Government of Karnataka

DEPARTMENT OF COLLEGIATE AND TECHNICAL EDUCATION

Programme	**Civil Engineering**	**Semester**	**V**
Course Code	**20CE52I**	**Type of Course**	**Specialization Pathway**
Course Name	**Town Planning and Green Building**	**Contact Hours**	**36 hours per week**
L:T:P	**104 : 52 : 312**	**Credits**	**24**
CIE Marks	**240**	**SEE Marks**	**160**

Introduction

Welcome to the curriculum for Town planning and Green Building Specialization. This specialization course is taught in Bootcamp mode. Bootcamps are 12 weeks, intense learning sessions designed to prepare you for the practical world – ready for either industry or becoming an entrepreneur. You will be assisted through the course, with development-based assessments to enable progressive learning. In this course, you'll learn how to foster innovative and responsive urban & regional development policies and practices for planned development. Leading to the successful completion of this boot camp, you shall be equipped to either do an internship at an organization working in Town planning and green building related industry or do a project in Town planning & Green building. After the completion of your Diploma, you shall be ready to take up roles like Town Planner, Green Engineer, Junior Engineer, Site Engineer.

This course will teach you Methods of data collection, data analysis, forecasting, designing, evaluating, management and maintenance of different components of City and Green Buildings. Details of the curriculum is presented in the sections below.

Pre-requisite

Before the start of this specialization course, you would have completed the following courses;

In the 1st year of study, you would have studied Engineering Mathematics, Communication Skills, Civil Engineering Graphics, Statistics & Analysis, Basic IT Skills, Basic Surveying, Fundamentals of Electrical and Electronics Engineering, Project Management skills, Construction Materials, Environmental Sustainability.

In the 2nd year of study, you would have studied Engineering Mechanics and Strength of Materials, Modern Surveying, Construction Techniques, Building Drawing using CADD, Concrete Technology, Building Estimating and valuation, Site Management, Design and detailing of RCC structures.

In this year of study, you shall be applying your previous years learning along with specialized field of study into projects and real-world applications.

Instruction to course coordinator:

1. Each Pathway is restricted to a Cohort of 20 students which could include students from other relevant programs.
2. Single faculty shall be the Cohort Owner.
3. This course shall be delivered in boot camp mode.
4. The industry session shall be addressed (in contact mode/online / recorded video mode) by industry experts only.
5. The cohort owner shall identify experts from the relevant field and organize industry sessions as per schedule.
6. Cohort owner shall plan and accompany the cohort for industrial visits.
7. Cohort owners shall maintain and document the industrial assignments and weekly assessments, practices and mini projects.
8. The cohort owner shall coordinate with faculties across programs needed for their course to ensure seamless delivery as per time table.
9. The cohort owner along with the classroom can augment or use for supplementally teaching online courses available although reliable and good quality online platforms like Karnataka LMS, Infosys Springboard, NPTEL, Unacademy, SWAYAM, etc.
10. Cohort owner shall guide the cohorts for the execution of mini project.

Course outcome: At the end of the semester students will be able to,

CO1	**Identify the need for planned development by adhering to legal implications of law/standards.**
CO2	**Collect essential data from reliable sources analyze & interpret**
CO3	**Conduct various types of Survey and handle spatial data by using tools and software's**
CO4	**Identify the suitable location & apply the technology used in smart city concept**
CO5	**Apply green building rating system to evaluate the level of sustainability of a building project.**

Detailed course plan

Week	C O	P O	Days	1st session (9am to 1 pm)	L	T	P	2nd session (1.30pm to 4.30pm)	L	T	P
1	1	1	1	**Introduction** History of Town Planning, Time as a dimension of built form, Human settlements-civilization, Origin of human settlement, Society, Social stratification, Agrarian classes, Industry and labor, Tribe: profile and location, Village structure and change, Forms- caste, class, power & gender. Reference & links *1.file:///C:/Users/PC%203/Downloads/TownPlanningScheme_24-05-2020.pdf* *2. https://www.drishtiias.com/pdf/indus-valley-civilization.pdf* *3. https://dhsgsu.edu.in/images/Reading-Material/Anthropology/ANT-CC-223-UNIT-4IV.pdf* *Demonstrate using any of online sources* **Case Exercise:** City pattern Study-Short trip to city/town covering old parts as well as recently planned developments and understand how a settlement grows and driving forces behind the growth.	1	1	2	**Urban Processes** • Criteria's of location and development of towns in history, Political, economic, technological, social and cultural factors which have shaped settlements through history. • Indian city typologies and study of urban growth, decline, renewal in different cities based on function, location etc. • Town and country planning- Goals and objectives of planning; • Components of planning; • Benefits of planning; • Arguments for and against planning **Case Exercise:** Presentation on stages in the evolution of the city. Identify what has made the city unique and understand how social & economic forces (port, tourism, industries etc.) has shaped the city.	1		2

	1,2		2	**Development plan:** • Types of development plans. • Master plan. • City development plan. • Structure plan. • District plan. • Action area plan. • Subject plan. • Town planning scheme. • Regional & sub-regional plan. • Sector plans and spatial plans. Reference & links *1file:///C:/Users/PC%203/Desktop/CIVIL%20&%20Allied%20CRW/TP/research%20paper-%20developement%20plan.pdf* **Case Exercise:** Distance, Area & Space Perception-Conduct survey of college campus/any area with varying characters using Total Station/Survey instruments.	1	1	2	**Case Exercise:** • Prepare a plan indicating plot sizes, FAR, building height and open space using CADD SOFTWARE using the data obtained from field. • Prepare contour map for the data obtained from field	1		2
	1,2	1,4, 5	3	**Physical and Socio-Economic Surveys:** • Preparation of Base maps at different scales, • Contents of base maps, • Techniques for conducting surveys for land use, • Building use, density planning and other surveys	2		2	**Case Exercise:** Prepare base plan using QGIS (for the data obtained from field) https://www.youtube.com/watch?v=x-rNnlAiCFY https://youtu.be/lj7JS_Vu6Uc	1	1	1

				Case Exercise: • QGIS –Introduction to QGIS, Applications, Installation & Demonstration.							
	1,2	1,4	4	**QGIS Case Exercise Continued..**			4	**QGIS Case Exercise Continued.**			3
			5	Developmental Assessment				Assessment Review and corrective action			3
	1,2		6	*Industry Session- Demonstration of Maps, survey Formats/Checklists, Base maps etc.*	1	1	3	*Industry class and assignment*			
2	1,2	1,2	1	*Peer review on industry class.*		4		**Types of Data and Sources**: • Difference between data, information and knowledge. • Distinction between facts and opinions. • Data requirements for urban and regional planning. • Sources of primary and secondary data-e.g. Census, NSSO etc. • Problems on Moving Average Method in Time Series	2		1

	1,2	1,4, 5	2	**Data Presentation:** **case exercise 1.** • Collect population data (5 decades) from census records and perform trend analysis by moving average method manually and using spreadsheet. • Present the results in the form of tables and charts using spreadsheet • Preparation of tables and charts, interpreting statistical, qualitative and spatial data to identify trends, patterns and processes.	2		2	**Case Exercise 2.** • Introduction to KGIS, Extraction of cadastral data from KGIS • Collect demographic details of an area from Spatial data and perform trend analysis by using spreadsheet. • Present the results in the form of tables and charts using spreadsheet. • Preparation of tables and charts, interpreting statistical, qualitative and spatial data to identify trends, patterns and processes https://kgis.ksrsac.in/kgis/home.aspx			3
	1,2		3	**Development and development control:** • Regulations. • Types of development control. • Implications of violations of development control regulations. • Conforming and Nonconforming land uses. • Compatible and non-compatible land uses. • Concept of Locally Unwanted Land Use(LULU) and Not in my Backyard (NIMBY) Case studies on Above topics.	2		2	**Governance of Planning** • District Planning Committees, • Metropolitan Planning Committees, • Objects & Principles of town planning. **Case Exercise:** Collect data from local government body & Prepare a presentation on organization structure of Town & Country Planning Authority and the activities performed by it. http://www.dtcp.gov.in/en	1		2
	1,2	1,3, 4	4	**Planning Legislation and Regulations**				**Case Exercise:**			3

				• Town Planning Legislation 73rd and 74th amendment • **Outlining KTCP Act 1961 and KUDA Act** 1.Laws related to Change of Land Use: 2.Laws related with Zoning, 3.Planning Permissions and Building Permission. 4.Identification of land use conflict and methods of resolution- 1.http://www.dtcp.gov.in/en 2.https://prsindia.org/files/bills_acts/acts_states/karnataka/1963/1963KR11.pdf 3.Karnataka_Urban_Development_Authorities_Act_1987.pdf (dtcp.gov.in) Examples and Case Studies	1		3	1. Refer to KTCP act 1961and KUDA Act Collect data on Common Zonal regulations w.r.t • Hierarchy of Land use • Change of Land use- Procedure, check list and documents required. 2. Collect/obtain the masterplan of the city /village map (Visit nearest TPA)/town and outline the features. http://www.dtcp.gov.in/en			
	1,2	1,2	5	Developmental Assessment				Assessment Review and corrective action			3
			6	*Industry Session- Land conversion Process and Documentation.*			5	*Weekly industry assignment.*			

Week	CO	PO	Days	1st session (9am to 1 pm)	L	T	P	2ND session (1.30pm to 4.30pm)	L	T	P
3	3	1,4, 5	1	*Peer review on industry class.*		4		**Topographical Surveying: Concepts and Techniques and GPS** • Procedure for topographic surveying. • Applications of topographical maps. • Relief-methods of representing relief	1		2

								• Maps – Types of Maps. https://www.youtube.com/watch?v=EnbWVDM4JeM			
	2,3	1,4, 5	2	• **Case Exercise:** Collect study and Demonstrate features like terrain, natural resources, Transportation networks etc from the Topo sheet.	1		3	• **Case exercise Continuation**			3
	2,3	1,4, 5	3	**GPS**-Global Positioning System • Application of GPS in Urban planning • Various Satellites used by GPS • GPS Receivers- Pictorial Representation of working principle. • Hand held GPS Receiver • Demonstration, • Functions. Field procedure- Accuracy, Errors	2		2	Case Exercise: Using handheld GPS instrument • Establish co-ordinates of important station points of a given boundary and perform survey. 1. Obtain length between two station points. Calculate area of the boundary using GPS instrument.	1		2
	3	1,3, 5	4	**Spatial Data Infrastructure** • Introduction • Roles of NNRMS, NUIS, National Urban Observatory, • Introduction to GIS • Concept, Components and Functions of GIS Case Exercise: Exposure to Spatial data handling tools. Prepare a report on uses and applications of GIS in Urban Planning **Spatial data handling tools:** • BHUVAN, KGIS etc.,	2		2	Case Exercise: Demonstrate the collection of cadastral information of a sample (neighborhood/residence) by using any of the tools.			3

				• DISHANK, BHOOMI etc.,							
			5	CIE 1– Written and practice test				Assessment Review and corrective action			3
	3		6	*Industry class- Case study on spatial data handling tools.*	1		4				
4	2,3	1,4 ,5	1	*Peer review on industry class*		4		**Aerial survey:** • Limitations of Traditional Surveys for Planning • Type of aerial Survey-Introduction to UAV survey. • Merits & demerits of UAV(drones) survey, • Application of drones in civil engineering. • Video demonstration of drones in urban planning; • ORI Images- QGIS software-conversion procedure from ORI sheets to maps- Swamitva central govt scheme – Commissioner survey settlement and land records, KR circle	1		2
	3	1,4 ,5	2	Purpose of 3D animation & visualization system. System architecture (Process of drone survey)	2	1	1	Video Demonstration on 3D animation. Types of drone used for civil engineering field.		2	1
	2,3	1,4 ,5	3	Process of terrain creation & building model distribution.	2		2	Integration of 3D modeling from UAV survey in BIM.(can use video demonstration)	1		2

				Video demonstration							
	2,3	1,3 ,5	4	Introduction to remote sensing. Objectives of remote sensing, working process of remote sensing , Types of remote sensing system.	2	2		Application of remote sensing. Remote sensing platforms .	1		2
		1,4 ,5	5	Developmental Assessment				Assessment Review and corrective action			3
	3		6	*Industry class-Drone Survey*	2		3				
5	1,2, 3	1,4 ,5	1	*Peer review on industry class*		4		**INFRASTRUCTURE PLANNING** • Role of physical planner in planning of utilities and services, • Objectives of utilities and services Case Exercise: List the various utilities and services required for a Town.	1		2
	1,2, 3	1,2 ,5	2	**Provisions of Utilities & Services** • Transportation Systems- Hierarchy of roads and its legal policies in planning	3		1	• Water supply systems- Location and space requirements for water distribution systems, Legal and government policy for urban and rural water supply, Familiarizing to CPHEEO manual and guidance-	1		2
	1,2, 3	1,4 ,5	3	• Sanitation and sewer systems Location criteria. • Innovative approaches in waste management	1		3	• Social Infrastructure-Education, health, safety, security and other public services.			3

								• Telecommunication services Location criteria for mobile phone towers				
	1,2, 3	1,4 ,5	4	• Recreation- Play grounds, Parks, Religious centers, Club house, Theaters, Stadiums, Spa's, Swimming polls etc	1		3	• Other Underground Services (Provision of gas and oil pipelines).				3
		1,4 ,5	5	CIE 2– Written and practice test				Assessment Review and corrective action				3
	1,2, 3		6	*Industry class*	1		4	*Industry weekly assignment*				
Learning Outcomes: At the end of the week 6, students will be able to,												
6	1,2, 3	1,2 ,5	1	*Peer review on industry class*		4		Case Exercise: Mini Project • Select a suitable site for a residential/commercial/ Industrial layout. • Conduct Boundary Survey Continued- Conduct Boundary Survey	2			1
	1,2, 3	1,4 ,5	2	Prepare layout plan of Infrastructure required as per the Town planning norm's.	2		2	Continued-				3
	1,2, 3	1,4 ,5	3	Make provision for services and other utilities as per town planning norm's.	1		3	Continued-				3
	1,2, 3	1,2 ,3	4	Prepare a master plan for the above using AutoCAD	1		3	Continued-				3

			5	Developmental Assessment				Assessment Review and corrective action			3
	1,2, 3		6	*Industry class*	2		3	*Industry weekly assignment*			
7		1,4 ,5	1	*Peer review on industry class*		4		**Concept of Smart City:** https://mohua.gov.in/ https://smartcities.gov.in/ • What is smart city • Why is a Smart city. • How is a Smart city. https://smartnet.niua.org/sites/default/files/resources/making_a_city_smart_mar2021.pdf			3
	4	1,4 ,5	2	**What is smart city** Case Exercise: Study the Smart city concept by GOI and using https://smartcities.gov.in/ **Why is a Smart city.** Case Exercise: Concept of Area based development(three model), core element of smart city infrastructure, component of area based development.	3		1	Prepare & present benefits of smart city. Field visit			3
	4	1,4 ,5	3	**How is a Smart city.** Case Exercise:				Field visit			3

				Smart city selection process, Process of smart city proposal(SCP). Process of implementation & financing. Citizen collaboration. Challenges in smart city.	2		2					
	4	1,4,5	4	**Assessment/Evaluation:** Introduction about smart city technologies. Smart city component, Importance of smart city. Smart city thematic areas. Strategic roadmap assessment. Fostering sustainability with smart cities. Features of a smart city.			4	Concept of DPR. Download a DPR prepared and sample DPR report. considering other city.	2		1
			5	CIE 3 – Written and Practice Test				Assessment Review and corrective action			3
	4		6	*Industry Class*	2		3	*Industry weekly assignment*			
Week	**CO**	**PO**	**Days**	**1st session (9am to 1 pm)**	**L**	**T**	**P**	**2ND session (1.30pm to 4.30pm)**	**L**	**T**	**P**
8	4	1,4.5	1	Weekly Assignment review		4		Field visit and mini Project: • List out the recognized smart cities in Karnataka state. • Selection criteria for Smart Cities.	1		2
	4	1,4,5	2	Select a nearby Smart city. Identify the Smart works planned and implemented.	2	2		Case Exercise : Field site/Video demonstration			3

	4		3	Architecture Conceptualization Smart City Sensors Monitoring in smart city	2	2		Smart City Challenges. Presentation on steps involve to make a normal city into smart city	1		2
	4	1,4 ,5	4	Concept of IOT models used in smart city.(video demonstration)	2		2	Case excises : Present how smart city secured & Trusted			3
			5	Developmental Assessment				Assessment Review and corrective action			3
	4	1,4 ,5	6	*Industry Class*	2	1	2	*Industry weekly assignment*			
9	5	1,4 ,5	1	Weekly Assignment review		4		**Green Building:** Introduction, Need & Scope for green building and sustainable development. Reference YouTube video links: 1:*https://www.youtube.com/watch?v=YkfpYeVQXxA* 2: *https://youtu.be/IJ9qvOKEQ9A* *Case exercise:* 1. Conduct a local survey to identify an ecofriendly home in a nearby locality and prepare a report. 2.http://www.asiabusinesscouncil.org/docs/BEE/GBCS/GBCS_CII.pdf	1		2

								3.https://nzeb.in/case-studies/nzebs-in-india/nzebs-in-india-case-studies-list/ipb-case-study/ 3. Prepare a presentation on need for Green building? (Considering Global warming, energy crunch, resource crunch, global economy) *(Note: Conclusions and recommendations are must)*			
	5	1,4 ,5	2	• Principles • Features • Tangible and intangible benefits towards sustainable development. *Case exercise:* 3. Conduct a comparative study on green building over other conventional building. *(Note: Prepare a presentation and present)* 4. Prepare a report on effects of population density on biodiversity. *(Note: Conclusions and recommendations are must)*	2		2	**Sustainable site selection and Planning:** • Criteria for site selection. • Storm water management. • Effects of the building on light pollution. • Heat island effect **Location and transportation:** • Sensitive land protection, • Neighborhood density, • Green transportation. Promotion of MRTS. *Case exercise:* 5. Select a site for construction of Green building and analyze the possibility of fulfilling the site selection criteria. 6. Prepare selected site key plan using Auto CAD. *(Note: Conclusions and recommendations are must)*	2		1

	5	1,4 ,5	3	**Shape of building:** • Orientation of the building on the site relative to sun and wind, • Size and compactness of building (e.g., occupants per square foot/meter), • Door and window locations, • Concept of SBC. *Case exercise:* 7. Indicate the Orientation of building & water source location in key Plan using Auto CAD.	1		3	8. Measure and compare solar gain through windows that face various cardinal directions using Revit. 9. Determine the SBC of selected Site. *(Note: Conclusions and recommendations are must)* **Energy and atmosphere:** • Fundamentals of Energy, • Primary Energy use in Buildings, energy efficiency, Energy reduction, • Energy from Wind Turbines. 10. Measure kilowatt hours and determine energy-saving solutions & compare with solar panel energy production.	1		2
	5	1,4 ,5	4	Carbon Foot Print: • The carbon footprint and its significance, • Carbon footprints that results from the building construction and operations. • Reducing carbon footprint. *Case exercise:* 11. Calculate carbon footprint of an individual person per day.	1		3	*Case exercise:* 12. Calculate Carbon Footprints of various construction materials and Prioritize ecofriendly materials.			3

				(Write your recommendations to reduce carbon footprint) *(Write your recommendations on replacing solar panels as alternative*							
		1,4,5	5	CIE 4 – Written and Practice Test				Assessment Review and corrective action			3
	5		6	*Industry Class*			5	*Industry weekly assignment*			
10	5	1,4,5	1	Weekly Assignment review		4		**Introduction to Autodesk Green Studio:** Demonstration and practice of Energy analysis and arriving for an energy efficiency check. Prepare a 3D model of 1BHK Residential building using Revit/AutoCAD.	2		1
	5	1,4,5	2	Hands-on- Analyze energy efficiency of selected building using Autodesk Green Studio. Reference video links: https://www.linkedin.com/learning/green-building-studio-energy-analysis/welcome-to-green-building-studio?autoplay=true&trk=course_preview&upsellOrderOrigin=default_guest_learning	2		2	Continuation			3
	5	1,4,5	3	**Water:** • Water efficient plumbing systems, • Water metering, • Reclaimed water, • Water treatment,	1		3	**Water:** • Rainwater harvesting & recharging methods for roof & non-roof, • Water issues in the landscape. • Waste water treatment and disposal.	1		2

				• Recycle and reuse systems. https://youtu.be/UcyprU5ZrHE Case exercise: 11. Identify naturally available sustainable water sources in and around the site. *(Note: Conclusions and recommendations are must)* 12. How do you make use of reclaimed water efficiently in your household? 13. Conduct a market survey on water-saving plumbing fixtures.				Case exercise: 14. Prepare a Presentation showing the methodology applied to implement grey recycled water for an individual home and community building. *(Note: Conclusions and recommendations are must)* 15. Estimate quantity of Rain water can be harvested for a selected building for available rainfall data.			
	5	1,4 ,5	4	**Materials and waste management:** • Identification of Eco-friendly Building material. • Recyclable, Rapidly renewable, sustainable wood products. • Local materials, re-purposed materials; overall reduction in material. Case exercise: 15. Conduct a survey to identify materials that can be reclaimed and used. 16. Prepare a comparative estimate in excel showing the cost difference between any of the ecofriendly method of	1		3	Waste Management- Segregation of waste, 3R concept. • Bio methanation, • Plastic waste recycling technology, • Recycling technology for C&D waste. Case exercise: 18. Conduct market survey for cost analysis and compare it with CC block and table moulded bricks using excel. *(Note: Conclusions and recommendations are must)*	1		2

				flooring with Vitrified or Granite flooring and prepare a report on it.								
			5	Developmental Assessment				Assessment Review and corrective action				3
	5		6	*Industry Class*1.			5					
Week	**C O**	**P O**	**D a y s**	**1st session (9am to 1 pm)**	**L**	**T**	**P**	**2ND session (1.30pm to 4.30pm)**	**L**	**T**	**P**	
11	5	1.4 .5	1	*Peer review on industry class*		4		**Indoor environment quality** • Indoor air quality, • Moisture and temperature control, • Connect occupants to nature via daylight, views and biophilic design. *Case exercise:* 17. Visit nearby Pollution control board /Municipal office/ Corporation/ Gram panchayat & Collect data to Control environmental toxins such as mold and radon. 18. Prepare a report on Study of psychological impact of daylight. *(Note: Conclusions and recommendations are must)*	1		2	
	5	1,3 ,5	2	**Social justice:** • Affordability, • Accessibility,				**Life cycle assessment:** • Ecological impacts across the life of building materials from creation to use to end-of-life.				

				• Positive or negative impacts to communities locally and globally due to green building design choices. *Case exercise:* 19. Prepare a BOQ with Rate analysis for Green building components (at least 5no's) and compare it with same Conventional building components.	2		2	• Embodied energy in furniture and building materials. *Case exercise:* 20. Follow a building product from "cradle to grave" or "cradle to cradle". 21. Compare old and new building practice.	1		2
	5	1,4 ,5	3	**Economics:** • Cost-saving features, • Long-term budgeting, • Trade-offs between cost and performance. *Case exercise:* 22. Calculate amount of energy savings by adopting use of reclaimed water, solar panels & wind turbines. 23.Compare costs of green building materials.	2		2	**Operations and metrics:** • Green cleaning, occupant education and training. • Building information modeling (BIM). • Performance monitoring. 24. Differentiate and compare environmental effects of various cleaning products on air and water quality. 25. Prepare a checklist to monitor Electronics Appliances in a green building.	2		1
	5	1,4 ,5	4	**Site Visit:** 25. Conduct survey to identify the nearest existing building which complies at least any 5 green building concepts incorporated and make a detailed report showing comparative study with conventional method.			4	**Site Visit:** 26. Prepare a detailed AutoCAD drawing for a residential building showing Green building components and also prepare detailed BOQ incorporating Green Infrastructure.			3
			5	CIE 5– Written and practice test				Assessment Review and corrective action			3

	5		6	*Industry Class*			5	*Industry weekly assignment*			
12	5		1	*Peer review on industry class*		4		**Green building certification:** • Building assessment and eco labels – ISO-14001 & ISO- 14064. • GHG removal & Verification process of GHG. Case exercise: 27. List the standards of code of practice related to above ISO's	1		2
	5	1,3 ,5		Assessment structure and process- GRIHA- Implementation of PMAY Scheme. GRIHA Online Registration process.	3		1	Case exercise: 26. Collect schedule of Ratings for Green building from agencies like GRIHA and Compare the collected ratings for the nearest Green project. *(Note: Conclusions and recommendations are must)*			3
	5	1,4 ,5		Assessment structure and process- IGBC IGBC- Online Registration process, Levels of Certification,	2		2	Case exercise: 27. Prepare a mock presentation showing the Green measures adopted for IGBC Certification of a nearest public building. *(Note: Conclusions and recommendations are must*			3
	5	1,4 ,5		Assessment structure and process- LEED-INDIA-	1		3	Case exercise: 28. Collect schedule of Ratings for Eco friendly home ratings from different agencies like LEED-INDIA and Compare the	1		2

				Requirements to get LEED-INDIA certificate for a school building.				collected ratings schedule and prepare a schedule for the nearest school building project. *(Note: Conclusions and recommendations are must)*			
			5	Developmental Assessment				Assessment Review and corrective action			3
	5		6	*Industry Class*			5	*Industry weekly assignment*			
13			1	**Internship** **a) Secondary research on various industries and their operations to identify at least 3 companies along with the areas of work interest and develop an internship plan that clearly highlights expectations from the industry during the internship.** **b) Design and develop a cover letter for an internship request to all 3 identified companies and the resume to be submitted to potential companies.** **c) Prepare for an internship interview to highlight your interests, areas of study, career aspirations and personnel competence – including the areas of learning you expect to learn during internship.**				**Project** **a) Identification of the problem statement (from at least 3 known problems) the students would like to work as part of the project – either as provided by faculty or as identified by the student. Document the impact the project will have from a technical, social and business perspective.** **b) Design and develop the project solution or methodology to be used to solve at least one of the problems identified.** **c) Prepare a project plan that will include a schedule, WBS, Budget and known risks along with strategies to mitigate them to ensure the project achieves the desired outcome.**		

Note: Saturday session from 9 AM -2 PM

CIE and SEE Assessment Methodologies

CIE Assessment	Assessment Mode	Duration In hours	Max Marks
Week 3	CIE 1– Written and practice test	4	30
Week 5	CIE 2– Written and practice test	4	30
Week 7	CIE 3– Written and practice test	4	30
Week 9	CIE 4– Written and practice test	4	30
Week 11	CIE 5– Written and practice test	4	30
	On line Course work (Minimum 10 hours online course with certification from (SWAYAM/NPTEL/Infosys Springboard)		40
	Profile building for Internship / Submission of Synopsys for project work		20
Portfolio evaluation (Based on industrial assignments and weekly developmental assessment) *			30
TOTAL CIE MARKS (A)			**240**
SEE 1 - Theory exam (QP from BTE) Conducted for 100 marks 3 hrs duration reduced to 60 marks		**3**	**60**
SEE 2 – Practical		**3**	**100**
TOTAL SEE MARKS (B)			**160**
TOTAL MARKS (A+B)			**400**

* The industrial assignment shall be based on peer-to-peer assessment for a total of 10 marks (on a scale of 1 to 10) and in the event of a group assignment the marks awarded will be the same for the entire group, the developmental assessment will be for a total of 20 marks and based on MCQ/case study/demonstration and such other assignment methods

Assessment framework for CIE (1 to 5)

Note : Theory to be conducted for 1 hour and practice for 3 hours, total duration of exam – 4 hours

Programme	**Civil Engineering**	**Semester**		**V**	
Course	**Town Planning & Green building**	**Max Marks**		**30**	
Course Code	**20CE52I**	**Duration**		**4 hours**	
Name of the course coordinator					
Note: Answer one full question from each section.					
Qn.No	**Question**	**CL L3/L4**	**CO**	**PO**	**Marks**
	Section-1 (Theory) – 10 marks				
1.a)	As a Town Planner what are the Techniques used for conducting surveys for land use & Contents of base maps.	L3	1	1,3,4	5
b)	As project Manager how you assign a Role of physical planner in planning of utilities and services	L4	1,3	1,2,5	5
2.a)	Town planning department switching to do Arial survey, what are the merits & demerits will face while using UAV(unmanned Arial vehicle) in the town.	L3	1,2,4	1,4,5	5
b)	As own builder how you will take Concept of Planning Permissions and Building Permission and apply Laws related with Zoning.	L4	3,4	1,3,4	5
	Section-2 (Practical) - 20 marks				
3)	Town planning department given a permission to do layout ,assume your developer/Civil engg, write the Procedure and Calculate area of the given boundary using GPS instrument.	L3 & L4	1,3	4,5	20
4)	Prepare layout plan of Infrastructure required as per the Town planning norm's using any BIM software like CADD/Sketchup/3DXmax etc	L4	1,4,5	1,4,5	20

Note : Theory questions shall be aligned to practical questions

Assessment framework for SEE 1 (Theory)

Programme	:	**Civil Engineering**			
Semester	:	**V**			
Course	:	**Town Planning & Green building**	**Max Marks**	:	**100**
Course Code	:	**20CE52I**	**Duration**	:	**3 Hrs**

Instruction to the Candidate: Answer one full question from each section.

Q.No	Question	CL	CO	Marks
	Section-1			
1.a)	There is a new hostel building going to start by next week, how topographical survey will do to prepare the topographical map. Also explain method of relief ?	L4	1,2,3	10
b)	In an smart city how GPS equipment will help & its principle ,also major challenges occur while using GPS ?	L3		10
2.a)	Town planning department switching to do Arial survey, what are the merits & demerits will face while using UAV(unmanned Arial vehicle) in the town.	L3		10
b)	In urban planning department hire a 2 fresher engineers to do the Arial survey, as a executive egg explain drone survey procedures and its types for fresh engg?	L4		10
	Section-2			
3.a)	If you are a town planning engg, which types of Arial survey will do like remote sensing or drone survey and justify?	L3	2,3	10
b)	Karnataka Government planning to lift the water from KRS to Bengaluru for drinking purpose , explain the legal & government policies for urban & rural water supply system as per CPHEEO manual.	L4		10
4.a)	Government of Karnataka planning to do Smart city in Mandya , as a Town planner what are the concepts should consider to do smarty City as per the GOI norm's	L3		10
b)	Explain the infrastructure required as per the Town Planning norm's for new layout of having 1200plots	L4		10
	Section- 3			
5.a)	As a Project manager , what are the challenges will occur during the development of Smart City.	L3	3,4	10
b)	As a civil engg , explain the IOT model used in the smarty city.	L4		10
6.a)	If you are an Project manager how will you explain scope of green building & sustainability development for client.	L4		10
b)	From past 2year in a village suffered from water scarcity, as a civil engg how will manage storm water and reduce the water scarcity.	L3		10
	Section-4			
7.a)	If you are civil engineer , how you will orient the building, doors and windows with respect to wind & sun & justify.	L4	3,4,5	10
b)	As a engineer how you will suggest concept of energy efficiency in the building	L3		10

8.a)	What are the precaution will take to reduce the carbon footprints from constructions & operation?	L3		10
b)	Explain the concept of ecofriendly building materials & how you will create awareness to the people.	L4		10
	Section-5			
9.a)	How psychological impact of daylight will effects on human being & how to balance impact of daylight.	L4	4,5	10
b)	What are the features help to save the cost & performance of the building?	L3		10
10.a)	As civil engineer how you will explain concept of GRIHA and IGBC.	L4		10
b)	There is an new polytechnic constructed at Mandya, how you will do assessment and process to provide LEED India certificate.	L3		10

Scheme of Evaluation for SEE 2

Sl. No	**Description**	**Marks: 100**
Problem statement	Urban and Town planning department decided to do layout with all amenities, as a civil engineer prepare Master plan & highlights of your layout to attract the customer.	
1	Procedure for topographical survey	20
2	Identify the boundary & calculate the area using GPS instruments.	20
3	Prepare a master plan for the above using AutoCAD(Make provision for services and other utilities as per town planning norm's.)	30
4	Prepare a BOQ with Rate analysis for Green building components (at least 2no's) and compare it with same Conventional building components.	20
5	Viva	10
Total		**100**

Sl no	References
1	*History of Human Settlements, Sengupta, B.K., New Delhi, Institute of Town Planners, India 2002*
2	*Introduction to Settlement Geography, Sumita Ghosh , Orient BlackSwan , 1998*
3	*Fundamentals of Town Planning, G.K. Hiraskar, Dhanpat Rai Publications, 2012*
4	*Architecture and town planning- by, Sajjan V Wagh & pravin R Minde. Tech-Neo Publications.*
5	*Principles of Town planning and Architecture- by Hirannay Biswas.*
6	
4	*URDPFI Guidelines (Volume I and II), Ministry of Urban Development, Government of India, 2015*
5	*Cities, Urbanization& Urban Systems (Settlement Systems), K.Siddhartha and S.Mukherjee, Kitab Mahal, 2016*
6	*How to Conduct Survey, Arlene Fink, Sage, 2013*
7	*The Survey Methods Workbook, A. Buckingham and Peter Saunders, Rawat, 2014*
8	*Fundamentals of Statistics, S.C. Gupta, Himalaya Publishing House, 2013*
9	*Surveying Vol. I &II, B.C.Punmia, Standard Book House, New Delhi,1983*
10	*Surveying (Volume I), S. K. Duggal, TMH*