



**Government of Karnataka
Department of Technical Education**

C-25 Diploma in Architecture Assistantship.

Scheme of Studies
(Effect from the AY 2025-26)



Government of Karnataka
DEPARTMENT OF TECHNICAL EDUCATION

Curriculum Structure

III Semester Scheme of Studies Architecture Assistantship

Sl. No.	Teaching Department	Course Code	Course Name	Hours per week			Total Contact Hours/week	Credits	CIE Marks		Theory SEE Marks		Practice SEE Marks		Total Marks
				L	T	P			Max	Min	Max	Min	Max	Min	
Integrated Courses															
1	AR	25AR31I	Building Construction and Materials- II	4	0	4	8	6	50	20	50	20	-	-	100
2	AR	25AR32I	Building Services and Drawing	4	0	4	8	6	50	20	50	20	-	-	100
3	AR	25AR33I	Architectural Drawing - I	3	0	4	7	5	50	20	-	-	50	20	100
4	AR	25AR34I	Computer Aided Drafting	3	0	4	7	5	50	20	-	-	50	20	100
Audit Course															
5	KA	25KA31T	Kannada -I	2	0	0	2	2	50	20	-	-	-	-	50
Total				16	0	16	32	24	250	-	100	-	100	-	450



Government of Karnataka
DEPARTMENT OF TECHNICAL EDUCATION

Curriculum Structure

IV Semester Scheme of Studies Architecture Assistantship

Sl. No.	Teaching Department	Course Code	Course Name	Hours per week			Total Contact Hours/week	Credits	CIE Marks		Theory SEE Marks		Practice SEE Marks		Total Marks
				L	T	P			Max	Min	Max	Min	Max	Min	
Integrated Courses															
1	AR	25AR41I	Building Construction and Materials- III	4	0	4	8	6	50	20	50	20	-	-	100
2	AR	25AR42I	Estimation and Costing	4	0	4	8	6	50	20	50	20	-	-	100
3	AR	25AR43I	Architectural Drawing - II	3	0	4	7	5	50	20	-	-	50	20	100
4	AR	25AR44I	Computer Aided Presentation Techniques	3	0	4	7	5	50	20	-	-	50	20	100
Audit Course															
5	KA	25KA41T	Kannada -II	2	0	0	2	2	50	20	-	-	-	-	50
Total				16	0	16	32	24	250	-	100	-	100	-	450



Government of Karnataka
DEPARTMENT OF TECHNICAL EDUCATION

Curriculum Structure

V Semester Scheme of Studies- Architecture Assistantship

Sl. No.	Teaching Department	Course Code	Course Name	Hours per week			Total Contact Hours/week	Credits	CIE Marks		Theory SEE Marks		Practice SEE Marks		Total Marks
				L	T	P			Max	Min	Max	Min	Max	Min	
Integrated Courses															
1	AR	SP-1	Specialization Pathway-I	4	0	4	8	6	50	20	50	20	-	-	100
2	AR	SP-2	Specialization Pathway-II	3	0	4	7	5	50	20	-	-	50	20	100
3	AR	SP-3	Specialization Pathway-III	3	0	4	7	5	50	20	-	-	50	20	100
4	AR	25AR54I	Construction Management & Entrepreneurship	4	0	4	8	6	50	20	50	20	-	-	100
Total				14	0	16	30	22	200		100	-	100	-	400

SP	Course code	Course Name	SP	Course code	Course Name	SP	Course code	Course Name
SP-1	25AR51IA	Sustainable Architecture	SP-2	25AR52IA	Architectural Design and Detailing	SP-3	25AR53IA	Introduction to BIM & Revit
	25AR51IB	Urban Planning		25AR52IB	Interior Design and detailing		25AR53IB	Surveying and Levelling



Government of Karnataka
DEPARTMENT OF TECHNICAL EDUCATION

Curriculum Structure

VI Semester Scheme of Studies- Architecture Assistantship

Sl. No.	Department	Course Code	Course Name	Hours per week	No of Weeks	Credits	CIE Marks		Practice SEE Marks		Total Marks
							Max	Min	Max	Min	
1	AR	25AR61I	Internship/Capstone Project	40	13	13	50	20	50	20	100
Total				40	13	13	50	20	50	20	100



**Government of Karnataka
DEPARTMENT OF TECHNICAL EDUCATION**

Program	Architecture Assistantship	Semester	III
Course Name	Building Construction and Materials - II	Type of Course	Integrated
Course Code	25AR31I	Contact Hours	8Hours / week 104Hours/semester
Teaching Scheme	L:T:P 4:0:4	Credits	6
CIE Marks	50	SEE Marks	50 (Theory)

1.Rationale:

The study of Building Construction and Material is essential to understand and apply the knowledge of building materials and their behavior under varied climatic conditions. The choice of materials & construction methods is crucial to select & ensure the structural integrity longevity, safety, Strength, durability, energy efficiency, aesthetic, cost and overall quality of the construction.

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

CO-01	Analyze various types of Roofs, Trusses and Roof coverings.
CO-02	Identify various types of plastering and flooring, their properties and uses in building construction.
CO-03	Identify types of staircase and their suitability in building.
CO-04	Recognize the application of Temporary supporting structures and pre-fabricated concrete structures.

3.Course Content

WEEK	CO	PO	Theory	Practice
1	1	1	ROOFS - Definition of roof, technical terms used in Pitched roof - Types of pitched roofs-Single and double roofs (Lean-to-roof, couple roof)	Prepare sketches on different types of pitched roofs
2	1	1,5,7	Types of pitched roofs- triple membered/trussed roof (king post and queen post roof truss)	Prepare sheet on King post roof Truss and queen post roof truss.
3	1	1,5,7	Ferrous metals- Engineering aspects, Properties	Prepare sketches on different types of steel truss.

			and market forms of mild steel. Steel trusses and its advantages. Roofing materials.	
4	1	1,5,7	RCC flat roof - • Definition and advantages. • One-way slab • Two-way slab	Prepare a plan and section showing reinforcement details for one way and two way slab
5	2	1,3,7	FLOORING • Factors to be considered while selecting the type of floor, • Tiled flooring Cement concrete flooring	Conduct market survey and prepare report on various types of flooring materials.
6	2	1,5,7	Plastering- • Necessity of Plastering • Types and methods of plastering.	Prepare report on different types of plastering based on materials used.
7	2	1,3,7	Pointing- • Types and methods of pointing • Types of finishes	Prepare sketches on different types of pointing
8	3	1,5,7	STAIRS • Definition and Requirement • Classification of stairs based on materials.	Prepare Plan and section through Dog-legged stairs
9	3	1,4,7	Components of staircase Handrail, baluster, balustrade, newel post etc.	Prepare Enlarged detailing of staircase components.
10	3	1,3,7	Classification of Stairs- Straight stairs • Quarter turn stairs • Half turn stairs • Open well staircase	Prepare Plan and section through Open well staircase
11	3	1,3,7	Classification of Stairs- • Bifurcated staircase • Spiral stairs	Prepare Plan and section through spiral staircase
12	4	1,4	TEMPORARY SUPPORTING STRUCTURES Formwork :- Definition, Requirements & material used for formwork, Formwork for wall & column footings, RCC columns, beams ,slab & stairs. Scaffolding: - Definition, Parts of scaffolding,	Visit nearby construction site, identify various supporting structures used and prepare report.

			types of scaffolding, Materials used for scaffolding.	
13	4	1,4	Pre-fabricated concrete structures • Introduction, Purpose and advantages	Prepare sheet on Pre-fabricated concrete structures

4. References:

1. Building construction by S.C.Rangwala
2. Building construction by Sushil kumar
3. Building construction by S.S. Bhavikatti
4. Building construction and drawing by W.B.Mckay
5. Building construction by S.P.Arora and S.P.Bindra
6. Engineering Materials by S.C.Rangwala
7. <https://theconstructor.org/>

5. CIE Assessment Methodologies

Sl. No	CIE Assessment	Test Week	Duration (minutes)	Max marks	Average of all CIE=50 Marks
1.	CIE-1 Theory Test	4	90	50	
2.	CIE-2 Practice Test	7	180	50	
3	CIE-3 Theory Test	10	90	50	
4.	CIE-4 Practice Test	13	180	50	
5	CIE-5 Portfolio evaluation of all the activities through Rubrics	1-13		50	
Total					50 Marks

6. SEE - Theory Assessment Methodologies

Sl. No	SEE - Theory Assessment	Duration	Exam Paper Max marks	Exam Paper Max Marks scale down to (Conversion)	Min marks to pass
1.	Semester End Examination- Theory	3 Hours	100	50	20

7.CIE Theory Test model question paper

Program	Architecture Assistantship			Semester - III	
Course Name	Building Construction and Materials - II			Test	I/III
Course Code	25AR31I	Duration	90 min	Marks	50
Name of the Course Coordinator:					
Note: Answer any one full question from each section. Each full question carries equal marks.					
Q.No	Questions		Cognitive Level	Course Outcome	Marks
Section - 1					
1	a) State technical terms used in Pitched roof b) Explain types of pitched roofs with sketches c) Sketch Queen post roof and label its components		R/U /AP	1	5 10 10
2	a)List various roofing material b) Sketch and explain one way slab c) Sketch and explain types of steel trusses.		R/U/AP	1	5 10 10
Section - 2					
3	a) List engineering aspects of mild steel b) Explain market forms of mild steel with sketches c) Sketch King post roof and label its components		R/U/AP	1	5 10 10
4	a)List the advantages of flat roof b)Explain properties and uses of mild steel c) Sketch and explain two way slab		R/U/AP	1	5 10 10
Note for the Course coordinator: Each question may have one, two or three subdivisions. Optional questions in each section carry the same weightage of marks, cognitive level and course outcomes.					

**Signature of the
Course Coordinator**

Signature of the HOD

Signature of the IQAC Chairman

8.CIE Practice Test model question paper

Program	Architecture Assistantship			Semester	III
Course Name	Building Construction and Materials - II			Test	II/IV
Course Code	25AR31I	Duration	180 min	Marks	50
Name of the Course Coordinator:					
Questions				CO	Marks
1. Draw wooden Queen Post Truss for a span 10.0m to a scale 1:20. Assume required data. Draw the following. a) Sectional plan b) Sectional Elevation c) One fixing detail to enlarged Scale 2. Draw one-way slab for dimension 3mx 6m showing reinforcement details. Draw the following a) Plan b) Elevation c) Enlarged detail				1	10 10 5
				1	10 10 5
Scheme of assessment					
1.a. Plan b. Elevation c. One fixing detail 2. a) Plan b) Elevation c)Enlarged detail					10 10 5
					10 10 5
Total Marks					50

Signature of the Course Coordinator

Signature of the HOD

9.. Suggestive Activities for Tutorials:

The List is an Example and not inclusive of all possible activities of the course. Student and Faculty are encouraged to choose activities that are relevant to the topic.

Sl.No.	Suggestive Activities for Tutorials
01	Graded exercises mentioned in the practice session.
02	Representation of the market survey done.
03	Site visit and preparing its report.

10. Rubrics for Assessment of Activity (Qualitative Assessment)

Sl. No.	Dimension	Beginner	Intermediate	Good	Advanced	Expert	Students Score
		2	4	6	8	10	
1		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	8
2		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	6
3		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	2
4		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	2
	Average Marks=(8+6+2+2)/4=4.5						5

Note: Dimension and Descriptor shall be defined by the respective course coordinator as per the activities

11. Equipment/software list with Specification for a batch of 30 students

Sl.No.	Particulars	Specification	Quantity
01	Drafting Tables	As per standard	30
02	Projector	OHP	01
03	Construction yard	As per COA norms	-



Government of Karnataka
DEPARTMENT OF TECHNICAL EDUCATION

Program	Architecture Assistantship	Semester	III
Course Name	Building Services and Drawing	Type of Course	Integrated
Course Code	25AR32I	Contact Hours	8Hours / week 104 Hours / semester
Teaching Scheme	L:T:P 4:0:4	Credits	6
CIE Marks	50	SEE Marks	50 (Theory)

1.Rationale:

Building services are indispensable for buildings and its function cannot be limited to provide shelter only. But it is also responsible for the design and planning of the mechanical, electrical and public health systems required for the safe, comfortable and environmental friendly operation of modern buildings. Hence Building should be designed in such a way to provide an environment where people can feel comfortable, work, live. Basically “BUILDING SERVICES” makes a building come to life or makes the building work.

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

CO-01	Identify various sources of water supply, types of water distribution system and sanitation system in building. Prepare necessary drawings.
CO-02	Analyze the importance of lighting, ventilation system in building and classify various types of air conditioning system. Prepare necessary drawings.
CO-03	Identify the necessity of Fire Safety, Sound and Thermal insulation in building. Prepare necessary drawings.
CO-04	Classify various types of Lifts, Escalator and building automation system. Prepare necessary drawings.

3.Course Content

WEEK	CO	PO	Theory	Practice
1	1	1,4	WATER SUPPLY SYSTEM. • Introduction and necessity of water supply system in buildings. • Sources and water supply requirement for buildings. • Sequence of water supply treatment	Prepare a sheet on Water supply service connection showing all the parts, different types and sizes of pipes and draw various types of pipe joints.
2	1	1,2,4	• Requirement of water for various purpose • Types of pipes and sizes and pipe joints.	Prepare a sheet on water distribution layout system. Sketch different types of Trap's , valves and label the parts.
3	1	1,4	Water distribution system. • Types of water distribution system. SANITATION.	Prepare Sketch of different types of sanitary fixtures used in the building. Prepare a water supply layout for a residential building using

			- Importance of sanitation, - Drainage and sanitary requirements	different color code as per standards.
4	1	1,4	- Technical terms-terms sullage, sewage, sewerage, sewer - Types and sizes of sewers and importance of rural sanitation. - Different types of sanitary fixtures used in the buildings	Prepare a sanitary layout for a residential building using different color code as per the standards. Prepare a sheet layout comprising soak pit and label the parts.
5	2	1,3,4	LIGHTING. Introduction to lighting in buildings, Systems of lighting Openings to afford good natural lighting, recommended values for illumination	Prepare a drawing of a building showing openings to afford good natural lighting. Prepare a sheet layout of artificial lighting for given room area considering the concept of false ceiling.
6	2	1,4,5	Different types of electrical protective devices used in building. Planning lighting for different works area. VENTILATION. Introduction and purpose of ventilation	Preparation of electric layout for master bedroom with attached toilet. Prepare detailed electric layout for building using symbolic representation as per IS standards.
7	2	1,4,5	Functional requirements of ventilation system, Purpose of air conditioning, Categories of air conditioning system Essential requirements of air conditioning system	Prepare sketch for wind effect and stack effect Prepare AC Plant diagram, Summer AC and Winter AC
8	3	1,4	FIRE SAFETY. Purpose of fire protection, Causes of fire in building, classification of fire hazards, fire zoning and fire resisting materials, fire extinguishing methods and alarm equipment's.	Compose a sheet layout for different methods of fire protection of structural components Prepare a sheet layout comprising various types of fire equipment's.
9	3	1,4	ACOUSTICS. Definition, characteristics of acoustics and acoustical defects reflected sound. Sound absorbent materials and their classification. Sound insulation methods and acoustical design requirements for an auditorium.	Prepare a drawing of various types of sound insulation methods. Compose a sheet layout having different types of sound absorbent materials.
10	3	1,4	THERMAL INSULATION. Definition and purpose of Thermal insulation. General principles of thermal insulation and study of heat insulating materials. Methods of thermal insulation for buildings.	Prepare drawings of various methods of thermal insulation for building. Compose a sheet layout having different types of heat insulating materials.

11	3	1,4,5	BUILDING AUTOMATION. Definition, purpose and advantages of building automation system. Understand the different types of building automation equipment's and their requirements.	Prepare a building layout showing different types of building automation system
12	4	1,4,5	LIFTS AND ESCALATORS. Definition and components of lifts. Application and location of lifts Understand the various types of lifts Safety regulations of lifts and escalators.	Prepare a drawing of a passenger lift to suitable scale and label the various parts.
13	4	1,4,5	Definition, purpose and working principles of an escalator. Components of an escalator and service requirement of the same.	Prepare a drawing of escalator and label various parts

4.References:

Sl. No.	Description
1	Water supply and sanitary Engineering - G S Birdie
2	Building Construction - B C Punmia
3	Building Construction - Ahuja and Birdie
4	Basic Electrical Engineering - Anwari
5	Electrical Technology - H. Cotton
6	Air conditioning and Refrigeration - Don Kundwar
7	Air conditioning and Refrigeration Data book - Manohar Prasad
8	Environmental engineering - V. Thanikachalam
9	Fire and Human Behaviors - David Gunter
10	Fire safety in building Thomas Adam and Charles Black
11	National building Code

5. CIE Assessment Methodologies

Sl. No	CIE Assessment	Test Week	Duration (minutes)	Max marks	Average of all CIE=50 Marks
1.	CIE-1TheoryTest	4	90	50	
2.	CIE-2Practice Test	7	180	50	
3	CIE-3TheoryTest	10	90	50	
4.	CIE-4Practice Test	13	180	50	
5	CIE-5 Portfolio evaluation of all the activities through Rubrics	1-13		50	Average of all CIE=50 Marks
Total					50 Marks

6. SEE - Theory Assessment Methodologies

Sl. No	SEE – Theory Assessment	Duration	Exam Paper Max marks	Exam Paper Max Marks scale down to (Conversion)	Min marks to pass
1.	Semester End Examination-Theory	3 Hours	100	50	20

7.CIE Theory Test model question paper

Program	Architecture Assistantship			Semester - III	
Course Name	Building Services and Drawing			Test	I/III
Course Code	25AR32I	Duration	90 min	Marks	50
Name of the Course Coordinator:					
Note: Answer any one full question from each section. Each full question carries equal marks.					
Q.No	Questions		Cognitive Level	Course Outcome	Marks
Section - 1					
1	a) List the requirements of Water supply system in building. b) List the Sources of water. c) Analyze water supply requirement for buildings.		U/AN	1	5 10 10
2	a) List the requirement of water for various purpose. b) List the requirements of Sanitary system. c) Analyze various types of sanitary fixtures used in the buildings with supporting sketches.		U/AN	1	5 10 10
Section - 2					
3	a) Define Lighting system in building. b) Explain various types of lighting used in building. C) Identify types of electrical protective devices used in building.		U/AP	2	5 10 10
4	a) List the purpose of ventilation in building. b) List the Purpose of air conditioning in building. c) Differentiate between Summer and Winter A/C.		U/AP	2	5 10 10
Note for the Course coordinator: Each question may have one, two or three subdivisions. Optional questions in each section carry the same weightage of marks, cognitive level and course outcomes.					

Signature of the
Course Coordinator

Signature of the HOD

Signature of the IQAC Chairman

8.CIE Practice Test model question paper

Program	Architecture Assistantship			Semester	III
Course Name	Building Services and Drawing			Test	II/IV
Course Code	25AR32I	Duration	180 min	Marks	50
Name of the Course Coordinator:					
Questions				CO	Marks
1.Reproduce the given plan and prepare the following. a. Electric layout for the given plan with graphical representation using different symbols. b. Sketch any five sanitary fixtures used in building.				1&2	50
Scheme of assessment a) Reproducing the given plan - 15 b) Presentation of Electrical Layout for a given plan. - 15 c) Sketch of Sanitary Fixtures. - 20					
Total Marks					50

Signature of the Course Coordinator

Signature of the HOD

9. Suggestive Activities for Tutorials:

The List is an Example and not inclusive of all possible activities of the course. Student and Faculty are encouraged to choose activities that are relevant to the topic

Sl.No.	Suggestive Activities for Tutorials
01	Graded Exercises.
02	Data collection
03	Site Visit
04	Market Survey

10. Rubrics for Assessment of Activity (Qualitative Assessment)

Sl. No.	Dimension	Beginner	Intermediate	Good	Advanced	Expert	Students Score
		2	4	6	8	10	
1		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	8
2		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	6
3		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	2
4		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	2
Average Marks=(8+6+2+2)/4=4.5							5

Note: Dimension and Descriptor shall be defined by the respective course coordinator as per the activities

11. . Equipment/software list with Specification for a batch of 30 students

Sl.No.	Particulars	Specification	Quantity
01	Drawing table	As per Standards	30
02	LCD Projector	As per Standards	01
03	UPS	As per Standards	01



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DEPARTMENT OF TECHNICAL EDUCATION**

Program	Architecture Assistantship	Semester	III
Course Name	ARCHITECTURAL DRAWING-I	Type of Course	Integrated
Course Code	25AR33I	Contact Hours	7 Hours / week 91 Hours / semester
Teaching Scheme	L: T: P. 3:0:4	Credits	5
CIE Marks	50	SEE Marks	50 (Practice)

1. Rationale:

Architectural drawing is important tool to an Architect to develop an idea or concept into real time construction document. This tool provides a convenient medium to convince the clients, of the merits of a design or to make a record of a completed Construction project.

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

CO-01	Identify Basic Elements and principles of design
CO-02	Conduct Case study and measured drawing.
CO-03	Develop architectural drawing for residential buildings
CO-04	Prepare a scaled model of residential building.

3.Course Content

WEEK	CO	PO	Theory	Practice
1	1	1, 3	Introduction to Basic Elements of Design like line, shape, texture, form, Space, Value and Color Basic Principles of Design – Definition of design principles. Importance of design principles. Listing the design principles. Contrast, Balance, Rhythm, Hierarchy	Compose a sheet on elements and principles of design
2	1	1, 3	Colour Theory – color wheel: Primary colours, Secondary colours and Tertiary colours, color scheme, Monochromatic , Complementary, split complementary. Analogous, Triadic, square colour scheme, warm colors	Prepare a Sheet on Colour theory- Colour wheel, Colour schemes, etc.

			and cool colours.	
3	2	1, 3, 5	Introduction to Anthropometrics and Planning Concept, Flow of space, Circulation, Space Requirement, Collect data on standard sizes of furniture and vehicle and various furniture required as per need of the design.	Prepare Data Collection Sheet related to standards of Residential buildings.
4	2	1, 2, 4	Measured drawing of an existing classroom/ staffroom/ computer lab/ design studio etc.	Prepare Plan, sections of the same
5	2	1, 2, 4	Case study (Duplex) Visit a Residence and understand concept development, planning, develop drawings, photographs (document project).	Prepare a sheet on case study analyzing circulation, flow of spaces, sizes and requirements.
6	2	1, 2, 4	Analyze merits and demerits of case study design with the help of photographs and sketches. Site selection and analysis for designing a residential building.	Prepare plan, section and elevation of the case study
7	3	1, 3, 5	Concept development, bubble diagram, building Byelaws, furniture requirement for residence with single floor.	Prepare plan with furniture layout, sections and elevations for one bedroom house
8	3	1, 4	Rendering, methods and media used for rendering.	Presentation/ rendering of drawings
9	3	1,3,4,5	Manual Drafting of duplex (3 BHK) residence. Introduction to residence, features of residence, points to be considered while designing a residence, Finalizing Requirements, bubble diagram, Circulation diagram	Prepare site plan with parking and landscape, floor plan with furniture layout, sections and elevations for one bedroom house
10	3	1, 2, 3	Study Standards for parking, staircase, doors and windows. Architectural representation of site, landscape, levels and material indication	Prepare drawings of sections and elevations.
11	3	1, 2, 4	Detailing Staircase, pergola, parapet, gate and compound wall.	Prepare drawings of compound wall and Entrance gate
12	4	1, 2, 3	Introduction to Model making, methods, materials used.	Prepare model of duplex with suitable materials
13	4	1, 2, 3	Model making, methods, materials used.	Prepare model of duplex with suitable materials

4.References:

- 1 Building Drawing – Shah M G, Tata McGraw – Hill, 1992.
2. Building Planning & Drawing – Kumaraswamy N., Kameswara Rao A., Charotar Publishing
3. Time savers standards for architectural design data by John Hancock
4. Neufert's standards
5. Form, Space & Order by Francis DK Ching

5. CIE Assessment Methodologies

Sl. No	CIE Assessment	Test Week	Duration (minutes)	Max marks	Average of all CIE=50 Marks
1.	CIE-1TheoryTest	4	90	50	
2.	CIE-2Practice Test	7	180	50	
3	CIE-3Practice Test	10	180	50	
4.	CIE-4Practice Test	13	180	50	
5	CIE-5 Portfolio evaluation of all the activities through Rubrics	1-13		50	
Total					50 Marks

6. SEE – Practice Assessment Methodologies

Sl. No	SEE – Practice Assessment	Duration (minutes)	Max marks	Min marks to pass
1.	Semester End Examination-Practice	180	50	20

7. CIE Theory Test model question paper

Program	Architecture Assistantship			Semester - III	
Course Name	Architectural drawing I			Test	I
Course Code	25AR33I	Duration	90 min	Marks	50
Name of the Course Coordinator:					
Note: Answer any one full question from each section. Each full question carries equal marks.					

Q.No	Questions	Cognitive Level	Course Outcome	Marks
Section - 1				
1	a) Explain colour as one of the element of architecture with an example. b) Illustrate balance as one of the design principle. c) Draw a neat sketch showing the contrast of textures	U/AP	1	10 10 5
2	a) Illustrate colour theory using colour wheel b) Explain the principle of rhythm with a sketch. c) draw a study table with standard size.	U/AP	1	10 10 5
Section - 2				
3	a) Illustrate the flow of spaces diagram for a residential design with the help of bubble diagram using colours. b) illustrate with sketches the space standards for two wheeler and four wheeler parking	AP/AN	2	15 10
4	a) Explain various factors to be considered for site analysis. b) Explain the importance of site planning.	AP/AN	2	15 10
Note for the Course coordinator: Each question may have one, two or three subdivisions. Optional questions in each section carry the same weightage of marks, cognitive level and course outcomes.				

**Signature of the
Course Coordinator**

Signature of the HOD

Signature of the IQAC Chairman

7. CIE Practice Test model question paper

Program	Architecture Assistantship			Semester	III
Course Name	Architectural Drawing I			Test	II/III /IV
Course Code	25AR33I	Duration	180 min	Marks	50
Name of the Course Coordinator:					
Questions				CO	Marks
a) Develop a plan for a given a line sketch of 2bhk residence b) Elevation c) Section-				3	30 8 12
Scheme of assessment					
a. Developing plan with furniture, text and dimensioning					20+5+5
b. Developing elevation with presentation					5+3
c. Developing section with levels and dimensions					8+2+2

Signature of the Course Coordinator

Signature of the HOD

8. Suggestive Activities for Tutorials:

The List is an Example and not inclusive of all possible activities of the course. Student and Faculty are encouraged to choose activities that are relevant to the topic

Sl.No.	Suggestive Activities for Tutorials
01	Graded exercises mentioned in the practice hour
02	Case study and its analysis
03	Data collection

9. Rubrics for Assessment of Activity (Qualitative Assessment)

Sl. No.	Dimension	Beginner	Intermediate	Good	Advanced	Expert	Students Score
		2	4	6	8	10	
1		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	8
2		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	6
3		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	2
4		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	2
Average Marks=(8+6+2+2)/4=4.5							5

Note: the respective course coordinator shall define Dimension and Descriptor as per the activities

10. SEE- Model Practice Question Paper

Program	Architecture Assistantship		Semester	III	
Course Name	Architectural Drawing I	Course Code	25AR33I	Duration	180 min
Questions			CO	Marks	
Develop the following for the given line plan			3	20	
a) Detailed plan with furniture text and dimensioning					
b) One side elevation					
c) Detailed section					
d) Sessional work & viva voce					

Scheme of assessment		
a.	Developing plan with furniture, text and dimensioning	10+5+5
b.	Developing elevation with presentation	5+3
c.	Developing section with levels and dimensions	8+2+2
d.	Sessional work & viva voce	5+5
Total Marks		50

Signature of the Examiner

Signature of the Examiner

11.Equipment/software list with Specification for a batch of 30 students

Sl.No.	Particulars	Specification	Quantity
01	Drawing table	As per Standards	30
02	LCD Projector	As per Standards	01
03	UPS	As per Standards	01



Government of Karnataka
DEPARTMENT OF TECHNICAL EDUCATION

Program	Architecture Assistantship	Semester	III
Course Name	Computer Aided Drafting	Type of Course	Integrated
Course Code	25AR34I	Contact Hours	07 hours / week 91hours/semester
Teaching Scheme	L:T:P 3:0:4	Credits	05
CIE Marks	50	SEE Marks	50 (Practice)

1.Rationale:

Drafting allows the Architectural professionals to visualize the building construction before fabricating it. Use of computer drafting has revolutionized the drafting process to develop, modify and optimize the design process. Hence, making it a necessary skill to acquire in study of Architecture and Construction.

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

CO-01	Develop Simple geometry using basic commands of CAD software.
CO-02	Develop various building components with appropriate representation of Line weight, Hatching and dimensioning.
CO-03	Apply suitable commands and generate plan, section and elevation of a building with necessary information and presentation.
CO-04	Develop 3D models of simple geometrical objects and render their surfaces.

3.Course Content

WEEK	CO	PO	Theory	Practice
1	1	1,3,4	• Introduction to Computer Aided Drafting and Software used. • General features of CAD software • Basic commands: Line, polyline, Rectangle etc.	Practice Draw & Modify commands to draw various geometrical shapes.
2	1	1,3,4	• Advantages of CAD and its Application in Architectural Drawing • Introduction to AutoCAD user interface. • Basic commands: Move, Rotate, Trim, offset etc.	Explore annotation and layer properties. Draw polygons, ellipse, arc etc.
3	2	1,3,4	Draw and Modify tools	Draw Section through wall to demonstrate various parts from foundation up to parapet wall with dimensioning, line weight & hatching for material indication.

4	2	1,3,4	• Layer properties, line Weight, types of lines used in drawing • Creating Text and Tables	Draw Plan, Section and Elevation of a Door and window with enlarged detail,
5	2	1,3,4	Hatching and its types for indicating various materials	Draw, Plan, section and elevation of a dog-legged staircase to demonstrate various parts with dimensioning, line weight & hatching for material indication.
6	3	3,4,7	Analyzing model and object properties • Property palette • Quick select • Select Similar • Fillet and Chamfer	Prepare furniture drawings used in residential building.
7	3	3,4,7	• Array • Spline • P edit • Join • Creating blocks and group	Prepare furniture drawings used in office building.
8	3	3,4,6,7	Shortcut keys for various commands Save, import and export. User preference and drafting settings	Prepare floor plans for a residential building of your choice with furniture layout and appropriate graphical representation
9	3	3,4,6,7	Template management and application • Editing Drawing • Match property	Draw Section and Elevation of the same residential building showing different levels, labeling, dimensioning and material indication.
10	3	3,4,6,7	• View ports • Layout making • Scaling viewports • Plotting: Plot styles, properties, Paper size, setting margins	Prepare floor plans of a Duplex with furniture layout and appropriate graphical representation
11	3	3,4,6,7	Modify paper size, scaling the drawings for printing Plot and Printing	Draw Section and Elevation of the same residential building showing different levels, labeling, dimensioning and material indication.
12	4	1,3,4	Introduction to 3D modelling, 3D Surface and Solid Modelling: Ruled, Revolved and Tabulated Surfaces. Solid Objects: Box, Sphere, Cylinder, Cone, Wedge and Torus.	Prepare basic 3D objects.
13	4	1,3,4	Solid Editing: Union, Subtract, Extrude, Revolve, and Slice. UCS Icon, Views, View ports, V port Settings.	Prepare 3Dmodels of basic furniture.

4.References:

1. AutoCAD reference guide: everything you wanted to know about AutoCAD-- fast by Dorothy Kent.
2. Arshad N Siddique, Zahid Khab, Mukhtar Ahmed- Engineering Drawing with CAD.

5. CIE Assessment Methodologies

Sl. No	CIE Assessment	Test Week	Duration (minutes)	Max marks	Average of all CIE=50 Marks
1.	CIE-1TheoryTest	4	90	50	
2.	CIE-2 Practice Test	7	180	50	
3	CIE-3 Practice Test	10	180	50	
4.	CIE-4 Practice Test	13	180	50	
5	CIE-5 Portfolio evaluation of all the activities through Rubrics	1-13		50	Average of all CIE=50 Marks
Total					50 arks

6.SEE – Practice Assessment Methodologies

Sl. No	SEE – Practice Assessment	Duration (minutes)	Max marks	Min marks to pass
1.	Semester End Examination-Practice	180	50	20

7.CIE Theory Test model question paper

Program	Architecture Assistantship			Semester - III	
Course Name	Computer Aided Drafting			Test	I
Course Code	25AR34I	Duration	90 min	Marks	50
Name of the Course Coordinator:					
Note: Answer any one full question from each section. Each full question carries equal marks.					
Q. No	Questions		Cognitive Level	Course Outcome	Marks
Section - 1					
1	a) Explain Advantages of Computer Aided Drafting		L2	1	10
	b) Explain general features of AutoCAD		L2		10
	c)Mention uses of give commands: Line, Polyline, spline, rotate, trim		L1		5
2	a) Explain the various draw commands.		L2	1	10
	b) Explain the various modify commands.		L2		10
	c) Write short cut keys for any five commands		L1		5
Section - 2					
3	a) Explain Hatch command and its application in CAD.		L2	2	15
	b) Mention and sketch any 5 hatch patterns used to indicate materials in drawings.		L1		10
4	a) Explain Layer properties and its importance in CAD		L2	2	15
	b) List any 5 types of lines and its uses in CAD		L1		10
Note for the Course coordinator: Each question may have one, two or three subdivisions. Optional questions in each section carry the same weightage of marks, cognitive level and course out comes.					

Signature of the

Course Coordinator

Signature of the HOD

Signature of the IQAC Chairman

8. CIE Practice Test model question paper

Program	Architecture Assistantship			Semester	III
Course Name	Computer Aided Drafting			Test	II/III/IV
Course Code	25AR34I	Duration	180 min	Marks	50
Name of the Course Coordinator:					
Questions				CO	Marks
Draw Detailed drawings of a Dog legged staircase of width 1.5m, Tread 300mm and riser 150mm, floor to floor height is 3m, Develop: - Prepare detailed plan of the staircase with dimensions. - Prepare detailed section with all indications. - Prepare any enlarged detail				2	20
					20
					10
Scheme of assessment					
a) plan + labeling + dimension					10+4+6=20
b) Section + labeling+ dimensioning+ hatching					10+2+4+4=20
b) Enlarge drawing+ specification+ material indication					6+2+2=10
Total Marks					50

Signature of the Course Coordinator

Signature of the HOD

9. Suggestive Activities for Tutorials:

The List is an Example and not inclusive of all possible activities of the course. Student and Faculty are encouraged to choose activities that are relevant to the topic

Sl. No.	Suggestive Activities for Tutorials
01	Prepare sheet on geometrical shapes using CAD
02	Draw ellipse, polygons
03	Prepare section through wall.
04	Draw Plan, Section and Elevation of a Door and window with enlarged detail.
05	Draw, Plan, section and elevation of a dog-legged staircase
06	Draw furniture drawings used in residential building.
07	Draw furniture drawings used in office building.
08	Prepare floor plans for a residential building of your choice with furniture layout

09	Draw Section and Elevation of the Residential building
10	Prepare floor plans of a Duplex with furniture layout
11	Draw Section and Elevation of the Duplex
12	Draw basic 3D models
13	Prepare 3D models of basic furniture.

10. Rubrics for Assessment of Activity (Qualitative Assessment)

Sl. No.	Dimension	Beginner	Intermediate	Good	Advanced	Expert	Students Score
		2	4	6	8	10	
1		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	8
2		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	6
3		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	2
4		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	2
Average Marks=(8+6+2+2)/4=4.5							5

Note: Dimension and Descriptor shall be defined by the respective course coordinator as per the activities

11. SEE- Model Practice Question Paper

Program	Architecture Assistantship		Semester	III
Course Name	Computer Aided Drafting	Course Code: 25AR34I	Duration	180 min
Questions			CO	Marks
Draw Detailed drawings of a Residential building for given line sketch,			3	
a) Prepare detailed plan with furniture layout				20
b) Prepare a detailed section with all indications.				15
c) Prepare an Elevation with level indication.				05
d) Sessional work				10
Scheme of assessment				
a) Developing Plan + Naming + Hatching+ furniture				8+2+5+5=20
b) Section + labeling+ dimensioning+ hatching				8+2+2+3=15
c) Developing Elevation + presentation				3+2=05
d) Sessional work				10
Total Marks				50

Signature of the Examiner

Signature of the Examiner

12.Equipment/ software list with Specification for a batch of 30 students

Sl. No.	Particulars	Specification	Quantity
01	Computers	any configuration that the supports software	30
02	Software	AutoCAD	30
03	Printer/plotter	A4/A3 size paper printer	1
04	LCD Projector	OHP	1



Government of Karnataka
DEPARTMENT OF TECHNICAL EDUCATION

Program	Architecture Assistantship	Semester	IV
Course Name	Building Construction and Materials - III	Type of Course	Integrated
Course Code	25AR41I	Contact Hours	8Hours / week 104Hrs/ semester
Teaching Scheme	L:T:P 4:0:4	Credits	6
CIE Marks	50	SEE Marks	50 (Theory)

1.Rationale:

The study of Modern Building Construction techniques and Modern Material is essential to understand and apply the knowledge of building materials and their behavior under varied climatic conditions. The choice of materials & construction methods is crucial to select & ensure the structural integrity longevity, safety, Strength, durability, energy efficiency, aesthetic, cost and overall quality of the construction.

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

CO-01	Analyze various types of Partitions and materials used for partitions.
CO-02	Identify different types of wall paneling and false ceiling.
CO-03	Recognize different types of retaining wall, Causes and prevention of dampness.
CO-04	Identify different methods and materials of Paints, Distempers and Varnishes.

3.Course Content:

WEEK	CO	PO	Theory	Practice
1	1	1,4, 7	Non Ferrous Metals Engineering aspects of Aluminum Partition Wall Definition, advantages and requirements of partition wall, types of partition wall - glass and aluminum.	Prepare plan, elevation and section of aluminum partition
2	1	1,4,7	Definition, advantages of timber partition wall Advantages and types of Brick partition wall	Prepare plan, elevation and section of partition using Industrial Timber.
3	1	1,4,7	Engineering aspects of glass. Properties and uses of different types of glass Engineering aspects of Plastic. Properties and uses of FRP.	Prepare plan, elevation and section of fully glazed partition using timber frame work
4	1	1,4,7	Engineering aspects of UPVC. Properties and uses of UPVC	Prepare plan, elevation and section of fully glazed UPVC sliding door for a balcony

5	2	1,3,4,7	Wall paneling :- Definition, Advantages, Materials used for wall paneling, Construction method for wall paneling	Prepare plan, section and elevation of a wall paneling using Industrial timber.
6	2	1,4,7	Suspended ceiling :- Definition, Advantages, Materials used for false ceiling, construction method for exposed grid false ceiling.	Prepare reflected ceiling plan and cross section of exposed grid false ceiling using GI sections and acoustical tiles.
7	2	1,3,7	Suspended ceiling :- Definition, Advantages, Materials used for false ceiling, construction method for concealed Grid false ceiling.	Prepare reflected ceiling plan and cross section of concealed grid false ceiling using GI sections and Gypsum boards.
8	2	1,3,7	Curtain Wall Definition, Advantages, Materials used Curtain wall and Structural glazing	Prepare plan, section and elevation of an exterior wall using Structural glazing.
9	3	1,4,7	Retaining Wall Definition, Advantages and types of Retaining Wall	Prepare a sheet on types of retaining wall.
10	3	1,4,7	Damp proofing and Water proofing Definition, sources or causes for dampness, Effects of dampness, Materials used for damp proofing, Techniques & Methods of damp prevention,.	Prepare sketches of damp proofing at different parts of a building like foundation and floor
11	3	1,4,7	Damp proofing and Water proofing Water proofing methods for basement, concrete flat roof & sloped roof	Prepare sketches of water proofing of concrete flat roof.
12	4	1,3,7	Paints, Engineering aspects of paints , Objects of painting, Ingredients of paints and their functions. Characteristics of good paint Types and common brands of paints, Methods of painting	Conduct market survey of various brands of paints and prepare a report.
13	4	1,3,7	Varnishes and Distempers Engineering aspects of varnishes and distemper Objects of varnishing and distemping. Ingredients of varnishes and distemper and their functions. Characteristics of good varnishes and distempers	Prepare a sheet on various textured paint finishes with the help of photographs.

4.References:

1. Building construction by S.C.Rangwala
2. Building construction by Sushil kumar
3. Building construction by S.S. Bhavikatti
4. Building construction and drawing by W.B.Mckay
6. Building construction by S.P.Arora and S.P.Bindra
7. Engineering Materials by S.C.Rangwala
8. <https://theconstructor.org/>

5.CIE Assessment Methodologies

Sl. No	CIE Assessment	Test Week	Duration (minutes)	Max marks	Average of all CIE=50 Marks
1.	CIE-1TheoryTest	4	90	50	
2.	CIE-2Practice Test	7	180	50	
3	CIE-3TheoryTest	10	90	50	
4.	CIE-4Practice Test	13	180	50	
5	CIE-5 Portfolio evaluation of all the activities through Rubrics	1-13		50	
Total					50 Marks

6. SEE - Theory Assessment Methodologies

Sl. No	SEE - Theory Assessment	Duration	Exam Paper Max marks	Exam Paper Max Marks scale down to (Conversion)	Min marks to pass
1.	Semester End Examination-Theory	3 Hours	100	50	20

7.CIE Theory Test model question paper

Program		Architecture Assistantship			Semester - IV	
Course Name		Building Construction and Materials - III			Test	I/III
Course Code		25AR41I	Duration	90 min	Marks	50
Name of the Course Coordinator:						
Note: Answer any one full question from each section. Each full question carries equal marks.						
Q.No	Questions			Cognitive Level	Course Outcome	Marks
Section - 1						
1	a) State the purpose of partition wall			R/U	1	5
	b) Explain the properties and uses of UPVC					10
	c) Explain with sketch aluminum partition wall					10
2	a) State the engineering aspects of plastics			R/U	1	5
	b) Explain the properties and uses of different types of glass					10
	c) Explain the advantages and requirements of partition wall					10
Section - 2						
3	a) State the engineering aspects of glass			R/APP/AN	1	5
	b) Illustrate with sketch types of Brick partition wall					10
	c) Compare aluminum partition and wooden partition					10

4	a) List the uses of FRP as an engineering material b) Illustrate with sketch Timber partition wall c) Compare glass and plastic in construction	R/APP/AN	1	5 10 10
Note for the Course coordinator: Each question may have one, two or three subdivisions. Optional questions in each section carry the same weightage of marks, cognitive level and course outcomes.				

Signature of the
Course Coordinator

Signature of the HOD

Signature of the IQAC Chairman

8. CIE Practice Test model question paper

Program	Architecture Assistantship			Semester	IV
Course Name	Building Construction and Materials - III			Test	II/IV
Course Code	25AR41I	Duration	180 min	Marks	50
Name of the Course Coordinator:					
Questions				CO	Marks
1. Design false ceiling for a showroom of size 10.0Mx5.0M using GI sections and gypsum board to a suitable scale. Draw the following. a) Reflected ceiling plan b) Section c) One enlarged fixing detail 2. Draw wall paneling using Industrial timber for a wall of size of 4.0M wide and 3.0M ht. to a suitable scale. Assume necessary data. Draw the following. a) Sectional plan b) Elevation c) Longitudinal Section d) One enlarged detail				02	10 10 5
				02	10 7 5 3
Scheme of assessment					
1.					
a) Drawing =6marks + dimensioning =2marks + labelling =2marks					10
b) Drawing =6marks dimensioning =2marks +labelling =2marks					10
c) Drawing =3marks labelling =2marks					5
2.					
a) Drawing =6marks + dimensioning =2marks + labelling =2marks					10
b) Drawing =4marks + dimensioning =1marks + labelling =2marks					7
c) Drawing =3marks + dimensioning =1marks + labelling =1marks					5
d) Drawing =2marks + labelling =1marks					3
Total Marks					50

Signature of the Course Coordinator

Signature of the HOD

9. Suggestive Activities for Tutorials:

The List is an Example and not inclusive of all possible activities of the course. Student and Faculty are encouraged to choose activities that are relevant to the topic

Sl.No.	Suggestive Activities for Tutorials
01	Graded exercises mentioned in the practice session.
02	Representation of the market survey done.
03	Site visit and preparing its report.

10. Rubrics for Assessment of Activity (Qualitative Assessment)

Sl. No.	Dimension	Beginner	Intermediate	Good	Advanced	Expert	Students Score
		2	4	6	8	10	
1		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	8
2		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	6
3		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	2
4		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	2
	Average Marks=(8+6+2+2)/4=4.5						5

Note: Dimension and Descriptor shall be defined by the respective course coordinator as per the activities

11. Equipment/ software list with Specification for a batch of 30students

Sl.No.	Particulars	Specification	Quantity
01	Drawing table	As per Standards	30
02	LCD Projector	As per Standards	01
03	UPS	As per Standards	01



Government of Karnataka
DEPARTMENT OF TECHNICAL EDUCATION

Program	Architecture Assistantship	Semester	IV
Course Name	Estimation and Costing	Type of Course	Integrated
Course Code	25AR42I	Contact Hours	08 Hours / week 104 Hours / Semester
Teaching Scheme	L: T:P 4:0:4	Credits	6
CIE Marks	50	SEE Marks	50 (Theory)

1.Rationale:

Estimation helps to know the probable cost of the building. The estimator uses the project's drawings and specifications to determine the necessary material Quantities to plan project execution. In addition, structural drawings communicate the design of the building's structure to the construction team. Structural drawings also guide contractors with detailing, fabricating, and installing parts of the structure.

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

CO-01	To analyze from first principle, the rates of various items of a building
CO-02	To prepare cost estimate of a proposed building given the detailed specification of the materials and the drawings.
CO-03	Identify Applications and aspects of R.C.C in building construction.
CO-04	Prepare the detailed Structural drawing of building components and analyze quantity of steel.

3.Course Content

WEEK	CO	PO	Theory	Practice
1	1	1, 2	Introduction & necessity of estimation. Different types of estimating Units of measurement of various items of work	Prepare estimation of residential building using preliminary estimate method.
2	1	1, 2, 5	Specification necessity of preparing detailed specification. Detailed specifications for • Earthwork excavation in foundation • Cement concrete in foundation • Ashlar masonry • RCC for roof slab • Plastering in cement mortar	Write detail specification for given item of work
3	1	1, 2, 5	Rate Analysis- Definition and necessity Analyze rates for the following items of work • Earthwork excavation in foundation • Cement concrete in foundation • Ashlar masonry	Analyze from first principle the rate for given items of work

			• RCC for roof slab • Plastering in cement mortar	
4	2	1,2,5,6	Detailed estimate: Introduction, Types of estimation, Long wall short wall method and centerline method and Abstract of estimated quantities.	Prepare detailed estimate of quantities and abstract of estimated cost for various items of work pertaining to a single room building whose plan and sectional details are given.
5	2	1,2,5,6	Detailed estimate: Prepare the detailed estimate of quantities and abstract estimate of cost for a given building with specification for each item of work of a two-room building.	Prepare detailed estimate of quantities and abstract of estimated cost for various items of work pertaining to a single roomed building whose plan and sectional details are given
6	2	1,2,5,6	Detailed estimate: Prepare the detailed estimate of quantities and abstract estimate of cost for a given building with specification for each item of work of a residential building with flat roof.	Prepare detailed estimate of quantities and abstract of estimated cost for various items of work pertaining to a residential building whose plan and sectional details are given.
7	2	1,2,5,6	Detailed estimate: Prepare the detailed estimate of quantities and abstract estimate of cost for a given building with specification for each item of work of a residential building with flat roof.	Prepare detailed estimate of quantities and abstract of estimated cost for various items of work pertaining to a residential building whose plan and sectional details are given.
8	3	1,2,4,5	Introduction to behavioral concepts of RCC structures. Necessity of reinforcement and proper placement of reinforcement.	Make necessary sketches for various bar details and bending.
9	4	1,2,4,5,7	Bar bending schedule for the column with isolated footing using the given design data and to calculate the quantity of steel reinforcement.	Prepare detailed drawing of column isolated footing for the given data
10	4	1,2,4,5,7	Bar bending schedule for the RCC singly reinforced beam using the given design data and to calculate the quantity of steel reinforcement	Prepare detailed drawing of RCC singly reinforced beam for the given data
11	4	1,2,4,5,7	Bar bending schedule for the RCC doubly reinforced beam using the given design data and to calculate the quantity of steel reinforcement	Prepare detailed drawing of RCC doubly reinforced beam for the given data
12	4	1,2,4,5,7	Bar bending schedule for the RCC one way slab using the given design data and to calculate the quantity of steel reinforcement	Prepare detailed drawing of RCC one way slab for the given data
13	4	1,2,4,5,7	Bar bending schedule for the RCC two way slab using the given design data and to calculate the quantity of steel reinforcement	Prepare detailed drawing of RCC two way slab for the given data

4 References:

1. Estimating and Costing in Civil Engineering - B.N. Datta
2. Estimating and Costing in Civil Engineering - M. Chakraborti
3. Estimating and Costing in Civil Engineering - S.C. Rangwala
4. Building Drawing – Shah M G, Tata McGraw – Hill, 1992
5. Civil engineering Drawing By Chakraborti
6. Civil Engineering Drawing - Gurucharan singh
7. Building Drawing – Shah M G, Tata McGraw – Hill, 1992
8. Structural design and Drawing by N Krishnaraju
9. Reinforcing Detailing of RCC members- T Rangaraju
10. Manual of standard practice for detailing reinforced concrete structures (aci 315-65)

5. CIE Assessment Methodologies

Sl. No	CIE Assessment	Test Week	Duration (minutes)	Max marks	Average of all CIE=50 Marks
1.	CIE-1 Theory Test	4	90	50	
2.	CIE-2 Theory Test	7	90	50	
3	CIE-3 Practice Test	10	180	50	
4.	CIE-4 Practice Test	13	180	50	
5	CIE-5 Portfolio evaluation of all the activities through Rubrics	1-13		50	Average of all CIE=50 Marks
Total					50 Marks

6. SEE - Theory Assessment Methodologies

Sl. No	SEE – Theory Assessment	Duration	Exam Paper Max marks	Exam Paper Max Marks scale down to (Conversion)	Min marks to pass
1.	Semester End Examination-Theory	3 Hours	100	50	20

7.CIE Theory Test model question paper

Program		Architecture Assistantship			Semester -IV	
Course Name		Estimation and Costing			Test	I/II
Course Code		25AR42I	Duration	90 min	Marks	50
Name of the Course Coordinator:						
Note: Answer any one full question from each section. Each full question carries equal marks.						
Q.No	Questions			Cognitive Level	Course Outcome	Marks
Section - 1						
1	a) Write detailed specification for one of the following items of work. - Cement concrete in foundation - Ashlar masonry			R	01	05
	b) Analyze from first principle the rate of any two items of work. - Earthwork excavation in foundation - Ashlar masonry - RCC for roof slab			AN		20
2	a) List types of Estimate and explain any one of them.			R	01	05
	b) Analyze from first principle the rate of following items of work. - Earthwork excavation in foundation - Cement concrete in foundation			AN		20
Section - 2						
3	a) Prepare detailed and abstract estimate for the items of work for the given single room building. - Earthwork excavation in foundation - Cement concrete flooring.			Ap	02	10+15=25
4	a) Prepare detailed and abstract estimate for the items of work for the given single room building. - Bed concrete in foundation - Exterior plastering			Ap	02	10+15=25
Note for the Course coordinator: Each question may have one, two or three subdivisions. Optional questions in each section carry the same weightage of marks, cognitive level and course outcomes.						

**Signature of the
Course Coordinator**

Signature of the HOD

Signature of the IQAC Chairman

8. CIE Practice Test model question paper

Program	Architecture Assistantship			Semester	IV
Course Name	Estimation and Costing			Test	III/ IV
Course Code	25AR42I	Duration	180 min	Marks	50
Name of the Course Coordinator:					
Questions				CO	Marks
1. Draw Sectional plan of a RCC square column of size 450x450mm with following reinforcement details. • Footing size: 1200x1200mm, • Footing mesh: 10mm dia @ 150mm C/c on both sides. • Column reinforcement: 16mm dia, four numbers, stirrups- 6mm dia @ 200mm c/c. • Clear cover: for column- 40mm , for footing- 50mm • Assume the missing data				4	10+12+3=25
2. Draw longitudinal section and cross section at mid and end of a RCC singly reinforced T – Beam of a hall of size 5m x 6m. Following are the details of reinforcement • Clear Span of the beam is 5m • Overall depth of beam 600mm • Rib width of beam 300mm • End support 230mm thick BBM Wall • Longitudinal Reinforcement of beam are 6 no's of 20mm Ø • Out of 6 longitudinal bars, 2 bars are bent up at 45 degree at a distance of 1200mm from the face of the support. • 2 hanger bars of 16mm Ø • 8mm Ø 2 legged stirrups at 100mm c/c Clear concrete cover and other missing data may suitably be assumed and stated.				4	12+5+5+3=25
Scheme of assessment					
1) Plan + Section + Labeling and dimensioning					10+12+3=25
2) Longitudinal section + Cross section mid + Cross section end+ Labeling and dimensioning					12+5+5+3=25
Total Marks					50

Signature of the Course Coordinator

Signature of the HOD

9. Suggestive Activities for Tutorials:

The List is an Example and not inclusive of all possible activities of the course. Student and Faculty are encouraged to choose activities that are relevant to the topic

Sl.No.	Suggestive Activities for Tutorials
01	Site Visit to a construction site to observe Reinforcement for details
02	Market survey for Rate analysis
03	Collect photographs of reinforcement for various RCC components

10. Rubrics for Assessment of Activity (Qualitative Assessment)

Sl. No.	Dimension	Beginner	Intermediate	Good	Advanced	Expert	StudentsScore
		2	4	6	8	10	
1		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	8
2		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	6
3		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	2
4		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	2
	Average Marks=(8+6+2+2)/4=4.5						5

Note: Dimension and Descriptor shall be defined by the respective course coordinator as per the activities

11. Equipment/software list with Specification for a batch of 30 students

Sl.No.	Particulars	Specification	Quantity
01	Drawing Tables	Standard drafting table	30
02	Projector	OHP	1



Government of Karnataka
DEPARTMENT OF TECHNICAL EDUCATION

Program	Architecture Assistantship	Semester	IV
Course Name	Architectural Drawing II	Type of Course	Integrated
Course Code	25AR43I	Contact Hours	7 Hours / week 91 Hours / semester
Teaching Scheme	L: T:P 3:0:4	Credits	5
CIE Marks	50	SEE Marks	50 (Practice)

1.Rationale:

Architectural drawing is important tool to an Architect to develop an idea or concept into real time construction document. This tool provides a convenient medium to convince the clients, of the merits of a design or to make a record of a completed Construction project.

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

CO-01	Analyze the climatic parameters, basic principles & elements of landscape architecture.
CO-02	Illustrate various public building, need of data collection and conducting case study of given public building
CO-03	Develop the ability to draw and design by using concepts of building planning, building bye laws applicable to that type of public building for a given location using CAD.
CO-04	Develop 3D view for the public building.

3.Course Content

WEEK	CO	PO	Theory	Practice
1	01	1, 5	Introduction to climate responsive design Introduction to Climate- The Climate-built form interaction; some examples. Elements of climate, measurement and representations of climatic data. Examples of climate responsive design, CEPT Ahmedabad, vernacular architectural features.	Prepare a sheet on passive design strategies for climate responsive design.
2	01	1, 5	Major climatic zones of India. Site Climate: Effect of landscape elements on site/micro climate.	Preparing a sheet on various climatic zones of India
3	01	1,3,5,7	Introduction to landscape Architecture and its elements	Prepare a sheet on elements of landscape architecture
4	01	1,3,5,7	Principles of landscape architecture, landscape design for public buildings	Prepare a sheet on landscape layout for residential building on a given site.
5	02	1,3,5,7	Introduction to public buildings Definition, Features, points to be considered while designing public	Choose a project and identify a suitable site locally available and collect the data for site

			building.	analysis.
6	02	1, 2	Identify suitable Time saver standards, Anthropometrical data required for the design.	Prepare a sheet on collected data for proposed public building.
7	02	1, 2, 3	Live Case study, choose a suitable project in your town, visit, and understand concept development and planning.	Prepare presentation on case study analysis done and develop drawings.
8	03	1,3,5,7	Produce schematic drawing, Site plan with proper demarcation of parking space, vehicular and pedestrian circulation in site and Landscaping with building roof plan. Represent various materials with suitable hatch and graphical representation.	Develop Architectural presentation drawing of all floors with opening details, staircase details, level indications, dimensions etc
9	03	1, 2, 3	Prepare drawings for area calculation, Calculate built up area of the project and determine FAR in a table	Prepare furniture layout with graphical representation
10	03	1,3,5,7	Develop sections of the design project, showing details through staircase, Toilet, balcony, furniture, openings etc.	Develop elevation defining levels, projections, openings etc.
11	03	1,3,5,7	Roles and responsibilities of local authority in implementation of byelaws.	Prepare sanction drawing with all necessary drawings using appropriate scale and layout.
12	04	1, 2, 3	Textures, materials, staircase details, and balcony railing, lighting fixtures, in the 3D model	Prepare exterior 3D view of the proposed project.
13	04	1, 2, 3	Adding Gate, compound wall details with appropriate material finish in the 3D model of project.	Produce rendered view for the same.
NOTE: 1)All the drawings are to be presented using CAD and Sketch Up 2) Suggested topics for project , Apartment, School, Restaurant, Primary Health Centre, Post Office, Bank etc.				

4. References:

1. Building Drawing – Shah M G, Tata McGraw – Hill, 1992.
2. Building Planning & Drawing – Kumaraswamy N., Kameswara Rao A., Charotar Publishing
3. Time savers standards for architectural design data by John Hancock
4. Neufert's standards
5. Form, Space & Order by Francis DK Ching
6. Climate responsive architecture by Arvind Krishnan

5. CIE Assessment Methodologies

Sl. No	CIE Assessment	Test Week	Duration (minutes)	Max marks	Average of all CIE=50 Marks
1.	CIE-1TheoryTest	4	90	50	
2.	CIE-2Practice Test	7	180	50	
3	CIE-3practice Test	10	180	50	
4.	CIE-4Practice Test	13	180	50	
5	CIE-5 Portfolio evaluation of all the activities through Rubrics	1-13		50	
Total					50 Marks

6.SEE – Practice Assessment Methodologies

Sl. No	SEE – Practice Assessment	Duration (minutes)	Max marks	Min marks to pass
1.	Semester End Examination-Practice	180	50	20

7.CIE Theory Test model question paper

Program	Architecture Assistantship			Semester - IV	
Course Name	Architectural Drawing II			Test	I
Course Code	25AR43I	Duration	90 min	Marks	50
Name of the Course Coordinator:					
Note: Answer any one full question from each section. Each full question carries equal marks.					
Q.No	Questions		Cognitive Level	Course Outcome	Marks
Section - 1					
1	a) Explain various climatic factors influencing architectural design		R/U	1	10
	b) sketch and explain various passive design strategies for climate responsive design		U/AP		10
	c) list various climatic zones of India		R/U		5
2	a) illustrate the architectural features of CEPT Ahmedabad		U/AP	1	10
	b) Explain with sketches two important features of vernacular architecture.		U/AP		10
	c) List the advantages of adopting courtyard in the design of any building.		U/AP		5

Section - 2				
3	a) Define landscape architecture and sketch any two elements of landscape architecture b) Explain with sketches principles of landscape architecture c) Write a note on water body used in landscape design.	R/U U/AP R/U	1	10 10 5
4	Design landscape layout for a given residential building	AP/AN	1	25
Note for the Course coordinator: Each question may have one, two or three subdivisions. Optional questions in each section carry the same weightage of marks, cognitive level and course outcomes.				

Signature of the
Course Coordinator

Signature of the HOD

Signature of the IQAC Chairman

8. CIE Practice Test model question paper

Program	Architecture Assistantship			Semester	IV
Course Name	Architectural Drawing II			Test	II/III /IV
Course Code	25AR43I	Duration	180 min	Marks	50
Name of the Course Coordinator:					
Questions				CO	Marks
1 For a given line plan of public building/office draft the following a) Detailed ground floor plan with openings and furniture. b) Elevation c) section				03	50
Scheme of assessment a) Detailed ground floor plan with openings and furniture. b) Elevation with presentation c) Section with levels					20+5+5 3+2 10+5
Total Marks					50

Signature of the Course Coordinator

Signature of the HOD

9. Suggestive Activities for Tutorials:

The List is an Example and not inclusive of all possible activities of the course. Student and Faculty are encouraged to choose activities that are relevant to the topic

Sl.No.	Suggestive Activities for Tutorials
01	Graded exercises mentioned in the practice hour
02	Case study and its analysis
03	Data collection with its report
04	Site visits and their reports.

8. Rubrics for Assessment of Activity(QualitativeAssessment)

Sl. No.	Dimension	Beginner	Intermediate	Good	Advanced	Expert	StudentsS core
		2	4	6	8	10	
1		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	8
2		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	6
3		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	2
4		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	2
Average Marks=(8+6+2+2)/4=4.5							5

Note: Dimension and Descriptor shall be defined by the respective course coordinator as per the activity

10. SEE- Model Practice Question Paper

Program	Architecture Assistantship		Semester	IV
Course Name	Architectural Drawing II	Course Code 25AR43I	Duration	180 min
Questions			CO	Marks
1) For a given line plan of public building/office draft the following a) Site plan with landscape layout b) Detailed ground floor plan with openings and furniture c) Elevation d) Section 2) Sessional work & viva voce			03	50
Scheme of assessment 1. a) Site plan with landscape layout b) Detailed ground floor plan with openings and furniture c) Elevation with presentation d) Section 2. Sessional work & viva voce				7+3 10+5 3+2 10 5+5
Total Marks				50

1.Signature of the Examiner

2. Signature of the Examiner

11.Equipment/softwarelistwithSpecificationforabatchof30students

Sl.No.	Particulars	Specification	Quantity
01	Computers	any configuration that the supports software	30
02	Software	AutoCAD	30
03	Printer/plotter	A4/A3 size paper printer	1
04	LCD Projector	OHP	1



Government of Karnataka
DEPARTMENT OF TECHNICAL EDUCATION

Program	Architecture Assistantship	Semester	IV
Course Name	Computer Aided Presentation Technique	Type of Course	Integrated
Course Code	25AR44I	Contact Hours	07 Hours/ week 91 Hours / semester
Teaching Scheme	L: T:P 3:0:4	Credits	5
CIE Marks	50	SEE Marks	50 (Practice)

1.Rationale:

3D models give the actual and clear idea of the building with its real dimensions. This helps designer to specifically analyze the design and make corrections if required prior to the construction. This tool provides the professionals to precisely present the design, its form and appearance.

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

CO-01	Develop geometrical objects and forms using basic draw tools.
CO-02	Develop 3D models of furniture, cabinets and apply materials.
CO-03	Prepare various elements of building design with accuracy and detail.
CO-04	Develop Interior and Exterior view of a residential building and render.

3.Course Content

WEEK	CO	PO	Theory	Practice
1	1	1,3,4	• Introduction to SketchUp • Selecting a template in Sketchup. Exploring the SketchUp interface: Title bar, Menu bar, Getting Started with toolbars, Drawing area, Status bar & Window resize handle. • Advantages & applications of SketchUp • Introduction to Entities: Line, Face, Circle, Group, Component, Guideline, Dimension, Surface, Section plane.	• Practice basic tools using sketch up. • Creating 3D model in SketchUp. Saving and reopening a model. Backing up a SketchUp file or restoring an Auto-save file. • Prepare geometrical 3D objects.
2	1	1,3,4	• SketchUp coordinate system • Dividing and Healing Geometry, push and pull • Camera adjustment, Camera tools	Prepare simple objects using Follow me tool like handles, pots, cups, plates etc.

			Perspective and projection	
3	2	1,3,4	- Materials, Application and creating materials - Group and Components - Styles and types of styles - Shadows: Ground shadow, Face shadow.	Prepare 3D model of Chair, table, Teapoy, Study table, Bed, Wardrobe.
4	2	1,3,4	- Sharing files - Export and import model - Warehouse - Rotate Moving and Coping, creating multiple copies.	Prepare 3D model of Dining table, TV unit, Kitchen unit.
5	3	1,3,4	- Scaling components - Measuring distance - Creating text and types of text - Zoom tool, changing focal length	Develop a Dog legged and Spiral staircase with railing of any design of your choice, apply materials, add necessary details
6	3	3,4	- Animation and walk through, scene tabs - Exporting and animation - Scaling an object - Dynamic components	Develop 3D of Windows with suitable texture/material
7	3	3,4	- Dividing lines of arc into equal parts - Flipping or mirroring geometry - Edit Menu and its elements	Develop 3D view of types of doors with all necessary fittings like handle, lock etc
8	3	3,4	- Camera menu and its elements - View menu and its elements	Develop interior model of a Living unit and Bedroom unit.
9	3	3,4	- Tools menu and its elements - Window menu and its elements - Draw menu and its elements	Develop interior model of a Kitchen and Dining unit.
10	4	3,4,7	Toolbars: Getting started, large toolset, camera tool bar, guide toolbar, Drawing tool bar, face style tool bar	Develop 3D Exterior and interior model of a residential building (2 floors)
11	4	3,4,7	Toolbars: google toolbar, measurement toolbar, principal toolbar, sand box toolbar	Develop 3D Exterior and interior model of a residential building (2 floors)
12	4	3,4,7	- Standard views - Match new photo	Develop 3D Interior and Exterior model of a residential building (2 floors)
13	4	3,4,7	- Sketching over image - Raster file formats	Render the model and create scenes to develop animation/walkthrough of the residential model

4. References:

<http://designerhacks.com/sketchup-tutorials/>

<http://www.sketchuptutorials.net/2011/10/21/sketchup-basics-tutorial-part-2-creating-your->

firstbuilding/
<http://designstudentssavvy.com/sketchup-floor-plan-tutorial/>
<http://www.sketchupartists.org/tutorials/sketchup-and-thea-render/>
<https://www.thearender.com/site/index.php/resources/tutorials/sketchup.html>
<http://www.suplugins.com/download/SUPodiumV2PLUSGuide.pdf>
<https://youtu.be/7sF1Y9hMv8>
https://youtu.be/MRX_VL1sKOA
<https://youtu.be/g8auG3MQnqQ>
<https://www.skillshare.com/browse/sketchup>
<https://youtu.be/aZp3s8SdEag>
<https://youtu.be/IFiuGq-HUHW>

5. CIE Assessment Methodologies

Sl. No	CIE Assessment	Test Week	Duration (minutes)	Max marks	Average of all CIE=50 Marks
1.	CIE-1TheoryTest	4	90	50	
2.	CIE-2Practice Test	7	180	50	
3	CIE-3 Practice Test	10	180	50	
4.	CIE-4Practice Test	13	180	50	
5	CIE-5 Portfolio evaluation of all the activities through Rubrics	1-13		50	Average of all CIE=50 Marks
Total					50 Marks

6.SEE – Practice Assessment Methodologies

Sl. No	SEE – Practice Assessment	Duration (minutes)	Max marks	Min marks to pass
1.	Semester End Examination-Practice	180	50	20

7.CIE Theory Test model question paper

Program	Architecture Assistantship			Semester - IV	
Course Name	Computer Aided Presentation Technique			Test	I
Course Code	25AR44I	Duration	90 min	Marks	50
Name of the Course Coordinator:					
Note: Answer any one full question from each section. Each full question carries equal marks.					

Q.No	Questions	Cognitive Level	Course Outcome	Marks
Section - 1				
1	a) What is Computer Aided Presentation Technique? Explain its advantages b) Sketch and Explain functions of following entities: Line, Face, Circle, Group, Component, Guideline,	R/U AP	1	3+10=13 6 x 2=12
2	a) What is Sketch Up? Explain its applications. b) Sketch and Explain functions of following entities: Dimension, Surface, Section plane, Push/pull, Camera, Perspective and projection.	R/U AP	1	3+10=13 6 x 2=12
Section - 2				
3	a) What is Material Pallet? Explain its application and creating materials b) Write a note on following: • Styles and types of styles • Shadows, ground shadow and face shadow.	R/U	2	3+10=13 6 x 2=12
4	a) What is Warehouse? Explain its benefits in 3D modeling. b) Write a note on following: • Export and import model • Moving and Coping, creating multiple copies.	R/U	2	3+10=13 6 x 2=12
Note for the Course coordinator: Each question may have one, two or three subdivisions. Optional questions in each section carry the same weightage of marks, cognitive level and course outcomes.				

Signature of the
Course Coordinator

Signature of the HOD

Signature of the IQAC Chairman

8. CIE Practice Test model question paper

Program	Architecture Assistantship			Semester	IV
Course Name	Computer Aided Presentation Technique			Test	II/III/IV
Course Code	25AR44I	Duration	180 min	Marks	50
Name of the Course Coordinator:					
Questions				CO	Marks
Develop 3D Model for an Interior of any given space and line sketch. a. 3D view with all necessary components b. Furniture and fixtures c. Material application and presentation				3	25 15 10
Scheme of assessment a) 3D Modelling b) Drawing furniture and fixtures c) Material Application and presentation					25 15 10
Total Marks					50

Signature of the Course Coordinator

Signature of the HOD

9. Suggestive Activities for Tutorials:

The List is an Example and not inclusive of all possible activities of the course. Student and Faculty are encouraged to choose activities that are relevant to the topic

Sl.No.	Suggestive Activities for Tutorials
01	Graded Exercises/Sheets with 3D views of given practice sessions
02	Study materials used for interior and exterior, their appearance, color, texture.
03	Collect data on standard sizes of furniture and building components.

10. Rubrics for Assessment of Activity (Qualitative Assessment)

Sl. No.	Dimension	Beginner	Intermediate	Good	Advanced	Expert	Students Score
		2	4	6	8	10	
1		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	8
2		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	6
3		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	2
4		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	2
Average Marks=(8+6+2+2)/4=4.5							5

Note: Dimension and Descriptor shall be defined by the respective course coordinator as per the activities

11. SEE- Model Practice Question Paper

Program	Architecture Assistantship		Semester	IV
Course Name	Computer Aided Presentation Technique	Course Code 25AR44I	Duration	180 min
Questions			CO	Marks
1. Develop 3D Model, Exterior View of a residential building for a given line sketch a. 3D view with all necessary components b. Fixtures and components c. Material application and presentation 2. Sessional work			4	20 10 10 10
Scheme of assessment 1. a) 3D Modelling b) Drawing furniture and fixtures c) Material Application and presentation 2. Sessional work				20 10 10 10
			Total Marks	50

Signature of the Examiner

Signature of the Examiner

11.Equipment/softwarelistwithSpecificationforabatchof30students

Sl.No.	Particulars	Specification	Quantity
01	Computers	Any configuration that the supports software	30
02	Software	SketchUp	30
03	Printer/plotter	4A/A3 size paper printer	1
04	LCD Projector	OHP	1



Government of Karnataka
DEPARTMENT OF TECHNICAL EDUCATION

Program	Architecture Assistantship	Semester	V
Course Name	Sustainable Architecture	Type of Course	Integrated
Course Code	25AR51IA	Contact Hours	8Hrs/week 104Hrs/Semester
Teaching Scheme	L: T:P 4: 0: 4	Credits	6
CIE Marks	50	SEE Marks	50 (Theory)

Rationale:

This course helps students to design buildings with minimal harm. It makes students aware of their Role in combating climate change. Guides students to use sustainable materials, energy efficient designs and smart waste management techniques. Makes them familiar with green building certifications. Prepares them to build a better, greener and more responsible future.

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

CO-01	Develop the skill needed to design environmentally responsible buildings
CO-02	Apply the features of energy efficiency and Review sustainable construction techniques and identify suitable green materials
CO-03	Analyze and apply the methods of water conservation and waste management in the buildings
CO-04	Identify and analyze the features of urban sustainability and green rating System.

2. Course Content

WEEK	CO	PO	Theory	Practice
1	1	1,5	Introduction to sustainable architecture Definition and importance of sustainable architecture History and evolution of sustainable architecture	Prepare a sheet on factors affecting sustainability and illustrate the features which can be adopted to attain sustainability in architecture
2	1	1,5	Key Principles of sustainable Architecture Difference between sustainable architecture and green building	Visit to a green building, prepare the report of the same with the aid of images.
3	1	1,3,5	Climate & Environmental considerations Site Specific Design, Site Development Guidelines- purpose of tree and	Illustrate various methods can be adopted for climate responsive architecture Prepare a sheet on walling and roofing solutions for climate

			vegetative cover, green roofs, installing cool and mainly reflective roofs, cool pavements.	responsive architecture in our country.
4	1	1, 3, 5	Climate responsive design Definition and importance of climate responsive design, site analysis & micro climate, passive solar design	Prepare a sheet on passive solar design principles
5	2	1, 3, 5	Energy Efficiency in buildings Introduction to energy efficiency in buildings, energy consumption in buildings, thermal insulation in walls, roofs and floors, types of insulation materials, renewable energy integration in buildings. Photo voltaic cells and solar water heating systems.	Collect information and make a report about materials which can be adopted to achieve energy efficiency in a building
6	2	1,3,5	Energy Efficiency in buildings Energy efficient windows and glazing, U Value, solar heat gain coefficient (SHGC), Guidelines for energy efficiency of built environment with respect to HVAC	Prepare a sheet on solar panels for energy generation and solar water heater.
7	2	1,5	Fundamentals of Sustainable building materials Introduction to sustainable materials and their properties, properties and uses of CSEB (Compressed Stabilized Earth Blocks), AAC Blocks (Autoclaved Aerated Concrete blocks), Fly ash, Bamboo, certified wood.	Conduct market survey of green materials and prepare a report highlighting cost analysis in comparison with traditional conventional materials.
8	2	1,5	Recycled and reclaimed materials , sustainable flooring materials, Cork flooring: sustainability and performance, Recycled rubber flooring, Linoleum and bamboo flooring as eco-friendly alternatives to vinyl and laminate	Completion of the above report
9	3	1,3,4,5	Water conservation and waste management in buildings - Water-efficient plumbing and fixtures (e.g., low-flow toilets, faucets, showerheads). - Rainwater Harvesting purpose	Prepare a sheet on rainwater harvesting and Grey water recycling methods and materials. Find out the volume of water tank required to collect rain water for a particular area of slab

			and methods. • Greywater Recycling and Reuse • Definition and types of Grey water, Design considerations and building codes for Grey water systems	
10	3	1,3,4,5	• Types of waste • Waste management methods • Recycling and circular economy • Sustainable waste management • Community engagement and awareness • Smart and innovative waste management	Prepare a sheet on waste management methods. Case study of Bhopal solid waste management.
11	4	1,5	Green building rating system Introduction to building rating systems: points system, weightage, agencies and institutions- TERI GRIHA rating, IGBC, in the contexts of Indian sub-continent.	Prepare a chart showing steps to be adopted for taking IGBC green rating for buildings.
12	4	1,3,4,5	Urban sustainability and planning Introduction to Urban Sustainability Definition and Importance of Urban Sustainability, Sustainable Urban Planning Principles.	Prepare a sheet on sustainability features, which can be considered in urban planning. Illustrate the same with sketches.
13	4	1,5	Case studies and practical applications Analysis and study of green buildings in India-First green building in India CII Sohrabji Godrej Green Business Centre Hyderabad, ITC Green centre - Gurgaon, Nisha's play school Goa.	Make a report on green features of CII Sohrabji Godrej Green Business Centre and ITC Green centre Gurgaon

3. References:

1. Sustainable Building Design
2. Indian Green Building Council
3. Energy Efficient Buildings-TERI India Publications.
4. Climate responsive architecture (a Design Handbook for Energy Efficient Buildings) by Aravind Krishnan

5. CIE Assessment Methodologies

Sl. No	CIE Assessment	Test Week	Duration (minutes)	Max Marks	Average of all CIE=50 Marks
1.	CIE-1TheoryTest	4	90	50	
2.	CIE-2 Theory Test	7	90	50	
3	CIE-3TheoryTest	10	90	50	
4.	CIE-4 Practice Test	13	180	50	
5	CIE-5 Portfolio evaluation of all the activities through Rubrics	1-13		50	
Total					50 Marks

5. SEE - Theory Assessment Methodologies

Sl. No	SEE – Theory Assessment	Duration	Exam Paper Max marks	Exam Paper Max Marks scale down to (Conversion)	Min marks to pass
1.	Semester End Examination-Theory	3 Hours	100	50	20

7 CIE Theory Test model question paper

Program	Architecture Assistantship			Semester – V	
Course Name	Sustainable Architecture			Test	I/II/III
Course Code	25AR51IA	Duration	90 min	Marks	50
Name of the Course Coordinator:					
Note: Answer any one full question from each section. Each full question carries equal marks.					
Q.No	Questions		Cognitive Level	Course Outcome	Marks
Section - 1					
1	a) Explain Sustainable Architecture and highlight aims of sustainable architecture in maintaining the environment.		R/U	1	10
	b) explain key principles of sustainable architecture				15
2	a) Illustrate the features of cool roof and cool pavements		AP/AN	1	10
	b) Explain site selection and development guidelines for sustainable architecture				15
Section – 2					

3	a) Explain the guidelines to achieve energy efficiency with respect to HVAC	AP/AN	2	15
	b) Recognize green properties of CSEB blocks and Bamboo.			10
4	a) Explain the process of power generation using solar panels with a neat sktch	AP/AN	2	15
	b) Differentiate between recycled and reclaimed materials and explain recycled rubber flooring.			10
Note for the Course coordinator: Each question may have one, two or three subdivisions. Optional questions in each section carry the same weightage of marks, cognitive level and course outcomes.				

**Signature of the
Course Coordinator**

Signature of the HOD

Signature of the IQAC Chairman

4. CIE Practice Test model question paper

Program	Architecture Assistantship			Semester	V
Course Name	Sustainable Architecture			Test	IV
Course Code	25AR51IA	Duration	180 min	Marks	50
Name of the Course Coordinator:					
Questions				CO	Marks
1) Draw neat sketches of filler slab and rat trap bond used in buildings to achieve thermal efficiency in buildings.				1	20
2) Prepare sketches illustrating passive design principles, which can be adopted in the building to achieve energy efficiency.					30
TOTAL MARKS					50
Scheme of assessment					
1) Filler slab (section with labelling)					10
Rat Trap Bond (plan and 3d view)					10
2) Sketches of 5 passive design principles					6 x5 = 30
Total Marks					50

Signature of the Course Coordinator

Signature of the HOD

8. Suggestive Activities

Graded Exercises in the practice session can be the activities for the portfolio

9. Rubrics for Assessment of Activity (Qualitative Assessment)

Sl. No.	Dimension	Beginner	Intermediate	Good	Advanced	Expert	Students Score
		2	4	6	8	10	
1		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	8
2		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	6
3		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	2
4		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	2
Average Marks=(8+6+2+2)/4=4.5							5

Note: the respective course coordinator shall define Dimension and Descriptor as per the activities

10. Equipment/software list with Specification for a batch of 30 students

Sl.No.	Particulars	Specification	Quantity
01	Overhead projector	Overhead projector with display screen	1



Government of Karnataka
DEPARTMENT OF TECHNICAL EDUCATION

Program	Architecture Assistantship	Semester	V
Course Name	Urban Planning	Type of Course	Integrated
Course Code	25AR51IB	Contact Hours	8 Hrs./Week 104 Hrs. / Semester
Teaching Scheme	L: T:P 4:0:4	Credits	6
CIE Marks	50	SEE Marks	50 (Theory)

1. Rationale:

Urban planning provides broader understanding of how individual buildings interact with built environment. It helps individuals to create functionally and contextually appropriate spaces, encourages problem-solving approaches for urban regeneration and redevelopment. Encourages collaboration between architects, urban planners, engineers and policy makers.

2. Course Outcomes: At the end of the Course project, the student will be able to:

CO-01	Demonstrate knowledge of urban planning and interpret bye laws and zoning regulations
CO-02	Explore the concepts and policies of housing and understand the role of public buildings
CO-03	Assess the impact of industries, slums, neighborhood planning, recreational measures and transportation measures on urban development
CO-04	Propose Re-planning solutions for existing towns

3. Course Content

Week	CO	PO	Theory	Practice
1	1	1, 5	Introduction to Town planning - Necessity of town planning - Principles of town planning - Origin of Towns - Types of town planning Modern town planning India, Planning theory by Patrick Geddes and Le Corbusier	Prepare a report on master plan of Chandigarh by Le-Corbusier highlighting its features.
2	1	1, 5	- Growth of Towns - Forms of Planning - Socioeconomic Aspects of Town planning - Town planning in ancient India	Give a PPT presentation on the planning of city of Chandigarh

3	1	1,2,3,5	Zoning: • Definition, Objects of zoning, Uses of Land • Principles of zoning • Advantages of zoning • Land use classification • Aspects of zoning • Zoning and Urban development	Analyze and report the planning of city of Gandhinagar highlighting its features.
4	1	1,2,3,5	Building Bye-laws : • Objectives of building bye laws • Importance of bye laws • Role of building bye-laws in urban planning and development • Role of Municipal corporations and urban development authorities • National Building Code and its relevance • Environment and disaster management regulations in construction	Visit city municipal corporation office and collect the Bye-laws of your city. Collect zoning regulations Prepare a chart of the same.
5	1	1,2,3,5	General Building Requirements • Set back • Light Plane • Site Coverage and Floor Area Ratio • Open space and ventilation requirements • Zoning land use regulations • Waste management and rain water harvesting regulations • Environmental and sustainable development considerations	Visit any residential building, measure the setbacks, and compare the same with standard bye-laws Calculate floor areas, coverage and FSI
6	2	1,2,3,5	Housing • Introduction of Housing • Housing policies and regulations • Classification of Residential Building • Factors to be Considered while Selecting the building site • Design of residential areas	Prepare a plan for a small residential layout for a given site keeping in view of future growth
7	2	1,3,5,7	• Housing infrastructure and services • Low-Cost Housing • Different Types of Housing Agencies involved in Housing • EWS, LIG, MIG and HIG Housing • Challenges and future trends in housing	Prepare a case study report of any low-cost house in your locality with the aid of images.

8	2	1,3,5,7	Public buildings ● Introduction to public buildings ● Classification of public buildings ● Site selection of Public buildings ● Design Principles of public buildings ● Town centres ● Iconic Public buildings and their impact on urban spaces ● Sustainability and smart public buildings	Visit a public building and prepare a report. Draw the key plan of the same.
9	3	1,3,5,7	Industries and slums: ● Industries : Classification, their effects on town planning, ● Regulation of their location and disposal of waste. ● Requirements of an industry ● Slums : Causes, effects of slum and slum clearance methods, slum upgrading and redevelopment strategies, role of urban planning in slum prevention.	Prepare a report on functions of slum clearance board
10	3	1,2,3,5,7	Recreation and Neighborhood unit: ● Types of Recreation ● Zoning and land use for recreation ● Classification of Parks ● Parkways ● Playgrounds and boulevards ● Neighborhood planning ● Principles of neighborhood planning ● Features of neighborhood unit	Design a park for a given space according to the space standards. Prepare relevant drawings using Cad.
11	3	1,2,3,5,7	Urban Roads and Traffic Management ● Importance of Urban Roads ● Objects of Urban Roads ● Requirements of Good City Roads ● Road design standards and guidelines	Prepare a sheet on types of roads with relevant examples of the same.
12	3	1,2,3,5,7	Urban roads: ● classification of Urban Roads ● Through and Bypass roads ● Outer and inner ring roads, expressways and freeways ● Traffic management and traffic flow analysis and congestion management.	Make a report with the aid of photographs of anyone traffic congested area of your city and suggest a suitable solution for the same.
13	4	1,2,3,5,7	Re-planning of Existing Towns ● Introduction ● Objects of Re-planning ● Survey and data collection for re planning, ● Defects of Existing Towns ● Urban renewal projects ● Garden cities : features of the Garden City	Prepare a case study of your locality, identify the defects, and make a report of the same.

4. References:

Sl. No.	Author	Title of Book
1	Rangwala	Town Planning
2	SS Bhatti	Town Planning and Architecture in India
3	Abir Banyopadhyay	Textbook Of Town Planning
4	C S Yadav	Urban and Regional Planning in India
5	A K Jain	Urban Planning : Theory and Practice
6	G S Mathur	Smart Cities and Urban Development

5. CIE Assessment Methodologies

Sl.No.	CIE Assessment	Test Week	Duration (minutes)	Max Marks	Average of all CIE= 50 Marks
1	CIE-1 Theory Test	4	90	50	
2.	CIE-2 Theory Test	7	90	50	
3	CIE-3 Theory Test	10	90	50	
4	CIE-4 Practice Test	13	180	50	
5	CIE-5 Portfolio evaluation of all the Drawing sheets through Rubrics	1-13		50	
Total					50 Marks

6. SEE - Theory Assessment Methodologies

Sl. No	SEE - Theory Assessment	Duration	Exam Paper Max marks	Exam Paper Max Marks scale down to (Conversion)	Min marks to pass
1.	Semester End Examination-Theory	3 Hours	100	50	20

7.CIE-1 Theory Test Model Question Paper

Program	Architectural Assistantship			Semester V	
Course Name	Urban Planning			Test	I/II/III
Course Code	25AR51IB	Duration	90min	Marks	50
Name of the Course Coordinator:					
Note: Answer any one full question from each section. Each full question carries equal marks.					

Q. No	Questions	Cognitive Level	Course Outcome	Marks
Section-1				
1	a) Identify principles of town planning b) Recognize types of town planning c) explain town planning theory by Patrick- Geddes	R/U	1	10 10 5
2	a) Define zoning and list objects of zoning b) Explain use zoning c) Explain setback and light plane with sketches	R/U	1	05 10 10
Section-2				
3	a) Explain housing policies regulations of government to promote housing in India b) explain the factors to be considered in the design of residential areas c) Explain the classification of residential buildings	AP/AN	2	05 10 10
4	a) Explain design principles of public buildings b) Explain different types of agencies involved in promoting housing in India. c) Explain classification of public buildings	AP/AN	2	10 10 5
Note for the Course coordinator: Each question may have one, two or three subdivisions. Optional questions in each section carry the same weightage of marks, cognitive level and course outcomes.				

Signature of the

Course Coordinator

Signature of the HOD

Signature of the IQAC Chairman

8. CIE-2 Practice Test model question paper

Program	Architectural Assistantship			Semester	V
Course Name	Urban Planning			Test	IV
Course Code	25AR51IB	Duration	180 min	Marks	50
Name of the Course Coordinator:					
Questions				CO	Marks
1	a) Design a small park for a given site and list the colour codes used			1	25
	b) Calculate the total permissible built up area for the given FAR for two different sites, one being in densely populated area and other in less populated region and give your analysis.				25
TOTAL					50
Scheme of assessment					
1a)	Layout Plan to a particular scale :				20
	Presentation with color codes:				05
b)	calculation:				10
	analysis :				15
Total Marks					50

Signature of the Course Coordinator

Signature of the HOD

9. Suggestive Activities

Sl.No.	Suggestive Activities
1	Graded Exercises in the Practice Hour

10. Rubrics for Assessment of Graded Exercises (Qualitative Assessment)

Sl. No.	Dimension	Unsatisfactory (0-10)	Need Improvement (11-20)	Satisfactory (21-30)	Good (31-40)	Excellent (41-50)	Students Score
1	Technical Accuracy	Significant errors make the drawing unusable.	Multiple inaccuracies	Some errors affecting understanding but correctable.	Minor errors in interpretation or calculations	All details are accurate	40
2	Line Quality	Lines are messy and confusing.	Lines are uneven	Inconsistent line quality	Clear lines with minor inconsistencies.	Clean and consistent lines	40
3	Dimension	Dimensions are missing or incorrect.	Many errors; hard to interpret	Some dimension errors affecting interpretation.	Mostly accurate; minor issues	Dimensions are precise, clear, and correctly positioned, following standards.	45
4	Presentation & Neatness	Very untidy; Very poor presentation	Messy; Presentation hinders clarity	Somewhat neat; Some layout issues	Generally neat with minimal flaws; minor improvement in Presentation	Extremely neat and organized; all details easy to read	40
5	Adherence to Standards	Does not follow any drawing standards.	Limited adherence to standards	Lacks consistency.	Minor deviations from standards.	Adheres to relevant drawing standards (ISO, ANSI, etc.).	35
Average Marks = (40+40+45+40+35)/5 =							40/50

Note: The respective course coordinator shall define Dimension and Descriptor as per the activities

11. Equipment/software list with Specification for a batch of 30 students

Sl.No.	Particulars	Specification	Quantity
01	OHP Projector	Latest configuration	30



Government of Karnataka
DEPARTMENT OF TECHNICAL EDUCATION

Program	Architecture Assistantship	Semester	V
Course Name	Architectural Design and Detailing	Type of Course	Integrated
Course Code	25AR52IA	Contact Hours	07 Hours / week 91 Hours / Semester
Teaching Scheme	L: T:P 3 : 0 : 4	Credits	05
CIE Marks	50	SEE Marks	50 (Practice)

5. Rationale:

The architectural design process is crucial in the construction industry for several reasons. It ensures the building is structurally sound and meets safety regulations. It provides an aesthetically pleasing structure that meets the client's needs. Architectural design and construction details is a multifaceted approach that balances functionality, aesthetics, sustainability, safety, cost, site context, and construction methods to create a successful built environment.

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

CO-01	Distinguish the principles and viewpoints of Architectural planning through works of master architects.
CO-02	Conduct case study of existing public building to analyze and prepare a list of requirement.
CO-03	Identify Suitable site for the requirement, analyze and develop a site plan.
CO-04	Create schemes, Conceptual drawings on the basis of bubble diagram, floor plans showing interlinking of different spaces and prepare presentation drawings.
CO-05	Design 3D views and develop all necessary Architectural, working drawings , sanction drawing based on bye laws.

7. Course Content

WEEK	CO	PO	Theory	Practice
1	01	1, 5	Introduction to Design philosophies of master architects (Le corbusier, Frank Lloyd Wright, Mies Van Der Rohe)	Prepare sketches of famous buildings of master architects.
2	01	1, 5	Introduction to Design philosophies of master architects. (Charles Correa, B V Doshi, Laurie Baker)	Some of the Design Topics are suggested below. The students may choose any one of the following projects. • Hotel • Hostel

				• Health club/ Recreational club • Secondary school. etc.
3	02	1,3,5,7	Introduction to Public and semipublic buildings as per space standards using anthropometric data & NBC(national building code)	Live Case study, choose a suitable project in your town, visit and understand concept development, planning, develop drawings, photographs (document project). Prepare presentation on all analysis done and drawings developed.
4	02	1,3,5,7	Identify the various requirements of given public building and analyze the area required for each requirement .	Develop a zoning plan representing zones for all requirements of the project
5	03	1,3,5,7	Site Selection: Examine multiple options and assess their relative advantages suitable for your project. Select a location that meet your project requirements. Also, site should not have limitations that may compromise key design aspects.	Site analysis. Conduct discussion and Analyse information on data collected. Develop presentation graphs, sketches etc. Draw site plan and determine permissible area for development as per local bye-laws.
6	03	1, 2,3,5	Parking standards. Identify standard dimensions for 4wheeler and 2 wheeler parking. Turning radius, types of surfaces used in parking layout. Prepare sketches for the same.	Conduct a measured drawing of parking layout in your institution.
7	04	1,3,5,7	Identify suitable Time saver standards, Anthropometrical data required for the design.	Develop site layout, building plan as per standards and guidelines given in bye laws.
8	04	1, 2, 3	Prepare drawings for area calculation, Calculate built up area of the project and determine FAR in a table.	Develop Architectural presentation drawing for floor plans with all opening details, staircase details, level indications, dimensions etc.
9	04	1,3,5,7	Develop sections of the design project, minimum 2, showing details through staircase, Toilet, balcony, furniture, openings etc.	Develop elevation of all sides defining levels, projections, openings etc.
10	05	1,3,5,7	Prepare exterior 3D view of the proposed project with Textures, materials, staircase details, and balcony railing, lighting fixtures, in the 3D model.	Add Gate, compound wall details with appropriate material and landscape for 3D model.
11	05	1, 2, 3	Analyse appropriate column design and identify their correct positioning in plan. Prepare a center line plan as per column positioning, Prepare Set of working drawings stating all details, dimensions, column positions, opening details, material hatch etc.	Prepare detailed working drawing – Center line, excavation Drawing, Wall layout, Lintel Layout, Electrical Layout and slab Layout. etc.
12	05	1, 2, 3	Prepare detailed working drawing for staircase with all necessary details	Prepare sanction drawing with all necessary drawings using appropriate scale and layout.

			and specifications. Compound and Gate drawing with specifications.	
13	05	1, 2, 3	Prepare detailed drawing of any two units of your design project with enlarged joinery details and specification. Develop Detailed plan, Sectional Elevation with Specification & 3D View of the same.	Prepare detailed drawing of any two units of your design project with enlarged joinery details and specification. Develop Detailed plan, Sectional Elevation with Specification & 3D View of the same.
NOTE: All the drawings are to be presented using CAD and Sketch Up / Revit				

4. References:

Sl. No	Description
1	Building Drawing – Shah M G, Tata McGraw – Hill, 1992
2	Building Planning & Drawing – Kumaraswamy N., Kaneswaran Rao A., Charotar Publishing
3	Time savers standards for architectural design data by John Hancock
4	Neufert's standards
5	Form, Space & Order by Francis DK Ching

5. CIE Assessment Methodologies

CIE Assessment Methodologies					
Sl. No	CIE Assessment	Test Week	Duration (minutes)	Max marks	Average of all CIE=50 Marks
1.	CIE-1TheoryTest	4	90	50	
2.	CIE-2Practice Test	7	180	50	
3	CIE-3Practice Test	10	180	50	
4.	CIE-4Practice Test	13	180	50	
5	CIE-5 Portfolio evaluation of all the activities through Rubrics	1-13		50	
Total					50 Marks

6. SEE – Practice Assessment Methodologies

Sl. No	SEE – Practice Assessment	Duration (minutes)	Max marks	Min marks to pass
1.	Semester End Examination-Practice	180	50	20

7. CIE Theory Test model question paper

Program	Architecture Assistantship			Semester -V	
Course Name	Architectural Design and Detailing			Test	I
Course Code	25AR52IA	Duration	90 min	Marks	50
Name of the Course Coordinator:					
Note: Answer any one full question from each section. Each full question carries equal marks.					
Q.No	Questions		Cognitive Level	Course Outcome	Marks
Section - 1					
1	a) Explain Frank Lloyd Wright- Organic Architecture. – 8 Marks b) Explain Mies van der Rohe’s Farnsworth house. – 7 Marks c)Sketch falling water – 10 Marks		AP/AN	01	25
2	a) Sketch Gandhi Smarak Sangrahalaya, Ahmedabad - 8 Marks b) Write a note on Lauri Baker’s Cost effective construction technique - 7Marks c) Sketch Farnsworth House. - 10Marks		AP/AN	01	
Section - 2					
3	a) Identify the importance of conducting Case study. – 10 Marks b) Analyze the merits and Demerits of your Case Study – 15 Marks		AP/AN	02	25
4	a) Analyze the need of conducting measured drawing. – 10 Marks b) Develop various types of parking layout. – 15 Marks		AP/AN	02	
Note for the Course coordinator: Each question may have one, two or three subdivisions. Optional questions in each section carry the same weightage of marks, cognitive level and course outcomes.					

Signature of the

Course Coordinator

Signature of the HOD

Signature of the IQAC Chairman

7. CIE Practice Test model question paper

Program	Architecture Assistantship			Semester	
Course Name	Architectural Design and Detailing			Test	II/III/IV
Course Code	25AR52IA	Duration	180 min	Marks	50
Name of the Course Coordinator:					
Questions				CO	Marks
Develop the following for the given line plan e) Detailed plan with furniture text and dimensioning f) One elevation & Section g) Centerline and excavation drawing.				4 & 5	20 20 10
Scheme of assessment					50
a) Detailed plan with furniture text and dimensioning – 10 + 10 Marks b) One elevation & Section – 8 + 12 Marks c) Centerline and excavation drawing – 5 + 5 Marks					

Signature of the Course Coordinator

Signature of the HOD

9. Suggestive Activities for Tutorials:

The List is an Example and not inclusive of all possible activities of the course. Student and Faculty are encouraged to choose activities that are relevant to the topic

Sl.No.	Suggestive Activities for Tutorials
01	Graded exercises mentioned in the practice session.
02	Data collection & Literature study
03	Case study and its analysis
04	Site study and its analysis
05	Measured Drawing

10. Rubrics for Assessment of Activity (Qualitative Assessment)

Sl. No.	Dimension	Beginner	Intermediate	Good	Advanced	Expert	Students core
		2	4	6	8	10	
1		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	8
2		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	6
3		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	2
4		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	2
	Average Marks= $(8+6+2+2)/4=4.5$						5

Note: Dimension and Descriptor shall be defined by the respective course coordinator as per the activities

11. SEE- Model Practice Question Paper

Program	Architecture Assistantship		Semester	V
Course Name	Architectural Design and Detailing	Course Code: 25AR52IA	Duration	180 min
Parameters			CO	Marks
Scheme of assessment				
a) Justification of Design – 10 Marks b) Sessional Work – 30 Marks c) Viva Voce – 10 Marks				
Total Marks				50

Signature of the Examiner

Signature of the Examiner

12.Equipment/software list with Specification for a batch of 30 students

Sl.No.	Particulars	Specification	Quantity
01	Computers	Any configuration that the supports software	30
02	Software	AutoCAD, Sketch Up / Revit	-
03	Printer/plotter	A4/A3 size paper printer	1
04	LCD Projector	OHP	1



Government of Karnataka
DEPARTMENT OF TECHNICAL EDUCATION

Program	Architecture Assistantship	Semester	V
Course Name	Interior Design and Detailing	Type of Course	Integrated
Course Code	25AR52IB	Contact Hours	7 Hours / week 91 Hours / Semester
Teaching Scheme	L: T:P 3 : 0 :4	Credits	05
CIE Marks	50	SEE Marks	50 (Practice)

1. Rationale: Interiors design and detailing plays a major role in construction project as it encompasses a variety of aspects that contribute to the overall success of a design project. Detailing in interior design is essential for creating functional, aesthetic, and sustainable spaces that enhance user experience, selection of materials, comply with safety regulations, and ensure cost efficiency. It's the meticulous attention to detail that ultimately makes a design successful and enduring.

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

CO-01	Conduct case study, literature study, market survey and prepare report with Interior drawings.
CO-02	Identify various materials used in interior and develop all necessary drawings for furniture.
CO-03	Design and Produce detailed interior drawings of various spaces of a residential building.
CO-04	Design and Produce detailed interior drawings of a commercial /office spaces.

3. Course Content

WEEK	CO	PO	Theory	Practice
1	1	1,3,7	Introduction on Interior design and detailing as a course, Design Principles History of Interior & Furniture Design and the need of interior detailing. Understanding role of materials and technology in their transformation and various theories associated in their evolution	Prepare sheets on furniture, evolution of furniture style, economic factors of furniture design and materials - its characteristics and application. Functional classification of space. Barrier free design.
2	1	1,3,7	Live Case study, choose a suitable project in your town, visit and understand concept development, planning, develop drawings, photographs (document project).	Prepare presentation on all analysis done and drawings developed.
3	2	1,3,5,7	Study of materials : Types of	Prepare sheets on various

			industrial wood, specification and various joinery details.	carpentry joints used in furniture. Conduct market survey and prepare report.
4	2	1,3,5,7	Study of materials: Finishes, laminates, acrylic sheets and sustainable / green materials.	Prepare detailed drawing of Wardrobe and Study table with enlarged joinery details and specification. Develop Detailed plan, Sectional Elevation with Specification & 3D View
6	2	1,3,5,7	Study of materials : Types of False ceiling, wall paneling, types of hardware.(Hinges, handles, channels, Hydraulic pumps etc.)	Prepare detailed drawing of kitchen Storage and Crockery unit with enlarged joinery details and specification. Develop Detailed plan, Sectional Elevation with Specification & 3D View
7	3	1,3,4,7	In-depth understanding of the characteristics and workability of various materials used in interiors. Their classification could be on basis of elements of usage (floors, ceilings, walls, doors, windows and fabric) or materials based like wood, metal plastics and their variants.	Design interior for a living room with Foyer which comprises following furniture's – TV unit, Display Unit, Sofa Set with teapoy, Shoe Rack, Wooden Partition, False Ceiling and Decors (Planter Box, Aquarium, Curtain, Wall frames, Electrical Fixtures etc.) Develop layout plan & 3D Views
8	3	1,3,4,7	Innovation in Furniture & Interior Design Modern materials, Modular furniture, Interior landscaping, Fittings & fixtures.	Design interior for a Modular Kitchen and Dining which comprises following furniture's – Storage Units with Breakfast Counter, Dining Table, Crockery Unit, Wooden Partition, False Ceiling and Decors. Develop layout plan & 3D Views
9	3	1,3,4,7	Prepare Cost Estimation with specification for the following interior units. • Modular Kitchen • Bedroom with attached toilet • Living room	Design interior for a Master Bedroom with Attach toilet which comprises following furniture's –Double cot, wardrobe, study table, dressing unit, TV Unit, False Ceiling, attach toilet detail and Decors. Develop layout plan & 3D Views

10	4	1,3,4,7	Analysis of rate for Wardrobe using 19mm block board pre laminated both sides.	Develop plan, section and elevation for a commercial space / office layout with all necessary elements and furniture.
11	4	1,3,4,7	Analysis of rate for Curio unit using plywood and decorative laminates.	Develop interior 3D model for commercial space / office layout with appropriate graphical representation, colors, textures, materials and render the same.
12	4	1,3,4,7	Analysis of rate for Wall Paneling using teak wood frame work with ply wood and veneer.	Prepare detailed drawings of MD's cabin furniture, reception counter with enlarged joinery details and specification.
13	4	1,3,4,7	Analysis of rate for False Ceiling using Gypsum Board with GI Sections.	Prepare detailed drawings of Work station, storage and Conference table etc., with enlarged joinery details and specification.

4. References:

Sl. No	Description
1	Time Saver Standards for Interior Design and Space Planning by Joseph De Chiara, Julius Panero and Martin Zelnik.
2	Interior Construction & Detailing for Designers & Architects, 6th Edition by David Kent Ballast
3	Construction and Detailing for Interior Design by Drew Plunkett.
4	Interior Detailing: Concept to Construction by David Kent Ballast.
5	Construction Drawings and Details for Interiors: Basic Skills by W. Otie Kilmer Rosemary Kilmer
6	Estimating and Costing in Civil Engineering - B.N. Datta
7	Estimating and Costing in Civil Engineering - M. Chakraborti
8	Estimating and Costing in Civil Engineering - S.C. Rangwala
9	Estimating and Costing in Civil Engineering - P.L. Bhasin

6. CIE Assessment Methodologies

Sl. No	CIE Assessment	Test Week	Duration (minutes)	Max marks	Average of all CIE=50 Marks
1.	CIE-1TheoryTest	4	90	50	
2.	CIE-2Practice Test	7	180	50	
3	CIE-3Practice Test	10	180	50	
4.	CIE-4Practice Test	13	180	50	
5	CIE-5 Portfolio evaluation of all the activities through Rubrics	1-13		50	
Total					50 Marks

8. SEE – Practice Assessment Methodologies

Sl. No	SEE – Practice Assessment	Duration (minutes)	Max marks	Min marks to pass
1.	Semester End Examination-Practice	180	50	20

Note: Retain SEE – Theory Table if there is theory End examination or SEE – Practice Table if there is practice End examination

9. CIE Theory Test model question paper

Program	ARCHITECTURE ASSISTANTSHIP			Semester -V	
Course Name	Interior Design and Detailing			Test	I
Course Code	25AR52IB	Duration	90 min	Marks	50
Name of the Course Coordinator:					
Note: Answer any one full question from each section. Each full question carries equal marks.					
Q.No	Questions		Cognitive Level	Course Outcome	Marks
Section - 1					

1	a) Explain interior design principles with neat sketches. b) Explain Barrier free design with sketch	L2 L2	1	15 10
2	a) Explain evolution of Interior & Furniture Design and the need of interior detailing. b) Explain economic factors of furniture design.	L2 L2	1	15 10
Section - 2				
3	a) Classify various Industry wood and explain any two with sketch b) Develop a sketch of any one joinery details used in Furniture Design	L4 L3	2	15 10
4	a) Classify various sustainable materials used in Interior Design and Explain any two with Sketch b) Develop a sketch of any one Joinery Details used in wardrobe	L4 L3	2	15 10
Note for the Course coordinator: Each question may have one, two or three subdivisions. Optional questions in each section carry the same weightage of marks, cognitive level and course outcomes.				

Signature of the
Course Coordinator

Signature of the HOD

Signature of the IQAC Chairman

8. CIE Practice Test model question paper

Program	ARCHITECTURE ASSISTANTSHIP			Semester	V
Course Name	Interior Design and Detailing			Test	II/III/IV
Course Code	25AR52IB	Duration	180 min	Marks	50
Name of the Course Coordinator:					
Questions				CO	Marks
Develop interior design of a living room for a given line sketch. Prepare: 3D view - Plan - section - any one joinery detail (enlarged detail) with dimensions and specifications.				3	20 10 10 10
Scheme of assessment					
a) 3D view: Overall design+ material application+ presentation (10 + 5 + 5= 20)					20
b) Plan: Space optimization + Circulation + naming & dimensioning (4+ 4+ 2 = 10)					10
c) Section: Accuracy + hatching to differentiate materials + dimensioning (4 + 4 + 2 = 10)					10
d) Enlarged detail: precession + specification (5+5=10)					10
Total Marks					50

Signature of the Course Coordinator

Signature of the HOD

9. Suggestive Activities for Tutorials:

The List is an Example and not inclusive of all possible activities of the course. Student and Faculty are encouraged to choose activities that are relevant to the topic

Sl.No.	Suggestive Activities for Tutorials
01	Case study
02	Literature study
03	Market survey on materials
04	Graded exercise mentioned in practical sessions

10. Rubrics for Assessment of Activity (Qualitative Assessment)

Sl. No.	Dimension	Beginner	Intermediate	Good	Advanced	Expert	Students core
		2	4	6	8	10	
1		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	8
2		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	6
3		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	2
4		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	2
	Average Marks=(8+6+2+2)/4=4.5						5

Note: Dimension and Descriptor shall be defined by the respective course coordinator as per the activities

11. SEE- Model Practice Question Paper / Scheme of Assessment

Program	ARCHITECTURE ASSISTANTSHIP		Semester	V	
Course Name	Interior Design and Detailing	Course Code:	25AR52IB	Duration	180 min
Parameters			CO	Marks	
Scheme of assessment: a) Presentation on Case study, Literature study and market survey b) Sketch Carpentry Joinery used in furniture. c) Sketch any one furniture design and detailing. d) viva on portfolio					
			1	15	
			2	10	
			3	10	
			4	15	
Total Marks			50		

3) Signature of the Examiner

2) Signature of the Examiner

12.Equipment/software list with Specification for a batch of 30students

Sl.No.	Particulars	Specification	Quantity
01	Computers	Any configuration that the supports software	30
02	Software	Sketch Up / Revit	30
03	Printer/plotter	A4/A3 size paper printer	1
04	LCD Projector	OHP	1



Government of Karnataka
DEPARTMENT OF TECHNICAL EDUCATION

Program	Architecture Assistantship	Semester	V
Course Name	Introduction to BIM & Revit	Type of Course	Integrated
Course Code	25AR53IA	Contact Hours	7 hours/ week 91 hours / semester
Teaching Scheme	L: T: P 3: 0: 4	Credits	05
CIE Marks	50	SEE Marks	50 (Practice)

1. Rationale:

BIM (Building Information Modeling) helps the construction manager to gather data and information from the relevant disciplines and communicate them more effectively. The Revit software is a powerful Building Information Modeling (BIM) software that works the way architects think. The course streamlines the design process through the use of a central 3D model, where changes made in one view update across all views and on the printable sheets.

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

CO-01	Describe Revit and building information modeling methodology and its benefits
CO-02	Use different parts of the Revit Architecture user interface and work with different types of architectural elements, families and place walls, doors, windows to create floor plan
CO-03	Develop roofs, floors, curtain walls and mass elements.
CO-04	Annotation of a drawing including the dimensions, notes, schedules of architectural features and render the 3D model.

3. Course Content

WEEK	CO	PO	Theory	Practice
1	1	1,6,7	Introduction: Building Information Modelling History of BIM Types of BIM modeling BIM basics and Benefits	Prepare a presentation on Building Information Modeling (BIM)
2	1	1,6,7	Revit 3D Modelling: History Features Project Templates Revit File Types Working with Grids	Exploring the User Interface: Building Elements, Revit Elements and starting a new Project. Practice drawing Grids.
3	2	1,2,3,6,7	Walls	Start a new project, set template,

			Wall Properties Types of walls in Revit Doors Placing Doors Door Properties Windows Placing Windows Window Properties	Add levels and Create walls Draw a plan as per dimension using grids and practice (hands-on). Placing Doors and Windows in the floor plan and property editing tour.
4	2	1,2,3,6,7	Family Creation Creating a Swing Door Family Creating a Sliding Window Family Creating a New Furniture Family	Develop a parametric family for Door, Window and any furniture of your choice.
5	2	1,2,3,6,7	Stairs Creating Stairs Stair Calculator Modifying Stairs Stair Properties • Ramp • Railing	Develop a doglegged staircase as per the standard sizes with railing.
6	2	1,2,3,6,7	Editing Commands Move & Copy Paste • Editing Pasted Elements • Paste Aligned Create Similar, Rotate, Mirror, Array, Scale, Trim / Extend, Offset, Align	Develop a 3D model of Apartment building to practice various edit commands.
7	2	1,2,3,6,7	Components Loading Component & Placing Components Modifying Properties Introduction to Modern Medium Library Managing Views Floor Plan View, Ceiling Plan View, Cutting a Plan View, Elevation View, Section View, 3D Views.	Practice placing and Loading components and managing views for the building model. Explore modify properties of various components.
8	3	1,2,3,6,7	Floors Creating Floors Placing Elements on a Sloped Floor Ceilings Creating Ceilings	Create floors and ceiling for the building model.
9	3	1,2,3,6,7	Roofs	Practice creating various types

			Roof by Footprint & Roof by Extrusion Join/unjoin roofs Roof Ridges Openings On Face Vertical Opening Shaft opening Dormer opening Wall opening	of roofs
10	3	1,2,3,6,7	Curtain Walls Creating Curtain Walls Curtain Grids Mullions Reshaping Curtain Wall Panels Merging Curtain Wall Panels Adding Curtain Door Panel Embedded Walls	Develop Curtain walls, mullions and practice reshaping curtain wall, adding curtain door panel.
11	3	1,2,3,6,7	Massing Creating In-Place Masses using Forms Extrusion Modifying Forms Adding an Edge to a Form Adding a Profile to a Form Surface Forms Rationalizing Surface Patterning Surface	Develop masses for building model using form, Extrusion/ Revolve/ Sweeps/ Loft/Surface form
12	4	1,2,3,4,6,7	Schedules Creating Schedule and Quantities Custom Parameters Modifying Schedules Material Takeoff Exporting Schedule	Practice, creating schedule and quantities, modifying schedules and exporting schedule.
13	4	1,2,3,4,6,7	Lights and Rendering 3D model	Create a 3D view of the building model. Specify render appearances for materials, and apply materials to model elements. Define lighting for the building model. ▪ If the rendered image will use artificial lights, add them to the building model. ▪ If the rendered image will use natural light, define sun and shadow settings. Define render settings. Render the image and Save

4. References:

1. Building Information Modeling using Revit for Architects and Engineers
Author: Atefe Makhmalbaf.
2. "Mastering Autodesk Revit 2023" by Lance Kirby, Eddy Krygiel, and Marcus Kim.
3. "Autodesk Revit 2023 Architecture Certification Exam Study Guide" by Kristen Kurland.

5. CIE Assessment Methodologies

Sl. No	CIE Assessment	Test Week	Duration (minutes)	Max marks	Average of all CIE=50 Marks
1.	CIE-1 Theory Test	4	90	50	
2.	CIE-2 Practice Test	7	180	50	
3	CIE-3 Practice Test	10	180	50	
4.	CIE-4 Practice Test	13	180	50	
5	CIE-5 Portfolio evaluation of all the activities through Rubrics	1-13		50	
Total					50 arks

6. SEE – Practice Assessment Methodologies

Sl. No	SEE – Practice Assessment	Duration (minutes)	Max marks	Min marks to pass
1.	Semester End Examination-Practice	180	50	20

7. CIE Theory Test model question paper

Program	Architecture Assistantship			Semester - V	
Course Name	Introduction to BIM & Revit			Test	I
Course Code	25AR53IA	Duration	90 min	Marks	50
Name of the Course Coordinator:					

Note: Answer any one full question from each section. Each full question carries equal marks.				
Q.No	Questions	Cognitive Level	Course Outcome	Marks
Section - 1				
1	a)What is Building Information Modeling b)Mention History and benefits of BIM c)Explain application of BIM in construction management	R/U	1	05 10 10
2	a) What is BIM Execution Plan? b) Describe the process of Building information modeling c) Explain types of BIM modelling.	R/U	1	05 10 10
Section - 2				
3	a) What is Revit? Mention its applications. b) What are different types of Revit files? Differentiate between project file and family file. c) Explain the features of Revit.	R/U	1	05 10 10
4	a)What is a Family in Revit? b) What are the advantages of using Revit over traditional CAD software? c) Explain the process for defining levels in Revit architecture.	R/U	1	05 10 10
Note for the Course coordinator: Each question may have one, two or three subdivisions. Optional questions in each section carry the same weightage of marks, cognitive level and course outcomes.				

**Signature of the
Course Coordinator**

Signature of the HOD

Signature of the IQAC Chairman

7. CIE Practice Test model question paper

Program	Architecture Assistantship			Semester	V
Course Name	Introduction to BIM & Revit			Test	II/III/IV
Course Code	25AR53IA	Duration	180 min	Marks	50
Name of the Course Coordinator:					
Questions				CO	Marks
1. Develop a Doglegged Staircase with specification given below: • Width of Flight: 1.5M • Width of landing: 1.5M • Riser: 150mm • Tread: 300mm • Height of handrail is 900mm from pitch line				2	30
2. Develop a parametric family of a door with standard sizes and dimensions.					20
Scheme of assessment					
Q1 a) 3D modelling					10

b) Accuracy and precision	10
c) Adding properties and textures	10
Q2 a) 3D modelling	10
b) Parametric design	10
Total Marks	50

Signature of the Course Coordinator

Signature of the HOD

8. Suggestive Activities for Tutorials:

The List is an Example and not inclusive of all possible activities of the course. Student and Faculty are encouraged to choose activities that are relevant to the topic

Sl.No.	Suggestive Activities for Tutorials
01	Prepare Presentation on Building Information Modeling
02	Prepare grid line plan for a floor plan of your choice.
03	Prepare a sheet to demonstrate wall drawing with floor plan and 3D view of the same
04	Compose a sheet with the print of parametric family for Door.
05	Compose a sheet with the print of parametric family for Window.
06	Compose a sheet with the print of parametric family for a Table.
07	Develop a Doglegged staircase, Ramp with railing.
08	Develop a 3D Model of an Apartment Building (Min. 12 floors) with all necessary construction elements, materials and textures/surfaces as per the design of your choice.
09	Prepare project details and schedule- Crop Regions, Fills Patterns, and Detail Components, Add Text Notes, Create Drafting Views and Schedule
10	Render the apartment building and create 3D views.

9. Rubrics for Assessment of Activity (Qualitative Assessment)

Sl. No.	Dimension	Beginner	Intermediate	Good	Advanced	Expert	Students Score
		2	4	6	8	10	
1		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	8
2		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	6
3		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	2
4		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	2
	Average Marks=(8+6+2+2)/4=4.5						5

Note: Dimension and Descriptor shall be defined by the respective course coordinator as per the activity

10. SEE- Model Practice Question Paper

Program	Architecture Assistantship		Semester	V
Course Name	Introduction to BIM & Revit	Course Code: 25AR53IA	Duration	180 min
Questions			CO	Marks
1. Develop a 3D model of a residential building for given line sketch with all the necessary elements, materials and texture/surfaces and render a 3D view.			4	40
2. Sessional work				5
3. Viva Voce				5
Scheme of assessment				
Q1 a) 3D modelling.				10
b) Accuracy and precision.				10
c) Adding properties, materials and textures/surfaces.				10
d) Rendering				10
Q2 Sessional Work				05
Q3 Viva voce				05
Total Marks				50

Signature of the Examiner

Signature of the Examiner

11. Equipment/software list with Specification for a batch of 30 students

Sl.No.	Particulars	Specification	Quantity
01	Computers	Configurations that supports the functioning of software efficiently	30
02	Software	Autodesk Revit (any version that suits computer configurations)	30
03	Printer/ Plotter	As per standards	1
04	OHP	Overhead projector and display screen	1



Government of Karnataka
DEPARTMENT OF TECHNICAL EDUCATION

Program	Architecture Assistantship	Semester	V
Course Name	Surveying and Levelling	Type of Course	Integrated
Course Code	25AR53IB	Contact Hours	7 Hours / week 91 Hours / Semester
Teaching Scheme	L: T: P = 3:0:4	Credits	05
CIE Marks	50	SEE Marks	50 (Practice)

1. Rationale:

The aim of the course is to help students to attain the following industry identified competency through various teaching – learning experiences. Perform the fundamental tasks and computation in the field of Surveying. In the era of globalization today, the technology has brought significant advancements in surveying instruments and technology. Available precise digital surveying instruments are used in the field currently due to their accuracy, speed and easy operation.

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

CO-01	Apply standard practices to perform different operations and lot using different methods of chain surveying.
CO-02	Understand principles and practices to perform and plot the closed traversing using compass
CO-03	Demonstrate the knowledge and skills related to Leveling and Theodolite principles and practices to understand survey-based maps and drawings
CO-04	Illustrate the knowledge of Total Station, advanced surveying instruments and their working principles

3. Course Content

WEEK	CO	PO	Theory	Practice
1	1	1,2,5	Introduction to surveying Definition, Objectives, and purposes of surveying. Primary divisions and classifications of surveying Principles of Surveying, Units and measurements (Linear and angular) Chain survey Instruments Types of Chains - Metric Chain details with neat sketch Types of Tapes, Arrow, Tapes, ranging rod, ranging poles, Offset rod, Open cross staff and wooden cross staff.	Study of instruments required for chain surveying Ranging and chaining a line a) Direct Ranging by Eye and Line Ranger b) Indirect Ranging.
2	1	1,2,5	Selection of survey stations. Types of offsets: Perpendicular and Oblique	Setting out perpendicular from a point on a chain line by using chain and tape only

			Short and Long Offsets Chaining on flat ground and Chaining on sloping ground-by stepping method only.	To drop a perpendicular to a chain line from a point outside by using chain and tape only
3	1	1,5,7	Explain the corrections in measurement of distance with the chain in a given situation.	Construction of triangles and computation of area Construction of Trapezium and computation of area
4	1	1, 2,3,6,7	Errors in length: Instrumental error, personal error, error due to natural cause, random error-No numerical problems.	Construction of regular Pentagon and computation of area Construction of regular Hexagon and computation of area
5	1	1, 2,3,6,7	Chain triangulation: Chain survey Station, Base line, Check line, Tie line, Offset, Tie station. Applications of EDM & Rodometer in surveying.	Conducting closed traverse (cross staff survey) and recording in field book Plotting the same in a drawing sheet and determine the area
6	2	1, 2,3,6,7	Components of Prismatic Compass and their Functions Technical Terms: Bearings-True, Magnetic and Arbitrary bearing. Meridians Geographic/True, Magnetic and Arbitrary. System of bearing- Whole circle bearing system and reduced Bearing System. Examples on conversion of given bearing to another (from one to another) Compass traversing: Open and closed traversing.	Study of prismatic compass and surveyor's compass Taking bearings and findings the included angles by using prismatic compass
7	2	1, 2,3,6,7	Convert the given WCB into Reduced bearing and vice versa to find the included angle with examples. Local attraction, sources of local attraction, Magnetic dip and declination: simple problems on declination.	Given bearings or include angles setting out regular Pentagon by deflection angle method Given bearings or include angles setting out regular Hexagon by deflection angle method
8	2	1, 2,3,6,7	Errors in compass: Instrumental, Personal and natural cause. Terminologies: Level surfaces, Horizontal and vertical surfaces, Datum, Bench Marks- GTS, Permanent, Arbitrary and Temporary.	Conducting closed traverse by compass surveying and plotting the same Study of levelling instrument and its temporary adjustments
9	3	1, 2,3,6,7	Instruments used for levelling: Types of levels: Dumpy, Auto level, Digital level, Components of Dumpy Level and its fundamental axes, Temporary adjustments of Level. Levelling staff, telescopic staff and target staff. Reduced level, Rise, Fall, Line of collimation, Station, back sight, Fore sight, Intermediate sight, change point, Height of instrument.	Taking levels of various points and recording it in a level book Find the difference of levels between the two points by Plane of collimation method (Height of Instrument method)
10	3	1,	Leveling types: Simple, Differential,	Find the difference of levels between the

		2,3,6,7	Fly, Profile and Reciprocal Leveling Errors in leveling Contours, Importance of contour maps. Uses of Contours in Surveying. Characteristics of contours.	two points by Rise and fall method Finding RL of chejja or canopy with respect to RL of given bench mark
11	3	1, 2,3,6,7	Component parts of transit theodolite and their functions. Reading the Vernier, Salient features and relationship between the fundamental axes of transit theodolite. Technical terms used. Temporary adjustments.	Study of Theodolite and temporary adjustment of theodolite Measurement of horizontal angles by Theodolite Measurement of vertical angles by Theodolite
12	4	1, 2,3,6,7	Total Station: Introduction, Integral parts, Applications. Advantages, Disadvantages. Working principle. Use of function keys. Precautions to be Taken While Using a Total Station.	Study and setting up of Total station To find out the horizontal and vertical angle of a given point
13	4	1, 2,3,6,7	Aerial Surveying GPS: Introduction and Applications. Remote Sensing: Introduction and application Overview of GIS.	To find the distance, gradient, difference in height between two inaccessible points Stakeout using Total station - To find a specific point and coordinates in the field using Total station

4. References:

Sl. No	Description
1	Duggal, S.K .Surveying Vol .I&II,Tata McGraw Hill,NewDelhi
2	Subramanian, R. Fundamentals of Surveying & Levelling, Oxford University Press, New Delhi
3	Punima, B.C, Surveying I- Jain, Ashok Kumar Jain, Arun Kumar-Laxmi Publications., New Delhi.
4	Kanetkar T. P .and Kulkarni, S.V. Surveying and Levelling Vol.-I Pune Vidyarthi Gruh
5	Arora, K.R., Surveying Vol. I, II & II, Standard Book House. New-Delhi
6	Baskar, N.N. Surveying and Levelling, Tata Mc Graw Hill, New Delhi
7	Surveying-Saikia, M D.; Das. B.M.; Das. M.M. -PHI Learning, New Delhi
8	Survey I -Duggal, S. K. -McGraw Hill Education, New Delhi
9	Textbook of Surveying- Rao, P Venugopala Akella, Vijayalakshmi -PHI Learning, New Delhi
10	Surveying and Levelling, Volume 1 -Bhavikatti, S. S. -I. K. International, New Delhi
11	Textbook of Surveying-Venkat Ramaiah, C -Universities Press. New Delhi
12	Aror R Surveying and Levelling, Khanna Publishers, New Delhi
13	Aror,R .Advanced Surveying ,Khanna Publishers ,New Delhi
14	Roy, S.K Fundamentals of Surveying, Prentice Hal India, New Delhi
15	Remote Sensing and GIS by Bhatia, Oxford University Press New Delhi.

16	Remote sensing and Image interpretation by T. M Lilles and, R. Kiefer and J.W Chipman, 5th edition, John Wiley and Sons India
17	Lo C.P.&Yeung A.K.W., Concepts and Techniques of Geographic Information Systems, Prentice Hall of India, New Delhi, 2002

5. CIE Assessment Methodologies

Sl. No	CIE Assessment	Test Week	Duration (minutes)	Max marks	Average of all CIE=50 Marks
1.	CIE-1TheoryTest	4	90	50	
2.	CIE-2Practice Test	7	180	50	
3	CIE-3 Theory Test	10	90	50	
4.	CIE-4Practice Test	13	180	50	
5	CIE-5 Portfolio evaluation of all the activities through Rubrics	1-13		50	
Total					50 arks

6. SEE – Practice Assessment Methodologies

Sl. No	SEE – Practice Assessment	Duration (minutes)	Max marks	Min marks to pass
1.	Semester End Examination-Practice	180	50	20

7. CIE Theory Test model question paper

Program	ARCHITECTURE ASSISTANTSHIP			Semester -V	
Course Name	Surveying and Levelling			Test	I/III
Course Code	25AR53IB	Duration	90 min	Marks	50
Name of the Course Coordinator:					
Note: Answer any one full question from each section. Each full question carries equal marks.					
Q.No	Questions		Cognitive Level	Course Outcome	Marks
Section - 1					
1	a) Define surveying and discuss its objectives and purposes. b) Discuss principles of surveying.		R/U	1	05 10

	c) Define levelling and list the types of levelling instruments			10
2	a) List types of chains. Explain metric chain details with sketch b) Describe the procedure of finding the distance between two inter-visible stations	R/U	1	15 10
Section - 2				
3	a) Define compass survey. Discuss its uses. b) Explain the method used to set out a traverse c) Discuss the components of Prismatic compass and their uses.	R/U	2	05 10 10
4	a) Discuss the errors in compass. b) Discuss the sources of local attraction.	R/U	2	15 10
Note for the Course coordinator: Each question may have one, two or three subdivisions. Optional questions in each section carry the same weightage of marks, cognitive level and course outcomes.				

Signature of the
Course Coordinator

Signature of the HOD

Signature of the IQAC Chairman

8. CIE Practice Test model question paper

Program	ARCHITECTURE ASSISTANTSHIP			Semester	V
Course Name	Surveying and Levelling			Test	II/IV
Course Code	25AR53IB	Duration	180 min	Marks	50
Name of the Course Coordinator:					
Questions				CO	Marks
Construct a hexagon / pentagon of side 3.0mtr by using chain and tape method.				1	50
Scheme of assessment					
a) Field Procedure					10
b) Selection, Setting of Equipment's					10
c) Skill of conducting required Operation					10
d) Arithmetic calculation and Conclusion					10
e) Viva-Voce					10
Total Marks					50

Signature of the Course Coordinator

Signature of the HOD

8. Suggestive Activities for Tutorials:

Sl.No.	Suggestive Activities for Tutorials
1	Students are suggested to choose activities that are done during regular classes with relevant topic for continuous evaluation(graded exercise)

10. Rubrics for Assessment of Activity (Qualitative Assessment)

Sl. No.	Dimension	Beginner	Intermediate	Good	Advanced	Expert	Students core
		2	4	6	8	10	
1		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	8
2		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	6
3		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	2
4		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	2
Average Marks=(8+6+2+2)/4=4.5							5

Note: Dimension and Descriptor shall be defined by the respective course coordinator as per the activities

10. SEE- Model Practice Question Paper / Scheme of Assessment

Program	ARCHITECTURE ASSISTANTSHIP		Semester	V
Course Name	Surveying and Levelling	Course Code: 25AR53IB	Duration	180 min
Questions			CO	Marks
Construct a hexagon / pentagon of side 2.5mtr by using prismatic compass. Given fore bearing of the first line 35degree			2	50
Scheme of assessment:				
a) Field Procedure				10
b) Selection, Setting of Equipment's				10
c) Skill of conducting required Operation				10
d) Arithmetic calculation and Conclusion				10
e) Viva-Voce				10
Total Marks				50

Signature of the Examiner

Signature of the Examiner

11. Equipment /software list with Specification for a batch of 30 students

Sl.No.	Particulars with specifications	Quantity
01	Metric Chain made from galvanized mild steel wires 4mm in Dia, brass handles with swivel joints, brass tallies provided at every 5mtr length of chain- 20m and 30m.	05
02	Metallic tape- Steel tape, Invar satisfying IS 1269 (Part 1 and Part 2): 1997 specifications	05
03	Pegs of length 400mm and c/s area of 50mmx50mm.	50
04	Arrows 400 mm long and made up of good quality hardened and tempered steel wire of 4 mm in diameter.	50
05	Metallic Ranging rods of 2 m length, circular or octagonal in cross section of 30 mm diameter, Lower shoe of 150mm long. Painted in black, white and red stripes of 200mm each.	50
06	Line ranger, optical square confirming to IS: 7999–1973 specifications	50
07	Open cross staff consisting of 4 metal arms with vertical slits for sighting through.	05
08	Surveyor compass.	05
09	Prismatic compass confirming to IS 1957-1961 with stand, made in Gunmetal material having diameter of 85-110mm and the least count of 30 minutes.	
10	Dumpy level confirming to IS: 9613 – 1986 with stand and internal	05
11	Automatic levels confirming to IS: 9613 – 1986 with stand and internal focusing telescope of standard make.	05
12	EDM and Rodo meter	05
13	Theodolite with tripod	1 per batch
14	Total station	1 per batch
15	Hand held GPS	1 per batch
16	Computers with CADD software	1 per student



Government of Karnataka
DEPARTMENT OF TECHNICAL EDUCATION

Program	Architecture Assistantship	Semester	V
Course Name	Construction Management and Entrepreneurship	Type of Course	Integrated
Course Code	25AR54I	Contact Hours	8 hours / week 104 hours / Semester
Teaching Scheme	L: T: P 4: 0: 4	Credits	06
CIE Marks	50	SEE Marks	50 (Theory)

1.Rationale:

Construction Management provides a comprehensive understanding of the methodologies, tools, and practices that drive the success of projects. It develops critical competencies in planning, executing, controlling, and closing projects, making it a vital skill set for anyone aiming for leadership roles in their career. These competencies help both individuals and organizations achieve their strategic goals, optimize resources, and deliver successful outcomes, thus contributing to long-term success and career advancement.

Entrepreneurship provides individuals with the knowledge, and mindset needed to identify opportunities, take risks, and create meaningful impact through business ventures. It fosters innovation, personal growth, and critical business skills, while also contributing to economic development and job creation. Whether aiming to start a business or work in innovative companies, entrepreneurship education prepares individuals to navigate the challenges of the modern business world and create value in dynamic environments. The course is designed to equip diploma students with essential knowledge, practical skills, and a mindset to excel in managing projects and pursuing entrepreneurial ventures.

2. Course Outcomes: At the end of the Course project, the student will be able to

CO-01	Develop comprehensive plans, including objectives, scope, creating Work Breakdown Structures (WBS), and estimating resources.
CO-02	Use Project Management tools such as Gantt charts, Critical Path Method (CPM), and Program Evaluation and Review Technique (PERT) to manage project timelines and budgets.
CO-03	Demonstrate leadership and team management skills, and Apply project monitoring techniques to track project progress and performance.
CO-04	Identify the viable business opportunities through entrepreneur skills and Create comprehensive business plans, including marketing, operations with financial strategies.

3.Course Content

WEEK	CO	PO	Lecture (4 Hours per Week)	Practical (4 Hours per Week)
1	1	1,2,4,6,7	Introduction to Project Management Importance of project management Key concepts: scope, time, cost, quality, risk, and stakeholders. Project lifecycle: Initiation, planning, execution, monitoring, and closure.	Activity: Provide students with case studies of successful and failed Construction projects. Ask them to analyze what worked, what didn't, and suggest improvements
2	1	1,2,4,6,7	Introduction to construction management Project Initiation and Planning Defining project goals and objectives. Stages of planning for construction project: Pre-tender stage, Contract stage Creating a Work Breakdown Structure (WBS)	Activity: Divide students into small groups and assign them a residential project .Each group creates a project plan, including objectives, scope, WBS, timelines, and deliverable
3	1	1,2,4,6,7	Organising Construction project Objectives, principles of organisation. Types of organisations- Line organisation, Line & staff organization. Functional organisation-merits &demerits. Job layout for construction site.	Activity: Prepare organisation chart for the given construction project organisation. Prepare job layout for the given construction site.
4	1	1,2,4,6,7	Contracts Essential elements of a valid contract document Indian Contract Act 1872 Types of construction contracts Arbitration: types of Arbitration, Arbitration clause and reference	Activity: Prepare a report on formats of construction contract agreement
5	2	1,2,6,7	Scheduling and Resource Management Project scheduling necessity and timelines. Tools: Gantt charts, CPM and PERT. Resource allocation and management. Preparation of Construction schedule for labour, material, machine & finance.	Activity: Students design a Gantt chart for a given residential project, outlining tasks, timelines, and dependencies for.
6	2	1,2,6,7	Construction Risk Management Identifying and managing project risks. Types of construction Risks. Safety in construction - Importance of safety. Safety procedures and check list (excavation, scaffolding, form work.) and Fire safety	Activity: Present a project scenario with potential risks for a residential project. Students identify risks.
7	3	1,3,5,6,7	Construction monitoring, inspection and quality control Need for monitoring inspection & quality control Stages of inspection Stages of quality control in construction Reasons of time overrun and cost	Activity: Students Conduct a root cause analysis and manage their schedules to complete a residential project with multiple overlapping deadlines.

			overrun in construction	
8	3	1,3,5,6,7	Leadership and Team Management Key aspects of construction project manager leadership. Construction project team Roles and responsibilities of members of construction team Communication in construction management	Activity: Students take on specific construction project roles (e.g., construction project manager, architect, team member, client)
9	3	1,3,5,6,7	Closing a Project and Review Closing phase: Documentation, handover, and lessons learned. Conducting project reviews and retrospectives.	Activity: Students present the above residential project update till completion.
10	4	1,2,4,6,7	Entrepreneurship Definition, Characteristics of successful entrepreneurs. Types of entrepreneurs Importance of entrepreneurship in economic development Architect as an entrepreneur Duties and liabilities of architects	SWOT Analysis Objective: To introduce students to the SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis tool and how it helps assess business viability. Activity: Ask students to choose a business idea (either their own or one you provide) and conduct a SWOT analysis. In small groups, they will identify and discuss the strengths, weaknesses, opportunities, and threats associated with the idea. Each group should present their findings, and afterward, you can facilitate a discussion on how to address weaknesses or leverage strengths to increase the chances of success.
11	4	1,2,4,6,7	Idea Generation and Validation Identifying Opportunities Analyzing market trends Business Planning and Strategy Understanding Business Models Types of business models Crafting a Business Plan Components of a business plan Setting clear objectives Understanding target audiences and market segmentation	Business Plan Development Objective: To provide students with hands-on experience in creating a business plan. Activity: Give students a template for a business plan (including sections like market analysis, financial projections, marketing strategy, and operational plan). Students can either work individually or in teams to create a business plan for a hypothetical business (could be based on a previously developed idea or a new one). Have a short time to develop the plan (e.g., 60 minutes), after which teams present their plans to the group. Provide feedback and discuss the strengths and weaknesses of each plan.

12	4	1,2,4,6,7	Marketing and Sales Market Research Understanding the target audience Developing a marketing strategy Branding and Marketing Building the brand identity	Market Research Simulation Objective: To simulate the process of conducting market research and identifying customer needs. Activity: Provide students with a hypothetical product (e.g., a new type of sports drink, eco-friendly packaging or any product familiar to the student). Ask them to conduct market research by interviewing “customers” (other students in the class). Have them prepare a questionnaire or survey to gather feedback on potential customer interest, price sensitivity, and purchasing habits. After collecting data, students will analyze it and use the insights to refine their product or pitch.
13	4	1,2,4,6,7	Financial Planning and Management Basics of Business Finance Understanding startup costs Revenue streams and pricing Profit margins and break-even analysis Financial statements: Income Statement, Balance Sheet, Cash Flow. Funding Your Business Sources of funding: loans, investors, grants Pitching to investors Financial forecasting	Financial Planning Exercise Objective: To help students to understand the financial aspects of starting and running a business. Activity: Provide students with a fictional business (e.g., a coffee shop or online store or similar business familiar to the students) and a set of financial data, including startup costs, monthly expenses, and expected revenue. Ask them to create a basic budget or financial projection for the business over the first year. Discuss key financial concepts such as cash flow, break-even point, and profit margins. At the end of the exercise, review the financial projections as a group and analyze the sustainability of the business.

4.References:

Sl. No.	Author	Title of Book
1	Construction Project Management”	Chitkara, Mc Graw Hill Publications
2	Donald F. Kuratko	Entrepreneurship: Theory, Process, and Practice"
3	Eric Ries	The Lean Startup: How Today's Entrepreneurs Use Continuous Innovation to Create Radically Successful
4	Steve Blank and Bob Dorf	The Startup Owner's Manual: The Step-by-Step Guide for Building a Great Company
5	Bruce R. Barringer and R. Duane Ireland	Entrepreneurship: Successfully Launching New Ventures

6	Guy Kawasaki	The Art of the Start 2.0: The Time-Tested, Battle-Hardened Guide for Anyone Starting Anything
7	Michael E. Gerber	The E-Myth Revisited: Why Most Small Businesses Don't Work and What to Do About It
8	Alexander Osterwalder and Yves Pigneur	Business Model Generation: A Handbook for Visionaries, Game Changers, and Challengers
9	Simon Sinek	"Leaders Eat Last"
10	Prof.B.M. Dhir&P.S Gahlot, New Age International(p)Ltd,	Construction planning and Management
11	Jessica Livingston	Founders at Work: Stories of Startups' Early Days
12	Jeffrey K. Pinto	Project Management: Achieving Competitive Advantage
13	Scott Berkun	The Art of Project Management
14	Jack R. Meredith and Samuel J. Mantel Jr.	Project Management: A Managerial Approach
15	Brant Cooper and Patrick Vlaskovits	The Lean Entrepreneur: How to Accomplish More by Doing Less
16	Harold Kerzner	Project Management: A Systems Approach to Planning, Scheduling, and Controlling
17	Scott Berkun	Making Things Happ
18	Adam Josephs and Brad Rubenstein	Risk Up Front
19	Patrick Lencioni.	The Five Dysfunctions of a Team
20	by Jonah Berger.	"Contagious: How to Build Word of Mouth in the Digital Age"
21	Karen Berman and Joe Knight	"Financial Intelligence for Entrepreneurs"
22	Eric Ries	"The Lean Startup"
23	Peter Thiel.	"Zero to One"
24	Eric Ries,	"The Lean Startup"
25	Peter Thiel.	"Zero to One"

5. CIE Assessment Methodologies

Sl.No .	CIE Assessment	Test Week	Duration (minutes)	Max Marks	Average of all CIE=50 Marks
1.	CIE-1 Theory Test	4	90	50	
2.	CIE-2 Practice Test	7	180	50	
3	CIE-3 Theory Test	10	90	50	
4.	CIE-4 Practice Test	13	180	50	
5	CIE-5 Portfolio evaluation of all the Drawing sheets through Rubrics	1-13		50	Average of all CIE=50 Marks
Total					50 Marks

6. SEE – Theory Assessment Methodologies

Sl. No	SEE – Theory Assessment	Duration	Exam Paper Max marks	Exam Paper Max Marks scale down to (Conversion)	Min marks to pass
1.	Semester End Examination-Theory	3 Hours	100	50	20

7. CIE-1 Theory Test Model Question Paper

Program		Architecture Assistantship			Semester V	
Course Name		Construction Management and Entrepreneurship			Test	I/III
Course Code		25AR54I	Duration	90min	Marks	50
Name of the Course Coordinator:						
Note: Answer any one full question from each section. Each full question carries equal marks.						
Q.No	Questions			Cognitive Level	Course Outcome	Marks
Section-1						
1	a) Define project management and explain its importance in modern organizations. 8 marks b) Describe the components of the project management triangle.- - 9 marks c)Illustrate with sketch project life cycle - 8 marks			AP/AN	1	25
2	a) Develop a Work Breakdown Structure (WBS) for the construction of a college building. -8marks b) Explain stages of planning for construction project - 9marks c) Using examples, discuss importance of safety in construction 8marks			AP/AN	1	
Section-2						
3	a) Compare PERT and CPM– 8marks b)Prepare Gantt charts for a construction project 9marks c)Prepare Construction schedule for labor and material 8marks			AP/AN	2	25
4	a) Develop safety procedures and check list for excavation and scaffolding - 12 marks b) ABC company is supposed to construct a commercial building for a client. Identify and explain different types of risks involved in the project? - 13 marks.			AP/AN	2	
Note for the Course coordinator: Each question may have one, two or three subdivisions. Optional questions in each section carry the same weightage of marks, cognitive level and course outcomes.						

Signature of the
Course Coordinator

Signature of the HOD Signature of the IQAC Chairman

8. CIE-2 Practice Test model question paper

Program	Architecture Assistantship			Semester	V
Course Name	Construction Management and Entrepreneurship			Test	II/IV
Course Code	25AR54I	Duration	180 min	Marks	50
Name of the Course Coordinator:					
Questions				CO	Marks
Residential House –A Client name MR XYZ wants to build a house on his 9000 square feet (90x100) vacant plot in Bengaluru. His requirements were given below. i) He lives with his wife, parents and two college going children. ii) He likes open space around his house and likes to do gardening during free time iii) He has a budget limitation of INR 230,00,000 for this project and wants to present to his wife on their 20th wedding anniversary which is 18 months away iv) His parents can not climb stairs and hence prefer a ground floor room v) All the rooms should have attached bathrooms How-ever the Civil contractor who took the work, overshot the time and money available and hence Client was unhappy with the Architect firm who recommended the Contractor. a)Prepare the detailed WBS 10marks b)Design a Gantt chart for a given residential construction project. 20marks c)Discuss on the possible reasons for delay 10marks d)Methods with which performance to both time and budget could have been achieved 10marks				2	50
Scheme of assessment					
a) Prepare the detailed WBS					10
b) Design a Gantt chart for a given residential construction project.					20
c)Discuss on the possible reasons for delay					10
d)Methods with which performance to both time and budget could have been achieved					5+5
				Total Marks	50

Signature of the Course Coordinator

Signature of the HOD

9. Suggestive Activities for Tutorials:

- The students shall do minimum of one suggested activities
- List is an Example and not inclusive of all possible activities of the course.
- Student and Faculty are encouraged to choose activities that are relevant to the topic.

Sl.No.	Suggestive Activities for Tutorials
1	Resource Allocation Exercise Activity: Assign students a limited budget and resources for a hypothetical residential project and ask them to allocate these effectively.
2	The Columbus Hospital proposed in Hubli is a 200 bed speciality private hospital for treatment of Cancer. The hospital will come up on a 12 acre plot between Hubli-Dharwad. A leading construction company has come forward to complete the hospital works from concept to commissioning in 9 months. The promoters are willing to spend a premium to complete the hospital in 9month time and are not particular about type of construction, ie, RCC, Steel frame etc. i)What happens if the client decides to complete the ground floor roof 15 days earlier ? ii) What happens if the client reduces the inflow of project funds by 50% for the month 4 ? iii) Write an Audit report for the project at the end of 6th month
3	Role-Playing: Negotiation and Deal-Making Objective: To practice entrepreneurial negotiation skills in a controlled environment. Activity: • Pair students and assign each student a role (e.g., an entrepreneur negotiating with an investor or supplier). • Provide them with specific objectives (e.g., securing funding, negotiating a contract, etc.), and allow them to engage in a negotiation process. • Afterward, students can reflect on the experience, discussing what strategies worked, challenges they faced, and how they could improve their negotiation skills.
4	Startup Cost Estimation Game Objective: To estimate the different costs involved in starting a business and the importance of budgeting. Activity: • Provide each student or group with a list of various expenses required to start a business (e.g., equipment, marketing, staffing, location). • Ask them to estimate the cost of each item, keeping track of their total startup budget. • Afterward, reveal the correct costs and have students compare their estimates with the actual figures. • Discuss the importance of accurate financial planning and how underestimating costs can lead to challenges in launching a business.

5	Business Model Canvas Challenge						
	Objective: To develop a business model using a structured approach. Activity: - Introduce the Business Model Canvas framework, which includes key sections such as value proposition, customer segments, channels, and revenue streams. - Ask students to fill in a Business Model Canvas for a business idea, using post-it notes or digital tools. - Afterward, have each student or group present their business model, and provide constructive feedback on how to improve it.						

10. Rubrics for Assessment of Graded Exercises (Qualitative Assessment)

Sl. No.	Dimension	Unsatisfactory	Need Improvement	Satisfactory	Good	Excellent	Students Score
		(0-10)	(11-20)	(21-30)	(31-40)	(41-50)	
1	Technical Accuracy	Significant errors make the drawing unusable.	Multiple inaccuracies	Some errors affecting understanding but correctable.	Minor errors in interpretation or calculations	All details are accurate	40
2	Line Quality	Lines are messy and confusing.	Lines are uneven	Inconsistent line quality	Clear lines with minor inconsistencies	Clean and consistent lines	40
3	Dimension	Dimensions are missing or incorrect.	Many errors; hard to interpret	Some dimension errors affecting interpretation.	Mostly accurate; minor issues	Dimensions are precise, clear, and correctly positioned, following standards.	45
4	Presentation & Neatness	Very untidy; Very poor presentation	Messy; Presentation hinders clarity	Somewhat neat; Some layout issues	Generally neat with minimal flaws; minor improvement in Presentation	Extremely neat and organized; all details easy to read	40
5	Adherence to Standards	Does not follow any drawing standards.	Limited adherence to standards	Lacks consistency.	Minor deviations from standards.	Adheres to relevant drawing standards (ISO, ANSI, etc.).	35
Average Marks = (40+40+45+40+35)/5 =							40/50

Note: Dimension and Descriptor shall be defined by the respective course coordinator as per the activities

11. Equipment/software list with Specification for a batch of 30 students

Sl.No.	Particulars	Specification	Quantity
01	Computers	Latest configuration	30



**Government of Karnataka
Department of Technical Education**

C-25 Diploma Curriculum

**INTERNSHIP
AND
CAPSTONE PROJECT
GUIDELINES
FOR
FACULTY, STUDENTS AND EXAMINERS**

INTERNSHIP

Introduction

The students of Polytechnic Programs will have an opportunity to be part of one of the most challenging educational experiences in the year-3. The students will be trained in the specialization pathways of their interest in fifth semester, followed by 13-week internship or a Capstone Project work in sixth semester.

An internship is a professional learning experience which offers meaningful, practical work relevant to a student's field of study or career interest. It gives the students an opportunity for exploring the various career choices and acquire varied skills. It also offers an opportunity to bring out the innovative, creative ideas and energy into the workplace. This effectively aims at developing talent and potentially builds a pipeline for future Job prospects that may be ready for challenging roles in future. Internship has become very crucial for students to gain on-field experience which acts as an advantage for the students who do not have corporate experience.

Internships allow students to examine new situations, work techniques, problem-solving tactics, interpersonal skills, understanding of timelines and targets which would otherwise not be possible unless they were on board. Companies which plan to offer job placements to students also prefer hiring the interns for a short period as a trial wherein they have an opportunity to assess their ability and select them based on their observations over a considerable amount of time. This alternative gives the recruiter a better understanding of the candidate's worth in comparison to the assessment made in couple of interview sessions. Even for the interns it is a win-win situation as they get an opportunity to learn the corporate work culture in advance and later demonstrate their skills at their workplace

Outcomes

After completing Internship, Interns will be able to,

- Apply the theoretical knowledge and skill during performance of the tasks assigned in internship
- Demonstrate soft skills such as time management, positive attitude and communication skills during performance of the tasks assigned in internship
- Document the Use case on the assigned Task

Facilitating the Interns by an Internship Provider

- Orient intern in the new workplace. Give interns an overview of the organization, Explain the intern's duties and introduce him or her to co-workers
- Develop an internship job description with clear deliverables and timeline
- Allow the interns in meetings and provide information, resources, and opportunities for professional development
- The interns have never done this kind of work before, they want to know that their work is measuring up to organizational expectations, hence provide professional guidance and mentoring to the intern

- Daily progress report of Intern is to be evaluated by industry supervisor. examine what the intern has produced and make suggestions. Weekly supervision meetings can help to monitor the intern's work.

Duties & Responsibilities of the Faculty (Cohort Owner):

- To facilitate the placement of students for the internship
- To liaison between the college and the internship provider
- To assist the Industrial Training Supervisor during assessment

Instructions to the Interns(Students):

- Students shall report to the internship provider on the 1st day as per the internship schedule
- Intern is expected to learn about the organization, its structure, product range, market performance, working philosophy etc
- The interns shall work on live (On Job) projects assigned by the internship provider.
- The Intern shall record all the activities in the daily log book and get the signature of the concerned training supervisor
- Intern shall have 100% attendance during internship programme. In case of unavoidable circumstances students may avail leave with prior permission from the concerned training supervisor of the respective internship provider. However, the maximum leave permitted during internship shall be as per company norms where they are working and intern shall report the leave sanctioned details to their college cohort owner
- The interns shall abide all the Rules and Regulations of internship provider
- Intern shall follow all the safety Regulations of internship provider.
- On completion of the internship, intern shall report to the college and submit the internship certificate mentioning duration of internship, evaluation of interns by internship provider, Student's Diary, report to the cohort owner.

Assessment

The Internship will be assessed for 100 marks through formative and summative assessment tools, in formative assessment the internship will be evaluated for 50 marks and in summative assessment internship will be evaluated for 50 marks

The Formative Assessment- (Continuous Internal Evaluation- CIE)

The Formative Assessment is conducted for 50 marks throughout the course in three developmental phases as CIE-I, CIE II and CIE-III. Students shall complete CIE-I before taking CIE-II and complete CIE-II before taking CIE-III, otherwise will not be eligible to take Semester End Examination.

Continuous Internal Evaluation- CIE - I conducted at the end of 4th week		
Sl No	Assessment parameter	Marks
1	Submit a report to the training supervisor and copy to the cohort owner focusing on: • Overview of the organization • Vision and mission of the organization • Organization structure • Roles and Responsibilities of personnel in the organization • Products and market performance	30
2	Give a presentation on the above	20
	Total	50

Note: CIE-1 shall be assessed by the Faculty (Cohort owner) for 50 marks using appropriate Rubrics.

Continuous Internal Evaluation- CIE - II conducted at the end of 8th week		
Sl No	Assessment of On Job Training (OJT)	Marks
1	On select job role of his/her interest in an organization or role assigned by the training supervisor for next Four weeks and submit a report to the training supervisor and copy to cohort owner focusing on: 1. Intern's ability to apply the skill and technical knowledge on OJT 2. Intern's performance on assigned tasks and project 3. Extent of Intern's ability to add value to the organization through internship	30
2	Document a Use case on a task where he is working as intern	20
	Total	50

Note:

1. CIE-II shall be assessed by the Industrial Training Supervisor using companies' assessment Tools/Rubrics.
2. Faculty (Cohort owner) shall assist the Industrial Training Supervisor during assessment of CIE-II.

Continuous Internal Evaluation- CIE -III conducted at the end of 13th week		
Sl No	Assessment of On Job Training (OJT)	Marks
1	On select job role of his/her interest in an organization or role assigned by the training supervisor for next Five weeks and submit a report to the training supervisor and copy to cohort owner focusing on: 1. Intern's ability to apply the skill and technical knowledge on OJT 2. Intern's performance on assigned tasks and project 3. Extent of Intern's ability to add value to the organization through internship	30
2	Documenting of another Use case on a task where he is working as intern	20
	Total	50

Note:

1. CIE-III shall be assessed by the Industrial Training Supervisor using companies' assessment Tools/Rubrics
2. Faculty (Cohort owner) shall assist the Industrial Training Supervisor during assessment of CIE-III
3. **Average Marks obtained in the above Three CIE's (CIE-I,CIE-II & CIE-III) shall be recorded as Formative assessment for 50 Marks.**

The Summative assessment- Semester End Examination (SEE)

During the semester end examination, students shall demonstrate the outcomes of their Internship to the Panel of Examiners comprises of a Cohort owner and an external Subject expert The evaluation criteria are as follows

Sl No	SEE Evaluation Criteria	Marks
1	Presentation shall include: 1. Overview of the organization, vision, mission, structure, roles and responsibilities of personnel's, products, market Performance etc. - (10marks) 2. The role performed in the organization during OJT and Intern's ability to apply the skill and technical knowledge - (20 marks)	30
2	Evaluation of comprehensive Internship Report with special focus on organization profile, OJT and contribution made to the organization	20
	Total	50

Note: Cohort owner and External subject expert shall assess the intern separately using an appropriate rubrics and average marks to be tabulated

FORMATS

Department of Technical Education

FORMAT - 1

Student Internship Application

(Complete and submit to the Training and Placement Officer)

Student Name			
Student e-mail Id			
Mobile			
Name of the Institute			
Name of the Program			
Specify the Specialization Pathway			
Overall CGPA			
Internship Preferences	Location	Core area	Organization
Preference-1			
Preference-2			
Preference-3			
Cohort owner Signature: Date			
Student Signature: Date			

Department of Technical Education

FORMAT - 2

Request Letter from Institute to Internship Provider

(To be forwarded by the Training and Placement Officer/Student)

Date:

To,

.....

.....

Subject: Request for 13 weeks Semester long internship training of Diploma in -----
engineering Program

Dear Sir/ Madam,

This is to certify your good office to allow Mr/ Ms -----student of our polytechnic perusing
sixth semester diploma in ----- engineering and trained in ----- specialization pathway in boot
camp mode to render on-the-job internship training in your prestigious company

As per the requirement of Diploma in ----- engineering program, he/she is required to
complete 520 hours of internship related to his/her specialization

Your support in this regard is highly appreciated

With warm regards,

Signature of Training and Placement Officer

Department of Technical Education

FORMAT - 3

Agreement

This Agreement is between the student, cohort owner and internship provider. It shall serve to clarify the educational purpose of the internship and to ensure an understanding of the total learning experience among the student, cohort owner and Industrial training supervisor

Part I: Contact Information

Student

Name: _____ Student ID _____ Class Year: _____

College Address: _____ City, State: _____

Phone: _____ Email: _____

Industrial Supervisor

Name: _____ Designation: _____

Company/Organization: _____

Address: _____ City, State: _____ Pin: _____

Phone: _____ Email: _____

Cohort owner

Name: _____ Designation: _____

Phone: _____ Email: _____

College Address: _____

Academic Credit Information

Program: _____

Pathway: _____

Credits: 16

Beginning Date: _____

Ending Date: _____

Hours per Week: 40

Part II: The Internship

Internship Objectives:

Describe What do the interns intend to learn, acquire skill through this internship? Try to use concrete, measurable terms in listing the learning objectives under each of the following categories:

- Knowledge
- Skills

Job Description:

Describe in as much detail as possible intern's role and responsibilities while on internship. List duties, project to be completed, deadlines, etc. Describe How interns' technical knowledge can be applied at the site of the internship and how they can create value to the organization through internship

Supervision: Describe in as much detail as possible the supervision to be provided/needed at the work site. List what kind of instruction, assistance, consultation interns will receive from whom, etc

Evaluation: Describe How will interns work performance be evaluated? By whom? When?

Part III: Agreement

This Agreement may be terminated or amended by student, cohort owner or industry training supervisor at any time upon 7days written notice, which is received and agreed to by the other parties.

Student _____

Date _____

Cohort owner _____

Date _____

Industry Training Supervisor _____

Date _____

Department of Technical Education

FORMAT 4

Student's Daily Log Book

Day-1	Date:
Time of Arrival	Time of Departure
Dept/Division	Nature of work
Name of the Supervisor With designation and email ID	
Remarks of the Training supervisor:	
Record Main actives of the day (including observation, sketches, discussions, etc)	
Signature of Industry Supervisor	

Note: Prepare a A4 size hard bound Intern work book using this format with college and student details

Department of Technical Education

FORMAT 4

Internship Report template

The student, after the completion of internship should submit a comprehensive Internship report, the contents of the report shall be arranged in the following order:

1. Cover Page
2. Inside Title Page
3. Internship Certificate issued by the organization
4. Acknowledgements
5. Executive Summary
6. Table of Contents
7. List of Figures
8. List of Tables
9. Abbreviations/ Notations/ Nomenclature
10. Text of the Report
 - **Chapter 1:** Company Profile
 - **Chapter 2:** Describe in as much detail as possible intern's role and responsibilities while on OJT. List duties, project completed, etc. Describe How interns' technical knowledge can be applied at the site of the internship and how they can create value to the organization through internship
11. Student Profile/Resume
12. Photo Gallery
13. Appendices

General Guidelines

Report Size - Report may contain maximum of about 50 pages including Proto gallery and appendices.

Paper Size - Use A4 size paper

Paper Quality - White bond paper weighing 85 g/m² or more should be used. Photographs or images with dense colors may be printed in single side on glossy paper.

Margins - A margin of 40 mm is to be provided on left and 30 mm on right sides, whereas top and bottom margins should be 30 mm. No print matter should appear in the margin except the page numbers. All page numbers should be centered inside the bottom margin, 20mm from the bottom edge of the paper.

Font - Times New Roman (TNR) 12-point font has to be used throughout the running text. The captions for tables and figures should have font size of 11 and foot notes should be set at font size 10. Font sizes for various levels of headings are given in the table below

CHAPTER 3

TITLE PAGE-CENTERED TNR 17-POINT BOLD ALL CAPS

3.1. Section Heading

Left aligned with number, TNR 17 points, bold and leading caps

3.1.1. Second level section heading

Left aligned with number, TNR 14 points, bold and sentence case.

3.1.1.1 Third level section heading

Left aligned with number, TNR 12 points, bold and sentence case.

Fourth-level section heading

Numbered subsections beyond third level are not recommended. However, fourth-level subsection headings may be included without numbering, TNR 12-point font, left aligned and italicized
Running text should be set in 12-point TNR and fully justified. First line of paragraph should have indentation of 15 mm.

Line Spacing - The line spacing in the main text should be 1.5, for quotations, figure captions, table captions, figure legends, footnotes, equations, tables, figures, and quotations Single line spacing should be given.

Table / Figure/equation Format-

Tables and figures shall be numbered chapter-wise. For example, second figure in Chapter 3 will be numbered Figure 3.2. The figure can be cited in the text as Figure 3.2, Tables shall be numbered similarly (Table 2 in Chapter 3 will be numbered Table 3.2) and shall be cited in the text as Table 3.2. Figure caption shall be located below the figure. Table number and caption shall be located above the table.

Appendices

Include data tables, drawings, background calculations, specification lists for equipment used, details of experimental configuration, and other information needed for completeness,

Page Numbering

Page numbers for the prefacing materials (Inside title page, certificate, acknowledgements, executive summary, table of contents, etc.) of the report shall be in small Roman numerals and should be centered at the bottom of the pages.

The numbering of the prefacing material starts from the Inside Title Page. However, the number is not printed on the Inside Title Page. Each new item of the prefacing materials listed above should start on a fresh paper on right page. If the content of the prefacing material exceeds one page, it has to be printed on both sides of the paper by starting from the right-side page. For example, if the item „Table of Contents“ extends for 5 pages, it should be printed in fresh paper on right side page with second page of the „Table of Contents“ on the back of the paper and then continued. The page numbers of the prefacing material will be printed in small Roman numerals continuously counting blank pages also. However, the numbers are not printed on the blank pages. The body of the report starting from Chapter 1 should be paginated in Arabic numerals and should be centered at the bottom of the pages. The pagination should start with the first page of Chapter 1 and should continue throughout rest of the report. Each side of a sheet of paper should be counted as a separate page, even if the back side of a sheet of paper is blank. The odd numbered pages are always on the right and even-numbered pages are always on the left. If the end of a chapter is in odd page (right side page) the next chapter should start on odd page i.e., on a fresh paper, and should be numbered as odd only by counting the blank even page also. However, the page number is not printed on the blank pages.

Each of the items - Inside cover page, Certificate, Acknowledgements, executive summary, Table of Contents, List of Figures, List of Tables, Abbreviations, Notations, Nomenclature, each new Chapter, References, and each new Appendix should start on an odd page i.e., on the right side

Non-Paper Material

A report may contain non-paper material, such as specimen, CDs and DVDs, Pen drive if necessary. They have to be accommodated in a closed pocket in the back cover page of the report. The inclusion of non-paper materials must be indicated in the Table of Contents. All non-paper materials must have a label each clearly indicating the name of the candidate, student Register number and the date of submission.

Binding

Two hard bounded copies of the project Report shall be submitted for evaluation; the cover page should be printed on sky blue card of 300 g/m² or above. One copy is used for Semester End Examination and after the exam it should be maintained in the concerned Head of the department and another copy is maintained at cohort owner

Electronic Copy

An electronic version (PDF) of the project report should be submitted to the cohort owner and Head of the department. The file name should contain, student name, Register number and date of submission.

CAPSTONE PROJECT
GUIDELINES
FOR
FACULTY (COHORT OWNER), STUDENTS AND EXAMINERS

CAPSTONE PROJECT

How to design and deliver

The students of Polytechnic Programs will have an opportunity to be part of one of the most challenging educational experiences in the year-3. The students will be trained in the specialization pathways of their interest in fifth semester followed by an internship or a capstone project work in sixth semester. Those students who want to do a capstone project, requires to do developmental work on real-world problems which would motivate them to produce practical solutions. It is an opportunity for the students to use the problem-solving tools and techniques to solve the problems while doing the capstone project. With this approach, the learning process is gained through 'by-doing' experience and the students are expected to apply both the Capstone Project Management Skills and Technical Skills gained in previous years of polytechnic courses, which will enable them to participate and prepare for future employment. Working under the guidance of a Cohort owner, students may shape the direction of what they want to be, as well as gain better understanding of the responsibilities they need to shoulder when they undertake a capstone project. Teamwork will be inculcated with the development of good and professional relationships with their cohort owner and team members. The undertaken capstone project can also be used as a basis for employment or Startup by fully exploiting the learning process they have gone through, the skills they have gathered and the experience they have gained from the capstone project. The guidelines are prepared for Cohort owner, students and examiners enabling them to execute their respective roles and responsibilities in an effective manner.

Aims of Capstone

1. Promote integration and synthesis within the program of study.
2. Promote meaningful connections between the program of study and career experiences.
3. Improve learner's career preparation and pre professional developments.
4. Demonstrate professional identity as learner's transition from academic to professional World.

Job Alignment and Professional Scenario

While developing a capstone the goal should always to;

1. Use a real world professional scenario- built out with employer engagement where ever possible.
2. Align skills to be assessed to a job.
3. Explicitly and intentionally developed important learner's skills, competencies and perspectives that are tacitly developed in the curriculum and required in the workplace.
4. Give learner's the freedom to showcase their learning though a demonstrable artifact or output e.g. Technical Product, System, Service that resolves a real world problem.

Employer Engagement

Support in capstone development:

- Provide a problem statement
- Provide a case study background
- Review and feedback on case studies/scenarios developed

Support in class

- Mentor learner's during the capstone
- Support cohort owners during class-workshop seminars

Presentation of Capstone

- Sit on presentation panel for learners to give feedback.

Outcomes

On successful completion of the capstone project, students will be able to:

- Write Capstone project scope document
- Prepare a capstone project execution plan
- Manage the capstone project from start to finish meeting stated milestones and timelines
- Test and validate the findings
- Demonstrate interpersonal skills, teamwork, and effective use of appropriate technology required for the capstone project

Responsibilities of the Head of the Department

The Head of the Department shall coordinate in Executing the Capstone projects, their responsibilities can be summarized as follows:

- To ensure that the Capstone project scope document is relevant to the specialization pathway opted by the students in Fifth semester
- To assign Cohort owner to the students
- To maintain a centralized capstone project hub repository to facilitate capstone project management and keeping track of all capstone projects and design changes

Responsibilities of the Faculty (Cohort owner):

Students will be supervised by Cohort owner; their responsibilities can be summarized as follows:

- To guide the students in writing the Capstone project scope document
- To guide the students in preparing capstone project execution plan
- To interact with the students once in a week to review the progress of the capstone project work, these sessions shall reinforce/review the concepts, findings and focus on addressing issues relevant to weekly meetings.
- To guide the students in managing the capstone project from start to finish, meeting the stated milestones and timelines

- To guide the students in preparing the capstone project report
- Develop appropriate Rubrics and evaluate the capstone project work as per assessment criteria
- To oversee the capstone project work until the submission of the final report, and Semester End Examination
- Maintain all the documents related to the capstone project work

Responsibilities of the Students

Students are also required to exercise self-discipline, self-management, job co-ordination, teamwork, and trustworthiness to ensure the success of the capstone project.

The expected responsibilities are:

- To write the Capstone project scope document
- To prepare a capstone project execution plan
- To adhere to the weekly meeting schedule with the cohort owner for the purpose of updating their progress and seeking advice on capstone project matters (Attendance is compulsory as per regulation) and submit weekly report
- To Manage the capstone project from start to finish meeting stated milestones and timelines
- To report immediately to the cohort owner any difficulties encountered that would interrupt the work.
- To submit all reports on time

Group Member Roles and Contributions

The Capstone project groups often function more effectively when group members have designated roles. Each capstone project group shall consist of not more than **four students**. The Three core roles and responsibilities are:

- **Capstone project Lead:** One student in the group shall act as a capstone project lead, who is responsible for keeping the group on task, distributing the workload, meeting deadlines, and ensuring smooth group communication and coordination as well as accountability with the cohort owner and capstone project requirements
- **Documenter Lead:** One student in the group shall act as a documenter lead, who is responsible for recording group discussions and decisions, documenting various aspects of the capstone project's progress, and ensuring well-formed reports and capstone project documents are produced.
- **Development Lead:** Two students in the group shall act as a Development lead, who are responsible for overseeing the collaborative aspects of the capstone project, troubleshooting major technical problems.

The entire capstone project team should be engaged in discussions, documentation, and development of the capstone project. All members are expected to contribute towards the capstone project. Groups will have to rotate the roles among members for different stages of the capstone project. This will allow members to gain experience through being responsible in different areas of capstone project management.

Assessment of the capstone project work

This section is addressed to the Faculty (Cohort owner) and examiners. It provides information on assessment criteria for the capstone project work. It also provides guidance to students about what examiners will be looking for in evaluating the capstone projects. The Capstone project work will be assessed for 100 marks through formative and summative assessment tools, in formative assessment the capstone project will be evaluated for 50 marks and in summative assessment capstone project will be evaluated for 50 marks

The Formative Assessment- (Continuous Internal Evaluation- CIE)

The Formative Assessment is conducted for 50 marks throughout the course in three developmental phases as CIE-I, CIE II and CIE-III. Students shall complete CIE-I before taking CIE-II and complete CIE-II before taking CIE-III, otherwise they will not be eligible to take Semester End Examination

Continuous Internal Evaluation- CIE - I conducted at the end of 4th week		
Sl No	Assessment of parameter	Marks
1	Synopsis of the Project.	10
2	Capstone project Planning: • Data Collection - 10Marks • Literature Study -10 Marks • Finalizing Requirement - 10 Marks • Work Breakdown Structure (WBS) - 05 marks • Time-line Schedule - 05 marks	40
	Total	50

Continuous Internal Evaluation- CIE - II conducted at the end of 8th week		
Sl No	Assessment of parameter	Marks
1	Capstone project Details: - Case Study (Minimum Two) - 20 Marks - Area Analysis - 10 Marks - Site Selection & Site Analysis - 10 Marks - Concept Development - 10 Marks	50
	Total	50

Continuous Internal Evaluation- CIE - III conducted at the end of 13th week		
Sl No	Assessment of Parameter	Marks
1	Design Development: - Floor Plan with Furniture Layout - 10 Marks - Elevations & Sections - 10 Marks - Working Drawing & Detailing - 10 Marks 3D View - 10 Marks - Scale Down Model - 10 Marks	50
	Total	50

Note: Average Marks obtained in the above Three CIE's (CIE-I, CIE-II & CIE-III) shall be Recorded as Formative assessment for 50 Marks.

The Summative assessment- Semester End Examination (SEE)

During the Summative assessment, students shall demonstrate the outcomes of their Capstone project work to the Panel of Examiners comprising a cohort owner and an external Subject expert

The evaluation criteria are as follows:

Sl No	Parameters	Marks
1	Presentation of the Design Project	30
2	Scale Down Model	10
3	Cap Stone Project Report	10
	Total	50

Plagiarism

Plagiarism is the act of obtaining or attempting to obtain credit for academic work by representing the work of another as one's own without the necessary and appropriate acknowledgment. If a student is in doubt of the nature of plagiarism, he/she should discuss the matter with the supervisor. If a student is caught committing plagiarism, disciplinary action will be taken against the student

Keeping in view the policy of plagiarism, and avoid piracy of intellectual property, the student needs to follow the citation policy:

- When 10 words are taken together from some established core work, citation becomes essential.
- When the copied content reaches 40 words in accumulation, the fragment needs to be kept under inverted comma (“ ”) in italic.
- It is necessarily required to cite reference in case of any content adopted from anywhere other than internet open sites. It is also that, even in case of open site internet source or any other source the copied contents if found more than 35 percent in aggregate during plagiarism detection, the work shall not be considered for further process and asked to resubmit the report again for the evaluation

Copyright

The Polytechnic institutions shall be the owner for all findings, designs, patents, and other intellectual property rights.

FORMATS

Department of Technical Education
Capstone project

Format- 1

Capstone project Scope Document

Capstone project Scope Document

The capstone project scope clearly describes what the capstone project will deliver and outlines all the work required for completing the capstone project.

Capstone project Title:

Group Members:

Problem Statement: Objectives:

Capstone project description:

Capstone project Deliverables:

Key milestones:

Constraints:

Estimated Capstone project Duration: Estimated

Capstone project cost:

Date

Signature of the student Signature
of the cohort owner

Department of Technical Education

Capstone project

Format- 2

Work Breakdown Structure

Capstone project Name: <State the Title of the capstone project >

Capstone project Members: <List of group members>

Capstone project Objective(s): < statements describing the capstone project's objective(s)>

Work Breakdown Structure - Deliverables

1. Identify the deliverables (in the scope statement) to be produced in the capstone project.
This highlights the work to be done.
2. Decompose each large deliverable into a hierarchy of smaller deliverables. This involves taking a deliverable and breaking it down into lower and lower levels of detail.
3. The lowest level of detail is called a 'work package' which consists of activities and tasks.

Date

Signature of the student
Signature
of the cohort owner

Department of Technical Education
Capstone project

Format- 3
Time - line Schedule

Capstone project Name: <State the Title of the capstone project >

Capstone project Members: <List of group members>

1. Identify the activities and tasks needed to produce each work package.
2. Identify resources for each task (e.g., time, knowledge, monetary costs etc.)
3. Estimate how long it will take to complete each task. Consider constraints - resources, time, knowledge
4. Determine which tasks are dependent on other tasks and develop a critical path.
5. Develop a schedule of all activities and tasks - weekly and monthly. Work out when each task is scheduled to begin and end. Use a Gantt chart.

Date

Signature of the student

Signature of the cohort owner

Department of Technical Education

Capstone project

Format- 4

Cost Breakdown Structure

Capstone project Name: <State the Title of the capstone project >

Capstone project Members: <List of group members>

A cost breakdown structure (CBS) breaks down cost data into different categories, and helps you manage costs efficiently. It is a crucial part of the capstone project planning and management process, as it allows you to gain better insight into how much you spend and what you spend your capstone project budget on. When you have a solid structure in place, you can have better control of your capstone project costs to avoid going over budget.

1. Analyze your Work Breakdown Structure

- Before you can identify your costs, you must first determine what your capstone project entails.
- You can do this by looking at your work breakdown structure in detail, and work out the components that will contribute to the capstone project costs.

2. Estimate the labor cost of work

- The next step is to estimate the labor cost of work for each task or activity you have identified in your WBS.
- The time it takes for your team members to finish each work package in the WBS contribute to your labor costs.
- Once you have estimated the labor costs of work for all the tasks, you can use them to work out the final cost of labor for your capstone project.

3. Estimate the cost of materials

The next step is to look at the cost of the materials needed to complete each task you identified in your WBS. These costs include

- Raw material costs
- Equipment and parts purchased for this capstone project
- Anything rented for the purpose of the capstone project

4. Overhead costs.

- Ensure your CBS also includes an appropriate allocation to overhead costs.
- Overhead include various costs that aren't related to specific tasks, but are necessary for the capstone project to take place.

5. Build contingency into your CBS

- No matter how accurate your estimates are, you should still allow for some contingency in your cost breakdown structure in the CBS

6. Final-check

- The last step in creating a cost breakdown structure is to check your estimates against your available budget.
- If it your estimate is within the available budget, then you can be confident that the financial aspect of your capstone project will be smooth sailing
- If your CBS comes in higher than the available budget, you can look at ways to control costs.

Date

Signature of the student

Signature of the cohort owner

Department of Technical Education

Capstone project

Format- 5

Capstone project Execution Document

Capstone project Name: <State the Title of the capstone project >

Capstone project Members: <List of group members>

- Main Deliverables -

- 1) **Design:** descriptions of the components in the system, Component diagrams, and required design if any.
- 2) **Description of Technology Used:** provide details of Hardware devices, software products, programming languages etc.
- 3) **Fabrication:** fabrication or construction details
- 4) **Testing and validation:** provide the details of Methodologies/ laboratory experiments/ computer programming/ modelling/ simulations/ analysis/ findings etc
- 5) **Results and inference**

Date

Signature of the student

Signature of the cohort owner

Department of Technical Education
Capstone project

Format- 6
Weekly Meeting Record

<For Cohort Owner Use>

Capstone project Title:		
Group Members	1) 2) 3) 4)	☐ Present ☐ Present ☐ Present ☐ Present
Date		
Meeting venue		☐ On Time
Documents Submitted	☐ Status Report	☐ On Time
Issues Group Working on		
Assessment of Progress	☐ Excellent ☐ Good ☐ Satisfactory ☐ Fair ☐ Poor	
Notes/ Concerns/ Comments		

Signature of the Cohort owner

Department of Technical Education

Capstone project

Format- 7

Weekly Status Report

Capstone project Name: <State the Title of the capstone project >

Capstone project Members: <List of group members>

Status:

Briefly describe and illustrate the progress.

Highlights

List any items of note. Breakthroughs, accomplishments, major decisions, or changes in the capstone project plan Are you on schedule, ahead of schedule or behind schedule?

Risks or Issues List

In the following table, list any risk or issue that is critical for the success of the capstone project. This could be anything from “*we need to get data*” to “*how do we ensure that the system is usable*” to “*performance is unacceptable*”. This should be a complete historical list that is kept from the beginning of the capstone project until the end.

Status should be one of *New, ongoing, Closed*.

The resolution column should be filled in if the issue or risk has been taken care of.

A capstone project may be expected to have around 1-3 active issues or risks that are being managed (new or ongoing) at any given time. If you have more than three, then either you have a capstone project in serious trouble or your criteria for what is "critical to success" is too loose.

Date	Risk or Issue	Description	Resolution	Status

Contd..

Tasks in Progress or Completed:

List the tasks that each member of the capstone project worked on up to the present time.

Task Name	Description	Team Member Responsible	Percentage Complete

Upcoming Tasks:

List the tasks that each capstone project member is planning to work on in the upcoming Task.

Task Name	Description	Team Member Responsible

Date:

Signature of the students

Department of Technical Education

Capstone project

Format- 8

Student's Daily Log Book

Capstone project Name: <State the Title of the capstone project >

Capstone project Members: <List of group members>

Day-1	Date:
Capstone project Name:	
Name of the student	
Name of the Cohort owner:	
Remarks of the Cohort owner:	
Record Main actives of the day (including observation, sketches, discussions, etc):	
Signature of the Cohort owner	

Note: Prepare a A4 size hard bound Student's Diary/ Daily Log book using this format with college and student details

Department of Technical Education

Capstone project

Format- 9

Capstone project Report Template

The contents of the capstone project report shall be arranged in the following order:

1. Cover Page
2. Inside Title Page
3. Certificate signed by the Cohort owner and HOD
4. Declaration signed by the Candidate
5. Acknowledgements
6. Executive Summary
7. Table of Contents
8. List of Figures
9. List of Tables
10. Abbreviations/ Notations/ Nomenclature
11. Text of the Report
 - a. Introduction
 - b. Site Analysis
 - c Case Study
 - d Data collection
 - e Literature
 - f. Concept
 - g drawings
12. References
13. Appendices

General Guidelines

Report Size - Report may contain maximum of about 100 pages including references and appendices.

Paper Size - Use A4 size paper

Paper Quality - White bond paper weighing 85 g/m² or more should be used. Photographs or images with dense colors may be printed in single side on glossy paper.

Margins - A margin of 40 mm is to be provided on left and 30 mm on right sides, whereas top and bottom margins should be 30 mm. No print matter should appear in the margin except the page numbers. All page numbers should be centered inside the bottom margin, 20mm from the bottom edge of the paper.

Font - Times New Roman (TNR) 12-point font has to be used throughout the running text. The captions for tables and figures should have font size of 11 and foot notes should be set at font size 10. Font sizes for various levels of headings are given in the table below

CHAPTER 3

TITLE PAGE-CENTERED TNR 17-POINT BOLD ALL CAPS

3.1. Section Heading

Left aligned with number, TNR 17 points, bold and leading caps

3.1.1. Second level section heading

Left aligned with number, TNR 14 points, bold and sentence case.

3.1.1.1 Third level section heading

Left aligned with number, TNR 12 points, bold and sentence case.

Fourth-level section heading

Numbered subsections beyond third level are not recommended. However, fourth-level subsection headings may be included without numbering, TNR 12-point font, left aligned and italicized

Running text should be set in 12-point TNR and fully justified. First line of paragraph should have indentation of 15 mm.

Line Spacing - The line spacing in the main text should be 1.5, for quotations, figure captions, table captions, figure legends, footnotes, and references. The equations, tables, figures, and quotations Single line spacing should be given.

Table / Figure/equation Format-

Tables, figures, and equations shall be numbered chapter-wise. For example, second figure in Chapter 3 will be numbered Figure 3.2. The figure can be cited in the text as Figure 3.2, Tables shall be numbered similarly (Table 2 in Chapter 3 will be numbered Table 3.2) and shall be cited in the text as Table 3.2. Figure caption shall be located below the figure. Table number and caption shall be located above the table.

Listing of the References:

Referencing is a way to give credit to the writers from whom you have borrowed words and ideas. By citing the work of a particular scholar, you acknowledge and respect the intellectual property rights of that researcher. As a student or academic, you can draw on any of the millions of ideas, insights and arguments published by other writers, many of whom have spent years researching and writing. All you need to do is acknowledge their contribution to your assignment.

References are to be listed after last chapter. They are to be listed in alphabetical order and numbered. Within a reference the line spacing should be single. Each reference should be separated by one blank line. The reference number should be left aligned. The text of the reference should have an indentation of 10 mm. The reference format to be followed for journal articles, text books, conference proceedings etc. are given below.

Journals

1. Parkas, K. (2011). Feedback and optimal sensitivity: Model reference transformations, multiplicative semi norms, and approximate inverses. IEEE Transactions on Automatic Control, 26(2): 301–320.

Text books

1. Myers, D. G. (2007). Psychology (1st Canadian ed.). Worth: New York.

Conference proceedings

1. Payne, D.B. and Gunhold, H.G. (1986). Digital sundials and broadband technology, In Proc. IOOC-ECOC, 1986, pp. 557-998.

Reports

1. Milton, M and Robert, L. (2004). Atmospheric carbon emission through genetic algorithm, Environment and Technical Report No.3., Indian Meteorological Department., New Delhi

Online journals with a DOI (Digital Object Identifier)

1. Krebs, D.L. and Denton, K. (2006). Explanatory limitations of cognitive developmental approaches to morality. *Psychological Review*, 113(3): 672- 675. doi: 10.1037/0033- 295X.113.3.672

Online journals without a DOI

1. Vicki, G.T., Thomae, M., Cullen, A. and Fernandez, H. (2007). Modeling the hydrological impact on Tropical Forests. *Forest Ecology*, 13(10): 122-132. Retrieved from <http://www.uiowa.edu/~grpproc/crisp/crisp.html>

Online books

1. Perfect, T.J. and Schwartz, B. L. (Eds.) (2002). *Applied metacognition*. Retrieved from <http://www.questia.com/read/107598848> (-If DOI is available, use the DOI instead of a URL)

Chapters from a book

1. Krebs, D.L. and Denton, K. (1997). Social illusions and self-deception: The evolution of biases in person perception. In J. A. Simpson & D. T. Kenrick (Eds.), *Evolutionary social psychology* (pp.21-48). Hillsdale, NJ: Erlbaum

Appendices

Include data tables, drawings, background calculations, specification lists for equipment used, details of experimental configuration, and other information needed for completeness,

Page Numbering

Page numbers for the prefacing materials (Inside title page, dedication, certificate, declaration, acknowledgements, executive summary, table of contents, etc.) of the report shall be in small

Roman numerals and should be centered at the bottom of the pages.

The numbering of the prefacing material starts from the Inside Title Page. However, the number is not printed on the Inside Title Page. Each new item of the prefacing materials listed above should start on a fresh paper on right page. If the content of the prefacing material exceeds one page, it has to be printed on both sides of the paper by starting from the right- side page. For example, if the item „Table of Contents“ extends for 5 pages, it should be printed in fresh paper on right side page with second page of the „Table of Contents“ on the back of the paper and then continued. The page numbers of the prefacing material will be printed in small Roman numerals continuously counting blank pages also. However, the numbers are not printed on the blank pages

The body of the report starting from Chapter 1 should be paginated in Arabic numerals and should be centered at the bottom of the pages. The pagination should start with the first page of Chapter 1 and should continue throughout rest of the report. Each side of a sheet of paper should be counted as a separate page, even if the back side of a sheet of paper is blank. The odd numbered pages are always on the right and even-numbered pages are always on the left. If the end of a chapter is in odd page (right side page) the next chapter should start on odd page i.e., on a fresh paper, and should be numbered as odd only by counting the blank even page also. However, the page number is not printed on the blank pages.

Each of the items - Inside cover page, Certificate, Acknowledgements, executive summary, Table of Contents, List of Figures, List of Tables, Abbreviations, Notations, Nomenclature, each new Chapter, References, and each new Appendix should start on an odd page i.e., on the right side

Non-Paper Material

A report may contain non-paper material, such as specimen, CDs and DVDs, Pen drive if necessary. They have to be accommodated in a closed pocket in the back cover page of the report. The inclusion of non-paper materials must be indicated in the Table of Contents. All non-paper materials must have a label each clearly indicating the name of the candidate, student Register number and the date of submission.

Binding

Two hard bounded copies of the capstone project Report shall be submitted for evaluation; the cover page should be printed on sky blue card of 300 g/m² or above. One copy is used for Semester End Examination and after the exam it should be maintained in the concerned Head of the department and another copy is maintained at cohort owner

Electronic Copy

An electronic version (PDF) of the capstone project report should be submitted to the cohort owner and Head of the department. The file name should contain title of the capstone project, student Register number and date of submission.

Government of Karnataka
Department of Technical Education
Board of Technical Examinations

C-25 SEE Theory Question Paper Pattern

Course Name:
Time: 3 Hours

Course Code:
Max. Marks :100

Instructions:

For Part-A questions, only the first written answers will be considered for evaluation.

PART A

I. Select the correct answer from the choices given: 15X1 = 15 Marks

1. Multiple Choice Question-1
 - A.
 - B.
 - C.
 - D.
2. Multiple Choice Question-2
 - A.
 - B.
 - C.
 - D.
3. Multiple Choice Question-3
 - A.
 - B.
 - C.
 - D.
4. Multiple Choice Question-4
 - A.
 - B.
 - C.
 - D.
5. 5. Multiple Choice Question-5
 - A.
 - B.
 - C.
 - D.
6. Multiple Choice Question-6
 - A.
 - B.
 - C.
 - D.

7. Multiple Choice Question-7

- A.
- B.
- C.
- D.

8. Multiple Choice Question-8

- A.
- B.
- C.
- D.

9. Multiple Choice Question-9

- A.
- B.
- C.
- D.

10. Multiple Choice Question-10

- A.
- B.
- C.
- D.

11. Multiple Choice Question-11

- A.
- B.
- C.
- D.

12. Multiple Choice Question-12

- A.
- B.
- C.
- D.

13. Multiple Choice Question-13

- A.
- B.
- C.
- D.

14. Multiple Choice Question-14

- A.
- B.
- C.
- D.

15. Multiple Choice Question-15

- A.
- B.
- C.
- D.

**II. Fill in the blanks by choosing appropriate answer from those given in the bracket:
(Answer-1, Answer-2, Answer-3, Answer-4, Answer-5) 5X1 = 05 Marks**

- 1. Question-1
- 2. Question-2
- 3. Question-3
- 4. Question-4
- 5. Question-5

PART B

III. Answer any FIVE questions: 5X2 = 10 Marks

- 1. Question-1
- 2. Question-2
- 3. Question-3
- 4. Question-4
- 5. Question-5
- 6. Question-6.
- 7. Question-7
- 8. Question-8

PART C

IV. Answer any FIVE questions: 5X3 = 15 Marks

- 1. Question-1
- 2. Question-2
- 3. Question-3
- 4. Question-4

5. Question-5
6. Question-6
7. Question-7
8. Question-8

PART D (Section I)

V. Answer any FIVE questions:

5X5 = 25 Marks

1. Question-1
2. Question-2
3. Question-3
4. Question-4
5. Question-5
6. Question-6
7. Question-7
8. Question-8

PART D (Section II)

VI. Answer any THREE questions:

10X3 = 30 Marks

1. Question-1
2. Question-2
3. Question-3
4. Question-4
5. Question-5