



## SAMRAT ASHOK TECHNOLOGICAL INSTITUTE

(Engineering College), VIDISHA M.P.

(An Autonomous Institute Affiliated to RGPV Bhopal)

### -----CIVIL ENGINEERING-----

Semester/Year		IV/II		Program			B.Tech				
Subject Category	DC	Subject Code:	CE-401	Subject Name:		Fluid Mechanics – I					
Maximum Marks Allotted								Contact Hours			Total Credits
Theory				Practical			Total Marks	L	T	P	
End Sem	Mid-Sem	Assignment	Quiz	End Sem	Lab-Work	Quiz					
60	20	10	10	30	10	10	150	3	-	2	4
Prerequisites:											
Physics and Mathematics.											
Course Objective:											
Students are expected to learn basic concepts of fluid flow, fluid properties and relationship between them, fundamental principles of fluid mechanics (principles of continuity, momentum, and energy) as applied to fluid motions.											
Course Outcomes:											
After completion of the course, the student will be able to:											
<ol style="list-style-type: none"> <li>1. Perceive the knowledge of basic properties of fluids, different types of flows and analyze the fluid behavior under static condition</li> <li>2. Apply the basic concepts to examine the behavior of fluid under kinematic and dynamic conditions</li> <li>3. Perform dimensional analysis and dynamic similitude</li> <li>4. Evaluate practical flow problems for pipes, open channels</li> <li>5. Compare the difference between theoretical and practical values of different flow parameters and calibrate the equipments accordingly (Lab)</li> </ol>											
UNITS	Descriptions							Hrs.	CO's		
I	Review of Fluid Properties: Engineering units of measurement, mass, density, specific weight, specific volume, specific gravity, surface tension, capillarity, viscosity, bulk modulus of elasticity, pressure and vapor pressure. Classification of different Fluids, Rheological Classification of Fluid. Fluid Static's: Pressure at a point, pressure variation in static fluid, Absolute and gauge pressure, manometers, Forces on plane and curved surfaces (Problems on gravity dams and Tainter gates); buoyant force, Stability of floating and submerged bodies, Relative equilibrium.							9	CO1		
II	Kinematics of Flow: Path lines, streak lines, streamlines and stream tubes, Types of motion of Fluid Particles, Types of flow-ideal & real, steady & unsteady, uniform & nonuniform, flow one-, two- and three-dimensional flow, continuity equation for one- and three-dimensional flow, rotational & irrotational flow, circulation, stagnation point, separation of flow, sources & sinks, velocity potential, stream function, flow nets- their utility & method of drawing flow nets.							8	CO2		
III	Dynamics of Flow: Euler's equation of motion along a streamline and derivation of Bernoulli's equation, application of Bernoulli's equation, energy correction factor, linear momentum equation for steady flow; momentum correction factor. The moment of momentum equation, forces on fixed and moving vanes and other applications. Velocity measurement (Pitot tube, Prandtl tube, current meters etc.); flow measurement (orifices, nozzles, mouth pieces, orifice meter, nozzle meter, venture meter, weirs and notches).							8	CO3		
IV	Dimensional Analysis and Dynamic Similitude: Dimensional analysis, dimensional homogeneity, use of Buckingham-pi theorem, calculation							8	CO4		

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	of dimensionless numbers, similarity laws, specific model investigations (submerged bodies, partially submerged bodies, weirs, spillways, roto dynamic machines etc.)		
V	Laminar Flow: Introduction to laminar & turbulent flow, Reynolds experiment & Reynolds number, relation between shear & pressure gradient, laminar flow through circular pipes, laminar flow between parallel plates, laminar flow through porous media, Stokes law, lubrication principles.	7	CO5
Guest Lectures (if any)			
Total Hours		40	
Suggestive list of experiments:			
<ol style="list-style-type: none"> <li>1. Verification of Energy equation</li> <li>2. Calibration of venturi meter.</li> <li>3. Calibration of orifice meter.</li> <li>4. Calibration of Mouth Piece.</li> <li>5. Calibration of Water meter.</li> <li>6. Calibration Nozzle meter.</li> <li>7. Determination of Cc, Cv, Cd of orifices.</li> <li>8. Reynolds experiment for demonstration of stream lines &amp; turbulent flow.</li> <li>9. Determination of Friction Factor of a pipe.</li> <li>10. Verification of impulse momentum principle.</li> <li>11. Calibration Notches. (Rectangular &amp; V notch)</li> </ol>			
Text Book-			
<ol style="list-style-type: none"> <li>1. Modi&amp; Seth; Fluid Mechanics; Standard Book House, Delhi</li> <li>2. Som and Biswas; Fluid Mechanics and machinery; TMH</li> <li>3. Cengal; Fluid Mechanics; TMH</li> <li>4. White; Fluid Mechanics; TMH</li> </ol>			
Reference Books-			
<ol style="list-style-type: none"> <li>1. Essential of Engg Hyd. By JNIK DAKE; Afrikan Network &amp; Sclnstt. (ANSTI)</li> <li>2. A Text Book of fluid Mech. for Engg. Student by Franiss JRD</li> <li>3. R Mohanty; Fluid Mechanics By; PHI</li> <li>4. Fluid Mechanics; Gupta Pearson.</li> <li>5. Dr. D.S. Kumar, Fluid Mechanics and Fluid Power Engineering</li> </ol>			
Modes of Evaluation and Rubric			
Quiz, Assignment, Midterm exam, End term exam and Practical Viva. Rubric: End term exam. Practical: 50% Quiz and 50% Viva.			
List/Links of e-learning resource			
<a href="https://swayam.gov.in/nd1_noc20_ce59/preview">https://swayam.gov.in/nd1_noc20_ce59/preview</a> <a href="https://nptel.ac.in/courses/112105183">https://nptel.ac.in/courses/112105183</a>			
Recommendation by Board of studies on		14.12.2023	
Approval by Academic council on			
Compiled and designed by			
Subject handled by department		Civil Engineering	

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## SAMRAT ASHOK TECHNOLOGICAL INSTITUTE

(Engineering College), VIDISHA M.P.

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### -----CIVIL ENGINEERING-----

Semester/Year		IV/II		Program			B.Tech				
Subject Category	DC	Subject Code:	CE-402	Subject Name:		Quantity Surveying & Costing					
Maximum Marks Allotted								Contact Hours			Total Credits
Theory				Practical			Total Marks	L	T	P	
End Sem	Mid-Sem	Assignment	Quiz	End Sem	Lab-Work	Quiz					
60	20	10	10	-	-	-	100	3	1	-	4
Prerequisites:											
Building material											
Course Objective:											
Students are expected to learn to know the importance of preparing the types of estimates under different conditions; to know about the rate analysis and bill preparations; to study about the specification writing; to understand the valuation of land and buildings.											
Course Outcomes:											
After completion of the course, the student will be able to:											
<ol style="list-style-type: none"> <li>1. Apply knowledge and techniques to prepare different types of estimates for different types of structures.</li> <li>2. Carry out analysis of rates and bill preparation for various components of construction and utilize for calculating cost of works.</li> <li>3. Apply the concept of valuation for evaluating rent of buildings</li> </ol>											
UNITS	Descriptions							Hrs.	CO's		
I	Introduction: Purpose and importance of estimates, principles of estimating. Methods of taking out quantities of items of work. Mode of measurement, measurement sheet and abstract sheet; bill of quantities.  Types of estimates, plinth area rate, cubical content rate, preliminary, original, revised and supplementary estimates for different projects.							8	CO1		
II	Rate Analysis: Task for average artisan, various factors involved in the rate of an item, material and labour requirement for various trades; preparation for rates of important items of work. Current schedule of rates. (C.S.R.)							8	CO2		
III	Detailed Estimates: Preparing detailed estimates of various types of buildings, R.C.C. works, earth work calculations for roads and estimating of culverts Services for building such as water supply, drainage and electrification.							9	CO1		
IV	Cost of Works: Factors affecting cost of work, overhead charges, Contingencies and work charge establishment, various percentages for different services in building Preparation of DPR.							8	CO2		
V	Valuation: Purposes, depreciation, sinking fund, scrap value, year's purchase, gross and net income, dual rate interest, methods of valuation, rent fixation of buildings.							7	CO3		
Guest Lectures (if any)											
Total Hours								40			
Text Book-											

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1. Quantity Surveying & Costing – B.N. Datta 2. Estimating & Costing for Civil Engg. – G.S. Birdi	
Reference Books- 1. Quantity surveying & costing – Chakraborty 2. Estimating & Costing – S.C. Rangawala	
Modes of Evaluation and Rubric Quiz, Assignment, Midterm exam and End term exam. Rubric: End term exam.	
List/Links of e-learning resource <a href="https://nptel.ac.in/courses/105/104/105104161/">https://nptel.ac.in/courses/105/104/105104161/</a> <a href="https://pdfcoffee.com/estimation-amp-costing-5-pdf-free.html">https://pdfcoffee.com/estimation-amp-costing-5-pdf-free.html</a>	
Recommendation by Board of studies on	14.12.2023
Approval by Academic council on	
Compiled and designed by	
Subject handled by department	Civil Engineering





# SAMRAT ASHOK TECHNOLOGICAL INSTITUTE

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## -----CIVIL ENGINEERING-----

Semester/Year		IV/II		Program			B.Tech				
Subject Category	DC	Subject Code:	CE-403	Subject Name:			Transportation Engg. I				
Maximum Marks Allotted								Contact Hours			Total Credits
Theory				Practical			Total Marks	L	T	P	
End Sem	Mid-Sem	Assignment	Quiz	End Sem	Lab-Work	Quiz					
60	20	10	10	30	10	10	150	3	-	2	4
Prerequisites:											
Basic knowledge about the railway, bridge and tunnel											
Course Objective:											
<ul style="list-style-type: none"> <li>To know about the basic concepts and design of various components of railway engineering.</li> <li>To know about the types and functions of railway track, junctions, points and railway stations.</li> <li>To know about the basics of bridges and its components</li> <li>To know about the tunnels and its construction methods.</li> </ul>											
Course Outcomes:											
After completion of the course, the student will be able to:											
<ol style="list-style-type: none"> <li>Distinguish various component of railway transportation system and geometric design of railway elements.</li> <li>Discuss the basic concepts of bridge planning, construction and strengthening of bridges.</li> <li>Know about the basic components and methods of tunnel construction to facilitate the transportation system.</li> </ol>											
UNITs	Descriptions							Hrs.	CO's		
I	Components of Railway Engineering: Permanent way components Railway Track Gauge , Cross Section of Permanent Way - Functions of various Components like Rails, Sleepers and Ballast, Rail Fastenings, Creep of Rails, Theories related to creep, Adzing of Sleepers- Sleeper density, Rail joints.							8	CO1		
II	Geometric Design of Railway Track: Alignment – Engineering Surveys - Gradients- Grade Compensation, Cant and Negative Super elevation, Cant Deficiency, Degree of Curve, safe speed on curves, Transition curve, Compound curves, Reverse curves , Extra clearance on curves, widening of gauge on curves, vertical curves, cheek rails on curves.							10	CO1		
III	Turnouts & Controllers: Track layouts, Switches, Design of Tongue Rails, Crossings, Turnouts, Layout of Turnout, Double Turnout Diamond crossing, Scissors crossing. Signal Objectives, Classification Fixed signals – Stop signals, Signalling systems – Mechanical, signalling system – Electrical signalling system – System for Controlling Train Movement, Interlocking , Modern signaling Installations							7	CO1		
IV	Bridge Site Investigation, surveying and Planning; Loading Standards & Component parts: Selection of site, alignment, Indian loading standards for Railways Bridges and Highway Bridges, Bridge super structure and sub-structures, abutments, piers, wing walls, return walls, approaches, floors & flooring system, choice of super structure.							7	CO2		



V	Tunnels: Selection of route, Engineering surveys, alignment, shape and size of tunnel, bridge action, pressure relief phenomenon, Tunnel approaches, Shafts, pilot shafts  Construction of tunnels in soft soil, hard soil and rock, Different types of lining, methods of lining, Mucking operation, Drainage and ventilation, Examples of existing important tunnels in India and abroad.	8	CO3
Guest Lectures (if any)			
Total Hours		40	
Suggestive list of experiments:			
<ol style="list-style-type: none"> <li>1. Aggregate Crushing Value Test</li> <li>2. Determination of aggregate impact value</li> <li>3. Determination of Los Angeles Abrasion value</li> <li>4. Determination of penetration value of Bitumen</li> <li>5. Determination of Viscosity of Bituminous Material</li> <li>6. Determination of softening point of bituminous material</li> <li>7. Determination of ductility of the bitumen</li> <li>8. Determination of flash point and fire point of bitumen</li> <li>9. Determination of stripping value of road aggregate</li> <li>10. Determination of shape tests on aggregate</li> </ol>			
Text Book-			
<ol style="list-style-type: none"> <li>1. Chakraborty and Das; Principles of transportation engineering; PHI</li> <li>2. Rangwala SC; Railway Engineering; Charotar Publication House, Anand</li> <li>3. Rangwala SC; Bridge Engineering; Charotar Publication House, Anand</li> <li>4. Ponnuswamy; Bridge Engineering; TMH</li> <li>5. Railway Engineering by Arora &amp; Saxena-Dhanpat Rai &amp; Sons</li> </ol>			
Reference Books-			
<ol style="list-style-type: none"> <li>1. Railway Track by K.F. Antia</li> <li>2. Principles and Practice of Bridge Engineering S.P. Bindra – Dhanpat Rai &amp; Sons</li> <li>3. Bridge Engineering - J.S. Alagia - Charotar Publication House, Anand</li> <li>4. Railway, Bridges &amp; Tunnels by Dr. S.C. Saxena</li> <li>5. Essentials of Bridge Engg. By I.J. Victor; Relevant IS &amp; IRC codes</li> </ol>			
Modes of Evaluation and Rubric			
Quiz, Assignment, Midterm exam, End term exam and Practical Viva. Rubric: End term exam. Practical: 50% Quiz and 50% Viva.			
List/Links of e-learning resource			
<a href="https://nptel.ac.in/courses/105/107/105107123/">https://nptel.ac.in/courses/105/107/105107123/</a> <a href="https://nptel.ac.in/noc/courses/noc17/SEM2/noc17-ce24/">https://nptel.ac.in/noc/courses/noc17/SEM2/noc17-ce24/</a> <a href="https://en.wikipedia.org/wiki/Railway_engineering">https://en.wikipedia.org/wiki/Railway_engineering</a> <a href="https://nptel.ac.in/courses/105/105/105105212/">https://nptel.ac.in/courses/105/105/105105212/</a>			
Recommendation by Board of studies on		14.12.2023	
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Subject handled by department		Civil Engineering	





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### -----CIVIL ENGINEERING-----

Semester/Year		IV/II		Program			B.Tech				
Subject Category	DE-I	Subject Code:	DE-404	Subject Name:		Road and Railway Safety Engineering					
Maximum Marks Allotted								Contact Hours			Total Credits
Theory				Practical			Total Marks	L	T	P	
End Sem	Mid-Sem	Assignment	Quiz	End Sem	Lab-Work	Quiz					
60	20	10	10	-	-	-	100	3	-	-	3

**Prerequisites:**

Basic knowledge on Road and Railway safety Engineering.

**Course Objective:**

To provide the basic knowledge on road and railway safety engineering and acquaint them with evaluation of safety hazardous locations and remedial road safety measures.

**Course Outcomes:**

After the completion of the course the student should be able to

1. Able to acquire knowledge methods and application of road and railway safety engineering and accident analysis.
2. Able to remember the process of road and railway safety audit and the measures of improving road safety.
3. Able to Qualified to evaluate the effectiveness of various management techniques adopted in reducing railway accidents.

UNITs	Descriptions	Hrs.	CO's
I	Introduction to Road safety: Road accidents, Trends, causes, Collision diagrams; Highway safety; Human factors and road user limitations; Speed and its effect on road safety; Vehicle factors; Highway safety in India. Multi-causal dynamic systems approach to safety; Crash Vs Accident; Road safety improvement strategies; Elements of a road safety plan, Safety data Needs; Safe vehicle design	9	CO1
II	Understanding and Analysis of road accident Data: Before-after methods in accident analysis, Recording of accident data; Accident Investigation and Analysis; Statistical testing and the role of chance; Black Spot Identification and Investigations, Case Studies.	8	CO1
III	Road Safety Audits: Key elements of a road safety audit, Road Safety Audits & Investigations, Work zone safety audit; Road Accident Reconstruction: Understand basic physics related to accident reconstruction, speed for various skid, friction, drag, and acceleration scenarios, variables involved in jump and flip crashes, variables involved in pedestrian crashes, Case Studies	7	CO2
IV	Remedial safety Measures: Accident prevention by better planning, Accident prevention by better design of roads, Accident remedial measures, Highway operation and accident control measures, Highway Safety Measures during construction, Highway geometry and safety; Safety in urban areas;	8	CO2



	Public transport and safety, Road safety policy making, Stakeholders involvement; Road safety law.		
V	Railway Accidents and Safety: Accidents, Types and their Classification, Causes and their Prevention, Rules for reporting Accidents. Review and Analysis of Accidents for taking Corrective Measures, Role & Responsibilities of various Officials and Departments during Accidents.	8	CO3
Guest Lectures (if any)			
<b>Total Hours</b>		40	
Text Book-			
<ol style="list-style-type: none"> <li>1. C. Jotin Kishty &amp; B. Kent Lall, Transportation Engineering-An Introduction, Thrid Edition, Prentice Hall of India Private Limited, New Delhi, 2006</li> <li>2. Khanna and Justo, Text book of Highway Engineering, Nemchand Brothers, Roorkee.</li> <li>3. GeetamTiwari and Dinesh Mohan, Transport Planning and Traffic Safety: Making Cities, Roads, and Vehicles Safer, CRC Press, 2016.B.C. Punmia; Building Construction.</li> <li>4. Satish Chandra, M. M. Agarwal, Railway Engineering, Oxford University Press India.</li> </ol>			
Reference Books-			
<ol style="list-style-type: none"> <li>5. J. Stannard Baker, Traffic Collision Investigation, Northwestern University Center for Public Safety, 2002</li> <li>6. Ezra Hauer, Observational Before-After Studies in Road Safety, Pergamon Press, 1997 (reprinted 2002).</li> <li>7. AthelstanPopkess, Traffic Control and Road Accident Prevention, Chapman and Hall, 1997 (Digitized 2008)</li> <li>8. EN50126:1999 "Railway Applications – The specification and Demonstration of Reliability, Availability, Maintainability and Safety"</li> <li>9. MIL -STD-882D "Standard Practice for System Safety", Department of Defence, USA</li> </ol>			
Modes of Evaluation and Rubric			
Quiz, Assignment, Midterm exam, End term exam and Practical Viva. Rubric: End term exam. Practical: 50% Quiz and 50% Viva.			
List/Links of e-learning resource			
<a href="https://nptel.ac.in/courses/105/105/105105215/">https://nptel.ac.in/courses/105/105/105105215/</a>			
Recommendation by Board of studies on		14.12.2023	
Approval by Academic council on			
Compiled and designed by			
Subject handled by department		Civil Engineering	

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**-----CIVIL ENGINEERING-----**

Semester/Year		IV/II		Program			B.Tech				
Subject Category	DE	Subject Code:	DE-404 (B)	Subject Name:		Construction Management					
Maximum Marks Allotted								Contact Hours			Total Credits
Theory				Practical			Total Marks	L	T	P	
End Sem	Mid-Sem	Assignment	Quiz	End Sem	Lab-Work	Quiz		L	T	P	Total Credits
60	20	10	10	-	-	-	3	-	-	3	
<b>Prerequisites:</b>											
Nil											
<b>Course Objective:</b>											
The objectives of this subject are:											
<ul style="list-style-type: none"> <li>• To develop concepts related with Construction management &amp; Equipment management which involves Planning, scheduling, controlling, organizing of project and Execution of the project with economic development &amp; prosperity.</li> <li>• To learn basic principles of Construction Management &amp; Various networking techniques of project controlling in the context of various construction aspects.</li> <li>• To study Scheduling of the project &amp; resource allocating in terms of site management.</li> <li>• To finalize quantities of items, Equipment and resource requirement of civil engineering Works</li> <li>• To know the co-relation of client, consultant and contractor for the construction project with practical aspects</li> </ul>											
<b>Course Outcomes:</b>											
After completion of the course, the student will be able to:											
<ol style="list-style-type: none"> <li>1. Adopting the ethical knowledge for Construction &amp; project management.</li> <li>2. The students will get the experience to make proper site management &amp; specification for equipment for construction work.</li> <li>3. The student will get in depth knowledge of resource &amp; contract management &amp; cost management on site.</li> </ol>											
UNITS	Descriptions						Hrs	CO's			
I	<b>Construction Management:</b> Introduction, Objectives and Scope of Construction Management. Work break down structure for various projects, Construction Resources.						8	CO1			
II	<b>Management Techniques:</b> PMC and Conventional Methods: Gantt Bar chart, Mile stone chart, Line of balance (L O B) technique, Introduction of PMC						8	CO1			
III	<b>Network Analysis: Critical Path Method (CPM) :</b> Introduction , Basic assumption made for creating a Network, Terminology, Types of networks, Network Rules, CPM, Bar chart, Type of floats and their significance, Time grid diagram, Updating of networks and Time cost Optimization, Terms and definitions : Event, Activity, Dummies, Interrelationship of Events, Interrelationship of Activity						8	CO2			
IV	<b>Resource allocation and Resource Scheduling:</b> Various schedules i.e. Material, labour, equipment etc. Resource allocation models with and without constraints. Difference between PERT and CPM						8	CO3			

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V	<b>Program Evaluation and Review Technique (PERT):</b> Activities and project time estimates for probabilistic model, Time Estimates: TL, TE, Evaluation of project completion time probabilities. Comparison between Deterministic and Probabilistic Approaches.	8	CO3
Guest Lectures (if any)			
<b>Total Hours</b>		40	
Text Book-			
<ol style="list-style-type: none"> <li>1. Sharma, M.R., Fundamentals of Construction Planning and Management, S.K. Kataria &amp; Son, New Delhi, 2012.</li> <li>2. Seetharaman, S., Construction Engineering &amp; Management, Umesh Publications, 2007.</li> <li>3. Srinath, L.S., PERT &amp; CPM Principles and Applications, Tata McGraw Hill, New Delhi.</li> <li>4. Peurifoy, L., Schexnayder, C.J. and Shapira, A., Construction Planning, Equipment and Methods, McGraw Hill, New Delhi, 8th Edition, 2010.</li> <li>5. Punmia, B.C. and Khandelwal, K.K., Project Planning and Control with PERT and CPM, Laxmi Publications, New Delhi, 20</li> <li>6. R.L. Peurifoy and W.B. Ledbetter, "Construction Planning, Equipments and Methods" McGraw-Hill Publishers. New Delhi.</li> <li>7. D. Weist and F.K. Levy, "A Management Guide to PERT/ CPM", Prentice Hall of India Pvt. Ltd.</li> <li>8. B.C. Punmia and K.K Khandelwal, "Project Planning and control with PERT &amp;</li> </ol>			
Reference Books-			
<ol style="list-style-type: none"> <li>1. CPM" Laxmi Publication Pvt. Ltd. New Delhi.</li> <li>2. P.S. Gahlot and B.M. Dhir, "Construction Planning and Management", New Age International Pvt. Ltd., New Delhi.</li> <li>3. Sharma, S.C., Construction Equipment &amp; Management, Khanna Publications, New Delhi, 1988.</li> <li>4. Sengupta and Guha, Construction Management and Planning, Tata McGraw Hill, New Delhi.</li> <li>5. Chitkara, K. K., Construction Project Management Planning, Scheduling and Controlling, Tata McGraw Hill, New Delhi.</li> <li>6. Chitkara, K. K., Construction Project Management Techniques and Practices, Tata McGraw Hill, New Delhi, 2004</li> </ol>			
Modes of Evaluation and Rubric			
List/Links of e-learning resource			
<ol style="list-style-type: none"> <li>1. <a href="http://nptel.iitm.ac.in/courses/IITMADRAS/Infrastructure_Planning_Management/index.php">http://nptel.iitm.ac.in/courses/IITMADRAS/Infrastructure_Planning_Management/index.php</a></li> <li>2. <a href="http://www.deere.com/en_US/cfd/construction/deere_const/media/pdf/attachments.pdf">http://www.deere.com/en_US/cfd/construction/deere_const/media/pdf/attachments.pdf</a></li> <li>3. <a href="http://www.fta.dot.gov/documents/Construct_Proj_Mangmt_CD.pdf">http://www.fta.dot.gov/documents/Construct_Proj_Mangmt_CD.pdf</a></li> <li>4. <a href="http://www.netmba.com/operations/project/pert/">http://www.netmba.com/operations/project/pert/</a></li> <li>5. <a href="http://nptel.iitm.ac.in/courses/Webcourse-contents/IIT-20Guwahati/cpm/index.html">http://nptel.iitm.ac.in/courses/Webcourse-contents/IIT-20Guwahati/cpm/index.html</a></li> </ol>			
Recommendation by Board of studies on		14-12-2023	
Approval by Academic council on			
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Subject handled by department		Civil Engineering	

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### -----CIVIL ENGINEERING-----

Semester/Year		IV/II		Program			B.Tech					
Subject Category		DE		Subject Code:		DE-404 (C)		Subject Name:		Project Management		
Maximum Marks Allotted								Contact Hours			Total Credits	
Theory				Practical			Total Marks	L	T	P		
End Sem	Mid-Sem	Assignment	Quiz	End Sem	Lab-Work	Quiz						
60	20	10	10	-	-	-	-	3	-	-	3	
<b>Prerequisites:</b>												
Nil												
<b>Course Objective:</b>												
The objectives of this subject are:												
1. To outline the need for Project Management.												
2. To highlight different techniques of activity planning.												
3. Project Planning & Management												
<b>Course Outcomes:</b>												
After completion of the course, the student will be able to:												
1. Evaluate and select the most desirable projects.												
2. Apply appropriate approaches to plan a new project and develop project schedule.												
3. Identify the important risks facing in a new project.												
UNITS	Descriptions							Hrs	CO's			
I	<b>Introduction to Project Management and Project Selection:</b> Objectives of Project Management- Importance of Project Management- Types of Projects Project Management Life Cycle- Project Selection – Feasibility study: Types of feasibility Steps in feasibility study.							8	CO1			
II	<b>Project Planning and Implementation:</b> Project Scope- Estimation of Project cost – Cost of Capital – Project Representation and Preliminary Manipulations - Basic Scheduling Concepts - Resource Levelling – Resource Allocation.							8	CO1			
III	<b>Project Monitoring and Control:</b> Setting a base line- Project management Information System – Indices to monitor progress. Importance of Contracts in projects- Teamwork in Project Management - Attributes of a good project team – Formation of effective teams – stages of team formation.							8	CO2			
IV	<b>Project Closure:</b> Project evaluation- Project Auditing – Phases of project Audit- Project closure reports Guidelines for closeout reports.							8	CO3			
V	<b>Special Topics in Project Management:</b> Computers, e-markets and their role in Project management- Risk management Environmental Impact Assessment. Case studies in Project management.							8	CO3			
<b>Guest Lectures (if any)</b>												
<b>Total Hours</b>								40				

*SE*

Text Book-	
<ol style="list-style-type: none"> <li>1. Berkun, Scott (2005), The Art of Project Management, O'Reilly Media: Cambridge, MA.</li> <li>2. Berkun, Scott (2008), Making Things Happen: Mastering Project Management, O'Reilly Media: Cambridge, MA.</li> <li>3. Campbell, Clark A. (2006), The One-Page Project Manager: Communicate and Manage Any Project With a Single Sheet of Paper, Wiley: New York.</li> <li>4. Cook, Curtis R. (2004), Just Enough Project Management, McGraw-Hill: Boston, MA.</li> <li>5. Crowe, Andy (2006), Alpha Project Managers: What the Top 2% Know that Everyone Else Does Not, Velociteach: Kennesaw, GA</li> </ol>	
Reference Books-	
<ol style="list-style-type: none"> <li>1. Cunningham, Michael C. (2006), Finish what you Start: 10 Surefire Ways to Deliver your Projects On Time and On Budget, Kaplan Business: New York.</li> <li>2. Dvir, Dov &amp; Aaron J. Shenhar (2007), Reinventing Project Management: The Diamond Approach to Successful Growth and Innovation, Harvard Business: Cambridge, MA.</li> <li>3. Karsh, Ellen &amp; Arlen Sue Fox (2006), The Only Grant-Writing Book You'll Ever Need, Basic Books: New York.</li> <li>4. Khanna, R. B. (2011), Project Management, PHI Learning Private Limited, New Delhi.</li> <li>5. Kendrick, Tom (2004), The Project Management Toolkit: 100 Tips and Techniques for Getting the Job Done Right, AMACOM Books: Boston, MA.</li> </ol>	
Modes of Evaluation and Rubric	
List/Links of e-learning resource	
Recommendation by Board of studies on	14-12-2023
Approval by Academic council on	
Compiled and designed by	
Subject handled by department	Civil Engineering





## SAMRAT ASHOK TECHNOLOGICAL INSTITUTE

(Engineering College), VIDISHA M.P.

(An Autonomous Institute Affiliated to RGPV Bhopal)

### -----CIVIL ENGINEERING-----

Semester/Year		IV/II		Program			B.Tech				
Subject Category	OC-II	Subject Code:	OE-405	Subject Name:		Remote Sensing & GIS					
Maximum Marks Allotted								Contact Hours			Total Credits
Theory				Practical			Total Marks	L	T	P	
End Sem	Mid-Sem	Assignment	Quiz	End Sem	Lab-Work	Quiz					
60	20	10	10	-	-	-	100	3	-	-	3
Prerequisites:											
Surveying											
Course Objective:											
To Know the concepts of Remote Sensing, its interpreting Techniques and concepts of Digital images know the concept of Geographical Information System (GIS), coordinate system GIS Data and its types, Understand the students managing the spatial Data Using GIS. Understand Implementation of GIS interface for practical usage.											
Course Outcomes:											
After completion of the course, the student will be able to											
<ol style="list-style-type: none"> <li>1. Describe different concepts and terms used in Remote Sensing and its data</li> <li>2. Understand the Data conversion and Process in different coordinate systems of GIS interface</li> <li>3. Evaluate the accuracy of Data and implementing a GIS</li> <li>4. Understand the applicability of RS and GIS for various applications.</li> </ol>											
UNITS	Descriptions							Hrs.	CO's		
I	Concepts of Remote Sensing Basics of remote sensing- elements involved in remote sensing, electromagnetic spectrum, remote sensing terminology & units, energy resources, energy interactions with earth surface features & atmosphere, atmospheric effects, satellite orbits, Sensor Resolution, types of sensors. Remote Sensing Platforms and Sensors, IRS satellites. Remote Sensing Data Interpretation Visual interpretation techniques, basic elements, converging evidence, interpretation for terrain evaluation, spectral properties of soil, water and vegetation. Concepts of Digital image processing, image enhancements, qualitative & quantitative analysis and pattern recognition, classification techniques and accuracy estimation.							8	CO1		
II	Introduction to GIS: Introduction, History of GIS, GIS Components, GIS Applications in Real life, The Nature of geographic data, Maps, Types of maps, Map scale, Types of scale, Map and Globe, Co- ordinate systems, Map projections, Map transformation, Geo-referencing,							8	CO2		
III	Spatial Database Management System: Introduction: Spatial DBMS, Data storage, Database structure models, database management system, entity-relationship model, normalization Data models and data structures: Introduction, GIS Data model, vector data structure, raster data structure, attribute data, geo-database and metadata							8	CO2		
IV	Spatial Data input and Editing. Data input methods – keyboard entry, digitization, scanning, conversion of existing data, remotely sensed data, errors in data input, Data accuracy. Micro and Macro components of accuracy, sources of error in GIS. Spatial Analysis: Introduction,							8	CO3		



	topology, spatial analysis, vector data analysis, Network analysis, raster data analysis, Spatial data interpolation techniques		
V	Implementing a GIS and Applications Implementing a GIS: Awareness, developing system requirements, evaluation of alternative systems, decision making using GIS Applications of GIS: GIS based road network planning, Mineral mapping using GIS, Shortest path detection using GIS, Hazard Zonation using remote sensing and GIS, GIS for solving multi criteria problems, GIS for business applications	8	CO4
Guest Lectures (if any)			
<b>Total Hours</b>		40	
Text Book-			
<ol style="list-style-type: none"> <li>1. Remote Sensing and GIS by Basudeb Bhatta, Oxford University Press, 2nd Edition, 2011.</li> <li>2. Introduction to Geographic Information systems by Kang-tsung Chang, McGraw Hill Education (Indian Edition), 7th Edition, 2015.</li> <li>3.</li> </ol>			
Reference Books-			
<ol style="list-style-type: none"> <li>1. Remote Sensing and image interpretation by Lillesand T.M. and Kiefer R.W.</li> <li>2. Fundamentals of Geographic Information systems by Michael N. Demers, 4th Edition, Wiley Publishers, 2012.</li> </ol>			
Modes of Evaluation and Rubric			
Quiz, Assignment, Midterm exam, End term exam and Practical Viva. Rubric: End term exam. Practical: 50% Quiz and 50% Viva.			
List/Links of e-learning resource			
<a href="https://archive.nptel.ac.in/courses/105/101/105101206/">https://archive.nptel.ac.in/courses/105/101/105101206/</a> <a href="https://archive.nptel.ac.in/courses/105/107/105107201/">https://archive.nptel.ac.in/courses/105/107/105107201/</a> <a href="https://archive.nptel.ac.in/courses/107/105/107105088/">https://archive.nptel.ac.in/courses/107/105/107105088/</a> <a href="https://archive.nptel.ac.in/courses/105/107/105107206/">https://archive.nptel.ac.in/courses/105/107/105107206/</a>			
Recommendation by Board of studies on	14.12.2023		
Approval by Academic council on			
Compiled and designed by			
Subject handled by department	Civil Engineering		

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**-----CIVIL ENGINEERING-----**

Semester/Year		IV/II	Program			B.Tech				
Subject Category	DLC	Subject Code:	CE-406	Subject Name:		Instrumentation and Sensor Technology for Civil Engg.				
Maximum Marks Allotted							Contact Hours			Total Credits
Theory			Practical			Total Marks	L	T	P	
End Sem	Mid-Sem	Quiz	End Sem	Lab-Work	Quiz					
-	-	-	60	20	20	100	-	-	4	2
Suggestive list of experiments:										
1. Indicating Instrument: Wheat stone bridge 2. Indicating Instrument: Kelvin's double bridge 3. Indicating Instrument: Maxwell's Bridge 4. Indicating Instrument: Hay's bridge 5. Indicating Instrument: Wein bridge 6. Acceleration measurement-Velocity, Time and frequency measurement 7. Hall effect sensor, LDR Sensor, Photo Sensor 8. Orsat apparatus for environmental pollution (Video explanation) 9. Ultrasonic liquid level gauge (Video explanation) 10. Flow measurement by Turbine flow meter (Video explanation)										
Text Book- Hand Book of Instrumentation and Sensor by H.S. Kalksi.										
Reference Books- Instrumentation and Measurement by A.K. Sahwhney Instrumentation and Measurement by Sharma & Sharma										
Modes of Evaluation and Rubric										
Lab work and Practical Viva Rubric: Practical: 50% Quiz and 50% Viva.										
List/Links of e-learning resource										
Recommendation by Board of studies on						14.12.2023				
Approval by Academic council on										
Compiled and designed by										
Subject handled by department						Civil Engineering				

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