

जा.क. / शि.वि / अं.म. / २६९

दिनांक:- 12/05/2024

प्रति, मा. संचालक, तंत्रज्ञान अधिविभाग, शिवाजी विद्यापीठ, कोल्हापुर

मा. प्राचार्य / संचालक, सर्व संलग्नीत अभियात्रिकी महाविद्यालय व इन्स्टिटयुट, शिवाजी विद्यापीठ, कोल्हापुर

विषय : सिव्हील पीएच.डी. कोर्सच्या अभ्यासक्रमाबाबत.. संदर्भ : या कार्यालयाचे पत्र क्र.एसयु/बीओएस/सायन्स — टेक/४७० दि.२६/०६/२०२३.

महोदय,

उपरोक्त संदर्भिय विषयास अनुसरुन आपणास आदेशान्वये कळविण्यात येते की, शैक्षणिक वर्ष २०२३—२४ पासून लागू करण्यात आलेल्या सिव्हल पीएच.डी. कोर्सवर्क अभ्यासकमामध्ये किरकोळ दुरुस्ती करण्यात आलेली आहे. सोबत सदर अभ्यासकमाची प्रत जोडली आहे. तसेच विद्यापीठाच्या <u>www.unishivaji.ac.in</u> (Online Syllabus) या संकेतस्थळावर ठेवण्यात आला आहे.

सदर अभ्यासकम सर्व संबंधित विद्यार्थी व शिक्षकांच्या निदर्शनास आणून द्यावी ही विनंती. कळावे,

आमला विश्वास स. एम. कुबल उपकुलसचिव अभ्यास मंडळ विभाग

सोबत : अभ्यासकमाची प्रत.

प्रतः–

- 1. अधिष्ठाता, विज्ञान व तंत्रज्ञान विद्याशाखा
- 2. समन्वयक, कॉम्प्युटर सायन्स इंजिनिअरिंग अभ्यास मंडळ
- 3. मा. संचालक, परीक्षा व मुल्यमापन मंडळ
- 4. इतर परीक्षा 4 विभागास.
- 5. परीक्षक नियुक्ती ए व बी विभागास.

यांना माहितीसाठी व पुढील कार्यवाहीसाठी

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Раре	Paper 2: Advances in Civil Engineering					
*	Teaching Scheme	0 0				
Lectures	Seminar	Library Worl	x Tot	al		
40	10	10	60)		
Examination Scheme						
Credits	Theory	Internal	Minimum for Passing	Total Marks		
04	80	20	40	100		
Assessments: As per SUK Guidelines 1. Theory Examination is to be co Question Paper (Theory) a. Question paper should be so b. Each section will cover sep Contents. c. Each section will have 40 n d. Questions in any TWO sec 2. Internal Examination is to be co Internal evaluation will include 3. Separate passing head for theory [Minimum: 32 (Theory)+ 8 (Internal evaluation Manager)	onducted by the university et in six sections. arately six disciplines of C narks. tions shall be attempted. nducted by the concerned le 2 seminars of 10 marks y examination and intern nternal Evaluation) = 40] Course Contents	y with duration ivil Engineering d departments of s each. al evaluation	of 3 hours. given in the cour or research cente	se rs		
 Advances in Construction Manag Introduction to construction operat Equipments for Infrastructure Project in construction techniques. Mater Systems of material classification. I ABC analysis, replenishment and r purchase planning, EOQ model. Wa Computer applications based upon at New trends and construction equipm earthmoving, hauling, hoisting, co concrete production, pile driving, th procurement, purchase, import of e Research in Construction- Decision programming Textbooks and References: Construction Engineering and New Delhi Materials Management – Gopa Construction Planning, Metho 	ement ions, erection work, aut its- Dams, bridges, ports, ial planning, accounting Deterministic and probab eplacement policies, VE stage audit at site, Site way vailable softwares nent of future. Planning a proveying, pneumatic, put unneling and road constr quipment, procedural for Theory, Game Theory, L Management by. S. Seeth alkrishnan and Sunderasar ds & Equipment: Puerifoy	omation proces harbors, flyove g and material ilistic models a D analysis, lead aste material ma and selection of imping, aggreg uction applicati malities for Im inear Programm haraman, Umesh h, Prentice Hall I y – Tata McGrav	ses and special rs, recent trends reconciliation, nd applications, d time demand, anagement plan. equipments, for rate production, ons. Equipment port Operations ning, Non linear Publications, Publications v Hill	10 Hrs.		

2. Advances in Geotechnical Engineering			
Types of earth retaining structures, design of gravity and cantilever retaining walls, bracing			
system and apparent earth pressure diagram for open cuts.			
Reinforced earth retaining wall: general principle, concepts and mechanism of earth			
retaining wall, design considerations of reinforced earth: geotextiles, geogrid, metal strips			
and facing elements, construction selection of earth retaining structures, construction			
practice, field observations.			
Soil stabilization: introduction, objectives, factors affecting stabilization of soils, methods of			
stabilization: mechanical, cement, lime, bituminous: classification of stabilizing agents and			
stabilization processes. Lime stabilization: base exchange mechanism, pozzolanic reaction.			
lime-soil interaction cement stabilization: mechanism amount, fly ash: lime stabilization			
and soil bitumen stabilization.			
In-situ ground improvement by compaction piles dynamic loads explosion sand drains			
grouting, deep mixing, inserting reinforcement elements, freezing soil and vibroflotation			
Textbooks and References.			
1 Gonal Ranian and Rao A S.R. (2000) Basic and Applied Soil Mechanics. New Age			
International (P) I td. Newe Delhi			
2 P. Purushottam Rai (2015) 'Geotechnical Engineering' Tata Mcgraw Hill Company Ltd			
New Delhi.			
3. K. Terzaghi, R. B. Peck, G. Mesri 'Soil mechanics' 3rd edition, John Willey and Sons			
publication, New- York.			
3. Advances in Transportation Engineering			
Urban Transportation Problems & Policy: Urban transportation Issues, Travel Characteristics,			
Evolution of Planning Process, Supply and Demand – Systems approach			
Travel Demand Modelling: Trends, Overall Planning process, Long term - Short term planning,			
Demand Function, Independent Variables, Travel Attributes, Assumptions in Demand Estimation,			
Sequential, and Simultaneous Approaches, Aggregate and Disaggregate Techniques, Tour based			
models, and Activity based models.			
Inp Distribution Models: Trip Distribution: Growth Factor Methods, Gravity Models, Opportunity			
Models, Time Function Iteration Models.			
Mode Split Allarysis: Mode Choice Behavior Competing Modes Mode Split Curves Models and Probabilistic			
Approaches-Logit Model			
Traffic Assignment Techniques:			
Diversion Curves, Basic Elements of Transport Networks, Coding, Route Properties, Path Building			
Criteria, Skimming Tree, All- or-Nothing Assignment, Capacity Restraint Techniques, Reallocation			
of Assigned Volumes, Equilibrium Assignment, Multipath Assignment Technique.			
Corridor Identification-Plan preparation and evaluation: Master plans, Selection of Corridor,			
Corridor Identification, Corridor deficiency Analysis; TOD; Travel Forecasts to Evaluate			
Alternative Improvements, Impacts of New Development on Transportation Facilities; Pivot Point			
Analysis, Environmental and Energy Analysis.			
Textbooks and References:			
1 Principles of Urban Transport Systems Planning Hutchinson, B.G. McGraw Hill			
2 Modelling Transport Juan de Dios Ortuzar and Luis G. Willumsen 4th Edition,			
3 Transportation Planning Handbook Michael D. Meyer Fourth Edition. Institute of			
Transportation Engineers, John Wiley & Sons Inc.			

4. Advances in Water Resource Engineering		
Hydrologic Cycle and its individual component processes. River Basin as a Linear Hydrologic System. Linear Theory of Hydrologic Systems. Lumped Integral and Distributed Differential modelling approaches. Transform methods of Linear Systems Analysis. Morphological attributes of watersheds and its role in runoff dynamics. Flood Routing by Lumped Hydrologic and Distributed Hydraulic approaches. Unsaturated zone Hydrology and physics of the Soil- Plant-Atmosphere Continuum. Calibration and Validation of Rainfall-Runoff models.	5 Hrs,	
1. H.M. Raghunath, Hydrology, Principles, Analysis and Design, Wiley Eastern Ltd., 1986.		
5. Advances in Structural Engineering		
Advanced Reinforced Concrete Design Strut and tie method; Design of slender columns; Design of two way flat slabs; Design for torsion; Design of shear walls; Serviceability, crack width and deflection calculations. Composite Construction		
General concepts; Composite beams; Composite slabs; Composite columns. Structural use of		
composite and other emerging materials		
Structural Dynamics		
Earthquake response of linear MDOF systems, Modal analysis, Participation factors, Modal		
contributions, Dynamic analysis of Multi-storeyed buildings.		
Corrosion Estimation and Vulnerability Assessment Determine the mass loss of steel reinforcement embedded in concrete due to corrosion by Impressed Current Technique (ICD) through accelerated corrosion process. Seismic vulnerability assessment, HAZUS, Different types of MBT, Fragility curve, DPM, Simplified Vulnerability assessment as per	15 Hrs	
ASCE 41.Assessment procedures of NDT results		
Textbooks and References:		
 Lynn S. Beedle, "Plastic Design of Steel Frames", John Wiley and Sons, 1990. Narayanan.R.et.al., "Teaching Resource on Structural steel Design", INSDAG, Ministry of Steel Publishing, 2000. Subramanian.N, "Design of Steel Structures", Oxford University Press, 2008. Wie Wen Yu, "Design of Cold Formed Steel Structures", Mc Graw Hill Book Company, 		
6. Advances in Environmental Engineering Membrane constation processes Design and operation of Powerse especies Ultrafiltration and		
Electrodialysis Membrane fouling: Causes and Control disposal		
Kinetics of disinfection. Ozone disinfection: Chemistry System components. Modeling		
UV disinfection: Source, System components, Estimation of UV dose, Principles and theories of		
Chemical oxidation.		
Design and operation of decentralized wastewater treatment systems Moving Bed Bio- reactor, Anaerobic filter, Modified septic tank, Constructed Wetland (CW): Classification and application, Design and operation of horizontal flow subsurface, Vertical flow systems Emerging concepts in CW, Sludge treatment constructed wetland, Design and operation of Water		
hyacinth system.		
Air quality models : Gaussian dispersion model, Regional air quality models Indoor air quality Modelling approaches to water quality - classification and considerations in selecting models, Model requirements and limitations. D.O. Models for Streams: DO model for streams, Streeter - Phelps model - oxygen 'sag' curve, Benthal oxygen demand, Study of Mathematical Models, Models for	10 Hrs.	
Estuary and Lakes		
Figure 1 and the Systems Plastic waste management		
Textbooks and References.		
 Peavy H, S, Rowe D, R, and Tchobanoglous G, "Environmental Engineering", McGraw- Hill Book Company, Indian edition 2017. 		
2. Metcalf and Eddy "Wastewater Engineering Treatment and Reuse", Tata McGraw Hill Publication, Indian Edition 2017.		