SVSU

Shri Vishwakarma Skill University

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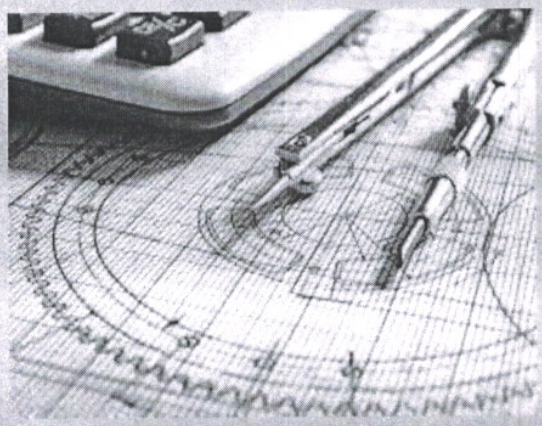
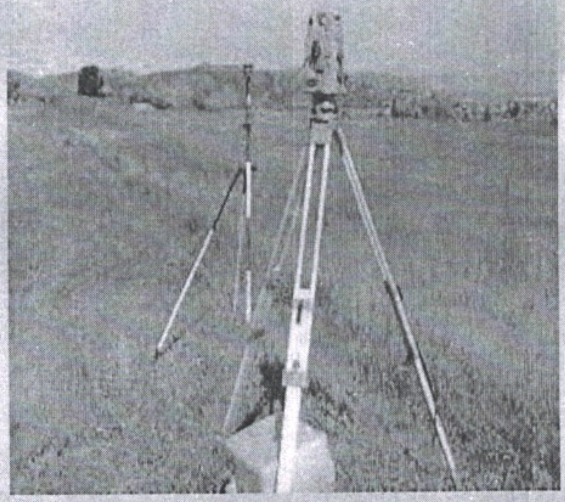
Detailed Project Report of DRAUGHTSMANSHIP (CIVIL) Course offered by Skill Department of Construction Management and Technology (REVISED – April 2024)





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It is certified that this revised DPR, developed and checked by us, is complete in all respects.

Mr. Upkar Singh

Skill Instructor(Civil)

Prof. A. K. Watal

Chairperson

Skill Department ofConstruction Management and Technology

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1. Preamble

1.1. Introduction

In line with Skill India Mission, the Government of Haryana has established Shri Vishwakarma Skill University under the Act 25 of 2016. The University is aiming at providing structured skill qualification programmes aligned with the existing and emerging job-roles in the Industry. The programmes have been mapped with NSQF levels that facilitate vertical mobility from Certificate to Doctoral level. SVSU aims at providing pathways to the Learners from school level to higher education level through a skill-based qualification framework for their career progression.

1.2. NSQF aligned Education System

Shri Vishwakarma Skill University has launched a scheme on skill development based short term courses, under the NSQF (National Skills Qualifications Framework). The course content which is developed is based on NSQF requirements.

The vision behind the establishment of Shri Vishwakarma Skill University (SVSU) is to emerge as one of the foremost institution of quality in skill education that bridges the gap between academic learning and practical application and become a hub of excellence , where cutting edge research and industry partnerships converge to cultivate the most sought after skills of the future. It is the first Government SkillingUniversity in India. Now University is offering a two year diploma course: Draughtsman ship(Civil).

1.3. About the Programme

The program in draughtsman ship focuses on developing the skills and knowledge, necessary to create accurate and detailed technical drawings. It typically covers various aspects of drawing,including architectural, mechanical, electrical, and civil engineering drawings. The program includes both theoretical and practical components to provide a comprehensive understanding of draughtsman ship.

Some key elements to be covered in a program in draughtsman ship:

- Drawing Fundamentals:
    - Introduction to basic drawing techniques and principles.
    - Understanding line work, shading, and perspective.
    - Developing hand-eye coordination and observational skills.

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- Technical Drawing Skills:
  - Familiarization with drafting tools and equipment.
  - Learning to create precise and accurate drawings using manual techniques.
  - Understanding scale, measurements, and dimensioning.
- Computer-Aided Design (CAD) Software:
  - Introduction to CAD software commonly used in draughtsman ship (e.g., AutoCAD,SolidWorks, Revit).
  - Learning the fundamentals of CAD software, including the user interface and basic tools.
  - Creating and modifying 2D and 3D drawings using CAD software.
- Architectural Drawings:
  - Understanding architectural drawing types, such as floor plans, elevations, sections, and site plans.
  - Learning architectural drawing standards and conventions.
  - Developing skills in creating accurate architectural drawings.
- Electrical and Electronic Drawings:
  - Familiarization with electrical and electronic symbols and notations.
  - Creating circuit diagrams, schematics, and wiring diagrams.
  - Understanding electrical and electronic drawing standards.
- Civil Engineering Drawings:
  - Learning to create civil engineering drawings such as site plans, topographic maps, and cross-sections.
  - Understanding civil engineering drawing symbols and conventions.
  - Incorporating survey data into drawings.
- Rendering and Visualization:
  - Techniques for adding shading, textures, and colours to drawings.

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- Creating realistic renderings and visualizations.
- Introduction to 3D modelling and rendering software.

• Project Documentation and Management:

- Organizing and structuring project drawings.
- Incorporating drawings into project documentation and reports.
- Understanding drawing numbering, revision control, and document management.

• Industry Standards and Best Practices:

- Compliance with relevant drawing standards and codes.
- Quality control and checking procedures.
- Effective communication through drawings.
- Collaborative drawing and document management practices.

• Practical Exercises and Projects:

- Hands-on practice with drawing exercises and projects.
- Applying the learned techniques to real-world scenarios.
- Feedback and guidance on improving draughtsmanship skills.

1.4. Objectives of the programme

This program is aimed at training candidates for the job of a Draughtsman. However, here are some common objectives that are typically associated with Draughtsman ship courses:

1. Develop Drawing Skills: The primary objective of a Draughtsman ship course is to enhance students' drawing skills. This includes improving their ability to observe and represent objects accurately, understanding perspective, proportions, shading, and other fundamental elements of drawing.
2. Understand Drafting Techniques: Draughtsman ship courses often aim to familiarize students with various drafting techniques used in different fields such as architecture, engineering, industrial design, or art. This includes learning technical drawing, orthographic projection, isometric and perspective drawing, and other relevant methods.
3. Learn Visual Communication: Draughtsman ship emphasizes the visual representation of ideas, concepts, and designs. A course in this subject aims to train students in

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effectively communicating their thoughts and designs through drawings, sketches, and diagrams.

4. Develop Spatial Visualization: One of the key objectives of Draughtsman ship is to enhance spatial visualization skills. This involves the ability to mentally manipulate and understand three-dimensional forms and translate them onto a two-dimensional surface.
5. Enhance Problem-Solving Skills: Draughtsman ship courses often involve practical exercises and projects that require students to analyse and solve design problems through drawing. This objective focuses on developing critical thinking, creativity, and problem-solving abilities.
6. Explore Different Media and Tools: Students in a Draughtsman ship course are typically exposed to a range of drawing media and tools such as pencils, pens,markers, charcoal, and digital drawing tools. The objective is to familiarize students with these different mediums and help them develop proficiency in their use.

Overall, the objectives of a Draughtsman ship course revolve around developing technical proficiency, artistic skills, and the ability to effectively communicate ideas visually.

1.5. Learning Outcomes of the programme

- Student should be able to translate ideas and concepts into visual form through sketches, diagrams, and plans.
- Student should be able to create accurate and visually appealing drawings using different media and tools.
- They should be able to identify constraints, evaluate options, and generate creative solutions using their draughtsman ship skills.

1.6. Level of Award

The certification level:

Sr. No.	Award	Duration	NSQF/ NCrF Level attained after Skill Training
1.	Certificate	1 Year	Level- 3.5
2.	Diploma in Draughtsmanship (Civil)	2 Year	Level- 4.0

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2. Programme Structure

2.1. Scope – Need of qualification

We will strive to build career for youngsters who have finished their secondary education and want to take a job in this domain.

2.2. Scheme and Syllabus

The course content and the credit scheme for the certification course covering both the theory portion as well as practical portion in 40:60 credit ratio as follows:

Theory: 1 Credit = 15 hours

Practical: 1 Credit = 30 hours

OJT: 1 Credit= 30 hours.

SCHEME/ SYLLABUS: Draughtsmanship (Civil)

Semester 1

Subject Code	Subject Name	Credits			Marks							Hours		
					Theory			Practical			Total			
		T	P	TO	I	E	TO	I	E	TO	(T+P)	T	P	TO
DEDM101	Communication Skills	3	-	3	15	35	50	-	-	-	100	45	-	75
DEDM111	Communicatio nSkills-Lab	-	1	1	-	-	-	35	15	50		-	30	
DEDM102	Health & safety	3	-	3	15	35	50	-	-	-	50	45	-	45
DEDM112	Engineering Drawing Lab-1	-	2	2	-	-	-	35	15	50	50	-	60	60
DEDM113	Building Design and Drawing Lab-1	-	2	2	-	-	-	35	15	50	50	-	60	60
DEDM103	Building Materials	3	-	3	15	35	50	-	-	-	100	45	-	105
DEDM114	Building Materials Lab	-	2	2	-	-	-	35	15	50		-	60	
DEDM104	Applied Mathematics-1	3	-	3	15	35	50	-	-	-	50	45	-	45
DEDM115	Workshop-1 Lab	-	6	6	-	-	-	35	15	50	50	-	180	180
DEDM116	Project-1	-	2	2	-	-	-	35	15	50	50	-	60	60
	Total	12	15	27	60	140	200	210	90	300	500	180	450	630

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Semester 2

Subject Code	Subject Name	Credits			Marks							Hours		
					Theory			Practical			Total			
		T	P	TO	I	E	TO	I	E	TO	(T+P)	T	P	TO
DEDM211	Engineering Drawing Lab -2	-	2	2	-	-	-	35	15	50	50	-	60	60
DEDM212	Building Design and Drawing Lab-2	-	2	2	-	-	-	35	15	50	50	-	60	60
DEDM201	Surveying	4	-	4	15	35	50	-	-	-	100	60	-	120
DEDM213	Surveying lab	-	2	2	-	-	-	35	15	50		-	60	
DEDM202	Building Construction	3	-	3	15	35	50	-	-	-	100	45	-	105
DEDM214	Building Construction Lab	-	2	2	-	-	-	35	15	50		-	60	
DEDM215	FOC & Auto Cad -1 lab	-	4	4	-	-	-	70	30	100	100	-	120	120
DEDM203	Applied Mathematics-2	3	-	3	15	35	50	-	-	-	50	45	-	45
DEDM216	Workshop-2	-	3	3	-	-	-	35	15	50	50	-	90	90
	Total	10	15	25	30	70	100	280	120	400	500	150	450	600

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Semester 3

Subject Code	Subject Name	Credits			Marks							Hours		
					Theory			Practical			Total			
		T	P	TO	I	E	TO	I	E	TO	(T+P)	T	P	TO
DEDM301	Innovative Emerging Technologies in Civil Engineering	3	0	3	15	35	50	-	-	-	50	45	-	45
DEDM311	Building Designand Drawing Lab-3	-	4	4	-	-	-	70	30	100	100	-	120	120
DEDM302	Advanced Surveying	4	-	4	15	35	50	-	-	-	100	60	-	120
DEDM312	Advanced Surveying lab	-	2	2	-	-	-	35	15	50		-	60	
DEDM303	Estimating andQuantity Survey	3	-	3	15	35	50	-	-	-	100	45	-	45
DEDM313	Estimating and Quantity SurveyLab	-	2	2	-	-	-	35	15	50		-	60	60
DEDM314	Auto Cad lab-2	-	4	4	-	-	-	70	30	100	100	-	120	120
DEDM315	Project 2	-	3	3	-	-	-	35	15	50		-	90	90
	Total	10	15	25	45	105	150	245	105	350	550	150	450	600

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Semester 4

Subject Code	Subject Name	Credits			Marks							Hours		
					Theory			Practical			Total			
		T	P	TO	I	E	TO	I	E	TO	(T+P)	T	P	TO
DEDM431	Open Elective-I via (MOOC) Entrepreneurship/ Environmental science/Value Education and professional ethics	2	0	2	15	35	50	-	-	-	50	30	-	30
DEDM421	OJT	-	24	24	-	-	-	120	120	240	240	-	720	720
	Total	2	24	26	15	35	50	120	120	240	290	30	720	750

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Semester- 1

Subject: Communication Skills
Code:DEDM 101
Total Marks: 50

Credit	Hours	Marks		
3	45	I	E	To
		15	35	50

Objectives

- To inculcate in students professional and ethical attitude, effective communication skills, teamwork, skills, multidisciplinary approach and an ability to understand engineer's social responsibilities.
- To inculcate in students written communication skills.

Learning Outcomes

- The syllabus introduces students to have basic skill set of channelizing information, self-development, decision making and interpersonal skills.

Unit	Topic	Key Learning
I	**Communication**	• Meaning of Communication, Importance of Communication, Types of communication. Process of communication. • Communication network in an organization. • Barriers to communication, Essentials of good communication.
II	**English Grammar Understanding and applying Vocabulary**	• Fill in the Blanks, Idioms & Phrases, One-word substitution • Synonyms, Antonyms, Mis-spelt words, Common errors, Grammar, Tenses, shuffling of sentence parts, sentence improvement, Shuffling of sentence in passage, Cloze passage, Comprehension Passage, Active/passive voice of verbs, Conversion into direct/indirect narration etc.
III	**Listening Skills**	• The process of listening, Types of listening, Benefits of effective listening. • Barriers to listening, listening to announcements at work place.
IV	**Reading Skills**	• Process and methodologies of reading, Skimming and scanning, Levels of reading, Proofreading, Summarizing, Precise writing. • Unseen comprehension passage, Note taking and reviewing. • Convert the given information into charts and graphs.

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V	**Writing Skills**	• Main Forms of Written Communication: Notices, Drafting an E-mail. • Correspondence: Personal and Official, Notices, • Technical Report Writing, Preparing agenda and minutes of meeting. • Resume/ CV writing.

Suggested Readings:

- Sethi, J & et al. A Practice Course in English Pronunciation, Prentice Hall of India, New Delhi.
- Sen, Leena. Communication Skills, Prentice Hall of India, New Delhi.
- Prasad, P. Communication Skills, S.K. Kataria& Sons.
- Bansal, R.K. and J.B. Harrison. Spoken English, Orient Language.
- Roach Peter. English Phonetics and Phonology.
- A.S. Hornby's. Oxford Advanced Learners Dictionary of Current English, 7th Edition.
- Prasad, P. The Functional Aspects of Communication Skills, Delhi.
- McCarthy, Michael. English Vocabulary in Use, Cambridge University Press.
- Rajinder Pal and PremLata. English Grammar and Composition, Sultan Chand Publication.
- Idioms & Phrases (English-Hindi), Arihant Publication (India) Pvt. Ltd.
- One Word Substitution, Dr. Ashok Kumar Singh, Arihant Publications (India) Pvt, Ltd

Subject: Communication Skills Lab
Code:DEDM 111
Total Marks: 50

Credit	Hours	Marks		
1	30	I	E	To
		35	15	50

Objectives:

- The language Lab focuses on computer-aided multi-media instruction and language acquisition to achieve the following targets:
- To expose the students to a variety of self-instructional learner- friendly modes of language learning.
- To enable them to learn better pronunciation through stress on word accent, Intonation and rhythm and to increase vocabulary.
- To train them to use language effectively to face interviews, group discussions, public speaking.
- To train them to give a positive feedback in various situation, to use appropriate body language and to avoid barrier for effective communication.

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- To acquaint them with the uses of resume/CV preparation, report writing, format making etc. and to improve writing skills.
- To train them to use the basic concepts of communication in an organised set up and social context.

Learning Outcomes

- The syllabus introduces students to have basic skill set of channelizing information, self-development, decision making.
- The syllabus enhances interpersonal skills of students such as presenting on group discussion, seminars and conferences.

List of Experiments:

1. Listening Skills

• The student should be able to listen to s text read aloud in normal speed with focus on intonation.

• After listening the student can fill-in-blanks, choose a suitable title, make a summary, supply required information and be able to answer comprehension questions from the passage read aloud.

2. Speaking Skill

• Reading aloud of dialogues, texts, poems, speeches focusing on intonation.

• Self-introduction

• Role plays on any two-situations.

• Telephonic Conversations.

3. Personality Development

• Initiation

• Physical Appearance

• Audience Purpose

4. Interpersonal Skills

• Appropriate use of non-verbal skills in face to face communication [i.e. Viva –Voce, group –interviews, GDs and seminars.]

5. Presenting in GD, Seminars and Conferences.

• Leadership Quality

• Time Management

• Achieving the target.

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Subject: Health and Safety
Code:DEDM 102
Total Marks: 50

Credit	Hours	Marks		
3	45	I	E	To
		15	35	50

Objectives

- To understand & follow General Safety in construction site.
- To understand & Follow Fire & First Aid safety organizational guidelines.
- To understand & follow waste disposal safety organizational guidelines.

Learning Outcomes

- The syllabus introduces students to have basic skill set of health and safety measures, firstaid process, waste disposal etc.

Unit	Topic	Key Learning
I	**Introduction**	• Importance of trade training, demonstrate tools & equipment's used in the trade and its use. • Importance of safety and general precautions observed in the industry/shop floor. • Introduction to 5S concept & its application. • Safety and environment guidelines, legislations & regulations as applicable.
II	**First Aid**	• Concept of First Aid process. • Use of fire extinguisher, Classification of fires and fire extinguisher Safety drills. • Types and use of PPEs as per general and plumbing safety norms/Manholes • Reporting procedure to the concerned authority in emergency situations.
III	**Emergency safety**	• Types of hazards involved in construction sites. • Types of hazard involved in plumbing, electrical, carpentry works. Preventive measures for plumbing, electrical and carpenter accidents & steps to be taken in such accidents. • Safety signs for danger, warning, caution & personal safety message. • Emergency safety control measures and actions to be taken under emergency situation e.g.: power failure, fire alarm, etc.
IV	**Waste disposal**	• Safe disposal of waste, type of waste and their disposal. • Basic ergonomic principles as per level.

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V	**Material Handling**	• Standard procedure of handling, storing and stacking material, plumbing fixtures and accessories.

Subject: Engineering Drawing Lab-1
Code:DEDM 112
Total Marks: 50

Credit	Hours	Marks		
2	60	I	E	To
		35	15	50

Objectives

- Understand and appreciate the importance of Engineering Graphics in Engineering.
- Understand the basic principles of Technical/Engineering Drawing.
- Understand the different steps in producing drawings according to BIS conventions.

Learning outcomes

- The students will become familiar with fundamentals of engineering design.
- Understanding the concept generation, design optimization and evaluation.
- Students will be able to effectively design various engineering components and make process plan for the production.

Unit	Topic	Key Learning
I	**Introduction**	• Scope and importance of engineering drawing. • Drawing instruments and their uses. • Method of fixing of drawing sheet on the drawing board. • Indian standard of drawing (IS-962,1989, SP-46,2003). • Sheet layout, border, title block, etc. • Draw free hand sketch of hand tools used in civil work. • Conventions of line and their uses, Lettering. • Introduction to general principals of Dimensioning. • Scales.

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II	**Types of Projections**	• Principal of projections. • Various types of projections. • Theory of orthographic projections (Elaborate theoretical instructions). • Projection of Points in different quadrant. • Projection of Straight Line (1st and 3rd angle), Line parallel to both the planes, Line perpendicular to any one of the reference plane, Line inclined to any one of the reference plane. • Projection of Plane – Different lamina like square, rectangular, triangular and circle inclined to one plane, parallel and perpendicular to another plane in 1st angle only. • Three views of orthographic projection of different objects. (At least one sheet in 3rd angle). • Identification of surfaces.
III	**Sectioning of solids**	• Importance and salient feature. • Drawing of full section, half section. • Convention & sectional representation of various materials, conventional breaks for shafts, pipes, rectangular, square,angle, channel & rolled sections.
IV	**Isometric Views**	• Fundamentals of isometric projections and isometric scale. • Isometric views of combination of regular solids like cylinder, cone, cube and prism.
V	**Common Symbols and Conventions used in Engineering**	• Symbols & conventional representation for materials in sections as per IS 962-1989, SP-46:2003 for building drawings.

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RECOMMENDED BOOKS

- A Text Book of Engineering Drawing by Surjit Singh; Dhanpat Rai & Co., Delhi.
- Engineering Drawing by PS Gill; SK Kataria& Sons, New Delhi
- Elementary Engineering Drawing in First Angle Projection by ND Bhatt; Charotar Publishing House Pvt. Ltd., Anand
- Engineering Drawing, I & II by JS Layall; Eagle Parkashan, Jalandhar
- Engineering Drawing, I by DK Goel, GBD Publication.

Subject: Building Design and Drawing Lab-1
Code:DEDM 113
Total Marks: 50

Credit	Hours	Marks		
2	60	I	E	To
		35	15	50

Objectives

- Understand the classification of different construction drawing..
- To understand how to develop and design a building plan.

Learning Outcomes

- After completion of this students will able to understand basic principles of building design.
- They will explore building drawing as a way of discovering and developing ideas for designing different elements of building.

List of Experiments:

Drawing No. 1:

Introduction of Vastu- shastra and its application in buildings.

Drawing No. 2:

Plan and elevation of spread footing foundations.

Drawing No. 3:

Elevation, plan and sectional side elevation of flush door and glazed door.

Drawing No. 4:

Drawing plan, elevation of various bond used in brick masonry.

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Drawing No. 5:

Draw detailed plan, elevation and section of Single flight R.C.C. Staircase.

Drawing No. 6:

Drawing of ground and upper floor showing various floor finish.

Drawing No. 7:

Drawing details of cavity wall.

Subject: Building Materials
Code:DEDM 103
Total Marks: 50

Credit	Hours	Marks		
3	45	I	E	To
		15	35	50

Objectives:

- To teach students about the physical and mechanical properties of various construction materials and their testing procedure.
- To teach students about the principles and methods to be followed in constructing various components of a building.
- To make the students aware of precautionary measures to be taken during construction to avoid any damage to the structure at a later date.
- To teach students about assessment of damages and methods of repairs and restoration.

Learning Outcomes: Students will gain knowledge in

- Follow BIS and NB codes for different components of building construction alongwith testing procedure of building materials with respect to relevant codes.
- Supervise construction work with technical ability within the frame work of codal provision.
- Select the modern construction materials appropriate to the climate and functional aspects of the buildings.
- Supervise the construction technique to be followed in brick and stone masonry, concreting, flooring, roofing and plastering etc.
- Understand the common lapses during the construction which results in the deterioration/damage to the structure at the later date.

	Topic	Key Learning

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I	**Aggregates, Cement, admixtures,**	• Classification of aggregates as per IS:383, zoning, all in aggregate and testing etc. • Cements composition, types of cement, manufacturing of various types of cements, testing of cement, special types of cement, storage of cement. Heat of hydration, Factors control heat of hydration of cement. • Introduction to admixtures and plasticizers. • Role of Fly ash in cement industry.
II	**Brick, Tiles, ACC blocks**	• Classification of bricks, constituents of good brick earth, hollow bricks, modular bricks etc., harmful ingredients, manufacturing of bricks, testing of bricks. • Brick Tiles. • ACC Blocks.
III	**Concrete, RCC Soil & Ceramic Building Materials**	• Basics of Concrete, mixing of ingredients, reinforcing, different types of shuttering and formwork.-steel plates, plyboard and mivon shuttering, curing. • Non Destructive tests on concrete. • Brief introduction to RMC and batching plant. • Classification of soil and their bearing capacities. • Introduction to anti- termite treatment. • Classification of ceramic materials. • Clay stones. Types of Tiles & Manufacturing of tiles.
IV	**Steel**	• Ferrous metals: Composition, properties and uses of cast iron, mild steel, HYSD steel, high tension steel as per BIS. Commercial forms of ferrous, metals, Aluminium & Stainless Steel.
V	**Stone, timber,**	• Classification, requirements of good structural stone, quarrying, blasting and sorting out of stones, dressing, sawing and polishing, prevention and seasoning of stone. • Classification of timber, structure of timber, seasoning of timber, defects in timber, important Indian timbers, Other wood-based products, laminated board, block board, fibre board, hard board, sunmica, plywood, veneers, nu-wood, adhesives for wood work and study of the brand name and cost of the wood-based products available in the market, Cement Panel Board, wooden acoustic fire doors.
VI	**Paints, varnishes and polymers**	• Basic constituents of paints, types of paints, painting of wood, covering capacity of paints, constituents of varnishes, characteristics and types of varnishes.

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VII	**Miscellaneous Materials**	• Plastics – Introduction and uses of various plastic products in buildings such as doors, water tanks and PVC pipes. • Fibre Sheets and their manufacture process. • Types and uses of insulating materials for sound and thermal insulation. • Construction chemicals like water proofing compound, epoxies, polymers, additives. • Water proofing, termite proofing and fire resistance materials – types and uses. • Plaster of Paris, uses. • Stainless steel railings. • aluminum extrusions • Molded Door.

Suggested Reading

- Sharma, SK; and Mathur, GC; "Engineering Materials;" Delhi-Jalandhar, S. Chand and Co.
- Surendra Singh; "Engineering Materials;" New Delhi, Vikas Publishing House Pvt. Ltd.
- Chowdhuri, N; "Engineering Materials;" Calcutta, Technical Publishers of India.
- Kulkarni, GJ; "Engineering Materials;" Ahmedabad, Ahmedabad Book Depot.
- SP – 62 Hand Book of BIS.
- B.I.S. – 6313 Part 1, 2, 3.
- National Building Code.
- Handbook of Civil Engineering by PN Khanna.
- SP: 2009. National Building Code.

Subject: Building Material Lab
Code:DEDM 114
Total Marks: 50

Credit	Hours	Marks		
2	60	I	E	To
		35	15	50

Objectives

- To facilitate the understanding of the behavior of construction materials.
- To know about the various test procedures on different construction materials.
- To understand the properties of various construction materials

Learning Outcomes

- Students will aware about various building materials.
- Students will understand the testing procedure of various construction materials.

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List of Experiments:

1. To create awareness of all building materials Viz: Stones. Bricks. Timber, Cement, Fineand coarse aggregate.
2. To determine the crushing strength of bricks.
3. To determine the Water Absorption of bricks.
4. To determine the consistency of cement.
5. To determine the specific gravity of fine aggregates.
6. To determine the fineness modulus of cement.
7. To determine the initial and final setting of cement.
8. To conduct the sieve analysis of aggregates.
9. To determine the specific gravity of cement.
10. To determine the silt content of fine aggregate.
11. To determine the compressive strength of a concrete cube.
12. To measure the workability of concrete by using a) slump cone, b) compaction factor test, c) Flow table test.
13. NB: -The students should submit a report on the construction tools and materials, covering water proofing material, cement, steel, paints and timber products available in the local market. They should also show the competitive study based upon the cost, brand name, sizes available in the local market.
14. - To conduct tensile strength test on a mild steel bar to find its (i) Yield stress (ii) ultimate stress (iii) breaking stress (iv) percentage elongation (v) percentage reduction in area of cross section and (vi) Young's modulus of Elasticity for steel material.

Subject: Applied Mathematics-1
Code:DEDM 104
Total Marks: 50

Credit	Hours	Marks		
3	45	I	E	TO
		15	35	50

Objectives:

- To teach students about the mathematical concept and principles to perform practical operations. Understand and explain basic science in the field of study.

Learning Outcomes:

- Demonstrate basic mathematical concept and principles to perform practical operations. Understand and explain basic science in the field of study.

Unit	Topic	Key Learning
I	**Unit, Fractions**	• Classification of unit system • Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units • Measurement units and conversion • Factors, HCF, LCM and problems • Fractions - Addition, subtraction, multiplication & division • Decimal fractions - Addition, subtraction, multiplication & division • Solving problems by using calculator

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II	**Square root, Ratio and Proportions, Percentage**	• Square and square root • Simple problems using calculator • Applications of Pythagoras theorem and related problems • Ratio and proportion • Ratio and proportion - Direct and indirect proportions Percentage • Precentage - Changing percentage to decimal and fraction
III	**Mass, Weight, Volume and Density, Heat & Temperature and Pressure**	• Mass, volume, density, weight and specific gravity • Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals • Scales of temperature, celsius, fahrenheit, kelvin and conversion between scales oftemperature • Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation • Co-efficient of linear expansion and related problems with assignments

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IV	**Mensuration**	• Area and perimeter of square, rectangle and parallelogram Area and perimeter of Triangles • Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse • Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder • Finding the lateral surface area, total surface area • capacity in litres of hexagonal, conical and cylindrical shaped vessels
V	**Trigonometry**	• Measurement of angles • Trigonometrical ratios • Trigonometrical tables • Application in calculating height and distance (Simple applications)

Suggested Readings:

- Quantitative aptitude, Dr R S Aggarwal
- NCERT Class 11

Subject: WORKSHOP-I (CARPENTRY SHOP)
Code: DEDM 115
Total Marks: 50

Credit	Hours	Marks		
6	180	I	E	TO
		30	70	100

Objectives:

- Understand the classification of different carpentry joints.
- To recognize elements and symbol carpentry.
- To understand how to design doors, windows & ventilators for a building.

Learning Outcomes:

- After completion of this students will able to understand basic principles of carpentry design.
- They will explore drawing as a way of discovering and developing ideas for designing different types of carpentry joints, doors, windows & ventilators of a building.

List of Experiments:

1. Different types of Carpentry joints.
2. Lengthening, bearing, housing, framing, paneling & moulding.
3. Different types doors including paneled, glazed and flush door.
4. Different types of windows.
5. Different types of ventilators.

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Subject: Project-1
CODE – DEDM 116
Total Marks: 50

Credit	Hours	Marks		
2	60	I	E	To
		35	15	50

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Semester- 2

Subject: Engineering Drawing Lab-2
Code:DEDM 211
Total Marks: 50

Credit	Hours	Marks		
2	60	I	E	To
		35	15	50

Objectives

- Understand and appreciate the importance of Engineering Graphics in Engineering.
- Understand the basic principles of Technical/Engineering Drawing.
- Understand the different steps in producing drawings according to BIS conventions.

Learning outcomes

- The students will become familiar with fundamentals of engineering design.
- Understanding the concept generation, design optimization and evaluation.
- Students will be able to effectively design various engineering components and make process plan for the production.

Unit	Topic	Key Learning
I	**Introduction**	• Overview of the subject to be taught in semester 1:- • Drawing instruments and their uses. • Indian standard of drawing (IS-962,1989, SP-46,2003). • Sheet layout, border, title block, etc. • Conventions of line and their uses, Lettering. • Introduction to general principals of Dimensioning. • Scales. • Construction of plain geometrical figures.
II	**Orthographic Projections**	• Construction of scale- Plain, comparative, diagonal, Vernier & scale of chords. • Three views in orthographic projection of Line, plane, solid objects. (At least one sheet in 1st angle & 3rd angle). • Identification of surfaces.
III	**Sectioning of solids**	• Drawing of full section, half section, partial or broken out sections, offset sections, revolved sections and removed sections. • Convention & sectional representation of various materials. conventional breaks for shafts, pipes, rectangular, square,angle, channel, rolled sections. • Orthographic sectional views of different objects.

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IV	**Oblique & Isometric Views**	• Construction of solid geometric figures. • Oblique and perspective views of step blocks. • Isometric projection of geometrical solids.
V	**Signs and Conventions used in Sanitary, Carpentry & Electrical Engineering**	• Civil Engineering sanitary fitting symbols. • Electrical & carpentry fitting symbols for domestic interior installations.

RECOMMENDED BOOKS

- A Text Book of Engineering Drawing by Surjit Singh; Dhanpat Rai & Co., Delhi.
- Engineering Drawing by PS Gill; SK Kataria& Sons, New Delhi
- Elementary Engineering Drawing in First Angle Projection by ND Bhatt; Charotar Publishing House Pvt. Ltd., Anand
- Engineering Drawing, I & II by JS Layall; Eagle Parkashan, Jalandhar
- Engineering Drawing, I by DK Goel, GBD Publication.

Subject: Building Design and Drawing-2
Code:DEDM 212
Total Marks: 50

Credit	Hours	Marks		
2	60	I	E	To
		35	15	50

Objectives

- Understand the classification of different construction drawing.
- To recognize elements and symbol construction drawings.
- To understand how to develop and design a building plan.

Learning Outcomes

- After completion of this students will able to understand basic principles of building design.
- They will explore building drawing as a way of discovering and developing ideas for designing different elements of building.

List of Experiments:

Drawing No. 1:

Details of spread footing foundations, load bearing and non-load bearing wall for given thickness of walls with the help of given data or rule of the thumb, showing offsets, position of DPC. The details of the concrete and brick plinth protection have to be shown in the drawing.

Drawing No. 2:

Elevation, sectional plan and sectional side elevation of flush door, glazed door, paneled door and window, Aluminum door and window with wire gauge shutter. Sketches of various joints of different members.

Drawing No. 3:

Drawing plan, elevation of a one room building and foundation detail and sectional elevation.

Drawing No. 4:

Drawing detailed plan, elevation and section of a two-room residential building from a given line plan, showing details of foundations, roof and parapet.

Draw detailed plan, elevation and section of Double flight R.C.C. Staircase.

Drawing No. 5:

Drawing of flat roof, showing the heat/thermal insulation provisions.

Drawing No. 6:

Drawing details of damp proofing arrangement of roofs and walls as per BIS Code. Show the rain water drainage arrangement also.

Drawing No. 7:

Drawings showing various pipe joints for underground drainage/ plumbing.

Drawing No. 8:

Prepare drawings for a simple of culvert.

Drawing No. 9:

Prepare a schematic electric drawing of a one room building.

Drawing No. 10:

Prepare drawings details of slopped/pitched truss- king & queen post truss showing detailed connections, steel roof truss & wooden roof truss.

Subject: Surveying

Code:DEDM 201
Total Marks: 50

Credit	Hours	Marks		
4	60	I	E	TO
		15	35	50

Objectives:

- Carryout civil engineering survey to prepare drawings & maps.
- Interpret the drawings and maps for calculating different physical quantities like length, area, volume, elevations etc.

Learning Outcomes:

- To carry out simple land survey to prepare maps with existing details.
- Find out area of irregular shaped plane figures.

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Unit	Topic	Key Learning
I	**Introduction**	• Units of measurement. • Basic principles of surveying. • Concept and purpose of surveying, measurements-linear and angular, units of measurements. • Instruments used for taking these measurements, classification based on surveying instruments. • Tapes

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II	**Chain surveying**	• Purpose of chain surveying, principles of chain surveying and its advantages and disadvantages. • Obstacles in chain surveying.
III	**Compass surveying**	• Purpose of compass surveying. Use of prismatic compass: Setting and taking observations • Concept of following with simple numerical problems: a) Meridian - Magnetic and true b) Bearing - Magnetic, True and Arbitrary c) Whole circle bearing and reduced bearing d) Fore and back bearing e) Magnetic dip and declination.
IV	**Levelling:**	• Purpose of levelling, concept of a level surface, horizontal surface, vertical surface, datum, reduced level and bench marks • Identification of various parts of Dumpy level and use of Dumpy level. Engineer' level, Auto level: advantages and disadvantages, use of auto level. • Concepts of line of collimation, axis of the bubble tube, axis of the telescope and vertical axis • Levelling staff: single piece, folding, invar precision staff, telescopic • Temporary adjustment and permanent adjustment of dumpy level by two peg method. • Concept of back sight, foresight, intermediate sight, change point, to determine reduce levels. • Level book and reduction of levels by I) Height of collimation method and ii) Rise and fall method. • Arithmetic checks, problem on reduction of levels, fly levelling, check levelling and profile levelling (L-section and X-section), errors in levelling, permissible limits, reciprocal levelling. Numerical problems.
V	**Plane Table Surveying**	• Purpose of plane table surveying, equipment used in plane table survey: • Setting of a plane table: (a) Centering (b) Levelling (c) Orientation Methods of plane table surveying (a) Radiation, (b) Intersection (c) Traversing (d) Resection. • Concept of Two- point problem.

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VI	**Theodolite Survey**	• Introduction, types, uses and method of plotting. • Fundamental line of theodolite. Adjustment of theodolite. • Open & Closed traverse and their applications to engineering field. • Measurement of horizontal & vertical angle. • Problems in transit theodolite- departure, latitude, northing and easting.

Suggested Readings:

- Hussain, SK and Nagraj, MS: "Text Book of Surveying"; New Delhi, S Chand and Co Ltd.
- Deshpande, RS: "A Text Book Surveying and Levelling"; Poona, United Book Corporation
- Kocher, CL; "A Text Book of Surveying": Ludhiana, Katson Publishing House
- Kanetkar,TP and Kulkarni, SV.. "Surveying and Leveling", Poona, AVG Parkashan
- Kanetkar, TP; and Kulkarni, SV; "Surveying and Leveling" Poona, AVG Prakashan
- Mahajan, Sanjay "Surveying -I", Tech. Publication, Delhi
- Punmia, BC; "Surveying and Leveling", Delhi Standard Publishers Distributors.
- Shahai, PB; "A Text Book of Surveying", Oxford and IBH Publishing Co.

Subject: Surveying Lab
Code:DEDM 213
Total Marks: 50

Credit	Hours	Marks		
2	60	I	E	To
		35	15	50

Objectives

- To determine the distance and angle between different objects.
- To prepare a map or plan to represent an area on a horizontal plan.
- To develop methods through the knowledge of modern science and the technology and use them in the field.
- To solve measurement problems in an optimal way.

Learning outcomes

- To learn to work as team, ethics and prepare technical reports of surveying.
- To relate theoretical knowledge of surveying to resolve real field problems.
- To establish horizontal control and vertical control by traversing and triangulation.
- To prepare topographical map and contour map on an area.

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List of Experiments:

1. Measurement of distance by ranging and chaining.
2. Determination of area of polygon by chain and cross staff survey.
3. Measurement of bearings of sides of traverse with prismatic compass and computation of correct included angle.
4. Determination of elevation of various points with dumpy level by collimation plane method and rise & fall method.
5. Fixing bench mark with respect to temporary bench mark with dumpy level by fly levelling and check levelling.
6. Measurement of horizontal angles theodolite by method of repetition.
7. Measurement of vertical angles with theodolite.
8. Determination of horizontal distance between two inaccessible points with theodolite.
9. Two-point problem & Three-point problem in plane table traversing.
10. Determination of elevation of point by trigonometric levelling.
11. Determination of area of irregular figure by using planimeter.

Subject: Building Construction
Code:DEDM 202
Total Marks: 50

Credit	Hours	Marks		
3	45	I	E	To
		15	35	50

Objectives:

- To teach students about the physical and mechanical properties of various construction materials and their testing procedure.
- To teach students about the principles and methods to be followed in constructing various components of a building.
- To make the students aware of precautionary measures to be taken during construction to avoid any damage to the structure at a later date.
- To teach students about assessment of damages and methods of repairs and restoration.

Learning Outcomes: Students will gain knowledge in

- Follow BIS and NB codes for different components of building construction alongwith testing procedure of building materials with respect to relevant codes.
- Supervise construction work with technical ability within the frame work of codal provision.
- Select the modern construction materials appropriate to the climate and functional aspects of the buildings.
- Supervise the construction technique to be followed in brick and stone masonry, concreting, flooring, roofing and plastering etc.
- Understand the common lapses during the construction which results in the deterioration/damage to the structure at the later date.

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Building Construction

	Topic	Key Learning
I	**Introduction**	• Brief introduction to building construction. • Types & techniques of constructions works.
II	**Masonry Construction, Cavity and Partition Walls, Foundation:**	• Brick masonry-bonds in brick work, laying brick work, structural brick work-cavity and hollow walls, reinforced brick work, Defects in brick masonry, composite stone and brick masonry, glass block masonry. • Introduction, Advantages, position of cavity, types of non-bearing partitions, constructional details and precautions, construction of masonry cavity wall. • Functions, types of shallow foundations, sub-surface investigations, geophysical methods, general feature of shallow foundation, foundations in water logged areas
III	**Damp-Proofing and Water-Proofing, Roofs and Floors, Doors and Windows, Plastering**	• Defects and causes of dampness, prevention of dampness, materials used, damp-proofing treatment in buildings. • Types of roofs, various terms used, roof trusses-king post truss, queen post truss etc. • Floor structures, ground, basement and upper floors, various types of floorings t.e. ceramic tiles, marbels, vinyl flooring, vitrified tiles, paver tiles. • Locations, sizes, types of doors and windows, fixtures and fasteners for doors and windows. • Plastering and its types.

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IV	**Arches, Lintels & Stairs**	• Arch work terminology, Classification of arches. • Stability of arches. • Classification of lintels. • Plinth and grade beams. • Staircase terminology & classification • Requirement of staircase.

Suggested Reading

- SC Rangawala, "Construction Materials", Charotar Publishers.
- Handbook of Civil Engineering by PN Khanna.
- Gupta, Sushil Kumar, Singla, DR, and Juneja BM; "A Text Book of Building Construction"; Ludhiana, Katson Publishing House.
- Rangwala, SC: "Building Construction"; Anand, Charotar Book Stall.
- A.K. Watal and Mahesh Sharma; "Quality Control in Civil engineering", Standard Publishers, New Delhi.
- SP – 62 Hand Book of BIS.
- B.I.S. – 6313 Part 1, 2, 3.
- National Building Code.
- Handbook of Civil Engineering by PN Khanna.
- SP: 2009. National Building Code.

Subject: Building Construction Lab
Code: DEDM 214
Total Marks: 50

Credit	Hours	Marks		
2	60	I	E	To
		35	15	50

Objectives

- To facilitate the understanding of the behavior of building construction.
- To know about the various drawings on different building construction techniques.

Learning Outcomes

- Students will aware about various building construction techniques.
- Students will understand the drawings on different building construction techniques.

List of Experiments:

1. Drawing of Grillage footing.

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2. Drawing of Spread foundation.
3. Drawing of pile foundation.
4. Drawing of raft foundation.
5. Drawing of well foundation.
6. Drawing of shoring, underpinning, scaffolding and timbering.
7. Drawing details of treatments in building:- damp proofing, anti- termite, fire proofing.
8. Drawing of arches, lintels & lintels with chajjas.
9. Demonstration of following items of work at construction site by: a) Timbering of excavated trenching b) Damp proof courses laying c) Construction of masonry walls d)Laying of flooring on an already prepared cement concrete base e) Plastering and pointing exercise f) Constructing RCC work g) Pre-construction and post construction termite treatment of building and woodwork.

NB: -The students should submit a report on the construction tools and materials, covering water proofing material, cement, steel, paints and timber products available in the local market. They should also show the competitive study based upon the cost, brand name, sizes available in the local market.

Subject: Auto Cad Lab-1
Code: DEDM 215
Total Marks: 100

Credit	Hours	Marks		
4	120	I	E	TO
		70	30	100

Objectives

- Understand the fundamental concepts and features of AutoCAD.
- Use the precision drafting tools in AutoCAD to develop accurate technical drawings.
- Present drawings in a detailed and visually impressive manner.

Learning Outcomes

- Demonstrate basic concepts of the AutoCAD software.
- Apply basic concepts to develop construction (drawing) techniques.
- Ability to manipulate drawings through editing and plotting techniques.
- Understand geometric construction.
- Produce 2D Orthographic Projections.
- Understand and demonstrate dimensioning concepts and techniques.
- Become familiar with Solid Modeling concepts and techniques.

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List of Experiments:

1. Introduction to various CAD commands with simple examples.
2. Line diagrams of different structures.
3. Isometric exercises.
4. Doors and Windows.
5. Calculation of area of closed traverse.
6. Plan, section and elevation of residential building.
7. Plan, section and elevation of public building.
8. Plan, section and elevation of multistoried building.
9. Preparation of Site plan of a residential building.

Subject: Workshop-2 Lab (Electrical Shop)
Code: DEDM 216
Total Marks: 50

Credit	Hours	Marks		
		I	E	TO
2	60	35	15	50

Objectives:

- Understand the classification of different system of Electrical wiring.
- To recognize elements and symbols in electrical.
- To understand about the wireman's tools kit.
- To understand about the general ideas of supply system.

Learning Outcomes:

- After completion of this students will able to understand basic principles of electric wiring system.
- They will explore drawing as a way of discovering and developing ideas for designing different types of electric wiring plan with all fitting.

List of Experiments:

1. To create awareness of all safety precautions and elementary first aid.
2. To demonstrate artificial respiration and treatment of electrical shock.
3. To demonstrate general ideas of supply system and wireman's tools kit.
4. Prepare drawing of wiring in different systems.
5. Prepare drawing of electrical wiring plan with all fittings showing in drawing, using CAD.

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Subject: Applied Science and Mathematics-2
Code: DEDM 203
Total Marks: 50

Credit	Hours	Marks		
2	60	I	E	TO
		15	35	50

Objectives:

- To teach students about the mathematical concept and principles to perform practical operations. Understand and explain basic science in the field of study.

Learning Outcomes:

- Demonstrate basic mathematical concept and principles to perform practical operations. Understand and explain basic science in the field of study.

Unit	Topic	Key Learning
I	**Centre of Gravity**	• Centre of gravity - Centre of gravity and its practical application
II	**Area of cut out regular surfaces and area of irregular surfaces**	• Area of cut out regular surfaces - circle, segment and sector of circle • Related problems of area of cut out regular surfaces - circle, segment and sector of circle • Area of irregular surfaces and application related to shop problems
III	**Algebra**	• Algebra - Addition , subtraction, multiplication & division • Algebra - Theory of indices, algebraic formula, related problems

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IV	**Elasticity**	• Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus • Elasticity - Ultimate stress and working stress
V	**Profit and Loss**	• Profit and loss - Simple problems on profit & loss • Profit and loss - Simple and compound interest

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Semester- 3

Subject: Innovative Emerging Technology in Civil Engineering
Code: **DEDM 301**
Total Marks: 50

Credit	Hours	Marks		
2	60	I	E	To
		15	35	50

Objectives:

- To teach students about core concepts of BIM and its impact on the AEC industry.
- To teach students about various types of BIM content, including 3D models, metadata, and specifications.
- To make the students Explore the functionalities of BIM content and management systems (BIM CMS).
- To teach students about light house,3D construction technology and advanced construction material.

Learning Outcomes: Students will gain knowledge in

- Understand the core concepts of BIM and its impact on the AEC industry.
- Identify the various types of BIM content, including 3D models, metadata, and specifications.
- Explore the functionalities of BIM content and management systems (BIM CMS).
- Gain proficiency in using specific BIM software for content creation and management.
- Students will be able to learn about light house,3D construction technology and advanced construction material.

Unit	Topic	Key Learning

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I	**Building Information and Management system**	• What is BIM? • Benefits and applications of BIM • Levels of Development (LOD) in BIM • The BIM workflow process • Types of BIM content (3D models, non-geometric data, etc.) • Creating and acquiring BIM content • Benefits of standardized BIM content libraries • Quality control and assurance for BIM content • Introduction to BIM CMS • Introduction to popular BIM software (e.g., Revit, ArchiCAD)
II	**Construction of light houses**	• Role of new technologies • About light house projects • Implementation methodology • Description of technology • Design and layout • Construction process • Case study of real time project: - Light house project Rajkot(Gujrat) Light house project Chennai (Tamil Nadu)
III	**3D-Construction Technology**	• Introduction to 3D construction technology • Concrete 3D-Printing technology(C3DP) • Quick build 3D-Paneles • Light gauge steel framed structures • Monolithic concrete construction system- Using plastic and aluminum formwork • Glass fiber reinforced gypsum panel system
IV	**Latest construction Materials**	• Introduction to latest construction materials • Building systems/Products-Compressed stabilized earth block(CSEB),Precast technology, konark aerated concrete reinforced panal(KonCrete),Bamboo wood products, solar roof panel, Insulated sandwich panel • Products from recycling of industrial/Agriculture/Waste management system-Bio-Bricks from agriculture waste, Fly-Ash based bricks, Agrocrete.

Suggested Reading

- Compendium of indigenous innovative building materials and construction

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technologies- BMTPC New Delhi

- Compendium of emerging construction technologies for housing and infrastructure- BMTPC New Delhi
- Gupta, Sushil Kumar, Singla, DR, and Juneja BM; "A Text Book of Building Construction"; Ludhiana, Katson Publishing House.
- Rangwala, SC: "Building Construction"; Anand, Charotar Book Stall.
- A.K. Watal and Mahesh Sharma; "Quality Control in Civil engineering", Standard Publishers, New Delhi.
- SP – 62 Hand Book of BIS.
- B.I.S. – 6313 Part 1, 2, 3.
- National Building Code.
- Handbook of Civil Engineering by PN Khanna.
- SP: 2009. National Building Code.

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Subject: Building Design and Drawing Lab-3
Code: DEDM 311
Total Marks: 100

Credit	Hours	Marks		
4	120	I	E	To
		70	30	100

Objectives

- Understand the classification of different construction drawing.
- To recognize elements and symbol construction drawings.
- To understand how to develop and design a building plan.

Learning Outcomes

- After completion of this students will able to understand basic principles of building design.
- They will explore building drawing as a way of discovering and developing ideas for designing different elements of building.

List of Experiments:

Drawing No. 1:

Detailed drawing of RCC Rectangular beams (Single reinforced & Double reinforced). Lintel, Chajjas & slabs.

Drawing No. 2:

Detailed drawing of Steel sections, rivet, bolts, etc. Section and elevation of girders. Structural Joints, Plate girders roof trusses,

Drawing No. 3:

Detailed drawing of showing various pipe joints for underground drainage, Types of sanitary fittings in multi-storeyed building, Manholes and septic tank & Water supply system.

Drawing No. 4:

Detailed drawing of Draw showing road structure and component parts, Prepare a drawing of Cross-sections showing the different types of roads-according to location & materials & Prepare a drawing of road curves & gradient.

Drawing No. 5:

Prepare drawing of Different types of culvert, Steel Foot over bridge & R.C.C Slab Culvert with splayed wing walls.

Drawing No. 6:

Draw typical cross section of rail track, Draw Railway tracks – embankment layout plans of railway platform & Draw typical cross- section of railway tracks cutting & embankment (single lane & double Lane).

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Drawing No. 7:

Drawing of different types of irrigation structures: – Dams, barrages, weir etc, Longitudinal section of distributaries with the help of given sketch & data & Head regulators.

Drawing No. 8:

Drawing of canal- Alignment including longitudinal and cross sections of canals with the given data.

Subject: Advanced Surveying
Code:DEDM 302
Total Marks: 50

Credit	Hours	Marks		
2	60	I	E	TO
		15	35	50

Objectives:

- Carryout civil engineering survey to prepare drawings & maps.
- Interpret the drawings and maps for calculating different physical quantities like length, area, volume, elevations etc.

Learning Outcomes:

- To carry out simple land survey to prepare maps with existing details.
- Find out area of irregular shaped plane figures.

Unit	Topic	Key Learning
I	**Modern Surveying Techniques**	• Introduction and use of modern surveying equipment's such as Total Station, Differential Global Positioning System (DGPS), Unmanned Aerial Vehicle(UAV). • Field procedures of modern surveying equipment's • Data Retrieval • Understanding GIS and its components • Applications of GIS
II	**Total Station: - –**	• Introduction. • Components parts,accessories used. • characteristics, features. • advantages anddisadvantages. • principle of EMD. • Working and need. • Setting and measurement. • Electronic, display & Datareading.

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		• Rectangular and polar co-ordinate system. • Terminology of open andclosed traverse.
III	**GPS (Global Positioning System):-**	• Introduction of GPSsystem. • Co- ordinate and timesystem. • Satellite and conversionalgeodetic system. • GPS. Signal, code, andbiases • Role of TRANSIT in GPSdevelopment. • GPS segment organization. • GPS survey methods. Basicgeodetic co-ordinate. • Ground support equipment, signals. • Tracking devises& system. • Time measurement andGPS timing.
IV	**DGPS Survey**	• Introduction to Differential GPS (DGPS): Principle, Concepts and Function, Duel and Single Frequency DGPS, RTK and Static Surveys in DGPS, • Use of DGPS in Topographical Survey, Base, Rover, DGPS Connections and Settings, • Field Work: Point data collection (Easting, Northing and Height), Electronic Distance Measurement Survey, Area Measurement Survey Height Measurement Survey, Survey Data Post Processing Survey Data Applications.
V	**PHOTOGRAMMETRIC SURVEYING:**	• Introduction, Basic principles, The photo theodolite, • Definitions, Horizontal and Vertical angles from terrestrial photograph, Horizontal position of a point from photographic measurement, Elevation of a point by photographic measurement, • Determination of focal length of the lens, Aerial camera, Scale of a vertical photograph, Scale of a tilted photograph, • Flight planning for aerial / drone photography, The ground control for photogrammetric, Aerial and close range photogrammetric.
VI	**GIS AND MAPPING:**	• Introduction to Geographic Information System (GIS), • The four Ms, Contributing Disciplines for GIS, Objectives, components, Data Models, Data Structures, Database Management, • Errors in GIS, GIS Software packages, Linkage of GIS to Remote sensing, • Application areas of GIS and Remote sensing.

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Suggested Readings:

- Hussain, SK and Nagraj, MS; "Text Book of Surveying"; New Delhi, S Chand and Co Ltd.
- Deshpande, RS; "A Text Book Surveying and Levelling"; Poona, United Book Corporation
- Kocher, CL; "A Text Book of Surveying"; Ludhiana, Katson Publishing House
- Kanetkar,TP and Kulkarni, SV., "Surveying and Leveling", Poona, AVG Parkashan
- Kanetkar, TP; and Kulkarni, SV; "Surveying and Leveling" Poona, AVG Prakashan
- Mahajan, Sanjay "Surveying -I", Tech. Publication, Delhi
- Punmia, BC; "Surveying and Leveling", Delhi Standard Publishers Distributors.
- Shahai, PB; "A Text Book of Surveying", Oxford and IBH Publishing Co.

Subject: Advanced surveying Lab
Code: DEDM 312
Total Marks: 50

Credit	Hours	Marks		
2	60	I	E	To
		35	15	50

Objectives

- To determine the distance and angle between different objects.
- To prepare a map or plan to represent an area on a horizontal plan.
- To develop methods through the knowledge of modern science and the technology and use them in the field.
- To solve measurement problems in an optimal way.

Learning outcomes

- To learn to work as team, ethics and prepare technical reports of surveying.
- To relate theoretical knowledge of surveying to resolve real field problems.
- To establish horizontal control and vertical control by traversing and triangulation.
- To prepare topographical map and contour map on an area.

List of Experiments:

1. Field procedure for co- ordinate measurement
2. Transfer or establish Bench Mark.
3. Perform stakeout / demarcation of buildinglayout /plot layout/ roads/ alignment
4. Measure remote distanceand elevation
5. Calculate surface area onfield/site
6. Calculate volume of field/site
7. Demonstration the Procedure for down load and up load data.
8. Demonstration of GPS Components of GPSdata processing. GPS signal.
9. Demonstration of Set up and use GPS equipment.
10. Demonstration the Comparison with DGPS, GIS,GNSS.

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Subject: Estimation and Quantity Survey
Code: DEDM 303
Total Marks: 50

Credit	Hours	Marks		
2	60	I	E	To
		15	35	50

Objectives

- Summarize the basic principal and standard methods for working out quantities in estimating.
- Demonstrate the detailed estimate of buildings and workout rate analysis of the various items of work.
- Understand the material requirements as per specified norms and standards.
- Assess the valuation of buildings and provide practical knowledge of standard specifications of items of buildings construction.

Learning Outcomes

- Organizing the units for various quantities of items of work.
- Associating the preparation of detailed estimation of building.
- Demonstrate the calculation of earth work quantity.
- Understand how to prepare a Notice inviting tender document for bidding.
- Analyze the building as per new estimated cost.
- Have knowledge on specifications and tendering process for contracts.
- Examining the rate analysis of various items of civil works.
- Calculate the quantities for different items of work.
- Identify specifications and tendering process for contracts.
- Create various Tender documents for bidding purpose.

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Unit	Topic	Key Learning
I	**Estimate of Buildings**	• Load bearing one room and two room building – Calculation of quantities of brick work, RCC, PCC, Plastering, white washing, colour washing and painting/ varnishing for shops, rooms, residential building with flat and pitched roof. • Estimate of joineries for paneled and glazed doors, windows, ventilators, handrails etc. • Measurement books and preparation of bills.
II	**Estimate of other structures**	• Estimate of septic tank, soak pit. • Estimate of bituminous and cement concrete roads. • Estimate of retaining walls.
III	**Specification and Tenders**	• Data, Schedule of rates, Analysis of rates, Specifications, sources. • Preparation of detailed and general specifications Tenders, e- tender, Preparation of Tender Notice and Document, uploading of e- tender on portal. • Contracts, Types of contracts, Drafting of contract documents. • ADR awareness.
IV	**Report preparation**	• Principles for report preparation • Report on estimate of residential building, Culvert, Roads.

Suggested Readings:

- Estimating and Costing for Building &Civil Engg. Works by P.L. Bhasin, S. Chand & Co., N. Delhi.
- Estimating, Costing & Specification in Civil Engineering by m. Chakraborty, Calcutta.
- Estimating and costing in civil engineering (theory & practice) by B. N. Dutta, S. Dutta & Co., Lucknow.
- Building Construction Estimating by George H. Cooper, Mc Graw- Hill Book Co., New York.

Subject: Estimating and Quantity Survey Lab
Code: DEDM 313
Total marks:

Credit	Hours	Marks		
		I	E	To
1	30	35	15	50

Objectives

- Understand the detailed estimate of buildings and workout rate analysis of the various items of work.

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Learning Outcomes

- Associating the preparation of detailed estimation of building.
- Demonstrate the calculation of earth work quantity.
- Examining the rate analysis of various items of civil works.

List of Practical:

1. Making model of a single room building, detachable at plinth level- for understanding the drawing (plan and sections) and fame the estimate accordingly.
2. Making model of a two-room building, detachable at plinth level- for understanding the drawing (plan and sections) and fame the estimate accordingly.
3. To make the model for a combined RCC footing of two columns as per the given plan and estimate the quantities.
4. To make the model of RCC roof slab and calculate the quantities of cement, fine aggregate (sand) and course aggregate (aggregate).

Subject: Auto CAD Lab -2

Code: DEDM 314

Total Marks: 100

Credit	Hours	Marks		
4	120	I	E	To
		70	30	100

Objectives

- Understand the fundamental concepts and features of AutoCAD.
- Use the precision drafting tools in AutoCAD to develop accurate technical drawings.
- Present drawings in a detailed and visually impressive manner.

Learning Outcomes

- Apply basic concepts to develop construction (drawing) techniques.
- Ability to manipulate drawings through editing and plotting techniques.
- Understand geometric construction of building plans such as single storeyed and multi- storeyd buildings.
- Understand and demonstrate RCC in buildings.

List of Practical:

1. Introduction to computer aided drafting.
2. Software for CAD- Introduction to different software's.
3. Practice exercises on CAD software
4. Drawing of plans of buildings using software

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- Single storeyed
- Multi storeyed

5. Developing sections and elevations for
   - Single storeyed
   - Multi storeyed
6. Detailing of building components like doors, windows, roof trusses etc. using CADsoftware's.
7. Exercises on development of working of buildings.
8. Practice with signs & symbols in Building Drawings
9. Practice with local building.
10. Showing details of RCC in Buildings: footing, columns, beam, slabs.
11. Drawing details of steel structures.
12. Drawing details of various opening structures with form work.

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Subject: Project-2

Code- DEDM 315

Total Marks: 50

Credit	Hours	Marks		
2	60	I	E	To
		35	15	50

Semester- 4

Subject: OJT (On Job Training)
Code- DEDM 421

Total Marks: 240

Credit	Hours	Marks		
24	780	I	E	To
		120	120	240

Subject: Open Elective-I via (MOOC)
Code- DEDM 431

Credit	Hours	Marks		
2	60	I	E	To
		15	35	50

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2.3 Faculty & staff requirement

Faculty: 5 (3 Civil Engg. faculty ,1 Auto CAD faculty, 1 Soft Skill Faculty).
Trainers-2.

2.4 Minimum infrastructure requirement

1. Classroom for 60 students- one
2. Building Material Centre 20 x 30 – one
3. Labs:
    i. Communication lab
    ii. Safety lab
    iii. Survey lab
    iv. Auto Cad lab
    v. Concrete lab
    vi. Drawing Hall for 60 students- one

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3 Admission process

3.1 Eligibility

- 10th standard
- Minimum Age: 16 years
- Age calculation: Age as on the last date of submission of form.

Note: If a student takes admission in the course, after 10+2 (With PCM /B), he/she will be awarded extra Marks in admission merit, as given below:

(a) 10+2 with 60% or more marks – 5 Extra marks

(b) 10+2 with less than 60% marks- 3 Extra marks

3.2 Seat details

Programme	Total seats
Diploma in Vocation (D.Voc) Draughtsman ship (Civil)	Reduced from 60 to 30(2024 onwards)

3.3 Mode of Application: online/offline, application fee

Candidates will apply online on the University website: www.svsu.ac.in for admission or in offline mode at Dudhola campus, on prescribed application form.

Online Application Fees

General	: INR 500
BC/Kashmiri Migrants	: INR 250
SC	: Free
PwD	: Free
Female	: INR 50

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3.4 Fee structure

Fees Detail	Total: INR for 1 semester At the Time of admission -Rs 15000.00(Semester-wise)

4 Commencement of the Programme

4.1 Orientation

There will be an orientation programme conducted for the participants at the time of admission, as per the academic calendar, which will highlight the programme details, terms and conditions of University.

4.2 Procedure of rules of SVSU

There will be display of procedure and guidelines for the Programme by SVSU and the norms that a participant needs to follow during the course. The participants will also be made aware about the assessment criteria for the academic.

4.3 Attendance and leave rule

I. A Participants shall be required to maintain a minimum of 75% of the lectures delivered (In theory and practical's combined), to be eligible to appear in the final examination.

II. The attendance will be counted from the date of start of session, till the end ofparticular of the semester.

III. In case of late admission, the attendance shall be counted from the date of actual admission of the candidate by the competent authority.

IV. The name of the participants shall be struck off the rolls if he/ she remains absent for 4 consecutive working days, without leave.

V. A participant whose name has been struck off from the roll of the institution, may however be readmitted if the absence of the participants was due to the circumstance beyond his/ her control and his /her request considered and approved by the Dean/ competent authority.

VI. The Programme coordinator / Head may grant leave to the participants in exceptional circumstances only to the extent of 10 days per programme, subject to the condition that the participants complete the prescribed minimum attendance as per attendance rule and the leave has been prior approved by Dean/Chairman.

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5 Assessment process and Awards

5.1 Theory/practical assessment by SVSU

The assessment will be done by Examination department of university.

5.2 Grading system

Marks	Grade	Grade Point	Category
90-100	O	10	Outstanding
80≤marks<90	A+	9	Excellent
70≤marks<80	A	8	Very good
60≤marks<70	B+	7	Good
50≤marks<60	B	6	Above Average
45≤marks<50	C	5	Average
40≤marks<45	D	4	Pass
<40	F	0	Fail
Absent	AB	0	Absent

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