Dayananda Sagar Academy of Technology & Management

(Autonomous Institute under VTU)

Scheme of Teaching and Examinations – 2025
Outcome Based Education (OBE) and Choice Based Credit System (CBCS)
(Effective from 2025-26)

6th SEMESTER: School of Architecture (SOA)

Sl.No	Course Category	Course Code	Course Title	BOS/ TD	Teaching Hours/Week					Credits	Examination				
					Lecture	Tutorial	Practical	Studio	Total		CIE Marks	SEE marks			Total Marks
					L	T	P	S				Duration (Hrs.)	Theory	Viva	
1	PCC	BAT601	Architectural Design-VI	Arch.	-	-	-	8	8	8	100	-	-	100	200
2	BSAE	BAT602	Materials & Methods in Building Construction VI	Arch.	1	-	-	3	4	4	50	4	100	-	150
3	PCC	BAT603	Landscape Architecture	Arch.	2	-	-	1	3	3	50	3	50	-	100
4	PCC	BAT604	Contemporary Architecture	Arch.	3	-	-	-	3	3	50	3	50	-	100
5	BSAE	BAT605	Building Services –IV (Acoustics & Noise Control)	Arch.	3	-	-	-	3	3	50	3	50	-	100
6	BSAE	BAT606	Building structures-V	Arch./ Civil	1	-	-	2	3	3	50	-	-	50	100
7	PCC	BAT607	Working Drawing-I	Arch.	-	-	4	-	4	4	100	-	-	-	100
8	PEC	BAT608(x)	Professional Elective:	Arch.	2	-	-	-	2	2	50	-	-	-	50
9	NCMC	BAT609	Physical Education (Sport &Athletics/Yoga & NSS)	PE/NSS	-	-	2	-	2	0	100	-	-	-	100
10	NCMC	BAT610	Study Tour	Arch	-	-	-	-	-	0	50	-	-	0	50
				Total	12		6	14	32	30	650		250	150	1050

PCC- Professional Core Courses
BSAE- Building Science & Applied Engineering Courses.
SEC - Skill Enhancement Course
HSMC - Humanity Sciences and Management Courses
AEC-Ability Enhancement Course
PEC-Professional Elective Courses
OEC- Open Elective Courses
NCMC - Non-Credit Mandatory Course

Progressive Assessment (Continuous Internal Evaluation) (CIE) to be awarded by the subject teacher.
Semester End Examination (SEE) will be conducted by DSATM.
Viva Voce examination shall be conducted jointly by one internal & one external examiner appointed by BOE-DSATM.
Minimum Marks to be Secured for Passing: In CIE for passing: 50% marks minimum
In Theory (SEE) exam, Term work/Viva Voce: 40% marks minimum
In aggregate (CIE+SEE) 50% minimum marks

PEC	BAT608(a)	Professional Elective: **Culture and Built Environment**
PEC	BAT608(b)	Professional Elective: **Geographical Information System**
PEC	BAT608(c)	Professional Elective: **Design Of High- Rise Buildings**

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Semester	:	**6th**			
Course Title	:	**ARCHITECTURAL DESIGN - VI**			
Course Code	:	**BAT601**			
Course Type (Theory/ Practical/ Integrated)	:	**Studio**			
Category	:	**PCC**			
Stream	:	**Arch**	**CIE**	:	**100 Marks**
Total Hours (L: T:P:S)	:	**0:0:0:8 Hrs/Week**	**SEE**	:	**100 Marks**
Credits	:	**8**	**SEE Duration**	:	**Viva-Voce**

Course Learning Objectives: Students will be able to *enable the students to integrate design with history, theory, building construction and material science in a more informed way.*

Teaching-Learning Process-

Pedagogy (General Instructions):

These are sample Strategies, which teacher 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, labs or 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.

OUTLINE:

- To understand the role of built environments of increasing complexity by:
- Intrinsic factors: Size, volume, levels, functional spaces or zones, structural possibilities
- External factors: site, approach, traffic, climate change, ecology, services
- Constraints: bye-laws, resource and planetary limits, budget, ideology, attitudes
- Create an 'Identity' to the Campus through integration of the above.

MODE OF STUDY

The aim of the studio is to explore STRUCTURING: structuring of a research or a case study, structuring of the program, spatial structuring and informal structuring.

Structuring of research: Case studies, reading material and site studies have to be a directed exercise with the involvement of tutors where visiting the project of concern would be of utmost importance. This studio is also about how one organizes research. It should be mandatory to use analytical models, diagrams to understand the chosen case study in terms of Design Intent, site and spatial structuring. There needs to be emphasis on Graphical consistency and legibility of the study. It is recommended to add a reading list as part of the studio to further enrich this discussion about institutions. Once a week, students could be asked to present the case studies and selected readings to the class. **Structuring program:** Studying requirements from various point of views which include relationship between requirements and values, requirements and phenomenology, area of the site and functional area requirements, issues of public and private domains, open and closed spaces, interrelationship between the various components, formal and

informal, service requirements, relationship between whole and the part, requirement and climate etc. information resulting from this exercise becomes the individual's program for the project which can then lead to structuring of space.

PROJECTS

a). One major project and one minor/time project to be tackled in the semester. Institutional projects like facilities of higher learning, such as, Engineering college campus, medical college campus, Paramedical campuses, management institute campus, hotel management institute, Law college campus, Dental college campus, Nursing college campus, Juvenile Correction Centre, Art and Architecture Colleges, Fashion and Design Institute Campuses etc.

b). The minor project could include a case study documentation of the project proposed for the design intervention. This work could be done in a group and as part of its findings shall be an outline program to be a major project.

In view of the current urban contexts where land is precious and resources are scarce, the project could also be institutional buildings on a small urban plot, on multiple levels and still engage with its context and establish an environment within that captures the essential nature of an institution. However, Project selection is left to the discretion of the tutors.

Project work could be done in 5 stages of activity jointly with research and analysis.

1. Introduction to the initial design parameters which include choice of:

a. Geography/situation (context)

b. Constraints (bye-laws, budget, ideology, attitudes, etc.)

2. Spatial structuring: To understand spatial structuring as a set of logical operations after an analytical understanding of the site, surroundings, program and intent expressing diversity of program and its resulting spatial variety and the relationship between the built and the unbuilt established through movement systems ,linkages and nodes etc.

3. Informal structuring: Architecture is an integrative discipline. Establishment of a structure enables reverse integration with other subjects where the students look beyond their studio offering a mechanism to observe the surroundings and document it, understand history and theory analytically, integrate design with building construction, climatic, environmental and material science in a more informed way.

4. The design exercise shall focus on ideas of scale, engagement (social, economic, political, and environmental), hierarchy, public/private space, and challenge the students to reflect on these as part of the design development. The emphasis should be to establish these larger goals as part of the discussion on the nature of an institution. The project and design development should focus on integrating sustainable design in every aspect and process possible,
with an emphasis on reducing thermal locals and integrating ventilation, insulation, thermal mass, shading, cool roofs, passive/natural cooling and low energy, low-carbon active cooling technologies; local materials as much as possible; sustainable systems such as storm water harvesting, water recycling and reusing, waste management systems and renewable energy systems and above all response to site context and existing informal systems.

5. Goal of the studio shall be to see the architect as instigator - defining the nature of engagement with the city, through the articulation of the program and its relationship with the context. Studio must provoke students to define clearly their agenda and to think of architecture as an active, live engagement rather than a passive and inert one. By having students spell out a hypothesis it then doesn't matter what the type is. This prepares the students to frame a series of questions to address the problem at hand.

NOTE:

- One major project and one minor/ time problem to be tackled in the semester.
- Detailing of Masterplan or Detailing of specific blocks can be attempted

Submission shall comprise duly drawn/drafted Masterplan, floor plans, elevations, section views, models, landscape details, services etc.

List of Programs:

Sl. No.	Experiments/Programs	COs
1	Analytical Case Study Documentation	CO1, CO2, CO4
2	Program Structuring Workshop	CO2, CO3, CO5
3	Site Response and Zoning Model	CO2, CO4
4	Sustainable Design Integration Exercise (Minor Exercise)	CO4, CO5
5	Design Intent and Hypothesis Framing (Major Exercise)	CO3, CO5
Value Added Programs		
1	Design Thinking and Sustainable Systems for Institutional Architecture	

Reference Books	
S.No.	**Books (Title of the Book/Name of the author/Name of the publisher/Edition and Year)**
1	Roger H. Clark and Michael Pause, " Precedents in architecture", 1984, John Wiley &Sons
2	Geoffrey H Baker , "Le Corbusier an analysis of form", 1996, Van Nostrand Reinhold.
3	Herman Hertzberger, "Lessons for students in architecture", 1991, Delft University.
4	Charles Correa , "A Place in shade", 2010, Penguin India
5	Rem Koolhaas, "Conversation with students", 1996, Princeton Architectural Press.

Weblinks and Video Lectures (e-Resources)	
1	https://ndl.iitkgp.ac.in
2	https://www.youtube.com/watch?v=FfJ6j0NjfDo
3	https://www.youtube.com/watch?v=TY_aB4TLsUA
4	https://www.youtube.com/watch?v=dRKVZZ9Srcc
5	https://www.youtube.com/watch?v=_AOzpFXocKI

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

CO1	To **understand** the role of built environments of increasing complexity by Intrinsic factors like Size, volume, levels, functional spaces or zones, structural possibilities, External factors like site, approach, traffic, ecology, services and other Constraints like bye-laws, ideology, attitudes in campus design
CO2	**Apply** the principles of development regulations, building bylaws, and rules in the context of architectural design and the knowledge of circulation networks for both people and vehicular access to site planning.
CO3	**Analyze the** principles of campus design by analyzing spatial needs, experiential aspects, domain segregation, and climatic influences through literature and case study research, culminating in context-specific design guidelines.
CO4	**Evaluate** the architectural design strategies based on their responsiveness to contextual, social, and environmental needs, with an emphasis on sustainable practices such as passive cooling, eco-friendly materials, and efficient water management.
CO5	**Create** innovative and contextually relevant campus designs that engage with the context, reflecting institutional identity, sustainability principles and integrate innovative construction technologies and materials, while considering environmental, socio-cultural, and economic dimensions.

Mapping of Course Outcome to Program Outcome: *(75%-100%=3 ; 50%-74% = 2 ; Below 50 = 1)*

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

Assessment Pattern (Both CIE and SEE):

9 Credit Course-PCC								
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		25
			Group Work	20	Case study + Site analysis Presentation skill and coordination	15		15
			Site Visits	10				
			Progressive Models	20	Presession, Materials and Scale.	10		10
			Intermediate reviews	20	Completion of work, Presentation skills, Communication of ideas, Design	10		10
					Total CIE Studio			**60**
	Panel Review	Viva Voce	Review	50	Presentation skills, Communication of ideas, Design	25		40
			Final Portfolio + Models	30	She Presentation, Accuracy, Details, Architectural Drawings. etc, presentation	15		
					Total CIE Review			**40**
						CIE	**50**	**100**
SEE	**External Viva Voce**			**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 StudioAssessment and Internal Review and 40 (40% of Maximum Marks -100) in the External Viva Voca. The total of CIE + SEE shall be a minimum of 100 (50% of Maximum Marks -200).

CIE- Continuous Internal Evaluation (100 Marks)

Bloom's Category	STUDIO	
	Studio Assessment	Panel Review
	60 Marks	40 Marks
Remember	10	
Understand	10	
Apply	10	10
Analyse	10	10
Evaluate	10	10
Create	10	10

Course Contents and Lecture Schedule:

Module No.	Topics	No. of Lectures
	Introductory assignment/holiday assignment	8 Hrs
	Minor Project	30 Hrs.
	Review- Minor project	8 Hrs.
	Study Model	8 Hrs
	Major Project (including case study & literature study)	54 Hrs.
	Final external Review	8 Hrs.
	Total	**120 Hrs.**

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Semester	:	**6th**				
Course Title	:	**MATERIALS AND METHODS IN BUILDING CONSTRUCTION-VI**				
Course Code	:	**BAT602**				
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**
				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 structural glazing, Metal Cladding and roofing systems and to study constructional systems and detailing of alternative material doors, windows and partition

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 -2025-26
Outcome Based Education and Choice Based Credit System (CBCS)
(Effective from the Academic Year 2025-26)

COURSE SYLLABUS

Module No.	Contents of the Module	Hours
1	1) **Glass as a building material :** Glass manufacturing in various types like plate, tinted, decorative, reinforced, laminated glass block, fibre glass, glass murals, partially coloured glass, etching of glass and its applications in building industry for both exteriors and interiors. Glass fabrication techniques, fibre reinforced composite materials and products. 2) **Frameless glass doors and windows and partitions** : Fixing and fabrication details.	12
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	3) **Structural Glazing and cladding :** Fixing and fabrication details. 4) **Point supported glazing :** Fixing and fabrication details. 5) **Introduction to metal cladding :** ACP, Aluminium louvers; Fixing and fabrication details.	12
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	6) **Glass and Metal cladding of facades and building envelopes :** Fixing and fabrication details. 7) **UPVC, PVC & FRP :** Doors and windows and partitions (Detailing and study of joinery). 8) **Wooden sliding and folding doors and partitions :** Principles and methods of construction and detailing.	12
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	9) **Steel sliding and folding doors and partitions :** Principles and methods of construction and detailing. 10) **Aluminium sliding and folding doors and partitions:** Principles and methods of construction and detailing.	12
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	11) **Skylight in steel and glass:** Principles and methods of construction and detailing. 12) **Alternative wall technologies:** Sandwich panel walls, PUF panels etc.	12
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: **Introduction to Glass :** Types of Glasses, its properties and applications.	CO1
2	Sheet: **Frameless Glass Door & Partition :** Full height Single Door & Partition with Double Door Details. Principles and methods of construction and detailing.	CO1, CO2
3	Sheet: **Structural Glazing and cladding :** Curtain wall and structural glazing system. Principles and methods of construction and detailing.	CO1, CO2
4	Sheet: **Point supported glazing :** Glazing by using Stainless steel Stud fittings. Principles and methods of construction and detailing.	CO1, CO2
5	Sheet: **ACP Cladding :** Fabrication and installation details of exterior wall Aluminium Composite Panel Cladding. Principles and methods of construction and detailing.	CO1, CO2
6	Sheet: **UPVC Window :** Casement & Sliding Window Details. Principles and methods of construction and detailing.	CO3
7	Sheet: **PVC Door :** Fabrication Details of PVC Door. Principles and methods of construction and detailing.	CO3
8	Sheet: **Wooden sliding and folding doors and partitions :** Fabrication and operating system of wooden sliding & folding door. Principles and methods of construction and detailing.	CO3
9	Sheet: **Steel sliding and folding doors and partitions :** Fabrication and operating system of steel sliding & folding door. Principles and methods of construction and detailing.	CO3
10	Sheet: **Skylight in steel and glass :** Fabrication and Installation details of Steel and Aluminium Extrusion Supported Skylight. Principles and methods of construction and detailing.	CO4
11	Sheet: **Sandwich panel walls :** Fabrication and Installation details of Aerocon Composite Panel Partition. Principles and methods of construction and detailing.	CO4
12	Sheet: **PUF panels :** Fabrication and Installation details of PUF panel roofing system. Principles and methods of construction and detailing.	CO4

	Reference Books
S.No.	**Books (Title of the Book/Name of the author/Name of the publisher/Edition and Year)**
1	Francis, D.K. (2008), "Building Construction Illustrated", Fourth Edition, Wiley India Pvt. Ltd.
2	Mackay, J.K. (2015) – Volume 1, "Building Construction", Fourth Edition, Pearson India.
3	Roy Chudley (2015) – Volume 1, "Construction Technology" Second Edition, Pearson India.
4	Barry R. (1999) – Volume 3 & 4, "The Construction of Buildings", Fourth Edition, East-West Press Pvt. Ltd., New Delhi.
5	Lyons Arthur (2014), "Materials for Architects and Builders", Fifth Edition, Routledge.
6	Varghese P.C. (2015), "Building Materials", Second Edition, PHI Learning Pvt. Ltd.

Weblinks and Video Lectures (e-Resources)	
1	https://ndl.iitkgp.ac.in
2	https://www.youtube.com/watch?v=IoCKY6kZM-U
3	https://www.youtube.com/watch?v=BGPaywY1wvs
4	https://www.youtube.com/watch?v=i_5XuGZPiog
5	https://www.youtube.com/watch?v=2fMISF6lreM

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 various glazing, cladding, and partition materials and their applications.	L1, L2	Remember, understand
CO2	Apply construction knowledge to produce detailed drawings of glass and metal systems.	L3	Apply
CO3	Analyze material systems for their suitability in building envelopes and partitions.	L4	Analyse
CO4	Evaluate construction solutions based on performance, durability, and aesthetics.	L5	Evaluate
CO5	Design and develop innovative construction solutions using advanced materials.	L6	Design

Mapping of Course Outcomes to Program Outcomes: *(75%-100%=3 ; 50%-74% = 2 ; Below 50 = 1)*

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

Assessment Pattern (both CIE and SEE)

4 Credit Course-BSAE

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		20
		Internal Assessment test	IAT 1	50	Internals paper	20		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		5
		AAT	MCQ/Quiz	10	--	5		5
						Total CIE Marks	**25**	**50**
SEE				**100**	SEE Exam is theory exam, conducted for 75 marks.	**100**	**40**	**100**

CIE+SEE	75	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 (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/ Case Study Presentations	MCQ/Quiz
	20 Marks	20 Marks	5 Marks	5 Marks
Remember	6	4	1	2
Understand	6	4	1	2
Apply	3	4	1	1
Analyse	3	4	2	-
Evaluate	2	4	-	-

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	2	2	2	2	2	10	20%
CO2	4	4	4	4	4	20	40%
CO3	2	2	2	2	2	10	20%
CO4	2	2	2	2	2	10	20%
Total	10	10	10	10	10	50	100 %

SEE- Semester End Examination (100 Marks)

Bloom's Category	SEE Marks
Remember & understand	30
Apply	30
Analyse	20
Evaluate	20

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	25 %
CO2	6	6	6	6	6	30	25 %
CO3	4	4	4	4	4	20	25 %
CO4	4	4	4	4	4	20	25 %
Total	20	20	20	20	20	100	100 %

Course Contents and Lecture Schedule

Module No.	Topics	No. of Lecture hrs.
1	Glass as a building material	4 hrs
1	Frameless glass doors and windows and partitions	12 hrs
2	Structural Glazing and cladding	4 hrs
2	Point supported glazing	4 hrs
2	Introduction to metal cladding	4 hrs
3	Glass and Metal cladding of facades and building envelopes	4 hrs
3	UPVC, PVC & FRP	4 hrs
3	Wooden sliding and folding doors and partitions	4 hrs
4	Steel sliding and folding doors and partitions	6 hrs
4	Aluminium sliding and folding doors and partitions	6 hrs
5	Skylight in steel and glass	6 hrs
5	Alternative wall technologies	6 hrs
	Total	**60 Hrs.**

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Semester	**:**	**6th**				
Course Title	**:**	**LNDSCAPE ARCHITECTURE**				
Course Code	**:**	**BAT603**				
Course Type (Theory/ Practical/ Integrated)	**:**	**Theory**				
Category	**:**	**PCC**				
Stream	**:**	**Architecture**		**CIE**	**:**	**50 Marks**
Total Hours (L: T:P:S)	**:**	**2:0:0:1 Hrs/Week**		**SEE**	**:**	**100 Marks (Reduced to 50 marks)**
Credits	**:**	**3**		**SEE Duration**	**:**	**3 Hrs.**

Course Learning Objectives: Students will be able

Sl. No	Course Objectives
1.	To introduce the students to the discipline of Landscape Architecture.
2.	To advance analytical and planning skills for Architectural project sites.
3.	To develop design skills for small landscape projects.

Teaching-Learning Process

(General Instructions)

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

1. **Lecture component:** Various landscape design projects to explain the design philosophies, theoretical aspects of site analysis and site planning, element of landscape architecture and design process will be delivered as lecture component.
2. **Literature study:** Exercise on 'relating architecture and landscape' may be undertaken as a literature study exercise.
3. **Studio component:** Studio exercises in site analysis, site planning and a small landscape design project.

Note:

- 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.
- Faculties handling subject can discuss how every concept can be applied to the real world - and when that's possible, it helps improve the students' understanding.
- Individual teachers can device innovative pedagogy to improve teaching-learning.

DSATM

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COURSE CURRICULUM

Module No.	Topics	Hours
1	**Introduction to the discipline of landscape architecture** a. Landscape as a broad terminology, Natural and Man-modified landscapes. b. Scope and nature of professional work in contemporary landscape architecture c. Historical overview of garden design; types of gardens.	**6 hrs**
Pedagogy	1) The teacher can use PPTs, Videos to discuss the style of Landscape design. 2) The students need to sketch and document elements of landscape architecture. 3) Quizzes, models, seminars from students can be encouraged.	
2	**Relating Architecture and Landscape, Site analysis and Site planning** a. Study of architectural response to landscapes and understanding the relation between architecture and landscape through case examples. b. The idea of site as part of whole/larger landscape, Site inventory and analysis: physical, biological, social contextual studies and layers of site analysis, site suitability analysis, inferences, and response for architectural interventions. c. Design considerations and approaches to site planning, site program, siting of buildings and open spaces, introduction to grading and land modifications, working with sloping sites. Demonstration of understanding of site analysis and site planning through studio exercise.	**6 hrs**
Pedagogy	1) The teacher can use PPTs, Videos to discuss the style of Landscape design. 2) The students need to sketch and document elements of landscape architecture. 3) Quizzes, models, seminars from students can be encouraged.	
3	**Elements of landscape architecture and their application in landscape design** Classification of plants, Taxonomy, Units of taxonomy, Botanical names, and common names of plant materials. Commonly used in landscape design. a. Primary landscape elements: Landform, water and vegetation, Design considerations and their role in articulating outdoor spatial design. b. Secondary landscape elements: Street furniture, landscape walls, paving, inert ground covers, trellis, outdoor shading structures, embellishments, etc. Design considerations and their role in spatial design. Hard and soft landscapes.	**10 hrs**
Pedagogy	1) The teacher can use PPTs, Videos to discuss the style of Landscape design. 2) The students need to sketch and document elements of landscape architecture. 3) Quizzes, models, seminars from students can be encouraged.	
4	Works of noted landscape architects and landscape projects Examples in modern landscape: works of Garret Eckbo, Lawrence Halprin and Peter Latz. Examples of contemporary landscape projects: works of Martha Schwartz , Maya lin, Peter Walker & Partners, Sasaaki, Michael Van Valkenburgh, Turenscape etc. Landscape projects in India: works of Ravindra Bhan, Shaheer Associates etc. Examples should cover various categories of landscape design such as residential,	**6 hrs**

	commercial, institutional, public plaza, water/riverfront, and other categories. The content of this module should emphasis on design philosophies, the changing styles and changing priorities of the profession over time.	
Pedagogy	1) The teacher can use PPTs, Videos to discuss the style of Landscape design. 2) The students need to sketch and document elements of landscape architecture. 3) Quizzes, models, seminars from students can be encouraged.	
5	**Landscape Design project** Demonstration of an understanding of landscape design through simple and small design exercise as studio project. Clarity in design process, detail development and representation of the landscape design scheme is to be emphasized. One more minor analysis activity can be included as a project: Study the design of a current or recently proposed landscape project such as riverfront development, lake projects, religious corridors, tourism projects and analyse and assess the design, identify the loopholes and its impact on the environment and inhabiting population NOTE: Studio exercises should be introduced after relevant theoretical inputs are delivered utilizing the contact periods.	**14 hrs**
Pedagogy	1) The teacher to give an assignment of an open space in the city/locality or an academic project of an earlier semester or current semester to design with all details. 2) The students need complete the assignment with details and proper presentation.	

List of Activities:

Sl. No.	Activities	COs
1	Site analysis (understanding contours, slope analysis and cut and fill)	CO2& CO3
2	Understanding plant and their species used in landscape design	CO2& CO3
3	Case study of any existing landscape project	CO3& CO4
4	Presentation on various landscape architect and understand their design philosophies	CO3& CO4
5	Landscape project	CO5

Reference Books	
Sl. No.	**Title of the Book/Name of the author/Name of the publisher/Edition and Year**
1	Laurie, M. An introduction to landscape architecture, Elsevier. 1975.
2	Motloch, J. Introduction to landscape design, John Wiley & Sons, 2001.
3	Holden, R &Liversedge, J. Landscape Architecture: An Introduction, Laurence King publishing ltd. 2014.
4	Girot, C. **The course of landscape architecture: A history of our designs on our natural world**, Thames & Hudson. 2016.
5	Simonds, J O. **Landscape Architecture: A manual of site planning and design**, McGraw- Hill, 1997.
6	LaGro, J. **Site Analysis: Sustainable site planning and design**, John Wiley & Sons. 2013.
7	Birksted, J. Relating architecture to landscape, E&FN Spon. 2004. 8. Shaheer, M &Dua, G. Landscape Architecture in India: A reader, LA, Journal of landscape architecture. 2010.

Weblinks and Video Lectures (e-Resources)	
1	https://youtu.be/N7sgg9L3F_A

2	https://youtu.be/IbwdNFEkFuE
3	https://youtu.be/C6JeM4GopVQ
4	https://youtu.be/zSDbts3i0Ak

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 relationship between building and outdoor environment, elements of landscape design, and role of site planning in enhancing quality of building environment.	Remember & understand	L1 & L2
CO2	To **apply** site inventory, various construction techniques of hardscape elements, landforms, and their application in articulating outdoor spaces	Apply	L3
CO3	To **analyze** contours, primary and secondary landscape elements, and their design consideration in site planning.	Analyse	L4
CO4	To **evaluate** classical landscape elements, design philosophies and contemporary approaches in landscape design through various design projects.	Evaluate	L5
CO5	To **develop** a site plan with landscape design based on visual and physical analysis and integrating required functions.	Design	L6

Mapping of Course Outcomes to Program Outcomes: *(75%-100%=3 ; 50%-74% = 2 ; Below 50 = 1)*

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1															
CO2	**3**														
CO3						**1**								**2**	**2**
CO4			**2**	**3**		**3**				**1**					
CO5			**3**	**2**			**3**		**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	Internal paper	20		20
		IAT 2		50				
						Total CIE (IAT)		**20**
	Studio Assessment/exercise	AAT	seminars, group presentations/ case study etc.	30	Understanding, Presentation, Analysis, Design, Communication,	15		15
		AAT	Landscape Project	30		15		15
						Total CIE Practical / Activities		**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	Continuous Assessment Tests		Theory Alternative Assessment Tool (AAT)
	Test-1 (50 marks)	Test-2 (50 marks)	50 Marks
Remember			
Understand	15	10	-
Apply	15	10	-
Analyse	20	20	-
Evaluate	-	10	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	5	5	5	-	25	20%
CO2	5	5	5	5		20	40%
CO3	-	10	10	5	10	35	30%
CO4	-	-	-	10	10	20	10%
CO5	-	-	-	-	-	-	-
Total	15	20	20	25	20	100	100%

SEE- Semester End Examination (50 Marks)

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

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	40%
CO2	10	10	10	-	-	30	30%
CO3	-	-	-	10	-	10	10%
CO4	-	-	-	-	-	-	-
CO5	-	-	-	-	20	20	20%
Total	20	20	20	20	20	100	100%

Course Contents and Lecture Schedule

Module No.	Topics	No. of Lecture hrs.
1	Introduction to landscape design	3 hrs
1	Brief history and the growth of landscape architecture as a design and planning profession	4 hrs
2	Relation between architecture and landscape	2 hrs
2	Site analysis and site planning	6 hrs
3	Primary landscape elements-landform, water, and vegetation	8 hrs
3	Street furniture and secondary landscape elements	2 hrs
4	Works of noted landscape architects and landscape project	6 hrs
5	Landscape Design project	14 hrs
	Total	**45 Hrs.**

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

Semester	:	**6th**				
Course Title	:	**Contemporary Architecture**				
Course Code	:	**BAT604**				
Course Type	:	**Theory**				
Category	:	**PCC** (Professional Core Courses)				
Stream	:	**Architecture**				
Total Hours/week (L:T:P:S)	:	**3:0:0:0**		**CIE**	:	**50 Marks**
				SEE (Theory)	:	**100 Marks (Reduced to 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 Contemporary Architecture:** Through analyzing and comparing Modern, Post Modern, Deconstructivism and High Tech 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 contemporary 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 Contemporary Architecture:** By studying representative buildings and from each period, students will develop a strong visual vocabulary of Indian and 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 -2025-26

Outcome Based Education and Choice Based Credit System (CBCS)

(Effective from the Academic Year 2025-26)

	COURSE SYLLABUS	
Module No.	**Contents of the Module**	**Hours**
1	• **Modern Architecture in India-1**: Architecture in India (Post-Independence): Works of public nature in Chandigarh and Ahmedabad (Legislative Assembly Complex including High Court, Legislative assembly and Secretariat, Chandigarh and Mill Owners Building, Ahmedabad), IIM, Ahmedabad and its significance. • **Modern Architecture in India-2**: Ideas and works of BV Doshi (Institute of Indology Ahmedabad, IIM-Bangalore and Gufa, Ahmedabad) and Charles Correa: (Jawahar Kala Kendra, Vidhan Bhavan Bhopal, Kala Akademi Goa, Kanchenjunga Apartments Mumbai)	**10**
Pedagogy	1. Case studies by analyzing 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. 2. Compare examples quoted to known structures, focusing on spatial organization, light, engineering, climate and material usage. 3. Utilize 3D modelling software to explore historical structures virtually. 4. Explore online resources like historical building databases and virtual tours of sites.	
2	• **Modern Architecture in India-3:** Ideas and works of Raj Rewal and Uttam Jain (Pragati Maidan, New Delhi and Asian Games Village, New Delhi), Achyut Kanvinde (IIT, Kanpur and Nehru Science Centre, Mumbai), Uttam Jain (Lecture Theatres, Jodhpur and Engineering College, Kota). • **Modern Architecture in India-4:** Enrichment of Indian experience- Cost effectiveness and local influences. Lauire Baker and Anant Raje (Centre for Development Studies, Thiruvananthapuram and St. John Cathedral at Tiruvalla) and Anant Raje (IIFM, Bhopal and Management Development Centre, IIM-A). **Parallel trends in Indian architecture:** a) Revivalistic- monumental, religious b) Experimental-Pondicherry, Belgium embassy, IITB, Sriram Centre New Delhi c) Vernacular Influence-Cost effective concepts.	9
Pedagogy	**1.** Case studies by analyzing 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. **2.** Compare examples quoted to known structures, focusing on spatial organization, light, engineering, climate and material usage. **3.** Utilize 3D modelling software to explore historical structures virtually. **4.** Explore online resources like historical building databases and virtual tours of sites.	
3	• **Last phase of Modern Architecture:** Ideas and works of Richard Meier (Smith House, Connecticut and Getty Centre, Brent Wood, Los Angeles) • **Post Modern Architecture**: Development of Postmodernism with its origins in the alleged failure of Modern architecture from 1950s, and spreading in the 1970s and its continuous influence on present-day architecture. Robert Venturi (Venturi House), Charles Moore (Architect's Own House at Orinda and Piazza d'Italia, New Orleans)	**10**

Pedagogy	1. Case studies by analyzing 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. 2. Compare examples quoted to known structures, focusing on spatial organization, light, engineering, climate and material usage. 3. Utilize 3D modelling software to explore historical structures virtually. 4. Explore online resources like historical building databases and virtual tours of archaeological sites.	
4	• **High-tech architecture or Structural Expressionism-1:** An architectural style that emerged in the 1970s: The High-tech architecture practitioners include British architects Sir Norman Foster (Hong Kong Shanghai Bank and Renault Distribution Centre, Swindon, England), Sir Richard Rogers, Sir Michael Hopkins. • **High-tech architecture or Structural Expressionism-2:** The High-tech architecture practitioners include Italian architect Renzo Piano (Pompidou Centre, Paris and Menil Museum, Houston) and Spanish architect Santiago Calatrava (Lyon-Satolas Railway Station and Olympic Stadium at Athens).	**8**
Pedagogy	1. 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. 2. Compare examples quoted to known structures, focusing on spatial organization, light, engineering, climate and material usage. 3. Utilize 3D modelling software to explore historical structures virtually. 4. Explore online resources like historical building databases and virtual tours of sites.	
5	• **Hyper theories of Architecture-1:** Development of postmodern architecture in 1980s in the ideas of Deconstructivism including, Frank Gehry (Aerospace Museum, Santa Monica and Guggenheim Museum, Bilbao), Daniel Leibskind (Jewish Museum, Berlin and World Trade Centre, New York), Rem Koolhas (Dance Theatre, The Hague and Netherlands Sports Museum). • **Hyper theories of Architecture-2:** Ideas of Deconstructivism including, Peter Eisenman, Zaha Hadid (The Peak Club, Hong Kong and IBA Housing Block 2, West Berlin), Coop Himmelb(l)au, and Bernard Tschumi.	**8**
	1. 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. 2. Compare examples quoted to known structures, focusing on spatial organization, light, engineering, climate and material usage. 3. Utilize 3D modelling software to explore historical structures virtually. 4. Explore online resources like historical building databases and virtual tours of sites.	

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	
S.No.	**Books (Title of the Book/Name of the author/Name of the publisher/Edition and Year)**
1	Morgan, Ann Lee & Taylor Colin , “Contemporary Architecture”.
2	Bahga, Bahga and Bahga , “Modern Architecture in India”, 1993, Galgotia Pub. Co.

Weblinks and Video Lectures (e-Resources)	
1	https://ndl.iitkgp.ac.in
2	https://www.youtube.com/watch?v=Ym2CGp69oBQ
3	https://www.youtube.com/watch?v=QkVcUJauY0Y
4	https://www.youtube.com/watch?v=BfhHYPaIVwo

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 Modern Architecture, Post Modern Architecture and Deconstructivism.	L1, L2	Remember and understand
CO2	**Apply** the principles of design and architectural features of buildings from the Modern Architecture, Post Modern Architecture and Deconstructivism.	L3	Apply
CO3	**Analyze** the significance of architectural works from the Modernism to Deconstructivism, 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 Modern to Deconstructivism buildings, 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: *(75%-100%=3 ; 50%-74% = 2 ; Below 50 = 1)*

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		

Assessment Pattern (both CIE and SEE)

3 Credit Course - PCC								
Assessment Method	**Component**	**Type of Assessment**	**Assessment Type used**	**Max. Marks**	**Evaluation Details**	**Reduced Marks**	**Min. Marks**	**Total**
CIE	Studio Assessment	AAT	Exercises	50	Presentation, Analysis, Design, Communication	25		25
	Internal Assessment Test	IAT	IAT 1	50	Internals paper	25		25
			IAT 2	50	Internals paper			

				Total CIE Review	25	50
SEE	Exam	50	Question Paper	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)
	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	3	2	1	1	1	8	16%
CO2	3	3	3	3		12	24%
CO3		7	7	5	5	24	48%
CO4	6					6	12%
Total	12	12	11	9	6	50	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	3	2	1	1	1	8	16%
CO2	3	3	3	3		12	24%
CO3		7	7	5	5	24	48%
CO4	6					6	12%
Total	12	12	11	9	6	50	100%

Course Contents and Lecture Schedule

Module No.	Topics	No. of Lecture Hrs.
1	Modern Architecture in India-1	5
1	Modern Architecture in India-2	5
2	Modern Architecture in India-3	5
2	Modern Architecture in India-4	4
2	Parallel trends in Indian architecture	5
3	Last phase of Modern Architecture	5
3	Post Modern Architecture	4
4	High-tech architecture or Structural Expressionism-1	4
4	High-tech architecture or Structural Expressionism- 2	4
5	Hyper theories of Architecture-1	4
5	Hyper theories of Architecture-1	
	Total	**45 Hrs**

Dayananda Sagar Academy of Technology & Management

(Autonomous Institute under VTU)

Semester	**:**	**6th**				
Course Title	**:**	**Building Services –IV (Acoustics & Noise Control)**				
Course Code	**:**	**BAT605**				
Course Type (Theory/ Practical/ Integrated)	**:**	**Theory**				
Category	**:**	**BSAE** (Building Science & Applied Engineering Courses)				
Stream	**:**	**Architecture**		**CIE**	**:**	**50 Marks**
Teaching hours/ week (L:T:P:S)	**:**	**3:0:0:0**		**SEE**	**:**	**100 Marks (Reduced to 50 Marks)**
				SEE Duration	**:**	**3 Hrs**
Credits	**:**	**3**				

Course Learning Objectives: Students will be able to:

Sl. No	Course Objectives
1	To impart knowledge on basics of acoustics and behavior of sound in an enclosed space and to familiarize with concepts of environmental noise control.
2	To impart knowledge and develop basic understanding on acoustical tools and measurement methods. To understand the various materials and its application used in architecture for acoustical purpose.
3	To study the historical Acoustical Design of different Architectural spaces and IS standards for acoustics.
4	To evaluate the role and capacity of sound and noise in all its variations and to enhance aural experience in built environment- within and without.
5	To design Acoustics of multiple Architectural Spaces like: Open air theatres, Halls for Indoor Sports, home theatres, recording studios, open plan offices, Auditorium etc.

Teaching-Learning Process

Pedagogy (General Instructions):

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)** 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)**.

DSATM

Scheme of Teaching and Examinations for BE Programme -2025-26

Outcome Based Education and Choice Based Credit System (CBCS)

(Effective from the Academic Year 2025-26)

COURSE SYLLABUS

Module No.	Topics	Hours
1	**Introduction to Sound and Room Acoustics** **1) Introduction to Sound:** Origin and nature of sound, its characteristics and measurement Amplitude, frequency, period, wavelength, velocity of sound, sound pressure, sound intensity, decibel scale, sound and distance inverse square law. human hearing, auditory range for humans (Frequency and Intensity threshold of audibility and pain), pitch (association with frequency), tone, loudness (association with amplitude and intensity), Phon. **2) Room Acoustics:** Reflection - Nature of reflection from plane, convex and concave surfaces, diffraction, Absorption, Echoes, focusing of sound, dead spots, flutter echo. Room Resonance Reverberation time (RT) calculation using Sabine's and Eyring's Formulae. Effect of RT on Speech and music.	8
Pedagogy	1) The subject teacher can use PPTs & Videos to teach basics of the topics 2) The students need to work on the assignments given by the teacher. 3) Quizzes, models, seminars from students can be encouraged.	
2	**Acoustical Tools, Measurements and Materials** **3) Acoustical Tools and Measurements:** Use of SLM (Sound Level Meter), AI (Articulation Index), STI (Speech-Transmission Index), Speech Intelligibility. Sound Attenuation. Absorption coefficients of acoustical materials, NRC value, NC Curves for various spaces. **4) Acoustical Materials:** Vernacular methods of sound insulation, porous materials, panel absorbers, membrane absorbers, acoustical plasters, diffusers, cavity or Helmholtz resonators. Role of functional absorbers, Adjustable acoustics and variable sound absorbers. Acoustical correction and retrofits to existing spaces.	8
Pedagogy	1) The subject teacher can use PPTs & Videos to teach Acoustics tools & Materials. 2) The students need to work on the assignments given by the teacher. 3) Site visit for the material study and applications.	
3	**Acoustical Design** **5) Acoustical Design of Auditoriums** - Multipurpose Halls: History of Greek, Roman theatres. Use of IS code 2526 - 1963 for design and detailing of Auditoriums – Cinema Halls - Multi- purpose Halls - Halls for speech and music. **6) Acoustical Design and Detailing of Other Spaces -** Open air theatres, Halls for Indoor	

	Sports, home theatres, recording studios, open plan offices, etc. Need and use of sound reinforcement systems, sound masking systems and speech privacy.	**13**
Pedagogy	1) The subject teacher can use PPTs & Videos to teach Historical developments, IS Codes, designing and detailing of auditorium. 2) The students need to work on the assignments given by the teacher. 3) Site visit to understand acoustical designing and detailing of various types of spaces.	
4	**Noise reduction and Control** **7) Introduction to environmental noise control:** Noise, its sources and its classification - outdoor and indoor, airborne and structure borne, impact noise, noise from ventilation system, community and industrial noise. Noise transmission, Mass law and transmission loss. Maximum acceptable noise levels. Design Principles reduction at source, reduction near source, etc. **8) Constructional measures of noise control and sound insulation** -Enclosures, Barriers, Sound insulation (AC Ducts and plants), Vibration isolation control of mechanical noise, floor, wall, ceiling treatment. Sound Isolation. Construction details of composite walls, double walls, floating floors, wood-joist floors, plenum barriers, sound locks, etc. STC (Sound Transmission Class) ratings.	**8**
Pedagogy	1) The subject teacher can use PPTs & Videos to teach problems associated with noise and measures for the same. 2) The students need to work on the assignments given by the teacher. 3) Students interaction with acoustical experts for practical solutions.	
5	**Noise reduction and Control-II** **9) Industrial noise:** Sources of industrial noise - impact, friction, reciprocation, air turbulence and other noise. Methods of reduction by enclosures and barriers. **10) Introduction to Urban Soundscape -** Introduction to Urban noise, Noise sources - Air traffic, Rail traffic, Road traffic, Seashore and inland. Traffic planning against outdoor noise. Noise reduction and control by Site planning, Town planning and Regional Planning consideration. Role of Architects / Urban Planners in shaping the urban soundscape. Sustainable design strategies in building acoustics.	**8**
Pedagogy	1) The subject teacher could arrange for visits to acoustically designed and treated multipurpose halls - general purpose halls used for both speech and music, cinema theatres, Industrial Buildings, etc. 2) Case study reports could be submitted as group assignments. 3) Design of a multipurpose hall - rooms for speech and music for optimum acoustics - drawings and construction details of acoustical treatment.	

List of Programs:

Sl. No.	Experiments/Programs	COs
1	**Experient** to Learn how sound Behaves when traveled through different medium, and also experience the reflection of sound.	**CO2**
2	**Experiment** to understand the Diffraction affect in Sound, by replicating it with water waves.	**CO3**
3	**Evaluating** and Creating a Acoustic Heat Map, by collect noise level data of M-Block at different floors	**CO4 & CO5**
Value Added Programs		
1	Creating an Acoustic Panel by using Sustainable or Waste Materials and Test them for the real world	**CO5**

Reference Books	
Sl. No.	**Title of the Book/Name of the author/Name of the publisher/Edition and Year**
1	M.DavidEgan , "Architectural Acoustics".
2	Leslie L. Doelle , "Environmental Acoustics".
3	Vern O.Knudsen and Cyril M.Harris , "Acoustical Designing in Architecture".
4	Peter H. Parkins and H. R. Humphreys , "Acoustics, noise and buildings".
5	F.Alton Everest and Ken C. Pohlmann , "Master Handbook of Acoustics".
6	National Building Code of India (NBC) 2016; Part 8 Section 4
7	IS 1950: 1962 Code of practice for sound insulation of non-industrial buildings
8	IS 3483: 1965 Code of practice for noise reduction in industrial buildings
9	IS 4954: 1968 Recommendations for noise abatement in town planning
10	IS 11050 (Part 1) 1984: Rating of sound insulation in buildings and of building elements: Part 1 Airborne sound insulation in buildings and of interior building elements
11	IS 11050 (Part 2)1984: Rating of sound insulation in buildings and of building elements: Part 2 Impact sound insulation
12	IS code 2526: 1963Code of practice for acoustical design of auditoriums and conference halls

Weblinks and Video Lectures (e-Resources)	
1	https://ndl.iitkgp.ac.in
2	https://www.youtube.com/watch?v=IftFGdH52Lc
3	https://www.youtube.com/watch?v=JPYt10zrclQ
4	https://www.youtube.com/watch?v=akiWq97dSBA
5	https://www.youtube.com/watch?v=B9u7k2V4YPw
6	https://www.youtube.com/watch?v=IrNBrI9qMLw

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

CO	Course Outcomes	RBT Level	RBT Level Indicator
CO1	Recalling the fundamentals to Sound, Room Acoustics and noise reduction and control.	R,U	L1,L2
CO2	Apply the Acoustical Measurement Tools, methods to room Acoustics quantification and Acoustical materials.	A	L3
CO3	Analyze the historical Acoustical Design, IS standards of acoustical design for different spaces like: auditorium, dance hall, multipurpose hall, music room, recording studio, sports complex etc. and noise reduction and control.	An	L4
CO4	Evaluate the design by physical and quantification method of acoustics and noise control.	E	L5
CO5	Design Acoustics, Noise control measures and detailing for different type of spaces (ex; Open air theatres, Halls for Indoor Sports, home theatres, recording studios, open plan offices, etc.	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												1			
CO2	2														
CO3		3													
CO4				3	1										
CO5			3		1										

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	Internal paper	20		20
		IAT 2		50				
						Total CIE (IAT)		**20**
	Assignment/ Experiments	AAT	Considering all the Modules	100	Understanding, Presentation, Analysis, Design, Communication,	30		**30**
							25	**50**
					Total CIE(IA + Assignments/Experiments)			

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 activities/experiments/assignments 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	Theory			Practical
	Continuous Assessment Tests	Continuous Comprehensive Assessment (CCA)		Practical Test
	IAT-1 & IAT-2	CCA-1	CCA-2	
	25 Marks	25 Marks		
Remember	8			
Understand	8			
Apply	17			
Analyse	17			
Evaluate		12		
Create		13		

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	2	2	2	2	2	10	20%
CO2	4	4	4	4	4	20	40%
CO3	2	2	2	2	2	10	20%
CO4	2	2	2	2	2	10	20%
CO5							
Total	10	10	10		50	150	50%

SEE- Semester End Examination (50 Marks)

Bloom's Category	SEE Marks
Remember	10
Understand	10
Apply	10
Analyse	10
Evaluate	10
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			15	15%
CO2	5	5	5	5		20	20%
CO3			10	10	10	30	30%
CO4			10	10	15	35	35%
CO5							
Total	10	10	30	25	25	100	100%

Course Contents and Lecture Schedule

Module No.	Topics	No. of Lecture hrs.
1	Introduction to Sound and Room Acoustics	3 hrs
1	Room Acoustics:	5 hrs
2	Acoustical Tools and Measurements:	2 hrs
2	Acoustical Materials:	6 hrs
3	Acoustical Design of Auditoriums	5 hrs
3	Acoustical Design and Detailing of Other Spaces	8 hrs
4	Introduction to environmental noise control	4 hrs
4	Constructional measures of noise control and sound insulation	4 hrs
5	Industrial noise	4 hrs
5	Introduction to Urban Soundscape	4 hrs
	Total	**45 Hrs.**

Dayananda Sagar Academy of Technology & Management

(Autonomous Institute under VTU)

Semester	**:**	**VI**				
Course Title	**:**	**Building structures-V**				
Course Code	**:**	**BAT606**				
Course Type (Theory/ Practical/ Integrated)	**:**	**Integrated**				
Category	**:**	**BSAE**				
Stream	**:**	**Arch./ Civil**		**CIE**	**:**	**50M**
Teaching hours/ week (L:T:P:S)	**:**	**1:0:0:2**		**SEE**	**:**	**100 Marks (Reduced to 50 Marks)**
				SEE Duration	**:**	**VIVA**
Credits	**:**	**3**				

Course Learning Objectives: Students will be able to:

Sl. No	Course Objectives
1	Integration of structures with architectural objectives by developing an understanding of building structures and selection criteria for appropriate horizontal systems; conceptual design of long span structures for gravity and lateral wind and seismic loads.

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)** 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)**.

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.	Topics	Hours
1	**1) Introduction:** Horizontal or Long Span Structures **2) Structural Analysis and Design to satisfy Building Codes and Standards:** Determine the general loads to be considered in the design of the structure, based on the type of occupancy specified for each area. a) Gravity loading: Dead and Live load calculation based on IS 875 (Part 1&2) b) Seismic loading: Seismic loading calculation based on IS 1893 Code Static Analysis Procedure c) Wind loading:Wind loading calculation based on Indian Standard I.S. 875 (Part3).	8
Pedagogy	1) The teacher can use PPTs, Videos to discuss the subject/concepts 2) The students need to visit sites to understand the Concepts of Design. 3) Quizzes, models, seminars from students can be encouraged.	
2	**3) Design of Portal frame Structure System:** Design of two-dimensional rigid frames that have a rigid joint between column and beam. General framing arrangement of Portal frame for 75M X 300M building, basic load path and total structural weight calculation. **4) Design of Arch and Vault Structures:** Design of curved structural member spanning two points, of masonry, concrete or steel and used as the roofing systems of large span buildings. Design of Arch and Vault arrangement for spanning 75M X 300M building, and basic load path and total structural weight calculation. **5) Design of Dome Structures:** Domes as polar arrays of curved structural systems in masonry, concrete, steel with glass cladding, their structural strength and properties as roofing systems of large column-free spans. Design of dome(s) for spanning 75M X 300M building, basic load path and total structural weight calculation	9
Pedagogy	1) The teacher can use PPTs, Videos to discuss the subject/concepts 2) The students need to visit sites to understand the Concepts of Design. 3) Quizzes, models, seminars from students can be encouraged.	
3	**6) Long Span Planar Truss Design:** Triangular structural system; assembly of simple triangular planar trusses. Planar trusses in roofs and bridges. General framing arrangement of Long Span Truss for 75M X 300M building, and basic load path and total structural weight calculation. **7) Vierendeel truss design:** Truss design with rectangular or square assembly of members with rigid joints capable of resisting bending moments. General framing arrangement of Vierendeel truss for 75M X 300M building, and basic load path and total structural weight calculation.	9
Pedagogy	1) The teacher can use PPTs, Videos to discuss the subject/concepts 2) The students need to visit sites to understand the Concepts of Design. 3) Quizzes, models, seminars from students can be encouraged.	
4	**8) Cable and Suspension Structures:** Design for long-span systems using Cable and suspension systems. Design cable suspended roof to span 75M X 300M building and basic load path and total structural weight calculation. **9) Space Truss:** Design of three dimensional trusses, their structural properties and strength due to three dimensional triangulation. Design of Space Truss roof for spanning 75M X 300M building, and basic load path and total structural weight calculation.	9
Pedagogy	1) The teacher can use PPTs, Videos to discuss the subject/concepts	

	2) The students need to visit sites to understand the Concepts of Design. 3) Quizzes, models, seminars from students can be encouraged.	
5	**10) Concrete Shell structure design:** Design of double curved surfaces formed from warped surface (e.g. hyperbolic parabolic); their properties and strength as light-weight construction for column free large spans. Design of Concrete shell roof to spanning 75M X 300M building, and basic load path and total structural weight calculation. **11) Fabric Structure:** Design of membrane structures of thin flexible fabric covers that provide light-weight free-form roofing system. Design of Fabric roof to span 75M X 300M building, and basic load path and total structural weight calculation.	**10**
Pedagogy	1) The teacher can use PPTs, Videos to discuss the subject/concepts 2) The students need to visit sites to understand the Concepts of Design. 3) Quizzes, models, seminars from students can be encouraged.	

List of Activities/Programs:

Sl.No	Exercises	COs
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	Visit to a construction site to evaluate Various types of large span structures.	
4	Seminar by students in groups on their learnings.	
5	**Case studies:** maps different domains in real time applications	
6	**Demonstration:** exhibits the implementation process	

Text Books / Reference Books	
S.No.	**Books (Title of the Book/Name of the author/Name of the publisher/Edition and Year)**
1	Martin Bechthold,Daniel L Schodek, “Structures”;2014,PHI Learning Private limited.
2	Works of Felix Candela
3	Works of Frei Otto
4	Works of Hassan Fathy
5	Works of P.L. Nervi
6	Works of Sir Buck minister Fuller

Web links and Video Lectures (e-Resources)	
1	https://ndl.iitkgp.ac.in
2	https://www.youtube.com/watch?v=GDs1HiWPZ2U https://www.youtube.com/watch?v=KWnBNf1INfs
3	https://www.youtube.com/watch?v=_JMtIkNkzbk https://www.youtube.com/watch?v=l0s9CVmusmY
4	https://www.youtube.com/watch?v=2Wamzp4TaOE
5	https://www.youtube.com/watch?v=APc0EXTw2KQ

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, types, and behaviour of long-span structural systems under different load conditions.	L1, L2	Remember
CO2	**Apply** IS codes and standards to perform structural analysis and load calculations for long-span buildings.	L3	Apply
CO3	**Analyze** the load distribution, material efficiency, and structural performance of different long-span systems.	L4	Analyze
CO4	**Evaluate** the feasibility and efficiency of various long-span structural systems based on structural behavior and material optimization.	L5	Synthesize
CO5	**Design** structural solutions for an airport terminal using appropriate long-span systems while ensuring stability and efficiency.	L6	Evaluate

Mapping of Course Outcomes to Program Outcomes: *(75%-100%=3 ; 50%-74% = 2 ; Below 50 = 1)*

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

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	Question Paper	**20**		**20**
		IAT 2		50				
	Studio Assessment/exercise	AAT	Portfolio	50	Portfolio, Quiz Group Presentation POP Models Mock Review	10		10
			Group Presentation	10		5		5
			POP Models	10		5		5
			Quiz	10		5		5
			Mock Review	20		5		5
						30		**30**
Total CIE (IA +Practical / Activities)							**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	Studio					
	Portfolio (A)	Group Presentation (B)	POP Models (C)	Quiz (D)	Mock review (E)	Grand Total (A+B+C+D+E)
	25 Marks	5 Marks	5 Marks	5 Marks	10 Marks	50 Marks
Remember & Understand	6	-	-	2	2	10
Apply	4	-	-	3	2	10
Analyse	4	5	-	-	2	10
Evaluate	6	-	2	-	2	10
Create	5	-	3	-	2	10
Total	25	5	5	5	10	50 Marks

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	5	-	-	3	2	10	20%
CO3	3	5	-	-	2	10	20%
CO4	6	-	2	-	2	10	20%
CO5	5	-	3	-	2	10	20%
Total	25	5	5	5	10	50 Marks	100%

SEE- Semester End Examination (50 Marks)

Bloom's Category	SEE Marks
Remember	25%
Understand	10%
Apply	30%
Analyse	20%
Evaluate	10%
Create	10%

SEE Course Plan

CO's	Marks Distribution					Total marks	Weightage
	Portfolio (A)	Group Presentation (B)	POP Models (C)	Quiz (D)	Mock review (E)		
CO1	6	-	-	2	2	10	20%

CO2	5	-	-	3	2	**10**	**20%**
CO3	3	5	-	-	2	**10**	**20%**
CO4	6	-	2	-	2	**10**	**20%**
CO5	5	-	3	-	2	**10**	**20%**
Total	**25**	**5**	**5**	**5**	**10**	**50 Marks**	**100%**

Course Contents and Lecture Schedule

Module No.	Topics	No. of Lecture hrs.
1	Introduction: Horizontal or Long Span Structures	3 hrs
1	Structural Analysis and Design to satisfy Building Codes and Standards	5 hrs
2	Design of Portal frame Structure System:	3 hrs
2	Design of Arch and Vault Structures	4 hrs
2	Design of Dome Structures	4 hrs
3	Long Span Planar Truss Design	5 hrs
3	Vierendeel truss design	6 hrs
4	Cable and Suspension Structures	4 hrs
4	Space Truss	4 hrs
5	Concrete Shell structure design	4 hrs
5	Fabric Structure	4 hrs
	Total	**45 Hrs.**

Dayananda Sagar Academy of Technology & Management

(Autonomous Institute under VTU)

Semester	**:**	**6th**				
Course Title	**:**	**Working Drawing-I**				
Course Code	**:**	**BAT607**				
Course Type (Theory/ Practical/ Integrated)	**:**	**Integrated**				
Category	**:**	**PCC**				
Stream	**:**	**Architecture**		**CIE**	**:**	**100 Marks**
Teaching hours/ week (L:T:P:S)	**:**	**0:0:0:4**		**SEE**	**:**	**-**
				SEE Duration	**:**	**-**
Credits	**:**	**4**				

Course Learning Objectives: Students will be able to:

Sl. No	Course Objectives
1	Developing a strong understanding of architectural principles: This emphasizes the theoretical foundation.
2	Acquiring proficiency in technical skills: Acquire proficiency in reading and interpreting architectural and engineering drawings.
3	Explore advanced techniques: Learn to effectively utilize layers, blocks, templates, assemblies, libraries, layouts, plot styles, and error-checking tools within CAD software.
4	Fostering teamwork and collaboration: This emphasizes the importance of professional and interpersonal skills.
5	Real-world Application: The final project, involving the preparation of working drawings for a real-world building project, provides valuable experience in applying theoretical knowledge to a practical context.

Teaching-Learning Process

Pedagogical Initiatives:

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

1. Use of theory, activities, sketches, drawings, assignment and tutorial for teaching.
2. Site visits as per the topic for better understanding the distribution systems.
3. Making physical models and doing role play of the topics helps in good visualization.
4. Evaluation by quiz, tests, classroom activities.
5. Devise innovative pedagogy to improve **Teaching-Learning Process (TLP)**.

DSATM

Scheme of Teaching and Examinations for BE Programme -2025-26

Outcome Based Education and Choice Based Credit System (CBCS)

(Effective from the Academic Year 2025-26)

	COURSE SYLLABUS	
Module No.	**Contents of the Module**	**Hours**
1	Introduction: Overview of Working Drawings; historical perspective; consultants involved in preparation of working drawings, their role and scope; reading, error checking, problems in working drawings	**12**
Pedagogy	1) The teacher can use PPTs, Videos to discuss the concepts in sociology. 2) The students need to do assignments for better understanding of the concepts.	
2	Drafting Conventions: Representation of materials, graphic symbols, line type conventions, grid lines, lettering, colour codes, paper sizes, title blocks, office practices, standardization of details.	**12**
Pedagogy	1) The teacher can use PPTs, Videos to discuss the concepts in sociology. 2) The students need to do assignments for better understanding of the concepts.	
3	CAD Drawings: Working with layers, blocks, templates, assemblies, libraries, layouts, plot styles, error checking, editing.	**10**
Pedagogy	1) The teacher can use PPTs, Videos to discuss the concepts in sociology. 2) The students need to do assignments for better understanding of the concepts.	
4	Project work: Preparation of Architectural Working drawings and details for one of the design projects of medium rise-framed structure, from earlier semester, like Residence, Primary Health Center or School etc. Alternatively, the design of this project may be taken up at the beginning of the semester in a site measuring 30 m x 40 m or less and within B+G+3 floors.	**12**
Pedagogy	1) The teacher can use PPTs, Videos to discuss the concepts in sociology. 2) The students need to do assignments for better understanding of the concepts.	
5	Preparation of Submission Plan of the project assignment. Refer local guidelines and requirements for such building to get permission as per the byelaws. Sustainable systems like rainwater harvesting systems, solar power generation, waste management infrastructure, percolation tanks, soft landscape, trees, etc to be the fundamentals of building design, to be incorporated in the project.	**14**
Pedagogy	1) The teacher can use PPTs, Videos to discuss the concepts in sociology. 2) The students need to do assignments for better understanding of the concepts.	
	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.	

List of Sheet work for portfolio:

Sl. No.	Sheet Work	COs
1	**All Detail floor plans**	**CO5**
2	**Working Drawings:** (Below mentioned sheets are mandatory and any extra sheets could be added as per the subject teacher's requirements) - Center line drawing with columns - Excavation and Footing Drawings - Plinth Beam Drawing - Masonry Drawing - Door window schedule - Elevations 4 sides & Sections through toilet and staircase - Balcony, Toilet sunken slab and Sky-light details - Staircase sections in details	**CO2 & CO3**

Text Books	
Sl. No.	**Title of the Book/Name of the author/Name of the publisher/Edition and Year**
1	Time saver standards by Callender.
2	Time saver standards by E & OE
3	Time saver standards by Nuferts.
Web links and Video Lectures (e-Resources):	
1	https://ndl.iitkgp.ac.in
2	https://www.youtube.com/watch?v=YDQqMFqjChY
3	https://www.youtube.com/watch?v=FZiFAAvsJqc
4	https://www.youtube.com/watch?v=Pyaw8ivOz6Q

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

CO	Course Outcomes	RBT Level	RBT Level Indicator
CO1	**Understand** the significance, historical evolution, and role of consultants in working drawings while developing skills in reading, analyzing, and error-checking them.	**Remember & understand**	**R & U**
CO2	**Apply** drafting conventions, including material representation, symbols, line types, and grid lines, while implementing standard office practices, title blocks, and detail standardization.	**Apply**	**A**
CO3	**Utilize** CAD tools efficiently for layers, blocks, templates, and assemblies while ensuring error checking, editing, and layout organization with industry-standard software.	**Analyze**	**An**
CO4	**Evaluate** the effectiveness of different drawing techniques and technologies in communicating design intent.	**Evaluate**	**E**
CO5	**Develop** detailed architectural working drawings for a selected project, incorporating framing details and structural elements for a medium-rise framed structure, floor design following professional drafting practices.	**Create**	**C**

Mapping of Course Outcomes to Program Outcomes: *(75%-100%=3 ; 50%-74% = 2 ; Below 50 = 1)*

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

Assessment Pattern (both CIE and SEE):

3 Credit Course – BSAE								
Assessment Method	**Component**	**Type of Assessment**	**Syllabus Covergae**	**Max. Marks**	**Evaluation Details**	**Reduced Marks**	**Min. Marks**	**Total**
CIE	Continuous Assessment through sheets	All the sheets mentioned in the list of activities.	Considering all the Modules	75	Drafting details and self-explanation of the drawings need to be given emphasis.	--	-	75
		Internal VIVA VOCE		25		--	-	25
Total CIE Practical / Activities				**100**		**--**	**50**	**100**
NOTE: The Minimum Marks to be secured in CIE shall be 50 (50% of Maximum marks – 100). The activities/experiments/assignments will be assessed through only CIE. Based on the marks scored in CIE grading will be awarded for this course.								

CIE- Continuous Internal Evaluation (100 Marks)

Bloom's Category/(CO)	Portfolio (A)	Group Presentation (B)	Grand Total (A+B)
Maximum marks	**75 Marks**	**25 Marks**	**100 Marks**
Remember & Understand (CO1)	10	10	**10**
Apply(CO2)	15	-	**7.5**
Analyse (CO3)	20	15	**17.5**
Evaluate (CO4)	10	-	**5**
Create (CO5)	20	-	**10**
Total	**75**	**25**	**100 Marks**

Course Contents and Lecture Schedule

Module No.	Topics	No. of Lecture hrs.
1	Introduction: Overview of Working Drawings	12 hrs
2	Drafting Conventions: Representation of materials	12 hrs
3	CAD Drawings: Working with layers, blocks	10 hrs
4	Project work: Preparation of Architectural Working drawings	12 hrs
5	Preparation of Submission Plan of the project assignment	14 hrs
	Total	**52 Hrs.**

Dayananda Sagar Academy of Technology & Management

(Autonomous Institute under VTU)

Semester	:	**6th**				
Course Title	:	**CULTURE AND BUILT ENVIRONMENT**				
Course Code	:	**BAT608(a)**				
Course Type (Theory/ Practical/ Integrated)	:	**Theory**				
Category	:	**PEC (Professional Elective Courses)**				
Stream	:	**Architecture**				
Total Hours/week (L:T:P:S)		**2:0:0:0**		**CIE**	:	**50 Marks**
				SEE (Theory)	:	**-**
Credits	:	**2**		**SEE Duration**	:	**-**

Course Learning Objectives: Students will be able to:

Sl. No	Course Objectives
1	To sensitize students to culture and behavioral sciences.
2	To understand the influence of culture on design and built environment.
3	Introduce students with relevant examples.

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 device innovative pedagogy to improve teaching-learning.
10. Field visits to be arranged by teachers. Group work could be encouraged.

DSATM

Scheme of Teaching and Examinations for BE Programme -2025-26
Outcome Based Education and Choice Based Credit System (CBCS)
(Effective from the Academic Year 2025-26)

	COURSE SYLLABUS	
Module No.	**Topics**	**Hours**
1	Understand the interrelationship between design and behavioral sciences	**5**
Pedagogy	1. Students will gain conceptual clarity through visual aids, demonstrations, and real-life examples. 2. Explores how the physical environment influences our actions, thoughts, and feelings, and vice versa. 2. Critical thinking will be developed through discussions, comparisons, and analysis of case studies	
2	Understand the contributions to the design field that behavioral sciences have made and can make	**5**
Pedagogy	1. Understanding prevailing cultural factors influencing global architecture, available construction materials, predominant religious practices, common structural forms evolved for local climates, symbolic ornamentation denoting social status hierarchies, and indicators of shared lifestyle ideals or values prioritized per era.	
3	What biosocial, psychological, and cultural characteristics of human beings, as members of a species, as individuals, as a member of various groupings, influence (and, in design, should influence) what characteristics of the built environment?	**5**
Pedagogy	1. Explain the construction process, sustainability issues, life cycle of buildings, etc., 2. Understanding Cultural preferences, beliefs, and traditions often dictate building designs, materials, and aesthetics. 3. Encourage discussions and case study analysis to compare applications, advantages, and limitations.	
4	What effects do what aspects of what environments have on groups of people, under what circumstances and why?	**5**
Pedagogy	1. Understanding the design of public spaces and buildings and its impact on how people interact and socialize. 2. Analysing the needs and preferences of diverse communities is essential for creating inclusive spaces that cater to different cultural groups. 3. Promote critical analysis through group discussions and case studies.	
5	Given these two way interactions between people and environments, what are the mechanisms that link them?	**5**
Pedagogy	1. Understanding how.the built environment can contribute to a sense of place, identity, and community. 2. Promote critical analysis through group discussions and case studies on the effectiveness, sustainability, and applications of different construction techniques.	
	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.	

List of Activities:

Sl. No.	Activities	COs
1	**Book reading Activity-** *Culture, Architecture and design*., by Amos Rapoport • Understanding biosocial, psychological, and cultural characteristics of human beings, as members of a species, as individuals, as a member of various groups. • what aspects of environments have on groups of people, under what circumstances and why. • Understanding two way interactions between people and environments, and the mechanisms that link them.	**CO2, CO3**
2	**Case Study Presentation:** Research on the construction material and technology used and understand the influence of culture over the built environment quoting examples across the world.	**CO3, CO4**
3	**Group Discussion/Debate:** Topics like: Are the buildings connecting culture with built environment helps to sustain the demanding needs of the community or the present generation?	**CO3, CO4**
4	**Poster/Chart Making:** Create informative posters on for classroom display.	**CO1, CO5**

Text Books	
Sl. No.	**Title of the Book/Name of the author/Name of the publisher/Edition and Year**
Reference Books	
1	Rapoport, "A. Culture, Architecture and design,' Locke Science publication, 2005
2	Zube, E & Moore., G (Ed,) ' Advances in environment, behavior and design', Springer, 1991

Weblinks and Video Lectures (e-Resources)	
1	https://www.youtube.com/watch?v=y_px2caS6JU
2	https://www.youtube.com/watch?v=i8FeYc8u-Uc
3	https://www.youtube.com/watch?v=lK3ogU2WNY0

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

CO	Course Outcomes	RBT Level	RBT Level Indicator
CO1	Students will be able to **Remember & understand** various building materials and construction method used across different culture and during different eras.	**Remember & understand**	**L1 & L2**
CO2	Students will be able to **perform** simple demonstration of material and technology involved in construction and their limitations	**Apply**	**L3**
CO3	Students will be able to **Analyse** the properties, advantages, and limitations of traditional vs current building technologies.	**Analyse**	**L4**
CO4	Students will be able to **evaluate** the life cycle of certain building materials and its sustainability along with its relationship with culture.	**Evaluate**	**L5**

CO5	Students will be able to **design** and create buildings blending cultural aspects into built environments in the most sustainable way.	**Design**	**L6**

Mapping of Course Outcomes to Program Outcomes: *(75%-100%=3 ; 50%-74% = 2 ; Below 50 = 1)*

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

Assessment Pattern forCIE and SEE)

2 Credit Course – PEC								
Assessment Method	**Component**	**Type of Assessment**	**Assessment Type used**	**Max. Marks**	**Evaluation Details**	**Reduced Marks**	**Min. Marks**	**Total**
CIE	Continuous Comprehensive Assessment (CCA)	CCA 1	CCA-1- **(Case Study- Individual presentation, Group discussions)**	50		25		25
		CCA 2	CCA-2- **Book reading activity**	50		25		25
						Total CIE Practical / Activities	**25**	**50**
NOTE: The Minimum Marks to be secured in CIE shall be 25 (50% of Maximum marks – 50). The activities/experiments/assignments/portfolios will be assessed through only CIE. Based on the marks scored in CIE grading will be awarded for this course.								

CIE- Continuous Internal Evaluation (50 Marks)

Bloom's Category	Studio						
	Poster presentation (A)	Culture and its interrelationship (B)	Construction technology (C)	Case study (D)	Group discussion (E)	Demonstrate (F)	Grand Total (A+B+C+D+E+F)
Max Marks	**15 Marks**	**5 Marks**	**5 Marks**	**5 Marks**	**10 Marks**	**10 Marks**	**50 Marks**
Remember & Understand	4	-	-	2	2	2	**10**
Apply	3	-	-	3	2	2	**10**
Analyse	2	5	-	-	2	2	**11**
Evaluate	4	-	2	-	2	2	**10**
Create	2	-	3	-	2	2	**9**
Total	**15**	**5**	**5**	**5**	**10**	**10**	**50 Marks**

Course Contents and Lecture Schedule:

Module No.	Topics	No. of Lecture hrs.
1	Introduction to the subject. Brief understanding of the syllabus and its content.	2
1	Understand the interrelationship between design and behavioral sciences.	2
1	Understanding Culture and built environment with examples across the world.	4
2	Understanding biosocial, psychological, and cultural characteristics of human beings, as members of a species, as individuals, as a member of various groups.	2
3	Understanding two way interactions between people and environments, and the mechanisms that link them.	6
4	Case studies to understand cultural influence with built spaces, Analysing various building material and construction techniques.	4
5	Group discussion on sustainability, practicality, life cycle of buildings, etc.,	5
	Total	**25 Hrs.**

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Semester	:	**6th**				
Course Title	:	**GEOGRAPHICAL INFORMATION SYSTEM**				
Course Code	:	**BAT608(b)**				
Course Type (Theory/ Practical/ Integrated)	:	**Integrated**				
Category	:	**PEC (Professional Elective Courses)**				
Stream	:	**Architecture**				
Total Hours/week (L:T:P:S)		**2:0:0:0**		**CIE**	:	**50 Marks**
				SEE (Theory)	:	**-**
Credits	:	**2**		**SEE Duration**	:	**-**

Course Learning Objectives: Students will be able to:

Sl. No	Course Objectives
1	To Integrate hardware, software, and data for capturing, managing, analyzing, and displaying all forms of geographically referenced information.
2	To do architectural analysis and Presentation using basic GIS techniques
3	To establish a bridge between the conceptual realms - Architecture /Site -Terrain Analysis/ Landscape architecture/Urban planning.

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 device innovative pedagogy to improve teaching-learning.
10. Field visits to be arranged by teachers. Group work could be encouraged.

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	COURSE SYLLABUS	
Module No.	**Topics**	**Hours**
1	**Introduction to GIS:** GIS as a Hardware/software/application? GIS data, Vector date, Raster data, attribute data, Data capture & methods, Coordinate reference systems	**5**
Pedagogy	**Use Interactive Maps and Demos** → Incorporate tools like Google Earth or QGIS live demos to make abstract concepts tangible. **Visualize Concepts Through Diagrams** → Use clear graphics to differentiate vector vs raster data, and show CRS transformations. **Apply Problem-Based Learning** → Assign mini-projects (e.g., mapping local amenities) to help students learn by doing and see the real-world value of GIS.	
2	**Introduction to Google Earth :** An overview of Google Earth & KML, Google Objects, Descriptive HTML in Placemarks, Ground overlays, Screen overlays, Paths, manipulating a path Polygon, taking profiles of site, creating KML files and exporting to GIS format.	**5**
Pedagogy	**Demonstration-**based learning to visually explore and create spatial data using Google Earth tools and KML. **Hands-on activities** for drawing paths, overlays, and exporting KML to GIS-compatible formats. **Integration of descriptive HTML** in Placemarks to enhance data presentation and user interactivity.	
3	**Creating & analyzing GIS data:** Capturing survey data through hand held GPS or mobile application. Traversing boundary of site, bringing routes and way point data into GIS. Spatial data, loading raster files, Mosaic raster, Geo referencing raster and vector files, Loading data from OGC web services, databases. Creating vector data layers, joining tabular data, Topology errors & tools, analyzing raster data, combining raster and vector data, Raster surface through interpolation, leveraging the power of Spatial database, Vector and raster analysis, Vector Spatial analysis (Buffers), Spatial analysis (interpolation).	**6**
Pedagogy	**Hands-on learning** through field data collection using GPS/mobile apps and integrating it into GIS platforms. **Step-by-step practice** of spatial data handling, including raster/vector loading, mosaicking, and georeferencing. **Analytical skill-building** via real-world vector and raster spatial analysis using interpolation, buffering, and spatial databases.	
4	**Terrain Analysis& scientific computing of Raster dataset:** Creating Digital elevation model (DEM) from point data, Hill shade, Slope, Aspect **Creating great Maps: Composing maps:** Vector styling, Labelling, Using adobe illustrator for composing multiple vector layers of maps, Designing print maps, Publishing GIS 2D maps on the web	**6**
Pedagogy	**Hands-on Learning –** Emphasize practical exercises using real-world spatial datasets for terrain and raster analysis. **Integrated Tool Use –** Teach students to seamlessly combine GIS tools with design software like Adobe Illustrator for high-quality map production. **From Analysis to Presentation –** Guide learners through the complete workflow from data processing to publishing maps for print and web platforms.	
5	**Create 3D maps:** 3D maps in html format and navigate in the internet browser	**6**
Pedagogy	**Enhances spatial learning** by allowing students to interact with and explore geographic data in a realistic, immersive 3D environment. **Promotes digital literacy** by engaging learners in web-based technologies such as HTML,	

	WebGL, and JavaScript libraries like Three.js or Cesium. **Encourages inquiry-based learning** through real-time map navigation, enabling students to analyze terrain, elevation, and geographic relationships dynamically.	
	Pedagogical Initiatives (Not limited to): • **GIS Fundamentals:** Introduce GIS concepts with hands-on practice on hardware, software, and data formats, building a foundational understanding of spatial analysis and data management. • **Google Earth Integration:** Utilize Google Earth and KML for creating interactive maps, guiding students to seamlessly export and integrate data into GIS systems. • **Data Capture & GIS Analysis:** Provide practical experience in capturing survey data using GPS, applying spatial analysis techniques, and integrating vector and raster data for complex problem-solving. • **Advanced Terrain Analysis:** Foster advanced GIS skills by teaching DEM creation, terrain modeling, and slope/aspect analysis, encouraging students to conduct scientific computations on raster datasets. • **3D Map Creation & Web Publishing:** Empower students to create and navigate 3D maps, enhancing skills in publishing GIS maps online for modern digital presentation and analysis.	

List of Activities/Exercises:

Sl. No.	Activities/Exercises	COs
1	Activity: List and define the basic components of a GIS system (hardware, software, data types).	CO1
2	Exercise: Explain the difference between vector and raster data with examples.	CO1
3	Assignment: Import a dataset (vector/raster) into GIS software and visualize it using appropriate map styles.	CO2
4	Exercise: Identify and categorize different GIS data types (spatial vs attribute data) within a sample project.	CO3
5	Assignment: Compare the advantages and limitations of different data capture methods (e.g., field surveys vs satellite imagery).	CO4
6	Project: Design a GIS project plan, including data sources, software tools, and methodology for a spatial analysis task (e.g., site suitability analysis).	CO5

Reference Books	
Sl. No.	**Title of the Book/Name of the author/Name of the publisher/Edition and Year**
1	Anita Graser, "Learning QGIS" PAKT open source, 2016.
2	GISP Dr. John Van Hoesen, Dr. Luigi Pirelli, GISP Dr. Richard Smith Jr., GISP Kurt Menke, " A refreshing look at QGIS: Mastering QGIS", PACKT Pub., 2016.
3	Displaying and analyzing 3D data in Surfer software. Carson, Tom, Baker, Donna L., "Adobe® Acrobat® and PDF for Architecture, Engineering, and Construction", Springer publication, 2006, available as Google Ebook.
WEBLINKS	
1	**QGIS Tutorials/Full Course:** https://www.youtube.com/playlist?list=PLX50j2HV43tdkUIiXMMWkGquWh_5I058S
2	**G.I.S. & CONTOURING :** https://www.youtube.com/playlist?list=PLX50j2HV43teLgDgSZCjlO51zi6cGfbzq

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

CO	Course Outcomes	RBT Level	RBT Level Indicator
CO1	Recall and understand the fundamental concepts of GIS, including hardware/software, data types, and basic data capture methods.	Remember & understand	L1 & L2
CO2	Apply GIS tools and Google Earth to capture, manipulate, and analyze spatial data, including creating and exporting KML files.	Apply	L3
CO3	Analyze GIS data by identifying errors, performing spatial analysis, and integrating raster and vector data layers.	Analyse	L4
CO4	Evaluate the quality and effectiveness of GIS data and analysis methods for real-world applications.	Evaluate	L5
CO5	Create professional GIS maps and 3D visualizations for web and print, integrating advanced data and analysis techniques.	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			
CO2	2														
CO3		2													
CO4				3											
CO5			3												

Assessment Pattern for CIE

2 Credit Course – PEC								
Assessment Method	**Component**	**Type of Assessment**	**Assessment Type used**	**Max. Marks**	**Evaluation Details**	**Reduced Marks**	**Min. Marks**	**Total**
CIE	Continuous Comprehensive Assessment (CCA)	CCA 1	CCA-1- **Creating TimeLine Map Story Using Google Earth**	50		15		15
		CCA 2	CCA-2- **Creating a walk Through using Google Earth**	50		15		15

		CCA 3	CCA3- **Terrain Analysis, Contour Extraction**	50		20		20
							Total CIE Practical / Activities	**25**	**50**

NOTE: The Minimum Marks to be secured in CIE shall be 25 (50% of Maximum marks – 50). The activities/experiments/assignments/portfolios will be assessed through only CIE. Based on the marks scored in CIE grading will be awarded for this course.

CIE- Continuous Internal Evaluation (50 Marks)

Bloom's Category	**Map Story (A)**	**Walk Through (B)**	**Terrain Analysis (C)**	**Grand Total (A+B+C)**
Max Marks	**15 Marks**	**15 Marks**	**20 Marks**	**50 Marks**
Remember & Understand	5	5		**10**
Apply	5	5		**10**
Analyse	5	5	5	**15**
Evaluate			5	**5**
Create			10	**10**
Total	**15**	**15**	**20**	**50 Marks**

Course Contents and Lecture Schedule:

Module No.	**Topics**	**No. of Lecture hrs.**
1	**Introduction to GIS:** GIS as a Hardware/software/application?	2
1	Raster data, attribute data, Data capture & methods	3
2	Introduction to Google Earth : An overview of Google Earth & KML	2
2	Creating KML files and exporting to GIS format.	3
3	Creating & analyzing GIS data: Capturing survey data through hand held GPS or mobile application.	5
4	Terrain Analysis& scientific computing of Raster dataset	3
4	Creating great Maps: Composing maps	2
5	Create 3D maps	5
	Total	**28 Hrs.**

Dayananda Sagar Academy of Technology & Management

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Semester	:	**6th**				
Course Title	:	**Elective – Design of Highrise Buildings**				
Course Code	:	**BAT608 (c)**				
Course Type (Theory/ Practical/ Integrated)	:	**Integrated**				
Category	:	**PEC** (Professional Elective Course)				
Stream	:	**Architecture**				
Total Hours/week (L: T:P:S)	:	**2:0:0:0**		**CIE**	:	**50 Marks**
				SEE	:	
Credits	:	**02**		**SEE Duration**	:	

Course Learning Objectives:

Sl.No	Course Objectives
1	To understand basic design concepts, structural systems, environmental impacts, economics and emerging technologies of high-rise buildings.

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.

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COURSE SYLLABUS

S.N.	Course Outline	Hours
1	**Introduction to Tall Structures :** a) History of Ancient tall structures. b) Origin of Skyscrapers. c) Scientific Invention of Mobility, New materials and Artificial Air condition system.	4
2	**Highrise Buildings - Basic Design Considerations :** a) Space planning and design standards. b) Safe access, functional efficiency and aesthetic. c) Building byelaws and codes.	4
3	**Structural Systems in Highrise Buildings :** a) Considerations for structural loads, wind loads and earthquake loads. b) Structural Systems – Interior & Exterior. c) Evolution of Structural System. d) Structural systems in Steel, RCC and Composite System.	8
4	**Service Core in Highrise Buildings :** a) Parking, building services-vertical transportation. b) HVAC, electrical, firefighting and security, water supply and sanitation. c) Building Automation System; Code provisions for building services. d) Damping Systems.	6
5	**Construction of Highrise Buildings :** a) Construction planning and management, equipment and construction techniques. b) Environment impact and Sustainable resource management. c) Economic rationale.	6
	Total Hours :	**25**

List of Activities

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

Reference Books

1	Basem M.M., "Construction Technology for High Rise Buildings: Handbook", 2014, CreateSpace .
2	Basem M.M., " Mechanical and Electrical Services for High Rise Buildings: Handbook", 2014, CreateSpace.
3	Mark Sarkisian, " Designing Tall Buildings: Structure as Architecture Routledge, Newyork, 2012.
4	Johann Eisele & Ellen Kloft, **"** High-rise Manual : Typology and Design, Construction, and Technology" Birkhäuser, 2003.
5	Nigel Clark and Bill Price, ″Tall Buildings: A Strategic Design Guide", RIBA & BCO, 2016.

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

CO	Course Outcomes	RBT Level	Level Indicator
CO1	Identify the historical evolution of tall structures and explain basic design and service concepts.	Remember &understand	L1, L2
CO2	Apply design standards and codes in planning Highrise buildings.	Apply	L3
CO3	Analyze structural systems and load considerations for highrise construction.	Analyze	L4
CO4	Evaluate building services and automation systems for functionality and compliance.	Evaluate	L5
CO5	Design a sustainable and cost-effective highrise building integrating all systems.	Create	L6

Mapping of Course Outcomes to Program Outcomes: *(75%-100%=3 ; 50%-74% = 2 ; Below 50 = 1*

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

Assessment Pattern (CIE)

Assessment Method	Component	Type of Assessment	Assessment Type used	Max. Marks	Evaluation Details	Min. Marks	Total
CIE	Studio Assessment	Continuous Assessment Tool	Individual Work	15	• Presentation about heritage tall structures & cultural values. • Study about type of Structure. • Materials, Construction methods.		15
	Studio Assessment	Continuous Assessment Tool	Individual Work	15	• Case Study of High-rise Buildings. • Detail about Structural Systems. • Analyse the Core Services. • Understanding the Façade systems. • Materials & method of construction study.		15
	Studio Assessment	Time Problem	Individual Work	20	• Design the concept of High-rise Building. • Considering Basic Structural systems & Core Services. • Preparation of two- & three-dimensional Conceptual drawings.		20
					Total	25	50

NOTE: The Minimum Marks to be secured in CIE shall be 25 (50% of Maximum marks – 50). The activities/experiments/assignments/portfolios will be assessed through only CIE. Based on the marks scored in CIE grading will be awarded for this course.

CIE- Continuous Internal Evaluation (50 Marks)

Bloom's Category	Presentation (A)	Case Study (B)	Design (C)	Grand Total (A+B+C)
Max Marks	**15 Marks**	**15 Marks**	**20 Marks**	**50 Marks**
Remember & Understand	5	5		**10**
Apply	5	5		**10**
Analyse	5	5	5	**15**
Evaluate			5	**5**
Create			10	**10**
Total	**15**	**15**	**20**	**50 Marks**

Course Contents and Lecture Schedule:

Module No.	Topics	No. of Lecture hrs.
1	Introduction to Tall Structures	4
2	Highrise Buildings - Basic Design Considerations	4
3	Structural Systems in Highrise Buildings	8
4	Service Core in Highrise Buildings	6
5	Construction of Highrise Buildings	6
	Total	**28 Hrs.**

Dayananda Sagar Academy of Technology & Management

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Semester	:	**6th**				
Course Title	:	**Physical Education (Sports & Athletics/Yoga & NSS)**				
Course Code	:	**BAT609**				
Course Type (Theory/ Practical/ Integrated)	:	**Practical**				
Category	:	**NCMC**				
Stream	:			**CIE**	:	**100 Marks**
Teaching hours/ week (L:T:P:S)	:	**0:0:2:0**		**SEE**	:	
				SEE Duration	:	
Credits	:	**-**				

Course Learning Objectives: Students will be able to:

Sl. No	Course Objectives
1	Understand the Meaning & Importance of the Fitness & benefits of fitness
2	Types of fitness & Fitness tips
3	Importance of sports & Yoga in day-to-day life
4	National Service Scheme(NSS) will enable the students to:

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)** 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)**.

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COURSE CURRICULUM

Module No.	Topics	Hrs
ATHLETICS	**Athletics** Track-Relays jump-Triple jump Throws-javelin throw Relay race: starting, baton holding/carrying, baton exchange in between zone & finishing. Triple jump: Approach run,take-off,fight in the hop,step,jump & landing Javelin throw grip, carry& recovery(3/5 impulse stride) Release	**6**
CRICKET	A. Fundamental skills 1.Batting – forward defense stroke, backward defence stroke, OFF Drive, On Drive, straight Drive, cover drive, square cut. 2. Bowling, Out Swing, In Swing, Off Break, Leg Break, and Googly 3.Fielding, Catching, The High Catch, The Skin Catch, The Close Catch, and Throwing at the Stumps from Different Angles Long Barrier and Throw, Short Throw, Long Throw, Throwing on the Turn 4. Wicket Keeping, B.The Rules and Their Interpretation and Duties of Officials.	**6**
YOGA	1.Patanjali, Ashtanga Yoga 2.Surya Namaskara 3.Different types of Asanas a. Sitting, b.Standing, c.Prone Line, d.Supine Line 4.Kapalbhati, 5.Pranayama	6
NSS	a)Disaster, Its Meaning, Its Types and Methods of Preparedness b)Health and Hygiene Concept of Complete Health and Maintenance of Hygiene Disease and Disorders, Preventive Campaigning, c)Environment enrichment program- Sustainability in the Environment, Features, Issues, Conservation of Natural Resources Note: Any of the above activities may be undertaken, active participation by the students is required(group discussion/campaign/community outreach activities etc) For CIE, the students can submit the activities in video/ portfolio form.	**7**

List of Activities/Exercises:

Sl. No.	Activities/Exercises	COs
1	Athletic Sessions	**CO1**
2	Case Study and Examples Study to understand the benefits of Health and Fitness	**CO1**
3	Presentations on Yoga	**CO2**
4	7 Day yoga challenge and recording the improvements for comparison	**CO3**
5	Practical Sports Sessions	**CO4**

6	Practical Yoga Session and Demonstration by students for Yoga Awareness	CO5

Suggested Learning Resources	
Text Books	
References:	
•	Dharma,P N Fundamentals Of Track & Field, Khel Sahitya Kendra,New Delhi
•	Swami Kuvulyananda : Asma (Kavayadhama,Lonavala)
•	Tiwari O P : Asana Why & How
•	Swami Satyananda Saraswati : Asam Pranayama Mudhra Bandha, (Bihar School of Yoga, Munger)
•	Swami Satyananda Saraswati : Surya Namaskar (Bihar School of Yoga, Munger)
•	Nagendra H.R., The Art and Science of Pranayama
•	NSS Course Manual, Published by NSS cell, VTU, Belagavi

Weblinks and Video Lectures (e-Resources)	
1	https://ndl.iitkgp.ac.in

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

CO	Course Outcomes	RBT Level	RBT Level Indicator
CO1	Understanding the importance of fitness/sports in day-to-day life	Remember & understand	L1 & L2
CO2	Benefits of yoga on fitness and health,	Apply	L3
CO3	Analyze the environmental and societal problems or issues and will be able to design solutions for the same.	Analyse	L4

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	3														
CO3		3													
CO4															
CO5															

Assessment Pattern for CIE

2 Credit Course – NCMC								
Assessment Method	**Component**	**Type of Assessment**	**Assessment Type used**	**Max. Marks**	**Evaluation Details**	**Reduced Marks**	**Min. Marks**	**Total**
CIE	Continuous Comprehensive Assessment (CCA)	CCA 1	CCA-1- **Books Reading**	50		30		30
		CCA 2	CCA-2- **Case study/Social Connect Presentation on yoga**	50		30		30
		CCA 3	CCA3- **Practical Sessions**	50		40		40
					Total CIE Practical / Activities		**50**	**100**

NOTE: The Minimum Marks to be secured in CIE shall be 50 (50% of Maximum marks – 100). The activities/experiments/assignments/portfolios will be assessed through only CIE. Based on the marks scored in CIE grading will be awarded for this course.

CIE- Continuous Internal Evaluation (50 Marks)

Bloom's Category	**Books Reading (A)**	**Presentation (B)**	**Practical Sessions (C)**	**Grand Total (A+B+C)**
Max Marks	**30 Marks**	**30 Marks**	**40 Marks**	**100 Marks**
Remember & Understand	10	10		**20**
Apply	10	10		**20**
Analyse	10	10	10	**30**
Evaluate			10	**10**
Create			20	**20**
Total	**30**	**30**	**40**	**100 Marks**

Course Contents and Lecture Schedule:

Module No.	**Topics**	**No. of Lecture hrs.**
1	SPORTS and ATHLETICS	6
2	CRICKET	6
2	Introduction of Yoga, Aim, and Objectives	6
2	NSS Activities	7
	Total	**25 Hrs.**

Dayananda Sagar Academy of Technology & Management

(Autonomous Institute under VTU)

Semester	**:**	**6th**				
Course Title	**:**	**Study Tour**				
Course Code	**:**	**BAT610**				
Course Type (Theory/ Practical/ Integrated)	**:**	**Practical**				
Category	**:**	**NCMC**				
Stream	**:**			**CIE**	**:**	**50 Marks**
Teaching hours/ week (L:T:P:S)	**:**	**0:0:0:0**		**SEE**	**:**	
				SEE Duration	**:**	
Credits	**:**	**-**				

Course Learning Objectives: Students will be able to:

Sl. No	Course Objectives
1	To expose students to historical, vernacular and contemporary architecture.

Teaching-Learning Process

Pedagogical Initiatives:

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

1. **Pre-Tour Research Assignment –** Students research the architectural significance of selected sites before the tour.
2. **Sketching Sessions On-Site –** Students create quick architectural sketches of buildings during the visit.
3. Photo Documentation Task – Each group captures key architectural details through photographs for later analysis.
4. **On-Site Peer Discussions –** Groups hold guided discussions about architectural elements while at the site.
5. **Expert Interaction Module –** Arrange short sessions with local architects or guides at selected locations.
6. **Daily Reflective Journal –** Students write short daily reflections on learnings and observations during the tour.
7. **Post-Tour Group Presentation –** Groups present key insights and comparative analysis of sites visited.
8. **Architectural Analysis Report –** Each group submits a structured report analyzing architectural features, style, and relevance.
9. **Map and Route Planning Task –** Students plan the tour route and justify it based on urban context and accessibility.
10. **Design Inspiration Workshop –** Conduct a workshop where students sketch conceptual designs inspired by the tour.

DSATM

Scheme of Teaching and Examinations for BE Programme -2025-26

Outcome Based Education and Choice Based Credit System (CBCS)

(Effective from the Academic Year 2025-26)

COURSE CURRICULUM

Module No.	Topics	Hrs
Pre-Tour Preparation	Selection of tour locations (India/Abroad) by faculty in consultation with students. Pre-tour briefing on the historical, cultural, and architectural relevance of selected sites. Formation of student groups (4–6 members each). **Activities:** Pre-tour research presentation. Itinerary planning and logistics discussion. Distribution of documentation roles within groups.	**-**
On-Tour Engagement	Site visits to selected architectural landmarks. Observational learning through real-world exposure. On-site analysis and documentation (photography, sketching, note-taking). **Activities:** On-site sketching and photography. Interviews or discussions with local experts. Guided peer discussions and reflection exercises.	-
Post-Tour Reporting and Reflection	Compilation and submission of group reports. Presentation and critique sessions. Assessment of learning through documentation quality and group interaction. **Activities:** Group report preparation with architectural analysis. Visual presentations of findings and experiences. Reflective journals and design response exercises.	**-**

List of Activities/Exercises:

Sl. No.	Activities/Exercises	COs
1	Pre-tour Research & Planning	**CO1**
2	On-tour Documentation & Engagement	**CO1**
3	Study Tour Report (Group Work)	**CO2**
4	Presentation & Reflection	**CO3,CO4**
5	Comprehensive Group Report	**CO5**

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

CO	Course Outcomes	RBT Level	RBT Level Indicator
CO1	Recall and explain the historical, cultural, and architectural significance of the buildings and sites visited during the study tours.	Remember & understand	L1 & L2
CO2	Apply observational and documentation techniques such as sketching, photography, and note-taking to record architectural elements on-site.	Apply	L3
CO3	Compare and contrast architectural styles, materials, spatial organization, and cultural contexts of the visited structures.	Analyse	L4
CO4	Critically evaluate the design principles, functional aspects, and contextual relevance of the built environments observed.	Evaluate	L5
CO5	Synthesize learning from the tours to produce a comprehensive and visually rich group report that reflects critical thinking, design insight, and collaborative effort.	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												3			
CO2	2														
CO3		2													
CO4				2											
CO5			3												

Assessment Pattern for CIE (50 Marks)

2 Credit Course – NCMC								
Assessment Method	**Component**	**Type of Assessment**	**Assessment Type used**	**Max. Marks**	**Evaluation Details**	**Reduced Marks**	**Min. Marks**	**Total**
CIE	Continuous Comprehensive Assessment (CCA)	CCA 1	CCA-1- **Pre-tour Research & Planning**	50		15		15
		CCA 2	CCA-2- **Presentation & Reflection**	50		15		15
		CCA 3	CCA3- **Comprehensive Group Report**	50		20		20
					Total CIE Practical / Activities		**25**	**50**
NOTE: The Minimum Marks to be secured in CIE shall be 25 (50% of Maximum marks – 50). The activities/experiments/assignments/portfolios will be assessed through only CIE. Based on the marks scored in CIE grading will be awarded for this course.								

CIE- Continuous Internal Evaluation (50 Marks)

Bloom's Category	Research & Planning (A)	Presentation (B)	Group Report (C)	Grand Total (A+B+C)
Max Marks	**15 Marks**	**15 Marks**	**20 Marks**	**50 Marks**
Remember & Understand	5	5		**10**
Apply	5	5		**10**
Analyse	5	5	5	**15**
Evaluate			5	**5**
Create			10	**10**