



PRESIDENCY UNIVERSITY

(Established under the Presidency University Act, 2013 of the Karnataka Act 41 of 2013)

[2022-23 EVEN/ WINTER SEMESTER]

COURSE HAND OUT [Revision 02 - Jan 2022]

SCHOOL: School of Engineering DEPT: Department of Civil Engineering DATE OF ISSUE: 16-02-2023

NAME OF THE PROGRAM : B. Tech. (Civil Engineering)
P.R.C. APPROVAL REF. : PU/AC-18.3/CIV14/CIV/2020-24
SEMESTER/YEAR : IV Semester/ II Year
COURSE TITLE & CODE : Advanced Concrete Technology & CIV2019
COURSE CREDIT STRUCTURE : 3-0-3
CONTACT HOURS : 3 periods per week
COURSE IC : Mr. Gopalakrishnan N
COURSE INSTRUCTOR : Mr. Gopalakrishnan N
COURSE URL :
PROGRAM OUTCOMES :

PO-1: Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO-2: Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO-3: Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO-4: Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO-5: Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations

PO-6: The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO-7: Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of and need for sustainable development.

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PO-8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO-9: Individual and teamwork: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO-10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO-11: Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO-12: Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change

COURSE PREREQUISITES: (Here mention the prior knowledge that the students are expected have to study this course.)

COURSE DESCRIPTION:

This course enables the students to study the composition and microstructure of concrete along with their influence on strength and deformation characteristics of concrete. The course will also focus on serviceability of concrete as well as various tests to assess the durability of concrete. Students will learn about different methods of placing and curing concrete in different conditions. Students will also be exposed to the material requirements, mix proportioning and application of special concretes namely, HPC, SCC, GPC and HPFR



COURSE OUTCOMES: On successful completion of the course the students shall be able to:

TABLE 1: COURSE OUTCOMES		
CO Number	CO	Expected BLOOMS LEVEL
CO1	Interpret the influence of the concrete components and admixtures on the properties of concrete	Application
CO2	Predict the properties and durability of hardened concrete	Application
CO3	Identify the correct concreting methods in the field depending upon the site condition	Comprehension
CO4	Choose the suitable concrete for different structures considering the on-site/client's requirements.	Application

MAPPING OF C.O. WITH P.O. [Mark H/M/L Against each of the C.O. depending on the degree of contribution of the C.O.to the P.O.]

[H-HIGH , M- MODERATE, L-LOW]

CO. No	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	H	L	H	H	-	M	H	-	L	L	-	M
CO2	H	L	M	M	-	M	M	L	L	L	-	M
CO3	H	L	H	M	-	L	H	-	L	L	-	H
CO4	H	-	H	H	-	L	H	M	L	L	-	H


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COURSE CONTENT (SYLLABUS):

Module:1: Concrete Composition and their Influence on Concrete Properties [09 Hrs] [Application]

Cement and its composition, types and grades of cement, Micro-structure of hydrated cement, Special cements, Aggregates for concrete, Chemical and Mineral Admixtures and their influence on properties of concrete.

Module: 2: Serviceability and Durability of concrete [10 Hrs] [Comprehension]

Elasticity, Stress Strain MOE – relationship, Shrinkages – Types, Factors affecting Shrinkage, Mechanism of Shrinkage, Creep- Factors Influencing Creep, Relation Between Creep and Time, Mechanism of Creep, Effect of Creep, Durability of concrete, Permeability of Concrete, physical and chemical causes for distress in concrete - Chloride Diffusion, Carbonation, Acid attack on concrete, Sulfate attack on concrete, Efflorescence, Effects of sea water on concrete, Disruption by alkali–silica reaction, Abrasion of concrete, Erosion resistance, Cavitation resistance, Types of cracking, Thermal Properties (fire and temperature), Resistance to Wear and other Properties.

Module: 3: Placing, Curing and Maintenance of concrete [09 Hrs] [Application]

Fresh and hardened concrete properties, Special concreting techniques (Placing), Sprayed concrete, underwater concrete, grouting, slip form construction, pumped concrete, concrete for liquid retaining structures, vacuum process, concrete coatings and surface treatments, concreting in hot and cold weather, mass concreting, RMC, Compacting, Curing-methods, QC and QA of concrete, Repair and maintenance, Non-destructive testing methods.

Module: 4: Special Concretes [09 Hrs] [Application]

High strength concrete, high performance concrete, self-compacting concrete, light weight concrete, autoclaved aerated concrete, fiber reinforced concrete, foam concrete, geopolymer concrete, mix design for self-compacting and high-performance concrete, Factors influencing mix proportions.

DELIVERY PROCEDURE (PEDAGOGY):

TABLE 3: SPECIAL DELIVERY METHOD/ PEDAGOGY PLANNED WITH TOPICS				
S. No	Lecture Number	Subtopic as per lesson Plan	Pedagogy adopted	Status
1	L43	Virtual demonstration of Tests on SCC	Blended Learning	Completed
2	L44	Student Group Seminars on New and Evolving Concrete Products	Participative Learning	Completed

REFERENCE MATERIALS:

Textbooks:

1. Neville A.M., “Properties of Concrete”, Prentice Hall, 5th Edition 2012.
2. Shetty, M.S., “Concrete Technology: Theory and Practice”, S. Chand and Co. Pvt. Ltd., Delhi, 2005.
3. Santhakumar A.R., “Concrete Technology”, Oxford University Press India, 2006.



References:

1. Mehta, P.K. (1983), Concrete – Structure, Properties and Materials, Prentice Hall, New Jersey, USA.
2. Pierre-Claude Aitcin, “High Performance Concrete”, Taylor & Francis, 2011.
3. Mary Krumboltz Hurd, “Formwork for Concrete”, American Concrete Institute, 2005.
4. IS: 10262 (2019), Concrete Mix Proportioning – Guideline, BIS, New Delhi

Web Based and E-Resources:

1. <https://nptel.ac.in/courses/105/106/105106176> - Advanced Concrete Technology NPTEL Course by Dr. Manu Santhanam
- 2.

SPECIFIC GUIDELINES TO STUDENTS:

COURSE SCHEDULE:

Sl. No.	ACTIVITY	PLANNED STARTING DATE	PLANNED CONCLUDING DATE	TOTAL NUMBER OF PERIODS
01	Over View of the course	17 Feb 2023	17 Feb 2023	01
02	Module: 01	20 Feb 2023	13 Mar 2023	10
02	Module: 02	14 Mar 2023	04 Apr 2023	10
03	Assignment – 1	04 Apr 2023	11 Apr 2023	-
04	Midterm	12 Apr 2023	15 Apr 2023	-
05	Module: 03 and discussion of Mid Term Examination solution	10 Apr 2023	08 May 2023	09
06	Module: 04	09 May 2023	26 May 2023	08
07	Assignment – 2	26 May 2023	29 May 2023	-
08	Seminar	29 May 2023	29 May 2023	01

DETAILED SCHEDULE OF INSTRUCTION:

PPT + White board will be adopted as the major pedagogical approach for the course

Session No.	TOPIC	SUBTOPIC	CO Number	Reference
1.	Program Integration	Program Integration		T1, T2
2.	Module 1 Concrete Composition and their Influence on Concrete Properties	Course integration for Module 1	CO1	T1, T2
3.	Module 1 Concrete Composition and their Influence on Concrete Properties	Cement and its composition, types and grades of cement	CO1	T1, T2
4.	Module 1 Concrete Composition and their Influence on Concrete Properties	Micro structure of hydrated cement	CO1	T1, T2
5.	Module 1 Concrete Composition and their Influence on Concrete Properties	Special cements	CO1	T1, T2, R1

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6.	Module 1 Concrete Composition and their Influence on Concrete Properties	Aggregates - Coarse aggregates, Fine aggregates, Manufactured sand	CO1	T1, T2
7.	Module 1 Concrete Composition and their Influence on Concrete Properties	Influence of Aggregates on Concrete Properties	CO1	T1, T2
8.	Module 1 Concrete Composition and their Influence on Concrete Properties	Mineral Admixtures	CO1	T1, T2, R4
9.	Module 1 Concrete Composition and their Influence on Concrete Properties	Influence of Mineral Admixtures on Concrete Properties	CO1	T1, T2, R4
10.	Module 1 Concrete Composition and their Influence on Concrete Properties	Chemical Admixtures	CO1	T1, T2, R4
11.	Module 1 Concrete Composition and their Influence on Concrete Properties	Influence of Chemical Admixtures on Concrete Properties	CO1	T1, T2, R4
Module 1 Concluded				
12.	Module 2 Serviceability and Durability of concrete	Course integration for Module 2	CO2	T1, T2
13.	Module 2 Serviceability and Durability of concrete	Elasticity, Shrink and Creep, Stress Strain MOE – relationship	CO2	T1, T2
14.	Module 2 Serviceability and Durability of concrete	Shrinkages – Types, Factors affecting Shrinkage, Mechanism of Shrinkage.	CO2	T1, T2
15.	Module 2 Serviceability and Durability of concrete	Creep- Factors Influencing Creep, Relation Between Creep and Time,	CO2	T1, T2
16.	Module 2 Serviceability and Durability of concrete	Mechanism of Creep, Effect of Creep,	CO2	T1, T2
17.	Module 2 Serviceability and Durability of concrete	Durability of concrete, physical and chemical causes for distress in concrete, transport of fluids in concrete, Diffusion, Absorption	CO2	T1, T2
18.	Module 2 Serviceability and Durability of concrete	Carbonation, Acid attack on concrete, Sulfate attack on concrete	CO2	T1, T2
19.	Module 2 Serviceability and Durability of concrete	Efflorescence, Effects of sea water on concrete, Disruption by alkali-silica reaction, Abrasion of concrete	CO2	T1, T2
20.	Module 2 Serviceability and Durability of concrete	Erosion resistance, Cavitation resistance, Resistance to Wear and other Properties.	CO2	T1, T2
21.	Module 2 Serviceability and Durability of concrete	Types of cracking, Thermal Properties (fire & temperature)	CO2	T1, T2
Module 2 Concluded				
22.	Module 3 Placing, Curing and Maintenance of concrete	Course integration for module 3	CO3	T1, T2
23.	Mid-term Examination	Discussion of solution and scheme of evaluation for Mid-term Examination	CO3	
24.	Module 3 Placing, Curing and Maintenance of concrete	Review and summary of fresh and hardened properties of Concrete	CO3	T1, T2, R3
25.	Module 3 Placing, Curing and Maintenance of concrete	Special concreting, techniques (Placing), Sprayed concrete, underwater concrete, grouting, slip form construction	CO3	T1, T2
26.	Module 3 Placing, Curing and Maintenance of concrete	Pumped concrete, concrete for liquid retaining structures, vacuum process,	CO3	T1, T2

27.	Module 3 Placing, Curing and Maintenance of concrete	Concrete coatings and surface treatments. Concreting in hot and cold weather.	CO3	T1, T2
28.	Module 3 Placing, Curing and Maintenance of concrete	Mass concreting, RMC,	CO3	T1, T2
29.	Module 3 Placing, Curing and Maintenance of concrete	Compacting and Curing methods, QC and QA of concrete	CO3	T1, T2
30.	Module 3 Placing, Curing and Maintenance of concrete	Repair and maintenance, Non-destructive testing methods.	CO3	T1, T2
Module 3 Concluded				
31.	Module 4 Special Concretes	Course integration for module 4	CO4	T1, T2
32.	Module 4 Special Concretes	Fiber reinforced concrete, Light weight concrete	CO4	T1, T2
33.	Module 4 Special Concretes	Autoclaved aerated concrete, Geopolymer Concrete	CO4	T1, T2, CN
34.	Module 4 Special Concretes	Self-compacting concrete (SCC) – Properties and Tests. Virtual Demonstration of Tests on SCC.	CO4	T1, T2, CN
35.	Module 4 Special Concretes	Briefing of mix design for SCC	CO4	T1, T2, CN
36.	Module 4 Special Concretes	High strength concrete and High-performance concrete (HPC)	CO4	T1, T2, CN
37.	Module 4 Special Concretes	Briefing of mix design for HPC	CO4	T1, T2, CN
38.	Module 4 Special Concretes	Factors influencing Mix proportions for SCC and HPC and numerical examples on Mix design	CO4	T1, T2, CN
Module 4 Concluded				
39.	Student Seminars	Student Group Seminars on New and Evolving Concrete Products	CO4	

ASSESSMENT SCHEDULE:

TABLE 6 ASSESSMENT SCHEDULE							
Sl. No.	Assessment type	Contents	Course outcome Number	Duration in Hours	Marks	Weightage	Venue, Date & Time
1	Midterm Examination	Module 1 Module 2	CO 1, CO 2	1 hour	60 Marks	30%	12 April 2023
2	Assignment - 1	Serviceability and Durability of concrete	CO 2	-	15 Marks	7.5%	04 Apr 2023
3	Seminar	Evolving New age Concrete like Self- Curing, Light transmitting and Porous concrete	CO 4	1 hour	10 Marks	5%	29 May 2023
4	Assignment - 2	Mix Design of HPC and SCC	CO4	-	15 Marks	7.5%	26 May 2023
5	End Term	Concrete Components Serviceability and Durability of concrete. Placing, Curing and Maintenance. Special concretes.	CO1, CO 2, CO 3, CO 4	3 hours	100 Marks	50%	TBA

COURSE CLEARANCE CRITERIA:

“AS PER ACADEMIC REGULATIONS OF THE UNIVERSITY”

MAKEUP EXAM POLICY:

“AS PER ACADEMIC REGULATIONS OF THE UNIVERSITY”

CONTACT TIMINGS IN THE CHAMBER FOR ANY DISCUSSIONS: Friday - 2:20PM TO 4:00PM

SAMPLE THOUGHT PROVOKING QUESTIONS:

TABLE 7: SAMPLE THOUGHT PROVOKING QUESTIONS				
SL NO	QUESTION	MARKS	COURSE OUTCOME NO.	BLOOM'S LEVEL
1.	In a time of scarcity of sand due to the exploitation of natural resources (sand), what are the alternatives for replacing fine aggregate?	2 marks	CO 1	L1
2.	For a bridge pier which is partially submerged in sea water, what is the possible degradation seen on the pier. Name few other phenomena that effect the durability of concrete.	10 Marks	CO2	L2
4.	For concreting in tunnels what method of placing can be adopted? Explain	5 marks	CO3	L2
5.	On a site visit, you identify that the quality of concrete is poor, to confirm your perception, what techniques would you adopt to check the quality of concrete?	5 marks	CO3	L2
6.	Which concrete is ideal for the construction of bridge decks considering self-weight as a criterion?	5 marks	CO4	L3
7.	What is fiber reinforced concrete and which type of FRC helps in improving the ductility?	5 marks	CO4	L2

TARGET SET FOR COURSE OUTCOME ATTAINMENT:

TABLE 8: TARGET SET FOR ATTAINMENT OF EACH CO and ATTAINMENT ANALYSIS AFTER RESULTS						
Sl. No.	C.O. No.	Course Outcomes	Threshold Set for the CO	Target set for attainment in percentage	Actual C.O. Attainment in Percentage	Remarks on attainment & Measures to enhance the attainment
01	CO1	Interpret the influence of the concrete components and admixtures on the properties of concrete	65	60		
02	CO2	Predict the properties and durability of hardened concrete	70	75		
03	CO3	Identify the correct concreting methods in the field depending upon the site condition	75	70		


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04	CO4	Choose the suitable concrete for different structures considering the on-site/client's requirements.	70	80		
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Signature of the course Instructor In-Charge

APPROVAL:

This course has been duly verified Approved by the D.A.C.

R. Ashok

Signature of the Chairperson D.A.C.

Name and signature of the Instructor In-Charge

Name and signature of the DAC Chairperson

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SCHOOL OF ENGINEERING DEPARTMENT OF CIVIL ENGINEERING

Year: 2022-2023

Semester: VI

Section: 6-CIV-1

Course Code: CIV2019

Course Name: Advanced Concrete Technology

Type of Skill: Skill Development

Type of Activity: Participative Learning

Instructor in Charge: Mr. Gopalakrishnan N

Instructor for Section: Mr. Gopalakrishnan N

Details about the activity: Students were asked to present on new and evolving age concrete products. Suggested topics for presentation were circulated to students and students were asked to choose topics of their choice to present on a topic as a group of 2 students. The seminar presentation activity by students focuses on Skill Development through participative learning.

Topic of Activity: Presentation on New and Evolving Age Concrete

Details of the students and topics presented by students along with schedule is presented below:

Sl. No.	Student ID No	Name	Topic	Date & Day
1	20201CIV9002	VINAY S	Underwater concrete – Introduction, Mix proportion, Applications	Tuesday, 16 May 2023
2	20201CIV0020	A V AJAY	Underwater concrete – Placing techniques with Case studies	
3	20201CIV0014	PRAKRUTHI S V	Ready Mix Concrete - Process	Tuesday, 16 May 2023
4	20201CIV0045	VAISHANVI N RAJ	Ready Mix Concrete - Properties/ Precautions	
5	20201CIV0038	G MANJUNATH REDDY	Foam Concrete – Introduction, Manufacutring, Mix proportion	Tuesday, 16 May 2023
6	20201CIV0004	ABRAR PASHA	Foam Concrete - Advantages, disadvantages, Applications with Case studies	
7	20201CIV0021	BHAVISH H A	Lightweight concrete – Introduction, Types, Mix proportion for light weight aggregate Concrete	Wednesday, 17 May 2023
8	20201CIV0023	SATYAM KUMAR SINGH	Lightweight aggregate concrete – Advantages, disadvantages, Applications with Case studies	

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9	20201CIV0025	MANISH KUMAR	Bacterial Concrete – Introduction, Manufacutring, Mix proportion	Wednesday, 17 May 2023
10	20201CIV0017	KISHORE S	Bacterial Concrete – Advantages, disadvantages, Applications with Case studies	
11	20201CIV0022	SAYAM BHARAMRAJ DURGE	Light Transmitting Concrete – Manufacutring, Uses and applications with Case studies	Wednesday,17 May 2023
12	20201CIV0032	B P JANAVI	Photoprint Concrete – Manufacutring, Uses and applications with Case studies	Wednesday, 17 May 2023
13	20201CIV0026	GOWTHAM PATEL P	Sprayed Concrete/ Shotcreting - Introduction, Dry Process and its Applications	Friday, 19 May 2023
14	20201CIV0009	SANTHOSH GOWDA K G	Sprayed Concrete/ Shotcreting - Wet Process, its applications. Advantages and Disadvantages of Shotcreting	
15	20201CIV0002	NIRANJAN K L	Fiber Reinforced Concrete – Introduction, Types, Mix proportion	Friday, 19 May 2023
16	20201CIV9001	ABHISHEK MANTALE	Fiber Reinforced Concrete – Advantages, disadvantages, Applications with Case studies	
17	20201CIV0031	SUNKARA JAYAPRAKASH	Roller Compacted concrete – Introduction, Manufacutring, Mix proportion	Friday, 19 May 2023
18	20201CIV0015	MANJUNATHA K	Roller Compacted concrete – Advantages, disadvantages, Applications with Case studies	
19	20201CIV0008	MEKHALA D	Geopolymer concrete – Introduction, Manufacutring, Mix proportion	Monday, 22 May 2023
20	20201CIV0024	SAHANA T H	Geopolymer concrete – Advantages, disadvantages, Applications with Case studies	
21	20211LCV0002	JEEVAN D	Self curing concrete – Introduction, Manufacutring, Mix proportion	Monday, 22 May 2023
22	20201CIV0007	ANAMIKA KUMARI	Self curing concrete – Advantages, disadvantages, Applications with Case studies	

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Sample Slides and Geo-tagged from Student Seminar Presentations



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SCHOOL OF ENGINEERING
Department of Civil Engineering

CIV2019 Advanced Concrete Technology

Seminar Presentation on

“Light Transmitting Concrete – Manufacturing, Uses and applications with Case studies”

Presented by

Mr. Sayam .B. Durge

2020CIV0022

VI Sem B. Tech. (Civil Engineering)



CASE STUDIES

Case Study 01: “Light Transmitting Concrete” for the Cella Septichora Visitor Center, Pecs, Hungary (LiTraCon):

Description Of Project

Location	Pécs, Szent István tér, 7624 Hungary
Architect	Bachmann Architects (H)
Area	50 square meter (Appx.)
Materials	Glass optical fibre, concrete
Start of works	Project 2005
End of works	Completion 2006
Total cost of the work	51360 euro (3.9 cr.appx.)



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17.05.2023 14:36
13°10'2.76"N 77°32'1.32"E
5G9M+3CQ, Dibbur



17.05.2023 14:36
13°10'2.74"N 77°32'1.32"E
5G9M+3CQ, Dibbur

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17.05.2023 14:25
13°10'2.78"N 77°32'1.3"E
5G9M+3CQ, Dibbur



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SCHOOL OF ENGINEERING
Department of Civil Engineering

CIV2019 Advanced Concrete Technology

Seminar Presentation on

PHOTOPRINT CONCRETE – Manufacturing, uses, and applications

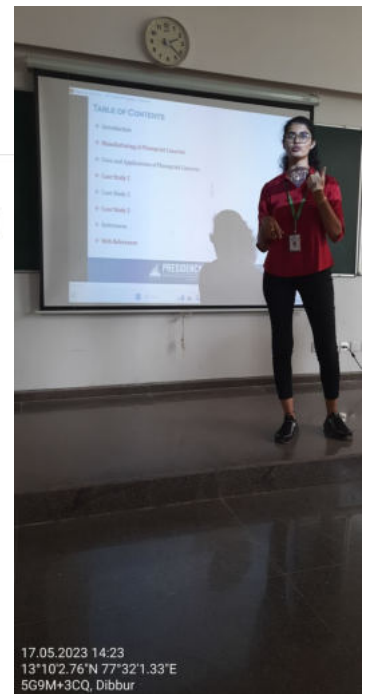
with case studies

Presented by

Ms. BP JANAVI

20201CIV0032

VI Sem B. Tech. (Civil Engineering)



17.05.2023 14:23
13°10'2.76"N 77°32'1.33"E
5G9M+3CQ, Dibbur

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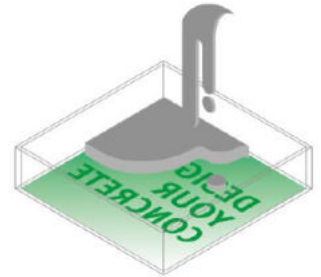
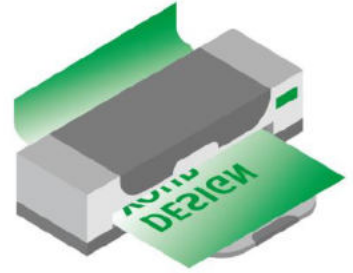
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MANUFACTURING OF PHOTOPRINT CONCRETE:

- **Digital Design:** The manufacturing process begins with the creation of a digital design using computer-aided design (CAD) software. This design defines the shape, dimensions, and patterns to be printed on the concrete surface.
- **Print Design:** RECKLI prints the design with a screen printing method on to a synthetic or magnetic foil that is treated with a concrete activator. The deactivator affects a delayed setting of the concrete. The treated surface can be washed out..
- **Cast Concrete:** The artico foil is laid into the casing. The synthetic foils ensure that the motif is applied to the concrete without wrinkles or creases. After the foil has been applied, the concrete is cast into the casing..



22.05.2023 14:23
13°10'2.77"N 77°32'1.32"E
5G9M+3CQ, Dibbur

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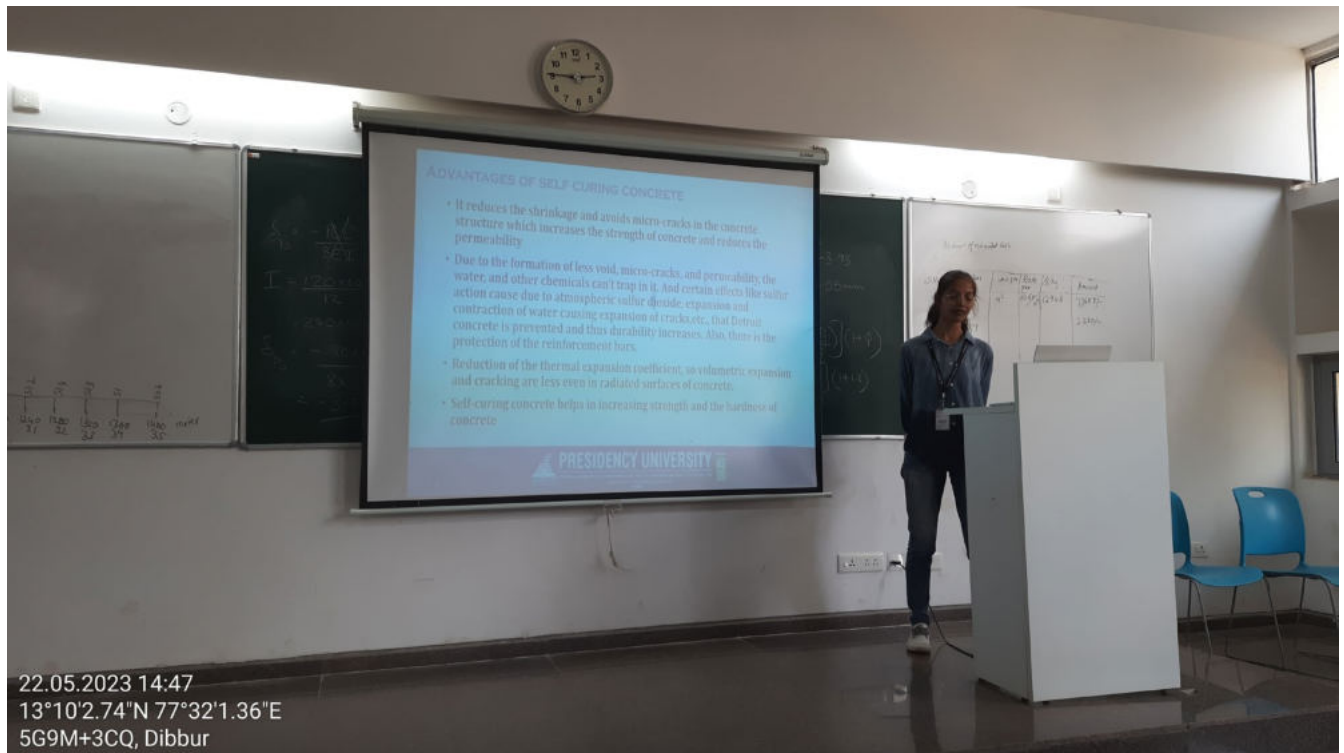


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APPLICATIONS OF SELF CURING CONCRETE

- Self-curing concrete is basically targeted to the high-performance concrete and high strength concrete by which massive megastructure like tall sky scrapper, Tunnels, Bridge, shotcrete to prevent unstable slopes are needed to be constructed.
- These kinds of works need a very low water-cement ratio and less use of water. Thus there is a very high chance of the microcrack formation in such kind concrete during hydration. Thus the internal Curing is needed to apply in such works.
- Self-curing concrete created uninterrupted and progressive curing thus generally more applicable to the place where the accessibility after construction is difficult.
- Highly applicable where there is a scarcity of water like the desert area of the world. Moreover, the construction of rigid pavement road, where the water curing is difficult to maintain for a long time, sloping surfaces concreting, they can be applied for ease.



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CIV2019 Advanced Concrete Technology

Seminar Presentation on

“SELF CURING CONCRETE – INTRODUCTION, MANUFACTURING, MIX PROPORTION”

Presented by

Mr. JEEVAN D

20211LCV0002

VI Sem B.Tech. (Civil Engineering)



MIX PROPORTION

- The mix proportion for self-curing concrete can vary depending on the specific project requirements and desired performance characteristics. However, here is a general guideline for a typical mix proportion:
 1. **Cement:** Typically, the cement content ranges from 10% to 15% of the total volume of concrete. The type of cement used can vary based on project specifications
 2. **Aggregates:** Aggregates, including sand and gravel, make up the majority of the concrete mixture. The proportions of coarse and fine aggregates can vary based on the desired strength and workability of the concrete.
 3. **Water:** The water-to-cement ratio is an essential factor in the mix proportion. It determines the workability and strength of the concrete. The water content should be carefully calculated to account for the self-curing agents and achieve the desired moisture retention.
 4. **Self-curing agents:** The amount of self-curing agents or admixtures added to the mix depends on the specific product being used and its recommended dosage. The dosage is typically determined based on the cement content or the total weight of the concrete mixture.



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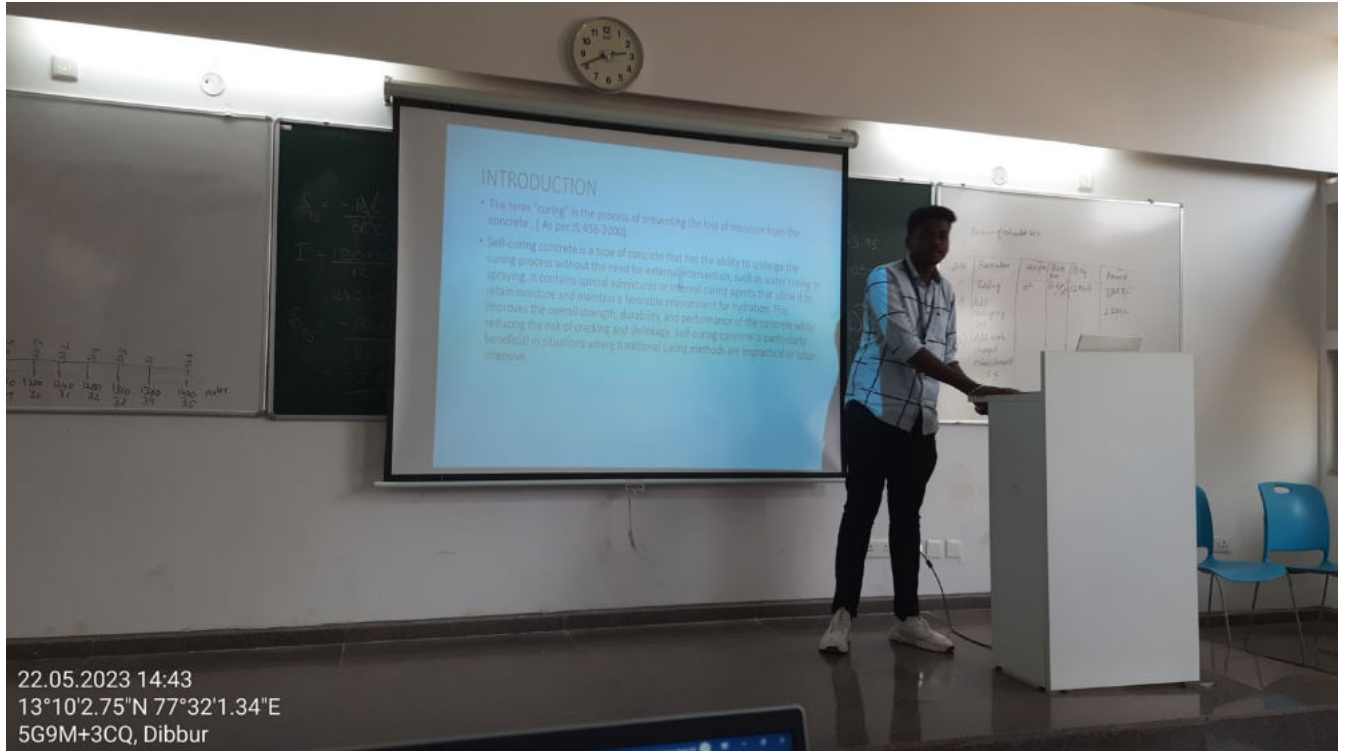
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Signature of Instructor In-Charge

HOD - CIV

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[2022-23 EVEN/ WINTER SEMESTER]

COURSE HAND OUT [Revision 02 - Jan 2022]

SCHOOL: ENGINEERING	DEPT.: CIVIL	DATE OF ISSUE: 25-01-2023
NAME OF THE PROGRAM	: B.Tech	
P.R.C. APPROVAL REF.	: PU/AC-18.3/CIV14/CIV/2020-2024	
SEMESTER/YEAR	: VI Semester/ 3rd year	
COURSE TITLE & CODE	: CIV2039 - Construction Quality & Safety	
COURSE CREDIT STRUCTURE	: 3-0-3	
CONTACT HOURS	: 3 periods per week	
COURSE IC	: Mrs. Divya Nair	
COURSE INSTRUCTOR	: Mrs. Divya Nair	

PROGRAM OUTCOMES:

PO-1: Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO-2: Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO-3: Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

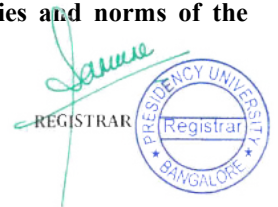
PO-4: Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO-5: Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations

PO-6: The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO-7: Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of and need for sustainable development.

PO-8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.



PO-9: Individual and teamwork: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO-10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO-11: Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO-12: Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

COURSE PREREQUISITES: Basic terminologies of quality, safety General parameters of quality.

COURSE DESCRIPTION:

The purpose of this course is to deal with the significance of Quality, Risk and Safety in Construction and to develop the basic abilities of risk management. The course is more of conceptual in nature and needs fair knowledge of causes for construction accidents, risk identification. This course mainly focusses on management aspects of construction project such as organization, quality management and safety management. The course develops the construction site safety skills by attaining quality. The course also enhances the programming abilities through assignments.

COURSE OBJECTIVE: The objective of the course is to familiarize the learners with the concepts of Construction Quality & Safety and attain **Employability Skills** through **Participative Learning** techniques

COURSE OUTCOMES: On successful completion of the course the students shall be able to:

TABLE 1: COURSE OUTCOMES		
CO Number	CO	Expected BLOOMS LEVEL
1	Describe construction project management process and various engineering roles involved in project organization.	Comprehension
2	Discuss total quality management and safety for construction projects.	Comprehension
3	Indicate the aspects of Safety, safety rules.	Comprehension
4	Identify risks involved in construction projects.	Comprehension

MAPPING OF C.O. WITH P.O. [H- HIGH, M- MODERATE, L-LOW]:

TABLE 2: CO PO Mapping ARTICULATION MATRIX												
CO. No	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12
CO1					L	M	L	H	H		M	L
CO2					L	M	L	H	H		L	L
CO3					L	M	L	H	H		M	H
CO4					M	L	L	L	L		L	L



COURSE CONTENT (SYLLABUS):

Module 1: Project Organization Management

[09 Hrs] [COMPREHENSION]

Construction Projects: Concept, Project Categories, Characteristic of projects, project life cycle phase, Project Management- Project Management Function, Role of Project Manager, Organizing for Construction - Principles of organization, type of organization structure.

Module 2: Construction Quality Management

[09 Hrs] [COMPREHENSION]

Construction Quality, Inspection and Testing, Quality control, Quality Assurance, Total Quality Management, Benchmarking, Quality philosophy. **Standards, manual, Quality philosophy. Quality Certification for companies and laboratories, ISO Certification.**

Module 3: Safety Management

[09 Hrs] [COMPREHENSION]

Safety in Construction: Causes, classification, cost of an accident, safety programme for construction, protective equipment, accident report. Types of injuries, Factors affecting safety. Personal & Structural safety. Recording injuries **Safety Performance on Construction Sites, Safety Auditing and Its Use in Proactive Prevention of Accidents.**

Module 4: Construction Risk Management

[09 Hrs] [COMPREHENSION]

Certainty, Risk and Uncertainty Reasons for the risks, Types of Risks, Risk Management Identification and Nature of Construction Risks, Minimizing risks and mitigating losses, Risk mitigation

DELIVERY PROCEDURE (PEDAGOGY):

Self-learning topics: Personal & Structural safety.

Experiential Learning: Types of injuries, Factors affecting safety

Participative Learning: Project Management Function, Role of Project Manager through group discussion

Technology Enabled Learning: protective equipment

Problem Based Learning: Risk Management

TABLE 3: SPECIAL DELIVERY METHOD/ PEDAGOGY PLANNED WITH TOPICS				
S. No	Lecture Number	Subtopic as per lesson Plan	Pedagogy title/ short explanation of adopted pedagogy	** At end of semester please update whether activity was done
1	L31	Personal and Structural Safety	Self-learning	
2	L6, L7	Project Management Function, Role of Project Manager	Participative Learning through Seminar	
3	L28	Protective equipment-ICT	Technology Enabled Learning	
4	L36,L37,L38	Risk Management	Problem Based Learning	

REFERENCE MATERIALS: Textbooks, reference books, any other resources, like webpages.

(i) Textbook(s)

1. "Construction Project Management", Kumar Neeraj Jha, Pearson. Second Edition.
2. "Construction Planning and Management Paperback", 2018, by P.S. Gahlot, B. M. Dhir

Reference Book(s)

1. "Safety Management in construction and Industry", David Gold Smith, Mc Graw Hill
2. "Construction Safety Management", K N Vaid, NICMAR, Bombay
3. "Management for Total Quality", N. Logothetis, Prentice Hall 2.
4. "Project Management Body of Knowledge" (PMBOK® GUIDE, Guide, A.), Project Management Institute, 2001.
5. Managing Risk in Construction Projects, 3rd Edition by Nigel J smith.

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https://onlinecourses.nptel.ac.in/noc22_mg55/preview

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SPECIFIC GUIDELINES TO STUDENTS:

1. Students should maintain class work which will be evaluated after every module.
2. Students are expected to strictly adhere to assignment deadlines.
3. Students should actively participate in classroom discussions and other activities that are planned.

COURSE SCHEDULE:

Sl. No.	ACTIVITY	PLANNED STARTING DATE	PLANNED CONCLUDING DATE	TOTAL NUMBER OF PERIODS
01	Over View of the course	17-02-2023	17-02-2023	01
02	Module : 01	20-02-2023	13-03-2023	1+9
03	Module: 02	14-03-2023	04-03-2023	1+9
04	Seminar Presentation	10-04-2023	10-04-2023	01
05	Midterm Discussion	11-04-2023	11-04-2023	01
06	Midterm	12-04-2023	15-04-2023	03
07	Module:03	17-04-2023	08-05-2023	1+9
08	Module:04	09-05-2023	30-05-2023	1+9
09	Last Instruction Day (Revision)	02-06-2023	02-06-2023	01



DETAILED SCHEDULE OF INSTRUCTION:

TABLE 5: DETAILED COURSE SCHEDULE/ LESSON PLAN							
Sl. No	Session no.	Lesson Title	Topics	Course Outcome Number	Delivery Mode	Reference	
1	L1	Overview of the course	Programme Integration	-	Lecture	-	
2	L2	Project Organization Management	Construction Projects: Concept	CO1	PPT	T1, T2	
			Course Integration- Module 1				
3	L3		Project Categories	CO1	PPT + Chalk Board	T1, T2	
4	L4		Characteristic of projects	CO1	PPT + Chalk Board	T1, T2	
5	L5		project life cycle phase	CO1	Chalk Board	T1, T2	
6	L6		Project Management- Project Management Function	CO1	PPT / Lecture	T1, T2	
7	L7		Role of Project Manager	CO1	Lecture/ Chalk Board	T1, T2	
8	L8		Organizing for Construction -	CO1	PPT /Lecture	T1, T2	
9	L9		Principles of organization	CO1	PPT + Chalk Board	T1, T2	
10	L10		Type of organization structure	CO1	PPT	T1, T2	
11	L11		Type of organization structure	CO1	Lecture	T1, T2	
END OF MODULE 1							
12	L12	Construction Quality Management	Course Integration- Module 2	CO2	PPT /Lecture	T1, T2	
13	L13		Construction Quality	CO2	PPT /Lecture	T1, T2	
14	L14		Inspection and Testing	CO2	PPT /Lecture	T1, T2	
15	L15		Inspection and Testing	CO2	PPT + Chalk Board	T1, T2	
16	L16		Quality control	CO2	PPT	T1, T2	


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17	L17	Quality Assurance	CO2	PPT / Lecture	T1, T2
18	L18	Quality philosophy	CO2	PPT / Lecture	T1, T2
19	L19	Benchmarking, Standards manual, Quality philosophy..	CO2	PPT + Chalk Board	T1, T2
20	L20	Quality Certification for companies and laboratories, ISO Certification	CO2	PPT + Chalk Board	T1, T2
21	L21	Total Quality Management	CO2	PPT + Chalk Board	T1, T2
22	L22	Surprise Test	CO1, CO2	-	-
23	L23	Midterm Discussion	CO1, CO2	-	-

END OF MODULE 2

24	L24	Safety in Construction	Course Integration- Module 3	CO3	PPT / Lecture	T1, T2
25	L25		Causes , Classification	CO3	PPT / Lecture	T1, T2
26	L26		Cost of an accident	CO3	Lecture	T1, T2
27	L27		Safety programme for construction	CO3	PPT	R2
28	L28		Protective equipment	CO3	PPT + Chalk Board	R2
29	L29		Accident report	CO3	PPT	R2
30	L30		Types of injuries	CO3	PPT + Chalk Board	R2
31	L31		Factors affecting safety Personal & Structural safety	CO3	PPT / Lecture	R2

32	L32		Factors affecting safety Recording injuries Safety Performance on Construction Sites	CO3	PPT + Chalk Board	R2	
33	L33		Safety Auditing and Its Use in Proactive Prevention of Accidents.	CO3	PPT + Chalk Board	R2	
END OF MODULE 3							
34	L34	Construction Risk Management	Course Integration- Module 4	CO4	PPT + Chalk Board	R5	
35	L35		Certainty, Risk and Uncertainty Reasons for the risks	CO4	PPT + Chalk Board	R5	
36	L36		Types of Risks	CO4	Chalk Board	R5	
37	L37		Types of Risks	CO4	PPT + Chalk Board	R5	
38	L38		Risk Management	CO4	PPT + Chalk Board	R5	
39	L39		Identification	CO4	PPT + Chalk Board	R5	
40	L40		Nature of Construction Risks,	CO4	Lecture	R5	
41	L41		Risk mitigation	CO4	PPT + Chalk Board	R5	
42	L42		Minimizing risks and mitigating losses	CO4	PPT + Chalk Board	R5	
43	L43		Minimizing risks and mitigating losses	CO4	PPT + Chalk Board	R5	
44	L44		Endterm Discussion	CO1, CO2, CO3, CO4	-	-	
END OF MODULE 4							

Topics relevant to “EMPLOYABILITY SKILLS”: Project Management- Project Management Function, Role of Project Manager, Organizing for Construction, Principles of organization Safety & risk management for developing Employability Skills through Participative Learning techniques. This is attained through the Presentation as mentioned in the assessment component.

ASSESSMENT SCHEDULE:

Sl. No	Assessment type	Contents	Course outcome Number	Duration	Marks	Weightage	Venue, DATE & TIME
1	Assignment 1	Module 1 & 2	CO1& CO2	3 weeks	15	7.5%	Will be announced one week prior to submission
2	Mid Term Exam	Module 1 and 2	CO1& CO2	1.5 hrs	50	25%	As per timetable from CoE
3	Surprise test	Module 1 and 2	CO1& CO2	40 min	10	5%	After completion of Module 2
4	Seminar Presentation	Participative learning through Seminar	CO3	-	10	5%	Will be announced one week prior to submission
5	Quiz/ Presentation	Topics will be announced one week prior to the submission/ participation data	CO3	30 Mins	15	7.5%	Will be announced one week prior to submission
6	End Term	Complete syllabus	CO1,CO2, CO3,CO4	3 hrs	100	50%	As per timetable from CoE

COURSE CLEARANCE CRITERIA:

“AS PER ACADEMIC REGULATIONS OF THE UNIVERSITY”

MAKEUP EXAM POLICY:

“AS PER ACADEMIC REGULATIONS OF THE UNIVERSITY”

CONTACT TIMINGS IN THE CHAMBER FOR ANY DISCUSSIONS:

Students are encouraged to approach for any discussions on this course anytime between 3 PM to 4:30 PM on Wednesdays.

In case of absence, students can also to meet on any other day by checking the availability of faculty over the phone.



SAMPLE THOUGHT PROVOKING QUESTIONS:

TABLE 7: SAMPLE THOUGHT PROVOKING QUESTIONS				
SL NO	QUESTION	MARKS	COURSE OUTCOME NO.	BLOOM'S LEVEL
1.	A project manager is leading a project to investigate the feasibility of constructing a dam to generate hydroelectric power. The project needs to be analyzed from technical, economic and social points of view. The project manager has created the project character on behalf of the project sponsor, and it is now approved. List the rest of the processes to be performed in sequential order and also explain their priority in taking the project forward.	12 marks	CO 1	Comprehension
2	A Project Manager is leading the construction of a new office building. The client asks the project manager to email him the project document that was presented during the last project status meeting. The project sponsor states that he has forgotten the name of the document, but he remembers it contained the description, owner, source, priority and status of the project requirements. Which Project document is the owner requesting?	2 marks	CO 1	Knowledge
3	Deming is best known in the United States for his 14-point quality management philosophy. List all the 14 points stated in the principle governing quality management.	10 marks	CO2	Comprehension
4	A construction worker was assigned a welding job to be performed in the second floor while standing on scaffolding. As a safety officer at site, what are the personnel safety equipment recommended to the worker?	6 marks	CO3	Comprehension

TARGET SET FOR COURSE OUTCOME ATTAINMENT:

TABLE 8: TARGET SET FOR ATTAINMENT OF EACH CO and ATTAINMENT ANALYSIS AFTER RESULTS						
Sl.no	C.O. No.	Course Outcomes	Threshold Set for the CO	Target set for attainment in percentage	Actual C.O. Attainment In Percentage	Remarks on attainment & Measures to enhance the attainment
01	CO1	Describe construction project management process and various engineering roles involved in project organization.	60%	70%	*	*
02	CO2	Discuss total quality management and safety for construction projects.	60%	70%		
03	CO3	Indicate aspects of Safety, safety rules	60%	70%		
04	CO4	Identify risks involved in construction projects.	60%	70%		

Signature of the course Instructor In-Charge (s)

APPROVAL:

This course has been duly verified Approved by the D.A.C.

Signature of the Chairperson D.A.C.





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SCHOOL OF ENGINEERING DEPARTMENT OF CIVIL ENGINEERING

Year: 2022-2023

Semester: VI

Section: 6-CIV-1

Course Code: CIV2039

Course Name: Construction Quality & Safety

Type of Skill: Skill Development

Type of Activity: Participative Learning

Instructor in Charge: Ms. Divya Nair

Instructor for Section: Ms. Divya Nair

Details about the activity: Students were given certain situations/tasks in the form of Case studies and were asked to present the solutions for the same after interacting with the fellow students. Topics for Case studies / presentation were circulated amongst students to pick the topic of their choice. The seminar presentation activity by students focuses on Skill Development through participative learning.

Topic of Activity: Building A Safe Future: Proactive Prevention of Accidents in Construction Sites

Details of the students and topics presented by students along with schedule is presented below:

Sl. No.	Student ID No	Name	Topic	Date
1	20201CIV0034	NAVEEN N	Case study on “Differences in opinion” at site	12 May 2023
2	20201CIV0035	SWAROOP N VENKAT	Case study on “Miscommunication” at Site	12 May 2023
3	20201CIV0036	VIKAS G	Case Study on “Brick Mock-up”	23 May 2023
4	20201CIV0040	SAI GANESH BALLARY	Classification of Construction accidents- Case study on Highway accident	26 May 2023
5	20211LCI0001	MUNGARA BHUVANA MANICHANDRA	Case Study on “Compromise in Quality”	25 April 2023

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Sample Slides and Geo-tagged from Student Seminar Presentations



A REPORT ON

CASE STUDIES ON CONSTRUCTION QUALITY AND SAFETY

PRESENTED BY:

MUNGARA BHUVANA CHANDRA - 2021LCI0001
NAVEEN N - 2020CIV0034
SWAROOP N VENKAT - 2020CIV0035

FACULTY:

DIVYA NAIR

ASST. PROFESSOR

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CASE STUDY ON

'DIFFERENCES IN OPINION'

This architect is very new in her career, the firm she's working for is quite small and specialized in educational facilities. She has been assigned to a public university project which is more than double the value that either she or her firm has ever undertaken. This firm is very much planned and specialized architectural firm.

The general contractor and his project manager, who are working on the project have just the opposite background than the design team. The construction teams has mostly private negotiated project experience and are very accustomed to large projects.

PROBLEM STATEMENT:

- General Manager and his project manager are working on this project has just the opposite background than the design team.
- The construction team has mostly private negotiated project experience
- The project manager and the architect are not working well together.

PROBLEM CAN BE SOLVED BY:

- If the project manager and the architect are not working well together, it is likely that there will be communication and coordination issues that could potentially lead to delays, misunderstandings, and conflicts throughout the project's lifecycle.
- These issues could ultimately impact the quality of the final product, as well as its ability to meet project requirements and stakeholder

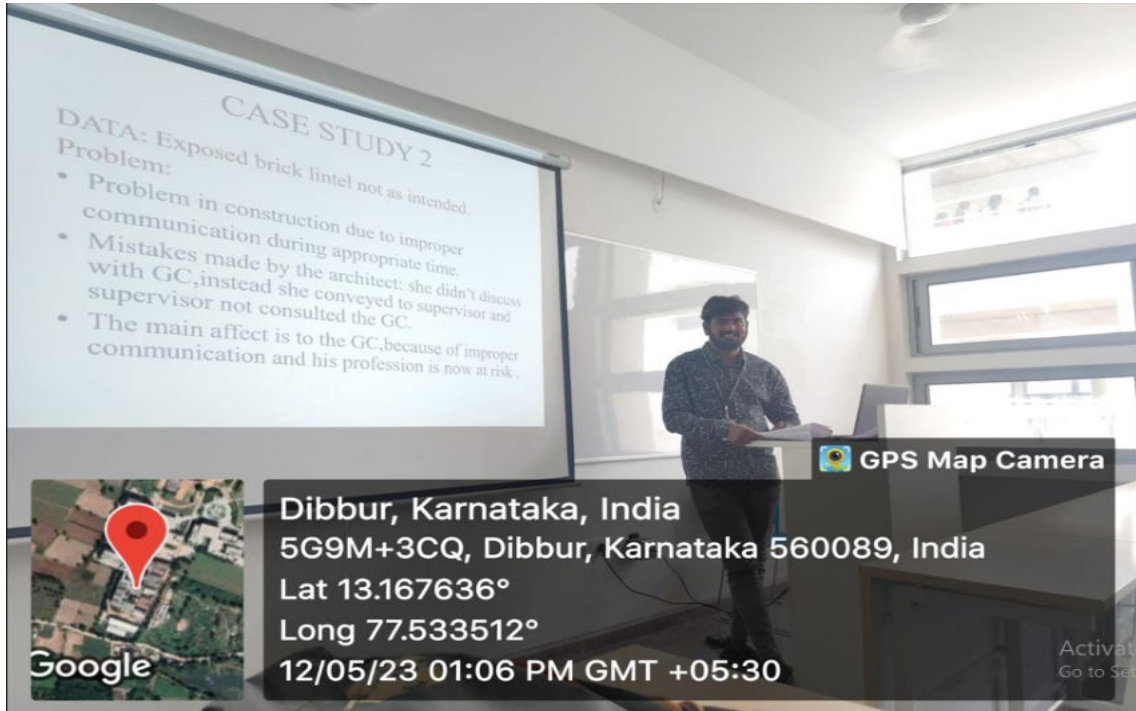
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CASE STUDY ON

'MISCOMMUNICATION'

On one of the site visits, the architect notices that the exposed interior brick lintels were not brought which she was intended. There were no clear details for this work in the bill document. She didn't discuss with GC but returned to her office and discuss with GC, but returned to her office and discussed the installation with the supervisor two weeks later at a weekly construction co-ordination meeting. She reported this to the owner, representing and stated that she wanted it to bid to the quality issues log. The brick mason former has chosen to repeat another lintel that was available in the document, although it was further exterior wall. The former thought he was doing the right thing as the course layout that he following was more difficult than the detail that architectural firm.

PROBLEM STATEMENT:

- Problem in construction due to improper communication during appropriate time.
- Mistakes made by the architect: she didn't discuss with GC, instead she conveyed to supervisor and supervisor not consulted the GC.
- The main affect is to the GC, because of improper communication and his profession is now at risk.

PROBLEM CAN BE SOLVED BY:

- Because the most important details in this text are that the GC and superintendent should remain professional and objective during a meeting and focus on finding solutions to the problem at hand. They may feel

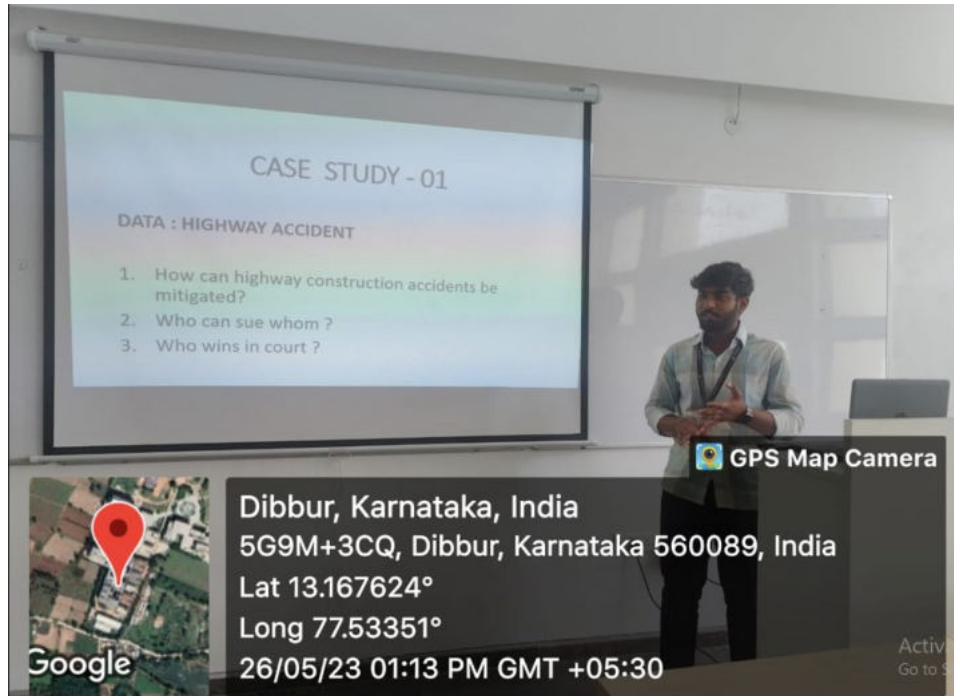
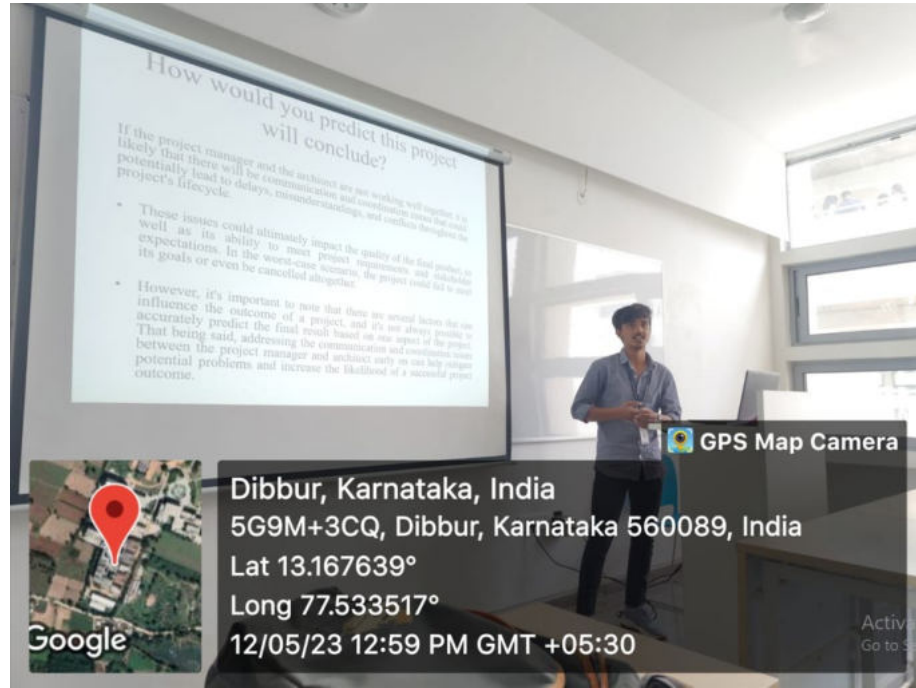
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CASE STUDY ON

'COMPROMISE IN QUALITY'

This project includes new classrooms and training workshops for the carpenter' union apprentices. The general contractor has bid the project lump sum and is approximately 90% through the schedule. Gypsum wallboard (GWB) is being taped and finish material begin to arrive on the job. On a recent walk-through, the owner and the design teams realize that several items are not exactly as they had anticipated. The gray carpet is actually black. The plywood wainscot in the ware- house area is CDX (construction) grade, not AC (finish) grade.

The design-build sanitary waste pipe in the ceiling space between the two floor is plastic and not cast iron. The pipe minimally meets code and will be noisy. The gates on the fence are swinging and not rolling. The interior wood trim is hemlock and not oak. There are many other examples of these types of surprises. The contract requirement for preparing submittals was generic, and although it did list a few items to be submit- ted, it did not list everything. The architect and project owner acknowledge that there were conflicts in the documents. The contractor has chosen the least expense- ive materials wherever possible, and is now basing their argument on document inconsistency.

PROBLEM STATEMENT:

MIS-MATCH OF MATERIALS

AND THEIR QUALITIES WHILE EXPORTED FOR CONSTRUCTION

PROBLEM CAN BE SOLVED BY:

- Details Lack of communication between the project manager and architect

Signature of Instructor In-Charge

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SCHOOL OF ENGINEERING DEPARTMENT OF CIVIL ENGINEERING

Year: 2022-2023

Semester: IV

Section: 4-CIV-1

Course Code: CIV3044

Course Name: E Governance

Type of Skill: Skill Development

Type of Activity: Participative Learning

Instructor in Charge: Mr. Dayalan J

Instructor for Section: Mr. Dayalan J

Details about the activity: Students were asked to present on recent initiatives taken by GoI in implementation of e-governance. Suggested topics for presentation were circulated to students and students were asked to choose topics of their choice to present on a topic as a group of 3 to 4 students. The seminar presentation activity by students focuses on Skill Development through participative learning.

Topic of Activity: Initiatives taken by Government of India in implementation of e-governance.

Details of the students and topics presented by students along with schedule is presented below:

Sl. No.	Student ID No	Name	Topic	Date & Day
1	20211CIV0019	SANKETH KUMAR K N	Models of E-Governance Implementation	09/03/2023 & Thursday
2	20211CIV0026	JEEVAN AG		
3	20211CIV0037	GURU TEJAS K S		
4	20211CIV0034	THIRUMALA NAIK V		
5	20211CIS0002	ATTAL THAPA C	e-Kranti : National e-governance plan 2.0	16/03/2023 & Thursday
6	20211CIV0014	NIRAJ KUMAR MALUWA		
7	20211CIV0022	NIKHIL KUMAR		
8	20211CIS0001	MOHAMMED AZHAR AHMED		

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9	20211CIV0007	BHUMIKA M	e-Governance Project financing	11/05/2023 & Thursday
10	20221LCV0005	PRAGATI PATIL		
11	20211CIV0006	NITHIN K	Common Service Station	18/05/2023 & Thursday
12	20211CIV0012	CHINNU K R		
13	20211CIV0021	BHOOMAN PRADEEP		

Sample Slides and Geo-tagged from Student Seminar Presentations

MODELS OF E-GOVERNANCE



SANKETH KUMAR KN 20211CIV0019

JEEVAN AG 20211CIV0026

GURUTEJAS KS 20211CIV0037

THIRUMALA NAIK V 20211CIV0034



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❖ The Broadcasting Model

The model is based on dissemination, broadcasting of useful Governance information and it will also provide people with correct information. Critical Flow model- The model is based on disseminating, channelling information of critical value to the targeted audience or into the wider public domain.

e-Kranti : National eGovernance Plan 2.0



Department of Electronics
and Information Technology,
Government of India

e-Kranti : National eGovernance Plan 2.0

Presented by

20211CIS0002	ATTAL THAPA C	4 CIV
20211CIV0014	NIRAJ KUMAR MALUWA	4 CIV
20211CIV0022	NIKHIL KUMAR	4 CIV
20211CIS0001	MOHAMMED AZHAR AHMED	4 CIV

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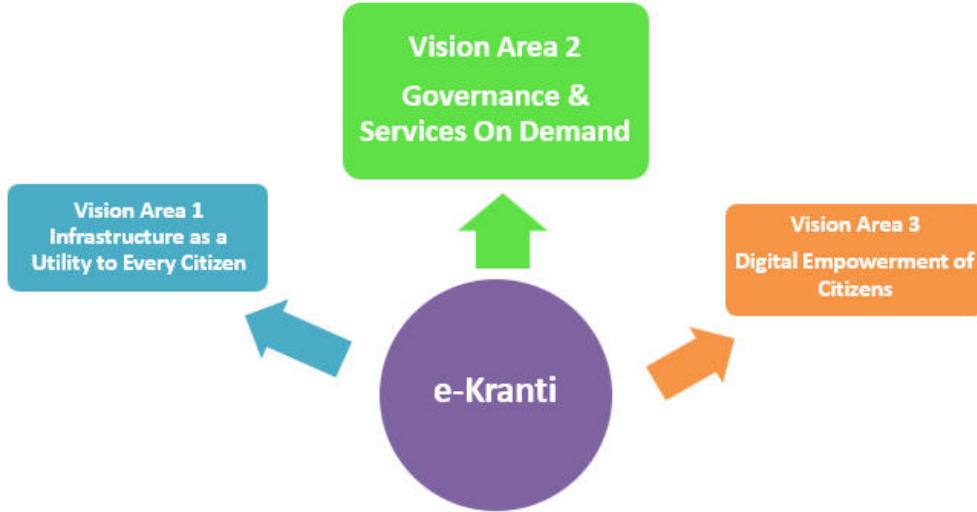


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e-Kranti : National eGovernance Plan 2.0

Digital India and e-Kranti



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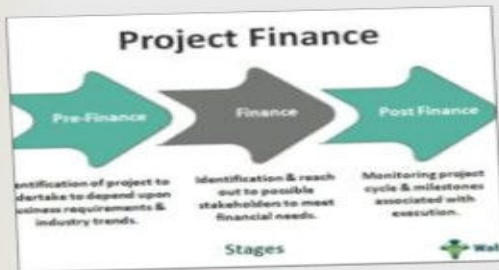
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E—GOVERNANCE PROJECT FINANCING



Presented by

BHUMIKA.M
2021CIV0007

PRAGATHI PATIL
20221LCV0005

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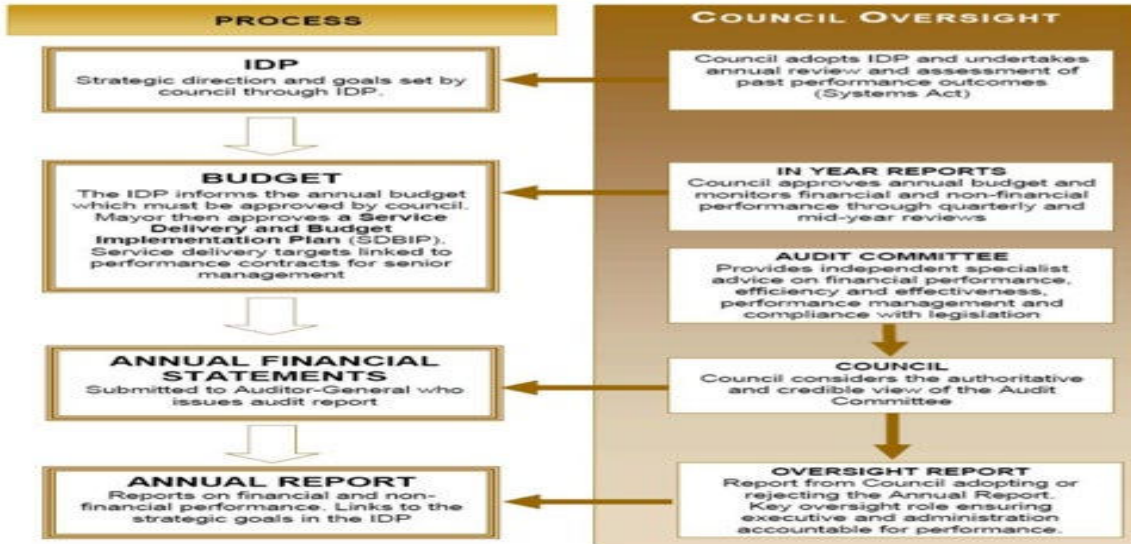
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Financial Governance in Practice

Financial Governance in Practice – COUNCIL OVERSIGHT



Common Service center (CSC)

Presented by



20211CIV0006	NITHIN K	4CIV1
20211CIV0012	CHINNU K R	4CIV1
20211CIV0021	BHOOMAN PRADEEP	4CIV1

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Objective:

- The scope of the program is to cover maximum Government services.
- provide all high quality and cost effective e-Governance services under one umbrella through the use of ICT.
- A highlight of the CSCs is that it will offer web-enabled e-governance services in rural areas, including application forms, certificates, and utility payments such as electricity, telephone and water bills.



J. S. S. S.

Signature of Instructor In-Charge

R. S. S. S.

HOD - CIV

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(Established under the Presidency University Act, 2013 of the Karnataka Act 41 of 2013)

[2022-23 EVEN/ WINTER SEMESTER]

COURSE HAND OUT [Revision 02 - Jan 2022]

SCHOOL: ENGINEERING	DEPT: CIVIL ENGINEERING	DATE OF ISSUE:25 /01/2023
NAME OF THE PROGRAM	: B. Tech. (Civil Engineering)	
P.R.C. APPROVAL REF.	: PU/AC-20.5/CIV15/CIV/2021-25	
SEMESTER/YEAR	: IV sem /III year	
COURSE TITLE & CODE	: CIV 3044 E-Governance	
COURSE CREDIT STRUCTURE	: 3-0-3	
CONTACT HOURS	: 3 periods per week	
COURSE IC	: Mr. Dayalan J	
COURSE INSTRUCTOR	: Mr. Dayalan J	
COURSE URL	:	
PROGRAM OUTCOMES	:	

PO-1: Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO-2: Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO-3: Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO-4: Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO-5: Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations

PO-6: The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.


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PO-7: Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of and need for sustainable development.

PO-8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO-9: Individual and teamwork: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO-10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO-11: Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO-12: Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

COURSE PREREQUISITES: Knowledge of structural analysis and basics of Design of Structural Steel elements and their connections

COURSE DESCRIPTION: This course familiarize with the concept of e-Governance or electronic Governance. This course provides a basic understanding of e-governance strategies, its architecture and the technologies behind their implementation. It deals with conceptualization of ideas and development of service delivery models for improving the quality of service to citizens. It teaches how an effective strategic plan can be developed for implementing the concept of Smart Cities of the Government of India. Global case studies of e-Governance initiatives along with e-Kranti or the National e-Governance Plan 2.0 under Digital India would be dealt with in detail. The course will help to encouraged to provide innovative solutions in order to improve performance of such schemes.

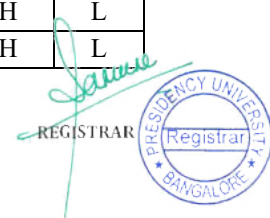
COURSE OBJECTIVE: The objective of the course is to familiarize the learners with the concepts of E-Governance and attain **Employability Skills** through **Participative Learning** techniques

COURSE OUTCOMES: On successful completion of the course the students shall be able to:

TABLE 1: COURSE OUTCOMES		
CO Number	CO	Expected BLOOMS LEVEL
CO1	Understand the concept of e-Governance and its utility	L1
CO2	Explain the various e-Governance and e-Government models	L2
CO3	Show how e-Governance is implemented	L2
CO4	Discuss the implementation of e-Governance in India	L3

MAPPING OF C.O. WITH P.O. : [H-HIGH, M- MODERATE, L-LOW]

TABLE 2: CO PO Mapping ARTICULATION MATRIX												
COs	PO-01	PO-2	PO-03	PO-04	PO-05	PO-06	PO-07	PO-08	PO-09	PO-10	PO-11	PO-12
CO1	H		L	-	H	M	H	M	M	M	H	M
CO2	H		H	-	H	M	L	H	L	M	H	L
CO3	H		H	-	H	L	L	H	L	M	H	L
CO4	H		H	-	H	M	L	H	L	M	H	L



COURSE CONTENT (SYLLABUS):

Module 1 E-Governance: Concepts and Evolution [06 Hrs] [Knowledge]

E-Government and need of e-governance, Challenges and Measures; Role of ICT in e-governance, Gov. 3.0, Basic Concepts - Evolution, Smart City governance, Emerging Trends.

Module 2 E-Governance Models [08 Hrs] [Comprehension]

E-Government Model Types, Smart governance interactions - Government to Citizen (G2C), Government to Business (G2B), Government to Government (G2G), Government to Employee (G2E) – Initiatives of GoI, E-Governance Models, E-Governance Benefits, E-Government Maturity Model, Mobile government, M-Governance versus E-Governance

Module 3: Implementation of e-Governance [10 Hrs] [Comprehension]

Implementation Elements, Implementation Models, Implementation strategies, Service Prioritization, Service Delivery Centers, Web-portals, Mobile implementation, Social networks, Software and Hardware Requirements, Data warehousing, Data mining and Business Intelligence; Open source usage, E-Government Project Costing, E-Government Project Financing.

Module 4: E-Governance in India [08 Hrs] [Application]

National e-Governance Plan (NeGP), e-Kranti (NeGP 2.0), Policies for e-Gov, State Data Centers, State Wide Network, Common Service Centre, Mission Mode Projects, Integration in Smart Cities, Case Studies.

DELIVERY PROCEDURE (PEDAGOGY):

TABLE 3: SPECIAL DELIVERY METHOD/ PEDAGOGY PLANNED WITH TOPICS				
S. No	Lecture Number	Subtopic as per lesson Plan	Pedagogy title/ short explanation of adopted pedagogy	** At end of semester please update whether activity was done
1	L8	Role of e-governance consultants and advisor to service providers	Self-learning topics	
2	L36	Seminar on case studies of E-Governance implementation	Participative Learning	
3	L28	Study of implementation of ICT tools in National e-Governance plan in India	Technology Enabled Learning	

REFERENCE MATERIALS:

Text Books:

1. Shirin Madon , “E-governance for Development : A Focus on Rural India”, Palgrave Macmillan,2009
2. Ashok Agarwal, “E-governance : Case studies”, University Press India,2007
3. Kamalesh N. Agarwala and Murlidhar D. Tiwari “IT-e-Governance in India”, Macmillan,2002
4. Subhash C. Bhatnagar “E-Government : from Vision To Implementation: A Practical Guide With Case Studies”, SAGE , 2004



5. C.S.R. Prabhu ,“E-Governance: Concepts And Case Studies”, PHI ,2011

References Books:

1. Yu-Che Chen and Pin-Yu Chu ,“Electronic Governance and Cross-Boundary Collaboration: Innovations and Advancing Tools” , Information Science Reference, 2011
2. G. David Garson, “Public Information Technology and E-Governance: Managing the Virtual State”, Jones & Bartlett Learning, 2006
3. ed. Toshio Obi, “E-governance: A Global Perspective on a New Paradigm”, IOS Press, 2007
- 4.ed. Viktor Mayer-Schönberger and David Lazer, “Governance and Information Technology From Electronic Government to Information Government”, Massachusetts Institute of Technology, 2007

GUIDELINES TO STUDENTS:


- 1.Students are required to maintain classwork and solve the practice problems circulated at the end of each topic/module.
2. Students are required to strictly adhere to assignment deadlines.
3. Students are required to actively participate in classroom discussions and other activities which is planned in and out of the classroom.

COURSE SCHEDULE:

TABLE 4: COURSE BROAD SCHEDULE				
Sl. No.	ACTIVITY	PLANNED STARTING DATE	PLANNED CONCLUDING DATE	TOTAL NUMBER OF PERIODS
01	Over View of the course	16/02/2023	16/02/2023	1
02	Module : 01	20/02/2023	06/03/2023	7
03	Module: 02	07/03/2023	27/03/2023	9
04	Midterm	12/04/2023	17/04/2023	
05	Module:03	28/03/2023	20/04/2023	11
06	Module:04	24/04/2023	16/05/2023	9
07	Seminar (Case study)	18/05/2023	01/06/2023	8

DETAILED SCHEDULE OF INSTRUCTION:

TABLE 5: DETAILED COURSE SCHEDULE/ LESSON PLAN					
Sl. No.	Session No	Lesson Title	Topics	Course Outcome Number	Reference
1	L1		Overview of the Programme		
2	L2	Module 1: E-Governance: Concepts and Evolution	Course Integration		T1, T2
3	L3		E-Government and need of e-governance	CO1	T1, T2
4	L4		Challenges and Measures	CO1	T1, T2
5	L5		Role of ICT in e-governance	CO1	T1, T2


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6	L6		Gov. 3.0, Basic Concepts	CO1	T1, T2
7	L7		Evolution	CO1	T1, T2
8	L8		Smart City governance, Emerging Trends.	CO1	T1, T2
9	L9	MODULE 2 : E-Governance Models	Course Integration	CO2	T1, T2
10	L10		E-Government Model Types, – Initiatives of GoI,	CO2	T1, T2
11	L11		Smart governance interactions -,	CO2	T1, T2
12	L12		Government to Citizen (G2C), Government to Business (G2B)	CO2	T1, T2, R1
13	L13		Government to Government (G2G), Government to Employee (G2E)	CO2	T1, T2
14	L14		E-Governance Models,	CO2	T1, T2, CN
15	L15		E-Governance Benefits, E-Government	CO2	T1, T2, CN
16	L16		Maturity Model, Mobile government	CO2	T1, T2
17	L17		M-Governance versus E-Governance.	CO2	T1, T2, R1
18	L18		MODULE 3 : Implementatio n of e- Governance	Course Integration to Module 3	
19	L19	Implementation Elements, Implementation Models		CO 3	T1, T2, R1
20	L20	E-Government Project Financing, ,		CO 3	T1, T2, R1
21	L21	Service Prioritization Service Delivery Centers,		CO 3	T1, T2, CN
22	L22	Web-portals, Mobile implementation		CO 3	T1, T2, CN
23	L23	Social networks, Software and Hardware Requirements ,		CO 3	T1, T2
24	L24	Data warehousing, Data mining and		CO 3	T1, T2, CN
25	L25	Business Intelligence		CO 3	T1, T2, CN
26	L26	Open source usage,		CO 3	T1, T2, CN
27	L27	E-Government Project Costing		CO 3	T1, T2, CN
28	L28	E-Government Project Financing	CO 3		
29	L29	MODULE 4 E-Governance in India	Course Integration		T1, T2, R1
30	L30		National e-Governance Plan (NeGP),	CO 4	T1, T2, R1
31	L31		e-Kranti (NeGP 2.0),	CO 4	T1, T2, R1

32	L32		Policies for e-Gov, State Data Centers, State Wide Network,	CO 4	T1, T2, R1
33	L33		Common Service Centre,	CO 4	T1, T2, CN
34	L34		Mission Mode Projects	CO 4	T1, T2, CN
35	L35		Integration in Smart Cities	CO 4	T1, T2, CN
36	L36		Case Studies.	CO 4	T1, T2, CN
37	L37		Case Studies.	CO 4	T1, T2, CN

Topics relevant to “Employability Skills”: Role of ICT in e-Governance, E-Government, Data mining and Business Intelligence, Integration of e-Governance in Smart Cities for **developing Employability Skills through Participative Learning techniques**. This is attained through the Presentation as mentioned in the assessment component.

ASSESSMENT SCHEDULE:

TABLE 6 ASSESSMENT SCHEDULE							
Sl.no	Assessment type	Contents	Course outcome Number	Duration In Hours	Marks	Weightage	Venue, DATE & TIME
1	Assignment 1	Module 1& 2	CO 1	-	20	10%	04/04/2023
2	Mid-Term Test	Module 1& 2	CO 1, CO2	1.5 hour	50	25%	13/04/2023
3	Assignment 2	Module 2 & 3	CO 2, CO 3	-	20	10%	15/05/2023
4	Seminar	Module 1,2 3 & 4	CO 3, CO4	1 hour	10	5%	01/06/2023
5	End Term	Module 1 to 4	CO1, CO 2, CO 3, CO 4	3 hours	100	50%	07/06/2023

COURSE CLEARANCE CRITERIA: “AS PER ACADEMIC REGULATIONS OF THE UNIVERSITY”

MAKEUP EXAM POLICY: “AS PER ACADEMIC REGULATIONS OF THE UNIVERSITY”

CONTACT TIMINGS IN THE CHAMBER FOR ANY DISCUSSIONS:

Students are encouraged to contact through phone, e-mail or other digital modes and can meet in chamber.



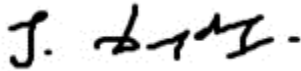
SAMPLE THOUGHT PROVOKING QUESTIONS:

TABLE 7: SAMPLE THOUGHT PROVOKING QUESTIONS				
SL NO	QUESTION	MARKS	COURSE OUTCOME NO.	BLOOM'S LEVEL
1	Explain the concept of e-governance and its various steps.	10	CO1	L2
2	'ICT enables planning and decision making in governance' comment.	10	CO2	L2
3	'ICT has played an important role in promoting agriculture during the last several decades'. Elaborate	10	CO3	L3
4	Highlight the critical success gaps in the effective implementation of e-governance.	10	CO4	L2
5	rite short notes in about 200 words on each of the following: (a) Limitations of Electronic Commerce 5 (b) Impact of E-Seva	10	CO4	L3

TARGET SET FOR COURSE OUTCOME ATTAINMENT:

TABLE 8: TARGET SET FOR ATTAINMENT OF EACH CO and ATTAINMENT ANALYSIS AFTER RESULTS						
Sl. No.	C.O. No.	Course Outcomes	Threshold Set for the CO	Target set for attainment in percentage	Actual C.O. Attainment in Percentage	Remarks on attainment & Measures to enhance the attainment
01	CO1	Understand the concept of e-Governance and its utility	70	70		
02	CO2	Explain the various e-Governance and e-Government models	70	70		
03	CO3	Show how e-Governance is implemented	70	65		
04	CO4	Discuss the implementation of e-Governance in India	70	65		

Signature of the course Instructor In-Charge



APPROVAL:

This course has been duly verified Approved by the D.A.C.

Signature of the Chairperson D.A.C.






PRESIDENCY UNIVERSITY

Private University Estd. in Karnataka State by Act No. 41 of 2013

SCHOOL OF ENGINEERING DEPARTMENT OF CIVIL ENGINEERING

Year: 2021-2022

Semester: VI

Section: 3-ECE-2 & 3-ECE-4

Course Code: CIV2006

Course Name: Infrastructure Systems for Smart Cities

Type of Skill: Skill Development

Type of Activity: Participative Learning

Instructor in Charge: Dr. Jagdish H Godihal

Instructor for Section: Mr. Gopalakrishnan N

Details about the activity: Students were asked to present their innovative ideas for Smart Cities in any aspect of Smart city development such as Transportation, Healthcare, Education, Tourism, Water management etc. The seminar presentation activity by students focuses on Skill Development through participative learning.

Topic of Activity: Presentation on Innovative solutions for Smart Cities development

Details of the students and topics presented by students is presented below:

Sl. No.	Roll Number	Name	Topic Presented
1	20201ECE0128	MD Kamraan	SMART TOURISIM
2	20201ECE0119	Hemanth M	
3	20201ECE0110	Chethan BM	

Sl. No.	Roll Number	Name	Topic Presented
1	20201ECE0105	Sujith M	ARDUINO DISTANCE SENSOR USING THE HC- SR04
2	20201ECE0087	Sanjeev S	
3	20201ECE0096	Vaishali R	
4	20201ECE0092	Chandana M	
5	20201ECE0099	Arvind Kumar S	

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SMART TOURISIM

MD Kamraan(2020IECED128)
Hemanth.M(2020IECED119)
Chethan BM(2020IECED110)

OUR IDEAS

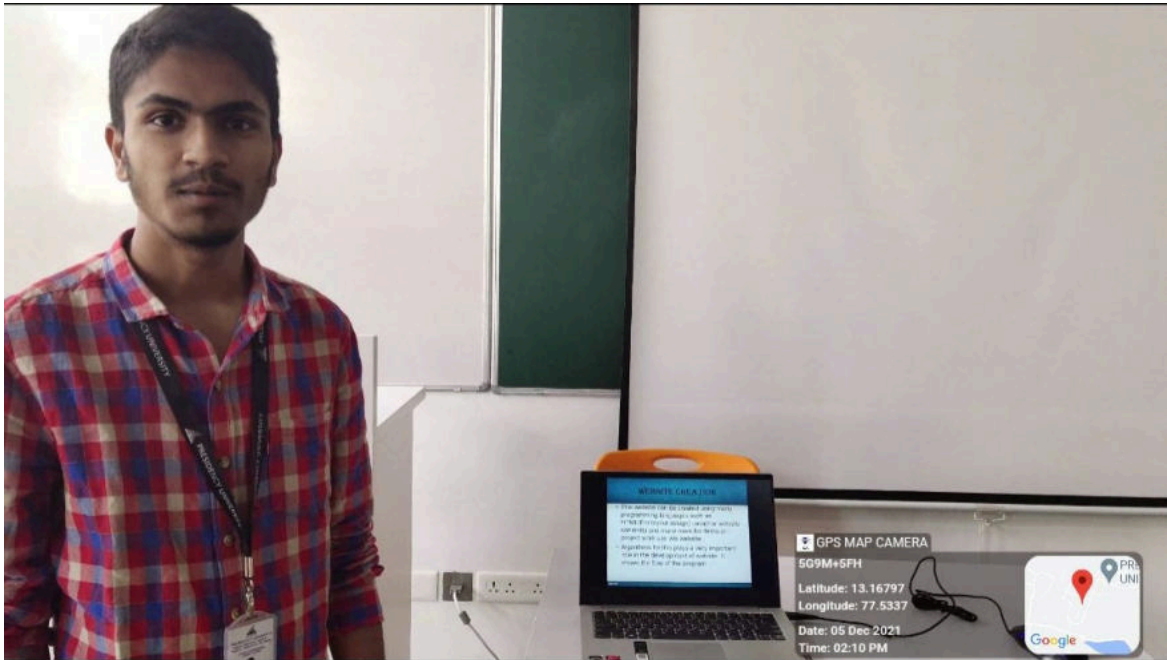
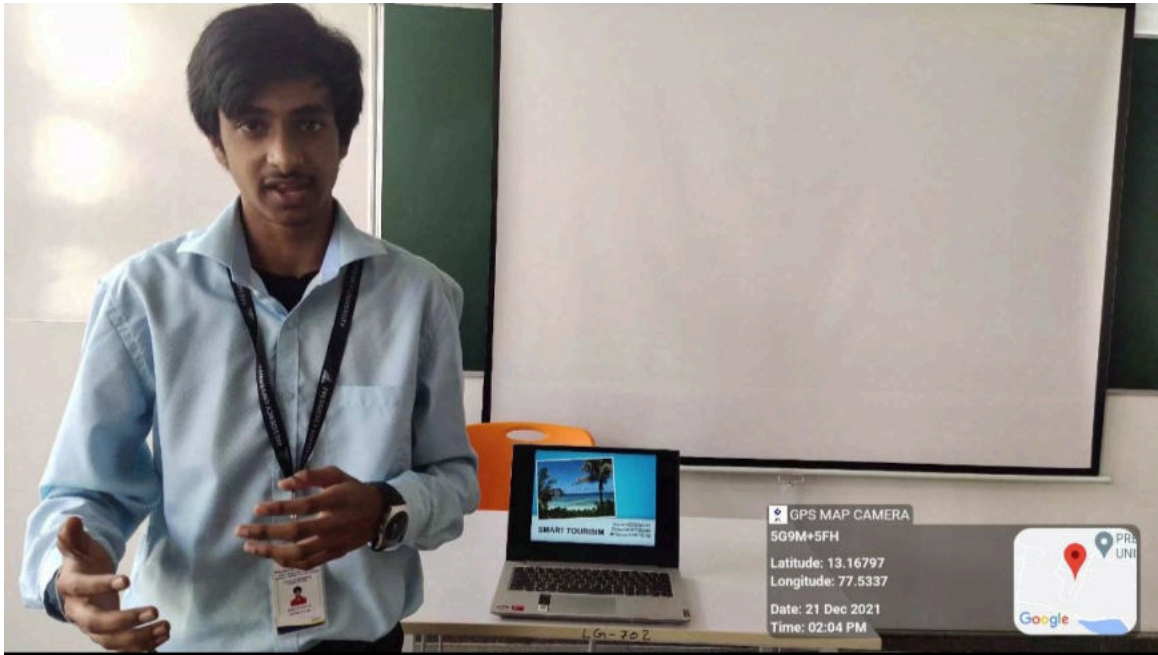
- The main Concept is that to develop a website for people who want to explore different places.
- But people are not familiar with the places So this website helps them to research about famous places , hotels .This Site also compares the hotel prices . Also when people are in a new place there are language barriers faced by them To resolve this a translator is needed
- This Website Provides all these services stated

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Students expressing their idea on Smart tourism and demonstrating their website development and the user interface.

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BANGALORE

Arduino Distance Sensor using the HC-SR04

Semester & AY: Odd Sem 2021-22

Course Code: CIV 2006

Course Name: Infrastructure Systems for Smart Cities

Program & Sem: B. Tech (ECE) & III Sem

Section: 3-ECE-2

Faculty In-charge: Gopalakrishnan N,

Asst. Professor, Dept. of Civil Engg.

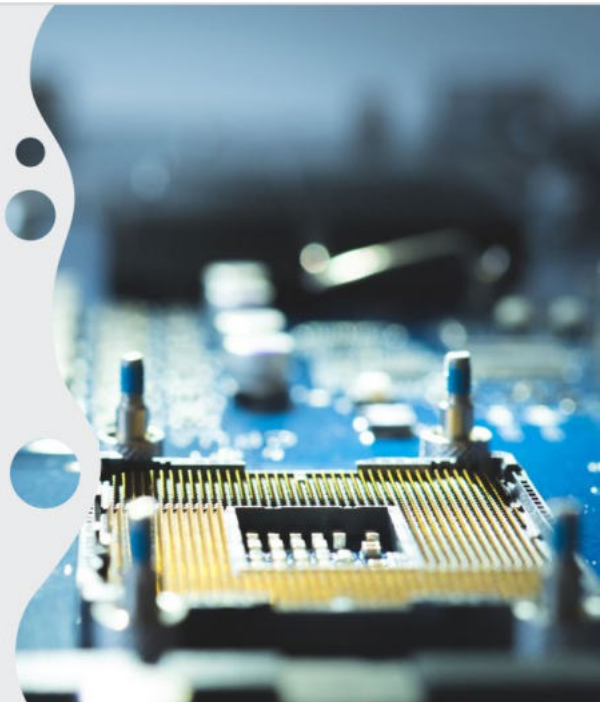
Name of the Student	Id No.
Sujith M	20201ECE0105
Sanjeev S	20201ECE0087
Vaishali R	20201ECE0096
Chandana M	20201ECE0092
Arvind Kumar S	20201ECE0099

HC-SR04 Ultrasonic Sensor

The HC-SR04 ultrasonic distance sensor is a popular affordable sensor that provides 2cm to 400cm of measurement

It can be as accurate as 3 mm but can vary depending on the quality of the sensor

Ultrasonic sensors are relatively simple devices and extremely useful in a lot of high-tech setups



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Students demonstrating Distance measurement using Ultrasonic sensors connected to Arduino board.

Signature of Instructor In-Charge

HOD - CIV

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PRESIDENCY UNIVERSITY

(Established under the Presidency University Act, 2013 of the Karnataka Act 41 of 2013)

[2022-23 EVEN/WINTER SEMESTER]

COURSE HAND OUT [Revision 02 - Jan 2022]

SCHOOL: School of Engineering

DEPT: Civil Engineering

DATE OF ISSUE: 25-01-2023

NAME OF THE PROGRAM : B.Tech (Civil Engineering)
P.R.C. APPROVAL REF. : PU/AC-18.3/CIV14/CIV/2021-25
SEMESTER/YEAR : 4th/2nd
COURSE TITLE & CODE : Introduction to Infrastructure Systems and Planning – CIV 2036
COURSE CREDIT STRUCTURE : 3-0-3
CONTACT HOURS : 3 Hrs/Week
COURSE IC : Mr. Ajay H A
COURSE INSTRUCTOR : Mr. Ajay H A
COURSE URL :
PROGRAM OUTCOMES :

PO 01. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO 02. Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO 03. Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO 04. Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO 05. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations



PO 06. The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO 07. Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of and need for sustainable development.

PO 08. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO 09. Individual and teamwork: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO 10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO 11. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO 12. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

COURSE PREREQUISITES: Fundamental knowledge of Infrastructure systems and its need

COURSE DESCRIPTION: The course appreciates the need for Infrastructure, which is instrumental in promoting economic growth of any country. The course is conceptual in nature that enable to learn what is Infrastructure, types and challenges and its planning. The course helps to develop the critical thinking pertaining to the infrastructure development and corresponding usage to the mankind.

COURSE OUTCOMES: On successful completion of the course the students shall be able to: (The outcomes are to be developed using the appropriate action verbs from the Bloom's Taxonomy-the list of verbs are attached)

TABLE 1: COURSE OUTCOMES		
CO Number	CO	Expected BLOOMS LEVEL
1	Define terms associated with the types of Infrastructure systems.	L1
2	Discuss steps in scheduling and management of activities associated with infrastructure projects.	L2
3	Apply the concepts of financial evaluations in the infrastructure project and project the cash flows.	L3

MAPPING OF C.O. WITH P.O.

[H-HIGH, M- MODERATE, L-LOW]

CO. No.	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12
CO1	M				M	M	M		L		H	
CO2	M				M	M	M		L		H	
CO3	M				M	M	M		L		H	



COURSE CONTENT (SYLLABUS):

Module:1: Introduction to Infrastructure

[12 Hrs] [KNOWLEDGE]

Definitions of infrastructure; Types of Infrastructure systems, Phases in Infrastructure Planning, Transportation Infrastructure (Roads, Bridges, Airports, Ports, Waterways), Transportation Research using GIS, Urban and Rural Infrastructure, Water and Sanitation Infrastructure (Water Supply Systems, Sewage treatment systems), Public – private partnerships (PPP) in Water and sanitation, Energy Infrastructure (Dams, power plants, power distribution and transmission facilities, pipelines)

Module: 2: Infrastructure Planning

[10 Hrs] [COMPREHENSION]

Typical infrastructure planning steps; Planning and appraisal of major infrastructure projects; Screening of project ideas; Life cycle analysis; Multi-criteria analysis for comparison of infrastructure alternatives Procurement strategies; Scheduling and management of planning activities.

Module: 3: Concepts of Infrastructure Planning

[10 Hrs] [APPLICATION]

Financial Evaluation - Time value of money, Investment criteria, Project cash flows – elements and basic principles of estimation, Financial estimates and projections, Cost of capital, Rate of return; Project risk analysis, Political and social perspectives of infrastructure planning; Case studies

DELIVERY PROCEDURE (PEDAGOGY):

TABLE 3: SPECIAL DELIVERY METHOD/ PEDAGOGY PLANNED WITH TOPICS				
S. No	Lecture Number	Subtopic as per lesson Plan	Pedagogy title/ short explanation of adopted pedagogy	** At end of semester please update whether activity was done
1	L8	Public private partnerships (PPP)	Problem Based Learning	
2	L25	Project cash flows	Experiential Learning	

REFERENCE MATERIALS:

Textbook(s)

T1. A. S. Goodman and M. Hastak, Infrastructure planning handbook: Planning, engineering, and economics, McGraw-Hill, New York, 2006.

T2. J. Parkin and D. Sharma, Infrastructure planning, Thomas Telford, London, 1999.

Reference Book(s)

R1. A. S. Goodman and M. Hastak, Infrastructure planning handbook: Planning, engineering, and economics, McGraw-Hill, New York, 2006.

R2. J. D. Finnerty, Project financing - Asset-based financial engineering, John Wiley & Sons, New York, 1996.

R3. A. S. Goodman and M. Hastak, Infrastructure planning handbook: Planning, engineering, and economics, McGraw-Hill, New York, 2006.

Website: <https://www.india.gov.in/> (National portal for Infrastructure in India)



SPECIFIC GUIDELINES TO STUDENTS: (Here mention a few tips to study this course effectively)

1. Students are required to attend classes regularly and maintain a minimum of 75% of attendance to be eligible to attend the exam.
2. Students are required to strictly adhere to assignment deadlines or presentation schedule if any.
3. Students are required to actively participate in classroom discussions and other activities which are planned in the classroom.

COURSE SCHEDULE:

TABLE 4: COURSE BROAD SCHEDULE				
Sl. No.	ACTIVITY	PLANNED STARTING DATE	PLANNED CONCLUDING DATE	TOTAL NUMBER OF PERIODS
01	Over View of the course			1
02	Module : 01			12
02	Module: 02			10
03	Assignment			
04	Midterm			
05	Module:03			10
06	Quiz			1
07	Last instruction day			
08	End-Term			

DETAILED SCHEDULE OF INSTRUCTION:

Self-learning topics: Infrastructure, Life cycle analysis, Project risk analysis, Cash flow

Teaching Pedagogy: PPT Lectures

TABLE 5: DETAILED COURSE SCHEDULE/ LESSON PLAN				
Session no.	TOPIC	SUBTOPIC	CO Number	Referen ce
1	Course Overview			
2	Introduction to Infrastructure	Definitions of infrastructure	CO1	T1, R1
3		Types of Infrastructure systems	CO1	T1, R1
4		Phases in Infrastructure Planning	CO1	T1, R1
5		Urban and Rural Infrastructure	CO1	T1, R1
6		Transportation Infrastructure (Roads, Bridges)	CO1	T1, R1
7		Transportation Infrastructure (Airports, Ports, Waterways)	CO1	T1, R1
8		Transportation Research using GIS	CO1	T1, R1
9		Water and Sanitation Infrastructure (Water Supply	CO1	T1, R1

		Systems, Sewage treatment systems),		
10		Public –private partnerships (PPP) in Water and sanitation,	CO1	T1, R1
11		Energy Infrastructure (Dams, power plants, power distribution and transmission facilities, pipelines)	CO1	T1, R1
12		Energy Infrastructure (Dams, power plants, power distribution and transmission facilities, pipelines)	CO1	T1, R1
END OF MODULE 1				
13	Infrastructure Planning	Typical infrastructure planning steps	CO2	T1, T2, R3
14		Typical infrastructure planning steps	CO2	T1, T2, R3
15		Planning and appraisal of major infrastructure projects	CO2	T1, T2, R3
16		Planning and appraisal of major infrastructure projects	CO2	T1, T2, R3
17		Screening of project ideas	CO2	T1, T2, R3
18		Life cycle analysis	CO2	T1, T2, R3
19		Life cycle analysis	CO2	T1, T2, R3
20		Multi-criteria analysis for comparison of infrastructure alternatives Procurement strategies	CO2	T1, T2, R3
21		Multi-criteria analysis for comparison of infrastructure alternatives Procurement strategies	CO2	T1, T2, R3
22		Scheduling and management of planning activities.	CO2	T1, T2, R3
END OF MODULE 2				
23	Concepts of Infrastructure Planning	Financial Evaluation - Time value of money	CO3	T1, R2
24		Financial Evaluation - Time value of money	CO3	T1, R2
25		Investment criteria	CO3	T1, R2
26		Project cash flows – elements and basic principles of estimation	CO3	T1, R2
27		Project cash flows – elements and basic principles of estimation	CO3	T1, R2
28		Financial estimates and projections	CO3	T1, R2
29		Cost of capital, Rate of return	CO3	T1, R2 T1, R2

30		Project risk analysis	CO3	T1, R2
31		Political and social perspectives of infrastructure planning	CO3	T1, R2
32		Case studies	CO3	
END OF MODULE 3				

ASSESSMENT SCHEDULE:

TABLE 6 ASSESSMENT SCHEDULE							
Sl.no	Assessment type	Contents	Course outcome Number	Duration In Hours	Marks	Weightage, %	Venue, DATE & TIME
1	Assignment 1	Module 1 & 2	CO1, CO2		20	10	
2	Midterm	Module 1 & 2	CO1, CO2	1.5	50	25	
3	Assignment 2	Module 3	CO3		20	10	
4	Quiz	Module 3	CO3	0.5	10	5	TBA
5	End term	Module 1, 2 & 3	CO1, CO2, CO3	3	100	50	

COURSE CLEARANCE CRITERIA: AS PER ACADEMIC REGULATIONS OF THE UNIVERSITY

MAKEUP EXAM POLICY: AS PER ACADEMIC REGULATIONS OF THE UNIVERSITY

CONTACT TIMINGS IN THE CHAMBER FOR ANY DISCUSSIONS:

SAMPLE THOUGHT PROVOKING QUESTIONS:

TABLE 7: SAMPLE THOUGHT PROVOKING QUESTIONS				
SL NO	QUESTION	MARKS	COURSE OUTCOME NO.	BLOOM'S LEVEL
1	Infrastructure planning is the process of identifying, assessing, and planning the necessary infrastructure needs of an organization or community. Discuss how does the planning process affect the overall development of a city/town?	10	CO1	L2
2	Life cycle analysis (LCA) is a method of quantifying the environmental impacts associated with a given product. Prepare a life cycle analysis of concrete.	15	CO2	L3
3	Within project management, risk management refers to activities for minimizing project risks, and thereby ensuring that a project is completed within time and budget, as well as fulfilling its goals. Summarize a risk management plan by identifying a project. Of your choice.	15	CO3	L3



TARGET SET FOR COURSE OUTCOME ATTAINMENT:

TABLE 8: TARGET SET FOR ATTAINMENT OF EACH CO and ATTAINMENT ANALYSIS AFTER RESULTS						
Sl.no	C.O. No.	Course Outcomes	Threshold Set for the CO	Target set for attainment in percentage	Actual C.O. Attainment In Percentage	Remarks on attainment & Measures to enhance the attainment
					*	*
01	CO1	Define terms associated with the types of Infrastructure systems.	60	60		
02	CO2	Discuss steps in scheduling and management of activities associated with infrastructure projects.	60	50		
03	CO3	Apply the concepts of financial evaluations in the infrastructure project and project the cash flows.	50	50		

Signature of the course Instructor In-Charge:

APPROVAL:

This course has been duly verified Approved by the D.A.C.

Signature of the Chairperson D.A.C.

Name and signature of the Instructor In-Charge:

Name and signature of the DAC Chairperson:



PRESIDENCY UNIVERSITY

Private University Estd. in Karnataka State by Act No. 41 of 2013

SCHOOL OF ENGINEERING DEPARTMENT OF CIVIL ENGINEERING

Year: 2022-2023

Semester: IV

Section: 4-CIV

Course Code: CIV2036

Course Name: Introduction to Infrastructure Systems and Planning

Type of Skill: Employability Skill

Type of Activity: Participative Learning

Instructor in Charge: Mr. Ajay H A

Details about the activity: Students were asked to do an group presentation on various topics related to Infrastructure planning and financial aspects of it.

Topic of Activity: Presentation on Financial Evaluation of Infrastructure development.

Details of the students and topics presented by students is presented below:

Sl. No.	Roll Number	Name	Topic Presented
1.	20211CII0001	Peddireddy Shalini Reddy	Financial Evaluation of Projects
2.	20211CII0002	Bala Manikanta Boyina	
3.	20211CIV0001	Damodar Rishi	Project cash flow
4.	20211CIV0002	Chiradeep Reddy R	
5.	20211CIV0008	Abhishek Shivanandappa Bammanal	Financial Estimate and Projections in Business
6.	20211CIV0009	Pavankumar T	
7.	20211CIV0010	G Nithin Kumar Reddy	Cost of Capital and Rate of Return
8.	20211CIV0013	M K Shonith Kumar	
9.	20211CIV0015	M N Sai Bharadwaj	Investment Criteria
10.	20211CIV0024	Ayaan Shariff	The Political & Social Perspectives of Infrastructure Planning Case Studies
11.	20211CIV0035	Venugopal	

City Office: University House, 8/1, King Street, Richmond Town, Bengaluru - 560025

Campus: Presidency University, Itgalpur, Rajankunte, Bengaluru - 560064

Phone: + 80 4925 5533 / 5599 Email ID: info@presidencyuniversity.in

www.presidencyuniversity.in



Sample Slides and Geo-tagged from Student Seminar Presentations

THE POLITICAL & SOCIAL PERSPECTIVE'S OF INFRASTRUCTURE PLANNING CASE STUDIES

By Ayaan Shariff-20211CIV0024

Venu Gopal-20211CIV00

The Cross rail Project in London, UK:

- The Crossrail Project is a new railway line that will connect east and west London.
- The project has been highly controversial, with opponents arguing that it is too expensive and will cause significant disruption to local communities.
- Supporters of the project argue that it will reduce traffic congestion, promote economic growth, and provide new job opportunities.
- The project's funding and construction have been a significant political issue, with some politicians calling for its cancellation or reduction in scope.



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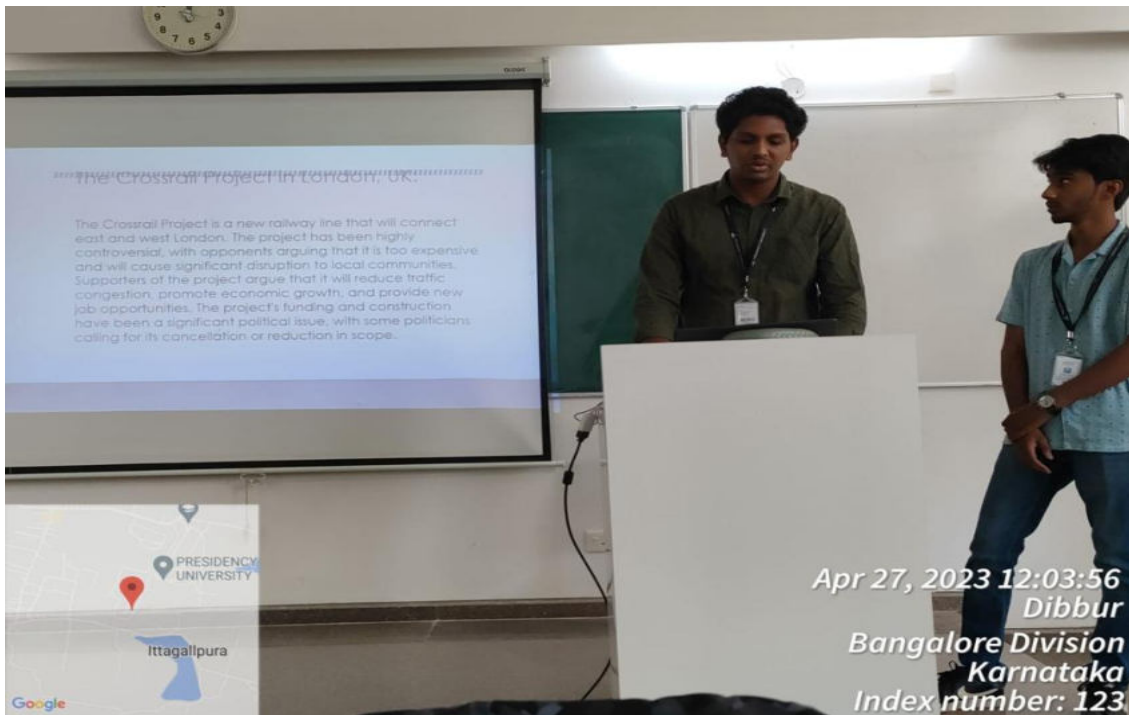
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PRESIDENCY UNIVERSITY

Private University Estd. in Karnataka State by Act No. 41 of 2013



Apr 27, 2023 12:03:56
Dibbur
Bangalore Division
Karnataka
Index number: 123



Title: Project cash flow

By

Chiradeep reedy

Damodhar rishi

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Introduction

In general terms, 'cash flow' is the movement of income into and expenditure out of a business (or other entity) over time. If more money is coming into the business than is going out of it, cash flow is said to be 'positive'. If more money is going out, this is negative cash flow.

In construction, however, the term 'cash flow' typically refers to an analysis of when costs will be incurred and how much they will amount to during the life of a project.



Students presenting on the assigned topics followed by a brain storming session based on specific questions from peers.

Signature of Instructor In-Charge

HOD - CIV

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PRESIDENCY UNIVERSITY

(Established under the Presidency University Act, 2013 of the Karnataka Act 41 of 2013)

[2022-23 EVEN/ WINTER SEMESTER]

COURSE HAND OUT

SCHOOL: SOE

DEPT: CIVL

DATE OF ISSUE: 25.01.2023

NAME OF THE PROGRAM : B.Tech in Civil Engineering

P.R.C. APPROVAL REF. : PU/AC-18.3/CIV14/CIV/2020-24

SEMESTER/YEAR : VI / 3rd Year

COURSE TITLE & CODE : Fundamentals of Smart City, Discipline elective, Theory, CIV2041

COURSE CREDIT STRUCTURE : 3-0-3

CONTACT HOURS : 3 periods per week

COURSE IC : Dr. Chandankeri G G

COURSE INSTRUCTOR : Dr. Chandankeri G G

COURSE URL : <https://presiuniv.knimbus.com/user#/home>

PROGRAM OUTCOMES :

PO-1: Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO-2: Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO-3: Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO-4: Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO-5: Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.



PO-6: The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO-7: Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of and need for sustainable development.

PO-8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO-9: Individual and teamwork: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO-10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO-11: Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO-12: Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

COURSE PREREQUISITES: NIL

COURSE DESCRIPTION:

This course is designed to introduce the students to the concept of Smart Cities. The course enables the students to gain insights into the modern-day smart city components and characteristics. This course will make an overall introduction to global smart city development in order to inform the leaders in smart cities and communities. The course will enable the students to make a step forward in developing an open, collaborative, citizen-centric, and digitally-enabled operating model for their city that realizes their vision of smart city toward sustainable, resilient, and prosperous future.

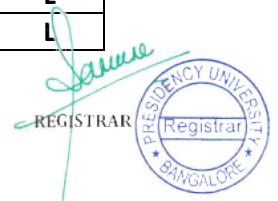
COURSE OUTCOMES:

TABLE 1: COURSE OUTCOMES		
CO Number	CO	Expected BLOOMS LEVEL
1	Describe the technologies and the smart solutions for the development of smart cities.	Knowledge
2	Prepare a sustainable urban system plan to build smart, inclusive, sustainable cities.	Comprehension
3	Demonstrate the knowledge of implementing and operation of smart cities.	Comprehension

MAPPING OF C.O. WITH P.O.

[H-HIGH , M- MODERATE, L-LOW]

TABLE 2: CO PO Mapping ARTICULATION MATRIX												
CO. No	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12
CO1	H	M	M	--	M	L	--	--	M	L	L	L
CO2	H	M	M	--	M	L	--	--	M	L	L	L



CO3	M	M	M	--	M	L	--	--	H	L	L	L
-----	---	---	---	----	---	---	----	----	---	---	---	---

COURSE CONTENT (SYLLABUS):

Module:1: Smart City: Definition, Idea, Concepts and Necessity; Core components, Technologies, Conceptualizing cities as complex socio-technical systems, digitalization, Implications on digitalization on cities, Smart solutions, Dimensions of Smart city development - smart infrastructure and building, smart transportations, smart energy, smart water management system, smart waste management, smart healthcare, and smart environment. Smart city models. [12 Hrs] [Knowledge]

Module: 2: Sustainable urban system plan, Planning approaches, Strategic urban development plan, Smart city documentation, Reference framework, Smart city proposal, Urban resilience; Urban consultations; Case studies [12Hrs] [Comprehension]

Module: 3: Government funding, Public private partnership, Convergence schemes; Implementation by SPV, Implementation by decentralization, Mission monitoring – Case studies [08 Hrs] [Comprehension]

DELIVERY PROCEDURE (PEDAGOGY):

TABLE 3: SPECIAL DELIVERY METHOD/ PEDAGOGY PLANNED WITH TOPICS				
S. No	Lecture Number	Subtopic as per lesson Plan	Pedagogy title/ short explanation of adopted pedagogy	** At end of semester please update whether activity was done
1	L9	Public private partnership	Problem based learning	
2	L26	Project cash flows	Experiential Learning	Project cash flows

REFERENCE MATERIALS:

Textbooks

T1: Smart City Emergence 2019 Elsevier Inc.

<https://www.sciencedirect.com/book/9780128161692/smart-city-emergence>

Reference Book(s)

R1: Saraju P Mohanty, Uma Choppali, Elias Kougianos, “ Everything you wanted to know about Smart Cities”, IEEE Consumer Electronics Magazine, July 2016

R2: Barton A, Manning R. Smart Cities: Technologies, Challenges and Future Prospects. Nova; 2017.

SPECIFIC GUIDELINES TO STUDENTS:

1. Students are required to attend classes regularly and maintain a minimum of 75% of attendance to be eligible to attend the exam.
2. Students are required to strictly adhere to assignment deadlines or presentation schedule if any.
3. Students are required to actively participate in classroom discussions and other activities which are planned in the classroom.
4. Students can study the online videos on the subject.



COURSE SCHEDULE

TABLE 4: COURSE BROAD SCHEDULE				
Sl. No.	ACTIVITY	PLANNED STARTING DATE	PLANNED CONCLUDING DATE	TOTAL NUMBER OF PERIODS
01	Over View of the course	17.2.2023	21.2.2023	03
02	Module : 01	24.2.2023	20.3.2023	11
02	Module: 02	21.3.2023	17.4.2023	10
03	Assignment/any other activity/Guest Lecture/ Field Visit	24.3.2023	10.4.2023	--
04	Midterm	16.3.2023	21.3.2023	04
05	Module:03	18.4.2023	5.5.2023	07
	And so on till last instruction day	Student presentation and remedial class		

DETAILED SCHEDULE OF INSTRUCTION:

Self-learning topics: Infrastructure, Life cycle analysis, Project risk analysis, Cash flow

Teaching Pedagogy: PPT Lectures

Sl. no	Sessi on no	Lesson Title	Topics	Course Outcome Number	Delivery Mode	Reference
Program and Course Integration						
1	L2	Smart City	Definition, Idea, Concepts and Necessity.	CO1	Online / PPTs, Whiteboard	Class Notes
2	L3	Smart City mechanisms	Components	CO1	Online / PPTs, Whiteboard	T1, R1 & R2, library resources and Class Notes
3	L4	Smart technologies	Technologies	CO1	Online / PPTs, Whiteboard	T1, R1 & R2, library resources and Class Notes
4	L5	Smart city difficulties	Conceptualizing cities as complex socio-technical systems	CO1	Online / PPTs, Whiteboard	T1, R1 & R2, library resources and Class Notes
5	L6	Smart city digitization	Digitalization, Implications on digitalization on cities	CO1	Online / PPTs, Whiteboard	T1, R1 & R2, library resources and Class Notes
6	L7	Smart city problem overcomes.	Smart solutions	CO1	Online / PPTs, Whiteboard	T1, R1 & R2, library resources and Class Notes
7	L8	Dimensions of Smart city development	Smart infrastructure and building, smart transportations	CO1	Online / PPTs, Whiteboard	T1, R1 & R2, library resources and Class Notes
8	L9	Smart management of resources	Smart energy, smart water management system, smart waste management.	CO1	Online / PPTs, Whiteboard	T1, R1 & R2, library resources and Class Notes


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9	L10	Modern healthcare and environmental systems	Smart healthcare and smart environment.	CO1	Online / PPTs, Whiteboard	T1, R1 & R2, library resources and Class Notes
10	11	Smart city models.	Case studies	--		
11	12	Revision of the portion				
End of Module 1						
12	L11	Sustainable urban planning	Understanding of inclusive planning	CO2	Online / PPTs, Whiteboard	T1, T2, R1, R2, R3 and Class Notes
13	L12	Planning methods	Approach	CO2	Online / PPTs, Whiteboard	T1, T2, R1 and Class Notes
14	L13	Strategic urban development plan	Drafting strategic urban development plans - objectives and key considerations Urban design (UD) concepts	CO2	Online / PPTs, Whiteboard	T1, T2, R1, R2 and Class Notes
15	L14	Smart city documentation	Various components	CO2	Online / PPTs, Whiteboard	T1, T2, R1 and Class Notes
16	L15	Reference framework	Reference guides to support the agencies responsible for carrying out the action stages.	CO2	Online / PPTs, Whiteboard	T1, T2, R1 and Class Notes
17	L16	Smart city proposal	Elements	CO2	Online / PPTs, Whiteboard	T1, T2, R1 and Class Notes
17	L17	Urban resilience	Definition, objectives, strengths and weakness	CO2	Online / PPTs, Whiteboard	T1, T2, R1 and Class Notes
18	L18	Urban consultations for smart city	Overview, basic principles and process.	CO2	Online / PPTs, Whiteboard	T1, T2, R1 and Class Notes
10	L19	Case studies		CO2	Online / PPTs, Whiteboard	T1, T2, R1 and Class Notes
20	L21	--	Revision of module 2			
End of Module 2						
21	L22	Financial resources for smart city projects	Government funding, Public private partnerships	CO3	Online / PPTs, Whiteboard	Web source and Class Notes
22	L23	Convergence schemes	convergence at the planning stage of various schemes	CO3	Online / PPTs, Whiteboard	Web source and Class Notes
23	L24	Smart Governance	Concept and mechanisms of working of smart city Governance	CO3	Online / PPTs, Whiteboard	Web source and Class Notes

24	L25	Implementation by SPV	Role of SPV in the development of the smart cities.	CO3	Online / PPTs, Whiteboard	Web source and Class Notes
25	L26	Implementation by decentralization	Management through Decentralization and its significance	CO3	Online / PPTs, Whiteboard	Web source and Class Notes
26	L27	Mission monitoring	– Case studies	CO3	Online / PPTs, Whiteboard	Web source and Class Notes
29	L30	--	Revision of module 3			
End of Module 3						

ASSESSMENT SCHEDULE:

Sl.no	Assessment type	Contents	Course outcome Number	Duration In Hours	Marks	Weightage, %	Venue, DATE & TIME
1	Assignment 1	Module 1 & 2	CO1, CO2	--	15	7.5	
2	Midterm	Module 1 & 2	CO1	1.5	60	30	16.3.23 to 21.3.2023
3	Assignment 2 / Student presentation	Module 2	CO2	--	15	7.5	
4	Quiz	Module 3	CO3	0.5	10	5	TBA
5	End term	Module 1, 2 & 3	CO1, CO2, CO3	3	100	50	

COURSE CLEARANCE CRITERIA: AS PER ACADEMIC REGULATIONS OF THE UNIVERSITY

MAKEUP EXAM POLICY: AS PER ACADEMIC REGULATIONS OF THE UNIVERSITY

SAMPLE THOUGHT PROVOKING QUESTIONS:

SL NO	QUESTION	MARKS	COURSE OUTCOME NO.	BLOOM'S LEVEL
1	The E Governance is not only a website on the internet E-governance is providing governmental services that are accessible through the internet. E-governance is the network that includes government, public, and business organizations. Describe the characteristics of Smart governance that benefits the Smart cities and list any 2 drawbacks because of the same.	10	1	1
2	A Smart City should be implemented for the citizens considering their challenges and using technology	15	2	2


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	resolve these challenges. A clear understanding of the challenges will help analyze, implement and prioritize to design smart solutions. Describe in detail Citizen Engagement Framework to prepare a strategic plan for Smart cities.			
3	A Smart City should be implemented for the citizens' considering their challenges and using technology resolve these challenges. Smart City development plans should address top-priority citizen challenges by leveraging suitable technology solutions. Explain with a neat diagram Smart City citizen engagement framework? Explain any three smart enablers.	15	2	2

TARGET SET FOR COURSE OUTCOME ATTAINMENT:

TABLE 8: TARGET SET FOR ATTAINMENT OF EACH CO and ATTAINMENT ANALYSIS AFTER RESULTS						
Sl.no	C.O. No.	Course Outcomes	Threshold Set for the CO	Target set for attainment in percentage	Actual C.O. Attainment in Percentage *	Remarks on attainment & Measures to enhance the attainment *
01	CO1	Define terms associated with the types of Infrastructure systems.	60	60		
02	CO2	Discuss steps in scheduling and management of activities associated with infrastructure projects.	60	50		
03	CO3	Apply the concepts of financial evaluations in the infrastructure project and project the cash flows.	50	50		

Signature of the course Instructor In-Charge (s)

APPROVAL:

This course has been duly verified Approved by the D.A.C.

Signature of the Chairperson D.A.C.

Name and signature of the Instructor In-Charge (s)



Name and signature of the DAC Chairperson

Sanne
REGISTRAR



REGISTRAR
PRESIDENCY UNIVERSITY
BANGALORE



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Private University Estd. in Karnataka State by Act No. 41 of 2013

SCHOOL OF ENGINEERING DEPARTMENT OF CIVIL ENGINEERING

Year: 2022-2023

Semester: VI

Section: 6-CIV

Course Code: CIV2041

Course Name: Fundamentals of Smart City

Type of Skill: Employability Skill

Type of Activity: Participative Learning

Instructor in Charge: Mr. Ajay H A

Details about the activity: Students were asked to do an individual presentation on various topics related to concepts of smart cities. The topics allotted would compel students to delve deep into various dimensions of infrastructure development in smart cities. Students would acquire a deep knowledge into the subject and enhance their employability skills and also participate in the question and answer session.

Topic of Activity: Presentation on dimensions on smart city development

Details of the students and topics presented by students is presented below:

Sl. No.	Roll Number	Name	Topic Presented
1.	20201CIS0001	Vivek	Smart Waste Management
2.	20201CIV0005	Mohammed Rayan	Building the Future: The promise and Potential of Smart Cities
3.	20201CIV0006	Almas Wajid	Core Components of Smart City
4.	20201CIV0010	Usha S	Smart City Model
5.	20201CIV0012	N S Harshith Nayak	Framework for Developing Smart Cities
6.	20201CIV0016	Harshith M D	Smart City Proposal
7.	20201CIV0019	Prajwal K M	Implementation by decentralization
8.	20201CIV0029	Praveen V Patil	Mission Monitoring in Smart Cities
9.	20201CIV0033	Manikanta N	Smart City - Future Trends

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10.	20201CIV0037	Shaik Abdul Musaveer	Smart City Framework
11.	20201CIV0039	Jaspreet Singh	Dimensions of Smart City Development
12.	20201CIV0041	Anup P Malge	Implementation by SPV
13.	20201CIV0042	Akash K V	Guidelines and Documentation
14.	20201CIV0044	N Faysal Fakruddin Niazi	Smart City Management
15.	20211LCM0001	Mohummad Faisal Chouhan	Smart Transportation

Sample Slides and Geo-tagged from Student Seminar Presentations



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4. EFFICIENT URBAN MOBILITY AND PUBLIC TRANSPORT

ADVANTAGES

1. Creates more reliable and efficient traffic routes by using live and historical data.
2. Smart sensors and CCTV cameras can quickly identify when an accident has happened.
3. Refillable transit cards allow passengers to prepay their fare and simply tap their card to access the subway or train terminal. This dramatically improves the speed at which passengers can access their train, and eliminates the need to carry cash.



SMART CITY MODEL

USHA S

20201CIV0010

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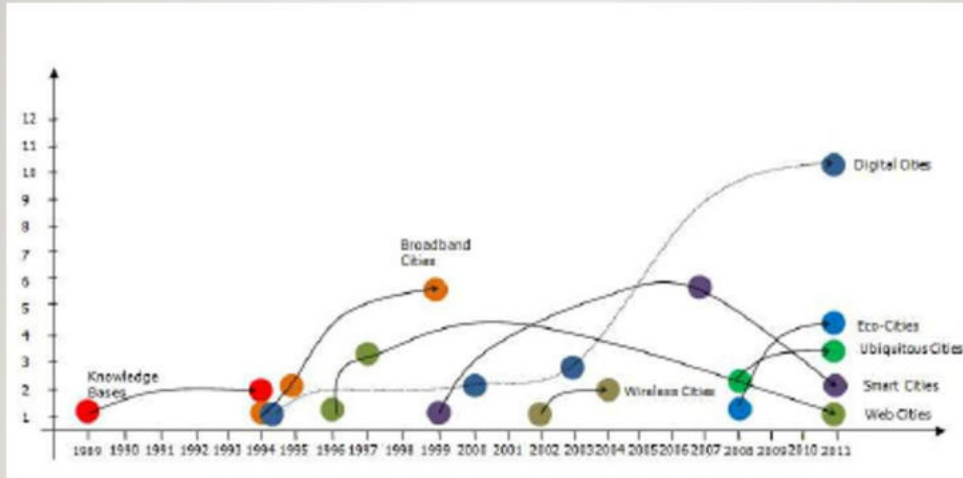
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Smart city Models Evolution:



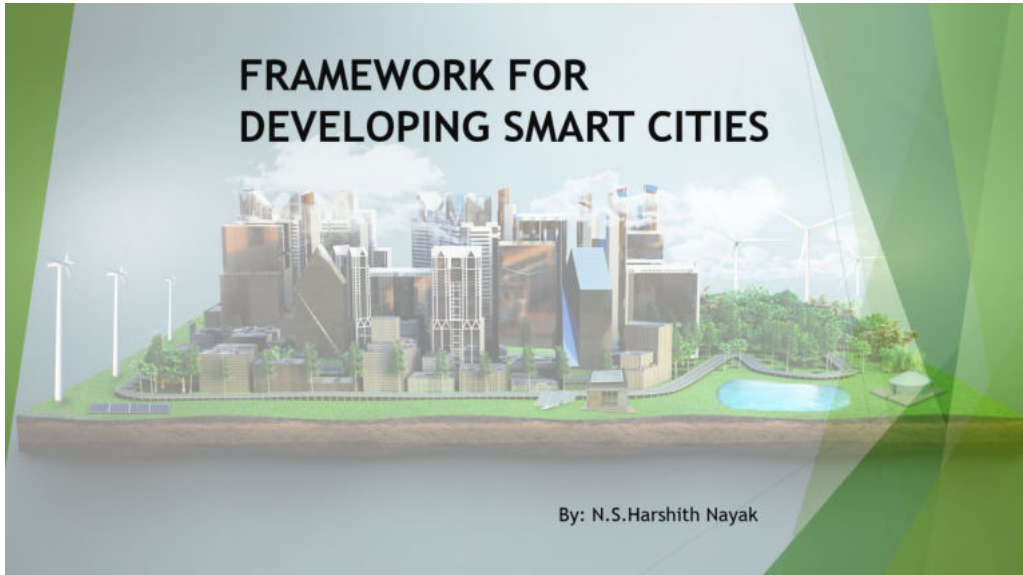
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FRAMEWORK FOR DEVELOPING SMART CITIES



By: N.S.Harshith Nayak

Pillars of Smart City Initiative

- ▶ In this presentation they have proposed critical factors that are crucial for understanding and developing smart cities. These factors have been used to design a framework that gives a more holistic view of the smart city initiative. The six pillars or factors are:
- ▶ (1) Social
- ▶ (2) Management
- ▶ (3) Economy
- ▶ (4) Legal
- ▶ (5) Technology
- ▶ (6) Sustainability.



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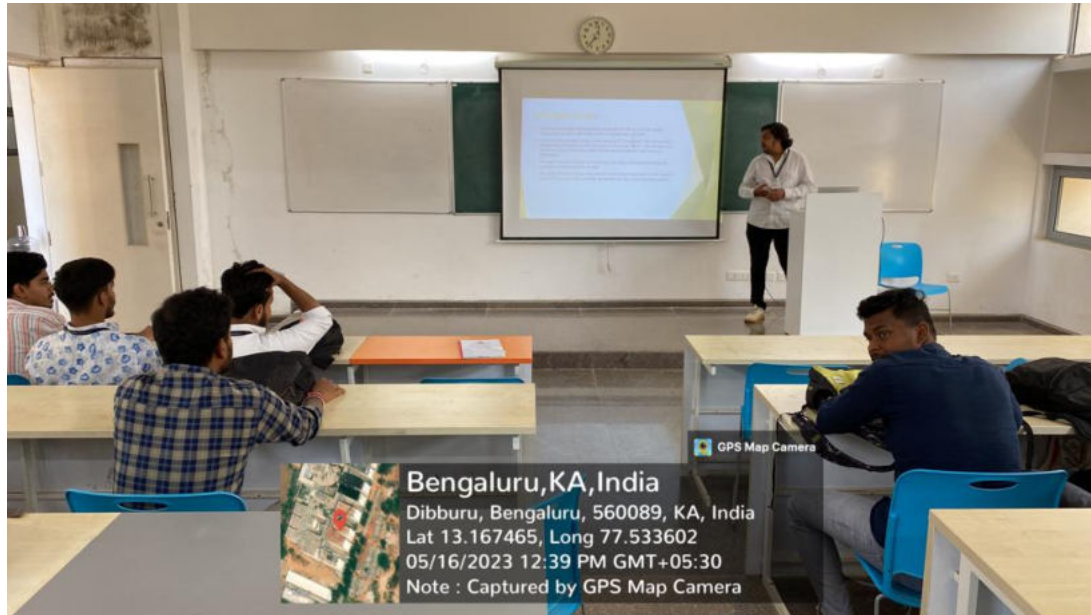
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Students presenting on the assigned topics followed by a brain storming session based on specific questions from peers.

Signature of Instructor In-Charge

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SCHOOL OF ENGINEERING DEPARTMENT OF CIVIL ENGINEERING

Year: 2021-2022

Semester: VI

Section: 3-ECE-2 & 3-ECE-4

Course Code: CIV2006

Course Name: Infrastructure Systems for Smart Cities

Type of Skill: Entrepreneurship Skill

Type of Activity: Participative Learning

Instructor in Charge: Dr. Jagdish H Godihal

Instructor for Section: Mr. Gopalakrishnan N

Details about the activity: Students were asked to present their innovative ideas for Smart Cities in any aspect of Smart city development such as Transportation, Healthcare, Education, Tourism, Water management etc. The seminar presentation activity by students focuses on Skill Development through participative learning.

Topic of Activity: Presentation on Innovative solutions for Smart Cities development

Details of the students and topics presented by students is presented below:

Sl. No.	Roll Number	Name	Topic Presented
1	20201ECE0128	MD Kamraan	SMART TOURISIM
2	20201ECE0119	Hemanth M	
3	20201ECE0110	Chethan BM	

Sl. No.	Roll Number	Name	Topic Presented
1	20201ECE0105	Sujith M	ARDUINO DISTANCE SENSOR USING THE HC- SR04
2	20201ECE0087	Sanjeev S	
3	20201ECE0096	Vaishali R	
4	20201ECE0092	Chandana M	
5	20201ECE0099	Arvind Kumar S	

Sample Slides and Geo-tagged from Student Seminar Presentations

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SMART TOURISIM

MD Kamraan(2020IECED128)
Hemanth.M(2020IECED119)
Chethan BM(2020IECED110)

OUR IDEAS

- The main Concept is that to develop a website for people who want to explore different places.
- But people are not familiar with the places So this website helps them to research about famous places , hotels .This Site also compares the hotel prices . Also when people are in a new place there are language barriers faced by them To resolve this a translator is needed
- This Website Provides all these services stated

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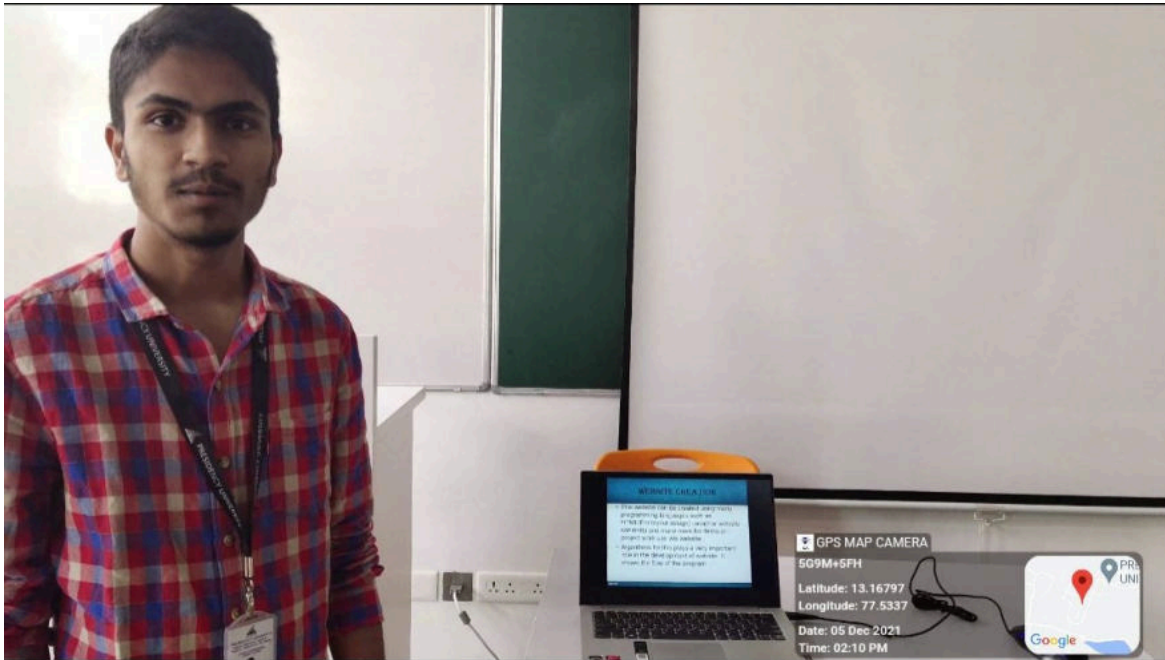
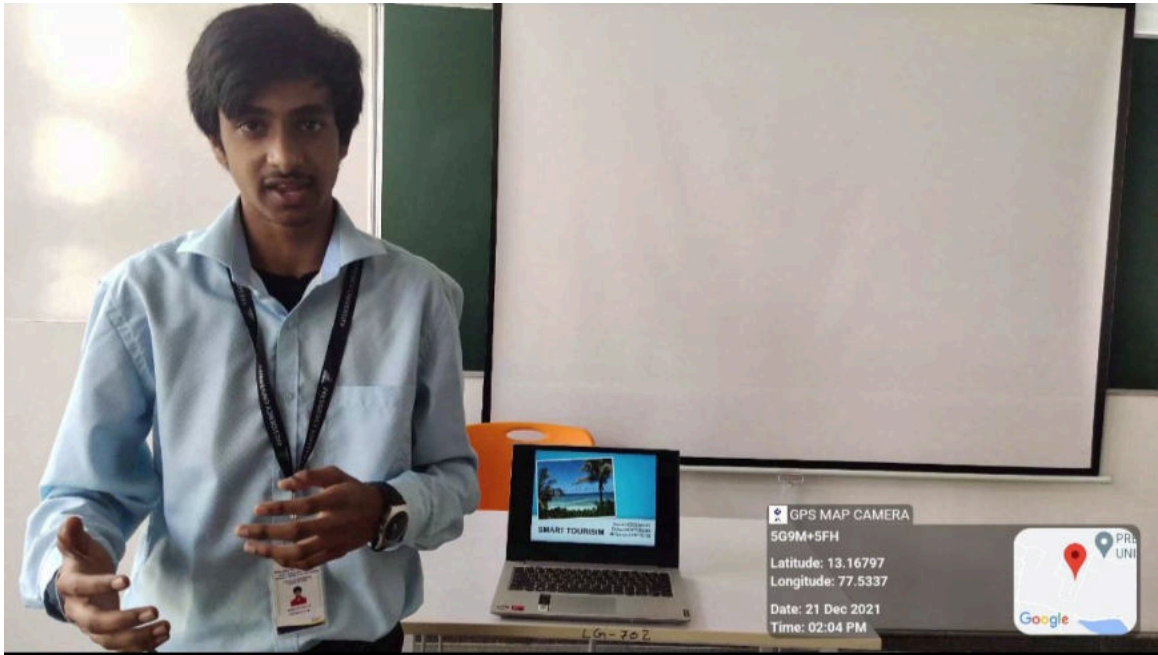
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Students expressing their idea on Smart tourism and demonstrating their website development and the user interface.

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Arduino Distance Sensor using the HC-SR04

Semester & AY: Odd Sem 2021-22

Course Code: CIV 2006

Course Name: Infrastructure Systems for Smart Cities

Program & Sem: B. Tech (ECE) & III Sem

Section: 3-ECE-2

Faculty In-charge: Gopalakrishnan N,

Asst. Professor, Dept. of Civil Engg.

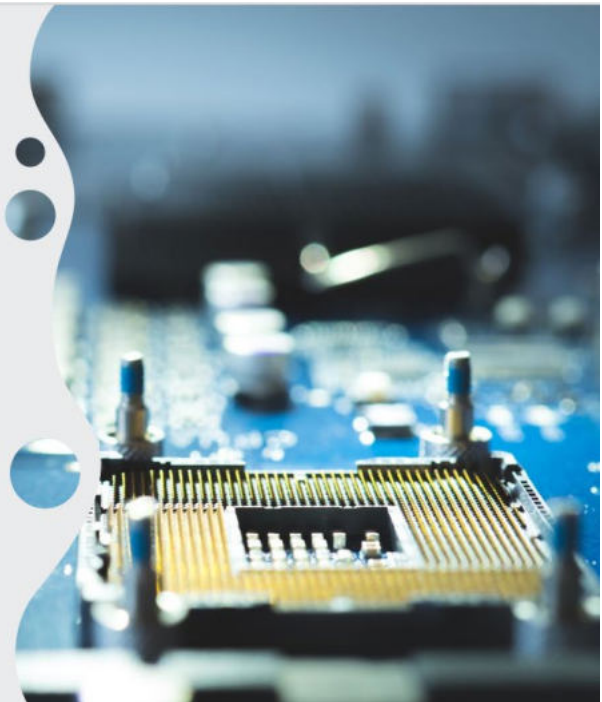
Name of the Student	Id No.
Sujith M	20201ECE0105
Sanjeev S	20201ECE0087
Vaishali R	20201ECE0096
Chandana M	20201ECE0092
Arvind Kumar S	20201ECE0099

HC-SR04 Ultrasonic Sensor

The HC-SR04 ultrasonic distance sensor is a popular affordable sensor that provides 2cm to 400cm of measurement

It can be as accurate as 3 mm but can vary depending on the quality of the sensor

Ultrasonic sensors are relatively simple devices and extremely useful in a lot of high-tech setups



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Students demonstrating Distance measurement using Ultrasonic sensors connected to Arduino board.

Signature of Instructor In-Charge

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