	Concept Development	8Hrs
	Program, Area Statement, Zonal Regulations, Zoning	8 Hrs
	Master Plan development	8 Hrs
	Design Development - Single line plans with section & elevation	16 Hrs
	Double line plans with services, structural aspects, Climatic aspects, Sustainable design principles.	16 Hrs
Final Internal Review		8 Hrs
Total		120 Hrs

Assessment Details (both CIE and SEE)

(methods of CIE need to be defined topic wise i.e.- Studio discussions, Reviews, Time problems, test, Seminar or micro project)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The student has to obtain a minimum of 50% marks individually both in CIE and 40 % marks in SEE to pass. Semester End Exam (SEE) is conducted for 100 marks (Viva-voce). Based on this grading will be awarded.

Continuous Internal Evaluation:

Methods suggested:

- Studio discussions, Reviews, Time problems, Seminar or minor project, report writing etc.
 - The subject teacher has to decide the topic for the Design and Seminars if any, in the beginning only. The teacher has to announce the methods of CIE for the subject in advance in writing.

Semester End Examination:

- The student needs to submit his/her works done throughout the semester, including rough sheets for the Viva examination, at least one day prior to the Viva work examination to the course teacher/ coordinator.
- The Viva-voce will be evaluated by an external teacher appointed by the University along with Course teacher or an internal examiner.
- The SEE marks list generated is to be signed by both internal and external examiners and submitted to examination department in the sealed cover through the HOD of the Department.



Dayananda Sagar Academy of Technology & Management

(Autonomous Institute under VTU)

Semester	:	4 th		
Course Title	:	MATERIALS AND METHODS IN BUILDING CONSTRUCTION-IV		
Course Code	:	23ARC42		
Course Type	:	Integrated		
Category	:	BSAE (Building Science & Applied Engineering Courses)		
Stream	:	Architecture		
Total Hours/week (L: T:P:S)		1:0:0:3	CIE	: 50 Marks
Total Hours/semester	:	60 Hrs.	SEE (Theory)	: 100 Marks
Credits	:	04	SEE Duration	: 4 Hrs.

Course Learning Objectives: Students will be able to:

Sl.No	Course Objectives
1	To acquaint the students with construction practices pertaining to RCC framing systems, and other building elements such as metal doors and windows (In Steel and Aluminium)

Teaching-Learning Process Pedagogy (General Instructions):

These are sample Strategies; which teachers can use to accelerate the attainment of the various course outcomes.

- 1. Integration of Theory and Practice:** Emphasize the practical application of theoretical knowledge by incorporating hands-on activities, case studies, and site visits to enhance understanding of building materials and construction methods.
- 2. Demonstration and Visual Aids:** Utilize visual aids, such as diagrams, illustrations, and multimedia presentations, to enhance the understanding of different building materials, construction techniques, and structural elements.
- 3. Active Learning and Collaborative Discussions:** Encourage active learning through group discussions, brainstorming sessions, and problem-solving activities to foster critical thinking and deeper understanding of the subject matter.
- 4. Real-life Examples and Case Studies:** Incorporate real-life examples and case studies to demonstrate the relevance and practicality of the concepts covered in the modules. This can include showcasing, contemporary architectural projects, and sustainable construction practices.
- 5. Assessment through Projects and Presentations:** Assign projects and presentations that require students to apply their knowledge and skills acquired during the modules.
- 6. Continuous Feedback and Assessment:** Provide regular feedback and assessment to students throughout the learning process to monitor their progress and address any misconceptions or gaps in understanding.
- 7. Encouraging Research and Exploration:** Encourage students to explore additional resources, conduct research, and stay updated with the latest advancements in building materials and construction methods, fostering a sense of curiosity and lifelong learning.



DSATM

**Scheme of Teaching and Examinations for B Arch Programme -2024-25
Outcome Based Education and Choice Based Credit System (CBCS)
(Effective from the Academic Year 2024-25)**

COURSE SYLLABUS

Module No.	Contents of the Module	Hours
1	<p>1. Introduction to Advanced RCC roofs: Moment framed, Flat slab and Flat plate, Filler slabs, Waffle slab.</p> <p>2. RCC Moment framed: Principles and methods of construction including detailing of Reinforcement.</p> <p>3. RCC Flat Plate & Slab: Principles and methods of construction including detailing of Reinforcement.</p>	10
Pedagogy	Minimum one plate on each construction topic. Site visits to be arranged by studio teachers. Study of material application in the form of portfolio.	
2	<p>4. RCC filler slabs: Principles and methods of construction. Introduction to different filler materials, Mangalore tiles, Burnt Clay Bricks, Hollow Concrete blocks, Stabilized Hollow Mud blocks, Clay pots, Coconut shells etc</p> <p>5. RCC Waffle slabs: Principles and methods of construction.</p>	10
Pedagogy	Minimum one plate on each construction topic. Site visits to be arranged by studio teachers. Study of material application in the form of portfolio.	
3	<p>6. Structural steel as a building material: Types, properties, uses, manufacturing methods. Life cycle and environmental impact of steel</p> <p>7. Steel construction: Steel columns/Stanchions/beam construction; Principles and methods of construction. (Reuse and repurpose of steel construction and demolition waste).</p>	10
Pedagogy	Minimum one plate on each construction topic. Site visits to be arranged by studio teachers. Study of material application in the form of portfolio.	
4	<p>8. Steel doors and windows: Study of joinery details.</p> <p>9. Steel doors for garages and workshops: uses and manufacturing methods.</p> <p>10. Collapsible gate and rolling shutters: uses and manufacturing methods.</p>	10
Pedagogy	Minimum one plate on each construction topic. Site visits to be arranged by studio teachers. Study of material application in the form of portfolio.	
5	<p>11. Aluminium as a building material: Types, properties, uses, manufacturing methods and Life cycle environmental impact of aluminium (including its thermal properties, energy needs during construction phase). Detailing of aluminium partitions.</p> <p>12. Aluminium doors and windows: Casement, Pivot, Sliding type: Study of joinery details. (Reuse and repurpose of Aluminium construction and demolition waste).</p>	10
Pedagogy	Minimum one plate on each construction topic. Site visits to be arranged by studio teachers. Study of material application in the form of portfolio.	

List of Sheet work for portfolio:

Sl.No	Sheet Work with miniature models	COs
1	Sheet: Definitions, types & uses of Moment framed, Flat slab and Flat plate, Filler slabs, Waffle slab.	CO1
2	Sheet: RCC Moment framed: Principles and methods of construction including detailing of Reinforcement.	CO1, CO2
3	Sheet: RCC Flat Plate & Slab: Principles and methods of construction including detailing of Reinforcement.	CO1, CO2
4	Sheet: RCC filler slabs: Principles and methods of construction. Introduction to different filler materials, Mangalore tiles, Burnt Clay Bricks, Hollow Concrete blocks, Stabilized Hollow Mud blocks, Clay pots, Coconut shells etc.	CO1, CO2
5	Sheet: RCC Waffle slabs: Principles and methods of construction	CO2
6	Sheet: Structural steel as a building material: Types, properties, uses, manufacturing methods. Life cycle and environmental impact of steel	CO2, CO3
7	Sheet: Steel construction: Steel columns/Stanchions/beam construction; Principles and methods of construction. (Reuse and repurpose of steel construction and demolition waste)..	CO2, CO3
8	Sheet: Steel doors and windows: Study of joinery details.	CO2, CO3
9	Sheet: Analysing different types of masonry foundations, create new bond patterns for foundations Model: Miniature model representing a load-bearing foundation made of brick or stone.	CO3, CO4
10	Sheet: Collapsible gate and rolling shutters: uses and manufacturing methods	CO3, CO4
11	Sheet: Aluminium as a building material: Types, properties, uses, manufacturing methods and Life cycle environmental impact of aluminium (including its thermal properties, energy needs during construction phase). Detailing of aluminium partitions.	CO1, CO2, CO3
12	Sheet: Aluminium doors and windows: Casement, Pivot, Sliding type: Study of joinery details. (Reuse and repurpose of Aluminium construction and demolition waste).	CO3, CO4

Reference Books

Books (Title of the Book/Name of the author/Name of the publisher/Edition and Year)

1	Chudley , Construction Technology, ELBS, 1993
2	Barry, Construction of Buildings, East West Press, 1999

Course Outcomes: At the end of the course, the student will be able to:

CO	Course Outcomes	RBT Level	Level Indicator
CO1	Remember & understanding the advanced RCC roofing systems, aspect of structural system and their uses in building industry, Steel & Aluminium as building material and their uses like doors, windows & Collapsible door/Rolling Shutter considering manufacturing, properties, methods, and sustainability	L1,L2	Remember, understand
CO2	Applications of different RCC roofing systems, in building industry, Steel & Aluminium as building material like doors, windows & Collapsible door/Rolling Shutter	L3	Apply

CO3	How to Analyse and detail the advanced RCC roofing systems in building industry, Steel & Aluminium as building material like doors, windows & Collapsible door/Rolling Shutter.	L4	Analyse
CO4	To evaluate the appropriate system, design and detail the structural elements/Non-structural elements like doors/windows etc., using appropriate building materials.	L5	Evaluate

Mapping of Course Outcomes to Program Outcomes:

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1						1						2		2	
CO2	2		3						1						
CO3		3		3				2					2		
CO4					3			2							3

Weblinks and Video Lectures (e-Resources)

- <https://ndl.iitkgp.ac.in>
- <https://www.youtube.com/watch?v=kjmPv1d1ohM>
- <https://www.youtube.com/watch?v=JMtIkNkzbnk>
- <https://www.youtube.com/watch?v=VdhOO3N2E00>
- <https://www.youtube.com/watch?v=XL2KXnui0Q>
- <https://www.youtube.com/watch?v=hCEvmTSBj4Y>

Assessment Pattern (both CIE and SEE)

4 Credit Course

Assessment Method	Component	Type of Assessment	Assessment Type used	Max. Marks	Evaluation Details	Reduced Marks	Min. Marks	Total		
CIE	Studio	Continuous Assessment Tool	Sheet work/ Portfolio and Models	40	Accuracy and Completeness of Construction Drawing Sheets (20 marks) Documentation and Portfolio (10 marks) Quality and Presentation of Construction Models (10 marks)	20	10	20		
				Internal Assessment test	IAT 1	50	Internals paper	20	10	20
					IAT 2	50	Internals paper			
	Theory	AAT	Seminar/ Case Study Presentations	10	Knowledge and understanding (6 marks) Presentation Skills (3 marks) Engagement and Interaction (1 mark)	5	2.5	5		
				AAT	MCQ/Quiz	10	--	5	2.5	5
Total CIE Marks							25	50		

SEE		75	SEE Exam is theory exam, conducted for 75 marks.	100	40	100
CIE+SEE					50 +100	150
The Marks of Continuous Internal Evaluation (CIE) is 50 and for Semester End Exam (SEE) is 100marks. The student has to obtain a minimum of 50% (25 marks out of 50 marks) of the maximum marks of CIE and 40% (40 marks out of 100 marks) of maximum marks of SEE (theory) to pass. The passing percentage shall not be less than the 50% in aggregate for a course (i.e. CIE and SEE (put together). Based on the marks scored in CIE+SEE grading will be awarded for this course.						

CIE- Continuous Internal Evaluation (75 Marks)

Bloom's Category	Studio		Theory	
	Continuous Assessment Tool	Internal Assessment Tool (IAT)	Alternative Assessment Tool (AAT)	
	Sheet Work and portfolio	Internal Papers	Seminar/ Case Study Presentations	MCQ/Quiz
	30 Marks	25 Marks	10 Marks	10 Marks
Remember	7.5	5	2	4
Understand	7.5	5	2	4
Apply	5	5	3	2
Analyse	5	5	3	-
Evaluate	5	5	-	-

CIE Internal Assessment Test Plan

CO's	Marks Distribution					Total Marks	Weightage
	IAT-1			IAT-2			
	Module-1	Module-2	Module-3	Module-4	Module-5		
CO1	5	5	4	3	2	19	25.33%
CO2	2	5	5	5	3	20	26.66%
CO3	4	4	3	4	3	18	24%
CO4	4	4	3	4	3	18	24%
Total	15	18	15	12	11	75	100 %

SEE- Semester End Examination (75 Marks)

Bloom's Category	SEE Marks
Remember & understand	15
Apply	15
Analyse	10
Evaluate	10

SEE Course Plan

CO's	Marks Distribution					Total Marks	Weightage
	Module-1	Module-2	Module-3	Module-4	Module-5		
CO1	5	5	5	5	5	25	33.33%
CO2	4	4	4	4	4	20	26.66%
CO3	3	3	3	3	3	15	20%
CO4	3	3	3	3	3	15	20%
Total	15	15	15	15	15	75	100 %

Course Contents and Lecture Schedule

Module No.	Topics	No. of Lecture Hrs.
1	1. Introduction to Advanced RCC roofs 2. RCC Moment framed 3. RCC Flat Plate & Slab	10
2	4. RCC filler slabs 5. RCC Waffle slabs	10
3	6. Structural steel as a building material 7. Steel construction	10
4	8. Steel doors and windows 9. Steel doors for garages and workshops 10. Collapsible gate and rolling shutters	10
5	11. Aluminium as a building material 12. Aluminium doors and windows	10
	Recapitulation of key concepts and topics covered in the previous modules. Practice exercises and discussions to reinforce learning. <ul style="list-style-type: none">• Assessment of students' understanding through quizzes, assignments, or presentations.• Project work and presentations related to the topics covered throughout the course. Evaluation and feedback.	10
Total		60 Hrs.



Dayananda Sagar Academy of Technology & Management

(Autonomous Institute under VTU)

Semester	:	4 th			
Course Title	:	History Of Architecture IV			
Course Code	:	23ARC43			
Course Type	:	Theory			
Category	:	PCC (Professional Core Courses)			
Stream	:	Architecture			
Total Hours/week (L:T:P:S)	:	3:0:0:0		CIE	50 Marks
Total Hours/semester	:	42 Hrs.		SEE (Theory)	50 Marks
Credits	:	03		SEE Duration	3 Hrs.

Course Learning Objectives: Students will be taught

S.No	Course Objectives
1	To develop a critical understanding of Western architectural traditions: Through analyzing and comparing classical Greek, Roman, Early Christian, Byzantine, Medieval, and Gothic architecture
2	To learn ethical and sustainable Practices: Learning from historical practices that prioritized local materials and sustainable methods and applying these lessons to modern sustainable design practices, and an understanding of the ethical implications of architectural design and the responsibility of architects to preserve cultural heritage.
3	To build a visual vocabulary of Western architectural styles: By studying representative buildings and typologies from each period, students will develop a strong visual vocabulary of Western architecture.

Teaching-Learning Process

Pedagogy (General Instructions):

These are sample Strategies; which teachers can use to accelerate the attainment of the various course outcomes.

1. Lecture method (L) does not mean only the traditional lecture method, but a different type of teaching method may be adopted to develop the outcomes.
2. Show Video/animation films to explain the infrastructures and the mechanism involved in the principle.
3. Encourage collaborative (Group) Learning in the class.
4. Ask at least three HOT (Higher-order Thinking) questions in the class, which promotes critical thinking.
5. Adopt Problem Based Learning (PBL), which fosters students' Analytical skills, develop thinking skills such as the ability to evaluate, generalize, and analyse information rather than simply recall it.
6. Topics will be introduced in multiple representations.
7. Show the different ways to solve the same problem and encourage the students to come up with their own creative ways to solve them.
8. Discuss how every concept can be applied to the real world - and when that's possible, it helps improve the students' understanding.
9. Individual teachers can device innovative pedagogy to improve teaching-learning.



DSATM

**Scheme of Teaching and Examinations for BE Programme -2023-24
Outcome Based Education and Choice Based Credit System (CBCS)
(Effective from the Academic Year 2023-24)**

COURSE SYLLABUS

Module No.	Contents of the Module	Hours
1	<ul style="list-style-type: none"> ● Classical Greek Architecture 1: Critical appreciation of works and synoptic study of architectural characteristic features from the Greek early periods and the Greek later periods, Doric, ionic and Corinthian orders, and optical correction. ● Greek architecture Typologies: Study of principles of design of Greek buildings through study of three kinds of Architecture: <ul style="list-style-type: none"> ● Monumental (Built to impress and last) ex. Parthenon, Theatre at Epidaurus. ● Domestic (Built to inhabit): House of Colline, House of Masks, etc. and ● Civic space: The Agora and Acropolis. 	8
Pedagogy	<ul style="list-style-type: none"> ● Case studies by analysing iconic buildings from each period and engage students in design exercises where they create structures inspired by these periods, translating historical principles into contemporary solutions. ● Compare examples quoted to known structures, focusing on spatial organization, light, engineering, climate and material usage. ● Utilize 3D modelling software to explore historical structures virtually. ● Explore online resources like historical building databases and virtual tours of archaeological sites. 	
2	<ul style="list-style-type: none"> ● Introduction to Roman Architecture: Critical appreciation of works and synoptic study of architectural characteristic features from the Roman periods. Study of Tuscan and composite orders. ● Roman architecture Typologies 1: Study of principles of design of Roman buildings through study of proportion, composition, visual effects etc. in Monumental (Built to impress and last) Pantheon, Colosseum, Thermae of Caracalla, Pont du Gard, Nimes, Basilica of Trajan. 	8
Pedagogy	<ul style="list-style-type: none"> ● Case studies by analysing iconic buildings from each period and engage students in design exercises where they create structures inspired by these periods, translating historical principles into contemporary solutions. ● Compare examples quoted to known structures, focusing on spatial organization, light, engineering, climate and material usage. ● Utilize 3D modelling software to explore historical structures virtually. ● Explore online resources like historical building databases and virtual tours of archaeological sites. 	
3	<ul style="list-style-type: none"> ● Roman architecture Typologies 2: Study of principles of design of Roman buildings through study of Domestic (Built to inhabit)-House, villa and apartments. ● Roman architecture Typologies 3: Study of principles of design of Roman buildings through study of Civic space with elements like triumphal arch, Column of Trajan (Septimius Severus), Roman Forum. ● Early Christian: Evolution of architecture parallel to the evolution of religious practices. Study of principles of design of buildings through study of three kinds of Architecture: <ul style="list-style-type: none"> a) Monumental b) Domestic (Built to inhabit) and c) Civic space. 	10
Pedagogy	<p>9. Case studies by analysing iconic buildings from each period and engage students in design exercises where they create structures inspired by these periods, translating historical principles into contemporary solutions.</p> <p>10. Compare examples quoted to known structures, focusing on spatial organization, light, engineering,</p>	

	<p>climate and material usage.</p> <p>11. Utilize 3D modelling software to explore historical structures virtually.</p> <p>12. Explore online resources like historical building databases and virtual tours of archaeological sites.</p>	
4	<ul style="list-style-type: none"> • Byzantine: Study of principles of design of buildings through study of its Architecture: <ul style="list-style-type: none"> a) Monumental; Hagia Sophia b) Domestic (Built to inhabit) and c) Civic space-St. Marks Venice. • Medieval: Study of principles of design of buildings through study of its Architecture: <ul style="list-style-type: none"> a) Monumental; Pisa Cathedral, the Campanile and Baptistery, Angouleme Cathedral b) Domestic (Built to inhabit) and c) Civic space; Pisa. 	8
Pedagogy	<p>13. Case studies by analysing iconic buildings from each period and engage students in design exercises where they create structures inspired by these periods, translating historical principles into contemporary solutions.</p> <p>14. Compare examples quoted to known structures, focusing on spatial organization, light, engineering, climate and material usage.</p> <p>15. Utilize 3D modelling software to explore historical structures virtually.</p> <p>16. Explore online resources like historical building databases and virtual tours of archaeological sites.</p>	
5	<ul style="list-style-type: none"> • Gothic: Study of principles of design of buildings through study of its Architecture: <ul style="list-style-type: none"> a) Monumental; Notre Dame, Paris. b) Domestic (Built to inhabit) and c) Civic space. • Gothic: Study of Gothic Architecture, typical characteristics including the pointed arch, the ribbed vault and the flying buttress, aesthetic elements with examples like Chartres Cathedral: French High Gothic style 	8
Pedagogy	<p>17. Case studies by analysing iconic buildings from each period and engage students in design exercises where they create structures inspired by these periods, translating historical principles into contemporary solutions.</p> <p>18. Compare examples quoted to known structures, focusing on spatial organization, light, engineering, climate and material usage.</p> <p>19. Utilize 3D modelling software to explore historical structures virtually.</p> <p>20. Explore online resources like historical building databases and virtual tours of archaeological sites.</p>	

List of Exercises

Sl.No	Exercises	COs
1	Sketching and Study models	CO2, CO4
2	Digital Presentation	CO1, CO5
3	Design of elements/ product inspired from Architectural Style	CO4, CO5
4	Quiz/ Identify the Structure	CO1, CO2
5	Debate	CO2, CO3

Reference Books

Books (Title of the Book/Name of the author/Name of the publisher/Edition and Year)

1. Bannister Fletcher , "History of Architecture", CBS Publishers, 1992

2. Henri Stierlin, "Architecture of the world - Greece", Herron Books 1994
3. Henri Stierlin, "Architecture of the world - The Roman Empire", Taschen Pub., 1997 .
4. Henri Stierlin , "Architecture of the world - Romanesque", Taschen Pub., 2008.
5. James Stevens Curl," Classical Architecture", W. W. Norton & Company; Reissue edition, 2003.
6. Robert Adam, " Classical Architecture", Harry N. Abrams; 1st edition, 1991

Course Outcomes: At the end of the course, the student will be able to:

CO	Course Outcomes	RBT Level	Level Indicator
CO1	Identify and describe the key architectural characteristics and typologies of Classical Greek, Roman, Early Christian, Byzantine, Medieval, and Gothic periods.	L1, L2	Remember and understand
CO2	Apply the principles of design and architectural features of buildings from the Classical Greek, Roman, Early Christian, Byzantine, Medieval, and Gothic periods to modern architectural designs.	L3	Apply
CO3	Analyze the significance of architectural works from the Classical Greek to Gothic periods, providing well-supported critiques of their design principles, aesthetic qualities, and cultural impacts.	L4	Analyze
CO4	Critically evaluate the evolution and influence of architectural styles and typologies from Classical Greek to Gothic architecture, identifying the social, cultural, and technological factors that shaped these styles.	L5	Evaluate
CO5	Integrate knowledge of historical architectural principles and typologies to create innovative design solutions that respect and reflect historical contexts.	L6	Design

Mapping of Course Outcomes to Program Outcomes:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1															
CO2	2														
CO3															
CO4						1									2
CO5			3		1							2	3		

Weblinks and Video Lectures (e-Resources)

- <https://ndl.iitkgp.ac.in>
- <https://www.youtube.com/watch?v=6bDrYTXQLu8>
- <https://www.youtube.com/watch?v=yGPevxwITBE>
- <https://www.youtube.com/watch?v=M8adUsbspfw>

Assessment Pattern (both CIE and SEE)

3 Credit Course								
Assessment Method	Component	Type of Assessment	Assessment Type used	Max. Marks	Evaluation Details	Reduced Marks	Min. Marks	Total
	Studio Assessment	AAT	Exercises	50	Presentation, Analysis, Design, Communication	25	13	25
		IAT	IAT 1	50	Internals paper	25	13	25

CIE	Internal Assessment Test		IAT 2	50	Internals paper			
						Total CIE Review	25	50
SEE		Exam	100		Question Paper	100	40	100
						CIE+SEE	100	200

Note: The Minimum Marks to be secured in CIE to appear for SEE shall be 25 (50% of Maximum marks – 50). The Minimum Marks to be secured in SEE shall be 20 (40% of Maximum marks – 50). The design activities will be assessed through only CIE. The passing percentage shall not be less than the 50% in aggregate for a course (i.e. CIE and SEE (put together). Based on the marks scored in CIE+SEE grading will be awarded for this course.

CIE- Continuous Internal Evaluation (50 Marks)

Bloom's Category	Continuous Assessment Tests		Theory
	Test-1 (50 marks)	Test-2 (50 marks)	Alternative Assessment Tool (AAT)
			50 Marks
Remember			
Understand	15	15	
Apply	15	15	
Analyse	20	20	
Evaluate	-	-	30
Create	-	-	20

CIE Internal Assessment Test Plan

CO's	Marks Distribution					Total Marks	Weightage
	Test-1			Test-2			
	Module-1	Module-2	Module-3	Module-4	Module-5		
CO1	5	5	5	5	5	25	25%
CO2	5	5	5	5		20	20%
CO3		10	10	10	10	30	30%
CO4	5				10	15	15%
Total	15	20	20	20	25	100	100%

SEE- Semester End Examination (50 Marks)

Bloom's Category	SEE Marks (100% Theory)
Remember	20%
Understand	20%
Apply	20%
Analyse	20%
Evaluate	20%
Create	-

SEE Course Plan

CO's	Marks Distribution					Total Marks	Weightage
	Module-1	Module-2	Module-3	Module-4	Module-5		
CO1	5	5	5	5	5	25	25%
CO2	5	5	5	5	5	25	25%
CO3	10	5	5	5	5	30	30%
CO4		5	5	5	5	20	20%
CO5							

Course Contents and Lecture Schedule

Module No.	Topics	No. of Lecture Hrs.
1	Classical Greek Architecture 1	4
1	Greek architecture Typologies	4
2	Introduction to Roman Architecture	4
2	Roman architecture Typologies 1	4
3	Roman architecture Typologies 2	5
3	Roman architecture Typologies 3	5
4	Early Christian	4
4	Byzantine	4
5	Medieval	4
5	Gothic	4
	Total	42 Hrs



Dayananda Sagar Academy of Technology & Management

(Autonomous Institute under VTU)

Semester	:	4 th			
Course Title	:	BUILDING SERVICES II (ELECTRICAL & ILLUMINATION)			
Course Code	:	23ARC44			
Course Type	:	Theory			
Category	:	BSAE (Building Science & Applied Engineering Courses)			
Stream	:	Architecture			
Total Hours/week (L:T:P:S)		3:0:0:0		CIE	: 50 Marks
Total Hours/semester	:	42 Hrs.		SEE (Theory)	: 50 Marks
Credits	:	03		SEE Duration	: 3 Hrs.

Course Learning Objectives: Students will be able to:

Sl. No	Course Objectives
1	To introduce students to electrical services and illumination and to sensitize them with respect to their integration into Architectural Design
2	To introduce students to the green building councils of India and codes (BEE, GRIHA, IGBC).
3	To sensitize students about the energy consumption and carbon emissions of different electrical equipment, technologies and lighting.
4	To address energy requirements in different socio-economic sections of the society. Introduction and study of renewable energy systems.

Teaching-Learning Process

Pedagogical Initiatives:

Some sample strategies to accelerate the attainment of various course outcomes are listed below:

1. Lecture method (L) does not mean only the traditional lecture method, but a different type of teaching method may be adopted to develop the outcomes.
2. Show Video/animation films to explain the infrastructures and the mechanism involved in the principle.
3. Encourage collaborative (Group) Learning in the class.
4. Ask at least three HOT (Higher-order Thinking) questions in the class, which promotes critical thinking.
5. Adopt Problem Based Learning (PBL), which fosters students' Analytical skills, develop thinking skills such as the ability to evaluate, generalize, and analyze information rather than simply recall it.
6. Topics will be introduced in multiple representations.
7. Show the different ways to solve the same problem and encourage the students to come up with their own creative ways to solve them.
8. Discuss how every concept can be applied to the real world - and when that's possible, it helps improve the students' understanding.
9. Individual teachers can devise innovative pedagogy to improve teaching-learning.



Scheme of Teaching and Examinations for BE Programme -2024-25
Outcome Based Education and Choice Based Credit System (CBCS)
(Effective from the Academic Year 2024-25)

DSATM

COURSE CURRICULUM

Module No.	Topics	Hours
1	<p>Electricity Generation; Transmission and Distribution:</p> <p>7. Introduction to Electrical Services: Introduction to commonly used terminology – Voltage, Current, Power, Connected Load, Max. Demand, Load Factors, Diversity Factor Etc.; Importance of Electrical Services and Its implications on building design; Introduction to Codes and Standards like National Building Code, National Electric Code (including Renewable/Clean energy/ Green Building codes), IS Codes, State Electricity Board and Chief Electrical Inspectorate Guidelines</p> <p>8. Supply and distribution of electricity to buildings: Brief introduction to various Sources for Electricity generation. Introduction to Transmission and Distribution system (from generation to Building’s main). Working principles of Sub-Station & Transformers.</p>	6
Pedagogy	<p>1) The teacher can use PPTs, Videos to discuss Electrical services in a building. 2) The site visit to an electrical substation. 3) Quizzes, models, seminars from students can be encouraged.</p>	
2	<p>Internal Electrical distribution systems and Renewable Energy Systems:</p> <p>1. Residential & Commercial Building internal electrical distribution system: Power Requirement, RMU, HT & LT Metering Panels & Sub Metering Panels, Generators, UPS requirements, Wiring Systems, Wiring Installation systems, distribution systems in high rise buildings (Activity 1 and 2)</p> <p>2. Introduction to Renewable Energy Systems (On-Site and Off-Site): Understanding the primary importance of thermal load reduction (i.e. reducing artificial cooling and heating energy needs in buildings) as a prerequisite for Net Zero Energy Building Design. Solar, Wind, Bio-Mass, Achieving Net Zero Building Design through utilization of above natural resources & Energy Conservation techniques. (Activity 3). Green Power Generation and minimizing ecological imbalance through sustainable green technologies for the safety of people.</p>	10
Pedagogy	<p>1) The teacher can use PPTs, Videos to discuss Electrical services in a building. 2) The students need to draw an electrical layout of a building with details. 3) Quizzes, models, seminars from students can be encouraged.</p>	
3	<p>Protection Systems:</p> <p>3. Switchgear & Protection Devices – Fuses, Breakers: Miniature Circuit Breakers; Earth Leakage Circuit Breakers; Moulded Case Circuit Breakers & Air Circuit Breakers and Protection Relays.</p> <p>4. Earthing & Lightning Protection System: Definition, Purpose; Types of Earthing Systems, Factors affecting selection and system specification - Type of Soil, water table, soil resistivity etc. Brief about new advances in earthing systems; Lightning system design - Factors affecting the system specification, basic rules as per NBC and other relevant codes</p>	8
Pedagogy	<p>1) The teacher can use PPTs, Videos to discuss Electrical systems in buildings. 2) The students to sketch the protection systems employed in a building.</p>	

	3) Quizzes, models, seminars from students can be encouraged.	
4	<p>Illumination:</p> <p>5. Fundamentals: Quality & Quantity of Lighting; Recommended Lux Levels; Type of Lamps – Incandescent, Discharge Lamps, Fluorescent, CFL, LED and OLED. Integration of Day lighting with Artificial Lighting, Control Systems, Laws of illumination, high energy and low energy (sustainable) lighting.</p> <p>6. Techniques, Principles and Applications: Lighting Methods - Ambient, Task & Accent lighting; Systems of Luminaires - Up-Lighting, Down-Lighting, Spot Lighting etc.; Street Lighting, Façade Lighting, Landscape Lighting, Architectural Typologies; Preparation of Lighting Layout. (Activity 4)</p> <p>7. Introduction to lighting design software. (Activity 5)</p>	10
Pedagogy	<p>1) The teacher can use PPTs, Videos to discuss Illumination services in buildings.</p> <p>2) The students to sketch the illumination systems employed in a building, Quizzes, Market Surveys, seminars from students can be encouraged.</p> <p>3) Softwares could be used to make students understand the current applications.</p>	
5	<p>Extra Low Voltage Systems and Load Estimation:</p> <p>8. Extra Low Voltage systems: Telephone; Data & Cable TV Networking; Service provider requirements; Point matrix for Individual residential / Apartment.</p> <p>9. Electrical Layout Design and Load Estimation: Residential Electrical Layout Design (using symbols as per IS codes), Compliance to local building codes; and Electrical Load Calculations. (Activity 6)</p>	8
Pedagogy	<p>Case studies: Typical Layouts & Layout Generation for Lighting, Transformers Yards, Generator Rooms, Lighting layouts for shops/clinic.</p> <p>Site Visits: Sub-Stations, Transformer Yards, Generator Yards and Panel Rooms etc. of Multi- storied Residential Buildings/Campus, Hotels, Hospital & IT Buildings etc.</p>	
	<p>Pedagogical Initiatives (Not limited to):</p> <p>1. Think Pair and Share (Blended Learning): provides an opportunity for students to learn from one another.</p> <p>2. Problem Solving: encourages cognitive thinking and enables creative problem solving.</p> <p>3. Poster Presentation: allows students to represent the concepts visually in order to understand the topics easily.</p> <p>4. Case studies: maps different domains in real time applications.</p> <p>5. Demonstration: exhibits the implementation process.</p>	

List of Activities:

Sl. No.	Activities	COs
1	Case study on distribution of electricity from grid to individual flats in a high-rise residential building.	CO1 & CO3
2	Case study on electricity distribution in a Sub station	CO1 & CO3
3	Presentation on analysis of Literature study of different NZEBs.	CO1 & CO3
4	Market Survey on different types of lamps & Luminaires and analysis on where they should be used.	CO1, CO2 & CO3
5	Generation of lighting design with required artificial and day light integration with specified opening within a space given.	CO3, CO4 & CO5

6	Design an electrical layout for a 2-bed room residential house with load estimation of the electricity per month.	CO4 & Co5
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Text Books	
Sl. No.	Title of the Book/Name of the author/Name of the publisher/Edition and Year
1	L.Uppal ; Electrical Wiring, Estimating & Costing.
2	Fundamentals of Lighting by Susan M. Winchip.
Reference Books	
1	Anwari ; Basic Electrical Engineering.
2	National electric Code, Indian Electricity Rules 1956, Energy Conservation and Building Code.
3	National Building Code, 2016 – Part 8 (Section 1, 2, 6).
4	Code of Practice for Interior Illumination (IS 3646-1 (1992); Indian Standard - BIS.

Weblinks and Video Lectures (e-Resources)	
1	https://ndl.iitkgp.ac.in
2	https://www.youtube.com/watch?v=8DEap6exAB0
3	https://www.youtube.com/watch?v=qY_VzvksNa8
4	https://www.youtube.com/watch?v=ofWq03WPek0
5	https://www.youtube.com/watch?v=lebfvdLVvM
6	https://www.youtube.com/watch?v=5cr71HISw6k

Course Outcomes: At the end of the course, the student will be able to:

CO	Course Outcomes	RBT Level	RBT Level Indicator
CO1	Understand and remember the terminology, Codes, Standards, Laws, equipments, devices, accessories used in different stages from generation till distribution of electrical Power supply and Illumination services for functions in buildings through various resources.	Remember & understand	L1 & L2
CO2	Apply different conservation techniques for achieving the optimum usage of electrical services and also looking at the safety measures through conventional, non-conventional and sustainable methods	Apply	L3
CO3	Analyse the best electrical accessories, installation systems and integration methods to be used for various functions in a building for ensuring the optimum usage.	Analyse	L4
CO4	Evaluate the required electrical load for a specified function of a layout.	Evaluate	L5
CO5	Design an electrical/lighting layout for any specified spaces through following the standards and codes.	Design	L6

Mapping of Course Outcomes to Program Outcomes:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1															
CO2	3														
CO3						1	2			1				2	2
CO4			2	3		3									
CO5									2						

Assessment Pattern (both CIE and SEE)

3 Credit Course – BSAE								
Assessment Method	Component	Type of Assessment	Assessment Type used	Max. Marks	Evaluation Details	Reduced Marks	Min. Marks	Total
CIE	IA exams	IAT 1	Internal Assessment exams	50	(50+50)/2	20	10	20
		IAT 2		50				
	Total CIE (IAT)						10	20
	Continuous Comprehensive Assessment (CCA)	CCA 1	CCA-1- (site visits, market surveys, seminars, group presentations)	50	(50+50)/2	15	7.5	15
CCA 2		CCA-2- Electrical Dwg. And load calculation		50		15	7.5	15
Total CIE Practical / Activities						15	30	
TOTAL CIE						25	50	
SEE	SEE Exam will be Theory exam			100	SEE Exam will be Theory exam	50	20	50
CIE+SEE						50	100	

NOTE: The Minimum Marks to be secured in CIE to appear for SEE shall be 25 (50% of Maximum marks – 50). The Minimum Marks to be secured in SEE shall be 20 (40% of Maximum marks – 50). The design activities will be assessed through only CIE. The passing percentage shall not be less than the 50% in aggregate for a course (i.e. CIE and SEE (put together). Based on the marks scored in CIE+SEE grading will be awarded for this course.

CIE- Continuous Internal Evaluation (50 Marks)

Bloom's Category	IA Theory	Practical
	20 Marks	30 Marks
Remember	IA 1 & 2	
Understand	IA 1 & 2	
Apply	IA 1 & 2	
Analyse		Market survey
Evaluate		Case study
Create		Electrical drawings and activities

CIE Internal Assessment Test Plan

CO's	Marks Distribution					Total Marks	Weightage
	Test-1			Test-2			
	Module-1	Module-2	Module-3	Module-4	Module-5		
CO1	5	5	-	-	-	10	20%
CO2	5	5	5	-	5	20	40%
CO3	-	-	5	5	5	15	30%
CO4	-	-	-	5	-	5	10%
CO5	-	-	-	-	-	-	-
Total	10	10	10	10	10	50	100%

SEE- Semester End Examination (50 Marks)

Bloom's Category	SEE Marks (Theory exam of 100 marks to reduce to 50)
Remember	20%
Understand	20%
Apply	20%
Analyze	20%
Evaluate	-
Create	-

SEE Course Plan

CO's	Marks Distribution					Total Marks	Weightage
	Module-1	Module-2	Module-3	Module-4	Module-5		
CO1	10	10	10	10	-	40	60%
CO2	10	10	10	10	-	40	20%
CO3	-	-	-	10	10	20	20%
CO4	-	-	-	-	-		
CO5	-	-	-	-	-		
Total	20	20	20	30	10	100	100%

Course Contents and Lecture Schedule

Module No.	Topics	No. of Lecture hrs.
1	Electricity	2
1	Generation, Transmission and Distribution	4
2	Internal Electrical distribution systems	4
2	Renewable Energy Systems	6
3	Protection Systems Fuses & MCB's	4
3	Earthing & Lightning systems	4
4	Illumination, Lamps and their types	4
4	Artificial and natural light integration and lighting design principles	4
5	Extra Low Voltage Systems	2
5	Electrical Drawing and load calculation	6
	Total	42 Hrs.



Dayananda Sagar Academy of Technology & Management
(Autonomous Institute under VTU)

Semester	:	4th			
Course Title	:	BUILDING STRUCTURE III			
Course Code	:	23ENG45			
Course Type	:	Studio			
Category	:	BSAE (Building Science & Applied Engineering Courses)			
Stream	:	Civil/Architecture			
Total Hours/week (L:T:P:S)	:	1:0:0:2	CIE	:	50 Marks
Total Hours/semester	:	42 Hrs.	SEE (Viva Voce)	:	50 Marks
Credits	:	03	SEE Duration	:	-

Course Learning Objectives: Students will be able to:

Sl. No	Course Objectives
1	Introduction to Mechanics & Materials in building construction.

Teaching-Learning Process

Pedagogical Initiatives:

These are sample Strategies; which teachers can use to accelerate the attainment of the various course outcomes.

1. Lecture method (L) does not mean only the traditional lecture method, but a different type of teaching method may be adopted to develop the outcomes.
2. Show Video/animation films to explain the infrastructures and the mechanism involved in the principle.
3. Encourage collaborative (Group) Learning in the class.
4. Ask at least three HOT (Higher-order Thinking) questions in the class, which promotes critical thinking.
5. Adopt Problem Based Learning (PBL), which fosters students' Analytical skills, develop thinking skills such as the ability to evaluate, generalize, and analyse information rather than simply recall it.
6. Topics will be introduced in multiple representations.
7. Show the different ways to solve the same problem and encourage the students to come up with their own creative ways to solve them.
8. Discuss how every concept can be applied to the real world - and when that's possible, it helps improve the students' understanding.
9. Individual teachers can device innovative pedagogy to improve teaching-learning.



DSATM

Scheme of Teaching and Examinations for BE Programme -2024-25
Outcome Based Education and Choice Based Credit System (CBCS)
(Effective from the Academic Year 2024-25)

COURSE SYLLABUS

Module No.	Contents of the Module	Hours
1	1) Introduction to Reinforced Cement Concrete. 2) Properties of materials - with emphasis on cement, fine aggregates, coarse aggregates, admixtures.	6
Pedagogy	1) The teacher can use PPTs, Videos to discuss Reinforced Cement Concrete and its application in buildings. 2) The students need to visit sites and Concrete lab to understand the properties of RCC mix design. 3) Quizzes, models, seminars from students can be encouraged.	
2	3) Mechanics of Reinforced Cement Concrete 4) Loads on the structure as per IS 875 5) Concrete structural system design	6
Pedagogy	1) The teacher can use PPTs, Videos to discuss mechanics of Reinforced Cement Concrete. 2) The students need to visit sites and Concrete lab to understand the properties of RCC mix design. 3) Quizzes, models, seminars from students can be encouraged.	
3	6) Design of one-way slab - as per IS 456[using the BM coefficients given in IS 456] 7) Design of singly reinforced beam as per IS 456 (using the BM & SF coefficient given in IS 456).	10
Pedagogy	1) The teacher can use PPTs, Videos to discuss application of Reinforced Cement Concrete for slabs and Beams. 2) The students to design slabs and Beams in class using IS 456 codes 3) Quizzes, models, seminars from students can be encouraged.	
4	8) Design of Tee beam as per IS 456 - using limit state philosophy. 9) Design of staircase as per IS 456 - using limit state philosophy.	10
Pedagogy	1) The teacher can use PPTs, Videos to discuss application of Reinforced Cement Concrete for slabs and Beams. 2) The students to design Tee Beams and staircases in class using IS 456 codes 3) Quizzes, models, seminars from students can be encouraged.	
5	10) Design of Axially loaded short columns. 11) Design of isolated column footing. 12) Data given drawing for different cases viz. a. Doubly reinforced beam b. Two-way slab - for at least 2 cases c. Staircase detailing (dog legged staircase)	10
Pedagogy	1) The teacher can use PPTs, Videos to discuss application of Reinforced Cement Concrete for slabs and Beams. 2) The students to design Tee Beams and staircases in class using IS 456 codes 3) Quizzes, models, seminars from students can be encouraged.	
	Pedagogical Initiatives (Not limited to): Think Pair and Share (Blended Learning): provides an opportunity for students to learn from one another Problem Solving: encourages cognitive thinking and enables creative problem solving	

Poster Presentation: allows students to represent the concepts visually in order to understand the topics easily.

Case studies: maps different domains in real time applications

Demonstration: exhibits the implementation process

Text Books

Sl. No.	Title of the Book/Name of the author/Name of the publisher/Edition and Year
1	B.S.Basavarajai& P. Mahadevappa, "Strength of Materials", Universities Press, 3rd editng 2010.
2	Dr. S. Ramamrutham & R. Narayan "Strength of Materials", DhanpatRai Publ., 8th edi. 2014.

Reference Books

1	William A. Nash, "Strength of Materials", McGraw-Hill Education; 6th edition, 2013.
2	R.K.Bansal, "Strength of Materials", Laxmi Publications; 6th edition (2017).
3	R.S.Khurmi& N. Khurmi, " Strength of Materials", S Chand Pub., revised edition 2006

Course Outcomes: At the end of the course, the student will be able to:

CO	Course Outcomes	RBT Level	RBT Level Indicator
CO1	Remember and understand the fundamental principles of reinforced cement concrete (RCC) and its advantages over other construction materials.	L1, L2	Remember and understand
CO2	Apply the principles of mechanics to RCC structures to calculate loads on structures including axial loads and design isolated column	L3	Apply
CO3	Analyze concrete structural systems and the data given in drawings for different RCC structures, including singly reinforced beam, doubly reinforced beam, one-way slab, two-way slab, dog-legged staircase.	L4	Analyze
CO4	Evaluate different design options for RCC structures, including one-way continuous slab, singly reinforced continuous beam, tee beam, staircase, and isolated column footings, based on their effectiveness, efficiency, and compliance with IS 456 standards.	L5	Evaluate
CO5	Design RCC structures that comply with IS 456 standards, including one-way continuous slab, singly reinforced continuous beam, tee	L6	Design

Mapping of Course Outcomes to Program Outcomes:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1															
CO2	3					3									
CO3		2													1
CO4				2					2						
CO5			3							3			3		

Web links and Video Lectures (e-Resources)

1	https://ndl.iitkgp.ac.in
2	https://www.youtube.com/watch?v=arr_xwk-JsM
3	https://www.youtube.com/watch?v=WWkv4D2LHtk

Assessment Pattern (both CIE and SEE)

3 Credit Course								
Assessment Method	Component	Type of Assessment	Syllabus covered	Max. Marks	Evaluation Details	Reduced Marks	Min. Marks	Total
CIE	AAT	Portfolio	All Modules	50	All sheets carry equal marks	25	12.5	25
		Group Presentation		10	As per the research Topics allotted.	5	2.5	5
		Models		10	Different Materials to be used	5	2.5	5
		Quiz		10	Group and individual quiz	5	2.5	5
		Mock review		20	Portfolio based	10	5	10
Total CIE marks							25	50
SEE				100	SEE Exam is VIVA VOCE Exam, conducted for 100 Marks	50	20	50
CIE+SEE							50+50	100

Note: The minimum passing mark for the CIE is 50% of the maximum marks (50 marks). A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each subject/ course if the student secures not less than 40% (40 Marks out of 100) in the semester-end examination(SEE), and a minimum of 50% (50 marks out of 100) in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.

CIE Course Assessment Plan

CO's	Marks Distribution					Total Marks	Weightage
	Progressive marking						
	Portfolio (A)	Group Presentation (B)	POP Models (C)	Quiz (D)	Mock review (E)		
CO1	6	-	-	2	2	10	20%
CO2	4	-	-	3	2	9	18%
CO3	4	5	-	-	2	11	22%
CO4	6	-	2	-	2	10	20%
CO5	5	-	3	-	2	10	20%
Total	25	5	5	5	10	50 Marks	100%

CIE- Continuous Internal Evaluation (50 Marks)

Bloom's Category	Studio					Grand Total (A+B+C+D+E)
	Portfolio (A)	Group Presentation (B)	POP Models (C)	Quiz (D)	Mock review (E)	
	25 Marks	5 Marks	5 Marks	5 Marks	10 Marks	
Remember & Understand	6	-	-	2	2	10
Apply	4	-	-	3	2	9
Analyse	4	5	-	-	2	11

Evaluate	6	-	2	-	2	10
Create	5	-	3	-	2	10
Total	25	5	5	5	10	50 Marks

SEE- Semester End Examination (VIVA VOCE)

Bloom's Category	SEE Marks
Remember	20
Understand	20
Apply	20
Analyse	20
Evaluate	20
Create	-

Course Contents and Lecture Schedule

Module No.	Topics	No. of Lecture Hrs.
1	Introduction to Reinforced Cement Concrete	03
1	Properties of materials	03
1	Mechanics of Reinforced Cement Concrete	03
2	Loads on the structure as per IS 875	03
2	Concrete structural system design	03
2	Numerical problems on calculation	04
3	Design of one-way slab	03
3	Design of singly reinforced beam	03
3	Design of Tee beam as per IS 456	03
4	Design of staircase as per IS 456	04
4	Design of Axially loaded short columns.	04
5	Design of isolated column footing.	03
5	Data given drawing for different cases	03
Total		42 Hrs



Dayananda Sagar Academy of Technology & Management (Autonomous Institute under VTU)

Semester	:	4th			
Course Title	:	CONSTITUTION OF INDIA & PROFESSIONAL ETHICS			
Course Code	:	23CIP46			
Course Type	:	Theory			
Category	:	HSMC (Humanity Sciences and Management Courses)			
Stream	:	Humanities			
Total Hours/week (L:T:P:S)	:	1:1:0:0	CIE	:	50 Marks
Total Hours/semester	:	26	SEE	:	-
Credits	:	01	SEE Duration	:	-

Course Learning Objectives: Students will be taught

Sl.No	Course Objectives
1	To know the fundamental political structure & codes, procedures, powers, and duties of Indian government institutions, fundamental rights, directive principles, and the duties of citizens.
2	To understand engineering ethics and their responsibilities, identify their individual roles and ethical responsibilities towards society.

Teaching-Learning Process

Pedagogy (General Instructions):

These are sample Strategies; which teachers can use to accelerate the attainment of the various course outcomes.

Teachers shall adopt suitable pedagogy for effective teaching - learning process. The pedagogy shall involve the combination of different methodologies which suit modern technological tools and software's to meet the present requirements of the Global employment market.

- (i) Direct instructional method (Low /Old Technology),
- (ii) Flipped classrooms (High/advanced Technological tools),
- (iii) Blended learning (combination of both),
- (iv) Enquiry and evaluation-based learning,
- (v) Personalized learning,
- (vi) Problems based learning through discussion,
- (vii) Following the method of expeditionary learning Tools and techniques,

1. Apart from conventional lecture methods, various types of innovative teaching techniques through videos,

animation films may be adapted so that the delivered lesson can enhance the students in theoretical applied and

practical skills in teaching of 21CIP39/49 in general.



Scheme of Teaching and Examinations for BE Programme -2023-24
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COURSE SYLLABUS

Module No.	Contents of the Module	Hours
1	Introduction to Indian Constitution: Definition of Constitution, Necessity of the Constitution, Societies before and after the Constitution adoption. Introduction to the Indian constitution, Making of the constitution, Role of the Constituent Assembly. Preamble of Indian Constitution & Key concepts of the Preamble. Salient features of India Constitution.	5
Pedagogy	Chalk and talk method, Videos, Power Point presentation to teach. Creating real time stations in classroom discussions, giving activities and assignments (Connecting Campus & community with administration real time situations).	
2	Fundamental Rights (FR's), Directive Principles of State Policy (DPSP's) and Fundamental Duties (FD's): Fundamental Rights and its Restriction and limitations in different Complex Situations. DPSP's and its present relevance in Indian society. Fundamental Duties and its Scope and significance in Nation building.	5
Pedagogy	Chalk and talk method, Videos, Power Point presentation to teach. Creating real time stations in classroom discussions, giving activities and assignments (Connecting Campus & community with administration real time situations).	
3	Union Executive: Parliamentary System, Union Executive – President, Prime Minister, Union Cabinet, Parliament - LS and RS, Parliamentary Committees, Important Parliamentary Terminologies. Supreme Court of India, Judicial Reviews and Judicial Activism.	5
Pedagogy	Chalk and talk method, Videos, Power Point presentation to teach. Creating real time stations in classroom discussions, giving activities and assignments (Connecting Campus & community with administration real time situations).	
4	State Executive & Elections, Amendments and Emergency Provisions: State Executive, Election Commission, Elections & Electoral Process. Amendment to Constitution (Why and How) and Important Constitutional Amendments till today. Emergency Provisions.	5
Pedagogy	Chalk and talk method, Videos, Power Point presentation to teach. Creating real time stations in classroom discussions, giving activities and assignments (Connecting Campus & community with administration real time situations).	
5	Professional Ethics: Definition of Ethics & Values. Professional & Engineering Ethics. Positive and Negative aspects of Engineering Ethics. Clash of Ethics, Conflicts of Interest. The impediments to Responsibility. Professional Risks, Professional Safety and liability in Engineering. Trust & Reliability in Engineering, Intellectual Property Rights (IPR's).	6
Pedagogy	Chalk and talk method, Videos, Power Point presentation to teach. Creating real time stations in classroom discussions, giving activities and assignments (Connecting Campus & community with administration real time situations).	

Reference Books**Books (Title of the Book/Name of the author/Name of the publisher/Edition and Year)**

1	"Constitution of India & Professional Ethics" Published by Prasaranga or published on VTU website with the consent of the university authorities VTU Belagavi.
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Course Outcomes: At the end of the course, the student will be able to:

CO	Course Outcomes	RBT Level	Level Indicator
CO1	To remember and understand the fundamental political structure & codes, procedures, powers and duties of Indian government institutions, Fundamental Rights, Directive principles and the duties of citizens. To understand Architectural ethics and responsibilities, Identify their individual roles and ethical responsibilities towards society.	Remember & understand	1&2

Mapping of Course Outcomes to Program Outcomes:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	-	-	-	-	-	3	-	2	-	2	-	-		
CO2	-	-	-	-	-	-	-	-	-	-	-	-		
CO3	-	-	-	-	-	-	-	-	-	-	-	-		
CO4	-	-	-	-	-	-	-	-	-	-	-	-		

Weblinks and Video Lectures (e-Resources)

1	https://www.youtube.com/watch?v=sDstf8ockUo
2	https://www.youtube.com/watch?v=vq2Q1_v6TNU
3	https://www.youtube.com/watch?v=F3vdNGFG0LI&list=PLG_pOUNcDW47N8PwD380xECTQtG3hTzJu
4	https://www.youtube.com/watch?v=uH8GqBB-rLQ
5	https://www.youtube.com/watch?v=3PsH0-mfWzQ

Assessment Pattern (CIE)

1 Credit Course								
Assessment Method	Component	Type of Assessment	Assessment Type used	Max. Marks	Evaluation Details	Reduced Marks	Min. Marks	Total
CIE	AAT	Assignment 1		20	Presentation	20	10	20
		Assignment 2		20	Group presentation	20	10	20
		Quiz		10	Group/Individual Quiz	10	5	10
Total CIE Theory							25	50

Note: The weightage of Continuous Internal Evaluation (CIE) is 100% and the minimum passing mark for the CIE is 50% of the maximum marks (50 marks).

CIE Course Assessment Plan

CO's	Marks Distribution					Total Marks	Weightage
	Module-1	Module-2	Module-3	Module-4	Module-5		
CO1	10	10	10	10	10	50	100%

Course Contents and Lecture Schedule

Module No.	Topics	No. of Lecture Hrs.
1	Introduction to Indian Constitution: Definition of Constitution, Necessity of the Constitution, Societies before and after the Constitution adoption..	02
1	Introduction to the Indian constitution, Making of the constitution, Role of the Constituent Assembly.	01
1	Preamble of Indian Constitution & Key concepts of the Preamble. Salient features of India Constitution.	02
2	Fundamental Rights (FR's), Directive Principles of State Policy (DPSP's) and Fundamental Duties (FD's):	01
2	Fundamental Rights and its Restriction and limitations in different Complex Situations.	02
2	DPSP's and its present relevance in Indian society. Fundamental Duties and its Scope and significance in Nation building.	02
3	Union Executive: Parliamentary System, Union Executive – President, Prime Minister, Union Cabinet,	02
3	Parliament - LS and RS, Parliamentary Committees, Important Parliamentary Terminologies.	02
3	Supreme Court of India, Judicial Reviews and Judicial Activism.	01
4	State Executive & Elections, Amendments and Emergency Provisions	02
4	State Executive, Election Commission, Elections & Electoral Process.	01
4	Amendment to Constitution (Why and How) and Important Constitutional Amendments till today. Emergency Provisions.	02
5	Professional Ethics: Definition of Ethics & Values. Professional & Engineering Ethics. Positive and Negative aspects of Engineering Ethics. Clash of Ethics, Conflicts of Interest.	02
5	The impediments to Responsibility. Professional Risks, Professional Safety and liability in Engineering.	02
5	Trust & Reliability in Engineering, Intellectual Property Rights (IPR's).	02
Total		26 Hrs



Dayananda Sagar Academy of Technology & Management (Autonomous Institute under VTU)

Semester	:	4th			
Course Title	:	ADAVANCE COMPUTER APPLICATIONS IN ARCHITECTURE			
Course Code	:	23ARC47			
Course Type	:	Practical			
Category	:	SEC (Skill Enhancement Course)			
Stream	:	Architecture			
Total Hours/week (L:T:P:S)		0:0:4:0	CIE	:	100 Marks
Total Hours/semester	:	55	SEE	:	--
Credits	:	04	SEE Duration	:	--

Course Learning Objectives: Students will be able to:

SI. No	Course Objectives
1	utilize advanced 3D modelling software (such as REVIT & Rhino) to create detailed architectural models, demonstrating proficiency in using online resources, blogs, and tutorials for continuous learning.
2	deconstruct complex NURBS modelling concepts, including curves, surfaces, curve/surface editing, and solid modelling, and apply these techniques to create intricate architectural designs.
3	develop 3D models of complex objects and effectively convert these models into 2D drawings (plan, section, elevation) using appropriate CAD software, demonstrating an understanding of file conversions and interdependencies between software.
4	assess the significance of BIM adoption and develop comprehensive BIM strategies for architectural projects, utilizing Autodesk REVIT for essential architectural modelling and information development.
5	produce photo-realistic renderings and animations using 3D rendering engines (such as enscape), and present their architectural designs professionally using graphics/vector/image editing software and publishing tools.

Teaching-Learning Process

Pedagogical Initiatives:

Some sample strategies to accelerate the attainment of various course outcomes are listed below:

1. Implement regular hands-on workshops and interactive tutorials focusing on specific software features and modeling techniques.
2. Assign real-world architectural projects that require the application of NURBS modeling, BIM strategies, and 3D visualization.
3. Facilitate peer review sessions where students present their work and receive constructive feedback.
4. Encourage the use of online resources, forums, and communities related to 3D modeling and BIM software.
5. Incorporate AI tools and advanced rendering techniques into regular assignments.
6. Guide students in creating professional portfolios that showcase their 3D modeling, BIM, and rendering skills.



Scheme of Teaching and Examinations for B.Arch Programme -2024-25
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(Effective from the Academic Year 2024-25)

DSATM

COURSE SYLLABUS

Module No.	Topics	Hours
1	Introduction to advanced popular 3D modelling and BIM software's e.g. REVIT Rhinoceros and other appropriate software. Introduction to online resources, blogs, tutorials. Concepts of NURBS modelling :(curves and surfaces), curve / surface editing, solid modelling, layer management, etc.	10
Pedagogy	<ul style="list-style-type: none"> Interactive Software Demos Hands-on NURBS Modelling Workshop 	
2	<ul style="list-style-type: none"> Classroom exercise to demonstrate 3D modelling of transformed/modified/complex 3D objects: for e.g. Twisted tower, deformed cube, sliced cylinder. Introduction to file conversions and interdependencies between 3D modelling software and 2D drafting software, e.g. Rhinoceros to AutoCAD, or any other relevant CAD software. Conversion of 3D model (of transformed/modified objects) to 2D drawings (e.g. plan, section, elevation) Conversion of Architecture/interior design project into NURBS modelling project: For e.g. measured drawing of classroom, Architecture School, computer room etc. 	13
Pedagogy	<ul style="list-style-type: none"> Transformative 3D Modelling Exercise NURBS-Based Project Conversion 	
3	<ul style="list-style-type: none"> Introduction to BIM and Information Development Strategies: perceive the significance of BIM adoption, comprehensive understanding of BIM strategy Autodesk REVIT ESSENTIALS: Interface, setting up the project, essential architectural modelling 	13
Pedagogy	<ul style="list-style-type: none"> BIM Strategy Case Study Analysis Hands-on REVIT Essentials Workshop 	
4	<ul style="list-style-type: none"> Working on 3D modelling & Visualization software with rendering: such as REVIT and V-Ray, Rhino and V-Ray or any other appropriate software. Techniques of 3D visualizations and AI rendering tools: Introduction to tool settings in 3D rendering engines for photo-realistic rendering. Application of materials and Simple Timeline animations, for e.g. using enscape. Introduction to AI rendering tools like Midjourney and Dall-e 	10
Pedagogy	<ul style="list-style-type: none"> Integrated 3D Modelling and Rendering Project AI Rendering Tools Demonstration and Application 	
5	<ul style="list-style-type: none"> Working on Graphics/Vector/Image editing software: To present Architecture design studio projects Introduction to publishing tools for creating presentations and portfolios. Working with AI tools: To edit and present final work professionally and to give post production touches. 	9
Pedagogy	<ul style="list-style-type: none"> Portfolio Creation Workshop Using Graphics Software AI Tools for Post-Production Enhancement 	

List of Programs:

Sl. No.	Experiments/Programs	COs
1	Advanced 3D Modelling and BIM Software Exploration: Task: Students explore and familiarize themselves with various advanced 3D modelling and BIM software such as REVIT and Rhinoceros. They create basic models and understand their capabilities through guided tutorials and online resources.	CO1
2	NURBS Modelling and Complex Object Creation: Task: Students practice NURBS modelling techniques by creating complex objects like a twisted tower, deformed cube, or sliced cylinder. They learn curve and surface editing, solid modelling, and manage layers effectively.	CO1, CO2
3	Conversion and Integration of 3D to 2D Drawings: Task: Students transform 3D models of modified or complex objects into 2D drawings (plan, section, elevation) using software like Rhinoceros and AutoCAD. They understand file conversions and interdependencies between 3D modelling and drafting software.	CO2, CO3
4	BIM Strategy Development and REVIT Essentials: Task: Students develop a BIM strategy based on case studies of real-world projects, understanding the significance of BIM adoption. They then learn the essentials of Autodesk REVIT, including interface navigation, project setup, and essential architectural modelling.	CO4
5	Professional Visualization and Presentation Skills: Task: Students enhance their visualization and presentation skills using software like enscape. They create photo-realistic renderings, apply materials, and produce simple animations. Additionally, they use graphics/vector/image editing software to prepare professional presentations and portfolios of their architectural designs.	CO5
Open ended Programs		
1	Integrated Architectural Design Studio Project: <ul style="list-style-type: none"> • Conceptualization and Planning • 3D Modelling and BIM Implementation • Conversion and Documentation • BIM Strategy and Implementation • Visualization and Rendering • Presentation and Portfolio Development 	

Books	
Sl. No.	Title of the Book/Name of the author/Name of the publisher/Edition and Year
1	Internet resources, blogs, and learning resources on the web of popular 3D modelling software and NURBS modelling,
2	Vector/Graphics/Image editing software

Course Outcomes: At the end of the course, the student will be able to:

CO	Course Outcomes	RBT Level	RBT Level Indicator
CO1	Understand key concepts and terminologies of advanced 3D modelling and BIM software, and explain their applications in architectural design.	R,U	L1,L2
CO2	Apply NURBS modelling techniques, including curve and surface editing, to create detailed and complex architectural models.	A	L3
CO3	Analysing , the interdependencies and conversion processes between 3D modelling software (e.g., Rhinoceros) and 2D drafting software (e.g., AutoCAD), effectively converting 3D models into 2D drawings.	An	L4
CO4	Evaluate the significance of BIM adoption in architectural projects and develop comprehensive BIM strategies using Autodesk REVIT.	E	L5
CO5	Create high-quality visualizations and presentations of architectural designs using advanced rendering engines (e.g., enscape) and AI tools (e.g., Midjourney, DALL-E), effectively applying materials and animations.	D	L6

Mapping of Course Outcomes to Program Outcomes:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1												3			
CO2	3														
CO3		3													
CO4				3	2										
CO5			3												

PO1. Architectural knowledge; PO2. Problem Analysis; PO3. Design & Development; PO4. Conduct Investigation of Complex Problems; PO5. Modern Tool Usage; PO6. An Architect & Society; PO7. Environment and Sustainability; PO8. Ethics; PO9. Individual and Teamwork; PO10. Communication; PO11. Project Management and Finance; PO12. Life-long Learning

Weblinks and Video Lectures (e-Resources)

1	LEARN RHINO & GRASSHOPPER: (6) Rhino Grasshopper bypiyush - YouTube
2	https://www.youtube.com/watch?v=92VvxRtZ_Tk
3	https://www.youtube.com/watch?v=wY3rezjj9es
4	https://www.youtube.com/watch?v=yEWT_XmqCtQ
5	https://ndl.iitkgp.ac.in

CIE- Continuous Internal Evaluation (100 Marks)

Bloom's Category	Practical				
	Task-01	Task-02	Task-03	Task-04	Task-05
Remember	5	-	-	-	-
Understand	10	10	-	-	-
Apply	-	15	5	-	-
Analyse	-	-	15	-	-
Evaluate	-	-	-	20	-
Create	-	-	-	-	20
Total	15	25	20	20	20

CIE Course Assessment Plan

CO's	Practical						Total Marks	Weightage
	Module-1	Module-2	Module-3	Module-4	Module-5			
	Task-1	Task-2	Task-3	Task-4	Task-5			
CO1	15	10	-	-	-	25	25%	
CO2	-	15	5	-	-	20	20%	
CO3	-	-	15	-	-	15	15%	
CO4	-	-	-	20	-	20	20%	
CO5	-	-	-	-	20	20	20%	
Total	15	25	20	20	20	100	100%	

Course Contents and Lecture Schedule

Module No.	Topics	No. of Lecture Hrs.
1	Introduction to advanced popular 3D modelling and BIM software's	6
1	Concepts of NURBS modelling objects	4
2	Classroom exercise to demonstrate 3D modelling of transformed/ modified/complex 3D	7
2	Conversion of Architecture/interior design project into NURBS modelling project	6
3	Introduction to BIM and Information Development Strategies	6
3	Autodesk REVIT ESSENTIALS	7
4	Working on 3D modelling & Visualisation software with rendering	5
4	Techniques of 3D visualizations and AI rendering tools	5
5	Working on Graphics/Vector/Image editing software	5
5	Working with AI tools	4
Total		55 Hrs



Dayananda Sagar Academy of Technology & Management (Autonomous Institute under VTU)

Semester	:	IV				
Course Title	:	Elective 2 - Product Design				
Course Code	:	23ARC48a				
Course Type	:	Integrated				
Category	:	PEC (Professional Elective Courses)				
Stream	:	Architecture				
Total Hours/week (L:T:P:S)		2:0:0:0		CIE	:	50 Marks
Total Hours/semester	:	28 Hrs.		SEE	:	-
Credits	:	02		SEE Duration	:	-

Course Learning Objectives: Students will be able to:

Sl. No	Course Objectives
1	1) To introduce the students to the discipline of Product Design 2) To develop basic skills required in handling simple product design projects

Teaching-Learning Process

Pedagogical Initiatives:

Some sample strategies to accelerate the attainment of various course outcomes are listed below:

6. Adopt different teaching methods to attain the course outcomes.
7. Include videos to demonstrate various concepts in C.
8. Encourage collaborative (Group) Learning to encourage team building.
9. Ask at least three **HOTS (Higher-order Thinking Skills)** module-wise questions to promote critical thinking.
10. Adopt **Problem-Based Learning (PBL)**, which fosters students' analytical skills, and develops thinking skills such as evaluating, generalizing, and analyzing information rather than simply recalling it.
11. Show different ways to solve a problem and encourage the students to come up with creative and optimal solutions.
12. Discuss various case studies to map with real-world scenarios and improve the understanding.
13. Devise innovative pedagogy to improve **Teaching-Learning Process (TLP)**.
14. Individual teachers can devise innovative pedagogy to improve teaching-learning.



Scheme of Teaching and Examinations for BE Programme -2024-25
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COURSE CURRICULUM

	<p>Preamble: We live in a world of objects. Objects can have meanings, carry associations or be symbols of more abstract ideas. These objects are predominantly functional in nature, some are purely symbolic / decorative in nature and there are a few which combine both the functional with the symbolic and decorative. Great Architecture has demonstrated this fusion of the functional with the symbolic through the ages. Product design, on a smaller scale, seeks to blend the technical with the aesthetic, the utilitarian with the emotional delight; the dialogue between what people need / want vs what people will buy / discard.</p>	
S.N.	Course Outline	Hours
1	<p>1.Product design as a noun: the set of properties of an artifact, consisting of the discrete properties of the form (i.e., the aesthetics of the tangible good and/or service) and the function (i.e., its capabilities) together with the holistic properties of the integrated form and function. 2. Product design as a verb: the process of creating a new product to be sold by a business to its customers. A very broad concept, it is essentially the efficient and effective generation and development of ideas through a process that leads to new products. 3. Product design process: from idea generation to commercialization; concept, development, detail; materiality, technicality, Imageability.</p>	4
2	<p>4. Relationship between Design, Technology and Product. 5. History of product design as a discipline, the various theories of design via study of design practices.</p>	6
3	<p>6. Mode and method of Design Process as applicable to product ideation and development. 7. Materials and manufacturing process and its influence on product ideation and development.</p>	4
4	<p>8.Influence of ergonomics on product ideation and development. 9. Impact of culture i.e. the aesthetics on product ideation and development, the dialogue between people's aspirations and people's needs.</p>	4
5	<p>10. Relationship and difference between craft based and mass manufactured products. 11. Market as a tool for product promotion.</p>	4
6	<p>12. Indian aesthetic sense and its influence on product ideation and development. 13. Influence of product design on other disciplines like automobile styling, furniture, jewellery, toys, systems design, computer interfaces, etc.</p>	6
	Pedagogical Initiatives (Not limited to):	
	<p>15. Short projects along with a time problem will be tackled in the class exploring the influences of design process, and ergonomics on the product ideation and development. 16. The student will also study the product changes that will occur through the choices made of materials, manufacturing process, and marketing techniques. 17. Discussions, video presentations, seminars and case studies will cover all the other topics 18. Activity Based Learning: Study a few houses in Informal settlements. Based on their requirements, design a multipurpose product or spatial resolution that can help informal household dwellers makes their small spaces more multi-functional. (Could be an architectural</p>	

system, furniture, modular low-cost housing, etc.)

Assessment Details (CIE)

(methods of CIE need to be defined topic wise i.e. - Studio/ Class room/Tutorial discussions, Reviews, Time problems, test, Seminar or micro project)

The weightage of Continuous Internal Evaluation (CIE) is 100% and there is no Semester End Exam (SEE). The student has to obtain a minimum of 50% marks in CIE and is conducted for 100 marks, reduced to 50 marks. Based on the CIE marks grading will be awarded.

Continuous Internal Evaluation:

Methods suggested:

1. Studio discussions, Reviews, Time problems, Seminar or micro project, Quiz, report writing etc.
2. The class teacher has to decide the course of learning for the Elective subject, in the beginning only. The teacher has to announce the methods of CIE for the subject in advance in writing.

Semester End Examination:

1. There is no Semester End Exam (SEE) The CIE marks list generated is to be signed by the internal examiners and submitted to examination department as per the procedure through the HOD of the department.

Reference Books

1	Alexander, Christopher, Notes on the Synthesis of Form, Harvard University Press, 1964
2	Morris, R, The fundamentals of product design, AVA Publishing 2009

Course Outcomes: At the end of the course, the student will be able to:

CO	Course Outcomes	RBT Level	RBT Level Indicator
CO1	Remember and understand the fundamental principles, theories in Product design and relationship between user requirements and product design Decisions	L1, L2	Remember and understand
CO2	Apply design principles and methodologies to develop solutions for specific product design challenges	L3	Apply
CO3	Analyze products to evaluate ergonomics, aesthetics & Functional qualities & design approach	L4	Analyze
CO4	Evaluate product design solutions based on specific criteria and user feedback	L5	Evaluate
CO5	Design innovative product prototypes that meet identified user needs and design criteria	L6	Design

Mapping of Course Outcomes to Program Outcomes:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1															
CO2	2					2									
CO3		2		2											
CO4															
CO5			1		2				2	2			2		

Web links and Video Lectures (e-Resources)

1	https://ndl.iitkgp.ac.in
2	https://www.youtube.com/watch?v=KCcvnMb8vNY

CIE Assessment Pattern

Assessment Method	Component	Type of Assessment	Max. Marks	Evaluation Details	Reduced Marks	Min. Passing Marks	Total
CIE	Assignments	Problem identification & Research	20	Product Design Process and final Product Presentation	10	5	10
		Product Design Concept Development	20		10	5	10
		Design & Prototyping	20		10	5	10
		Evaluation & Refinement	20		10	5	10
		Presentation	20		10	5	10
		Total					50

NOTE: The Minimum Marks to be secured in CIE shall be 25 (50% of Maximum Marks – 50).

Course Contents and Lecture Schedule:

Sl No.	Topics	No. of Lecture Hrs.
1	Introduction of product design	4
2	Relationship between Design, Technology and Product	2
2	History of product design as a discipline	4
3	Mode and method of Design	2
3	Materials and manufacturing process	2
4	Influence of ergonomics	2
4	Impact of culture	2
5	Relationship and difference between craft based and mass manufactured products	2
5	Market as a tool for product promotion	2
6	Indian aesthetic sense and its influence on product ideation and development	2
6	Influence of product design on other disciplines	4
Total		28 Hrs



Dayananda Sagar Academy of Technology & Management (Autonomous Institute under VTU)

Semester	:	4th			
Course Title	:	Elective II – Heritage Documentation			
Course Code	:	23ARC48b			
Course Type	:	Integrated			
Category	:	PEC (Professional Elective Courses)			
Stream	:	Architecture			
Total Hours/week (L:T:P:S)		2:0:0:0	CIE	:	50 Marks
Total Hours/semester	:	28 Hrs.	SEE	:	-
Credits	:	02	SEE Duration	:	-

Course Learning Objectives:

Sl.No	Course Objectives
1	To understand the character of heritage buildings space arrangements, openings, materials and its construction methods through a process of measured drawings, photographic and hybrid technology documentation.

Teaching-Learning Process

Pedagogy (General Instructions):

These are sample Strategies; which teachers can use to accelerate the attainment of the various course outcomes.

1. Lecture method (L) does not mean only the traditional lecture method, but a different type of teaching method may be adopted to develop the outcomes.
2. Show Video/animation films to explain the infrastructures and the mechanism involved in the principle.
3. Encourage collaborative (Group) Learning in the class.
4. Ask at least three HOT (Higher-order Thinking) questions in the class, which promotes critical thinking.
5. Adopt Problem Based Learning (PBL), which fosters students' Analytical skills, develop thinking skills such as the ability to evaluate, generalize, and analyze information rather than simply recall it.
6. Topics will be introduced in multiple representations.
7. Show the different ways to solve the same problem and encourage the students to come up with their own creative ways to solve them.
8. Discuss how every concept can be applied to the real world - and when that's possible, it helps improve the students' understanding.
9. Individual teachers can devise innovative pedagogy to improve teaching-learning.



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COURSE SYLLABUS

S.N.	Course Outline	Hours
1	Introduction to Heritage Documentation: 1. Definitions of heritage documentation, conservation and other terms. 2. Identification & Typology of Heritage: Process of identification the heritage through significance, integrity & context. Typology of heritage sites and types of buildings / sites. 3. Methodology of Listing & Grading: Background Research, Field Work, mapping & grading. 4. Conservation in India: History, Agencies & NGOs in Heritage Conservation and Management in India. Charters & Legal Framework.	2
2	Site work – Physical Documentation: 1. Selection of Heritage Sites / Buildings: Listing under the heritage criteria and typology the unprotected or not documented or yet to document sites / buildings. 2. Data Collection: History background, archaeology articles, research papers, old books, maps, photographs etc offsite works of literature study needs to be prepared for the shortlisted heritage sites / buildings. 3. Recording of Measurements: Documentation of heritage sites / buildings with the help of manual and digital measurements to prepare the 2d and 3d documents. Photographs and video recording. 4. Study the Construction Methods & Materials: Recording the Bricks, stone, mortar, stucco, painting used in heritage buildings and their methods of construction. Factors deteriorating Heritage Buildings. 5. Study the Architectural Elements: Documenting through sketches of openings, ornamental and other artistic elements.	8
3	Preparation of Drawings: 1. Developing drawings from the field data – Plans at various levels, Building floor plans, Reflected ceiling plans, roof plans, all elevations, relevant sections. 2. Drawings of details such as openings, ornamental details, joineries.	12
4	Analysis and Report: 3. Preparation of architectural heritage documentation report compiling the data collection and 2d and 3d documents. Analytical report with conservation proposals.	6
Total Hours :		28

List of Activities

Sl.No	Exercises	COs
1	Group Work: Presentation about heritage typologies of protected and unprotected monuments.	CO1, CO2
2	Onsite Group Work: Taking horizontal, vertical measurements, levels & condition mapping.	CO3, CO4
3	Group Work: Literature data collection and photography.	CO2
4	Group Work: Preparation of measured drawings, analysis and reports.	CO3, CO4

Reference Books	
1	Building Craft Lab- DICRC, CEPT University.
2	INTACH & ASI Projects.

Course Outcomes: At the end of the course, the student will be able to:

CO	Course Outcomes	RBT Level	Level Indicator
CO1	Understand the necessity about architectural documentation and heritage values in which importance to conservation activities.	Understand	L1, L2
CO2	Apply the architectural knowledge to work against appropriate methodologies and tools for recording, document and inventorying of heritage structures.	Apply	L3
CO3	Analyse the appropriate methodologies and tools for recording, document and inventorying of heritage structures.	Analyse	L4
CO4	Evaluate and assess the heritage components and apply suitable methodology with reference to given context.	Evaluate	L5
CO5	Create the architectural documentation and condition assessment report about taken heritage structure.	Create	L6

Mapping of Course Outcomes to Program Outcomes:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3													
CO2			2											
CO3				2	1									
CO4									2					2
CO5	3								2					

Assessment Pattern

Assessment Method	Component	Type of Assessment	Assessment Type used	Max. Marks	Evaluation Details	Min. Marks	Total
CIE	Studio Assessment	Continuous Assessment Tool	Group Work	10	4.Presentation about heritage typologies. 5.Selection of heritage site. 6.Date collection about heritage site.	5	10
	Field work	AAT	On Site Group Work	10	7.Measured drawing. 8.Sketches. 9.Condition assessment. 10. Photography. 11. Material & method of construction study.	5	10
	Studio Assessment	Documentation & Report	Group Work	30	12. Preparation of documentation drawings. 13. Preparation of condition assessment report. 14. Preparation of analysis report.	15	30
Total						25	50

Note: this course shall be conducted through an expert in Heritage Documentation. The exercises and assessment system can be devised as per the expert's knowledge and student's capacity of producing application-based outcomes.



Dayananda Sagar Academy of Technology & Management

(Autonomous Institute under VTU)

Semester	:	4th		
Course Title	:	Universal Human Values and Professional Ethics		
Course Code	:	23UH49		
Course Type	:	Integrated		
Category	:	HSMC (Humanity Sciences and Management Courses)		
Stream	:	Architecture		
Total Hours/week (L:T:P:S)		1:0:0:0	CIE	: 50 Marks
Total Hours/semester	:	15 Hrs.	SEE	: -
Credits	:	01	SEE Duration	: -

Course Learning Objectives: Students will be taught

Sl.No	Course Objectives
1	To help the students appreciate the essential complementarity between 'VALUES' and 'SKILLS' to ensure sustained happiness and prosperity which are the core aspirations of all human beings.
2	To facilitate the development of a Holistic perspective among students towards life and profession as well as towards happiness and prosperity based on a correct understanding of the Human reality and the rest of existence. Such a holistic perspective forms the basis of Universal Human Values and movement towards value-based living in a natural way
3	To highlight plausible implications of such a Holistic understanding in terms of ethical human conduct, trustful and mutually fulfilling human behaviour and mutually enriching interaction with Nature. This course is intended to provide a much-needed orientational input in value education to the young enquiring minds.

Teaching-Learning Process

Pedagogy (General Instructions):

These are sample Strategies; which teachers can use to accelerate the attainment of the various course outcomes.

- The methodology of this course is explorational and thus universally adaptable. It involves a systematic and rational study of the human being vis-à-vis the rest of existence.
- The course is in the form of 20 lectures (discussions)
- It is free from any dogma or value prescriptions.
- It is a process of self-investigation and self-exploration, and not of giving sermons. Whatever is found as truth or reality is stated as a proposal and the students are facilitated to verify it in their own right, based on their Natural Acceptance and subsequent Experiential Validation
 - the whole existence is the lab and every activity is a source of reflection.
- This process of self-exploration takes the form of a dialogue between the teacher and the students to begin with, and then to continue within the student in every activity, leading to continuous self-evolution.
- This self-exploration also enables them to critically evaluate their pre-conditionings and present beliefs



Scheme of Teaching and Examinations for BE Programme -2024-25
Outcome Based Education and Choice Based Credit System (CBCS)
(Effective from the Academic Year 2024-25)

DSATM

COURSE SYLLABUS

Module No.	Contents of the Module	Hours
1	Right Understanding, Relationship and Physical Facility (Holistic Development and the Role of Education) Understanding Value Education, Self-exploration as the Process for Value Education, Continuous Happiness and Prosperity – the Basic Human Aspirations, Happiness and Prosperity – Current Scenario, Method to Fulfil the Basic Human Aspirations	3
Pedagogy	<ul style="list-style-type: none"> Introduction to Value Education- Chalk and talk method, Discussion, Sharing of experiences, Live Examples and videos 	
2	Harmony in the Human Being Understanding Human being as the Co-existence of the Self and the Body, Distinguishing between the Needs of the Self and the Body, The Body as an Instrument of the Self, Understanding Harmony in the Self, Harmony of the Self with the Body, Programme to ensure self-regulation and Health	3
Pedagogy	<ul style="list-style-type: none"> Introduction to Value Education- Chalk and talk method, Discussion, Sharing of experiences, Live Examples and videos 	
3	Harmony in the Family and Society Harmony in the Family – the Basic Unit of Human Interaction, 'Trust' – the Foundational Value in Relationship, 'Respect' – as the Right Evaluation, Other Feelings, Justice in Human-to-Human Relationship, Understanding Harmony in the Society, Vision for the Universal Human Order	3
Pedagogy	<ul style="list-style-type: none"> Introduction to Value Education- Chalk and talk method, Discussion, Sharing of experiences, Live Examples and videos 	
4	Harmony in the Nature/Existence Understanding Harmony in the Nature, Interconnectedness, self-regulation and Mutual Fulfilment among the Four Orders of Nature, Realizing Existence as Co-existence at All Levels, The Holistic Perception of Harmony in Existence	3
Pedagogy	<ul style="list-style-type: none"> Introduction to Value Education- Chalk and talk method, Discussion, Sharing of experiences, Live Examples and videos 	
5	Implications of the Holistic Understanding – a Look at Professional Ethics Natural Acceptance of Human Values, Definitiveness of (Ethical) Human Conduct, A Basis for Humanistic Education, Humanistic Constitution and Universal Human Order, Competence in Professional Ethics, Holistic Technologies, Production Systems and Management Models-Typical Case Studies, Strategies for Transition towards Value-based Life and Profession	3
Pedagogy	<ul style="list-style-type: none"> Introduction to Value Education- Chalk and talk method, Discussion, Sharing of experiences, Live Examples and videos 	

List of Experiments or Programs

Sl.No	Experiments/Programs	COs
1	Holistic Self-Portrait: create a self-portrait that incorporates their physical appearance and also their relationships, skills, and values. This encourages them to reflect on the different aspects of themselves.	CO1
2	Happiness Project: They can research happiness strategies, try new activities, and keep a journal about their experiences. This can be followed by a class discussion about what worked for each student.	CO2
3	Meditation or Relaxation Techniques simple meditation or relaxation techniques.	CO2
4	Video watching on ethics topic to sensitise the students	CO2
5	Vision Board for a Harmonious Society	CO3
6	Debate on Universal Values	CO3
7	Personal Connection to Nature	CO4
8	Role Play - Food Chain Web	CO5
9	Case Studies in Transitioning to Value-based Professions	CO5

Reference Books

Books (Title of the Book/Name of the author/Name of the publisher/Edition and Year)

1	JeevanVidya: EkParichaya, A Nagaraj, JeevanVidyaPrakashan, Amarkantak, 1999.
2	Human Values, A.N. Tripathi, New Age Intl. Publishers, New Delhi, 2004.
3	The Story of Stuff (Book).
4	The Story of My Experiments with Truth - by Mohandas Karamchand Gandhi
5	Small is Beautiful - E. F Schumacher.
6	Slow is Beautiful - Cecile Andrews
7	Economy of Permanence - J C Kumarappa
8	Bharat Mein Angreji Raj – Pandit Sunderlal
9	Rediscovering India - by Dharampal
10	Hind Swaraj or Indian Home Rule - by Mohandas K. Gandhi
11	India Wins Freedom - Maulana Abdul Kalam Azad
12	Vivekananda - Romain Rolland (English)
13	Gandhi - Romain Rolland (English)
14	Sussan George, 1976, How the Other Half Dies, Penguin Press. Reprinted 1986, 1991
15	Donella H. Meadows, Dennis L. Meadows, Jorgen Randers, William W. Behrens III, 1972, Limits to Growth – Club of Rome’s report, UniverseBooks.
16	ANagraj, 1998, JeevanVidyaEkParichay, DivyaPathSansthan, Amarkantak.
17	PLDhar, RRGaur, 1990, ScienceandHumanism, CommonwealthPublishers.
18	ANTripathy, 2003, HumanValues, NewAgeInternationalPublishers.
19	SubhasPalekar, 2000, How to practice Natural Farming, Pracheen (Vaidik)KrishiTantraShodh, Amravati.
20	EGSeebauer&RobertL.Berry, 2000, Fundamentals of Ethics for Scientists & Engineers, Oxford University Press
21	M Govindrajan, S Natrajan & V.S. Senthil Kumar, Engineering Ethics (including Human Values), Eastern Economy Edition, Prentice Hall of India Ltd.
22	BPBanerjee, 2005, Foundations of Ethics and Management, Excel Books.

23	B LBajpai,2004,Indian Ethosand Modern Management,New RoyalBookCo., Lucknow. Reprinted 2008.
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Course Outcomes: At the end of the course, the student will be able to:

CO	Course Outcomes	RBT Level	Level Indicator
CO1	Remember and understand the terms and terminology of universal human values like Swasthya and Sanyam and the role of values in their education.	L1, L2	Remember & understand
CO2	Apply the principles value education in their lives.	L3	Apply
CO3	Students will be able to analyze their self and body	L4	Analyse
CO4	Students will be able to evaluate the various aspects of universal human values	L5	Evaluate

Mapping of Course Outcomes to Program Outcomes:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1						2		2		2				
CO2						1		1	2					
CO3				2		2	2	1						
CO4							2	2						

Weblinks and Video Lectures (e-Resources)

1	Value Education websites, https://www.uhv.org.in/uhv-ii , http://uhv.ac.in , http://www.uptu.ac.in
2	Story of Stuff, http://www.storyofstuff.com
3	Al Gore, An Inconvenient Truth, Paramount Classics, USA
4	Charlie Chaplin, Modern Times, United Artists, USA
5	IIT Delhi, Modern Technology - the Untold Story
6	Gandhi A., Right Here Right Now, Cyclewala Productions
7	https://www.youtube.com/channel/UCQxWr5QB_eZUnwxSwxXEkQw
8	https://fdp-si.aicte-india.org/8dayUHV_download.php
9	https://www.youtube.com/watch?v=8ovkLRYXijE
10	https://www.youtube.com/watch?v=OgdNx0X923I
11	https://www.youtube.com/watch?v=nGRcbRpvGoU
12	https://www.youtube.com/watch?v=sDxGXOgYEKM

Assessment Pattern (both CIE and SEE)

1 Credit Course – HSHC (Humanity Sciences and Management Courses)

Assessment Method	Component	Type of Assessment	Assessment Type used	Max. Marks	Evaluation Details	Reduced Marks	Min. Marks	Total
CIE	Studio	Continuous Assessment Tool	Presentations /Participations/Design	20	Creativity and Abstraction (5 marks) Presentation and communicating given subject using digital tool (2.5 marks) Quality, completeness, clarity and legibility in model making (2.5 marks)	10	5	10
		AAT	Portfolio	20	Quality of portfolio (10 Marks)	10	5	15
		AAT	Participation in all events	40	Knowledge and understanding (6 marks) Presentation (4 marks) Engagement and Interaction (10 mark)	20	10	30
		AAT	Skit/ Role Play	20	Narration (5 Marks) Performance (5Marks)	10	5	15
Total CIE						25	50	

The student has to obtain a minimum of 50% of the maximum marks of CIE (25 Marks out of 50 Marks)

CIE- Continuous Internal Evaluation (50 Marks)

Bloom's Category	Continuous Assessment Tests			
	Seminar	Participation	Portfolio	Role Play
	10 Marks	20 Marks	10 Marks	10 Marks
Remember	2	2	2	2
Understand	2	2	2	1
Apply	4	-	1	2
Analyse	2	3	-	
Evaluate	-	3	-	-

CIE Course Assessment Plan

CO's	Marks Distribution					Total Marks	Weightage
	STUDIO						
	Module-1	Module-2	Module-3	Module-4	Module-5		
CO1	5	5	5	5	4	24	48%
CO2	2	2	2	3	3	12	24%
CO3	2	2	2	2	3	11	22%
CO4	0	1	1	1	0	3	6%
Total	9	10	10	11	10	50	100%

Course Contents and Lecture Schedule

Module No.	Topics	No. of Lecture Hrs.
1	Presentation on Holistic Development and the Role of Education	1
1	Happiness Project	2
2	Harmony in the Human Being	2
3	Meditation or Relaxation Techniques	1
3	Video watching on ethics topic to sensitise the students	1
4	Harmony in the Family and Society	1
5	Vision Board for a Harmonious Society	1
6	Harmony in the Nature/Existence	1
7	Debate on Universal Values	1
8	Personal Connection to Nature	1
9	Role Play - Food Chain Web	1
10	Implications of the Holistic Understanding – a Look at Professional Ethics	1
11	Case Studies in Transitioning to Value-based Professions	1
Total		15 Hrs.

3rd SEMESTER

**PROJECT BASED
LEARNING (PBL)**



Dayananda Sagar Academy of Technology & Management
(Autonomous Institute under VTU)

Semester	:	3rd			
Course Title	:	ARCHITECTURAL DESIGN - III			
Course Code	:	23ARC31			
Course Type	:	Studio			
Category	:	PCC (Professional Core Courses)			
Stream	:	Architecture			
Total Hours/week (L: T:P:S)	:	0:0:0:8	CIE	:	100 Marks
Total Hours/semester	:	120 hrs.	SEE	:	100 Marks
Credits	:	08	SEE Duration	:	Viva-Voce

Course Learning Objectives: Students will be able

Sl. No	Course Objectives
1	To Understand the fundamental concepts related to space and place and apply the contextual analysis techniques to assess the physical, cultural, and environmental factors influencing a site.
2	To analyse and evaluate how the various contextual elements impact the design and functionality of architectural spaces and help in creating meaningful place.
3	To design and develop architectural projects that successfully transform space into place, reflecting a deep understanding of contextual influences.

Teaching-Learning Process-

Pedagogy (General Instructions):

These are sample Strategies; which teachers can use to accelerate the attainment of the various course outcomes

1. The contents of the courses shall be taught in an application-oriented manner on a scientific and design basis. The course contents shall be taught and learned in lectures, seminars, workshops, studio exercises and design projects, etc.
2. In-studio exercises the teachers shall take the lead to provide tasks and offer guidance for solutions finding. The students shall work either individually or in groups.
3. In design studios, the students contribute to the processing, analysis and solving of problems of direct professional practice, attended by faculty(s) entitled to conduct the studio and examine. The results shall be defended through drawings; models and reports and evaluated through periodic assessment and finally by a jury or panel, and finally, evaluated through periodic assessment and an end semester examination or viva voce.
4. **Auto-CADD, could be used as final drawings presentation mode.**

COURSE OF STUDY –

The main objective of the studio is transforming spaces into meaningful places. Therefore, it is crucial to thoroughly identify and analyze contextual elements and factors that influence the built environment

KEYWORDS – site/situation, neighborhood, memory, identity, belonging, defining characteristics/particularity of place (activity, need, function, scale, hierarchy, perception).

MODE OF STUDY

• EXPERIENCE

- The attempt of this studio is to understand the experience of a space that can enable a person to define its particularities as a place. An understanding of being "inside" that particular place, versus "outside" it, needs to be explored. The interrelation and interface of formally designed spaces and informal spaces must also be included since both in tandem make up our built environment. (Space making to be portrayed for both formal and informal spaces (along with respective field studies) through different typologies of spaces - markets, settlements, worship places, eateries, etc.
- The idea is to explicitly make students understand that the built environment consists of formal architecture, built by architects with legal rights to land but a major part of it consists of informal spaces which crop up due to societal and spatial circumstances. Since both cannot be observed in singularity, they should be studied parallelly to have a holistic understanding of the world.
- Visits to different places, public and semipublic spaces entrance places, transitional places, dwelling places, neighborhood built-open social spaces, informal space architecture, informal settlements, etc. Students need to experience and study 2 different types (including an informal space) of places, and what differentiates these from others.

• EXPLORATION

- Studies of how scale, proportions, physicality (including exposure of walls, roofs, windows to the sun), direction of winds and breeze climate, local ecology (animal and plant life), relationships with local water bodies and groundwater, materiality, and surrounding context, affect a place and how it is perceived.
- Sketches, models, drawings, photographs, collages, short films, that can illustrate the specificity of the given place. Their architectural representation is an important conclusion of this exploration.

• DESIGN TASKS

2 design projects (minor & major) that address the study, exploration, and expression of the Sense of Place in all its aspect (suggested projects may include but not limited to temporary shelters, pavilions, informal social open spaces, context specific community driven built forms like health canters).

Example: Place: The front entrance of dwellings. Visit to a traditional neighborhood, and a contemporary neighborhood. What is the nature of this place? What are the moments of transience?

What is the character of space before and after the front? What special characteristics place has?

Example: Space: The social spaces within an informal settlement and planned residential neighborhood, The organic space utility at a roadside tea stall and a cafe. What is the character and spirit of the place? What are the elements and forces that create the space. How does the community/people self-organize themselves?

After careful study, a design task based on the sense of place in the same context can be formulated. An emphasis on the translating of one's observations well - primarily in architectural drawing as well as in other methods that support it.

List of suggested Exercises:

"Placemaking" is a multifaceted approach to the planning, design, and management of public spaces, aiming to create vibrant, meaningful places that promote people's health, happiness, and well-being.

Students can create public spaces with very strong context, that are not only functional and aesthetically pleasing but also, vibrant, and meaningful places that foster community engagement and give a sense of belonging.

Suggested exercise is: Market place, public library, pavilions community centers, recreational spaces, police stations

NOTES:

- The DESIGN TASKS should be interspersed with the experience and exploration of the idea of Sense of Place, and not necessarily attempted separately.
- Minor and Major projects can be interlinked.
- **Auto-CADD could be used during progressive development and final drawings presentation mode.**
- The scale of the study area must be smaller. Also, the scale of the major project must be small to medium (site size should not exceed 1 acres)
- Discussions, book reading as well as writing, seminars, field trips, and group as well as individual study are important for the development of the architecture student's understanding of essential concepts such as that of a Sense of Place.

Reference Books	
Books (Title of the Book/Name of the author/Name of the publisher/Edition and Year)	
1	Edward Relph , "Place and Placelessness", Sage Publications, 2008
2	David Seamon , "Life Takes Place", Routledge , 2018
3	Yi Fu Tuan , "Space And Place: The Perspective of Experience", Univ Of Minnesota Press , 2001
4	Gaston Bachelard , "The Poetics of Space", French university publishing , 1958
5	D'Arcy Wentworth Thompson , "On Growth and Form", Cambridge University Press, 1917.
6	Martin Heidegger, "Building, Dwelling, Thinking, (Poetry, Language, Thought), 1951
7	Tim Cresswell , "Place: An Introduction", John Wiley & Sons, 2014
8	Marc Auge , "Non-Places: An Introduction to Supermodernity" , Verso, 1995
9	Peter Zumthor, Brigitte Labs-Ehlert "Atmospheres: Architectural Environments. Surrounding Objects", Birkhauser, 2006
10	Christian Norberg Schulz, "Genius Loci: Towards a Phenomenology of Architecture", New York : Rizzoli , 1979
11	Christopher Alexander, "The Timeless Way of Building", Oxford University Press , 1979
12	Doreen Massey, "For Space", Sage Publications , 2005
13	Christian Norberg Schulz, "Architecture: Presence, Language, Place", 1996

Course Outcomes: At the end of the course, the student will be able to:

CO	Course Outcomes	RBT Level	Level Indicator
CO1	To Understand the fundamental architectural concepts and terminology related to space and place	L1, L2	Remember and understand
CO2	To apply contextual analysis techniques to assess the physical, cultural, and environmental factors influencing a site.	L3	Apply
CO3	To analyze how the various contextual elements impact the design and functionality of architectural spaces	L4	Analyze
CO4	To evaluate different design approaches and solutions for their effectiveness in creating meaningful places.	L5	Evaluate
CO5	To design and develop architectural projects that successfully transform space into place, reflecting a deep understanding of contextual influences.	L6	Design

Mapping of Course Outcomes to Program Outcomes:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1						3									
CO2	3				2				2					1	
CO3		3		3		3	2			2					
CO4						2									
CO5			3			3	2						2		

Assessment Pattern (Both CIE and SEE)

6 Credit Course									
Assessment Method	Component	Type of Assessment	Assessment Type used	Max. Marks	Evaluation Details	Reduced Marks	Min. Marks	Total	
CIE	Studio Assessment	AAT	Progressive Work- (Sheets)	50	Regular on time discussion + Incorporation of changes in design + Presentation skills, Accuracy, Details, Architectural Drawings.	25	12.5	25	
			Group Work	20	Case study + Site analysis Presentation skill and coordination	15	7.5	15	
			Site Visits	10					
			Progressive Models	20	Pre-session, Materials and Scale.	10	5	10	
			Intermediate reviews	20	Completion of work, Presentation skills, Communication of ideas, Design	10	5	10	
	Total CIE Studio						30		60
	Panel Review	Viva Voce	Review	50	Presentation skills, Communication of ideas, Design	25	12.5	40	
Final Portfolio +Models			30	Site Presentation, Accuracy, Details, Architectural Drawings. etc, presentation	15	7.5			
Total CIE Review						20		40	
CIE							50	100	
SEE	External Viva Voce			100	Portfolio + Model + Review		40	100	
CIE+SEE							100	200	

NOTE: The Minimum Marks to be secured in CIE to appear for SEE shall be 50 (50% of Maximum marks – 100) in the Studio Assessment and 40 (40% of Maximum Marks -100) in the External of 100 (50% of Maximum Marks -200).

Course Contents and Lecture Schedule:

Si.No.	Topics	No. of Lecture Hrs.
1	Introductory assignment/holiday assignment	8 Hrs.
2	Minor Project	28 Hrs.
3	Review- Minor project	8 Hrs.
4	Study Model	8 Hrs.
5	Major Project (including case study & literature study)	60 Hrs.
6	Final external Review	8 Hrs.
Total		120 Hrs.

Assessment Details (both CIE and SEE)

(methods of CIE need to be defined topic wise i.e.- Studio discussions, Reviews, Time problems, test, Seminar or micro project)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The student has to obtain a minimum of 50% marks individually both in CIE and 40 % marks in SEE to pass. Semester End Exam (SEE) is conducted for 100 marks (Viva-voce). Based on this grading will be awarded.

Continuous Internal Evaluation:

Methods suggested:

1. Studio discussions, Reviews, Time problems, Seminar or minor project, report writing etc.
2. The subject teacher has to decide the topic for the Design and Seminars if any, in the beginning only. The teacher has to announce the methods of CIE for the subject in advance in writing.

Semester End Examination:

1. The student needs to submit his/her works done throughout the semester, including rough sheets for the Viva examination, at least one day prior to the Viva work examination to the course teacher/ coordinator.
2. The Viva-voce will be evaluated by an external teacher appointed by the University along with Course teacher or an internal examiner.
3. The SEE marks list generated is to be signed by both internal and external examiners and submitted to examination department in the sealed cover through the HOD of the Department.

1	https://www.youtube.com/watch?v=zJJEpLCOa24
2	https://www.completecommunitiesde.org/planning/inclusive-and-active/placemaking-intro/
3	https://www.youtube.com/watch?v=IBOChA1LJMc
4	https://www.youtube.com/watch?v=sw9zpH717ts
5	https://www.youtube.com/watch?v=pBJprhsBUrg
6	https://www.youtube.com/watch?v=4VxDoVuURNE



Dayananda Sagar Academy of Technology & Management (Autonomous Institute under VTU)

Semester	:	3 rd			
Course Title	:	CLIMATOLOGY			
Course Code	:	23ARC33			
Course Type	:	Theory			
Category	:	BSAE (Building Science & Applied Engineering Courses)			
Stream	:	Architecture			
Total Hours/week (L:T:P:S)	:	3:0:0:0	CIE	:	50 Marks
Total Hours/semester	:	42 Hrs.	SEE (Theory)	:	50 Marks
Credits	:	03	SEE Duration	:	3 Hrs.

Course Learning Objectives:

Sl.No	Course Objectives
1	Students shall Understand elements and classification of climate, related terminology, and relationship of climate with architecture.
2	Students shall describe different parameters of human thermal comfort and formulate strategies for its achievement in built environment.
3	Students shall analyse and evaluate Sun path and wind direction of different locations and articulate in built environment in the form of day lighting, shading devices, and natural ventilation.
4	Students shall explain and apply different parameters of thermal performance of buildings in various climatic zones.

Teaching-Learning Process

Pedagogy (General Instructions):

These are sample Strategies; which teachers can use to accelerate the attainment of the various course outcomes are listed below:

1. Adopt different teaching methods to attain the course outcomes.
2. Include videos to demonstrate various concepts in Climatology.
3. Encourage collaborative (Group) Learning to encourage team building.
4. Ask at least three **HOTS (Higher-order Thinking Skills)** module-wise questions to promote critical thinking.
5. Adopt **Problem-Based Learning (PBL)**, which fosters students' analytical skills, and develops thinking skills such as evaluating, generalizing, and analyzing information rather than simply recalling it.
6. Show different ways to solve a problem and encourage the students to come up with creative and optimal solutions.
7. Discuss various case studies to map with real-world scenarios and improve the understanding.
8. Devise innovative pedagogy to improve **Teaching-Learning Process (TLP)**.
9. Individual teachers can device innovative pedagogy to improve teaching-learning.



DSATM

**Scheme of Teaching and Examinations for BE Programme -2023-24
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(Effective from the Academic Year 2023-24)**

COURSE SYLLABUS

Module No.	Contents of the Module	Hours
1	<p>Introduction to Climate-1: The Climate-built form interaction; some examples. Elements of climate, measurement and representations of climatic data. Classifications and Characteristics of tropical climates.</p> <p>Introduction to Climate-2: Major climatic zones of India. Site Climate: Effect of landscape elements on site/micro climate. Interrelation between the human built environment and the natural environment: Historical trajectory of environmental degradation and climate change as a function of humankind's architectural and industrial interventions.</p> <p>Introduction to the current Climate crisis and targets- Documentation of changes in climate, environmental conditions over time and their ramifications on the built environment and the roles and responsibilities of the profession of architecture. Develop a climate change timeline.</p> <p>Thermal comfort-1: Thermal balance of the human body, basic understanding of psychrometric chart and related parameters (dry-bulb temperature, wet-bulb temperature, absolute humidity, relative humidity, enthalpy, specific volume), psychrometric basis of human thermal comfort, thermal comfort factors (including mean radiant temperature and air speed), Thermal Comfort Indices (Effective temperature, corrected effective temperature, bioclimatic chart, tropical summer index by CBRI Roorkee), Indian Model of Adaptive Comfort (IMAC) and comparison with global thermal comfort models, Measuring indoor air movement: Kata-thermometer, and measuring indoor radiation: Globe thermometer.</p>	10
Pedagogy	Lectures and Presentations, Case Studies, Climate Data Analysis, Field Trips, Interactive Climate Maps, Group Discussions, Mapping Exercises, Landscape Design Projects, Role-Playing, Document Analysis,	
2	<p>Thermal comfort-2: Uses of psychrometric chart for climate analysis, Calculation of Overheated and under heated period (based on air temperature only) for locations in Climatic zones and their optimization in terms of solar heating and Passive cooling desired.</p> <p>Sun-path diagram: Solar geometry & design for orientation and use of solar charts in climatic design.</p> <p>Thermal performance of building elements: Effect of thermo-physical properties of building materials and elements on indoor thermal environment. Convection, Radiation, concept of Sol-air temperature and Solar Gain factor. Thermal properties and performance of different materials used in construction such as Mud, Wood, Bamboo, RCC, Steel, Glass, GI, Tin, etc and relating it to Thermal Stress. Assessment of passive cooling possibilities and natural night-sky radiation of roofing materials and retrofitted radiant-barrier materials.</p>	6
Pedagogy	Lectures and Presentations, Case Studies & Comparative Analysis, Hands-on Experiments and Simulations, Interactive Workshops and Design Projects, Digital Tools and Software (GIS, CAD, Total station, BIM)	
3	<p>Thermal Heat gain or loss: Steady state and periodic heat flow concepts (conduction, convection and radiation), conductivity, resistivity, diffusivity, emissivity, thermal capacity, time lag and 'U' value. Calculation of U value for multi-layered walls and Roof, Temperature Gradient, Inference of time lags from Graphs for walls and Roof. Construction techniques for improving thermal performance of walls and roofs. (Effect of density, Insulation, and Cavity).</p>	6

Pedagogy	Lecture and videos, hands on and physical testing, digital tools (equest,ecotect), live testing of materials, case studies	
4	<p>Shading devices: Optimizing Design of Shading devices effective for overheated periods while allowing solar radiation for under heated periods for different wall orientations.</p> <p>Natural ventilation: Functions of natural ventilation, Stack effect due to thermal force and wind velocity. Air movements around buildings, Design considerations and effects of openings and external features on internal air flow and Wind shadows.</p> <p>Natural/passive cooling: Introduction to passive techniques of cooling such as evaporative cooling (including basic assessment of its cooling potential using the psychrometric chart for various climatic zones), earth tubing, wind scoops, roof ponds, shaded courtyards etc.</p>	10
Pedagogy	Design Studios and Practical Workshops, Computer Simulations and Digital Tools, Field Trips and Site Analysis, Case Studies and Comparative Analysis, Interactive Lectures and Discussions	
5	<p>Day Lighting: Nature of natural light, its transmission, reflection, diffusion, glare. Advantages and limitations in different climatic zones, North light, Daylight factor, components of Daylight devices.</p> <p>Climatic Design considerations 1: Literature study of relevant traditional and contemporary building examples.</p> <p>Climatic Design considerations 2: Two or more Indian case studies, including an informal settlement, example Dharavi or more local instances and one international for each climatic zone.</p> <p>Climatic Design considerations 3: Keeping in mind the current climatic scenario and how it is changing rapidly. Understanding how design tools can help in the making of climate-friendly and resilient designs.</p>	10
Pedagogy	Interactive Workshops, Hands-on Experiments, Simulations, Data Analysis, Interactive Discussions, Digital Tools and Software (GIS, CAD, Total station, BIM), Online Platforms (LMS), Collaborative Projects, Field Studies, Visual Aids (Diagrams, Charts, Videos), Demonstration	

List of Experiments or Programs

Sl.No	Exercises	COs
1	<p>Designing Adjustable Shading Devices</p> <p>Objective: Design shading devices that are effective for both overheated and underheated periods.</p> <p>Activity:</p> <ol style="list-style-type: none"> Choose a building with different wall orientations (north, south, east, west). Design adjustable shading devices (e.g., louvers, retractable awnings) for each orientation. Use simulation software to model and analyze the effectiveness of the shading devices in different seasons. Present the designs and simulations, discussing how they optimize solar gain and shading. 	CO2 & CO3
2	<p>Psychrometric Chart Workshop (Group Activity)</p> <p>Objective: Understand the psychrometric chart and its parameters.</p> <p>Activity:</p> <ol style="list-style-type: none"> Conduct a workshop on reading and interpreting the psychrometric chart. Provide exercises to plot various conditions and analyze comfort levels. 	CO2, CO3
3	<p>Sun-Path Diagram Construction & Designing Adjustable Shading Devices</p> <p>Objective: Understand solar geometry, design for orientation using solar charts and Design shading devices that are effective for both overheated and underheated periods</p> <p>Activity:</p>	CO5

	<ol style="list-style-type: none"> 1. Teach students how to construct and read sun-path diagrams for different latitudes. 2. Use these diagrams to determine optimal building orientation and window placement. 3. Design shading devices based on sun-path data for different times of the year. 	
4	<p>Calculating U-Value for Multi-Layered Walls and Roofs</p> <p>Objective: Calculate the U-value for walls and roofs with multiple layers.</p> <p>Activity:</p> <ul style="list-style-type: none"> • Provide the thermal properties (conductivity, thickness) of each layer in a wall or roof assembly. • Calculate the R-value (resistance) for each layer and then determine the overall U-value (1/R_{total}). <p>Compare the U-values of different assemblies to evaluate their thermal performance.</p>	CO4
5	<p>Evaporative Cooling Potential Assessment</p> <p>Objective: Assess the potential of evaporative cooling using the psychrometric chart.</p> <p>Activity:</p> <p>Choose a location and collect climatic data (temperature, humidity). Use the psychrometric chart to determine the potential cooling effect of evaporative cooling. Design an evaporative cooling system (e.g., water walls, misting systems) for a building in the selected location. Present the design and cooling potential analysis.</p>	CO5

Reference Books

1	Koenigsberger, Manual of Tropical Housing & Buildings (Part-II), Orient Longman, Bombay, 1996.
2	Martin Evans; Housing, Climate, and Comfort; Architectural Press (1 March 1980)
3	Baruch Givoni; Passive and Low Energy Cooling of Buildings; John Wiley & Sons (1 July 1994).
4	Energy Conservation Building Code (ECBC) 2007; Bureau of Energy Efficiency, Ministry of Power, Government of India.
5	Mili Majumdar (Editor); Energy Efficient Buildings in India; The Energy and Resources Institute, TERI (28 February 2009)
6	Donald Watson and Kenneth Labs; Climatic Building Design - Energy-Efficient Building Principles and Practice; McGraw-Hill Book Company, 1983.
7	Arvind Krishan, Baker & Szokolay, Climate Responsive Architecture, Tata McGraw Hill, 2002.

Weblinks and Video Lectures (e-Resources)

1	https://ndl.iitkgp.ac.in
2	https://youtube.com/watch?v=6D4ow2WuIVA
3	https://www.youtube.com/watch?v=8wweKGJDoG0
4	https://www.youtube.com/watch?v=yEWT_XmqCtQ
5	https://www.youtube.com/watch?v=SwZ1FEgangE
6	https://www.youtube.com/watch?v=Ouvk9t5T9X4
7	https://www.youtube.com/watch?v=BgOy3U34muY
8	https://www.youtube.com/watch?v=pCrZEJATeKQ
9	https://www.youtube.com/watch?v=fnhhj4vTzPQ
10	https://www.youtube.com/watch?v=YbigQjL6oKo

Course Outcomes: At the end of the course, the student will be able to:

CO	Course Outcomes	RBT Level	Level Indicator
CO1	Understand the elements of weather and climate, thermal comfort, phenomenon of heat flow inside building, and the concept of solar shading and day lighting in a built environment.	Remember and understand	L1, L2

CO2	Apply the knowledge of different materials, ventilation techniques and day lighting concepts, for achieving thermal comfort in a various climatic zone.	Apply	L3
CO3	Analyzing different techniques of passive design technologies in the building.	Analyze	L4
CO4	Investigate the traditional and contemporary techniques used in various climatic zones.	Evaluate	L5
CO5	Develop the climate responsive design guidelines for construction of any buildings in a particular climate zone through analyzation of various studies and implement in the design projects.	Design	L6

Mapping of Course Outcomes to Program Outcomes:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2						2					2		3	
CO2	2			2	2		3								
CO3			3			2				2			2		
CO4															
CO5					2				2						

Assessment Pattern (both CIE and SEE)

3 Credit Course – BSAE

Assessment Method	Component	Type of Assessment	Assessment Type used	Max. Marks	Evaluation Details	Reduced Marks	Min. Marks	Total
CIE	IA exams	Theory exam	IA1	50	(50+50)/2	20	10	20
			IA2	50				
	Total CIE Theory						10	20
	ASSIGNMENTS (AAT)	AAT	Considering all the module activities	50	50 (reduced to 15)	30	15	30
Total CIE Activities							15	30
Total CIE							25	50
SEE	SEE Exam will be Theory exam			100	SEE Exam will be Theory exam (100 Marks)	50	20	50
CIE+SEE							50% of total marks	100

NOTE: The Minimum Marks to be secured in CIE to appear for SEE shall be 25 (50% of Maximum marks – 50). The Minimum Marks to be secured in SEE shall be 20 (40% of Maximum marks – 50). The design activities will be assessed through only CIE. The passing percentage shall not be less than the 50% in aggregate for a course (i.e. CIE and SEE (put together). Based on the marks scored in CIE+SEE grading will be awarded for this course.

CIE- Continuous Internal Evaluation (50 Marks)

Bloom's Category	Internal Assessments	Assignments (AAT)
	20 Marks	30 Marks
Remember	IA 1 & 2	
Understand		
Apply	IA 1 & 2	
Analyse	IA 1 & 2	Module wise activities
Evaluate		Module wise activities
Create		Module wise activities

CIE Course Assessment Plan

CO's	Marks Distribution					Total Marks	Weightage
	Module-1	Module-2	Module-3	Module-4	Module-5		
CO1	5	5	5			15	15
CO2	5	5	5	5	5	25	25
CO3	5	5	5	5	5	25	25
CO4		5	5	5	10	25	25
CO5				10		10	10
Total	15	20	20	25	25	100	100%

SEE- Semester End Examination (50 Marks)

Bloom's Category	SEE Marks (Theory exam of 100 marks to reduce to 50)
Remember	20%
Understand	20%
Apply	20%
Analyse	20%
Evaluate	20%
Create	-

SEE Course Plan

CO's	Marks Distribution					Total Marks	Weightage
	Module-1	Module-2	Module-3	Module-4	Module-5		
CO1						25	50%
CO2						15	15%
CO3						10	0%
CO4							
CO5							
Total	10	10	10	10	10	50	100%



Dayananda Sagar Academy of Technology & Management
(Autonomous Institute under VTU)

Semester	:	3rd			
Course Title	:	BUILDING SERVICES - I			
Course Code	:	23ARC35			
Course Type	:	Theory			
Category	:	BSAE (Building Science & Applied Engineering Courses)			
Stream	:	Architecture			
Total Hours/week (L:T:P:S)		3:0:0:0	CIE	:	50 Marks
Total Hours/semester	:	42 Hrs.	SEE (Theory)	:	50 Marks
Credits	:	03	SEE Duration	:	3 Hrs.

Course Learning Objectives:

Sl.No	Course Objectives
1	To impart the knowledge and skills required for understanding the role of essential services of water supply, sanitation and solid waste management and their integration with architectural design.
2	To understand sustainability issues of water supply and sanitation systems.
3	To create awareness and share knowledge on sustainable practices of rain water harvesting, solar water heaters and recycle of waste.

Teaching-Learning Process

Pedagogy (General Instructions):

These are sample Strategies; which teachers can use to accelerate the attainment of the various course outcomes.

1. Lecture method (L) does not mean only the traditional lecture method, but a different type of teaching method may be adopted to develop the outcomes.
2. Show Video/animation films to explain the infrastructures and the mechanism involved in the principle.
3. Encourage collaborative (Group) Learning in the class.
4. Ask at least three HOT (Higher-order Thinking) questions in the class, which promotes critical thinking.
5. Adopt Problem Based Learning (PBL), which fosters students' Analytical skills, develop thinking skills such as the ability to evaluate, generalize, and analyze information rather than simply recall it.
6. Topics will be introduced in multiple representations.
7. Show the different ways to solve the same problem and encourage the students to come up with their own creative ways to solve them.
8. Discuss how every concept can be applied to the real world - and when that's possible, it helps improve the students' understanding.
9. Individual teachers can device innovative pedagogy to improve teaching-learning.



DSATM

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COURSE SYLLABUS

Module No.	Contents of the Module	Hours
1	<p>Water Supply – Importance of access to clean water, effects of water pollution, water borne and water related disease and epidemic.</p> <p>Municipal water supply – Sources - surface and ground water source; Intakes, pumping and transportation. Quality of water for different uses as per national standards; Quantity of water for different usages - Domestic, Commercial, Industrial, fire demand, public use, losses; Assessment of requirement for different uses. Treatment of water – sedimentation, filtration, softening, disinfection. Storage and pumping – gravity system, pumping system and combined; Distribution of water – distribution patterns; House service connections; Design of overhead and underground water tank for residence.</p>	10
Pedagogy	<p>1) Visit to a water treatment plant</p> <p>2) Quizzes, crossword, debates on the various concepts, design and issues of water supply.</p>	
2	<p>Sanitation - History of Sanitation with respect to human civilization, Conservancy to water carriage system, Rural sanitation systems – soak pits, aqua privy.</p> <p>Sewerage System - Assessment of sewage generated, Collection of sewage / wastewater from all sources, types and collection network schematic diagram, Conveyance of sewage – materials of sewer and Sewer appurtenances – traps, chambers and manholes. Objective of Sewage treatment, type of treatment, aerobic, anaerobic, Ventilation of STP, Space requirements. Septic tank design and space calculation. Study about other decentralised methods of sewage treatment for housing society or campus planning.</p>	10
Pedagogy	<p>1) Visit to a sewage treatment plant at a city level</p> <p>2) Quizzes, crossword, debates or extempore on the various concepts, design and issues of sanitation.</p>	
3	<p>Plumbing - Water supply piping – single stack, double stack, hot and cold-water plumbing, flushing water, Piping in sunken areas, false ceiling areas, sprinklers, shaft sizes, Drainage – floor traps, drains, P-trap, bottle traps, cross venting, fixture venting, Materials and fittings used in plumbing; Flow control Valves – Gate valve, Globe valves, butterfly valves, Pressure Reducing valves & station, Pipe supports, hangers, fixing. Detail plumbing of small houses. Water Supply to High Rise Buildings, Problems encountered and Systems adopted.</p> <p>Fixtures and Fittings - Soil appliances – Water closets, Bidet, urinals, Cisterns, Flush valve, Waste appliances – wash basin, sink, dishwasher, washing machine. Hot water system – Geysers, boilers, heat pump, solar water heater. Bath & water fixtures – Taps, mixers, single lever, quarter turn, bathtub, multi-jet bath, rain showers, health faucets, Wellness products : Sauna bath, steam bath, Jacuzzi.</p>	10
Pedagogy	<p>1) Visit to a construction site for various works of plumbing installations.</p> <p>2) Market survey, materials and study for various fixtures and installations.</p>	
4	<p>Storm water Management: Assessment, quantification of rainfall, flood control measures, Drainage system – piped drains, open drains, Recharging of storm water, Harvesting of roof top water, first flush, pre-treatment, Drainage of basements, podium, paved areas, Collection, Reuse of water within the project, reduction of the load on municipal system, landscape drainages and Rainwater harvesting. Municipal laws norms and incentive regarding rainwater harvesting. Design of RWH system for residence or housing society.</p>	6
Pedagogy	<p>4. Visit to a rain water harvesting site.</p>	

	5. Documenting importance of RWH and its various methods through collage, photography, videos and hand-outs. 6. Case studies of various RWH sites	
5	Solid Waste Management: Assessment of waste, segregation, collection, transportation, treatment and disposal of various types of Municipal waste. Waste collection methods for multi-storey buildings. Waste to wealth concept – organic waste composting and applications; Inorganic waste recycling and reusing applications. Special requirements: Central LPG Supply System, Medical Gases Supply systems, Central Vacuum and Waste Collection.	6
Pedagogy	1. Case study presentations on waste to wealth application.	

List of Experiments or Programs

Sl.No	Exercises	COs
1	Visit to rain water harvesting park	CO1, CO2
2	Visit to a campus or housing society to understand space requirement and design of STP, RWH, and plumbing, OHT, sump and other building services.	CO1, CO2, CO4
3	Design of detail plumbing drawing of a residence with Solar water heater supply	CO5
4	Market survey for plumbing fittings and fixtures	CO1, CO3
5	Case study on waste to wealth application. Or mini project design on waste to wealth concept.	CO5

Reference Books

1	Deshpande, RS. A Text Book of Sanitary Engineering, Vol:1, United Books, Pune, 1959.
2	Birdie, G. S. and Birdie J. S. Water Supply and Sanitary Engineering, DhanpatRai Publications, 2010

Weblinks and Video Lectures (e-Resources)

1	https://ndl.iitkgp.ac.in
2	https://www.youtube.com/watch?v=0_ZcCqqpS2o
3	https://www.youtube.com/watch?v=FvPakzqM3h8
4	https://www.youtube.com/watch?v=CdnZXvE4SKc
5	https://www.youtube.com/watch?v=LBy9Oulayjc
6	https://www.youtube.com/watch?v=KMP9-49I1U4

Course Outcomes: At the end of the course, the student will be able to:

CO	Course Outcomes	RBT Level	Level Indicator
CO1	Understand the basic systems and processes of water supply, sanitation, rain water harvesting and solid waste management in cities.	Remember and understand	L1, L2
CO2	Apply the knowledge of plumbing layout and RWH in any architectural projects.	Apply	L3
CO3	Analyze the water supply and sewerage system demand and problems and suggest sustainable solutions.	Analyze	L4
CO4	Evaluate various materials, fittings, fixtures and technologies available in market for its application in architectural projects.	Evaluate	L5
CO5	Design plumbing and drainage system for an architectural project and develop design model for waste recycling.	Design	L6

Mapping of Course Outcomes to Program Outcomes:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1															
CO2	3														
CO3						1	2			1				2	2
CO4			2	3		3									
CO5									2						

Assessment Pattern (both CIE and SEE)

3 Credit Course – BSAE

Assessment Method	Component	Type of Assessment	Assessment Type used	Max. Marks	Evaluation Details	Reduced Marks	Min. Marks	Total	
CIE	IA exams	Theory exam	IA exams	50	passing in 2 internal assessments	20	10	20	
	Total CIE Theory						10	20	
	Continuous Comprehensive Assessment (CCA)	CCA 1	quiz, crossword, reports, Market survey, field visit, case studies		50	Answering assignment questions, Quiz activities and Conduction of market surveys, case study presentation and field visit reports.	15	7.5	15
		CCA 2	Design Activities (as mentioned in each module)		50	Plumbing dwg. of a 2 bhk house which includes: OHT, RWH, STP and other plumbing connections.	15	7.5	15
Total CIE Practical / Activities						15	30		
SEE	SEE Exam will be Theory exam			100	SEE Exam will be Theory exam	50	20	50	
CIE+SEE						50	100		

NOTE: The Minimum Marks to be secured in CIE to appear for SEE shall be 25 (50% of Maximum marks – 50). The Minimum Marks to be secured in SEE shall be 20 (40% of Maximum marks – 50). The design activities will be assessed through only CIE. The passing percentage shall not be less than the 50% in aggregate for a course (i.e. CIE and SEE (put together). Based on the marks scored in CIE+SEE grading will be awarded for this course.

CIE- Continuous Internal Evaluation (50 Marks)

Bloom's Category	IA Theory	Practical
	20 Marks	30 Marks
Remember	IA 1 & 2	
Understand	IA 1 & 2	
Apply	IA 1 & 2	
Analyse		Market survey
Evaluate		Case study
Create		Plumbing drawings and design activities

CIE Internal Assessment Test Plan

CO's	Marks Distribution						Total Marks	Weightage
	Test-1			Test-2				
	Module-1	Module-2	Module-3	Module-4	Module-4	Module-5		
CO1	10	10	10	10	10	10	60	40%
CO2	10	20	10	10	-	10	60	40%
CO3	-	-	10	-	10	10	30	20%
CO4	-	-	-	-	-	-	-	-
CO5	-	-	-	-	-	-	-	-
Total	30	20	30	20	20	30	150	100%

SEE- Semester End Examination (50 Marks)

Bloom's Category	SEE Marks (Theory exam of 100 marks to reduce to 50)
Remember	20%
Understand	20%
Apply	20%
Analyse	20%
Evaluate	-
Create	-

SEE Course Plan

CO's	Marks Distribution					Total Marks	Weightage
	Module-1	Module-2	Module-3	Module-4	Module-5		
CO1	10	10	10	10	-	40	60%
CO2	10	10	10	10	-	40	20%
CO3	-	-	-	10	10	20	20%
CO4	-	-	-	-	-		
CO5	-	-	-	-	-		
Total	20	20	20	30	10	100	100%

Course Contents and Lecture Schedule

Module No.	Topics	No. of Lecture hrs.
1	Importance of WSS services and need of its provision by the municipality	1
1	Water supply – sources, Intakes and transportation and Quality of water	2
1	Quantity and demand estimation – requirement for different uses	2
1	Water treatment	3
1	Water distribution and house connection	1
1	OHT design and space estimation	1
2	History of sanitation and rural sanitation systems	1
2	Assessment and Collection of wastewater from all sources	1
2	Conveyance and material of sewers	1
2	Sewer apparauntuce	1
2	Sewage treatment plant and methods	3
2	Septic tank design and space estimation	2
2	Decentralised methods of waste water treatment	1
3	Plumbing – single stack, double stack, hot water and cold water	2

3	Traps and valves	2
3	Fitting and materials of plumbing	1
3	Sanitary fixtures	2
3	Market survey	2
3	Solar water heaters and plumbing concerns in multi storey buildings	1
4	Storm water Management - Assessment, flood control measures, Drainage system	1
4	Rain water harvesting – ground recharge, roof top collection and design, rural methods of rain water harvesting	2
4	Site visit and case study	2
4	Policies, norms and incentives for RWH and recycling of water	1
5	Solid waste management – types, segregation, collection and conveyance	1
5	Treatment of Solid waste	1
5	Waste recycling – organic and inorganic	1
5	Waste to wealth – concept , case study and design	2
5	Special service requirements	1
Total		42 Hrs.

**ABILITY ENHANCEMENT
COURSE (AEC)**



Dayananda Sagar Academy of Technology & Management (Autonomous Institute under VTU)

Semester	:	3 rd			
Course Title	:	SOCIAL CONNECT & RESPONSIBILITIES			
Course Code	:	23UH39			
Course Type	:	INTEGRATED			
Category	:	AEC (Ability Enhancement Course)			
Stream	:	Any Dept.			
Total Hours/week (L:T:P:S)		1:0:0:0	CIE	:	50 Marks
Total Hours/semester	:	15 Hrs.	SEE	:	-
Credits	:	01	SEE Duration	:	-

Course Learning Objectives: Students will be taught

Sl.No	Course Objectives
1	Enable the student to do a deep dive into societal challenges being addressed by NGO(s), social enterprises & the government and build solutions to alleviate these complex social problems through immersion, design & technology
2	Provide a formal platform for students to communicate and connect to their surroundings
3	Enable to create of a responsible connection with society

Teaching-Learning Process

Pedagogy (General Instructions):

These are sample Strategies; which teachers can use to accelerate the attainment of the various course outcomes.

- **Project-based learning:** Each module will involve a project where students will research, implement, and document a sustainability initiative. This fosters critical thinking, problem-solving, and teamwork skills.
- **Experiential learning:** Field trips, heritage walks, and visits to local farms will provide students with firsthand experience of sustainability challenges and solutions.
- **Community engagement:** Collaboration with neighboring villages and local craftspeople will encourage students to connect with their community and understand local practices.
- **Creative expression:** Documentary filmmaking or photo blogging allows students to document their learning visually and engage a wider audience.
- **Organisation Building:** Social immersion with NGOs/social sections will be a key part of the course. Will all lead to the course project that will address the needs of the social sector?



DSATM

Scheme of Teaching and Examinations for BE Programme -2023-24
Outcome Based Education and Choice Based Credit System (CBCS)
(Effective from the Academic Year 2023-24)

COURSE SYLLABUS

Module No.	Contents of the Module	Hours
1	Plantation and adoption of a tree: Plantation of a tree that will be adopted for four years by a group of B Arch. students. They will also make an excerpt either as a documentary or a photo blog describing the plant's origin, its usage in daily life, and its appearance in folklore and literature.	4
Pedagogy	<ul style="list-style-type: none">• Guest lectures by botanists or environmentalists.• Field trip to a nursery or botanical garden.• Research on the chosen tree species origin, uses, and cultural significance.• Group discussions and presentations on folklore and literature.• Documentation through filming or photo blogging.	
2	Heritage walks and crafts corner: Heritage tour, knowing the history and culture of the city, connecting to people around through their history, knowing the city and its craftsman, photo blog and documentary on evolution and practice of various craft forms.	4
Pedagogy	<ul style="list-style-type: none">• Guided heritage walks by a local historian or resident.• Interviews with craftspeople to understand traditional techniques and materials.• Workshops on specific crafts (optional).• Collaborative research on the evolution of crafts.• Photo blog or documentary creation showcasing the learning experience.	
3	Organic farming and waste management: Usefulness of organic farming, wet waste management in neighbouring villages, and implementation in the campus.	3
Pedagogy	<ul style="list-style-type: none">• Field visits to organic farms or composting facilities.• Interactive workshops on organic farming techniques and waste management.• Collaboration with local villages to implement waste management solutions in the campus.• Reflection papers on the importance of organic farming and waste management.	
4	Water Conservation: Knowing the present practices in the surrounding villages and implementation in the campus, documentary or photo blog presenting the current practices.	2
Pedagogy	<ul style="list-style-type: none">• Case studies on water conservation practices in villages.• Guest lectures by water management experts.• Design and implementation of water conservation measures in the college campus• Students monitor water usage and create a documentary or photo blog highlighting current practices and implemented solutions.	
5	Food Walk City's culinary practices, food lore, and indigenous materials of the region used in cooking.	2
Pedagogy	<ul style="list-style-type: none">• Guided tour of local food markets or historical sites related to food culture.• Interactions with street vendors and traditional cooks.• Research on the region's culinary practices, food lore and indigenous ingredients.• Documentation through photos, videos, or blog posts showcasing the food walk experience.	

Assessment Pattern (both CIE and SEE)

1 Credit Course – AEC								
Assessment Method	Component	Type of Assessment	Assessment Type used	Max. Marks	Evaluation Details	Reduced Marks	Min. Marks	Total
CIE	Studio	Continuous Assessment Tool	Presentations/Participations/Design	20	Creativity and Abstraction (5 marks) Presentation and communicating given subject using digital tool (2.5 marks) Quality, completeness, clarity and legibility in model making (2.5 marks)	10	5	10
		AAT	Portfolio	20	Quality of portfolio (10 Marks)	10	5	15
		AAT	Participation in all events	40	Knowledge and understanding (6 marks) Presentation (4 marks) Engagement and Interaction (10 mark)	20	10	30
		AAT	Skit/ Role Play	20	Narration (5 Marks) Performance (5Marks)	10	5	15
Total CIE Practical							25	50
The Marks of Continuous Internal Evaluation (CIE) is 50. The student has to obtain a minimum of 50% (i.e 25 marks out of 50 marks) to pass in CIE.								

CIE- Continuous Internal Evaluation (50 Marks)

Bloom's Category	Continuous Assessment Tests			
	Seminar	Participation	Portfolio	Role Play
	10 Marks	20 Marks	10 Marks	10 Marks
Remember	2	2	2	2
Understand	2	2	2	1
Apply	4	-	1	2
Analyse	2	3	-	
Evaluate	-	3	-	-
Create	-	10	5	5

Course Contents and Lecture Schedule

Module No.	Topics	No. of Lecture Hrs.
1	Presentation on ancient water systems, different species, farming	2
1	Field trip to a nursery or botanical garden.	2
2	Heritage walks to craft villages and historical towns	2
3	Understanding waste management systems and water conservation methods	2
3	Skit/Role play about social responsibilities	3
4	Presentation on ancient water systems,	2
5	Presentation on food culture	2
Total		15 Hrs.

4th SEMESTER

**PROJECT BASED
LEARNING (PBL)**



Dayananda Sagar Academy of Technology & Management
(Autonomous Institute under VTU)

Semester	:	4th			
Course Title	:	ARCHITECTURAL DESIGN - IV			
Course Code	:	23ARC41			
Course Type	:	Studio			
Category	:	PCC (Professional Core Courses)			
Stream	:	Architecture			
Total Hours/week (L: T:P:S)	:	0:0:0:8	CIE	:	100 Marks
Total Hours/semester	:	120 hrs.	SEE (Viva-Voce)	:	100 Marks
Credits	:	08	SEE Duration	:	-

Course Learning Objectives: Students will be able to

Sl. No	Course Objectives
1	From space to dwelling: An understanding of what it means to dwell in a space/s and to further explore as to why and how people choose to dwell together.
2	This semester follows on the heels of the past one, where students have attempted to understand the nature of places with shared memories and purposes.

Teaching-Learning Process

Pedagogical Initiatives:

Some sample strategies to accelerate the attainment of various course outcomes are listed below:

1. Adopt different teaching methods to attain the course outcomes.
2. Include videos to demonstrate various concepts in C.
3. Encourage collaborative (Group) Learning to encourage team building.
4. Ask at least three **HOTS (Higher-order Thinking Skills)** to promote critical thinking.
5. Adopt **Problem-Based Learning (PBL)**, which fosters students' analytical skills, and develops thinking skills such as evaluating, generalizing, and analyzing information rather than simply recalling it.
6. Show different ways to design a space and encourage the students to come up with creative and optimal solutions.
7. Discuss various case studies to map with real-world scenarios and improve the understanding.
8. Devise innovative pedagogy to improve **Teaching-Learning Process (TLP)**.



Scheme of Teaching and Examinations for BE Programme -2024-25
Outcome Based Education and Choice Based Credit System (CBCS)
(Effective from the Academic Year 2024-25)

DSATM

COURSE CURRICULUM

Module No.	Topics	Hours
A	<p>MINOR PROJECT - The Dwelling: How spaces change when people stake claim over them, and what boundaries are drawn between what is private and the many stages between that and the common public space.</p> <p>What it means to arrive "home", and what is the nature of that feeling of belonging that one gets when we "arrive" and are welcomed in to a familiar space.</p> <p>We enquire into the nature of a dwelling space, and what is the nature of spaces outside them? Common rangolis, porches, verandas, balconies, paths, pavements, plinths, wells, washing areas, vrindavanas, backyards, parking spaces for carts, cattle, and vehicles. We need to enquire in the nature of the spaces in-between these.</p> <p>Picking from memories, can we recollect and draw spaces that endure, ones that recall the same feelings and create similar expectations as before, Which spaces and behaviours have changed, and which remain. Which are in transition.</p>	12
Pedagogy	<p>Vacation Assignment Students have to study their own House and street (group of housing) to understand the architectural aspects through pin up board discussion</p>	
B	<p>Dwelling Together:</p> <p>Explore as to why people live together, and how we have lived together in the past. Questions to be addressed here are:</p> <ul style="list-style-type: none"> • How do we make common decisions? • What do we share, and when, where and how does it change to the more intimate, personal space? • Which spaces are "designed"? What What is the meaning of "organic" growth? What is the meaning of Vernacular Architecture? • What is the meaning of the term "sustainable"? 	12
Pedagogy	<p>Vacation Assignment Students have to study their own House and street (group of housing) to understand the architectural aspects through pin up board discussion and model.</p>	
Assignment-1	<p>SITE VISITS – Physical Case Study</p> <ul style="list-style-type: none"> • Two site visits to observe, discuss and document existing residential settlements (formal and informal), housing projects. • The emphasis should be on both conceptual understanding and accurately measured drawing. However, scale and proportion need to be observed carefully, as a method of understanding buildings. • Attention should be given to community spaces/common areas, the kind of materials, quality of environment and the emergent grouping of individual dwellings. • Sketches and documentation should show observations and inferences from the studies. 	12
Pedagogy	Physical Case study – Presentation with Models.	
Assignment-2	<p>SEMINARS – Literature Study</p> <ul style="list-style-type: none"> • To understand the architect as the facilitator: the architect's role in the process of building a dwelling community. • To understand some issues related to group housing/dwelling or 	12

	<p>settlements like basic services [lighting, ventilation & water supply] and building regulation.</p> <p>3) To explore the character of community spaces and their significance in housing projects [points of discussion could include different ways of occupying land: rentals, ownership, temporary squatting, organic settlements, and informal urban settlements].</p> <p>Indigenous building technologies, Post-Independence Housing: Otto Koenigsberger.</p> <p>4) Studying housing projects in India [Laurie Baker, BV Doshi, Charles Correa, MN Ashish Ganju, Raj Rewal, Shilpa Sindoor, Revathi Karnath] and other contemporary housing projects from around the world.</p>	
Pedagogy	Online Case study (Literature Study) – Presentation with Models	
Assignment- 3	<p>MAJOR PROJECT</p> <p>One major project (from formal apartment settlements be taken as design project) (Activity) and one time problem (looking at an informal settlement or vernacular parts of the city or rural setting for settlement/ community study and design) assignment to be tackled in the semester. Project work could be done in the following four stages of activity interspersed with seminars.</p> <ul style="list-style-type: none"> • Introduction to the initial design parameters which include choice of: <ul style="list-style-type: none"> • Geography/situation (context), • Understanding the dwellers, their lifestyle, and social context, and the materials used locally • Exploring ways in which dwellers come together to live in a small community. • Sustainable design principles and sustainable services (eg. Storm water harvesting, waste water reuse, solar power, etc.) Integration • Explore issues of community, public and private realms, edge conditions, communication and connectedness. • Enquire into individual and family/user group needs and aspirations. • The emphasis in the studio has to be on inclusion and integration of differences in age, gender, mobility, health, economic status. In today's world, there is a need to make buildings equitable to all at the outset, and we should begin with our dwellings. <p>5. Suggested plot size: From 4500 - 8500 sqm</p>	72
Pedagogy	<p>Pin Up Board Discussion</p> <p>Site Analysis - Data Collection, Physical Model</p> <p>Concept Development, Zonal Regulations, Program, Area Statement</p> <p>Bubble diagram, Zoning and Design.</p> <p>ALL ARCHITECTURAL DRAWINGS</p> <p>(Case study + Literature study+ Site Analysis + Concept+ Master plan+ section+ elevation+ double line plans ETC)</p>	
<p>Course outcome (Course Skill Set)</p> <p>the student will be able to:</p> <ul style="list-style-type: none"> • Get an introduction into the field of Architectural Design viz. a viz. the duality & the tension that exists between the form and function of a space. • Make responsible choices for design development • Get a perspective on design of spaces in formal and informal settlements. 		
<p>Activity Based Learning (Suggested Activities in Class)/ Practical Based learning</p> <p>the class be divided into groups to study on the formal housing (apartment for Middle-income groups) and the Informal settlement (rehabilitation/redesign/retrofitting for low-income groups - affordable housing)</p>		

List of Exercises:

Sl. No.	Experiments/Programs	COs
1	Minor Project –The Dwelling and Dwelling together – Analysis and Interpretation	CO1, CO2, CO3
2	Major Project – Case study & Literature Study	CO1, CO3, CO4
3	Major Project – Site Analysis	CO1, CO3
4	Major Project – Concept Development, Program, Area Statement, Zonal Regulations	CO1, CO2, CO3
5	Major Project - Design	CO4, CO5

Reference Books	
Books (Title of the Book/Name of the author/Name of the publisher/Edition and Year)	
1	Amos Rapoport, "House Form and Culture", Prentice-Hall, 1969
2	Christopher Alexander, "Pattern Language", Oxford University Press, 1977
3	Christopher Alexander, "A Timeless Way of Building", Oxford Uni. Press, 1979
4	Gautam Bhatia, "Laurie Baker, Life, Work, Writings", Viking, 1991
5	Dick Van Gameren & Rohan Verma, "Designs for Housing: Charles Correa", 2018
6	Atul Deulgaonkar, "Laurie Baker, Truth in Architecture", Jyotsna Prakashan, 2015
7	Otto Koenigsberger, "Manual of Tropical Housing and Building", 1975
8	Geoffrey Bawa, The Complete Works, 2002

Weblinks and Video Lectures (e-Resources)	
1	https://ndl.iitkgp.ac.in
2	https://www.youtube.com/watch?v=ly8orBNiNQM
3	https://www.youtube.com/watch?v=k4dVgbuxBAw

Course Outcomes: At the end of the course, the student will be able to:

CO	Course Outcomes	RBT Level	RBT Level Indicator
CO1	To understand the spaces of House, Housing of different typologies.	L1, L2	Remember and understand
CO2	To apply the knowledge gained to study physical case studies and Literature studies on House, Housing.	L3	Apply
CO3	To analyze spaces of the typologies of House and Housing with different methods, technologies.	L4	Analyse
CO4	To evaluate functional, Structural, aesthetical, spatial aspects of House and Housing.	L5	Evaluate
CO5	To design/create the House and Housing with Context analysis, Site physical constraints, Climate of the place etc.,	L6	Design

Mapping of Course Outcomes to Program Outcomes:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO3	-	3	-	-	-	2	-	-	-	-	-	-	-	-	-
CO4	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-
CO5	-	-	3	-	2	-	2	-	-	2	-	-	2	-	2

Assessment Pattern (both CIE and SEE)

8 Credit Course –										
Assessment Method	Component	Type of Assessment	Assessment Type used	Max. Marks	Evaluation Details	Reduced Marks	Min. Marks	Total		
CIE	Studio Assessment	AAT	Individual Discussion	50	Regular on time discussion + Incorporation of changes in design + Presentation skills.	25	12.5	25		
			Group Work	20	Observations at site + Group Co-ordination + Analysis	15	7.5	15		
			Models	20	Precession, Materials and Scale.	10	5	10		
			Sheets	20	Presentation, Accuracy, Details, Architectural Drawings.	10	5	10		
			Total CIE Studio						30	60
			Panel Review	Viva Voce	Review	50	Presentation skills, Communication of ideas, Design	25	12.5	40
					Portfolio + Models	30	Sheet Presentation, Accuracy, Details, Architectural Drawings. etc, presentation	15	7.5	
Total CIE Review						20	40			
SEE	External Viva Voca			100	Portfolio + Model + Review	-	40	100		
CIE+SEE							100	200		
<p>The Minimum Marks to be secured in CIE to appear for SEE shall be 50 (50% of Maximum marks – 100) in the Studio Assessment and Internal Review and 40 (40% of Maximum Marks -100) in the External Viva Voce. The total of CIE + SEE shall be a minimum of 100 (50% of Maximum Marks -200).</p>										

Course Contents and Lecture Schedule

ModuleNo	Topics	No. of Lecture Hrs.
A & B	Minor Project - Vacation Assignment Students have to study their own House and street (group of housing) to understand the architectural aspects through pin up board discussion	16 Hrs
Review - 1		8 Hrs
Assignment 1	Site Visit - Case Study	8 Hrs
Assignment 2	Seminars - Literature Study	8 Hrs
Review - 2		8 Hrs
Assignment 3	Major Project – Site Visit & Analysis - Site Model	8 Hrs
	Concept Development	8Hrs
	Program, Area Statement, Zonal Regulations, Zoning	8 Hrs
	Master Plan development	8 Hrs
	Design Development - Single line plans with section & elevation	16 Hrs
	Double line plans with services, structural aspects, Climatic aspects, Sustainable design principles.	16 Hrs
Final Internal Review		8 Hrs
Total		120 Hrs

Assessment Details (both CIE and SEE)

(methods of CIE need to be defined topic wise i.e.- Studio discussions, Reviews, Time problems, test, Seminar or micro project)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The student has to obtain a minimum of 50% marks individually both in CIE and 40 % marks in SEE to pass. Semester End Exam (SEE) is conducted for 100 marks (Viva-voce). Based on this grading will be awarded.

Continuous Internal Evaluation:

Methods suggested:

- Studio discussions, Reviews, Time problems, Seminar or minor project, report writing etc.
 - The subject teacher has to decide the topic for the Design and Seminars if any, in the beginning only. The teacher has to announce the methods of CIE for the subject in advance in writing.

Semester End Examination:

- The student needs to submit his/her works done throughout the semester, including rough sheets for the Viva examination, at least one day prior to the Viva work examination to the course teacher/ coordinator.
- The Viva-voce will be evaluated by an external teacher appointed by the University along with Course teacher or an internal examiner.
- The SEE marks list generated is to be signed by both internal and external examiners and submitted to examination department in the sealed cover through the HOD of the Department.



Dayananda Sagar Academy of Technology & Management (Autonomous Institute under VTU)

Semester	:	4th			
Course Title	:	BUILDING SERVICES II (ELECTRICAL & ILLUMINATION)			
Course Code	:	23ARC44			
Course Type	:	Theory			
Category	:	BSAE (Building Science & Applied Engineering Courses)			
Stream	:	Architecture			
Total Hours/week (L:T:P:S)		3:0:0:0	CIE	:	50 Marks
Total Hours/semester	:	42 Hrs.	SEE (Theory)	:	50 Marks
Credits	:	03	SEE Duration	:	3 Hrs.

Course Learning Objectives: Students will be able to:

Sl. No	Course Objectives
1	To introduce students to electrical services and illumination and to sensitize them with respect to their integration into Architectural Design
2	To introduce students to the green building councils of India and codes (BEE, GRIHA, IGBC).
3	To sensitize students about the energy consumption and carbon emissions of different electrical equipment, technologies and lighting.
4	To address energy requirements in different socio-economic sections of the society. Introduction and study of renewable energy systems.

Teaching-Learning Process

Pedagogical Initiatives:

Some sample strategies to accelerate the attainment of various course outcomes are listed below:

1. Lecture method (L) does not mean only the traditional lecture method, but a different type of teaching method may be adopted to develop the outcomes.
2. Show Video/animation films to explain the infrastructures and the mechanism involved in the principle.
3. Encourage collaborative (Group) Learning in the class.
4. Ask at least three HOT (Higher-order Thinking) questions in the class, which promotes critical thinking.
5. Adopt Problem Based Learning (PBL), which fosters students' Analytical skills, develop thinking skills such as the ability to evaluate, generalize, and analyze information rather than simply recall it.
6. Topics will be introduced in multiple representations.
7. Show the different ways to solve the same problem and encourage the students to come up with their own creative ways to solve them.
8. Discuss how every concept can be applied to the real world - and when that's possible, it helps improve the students' understanding.
9. Individual teachers can devise innovative pedagogy to improve teaching-learning.



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COURSE CURRICULUM

Module No.	Topics	Hours
1	<p>Electricity Generation; Transmission and Distribution:</p> <p>1. Introduction to Electrical Services: Introduction to commonly used terminology – Voltage, Current, Power, Connected Load, Max. Demand, Load Factors, Diversity Factor Etc.; Importance of Electrical Services and Its implications on building design; Introduction to Codes and Standards like National Building Code, National Electric Code (including Renewable/Clean energy/ Green Building codes), IS Codes, State Electricity Board and Chief Electrical Inspectorate Guidelines</p> <p>2. Supply and distribution of electricity to buildings: Brief introduction to various Sources for Electricity generation. Introduction to Transmission and Distribution system (from generation to Building's main). Working principles of Sub-Stations & Transformers.</p>	6
Pedagogy	<p>1) The teacher can use PPTs, Videos to discuss Electrical services in a building. 2) The site visit to an electrical substation. 3) Quizzes, models, seminars from students can be encouraged.</p>	
2	<p>Internal Electrical distribution systems and Renewable Energy Systems:</p> <p>1. Residential & Commercial Building internal electrical distribution system: Power Requirement, RMU, HT & LT Metering Panels & Sub Metering Panels, Generators, UPS requirements, Wiring Systems, Wiring Installation systems, distribution systems in high rise buildings (Activity 1 and 2)</p> <p>2. Introduction to Renewable Energy Systems (On-Site and Off-Site): Understanding the primary importance of thermal load reduction (i.e. reducing artificial cooling and heating energy needs in buildings) as a prerequisite for Net Zero Energy Building Design. Solar, Wind, Bio-Mass, Achieving Net Zero Building Design through utilization of above natural resources & Energy Conservation techniques. (Activity 3). Green Power Generation and minimizing ecological imbalance through sustainable green technologies for the safety of people.</p>	10
Pedagogy	<p>1) The teacher can use PPTs, Videos to discuss Electrical services in a building. 2) The students need to draw an electrical layout of a building with details. 3) Quizzes, models, seminars from students can be encouraged.</p>	
3	<p>Protection Systems:</p> <p>3. Switchgear & Protection Devices – Fuses, Breakers: Miniature Circuit Breakers; Earth Leakage Circuit Breakers; Moulded Case Circuit Breakers & Air Circuit Breakers and Protection Relays.</p> <p>4. Earthing & Lightning Protection System: Definition, Purpose; Types of Earthing Systems, Factors affecting selection and system specification - Type of Soil, water table, soil resistivity etc. Brief about new advances in earthing systems; Lightning system design - Factors affecting the system specification, basic rules as per NBC and other relevant codes</p>	8
Pedagogy	<p>1) The teacher can use PPTs, Videos to discuss Electrical systems in buildings. 2) The students to sketch the protection systems employed in a building.</p>	

	3) Quizzes, models, seminars from students can be encouraged.	
4	Illumination: 5. Fundamentals: Quality & Quantity of Lighting; Recommended Lux Levels; Type of Lamps – Incandescent, Discharge Lamps, Fluorescent, CFL, LED and OLED. Integration of Day lighting with Artificial Lighting, Control Systems, Laws of illumination, high energy and low energy (sustainable) lighting. 6. Techniques, Principles and Applications: Lighting Methods - Ambient, Task & Accent lighting; Systems of Luminaries - Up-Lighting, Down-Lighting, Spot Lighting etc.; Street Lighting, Façade Lighting, Landscape Lighting, Architectural Typologies; Preparation of Lighting Layout. (Activity 4) 7. Introduction to lighting design software. (Activity 5)	10
Pedagogy	1) The teacher can use PPTs, Videos to discuss Illumination services in buildings. 2) The students to sketch the illumination systems employed in a building, Quizzes, Market Surveys, seminars from students can be encouraged. 3) Softwares could be used to make students understand the current applications.	
5	Extra Low Voltage Systems and Load Estimation: 8. Extra Low Voltage systems: Telephone; Data & Cable TV Networking; Service provider requirements; Point matrix for Individual residential / Apartment. 9. Electrical Layout Design and Load Estimation: Residential Electrical Layout Design (using symbols as per IS codes), Compliance to local building codes; and Electrical Load Calculations. (Activity 6)	8
Pedagogy	Case studies: Typical Layouts & Layout Generation for Lighting, Transformers Yards, Generator Rooms, Lighting layouts for shops/clinic. Site Visits: Sub-Stations, Transformer Yards, Generator Yards and Panel Rooms etc. of Multi- storied Residential Buildings/Campus, Hotels, Hospital & IT Buildings etc.	
	Pedagogical Initiatives (Not limited to): 1. Think Pair and Share (Blended Learning): provides an opportunity for students to learn from one another. 2. Problem Solving: encourages cognitive thinking and enables creative problem solving. 3. Poster Presentation: allows students to represent the concepts visually in order to understand the topics easily. 4. Case studies: maps different domains in real time applications. 5. Demonstration: exhibits the implementation process.	

List of Activities:

Sl. No.	Activities	COs
1	Case study on distribution of electricity from grid to individual flats in a high-rise residential building.	CO1 & CO3
2	Case study on electricity distribution in a Sub station	CO1 & CO3
3	Presentation on analysis of Literature study of different NZEBs.	CO1 & CO3
4	Market Survey on different types of lamps & Luminaires and analysis on where they should be used.	CO1, CO2 & CO3
5	Generation of lighting design with required artificial and day light integration with specified opening within a space given.	CO3, CO4 & CO5

6	Design an electrical layout for a 2-bed room residential house with load estimation of the electricity per month.	CO4 & Co5
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Text Books	
Sl. No.	Title of the Book/Name of the author/Name of the publisher/Edition and Year
1	L.Uppal ; Electrical Wiring, Estimating & Costing.
2	Fundamentals of Lighting by Susan M. Winchip.
Reference Books	
1	Anwari ; Basic Electrical Engineering.
2	National electric Code, Indian Electricity Rules 1956, Energy Conservation and Building Code.
3	National Building Code, 2016 – Part 8 (Section 1, 2, 6).
4	Code of Practice for Interior Illumination (IS 3646-1 (1992); Indian Standard - BIS.

Weblinks and Video Lectures (e-Resources)	
1	https://ndl.iitkgp.ac.in
2	https://www.youtube.com/watch?v=8DEap6exAB0
3	https://www.youtube.com/watch?v=qY_VzvksNa8
4	https://www.youtube.com/watch?v=ofWq03WPeK0
5	https://www.youtube.com/watch?v=lebfivdLVvM
6	https://www.youtube.com/watch?v=5cr71HISw6k

Course Outcomes: At the end of the course, the student will be able to:

CO	Course Outcomes	RBT Level	RBT Level Indicator
CO1	Understand and remember the terminology, Codes, Standards, Laws, equipments, devices, accessories used in different stages from generation till distribution of electrical Power supply and Illumination services for functions in buildings through various resources.	Remember & understand	L1 & L2
CO2	Apply different conservation techniques for achieving the optimum usage of electrical services and also looking at the safety measures through conventional, non-conventional and sustainable methods	Apply	L3
CO3	Analyse the best electrical accessories, installation systems and integration methods to be used for various functions in a building for ensuring the optimum usage.	Analyse	L4
CO4	Evaluate the required electrical load for a specified function of a layout.	Evaluate	L5
CO5	Design an electrical/lighting layout for any specified spaces through following the standards and codes.	Design	L6

Mapping of Course Outcomes to Program Outcomes:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1															
CO2	3														
CO3						1	2			1				2	2
CO4			2	3		3									
CO5									2						

Assessment Pattern (both CIE and SEE)

3 Credit Course – BSAE

Assessment Method	Component	Type of Assessment	Assessment Type used	Max. Marks	Evaluation Details	Reduced Marks	Min. Marks	Total
CIE	IA exams	IAT 1	Internal Assessment exams	50	(50+50)/2	20	10	20
		IAT 2		50				
	Total CIE (IAT)						10	20
	Continuous Comprehensive Assessment (CCA)	CCA 1	CCA-1- (site visits, market surveys, seminars, group presentations)	50	(50+50)/2	15	7.5	15
CCA 2		CCA-2- Electrical Dwg. And load calculation	50	15		7.5	15	
Total CIE Practical / Activities							15	30
TOTAL CIE							25	50
SEE	SEE Exam will be Theory exam			100	SEE Exam will be Theory exam	50	20	50
CIE+SEE							50	100

NOTE: The Minimum Marks to be secured in CIE to appear for SEE shall be 25 (50% of Maximum marks – 50). The Minimum Marks to be secured in SEE shall be 20 (40% of Maximum marks – 50). The design activities will be assessed through only CIE. The passing percentage shall not be less than the 50% in aggregate for a course (i.e. CIE and SEE (put together)). Based on the marks scored in CIE+SEE grading will be awarded for this course.

CIE- Continuous Internal Evaluation (50 Marks)

Bloom's Category	IA Theory	Practical
	20 Marks	30 Marks
Remember	IA 1 & 2	
Understand	IA 1 & 2	
Apply	IA 1 & 2	
Analyse		Market survey
Evaluate		Case study
Create		Electrical drawings and activities

CIE Internal Assessment Test Plan

CO's	Marks Distribution					Total Marks	Weightage
	Test-1		Test-2				
	Module-1	Module-2	Module-3	Module-4	Module-5		
CO1	5	5	-	-	-	10	20%
CO2	5	5	5	-	5	20	40%
CO3	-	-	5	5	5	15	30%
CO4	-	-	-	5	-	5	10%
CO5	-	-	-	-	-	-	-
Total	10	10	10	10	10	50	100%

SEE- Semester End Examination (50 Marks)

Bloom's Category	SEE Marks (Theory exam of 100 marks to reduce to 50)
Remember	20%
Understand	20%
Apply	20%
Analyze	20%
Evaluate	-
Create	-

SEE Course Plan

CO's	Marks Distribution					Total Marks	Weightage
	Module-1	Module-2	Module-3	Module-4	Module-5		
CO1	10	10	10	10	-	40	60%
CO2	10	10	10	10	-	40	20%
CO3	-	-	-	10	10	20	20%
CO4	-	-	-	-	-		
CO5	-	-	-	-	-		
Total	20	20	20	30	10	100	100%

Course Contents and Lecture Schedule

Module No.	Topics	No. of Lecture hrs.
1	Electricity	2
1	Generation, Transmission and Distribution	4
2	Internal Electrical distribution systems	4
2	Renewable Energy Systems	6
3	Protection Systems Fuses & MCB's	4
3	Earthing & Lightning systems	4
4	Illumination, Lamps and their types	4
4	Artificial and natural light integration and lighting design principles	4
5	Extra Low Voltage Systems	2
5	Electrical Drawing and load calculation	6
	Total	42 Hrs.



Dayananda Sagar Academy of Technology & Management (Autonomous Institute under VTU)

Semester	:	IV			
Course Title	:	Elective 2 - Product Design			
Course Code	:	23ARC48a			
Course Type	:	Integrated			
Category	:	PEC (Professional Elective Courses)			
Stream	:	Architecture			
Total Hours/week (L:T:P:S)		2:0:0:0	CIE	:	50 Marks
Total Hours/semester	:	28 Hrs.	SEE	:	-
Credits	:	02	SEE Duration	:	-

Course Learning Objectives: Students will be able to:

Sl. No	Course Objectives
1	1) To introduce the students to the discipline of Product Design 2) To develop basic skills required in handling simple product design projects

Teaching-Learning Process

Pedagogical Initiatives:

Some sample strategies to accelerate the attainment of various course outcomes are listed below:

6. Adopt different teaching methods to attain the course outcomes.
7. Include videos to demonstrate various concepts in C.
8. Encourage collaborative (Group) Learning to encourage team building.
9. Ask at least three **HOTS (Higher-order Thinking Skills)** module-wise questions to promote critical thinking.
10. Adopt **Problem-Based Learning (PBL)**, which fosters students' analytical skills, and develops thinking skills such as evaluating, generalizing, and analyzing information rather than simply recalling it.
11. Show different ways to solve a problem and encourage the students to come up with creative and optimal solutions.
12. Discuss various case studies to map with real-world scenarios and improve the understanding.
13. Devise innovative pedagogy to improve **Teaching-Learning Process (TLP)**.
14. Individual teachers can devise innovative pedagogy to improve teaching-learning.



DSATM

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COURSE CURRICULUM

	Preamble: We live in a world of objects. Objects can have meanings, carry associations or be symbols of more abstract ideas. These objects are predominantly functional in nature, some are purely symbolic / decorative in nature and there are a few which combine both the functional with the symbolic and decorative. Great Architecture has demonstrated this fusion of the functional with the symbolic through the ages. Product design, on a smaller scale, seeks to blend the technical with the aesthetic, the utilitarian with the emotional delight; the dialogue between what people need / want vs what people will buy / discard.	
S.N.	Course Outline	Hours
1	1.Product design as a noun: the set of properties of an artifact, consisting of the discrete properties of the form (i.e., the aesthetics of the tangible good and/or service) and the function (i.e., its capabilities) together with the holistic properties of the integrated form and function. 2. Product design as a verb: the process of creating a new product to be sold by a business to its customers. A very broad concept, it is essentially the efficient and effective generation and development of ideas through a process that leads to new products. 3. Product design process: from idea generation to commercialization; concept, development, detail; materiality, technicality, Imageability.	4
2	4. Relationship between Design, Technology and Product. 5. History of product design as a discipline, the various theories of design via study of design practices.	6
3	6. Mode and method of Design Process as applicable to product ideation and development. 7. Materials and manufacturing process and its influence on product ideation and development.	4
4	8.Influence of ergonomics on product ideation and development. 9. Impact of culture i.e. the aesthetics on product ideation and development, the dialogue between people's aspirations and people's needs.	4
5	10. Relationship and difference between craft based and mass manufactured products. 11. Market as a tool for product promotion.	4
6	12. Indian aesthetic sense and its influence on product ideation and development. 13. Influence of product design on other disciplines like automobile styling, furniture, jewellery, toys, systems design, computer interfaces, etc.	6
	Pedagogical Initiatives (Not limited to):	
	15. Short projects along with a time problem will be tackled in the class exploring the influences of design process, and ergonomics on the product ideation and development. 16. The student will also study the product changes that will occur through the choices made of materials, manufacturing process, and marketing techniques. 17. Discussions, video presentations, seminars and case studies will cover all the other topics 18. Activity Based Learning: Study a few houses in Informal settlements. Based on their requirements, design a multipurpose product or spatial resolution that can help informal household dwellers makes their small spaces more multi-functional. (Could be an architectural	

system, furniture, modular low-cost housing, etc.)

Assessment Details (CIE)

(methods of CIE need to be defined topic wise i.e.- Studio/ Class room/Tutorial discussions, Reviews, Time problems, test, Seminar or micro project)

The weightage of Continuous Internal Evaluation (CIE) is 100% and there is no Semester End Exam (SEE). The student has to obtain a minimum of 50% marks in CIE and is conducted for 100 marks, reduced to 50 marks. Based on the CIE marks grading will be awarded.

Continuous Internal Evaluation:

Methods suggested:

1. Studio discussions, Reviews, Time problems, Seminar or micro project, Quiz, report writing etc.
2. The class teacher has to decide the course of learning for the Elective subject, in the beginning only. The teacher has to announce the methods of CIE for the subject in advance in writing.

Semester End Examination:

1. There is no Semester End Exam (SEE) The CIE marks list generated is to be signed by the internal examiners and submitted to examination department as per the procedure through the HOD of the department.

Reference Books

1	Alexander, Christopher, Notes on the Synthesis of Form, Harvard University Press, 1964
2	Morris, R, The fundamentals of product design, AVA Publishing 2009

Course Outcomes: At the end of the course, the student will be able to:

CO	Course Outcomes	RBT Level	RBT Level Indicator
CO1	Remember and understand the fundamental principles, theories in Product design and relationship between user requirements and product design Decisions	L1, L2	Remember and understand
CO2	Apply design principles and methodologies to develop solutions for specific product design challenges	L3	Apply
CO3	Analyze products to evaluate ergonomics, aesthetics & Functional qualities & design approach	L4	Analyze
CO4	Evaluate product design solutions based on specific criteria and user feedback	L5	Evaluate
CO5	Design innovative product prototypes that meet identified user needs and design criteria	L6	Design

Mapping of Course Outcomes to Program Outcomes:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1															
CO2	2					2									
CO3		2		2											
CO4															
CO5			1		2				2	2			2		

Web links and Video Lectures (e-Resources)

1	https://ndl.iitkgp.ac.in
2	https://www.youtube.com/watch?v=KCcvnMb8vNY

CIE Assessment Pattern

Assessment Method	Component	Type of Assessment	Max. Marks	Evaluation Details	Reduced Marks	Min. Passing Marks	Total
CIE	Assignments	Problem identification & Research	20	Product Design Process and final Product Presentation	10	5	10
		Product Design Concept Development	20		10	5	10
		Design & Prototyping	20		10	5	10
		Evaluation & Refinement	20		10	5	10
		Presentation	20		10	5	10
Total					50	25	50

NOTE: The Minimum Marks to be secured in CIE shall be 25 (50% of Maximum Marks – 50).

Course Contents and Lecture Schedule:

Sl No.	Topics	No. of Lecture Hrs.
1	Introduction of product design	4
2	Relationship between Design, Technology and Product	2
2	History of product design as a discipline	4
3	Mode and method of Design	2
3	Materials and manufacturing process	2
4	Influence of ergonomics	2
4	Impact of culture	2
5	Relationship and difference between craft based and mass manufactured products	2
5	Market as a tool for product promotion	2
6	Indian aesthetic sense and its influence on product ideation and development	2
6	Influence of product design on other disciplines	4
Total		28 Hrs