19BS1401– ENGINEERING MATHEMATICS-IV (NUMERICAL METHODS, PROBABILITY AND STATISTICS)

Course Category:				Basic Sciences							Credits:			
Course Type:			Theory							Lecture-Tutorial-			3-0-0	
										Practical:			3-0-0	
Prerequisites:										Continuous		30		
			Nil											
													70	
													20	
e Outcomes Total Marks: 100											50			
		nletion	of the a	ourse	the stu	dent wi	11 he al	le to						
										K3				
										K5				
random variables.										K3				
Understand and apply the basic concepts of inferences concerning means and														
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										K2				
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Course Content														
Sc	lution	to Al	gebrai						ns					
			0					-		method	and Nev	wton-		
Panhson's method									001					
				ation b	etweei	1 opera	tors, ii	nterpol	ation us	ing New	ton's for	rward	CO1	
and backward difference formulae. Interpolation with unequal intervals: Lagrange's														
formula.														
N	umerio	cal Dif	ferent	iation	and I	ntegra	tion							
NIT-2 numerical integration- trapezoidal rule, Simpson's $\frac{1}{3}^{rd}$ and $\frac{3}{8}^{th}$ rules. Ordinary C									CO2					
			ig mist	oruer	equall	0115.								
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									CO3					
1 5														
UNIT-4 Formulation of null hypothesis, critical regions, level of significance. Large sample tests: Test for single proportion, difference of proportions, test														
								. test	test CO4					
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		-		on (si	ngle m	nean, t	wo m	eans a	nd pair	ed t-test), Testi	ng of	CO5	
C-5 Student's t-distribution (single mean, two means and paired t-test), Testing of equality of variances (F-test)														
	rse T require Putcoo cessif putcoo cessif cessi	requisites: Putcomes cessful comp Determine value of inte value of inte valuate in valuate in	requisites: Dutcomes cessiful completion Determine approviate of interpolat Evaluate integral equations by Euler Date discrete and candom variables. 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Numerical Differentiation- <	rrse Type: Theory requisites: Nil Putcomes cessful completion of the course, the student of interpolating polynomial at generating approximate root of an equalue of interpolating polynomial at generating by Euler's, R.K. methods. Jse discrete and continuous distributi andom variables. Jnderstand and apply the basic proportions to the decision-making protections to the decision-making protections to the decision-making protections to the decision of the sector of the decision of the sector of the decision	rrse Type: Theory Theor	rse Type: Theory requisites: Nil Putcomes cessful completion of the course, the student will be at Determine approximate root of an equation and ap ralue of interpolating polynomial at given point Evaluate integrals making use of quadrature for equations by Euler's, R.K. methods. Jse discrete and continuous distribution models to andom variables. JInderstand and apply the basic concepts of proportions to the decision-making process. Iterpret hypotheses test for small samples. Contribution of Course Outcomes towards ach OI PO2 PO3 PO4 PO5 PO6 PO7 PO8 3 2 3 2 3 2 3 2 3 2 4 4 4 4 4 3 2 4 4 4 4 4 4 4 4 5 5 0 1 2 1 4 4 4 5 5 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Theory requisites: Nil Determine approximate root of an equation and apply di alue of interpolating polynomial at given point Evaluate integrals making use of quadrature formulae equations by Euler's, R.K. methods. Jse discrete and continuous distribution models to calcul andom variables. Understand and apply the basic concepts of infer oroportions to the decision-making process. Interpret hypotheses test for small samples. Contribution of Course Outcomes towards achievement of PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 3 2 1 </td <td>Type: Theory La requisites: Nil Image: Constraint of the course, the student will be able to: Determine approximate root of an equation and apply different rate of interpolating polynomial at given point Evaluate integrals making use of quadrature formulae and solt equations by Euler's, R.K. methods. Jage discrete and continuous distribution models to calculate probandom variables. Inderstand and apply the basic concepts of inferences corroportions to the decision-making process. Interpret hypotheses test for small samples. 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Finite difference formulae. Interpolation using New and backward difference formulae. Interpolation with unequal interval formula. Numerical Differentiation and Integration Numerical Differentiation - Newton's forward and backward differen numerical integration</td> <td>Insert Type: Theory Lecture-Tutorial-Practical: requisites: Nil Continuous Evaluation: Semester End Evaluation: Total Marks: Total Marks: Determine approximate root of an equation and apply different methods to calculatue of interpolating polynomial at given point Semester End Evaluate integrals making use of quadrature formulae and solve ordinary different methods. Jse discrete and continuous distribution models to calculate probabilities for appr andom variables. Jnderstand and apply the basic concepts of inferences concerning mea roportions to the decision-making process. nterpret hypotheses test for small samples. 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Numerical Differentiation and In</td> <td>rse Type: Theory Lecture-Tutorial-Practical: 3-4 requisites: Nil Continuous 3 requisites: Nil Evaluation: 3 Semester End 7 Total Marks: 10 Pattomes Total Marks: 10 cessful completion of the course, the student will be able to: Evaluation: 7 Determine approximate root of an equation and apply different methods to calculate the alue of interpolating polynomial at given point Evaluation: 7 Evaluations by Euler's, R.K. methods. Jse discrete and continuous distribution models to calculate probabilities for appropriate and/om variables. Inderstand and apply the basic concepts of inferences concerning means and roportions to the decision-making process. Interpret hypotheses test for small samples. 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Learning Resources						
Text Books	 B.S. Grewal, <i>Higher Engineering Mathematics</i>, Khanna Publishers, 44/e, 2019. T.K.V.Iyenger, Krishna Gandhi and others, <i>Probability & Statistics</i>, S.Chand. 					
Reference Books	 Erwin Kreyszig, <i>Advanced Engineering Mathematics</i>, 9/e, John Wiley & Sons, 2006. Miller and Freund's, <i>Probability and Statistics for Engineers</i>, Pearson. 					
e-Resources& other digital material	1. https://www.nptel.ac.in/courses/111/107/111107105/ 2. https://www.nptel.ac.in/courses/111/105/111105041/ 3. https://www.nptel.ac.in/courses/111/106/111106112/ 4. https://www.nptel.ac.in/courses/111/105/111105090/					