

1.2.1(1)



Certified List of Courses for 2022-23

NRI INSTITUTE OF TECHNOLOGY

Pothavarappadu(v), Agiripalli(M), Vijayawada Rural-521 212

1.2.1(1)-Certified List of New Courses along with the Highlighted Course Structure for the A.Y. 2022-23



NRI INSTITUTE OF TECHNOLOGY

(An Autonomous Institution Permanently Affiliated to JNTUK, Kakinada) (Accredited by NAAC with "A" Grade and ISO 9001:2015 Certified Institution) POTHAVARAPPADU (V), (VIA) NUNNA, AGIRIPALLI (M), PIN – 521 212

DEPARTMENT OF CIVIL ENGINEERING

COURSE STRUCTURE FOR THIRD YEAR B.TECH PROGRAMME

III YEAR I SEMESTER

		Title of the Course				truction Week)	Ex	cheme aminat mum N	ion	
S.No	Course Code		L	т	Р	Total	CIA	SEA	Total	No. of Credits
1	20A3101501	STRUCTURAL ANALYSIS	3	0	0	3	30	70	100	3
2	20A3101502	REINFORCED CONCRETE STRUCTURES	3	0	0	3	30	70	100	3
3	20A3101503	GEO-TECHNICAL ENGINEERING - I	3	0	0	3	30	70	100	3
4	20A3101511 20A3101512 20A3101513	OPEN ELECTIVE COURSE/JOB ORIENTED ELECTIVE (OE-1) STRENGTH OF MATERIALS FLUID MECHANICS SURVEYING AND GEOMATICS	3	0	0	3	30	70	100	3
	20A3101521	PROFESSIONAL ELECTIVE COURSE – I CONSTRUCTION TECHNOLOGY AND MANAGEMENT								
5	20A3101522 20A3101523	REMOTE SENSING AND GIS ENVIRONMENTAL IMPACT ASSESEMENT								
	20A3101524	RAILWAY ENGINEERING AND HARBOR	3	0	0	3	30	70	100	3
6	20A3101591	PROFESSIONAL CORE COURSES LAB ADVANCED SURVEYING CAMP (FIELD WORK)	0	0	3	3	15	35	50	1.5
7	20A3101592	GEOTECHNICAL ENGINEERING LAB	0	0	3	3	15	35	50	1.5
8	20A3101593	SKILL ADVANCED COURSE: DESIGN OF SPECIAL STRUCTURES: CHIMNEY, INTZE TANKS, SPILL WAYS ETC.,	1	0	2	3	15	35	50	2
S.	20A310080P	ESSENCE OF INDIAN TRADITIONAL KNOWLEDGE	2	0	0	2	30	70	100	0
10	20A3101594	SUMMER INTERNSHIP 2MONTHS (TO BE EVALUATE)					COND	YEAR		1.5
		Total	18	0	8	26	225	525	750	21.5

Head of The Department CIVIL ENGINEERING NRI Institute of Technology POTHAVARAPPADU.

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UNIT IV

CONCRETING EQUIPMENT:

Crushers – jaw crushers – gyratory crushers – impact crushers – selection of crushing equipment - screening of aggregate – concrete mixers – mixing and placing of concrete – consolidating and finishing.

UNIT V

CONSTRUCTION METHODS:

Earthwork – piling – placing of concrete – form work – fabrication and erection – quality control and safety engineering.

TEXT BOOKS:

- Construction Planning Equipment and Methods, Peurifoy and Schexnayder, Shapira, Tata Mcgraw hill
- Construction Project Management Theory and Practice, Kumar Neeraj Jha (2011), Pearson.
- Construction Technology, Subir K. Sarkar and Subhajit Saraswati, Oxford University press.
- Project Planning and Control with PERT and CPM, B. C. Punamia and K K Khandelwal, Laxmi Publications Pvt Ltd. Hyderabad.

REFERENCE BOOKS:

- Construction Project Management An Integrated Approach, Peter Fewings, Taylor and Francis
- Construction Management Emerging Trends and Technologies, Trefor Williams, Cengage learning.
- Hand Book of Construction Management, P. K. Joy, Trinity Press Chennai, New Delhi.

E-REFERENCES:

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UNIT III

DOCUMENTATION AND MONITORING:

Document planning – collection and organization of relevant information – use of visual display materials – team writing – remainder checklists. Environmental monitoring – Guidelines – policies – planning of monitoring programs. Environmental management plan. Post project audit. Expert system in EIA.

UNIT IV

CASE STUDIES:

Case studies of EIA of developmental projects. Dams, Sardar Sarovar Irrigation Project, Highway Projects, Power generation and their Impacts.

UNIT V

EIA notification by Ministry of Environment and Forest (Govt. of India):

Provisions in the EIA notification, procedure for environmental clearance, procedure for conducting environmental impact assessment report- evaluation of EIA report. Environmental legislation objectives, evaluation of Audit data and preparation of Audit report. Post Audit activities, Concept of ISO and ISO 14000. Case studies and preparation of Environmental Impact assessment statement for various Industries.

TEXT BOOKS:

- Environmental Impact Assessment, Canter Larry W., McGraw-Hill education Edi (1996)
- Environmental Impact Assessment Methodologies, Y. Anjaneyulu, B. S. Publication, Sultan Bazar, Hyderabad.
- Glasson, John, and Riki Therivel. Introduction to environmental impact assessment. Routledge, 2013.
- Eccleston, Charles H. Environmental impact assessment. John Wiley & Sons, New York, 2000.

REFERENCE BOOKS:

- Environmental Science and Engineering, J. Glynn and Gary W. Hein Ke Prentice Hall Publishers
- Environmental Science and Engineering, Suresh K. Dhaneja, S. K., Katania & Sons Publication., New Delhi.
- Environmental Pollution and Control, H. S. Bhatia, Galgotia Publication (P) Ltd, Delhi

E-REFERENCES:

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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.

UNIT 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 – Signaling systems – Mechanical signaling system – Electrical signaling system – System for Controlling Train Movement – Interlocking – Modern signaling Installations.

UNIT IV

PLANNING, LAYOUT, CONSTRUCTION & MAINTENANCE OF DOCKS

History of Port Growth – Factors affecting Growth of Port. Classification of Harbours – Planning of A Port – Ship Characteristics as they Relate to Port Planning-Hydrographic and Oceanographic Data Required for Port Design –Classification of ports – Requirement of a good port – classification of Harbors – Docks - Dry & wet docks

UNIT V

PLANNING, LAYOUT, CONSTRUCTION & MAINTENANCE OF HARBORS

Transition sheds and workhouses – Layouts; Quays – construction of Quay walls – Wharves – Jetties – Tides - Tidal data and Analysis – Break waters – Dredging – Maintenance of Ports and Harbors – Navigational aids. Determination of Best Location of a Harbor to Afford Maximum Protection- Minimum Maintenance and Facilities for Expansion.

TEXT BOOKS:

- Railway Engineering, Saxena & Arora Dhanpat Rai, New Delhi.
- Docks and Harbor Engineering, Bindra S.P. Dhanpathi Rai & Sons, New Delhi.

REFERENCE BOOKS:

- Transportation Engineering, Railways, Airports, Docks & Harbours, Srinivasa Kumar R, University Press, Hyderabad.
- Highway, Railway, Airport and Harbor Engineering, Subramanian K. P. Scitech Publications (India) Pvt Limited, Chennai.
- Railway Engineering, Satish Chandra and Agarwal M. M., Oxford University Press, New Delhi.

E-REFERENCES:

20A3101593 SKILL ADVANCED COURSE

Practical	2 Hours	Internal Marks: 30
Credits:	2	External Marks: 70

DESIGN OF SPECIAL STRUCTURES

- CHIMNEY,
- HINGE TANKS,
- SPILL WAYS.

20A3100801 ESSENCE OF INDIAN KNOWLEDGE AND TRADITIONS

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The need for protecting traditional knowledge Significance of TK Protection, value of TK in global economy, Role of Government to harness TK.

LEGAL FRAMEWORK AND TK: A:

The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, Plant Varieties Protection and Farmers Rights Act,2001 (PPVFR Act);B: The Biological Diversity Act 2002 and Rules 2004, the protection of traditional knowledge bill, 2016. Geographical indications act 2003.

UNIT III

TRADITIONAL KNOWLEDGE AND INTELLECTUAL PROPERTY:

Systems of traditional knowledge protection, Legal concepts for the protection of traditional knowledge, Certain non IPR mechanisms of traditional knowledge protection, Patents and traditional knowledge, Strategies to increase protection of traditional knowledge, global legal FORA for increasing protection of Indian Traditional Knowledge.

UNIT IV

TRADITIONAL KNOWLEDGE IN DIFFERENT SECTORS:

Traditional knowledge and engineering, Traditional medicine system, TK and biotechnology, TK in agriculture, Traditional societies depend on it for their food and healthcare needs

UNIT-V

Importance of conservation and sustainable development of environment,

Management of biodiversity, Food security of the country and protection of TK.

TEXT BOOKS:

- 1. Kapil Kapoor, "Text and Interpretation: The India Tradition", ISBN: 81246033375,2005.
- 2. "Science in Samskrit", Samskrita Bharti Publisher, ISBN-13:978-8187276333,2007.
- 3. NCERT, "Position paper on Arts, Music, Dance and Theatre", ISBN 81-7450-494-X,2006.

REFERENCE BOOKS:

- 1. Traditional Knowledge System in India by Amit Jha Atlantic publishers, 2002
- 2. "Knowledge Traditions and Practices of India" Kapil Kapoor, Michel Danino.

E- RESOURCES:

https://www.youtube.com/watch?v=sSgj_GZOwU8

		Title of the Course				truction Week)	Ex	cheme aminat mum N	ion	No. of
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1	20A3201601	DESIGN AND DRAWING OF STEEL								
		STRUCTURES	3	0	0	3	30	70	100	3
2	20A3201602	WATER RESOURCE ENGINEERING	3	0	0	3	30	70	100	3
3	20A3201603	GEOTECHNICAL ENGINEERING -2	3	0	0	3	30	70	100	3
		PROFESSIONAL ELECTIVE COURSE -II								
	20A3201611	ADVANCED STRUCTURAL ANALYSIS								
4	20A3201612	ARCHITECTURE AND TOWN PLANNING								
	20A32016137	ROAD SAFETY ENGINEERING								
	20A3201614	TRAFFIC ENGINEERING	3	0	0	3	30	70	100	3
		OPEN ELECTIVE COURSE/JOB	Ť			0				
		ORIENTED ELECTIVE (OE-2)								
5	20A3201621	ELEMENTS OF CIVIL ENGINEERING								
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	20A3201623	DISASTER MANAGEMENT	3	0	0	3	30	70	100	3
		PROFESSIONAL CORE COURSES LAB	3		0	3				
6	20A3101691	ESTIMATION, COSTING AND								
		CONTRACTS	0	0	3	3	15	35	50	1.5
		PROFESSIONAL CORE COURSES LAB			3	5				
7	20A3101691	HIGHWAY DESIGN BY USING MX								
		ROADS AND OPEN ROADS SOFTWARE	0	0	3	3	15	35	50	1.5
		PROFESSIONAL CORE COURSES LAB			0					
	0040101000	CIVIL ENGINEERING PRACTICE :								
8	20A3101692	MANUAL DESIGNING OF A								
		RESIDENTIAL BUILDING	1		2	2	15	35	50	1.5
		SKILL ADVANCED COURSE/ SOFT	1	0	4	3				
9	20A3101693	SKILL COURSE: COMPUTATIONAL								1.5
7.1		TOOLS					15	35	50	
10	20A3201	EMPLOYABILITY SKILLS	2	0	0	2	30	70	100	0
		INDUSTRIAL/RESEARCH INTERNSHIP (MA	ANDAT	I'ORYI	2 MC					
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III YEAR II SEMESTER

L - LECTURE T – TUTORIAL P - PRACTICAL CIA – Continuous Internal Assessment SEA – Semester End Assessment

Head of The Department CIVIL ENGINEERING Institute of Technology, AVARAPPADU.

Head of the Department (P. L. N. E. 176 (W. C. L. N. E. 176 (W. C. L. 1900)

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	UNIT IV
LATE	RAL LOAD ANALYSIS USING APPROXIMATE METHODS:
Appli	cation to building frames.
(i) Po:	rtal Method (ii) Cantilever Method.
	UNIT V
MATE	RIX METHOD:
unkn	oility methods: Introduction, application to continuous beams (maximum of two owns) including support settlements.
	NESS METHOD:
	duction, application to continuous beams (maximum of two unknowns) including
supp	ort settlements.
	BOOKS:
	uctural Analysis, T. S. Thandavamoorthy, Oxford university press, India.
	ructural Analysis, R.C. Hibbeler, Pearson Education, India
3. Th	eory of Structures – II, B. C. Punmia, Jain & Jain, Laxmi Publications, India.
4. Sta	ructural Analysis, C.S. Reddy, Tata Mc-Graw hill, New Delhi.
	RENCE BOOKS:
	ermediate Structural Analysis, C. K. Wang, Tata McGraw Hill, India.
	eory of structures, Ramamuratam, Dhanpatrai Publications.
3. An	alysis of structures, Vazrani & Ratwani – Khanna Publications.
4. Co	mprehensive Structural Analysis-Vol. I & 2, R. Vaidyanathan & P. Perumal-
Laxm	i Publications Pvt. Ltd., New Delhi.
5. Sti	uctural Analysis I, P.N. Chandramouli. Yesdee Publishing Pvt Limited.
6. Str	uctural Analysis, Aslam Kassimali, Cengage Learning.
7. Ma	trix Methods of Structural Analysis, P.N. Godbole, R. S., Sonaparote, PHI
Learn	ing Pvt Limited.
E-RI	EFERENCES :
٠	https://www.wipo.int/edocs/pubdocs/en/intproperty/450/wipo_pub_450.pdf
٠	https://www.icsi.edu/media/webmodules/publications/9,4%20Intellectual%20Property%20Rights.pdf

https://lecturenotes.in/notes/20883-note-for-intellectual-property-rights-ipr-by-gyan-prakash

20A3201612 TOWN PLANNING AND ARCHITECTURE

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WESTERN ARCHITECTURE:

Egyptian, Greek, Roman Architectures- Orders.

INDIAN ARCHITECTURE:

Vedic age, Indus valley civilization. Temples of religions.

Buddhist period: Stambas, Stupas, Toranas, Chaityas, Viharas – Hindu temples: Dravidian and Indo Aryan Styles-Temple of Aihole, Madurai, Bhuvaneshwar, Mount Abu. Indo Sarsanic (Islamic) Architecture: Mosque - Palace - Fort - Tomb.

UNIT- II

PRINCIPLES OF DESIGNING AND PLANNING:

Principles of planninga residence- site selection, site orientation- aspect, prospect, grouping, circulation, privacy, furniture requirements, services and other factors. **POST-CLASSIC ARCHITECTURE:**

Introduction of post-classic architecture- contribution of eminent architects to modern period-Edward Lutyens, Le Corbusier, Frank Lloyd Wrigt, Walter Groping.

UNIT- III

HISTORICAL BACK GROUND OF TOWN PLANNING:

Town planning in India – Town plans of mythological Manasa-Town plans of ancient towns: Harappa, Mohenjodaro, Pataliputra, Delhi, Acropolis (Greece), Jerusalem, Mecca, Rome, London.

UNIT- IV

MODERN TOWN PLANNING:

Zoning- Roads and road traffic- Housing- Slums, Parks, Play groundsPublic Utility Services- Surveys and maps for planning- Neighborhood Planning.

STANDARDS OF TOWN PLANNING:

Planning new towns, planning standards and specifications, national and regional planning, town planning and legislation-planning regulations and limitations.

UNIT-V

LAND SCAPING AND EXPANSION OF TOWNS:

Land scaping for the towns, horizontal and vertical expansion of towns- garden cities, satellite townsfloating towns- sky scrapers-pyramidal cities.

TEXT BOOKS:

- 1. The great ages of World Architecture by G.K. Hiraskar.
- 2. Planning and Design of Buildings by Section of Architecture by Y. S. Sane.
- 3. Professional Practice by G.K.Krishnamurthy, S.V.Ravindra, PHI Learning, New Delhi.
- 4. Indian Architecture Vol. I & II by Percy Brown, Taraporevala Publications, Bombay.
- 5. Fundamentals of Town Planning by G.K.Haraskar.

REFERENCE BOOKS:

- 1. Drafting and Design for Architecture by Hepler, Cengage Learning
- 2. Architect's Portable Handbook by John Patten Guthrie McGraw. Hill International Publications.

20A3201613 ROAD SAFETY ENGINEERING

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flip crashes, variables involved in pedestrian crashes, Case Studies.

UNIT-V

MITIGATION MEASURES:

Accident prevention by better planning, Accident prevention by better design of roads, Crash Countermeasures, Highway operation and accident control measures, Highway Safety Measures during construction, Highway geometry and safety; Safety in urban areas; Public transport and safety; Road safety policy making, Stakeholders involvement; Road safety law.

TEXT BOOKS:

1. The Traffic Safety Toolbox: A Primer on Traffic Safety, ITE, 1999. Towards Safe Roads in Developing country, Institute of Transportation Engineers (ITE), TRL - ODA, 2004

REFERENCE BOOKS:

1. Traffic Control and Road Accident Prevention, Athelstan Popkess, Chapman and Hall, 1997 (Digitized 2008).

2. Observational Before-After Studies in Road Safety, Ezra Hauer, Pergamon Press, 1997 (reprinted 2002).

3. Transport Planning and Traffic Safety: Making Cities, Roads, and Vehicles Safer, Geetam Tiwari and Dinesh Mohan, CRC Press, 2016.

20A3201614 TRAFFIC ENGINEERING

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and model flow patterns; Interrupted and Un interrupted traffic. Microscopic and macroscopic speed characteristics: Vehicular speed Trajectories; Speed characteristics – Mathematical distribution; Speed and travel time variations; Travel time and delay studies. Microscopic and Macroscopic density characteristics: Distance headway characteristics; Car following theories; Density measurement techniques; Density contour maps.

UNIT- III

Traffic Control Devices & Highway Safety:

Traffic signs & Markings; Signal Warrants; Signal phasing and Development of phase plans; Fixed and Vehicle activated signals; Webster method; ARRB method;

Drew's Method; IRC method; Signal coordination; Area Traffic control. Accident characteristics – Road – Driver – Vehicle; Accident recording and Analysis; Highway Safety Improvement Program; Safety Audit.

UNIT- IV

HIGHWAY CAPACITY AND LEVEL OF SERVICE:

Capacity and level of service; Factors affecting Capacity and LOS; Capacity of Rural Highways, Capacity of Urban Roads; HCM and IRC standards.

UNIT-V

INTELLIGENT VEHICLE HIGHWAY SYSTEMS:

Traffic surveillance and monitoring; IVHS programs, Role of IVHS, IVHS categories, Benefits and Costs of IVHS, Categories of ITS.

TEXT BOOKS:

- 1. Traffic Engineering: Theory and Practiceby Pignataro LJ., Prentice hall, Inc
- 2. Traffic and Transport planning by Kadiyali L.R., Khanna Publishers

REFERENCE BOOKS:

- 1. Traffic Engineering by Rogu P. Roess, Elena S. Prassas and William R. Mc Shane, Pearson India Education Services pvt. Ltd.
- Traffic and Highway Engineering by Garber and Hoel, Cengage Learning India pvt. Ltd., Noida, New Delhi.

E-REFERENES:

• https://nptel.ac.in/courses/105/101/105101008/

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CBRN – Chemical disasters, biological disasters, radiological disasters, nuclear disasters, Fire – building fire, coal fire, forest fire, Oil fire.

UNIT IV

TYPES OF MAN - MADE DISASTERS:

Accidents- road accidents, rail accidents, air accidents, sea accidents, Pollution - air pollution, water pollution, Deforestation, Industrial waste.

UNIT V

DISASTER DETERMINANTS:

Factors affecting damage – types, social status, habitation pattern, physiology and climate, Factors affecting mitigation measures, prediction, preparation, communication, area and accessibility, population, physiology and climate.

TEXT BOOKS:

- Disaster Management Guidelines, GOI-UND Disaster Risk Program (2009-2012).
- Damon, P. Copola, (2006) Introduction to International Disaster Management, Butterworth Heineman.
- Gupta A.K., Niar S.S and Chatterjee S. (2013) Disaster management and Risk Reduction, Role of Environmental Knowledge, Narosa Publishing House, Delhi.

REFERENCE BOOKS:

- Murthy D.B.N. (2012) Disaster Management, Deep and Deep Publication PVT. Ltd. New Delhi.
- Modh S. (2010) Managing Natural Disasters, Mac Millan publishers India LTD.

E-REFERENCES:

NRI INSTITUTE OF TECHNOLOGY



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Approved by AICTE, New Delhi: Permanently Affiliated to JNTUK, Kakinada Accredited by NAAC with "A" GRADE, Accredited by NBA (CSE, ECE&EEE) An ISO 9001:2015 Certified Institution

Pothavarappadu (V), Agiripalli (M), Eluru District, A.P., India, Pin: 521 212 URL: <u>www.nriit.edu.in</u>, email: <u>principal@nriit.edu.in</u>, Mobile: +8333882444



DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

NRIA20 Course Structure

III YEAR I SEMESTER

S1. No	Course Code	Course Category	Title of the Course	L	Т	P	Total Credit S
1	20A3102401	PCC	Power Systems-II	3	-	-	3
2	20A3102402	PCC	Power Electronics	3	-	-	3
3	20A3102403	PCC	Control Systems 👙	3	-	-	3
			Soft Skill Course: Employability		_		
4	20A3100601	SC	Skills •	3	-	-	3
			Aptitude and Reasoning				
5	20A3102511	PEC	Professional Elective – I: Utilization of Electrical Energy	3	-	-	3
6	20A3102491	PCC	Control Systems Lab	-	-	3	1.5
7	20A3102492	PCC	Power Electronics Lab	-	-	3	1.5
8	20A3102991	SC	Skill oriented course : IoT Lab			3	2
			Summer Internship 2 Months				
9	20A3102791	PROJ	(Mandatory) after second year (to be	-	-	-	1.5
			evaluated during V semester)				
			TOTAL	CR	DD	TS	= 21.5
]	Minors Course	4	0	0	4
]	Honors Course	4	0	0	4

Credits
12
12
3
3
5
1.5
21.5
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Dr. N. SAMBASIVA RAO B.Tech, M.Tech, Ph.D, MISTE Head of the Department & Professor of EEE NRI INSTITUTE OF TECHNOLOGY (KN)

E.

CONTROL SYSTEMS

Lecture -	Tutorial:		3-1	Hours			Inter	nal N	lark	5:		30
Credits:			3			External Marks				s:	1	70
Course O	bjectives:											
> To le	earn the ma	athem	atical	modeli	ing of	physi	cal sy	stems	s and	to use 1	olock	diagram
alge	bra and sig	nal flo	w gra	ph to d	leterm	ine ov	erall	transi	er fui	nction		
≻ Toa	nalyze the f	time r	espon	se of fin	rst and	d seco	nd or	der sy	vstem	s and in	iprov	vement o
perf	ormance us	ing PI	, PD,	PID con	ntrolle	rs.						
🕨 To i	nvestigate	the st	ability	of clo	sed loo	op sys	stems	using	g Rou	th's stal	oility	criterior
and	root locus 1	netho	d.									
> To	understand	basio	c asp	ects of	desig	n and	com	pensa	tion	of LTI s	yste	ms using
	e diagrams.		-		-			-			•	
> To	learn Frequ	lency	Resp	onse aj	pproac	ches f	or the	e ana	lysis	of LTI s	yste	ms usinį
	e plots, pola	-	-	_					-		-	-
≻ To	learn state	space	e app:	roach i	for an	alysis	of L'	ΓI sys	tems	and un	ders	stand the
	epts of con	-				-		2				
Course Out												
course out	comes											
		com	plet	ion o	f the	cou	rse,	the	stu	dent w	ill	be able
Upon su	ccessful	com	plet	ion o	f the	COU	rse,	the	stu	dent w	ill	be able
	ccessful						-					
Upon su to:		trans	fer fu	nction	of phy	sical	systen	ns an	d dete	erminati	on o	f ov e rall
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Mathematical Modelling of Control Systems Classification of control systems open loop and closed loop control systems and their differences - Feedback characteristics - transfer function of linear system, differential equations of electrical networkstranslational and rotational mechanical systems - transfer function of Armature voltage controlled DC servo motor - block diagram algebra signal flow graph - reduction using Mason's gain formula.

UNIT II

Time Response Analysis and Controllers Standard test signals – time response of first and second order systems – time domain specifications - steady state errors and error constants - effects of proportional (P) - proportional integral (PI) - proportional derivative (PD) - proportional integral derivative (PID) systems.

Stability Assessment Techniques The concept of stability – Routh's stability criterion – limitations of Routh's stability, root locus concept – construction of root loci (simple problems) – Effect of addition of Poles and Zeros to the transfer function.

UNIT III

Frequency Response Analysis Introduction to frequency domain specifications – Bode diagrams – transfer function from the Bode diagram –Polar plots, Nyquist stability criterion-stability analysis using Bode plots (phase margin and gain margin).

UNIT IV

Classical Control Design Techniques Lag, lead, lag-lead compensators - physical realisation - design of compensators using Bode plots.

UNIT V

State Space Analysis of Linear Time Invariant (LTI) Systems Concepts of state - state variables and state model - state space representation of transfer function - diagonalization using linear transformation - solving the time invariant state equations - State Transition Matrix and its properties- concepts of controllability and observability.

TEXT BOOKS:

1. Modern Control Engineering by Kotsuhiko Ogata, Prentice Hall of India

2. Automatic control systems by Benjamin C.Kuo, Prentice Hall of India, 2nd Edition.

REFERENCE BOOKS:

1. Control Systems principles and **design** by M.Gopal, Tata Mc Graw Hill education Pvt Ltd., 4thEdition.

2. Control Systems Engineering by Norman S. Nise, Wiley Publications, 7th edition

3. Control Systems by Manik Dhanesh N, Cengage publications.

4. Control Systems Engineering by I.J.Nagarath and M.Gopal, Newage International Publications, 5 th Edition.

SOFT SKILL COURSE EMPLOYABLIITY SKILLS

Lecture	– Tuto	rial:		3-1 Ho	ours		Int	erna	l Mar	ks:		15	
Credits:				3			Ext	erna	nal Marks:			35	
				0								00	
Course (Object i	ives:											
≽ То	enha	nce th	ne Nu	imeric	al abi	lity s	kills	such	as	addit	ion, s	ubtraction	
mu	ıltiplica	tion, d	ivision	, calcu	lation	of perc	entage	es, av	erage	etc.			
> То	develop	p the p	roblen	n solvi	ng skill	ls on t	ime, d	istan	ce an	d spee	ed calc	ulations, to	
im	prove tl	ne basi	c math	nemati	cal skil	ls on a	arithm	etic a	bility.				
≻ To	analy	ze a c	andida	ate's a	bility t	o rela	te a c	ertai	n give	en gro	oup of	items and	
illu	istrate i	it diagr	amma	tically.									
> To	devel	lop in	terper	sonal	skills	and	adopt	goo	d le	adersł	nip be	havior for	
em	powern	nent of	self a	nd oth	ers.by r	nanag	ing str	ess a	nd tin	ne effe	ctively		
> То	prepar	e good	l resu	me, pr	epare	for int	terview	's an	d gro	up dis	scussio	ns, and to	
exp	olore de	esired o	areer (opport	unities.	•							
Course Ou	itcomes												
Upon s	ucces	sful e	comp	letio	n of t	:he c	ours	e, th	ie st	uder	ıt wil	l be able	
to:								_					
CQ1	Follo	w strat	tegies	in mir	imizing	g time	consu	ımpti	on in	prob	lem so	lving Apply	
					re probl								
CO2				-		-	-				lese ma	athematica	
					ssional								
CO3	· ·	Analyze, summarize and present information in quantitative forms including											
	table, graphs and formulas												
CO4	Unde	rstand	the co	ore con	petenc	cies to	succee	ed in	profes	ssiona	l and p	ersonal life	
CO5	Learr	Learn and demonstrate a set of practical skills such as time management											
		leader											
CO6		Learn and demonstrate a set of practical skills such as, self-management,											
		ling co											
Contributi (1 – Low, 2				utcom	es tov	vards	achie	veme	nt o	f Pr	ogram	Outcomes	
(20W) /	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	
	1	2	3	4	5	6	7	8	9	10	11	12	
CO1	3	2									1		
CO2	3	3	1	1							1		
CO3	3	3	1	1							1		
CO4	3	3	1	1							1		
- nne													
CO5 CO6	3	3	1								1		

UNIT I

Numerical ability Number system, HCF & LCM, Average, Simplification, Problems on numbers Ratio & Proportion, Partnership, Percentages, Profit & Loss

UNIT II

Arithmetical ability Problems on ages, Time & Distance, Problems on boats &Steams, Problems on Trains, Time & Work, Pipes & Cistern, Chain Rule. Allegation, Simple interest and compound interest. Races & Games of skills. Calendar and Clock.

UNIT III

Logical ability: Permutations and Combination and Probability.

Mensuration: Geometry

Data interpretation: Tabulation, Bar graphs, Pie charts, line graphs

UNIT IV

Self-Management Skills Anger Management, Stress Management, Time Management, Six Thinking Hats, Team Building, Leadership Qualities Etiquette Social Etiquette, Business Etiquette, Telephone Etiquette, Dining Etiquette

UNIT V

Job-Oriented Skills Group Discussion, Mock Group Discussions, Resume Preparation, Interview Skills, Mock Interviews

TEXT BOOKS:

1. R. S. Aggarwal "Quantitative Aptitude", Revised ed., S Chand publication, 2017 ISBN:8121924987

2. Barun K. Mitra, Personality Development and Soft Skills, Oxford University Press, 2011. . Raman, Meenakshi & Sharma, Sangeeta, Technical Communication Principles and Practice, Oxford University Press, 2011.

REFERENCE BOOKS:

1. S.P. Dhanavel, English and Soft Skills, Orient Blackswan, 2010.

CONTROL SYSTEMS LAB

Lecture – Tutorial:	3-0 Hours	Internal Marks:	15
Credits:	1.5	External Marks:	35
Course Objectives:			

To impart hands on experience to understand the performance of basic control system components such as magnetic amplifiers

> To understand time and frequency responses of control system with and without controllers and compensators.

List of Experiments

(Any 10 of the following experiments are to be conducted)

1. Time response of Second order system

2. Characteristics of Synchro's

3. Effect of P, PD, PI, PID Controller on a second order systems

4. Design of Lag and lead compensation - Magnitude and phase plot

5. Transfer function of DC motor

6. Bode Plot, Root locus, Nyquist Plots for the transfer functions of systems up to 5th order using MATLAB.

7. Controllability and Observability Test using MAT LAB.

8. Temperature controller using PID

9. Characteristics of magnetic amplifiers

10. Characteristics of AC servo motor

11. Characteristics of DC servo motor

12. To study and verify the truth table of logic gates and simple Boolean expressions using PLC.

SKILL ORIENTED COURSE IOT APPLICATIONS OF ELECTRICAL ENGINEERING

Lecture – Tutorial:	4-0 Hours	Internal Marks:	15
Credits:	2	External Marks:	35
Course Objectives:			3//

To understand fundamentals of various technologies of Internet of Things.

To know various communication technologies used in the Internet of Things.

To know the connectivity of devices using web and internet in the IoT environment.

To understand the implementation of IoT by studying case studies like Smart Home, Smart city, etc.

List of Experiments:

(Any TEN of the following Experiments are to be conducted)

- 1. Familiarization with Arduino/Raspberry Pi and perform necessary software installation.
- 2. To interface LED/Buzzer with Arduino/Raspberry Pi and write a program to turn ONLED for 1 sec after every 2 seconds.
- 3. To interface Push button/Digital sensor (IR/LDR) with Arduino/Raspberry Pi and write a program to turn ON LED when push button is pressed or at sensor detection.
- 4. To interface temperature sensor with Arduino/Raspberry Pi and write a program to print temperature and humidity readings.
- 5. To interface Organic Light Emitting Diode (OLED) with Arduino/Raspberry Pi
- 6. To interface Bluetooth with Arduino/Raspberry Pi and write a program to send sensordata to smartphone using Bluetooth.
- 7. To interface Bluetooth with Arduino/Raspberry Pi and write a program to turn LED ON/OFF when '1'/'0' is received from smartphone using Bluetooth.
- 8. Write a program on Arduino/Raspberry Pi to upload and retrieve temperature andhumidity data to thing speak cloud.
- 9. 7 Segment Display
- 10. Analog Input & Digital Output
- 11. Night Light Controlled & Monitoring System
- 12. Fire Alarm Using Arduino
- 13. IR Remote Control for Home Appliances
- 14. A Heart Rate Monitoring System
- 15. Alexa based Home Automation System

b

NRI INSTITUTE OF TECHNOLOGY



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Pothavarappadu (V), Agiripalli (M), Eluru District, A.P., India, Pin: 521 212 URL: <u>www.nriit.edu.in</u>, email: <u>principal@nriit.edu.in</u>, Mobile: +8333882444



DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING NRIA20 Course Structure

III YEAR II SEMESTER

S1. No	Course Code	Course Category	Title of the Course	L	Т	P	Total Credit s
1	20A3202401	PCC	Microprocessors and Microcontrollers	3	-	-	3
2	20A3202402	PCC	Electrical Measurements and Instrumentation	3	-	-	3
3	20A3202403	PCC	Power System Analysis	3	-	-	3
4	20A3202511	PEC	Professional Elective – II: Switch Gear and Protection	3	-	-	3
5	20A3204605	OEC	Open Elective –II/ Job Oriented Elective-II: Industrial Electronics	3	-	-	3
6	20A3202491	PCC	Electrical Measurements and Instrumentation Lab	-	-	3	1.5
7	20A3202492	PCC	Microprocessors and Microcontrollers Lab	-	-	3	1.5
8	20A3202493	PCC	Power Systems and Simulation Lab,	-	-	3	1.5
9	20A3202991	SC	Skill Advanced Course: Machine Learning with Python Lab*	-	-		2
10	20A3200801	MC	Research Methodology	-		1	0
			TOTAL	CR	ED)	ITS	= 21.5
]	Minors Course	4	0	0	4
			Honors Course	4	0	0	4

Category	Credits
Professional Core	13.5
Courses	13.5
Professional	3
Elective Courses	3
Skill advanced	
course/ Soft skill	2
course	
Open Elective	3
Courses	9
Mandatory Course	0
TOTAL CREDITS	21.5

Dr. N. SAMBASIVA RAO B.Tech, M.Tech, Ph.D, MISTE Head of the Department & Professor of EEE NRI INSTITUTE OF TECHNOLOGY (KN)

ELECTRICAL MEASUREMENTS AND INSTRUMENTATION

Lecture - T	'utoria	ıl:		3-1 Ho	ours			Intern	al Mar	·ks:		30
Credits:				3				Extern	al Mai	rks:		70
Course Obj	ective	S:							•			
energ ➤ Desc and c ➤ To u	hoose t gy quali ribe th apacita ndersta	he app ities & 1 e opera ince. and the	ropria inders iting pi	te mete tand th rinciple ept of t	ers for le conc e of AC he tra	measu ept of s & DC b nsduce	ring of standar pridges r and t	voltage dizatio for mea heir ef	e, curre n. Isurem	nt, powe ent of re ness in c	er, powe sistance,	r factor and inductance g from one
> To u	ndersta	nd the	opera	ting pri	inciple	s of ba	sic buil	ding bl	ocks of	digital s	systems,	record and
A	ay units	5.										
Course Outco												
Upon suc	cessfi	ıl con	nplet	cion o	fthe	cour	se, th	e stud	<u>lent v</u>	vill be	able t	0:
CO1	Know	Know the construction and working of various types of analog instruments.										
CO2	Descr	Describe the construction and working of wattmeter										
CO3	Describe the construction and working of power factor meters											
CO4				tion an bacitant		king va	rious bi	ridges f	or the n	neasurer	nent res	istance -
CO5	Know	r the op	eratio	nal con	cepts o	of vario	us tran	sducer	5			
CO6	Know	the co	nstruc	tion an	d oper	ation d	igital m	neters				
Contribution	of	Cour	se	Outcom		toward		hievem	ent	of Pr	ogram	Outcomes
(1 - Low, 2- M											20	
	PO 1	PO 2	РО 3	PO 4	РО 5	PO 6	PO 7	P0 8	PO 9	PO 10	PO 11	PO 12
CO1	3	3	5		0	0	· ·	0	-	10		14
CO2	3	1										
	3	2	3									
CO3	2	2										
CO3 CO4	2											
	2	2	2									

UNIT I

Analog Ammeter and Voltmeters Classification – deflecting - control and damping torques - PMMC - moving iron type and electrostatic instruments - Construction - Torque equation - Range extension - Errors and compensations - advantages and disadvantages. Instrument transformers: Current Transformer and Potential Transformer-construction - theory - errors-Numerical Problems

UNIT II

Analog Wattmeters and Power Factor Meters Electrodynamometer type wattmeter (LPF and UPF) -Power factor meters: Dynamometer and M.I type (Single phase and Three phase) - Construction - theory torque equation - advantages and disadvantages. Potentiometers: Introduction to DC and AC Potentiometers - Construction-working - Applications - Numerical Problems.

UNIT III

Measurements of Electrical parameters DC Bridges: Method of measuring low - medium and high resistance - sensitivity of Wheat stone's bridge - Kelvin's double bridge for measuring low resistance - Loss of charge method for measurement of high resistance - Megger - measurement of earth resistance - Numerical Problems. AC Bridges: Measurement of inductance and quality factor - - Maxwell's bridge - - Hay's bridge - - Anderson's bridge. Measurement of capacitance and loss angle - - Desauty's bridge - Schering Bridge - Wien's bridge - Wagner's earthing device - - Numerical Problems.

UNIT IV

Transducers Definition - Classification - Resistive - Inductive and Capacitive Transducer - LVDT - Strain Gauge - Thermistors - Thermocouples - Piezo electric and Photo Diode Transducers - Hall effect sensorsNumerical Problems.

UNIT V

Digital meters Digital Voltmeters – Successive approximation DVM - Ramp type DVM and Integrating type DVM – Digital frequency meter - Digital multimeter - Digital tachometer - Digital Energy Meter - Q meter - Power Analyzer. CRO- measurement of phase difference & Frequency using lissajious patterns - Numerical Problems.

TEXT BOOKS:

1. Electrical Measurements and measuring Instruments by E.W. Golding and F.C.Widdis - 5th Edition - Wheeler Publishing.

2. Modern Electronic Instrumentation and Measurement Techniques by A.D. Helfrick and W.D. Cooper - PHI - 5th Edition - 2002.

REFERENCE BOOKS:

1. Electrical & Electronic Measurement & Instruments by A.K.Sawhney Dhanpat Rai & Co. Publications - 19th revised edition - 2011.

2. Electrical and Electronic Measurements and instrumentation by R.K.Rajput - S.Chand - 3rd edition. 3. Electrical Measurements by Buckingham and Price - Prentice - Hall

4. Electrical Measurements by Forest K. Harris. John Wiley and Sons

SWITCH GEAR AND PROTECTION (Professional Elective-II)

Lecture – Tu	torial:		3-1 H	ours			Inte	rnal N	larks		30
Credits:			3				Exte	rnal M	larks	l,	70
Course Objec	tives:				T 124						
		ssifica	-					-			lectromagneti
a .	ain protec		homos fo	or gane	arator a	nd tra	insfort	norc			
-	-								adere a	nd bus ba	re
 To gam To exp 		<u> </u>									13.
,	-		*								les of differen
	grounding			OI OVC	i voitab	C3 III	a pow	CI Syst	.cm un	ia princip.	tes of unteren
Course Outcom	<u> </u>	5 meth	043.								
Upon succe		mnl	etion o	of the	cours	se t	he st	uden	t will	he abl	e to:
CO1 []	Illustrate the principles of arc interruption for application to high voltage circuit breake of air - oil - vacuum - SF6 gas type.										
CO2 A		worki				ation	of diffe	rent ty	pes of	electroma	ignetic
CO3 A	Acquire knowledge of protective schemes for generator and transformers for different fault conditions.							or different			
	Classify various types of protective schemes used for feeders and bus bar protection and Types of static relays.							rotection and			
	nalyse the sulation o			lifferen	it types	of ov	er volta	ages pr	otectiv	ve scheme	s required for
	ypes of ne	bd		. 54							
Contribution (1 - Low, 2- Mee		urse ligh)	Outcon	nes	toward	S	achieve	ement	of	Program	n Outcome:
	PO PO	PO	PO	РО	PO	PO	PO	РО	PO	PO	РО
	1 2	3	4	5	6	7	8	9	10	11	12
CO1											
CO2											
CO3						_					
CO4								_			
C05											
C06											

UNIT I

Circuit Breakers Application oriented evolution of Switchgear - Miniature Circuit Breaker(MCB)– Elementary principles of arc interruption– Restriking Voltage and Recovery voltages– Restriking phenomenon - RRRV– Average and Max. RRRV– Current chopping and Resistance switching– Concept of oil circuit breakers– Description and operation of Air Blast– Vacuum and SF6 circuit breakers– Circuit Breaker ratings and specifications– Concept of Auto reclosing – Application Spectrum Numerical examples

UNIT II

Electromagnetic Protection Relay connection – Balanced beam type attracted armature relay - induction disc and induction cup relays–Torque equation - Relays classification–Instantaneous– DMT and IDMT types– Applications of relays: Over current and under voltage relays– Directional relays– Differential relays and percentage differential relays– Universal torque equation– Distance relays: Impedance– Reactance– Mho and offset mho relays– Characteristics of distance relays and comparison.

UNITIII

Generator Protection Protection of generators against stator faults- Rotor faults and abnormal conditions- restricted earth fault and inter turn fault protection- Numerical examples.

Transformer Protection Percentage differential protection- Design of CT's ratio- Buchholz relay protection-Numerical examples

UNIT IV.

Feeder and Bus bar Protection & Static Relays: Over current Protection schemes – PSM - TMS – Numerical examples – Carrier current and three zone distance relay using impedance relays. Protection of bus bars by using Differential protection. Static relays: Introduction – Classification of Static Relays – Basic Components of Static Relays.

UNIT V

Protection against over voltage and grounding Generation of over voltages in power systems- Protection against lightning over voltages- Valve type and zinc oxide lighting arresters. Grounded and ungrounded neutral systems – Effects of ungrounded neutral on system performance – Methods of neutral grounding: Solid-resistance-Reactance-Arcing grounds and grounding Practices.

TEXT BOOKS:

1. Power System Protection and Switchgear by Badri Ram and D.N Viswakarma - Tata McGraw Hill Publications - 2nd edition - 2011.

2. Power system protection- Static Relays with microprocessor applications by T.S.Madhava Rao - Tata McGraw Hill - 2nd edition.

REFERENCE BOOKS:

1. Fundamentals of Power System Protection by Paithankar and S.R.Bhide. - PHI - 2003.

2. Art & Science of Protective Relaying - by C R Mason - Wiley Eastern Ltd.

3. Protection and SwitchGear by BhaveshBhalja - R.P. Maheshwari - Nilesh G.Chothani - Oxford University Press - 2013.

ELECTRICAL MEASUREMENTS AND INSTRUMENTATION LABORATORY

Lecture – Tutorial:	3-0 Hours	Internal Marks:	15
Credits:	1.5	External Marks:	35
Course Objectives:		t gada ali n	
 To make the studer AC & DC bridges. To understand the couples, LVDT, Capa 	ts understand how to me esting of CT and PT. x To citive transducer, piezoe ain and choke coil param	of meters work and their constru easure resistance, inductance and Understand and the characterist lectric transducer. x To understan eters. To study the procedure for	capacitance by ics of Thermo nd the
		f Experiments	
	g experiments are to be ometer wattmeter using		
		ble Bridge and Determination of i	te toloron co
		-	to tolel allee.
3. Measurement of Capa	citance using Schering Br	idge.	
4. Measurement of Indu	ctance using Anderson Bi	ridge.	
5. Calibration of LPF Wa	ttmeter by direct loading	,	
6. Measurement of 3 pha	se reactive power using	single wattmeter method for a ba	lanced load.
C.T. by Null deflection m		ement of % ratio error and phase omparison – V.G as Null detector	
9. Determination of the	characteristics of a Therr	nocouple.	
10. Determination of the	characteristics of a LVD	Г.	
11. Determination of the	e characteristics for a cap	acitive transducer.	
12. Measurement of stra	in for a bridge strain gau	ge.	
	ke coil parameters and si alibration of single phase	ingle phase power using three vo Energy Meter.	ltmeter and three
15. Dielectric oil Test us	ng HV Kit.		
16. Calibration of DC an	meter and voltmeter usi	ng Crompton DC Potentiometer.	
17. AC Potentiometer: Pochoke.	olar Form / Cartesian.Foi	rm - Calibration of AC voltmeter -	Parameters of

MICROPROCESSORS AND MICRCONTROLLERS LABORATORY

Lecture - Tutorial:	3-0 Hours	Internal Marks:	15
Credits:	1.5	External Marks :	35
Course Objectives:			• Ext 2

To study programming based on 8086 microprocessor and 8051 microcontroller.

> To study 8086 microprocessor based ALP using arithmetic, logical and shift operations.

> To study to interface 8086 with 1/0 and other devices.

> To study parallel and serial communication using 8051& PIC 18 micro controllers.

List of Experiments

8086 Microprocessor Programs:

1. Arithmetic operations – Two 16-bit numbers and multibyte addition - subtraction - multiplication and division – Signed and unsigned arithmetic operations - ASCII – Arithmetic operations.

2. Logic operations - Shift and rotate - Converting packed BCD to unpacked BCD - BCD to ASCII conversion

3. Arrange the given array in ascending and descending order

4. Determine the factorial of a given number

5. By using string operation and Instruction prefix: Move block - Reverse string Sorting - Inserting - Deleting - Length of the string - String comparison.

6. Find the first and nth number of 'n' natural numbers of a Fibonacci series.

7. Find the number and sum of even and odd numbers of a given array

8. Find the sum of 'n' natural numbers and squares of 'n' natural numbers

9. Arithmetic operations on 8051

10. Conversion of decimal number to hexa equivalent and hexa equivalent to decimal number

11. Find the Sum of elements in an array and also identify the largest & smallest number of a given array using 8051.

Programs on Interfacing:

12. Interfacing 8255-PPI with 8086.

13. Stepper motor control using 8253/8255.

14. Reading and Writing on a parallel port using 8051

15. Timer in different modes using 8051

16. Serial communication implementation using 8051

17. Understanding three memory areas of 00 - FF Using 8051 external interrupts.

18. Traffic Light Controller using 8051.

POWER SYSTEMS AND SIMULATION LAB

Lecture – Tutori	ial: 3-0 Hours	3-0 Hours Internal Marks:					
Credits:	1.5	External Marks:	35				
Course Objectiv	es:						
Estimate th	e sequence impedances of 3-pl	hase Transformer and Alternators					
➢ Evaluate th	e performance of transmission	lines					
> Analyse an	d simulate power flow methods	s in power systems					
> Analyse an	d simulate the performance of I	PI controller for load frequency cont	trol				

List of Experiments

Any of 5 experiments are to be conducted from each section:

Section I: Power Systems Lab:

- 1. Estimation of sequence impedances of 3-phase Transformer
- 2. Estimation of sequence impedances of 3-phase Alternator by Fault Analysis
- 3. Estimation of sequence impedances of 3-phase Alternator by Direct method
- 4. Estimation of ABCD parameters on transmission line model
- 5. Performance of long transmission line without compensation
- 6. Performance of long transmission line with shunt compensation
- 7. Analyze the Ferranti effect on long transmission line

Section II: Simulation Lab

8. Determination of Y bus using direct inspection method

9. Load flow solution of a power system network using Gauss-Seidel method

- 10. Load flow solution of a power system network using Newton Raphson method.
- 11. Formation of Z bus by building algorithm.

12. Economic load dispatch with & without losses

13. Load frequency control of a two area Power System without & with PI controller

14. Transient Stability analysis of single machine connected to an infinite bus (SMIB) using equal area criterion

SKILL ADVANCED COURSE

MACHINE LEARNING WITH PYTHON

Lecture -	Tutoria	al:		2-11	Hours			Inte	rnal M	arks		30
Credits:				2	1			Exte	rnal M	larks		70
Course O	bjective	es:								1.	. u. j	
The st	udent wi	ill leàrr	1								K	
> Pat	tterns an	d conce	epts fr	om da	ta witho	out beir	ng expl	icitly p	orogran	amed	in various	IOT nodes.
												vith a modern
out	tlook foci	using o	n rece	nt adv	ances.		0	0			^	
		-				ed lear	ning p	aradig	ms of n	nachin	e earning.	Deep learning
	hnique a	+			-			-	9 10 1		0	
Course Out	*						0.0	,				
		iul cou	mple	tion	of the	cout	rse, tl	he st	uden	t will	be able	e to:
CO1		essful completion of the course, the student will be able to: Ilustrate and comprehend the basics of Machine Learning with Python										
CO2		Demonstrate the algorithms of Supervised Learning and be able to differentiate linear										
		gistic										
CO3	Demo	nstrate	e the a	lgorith	nms of U	Insupe	rvised	Learni	ng			
CO4	Ablet	o unde	rstand	l the c	lusterin	g algor	ithms					
CO5					binning					xampl	es	
CO6				nt ana	lysis for	variou	is case	studie	S			
Contribution (1 – Low, 2		Cou 1, 3 – Hi		Outco	omes	towar	ds a	chiev	ement	of	Program	1 Outcomes
	PO	PO	PO	PO	PO	PO	PO	PO	РО	PO	PO	PO
	1	2	3	4	5	6	7	8	9	10	11	12
C O1												
CO2												
CO3												
CO4												
CO5												

UNIT I

Introduction to Machine Learning with Python

Introduction to Machine Learning, basic terminology, Types of Machine Learning and Applications, Using Python for Machine Learning: Installing Python and packages from the Python Package Index, Introduction to NumPy, SciPy, matplotlib and scikitlearn, Tiny application of Machine Learning

UNIT II

Supervised Learning

Types of Supervised Learning, Supervised Machine Learning Algorithms: k-Nearest Neighbors, Linear Models, Naive Bayes Classifiers, Decision Trees, Ensembles of Decision Trees, Kernelized Support Vector Machines, Uncertainty Estimates from Classifiers.

UNIT III

Unsupervised Learning

Lecture -	Tutoria	1:		3-1 Ho	urs		Int	erna	l Mari	ks:		30
Credits:				3			Ext	erna	l Mar	ks:		70
Course O	bjective	S:										
 compo The the digital To reptransite method To examethod 	derstand nents as eory of control s resent th ion mat d.", desig mine the d of anal of state f	sociat z-tra system ne dis rix, tl n of st stabi yzing	edwith nsform rs. crete-t he des tate ob lity of digital	it. Adv nations sign of servers the syst	antage and a stems state s. tem us l syster	es comp pplicat in state feedb ing diff ns in th	pared to ion for e-space ack cor erent te ne w-pla	the the moc ntrol ests a ine.	analog mäth lel an by "	g type. ematio d eval the p	cal anal uation o ole plac	ysis of. of state cement
Course Out		leeuba	ICK COL	iti onei	unoug	in pole	placelli	ent.	*			
		l cor	nnlet	ion of	the c	ourse	the s	hīde	ent w	rill be	ahle	to:
C01	uccessful completion of the course, the student will be able to: Illustrate advantages of digital systems, sampling and data reconstruction.											
CO2	Calcula	Calculate Z Transform and Inverse Z Transfer function, pulse transfer functions of open andclosed loop response.										
CO3	Constr	Construct various canonical forms and concepts of controllability and observability.										
CO4	JI			ute and nd Roo			oility of	disc	rete ti	ime sy	stems ı	ising Routh
CO5		lag ar					prove s	yster	n peri	forma	nce usin	g bode
CO6			te feed	lback co	ontroll	ers and	state o	bserv	vers.			
Contributio	n of	Cour	'se C	Outcome		wards	achiev			of P	rogram	Outcomes
(1 - Low, 2-	Medium, PO	3 - Hig PO	h) PO	PO	PO	PO	PO	PO	PO	PO	PO	РО
	1	2	3	P0 4	РО 5	PU 6	7	8	9 9	10	11	PO 12
C01				-					-			
C02												
CO3												
C04												
C05 C06												

UNIT I

Patent Rights: Scope of Patent Rights. Licensing and transfer of technology. Patent information and databases. Geographical Indications.

UNIT V

New Developments in IPR: Administration of Patent System. New developments in IPR; IPR of Biological Systems, Computer Software etc, Traditional knowledge Case Studies, IPR and IITs.

TEXT BOOKS:

1.Stuart Melville and Wayne Goddard, "Research methodology: an introduction for science & engineering students'"

- 2. Wayne Goddard and Stuart Melville, "Research Methodology: An Introduction"
- 3. Ranjit Kumar, 2nd Edition, "Research Methodology: A Step by Step Guide for beginners"

REFERENCE BOOKS:

- 1. Halbert, "Resisting Intellectual Property", Taylor & Francis Ltd ,2007.
- 2. Mayall, "Industrial Design", McGraw Hill, 1992.
- 3. Niebel, "Product Design", McGraw Hill, 1974.
- 4. Asimov, "Introduction to Design", Prentice Hall, 1962.
- 5. Robert P. Merges, Peter S. Menell, Mark A. Lemley, "Intellectual Property in New TechnologicalAge", 2016.
- 6. T. Ramappa, "Intellectual Property Rights Under WTO", S. Chand, 2008

DIGITAL CONTROL SYSTEMS (Honors Engineering Course)

RESEARCH METHODOLOGY

Lecture -	Tutori	al:		2-1	Hours			Inte	rnal M	larks		30
Credits:				2				Exte	rnal N	larks	:	70
Course Ob	jective	es:										
×	To un	dersta	nd th	e obje	ctives ar	nd cha	aracte	ristics	ofare	esearc	h proble	m.
\gg	To ana	alyze r	esear	ch rel	related information and to follow research ethics							
×	To un	dersta	nd th	e type	pes of intellectual property rights.							
\triangleright	To lea	rn abo	out the	e scop	ope of patent rights.							
\rightarrow				-	develop		-	R.				
Course Outo									_			
Upon su	ccessf	ul co l	mple	etion	of the	cou	rse, ti	he st	uden	t will	l be abl	e to:
CO1		erstand objectives of a research problem										
CO2		nderstand characteristics of a research problem										
CO3		nalyze research related information and to follow research ethics.										
CO4				he types of intellectual property rights.								
CO5				he scope of IPR.								
CO6	_				evelopm	ents	in IPR.					
Contribution (1 – Low, 2-		Cou 1, 3 – Hi		Outco	omes	towar	ds a	ichievo	ement	of	Progra	m Outcomes
	PO	PO	PO	PO	PO	PO	PO	PO	РО	PO	PO	PO
C01	1	2	3	4	5	6	7	8	9	10	11	12
CO1									/			
C02												
CO4												
C05												
C06												

UNIT I

Research problem: Meaning of research problem, Sources of research problem, Criteria Characteristics of a good research problem, Errors in selecting a research problem, Scope and objectives of research problem. Approaches of investigation of solutions for research problem, data collection, analysis, interpretation, Necessary instrumentations

t

UNIT II

Literature study: Effective literature studies approaches, analysis Plagiarism, Research ethics, Technical writing: Effective technical writing, how to write report, Paper Developing a Research Proposal, Format of research proposal, a presentation and assessment by a review committee

UNIT III

Nature of Intellectual Property: Patents, Designs, Trade and Copyright. Process of Patenting and Development: technological research, innovation, patenting, development. International Scenario: International cooperation on Intellectual Property. Procedure for grants of patents, Patenting under PCT.

UNIT IV

Patent Rights: Scope of Patent Rights. Licensing and transfer of technology. Patent information and databases. Geographical Indications.

UNIT V

New Developments in IPR: Administration of Patent System. New developments in IPR; IPR of Biological Systems, Computer Software etc, Traditional knowledge Case Studies, IPR and IITs.

TEXT BOOKS:

1.Stuart Melville and Wayne Goddard, "Research methodology: an introduction for science & engineering students'"

- 2. Wayne Goddard and Stuart Melville, "Research Methodology: An Introduction"
- 3. Ranjit Kumar, 2nd Edition, "Research Methodology: A Step by Step Guide for beginners"

REFERENCE BOOKS:

- 1. Halbert, "Resisting Intellectual Property", Taylor & Francis Ltd ,2007.
- 2. Mayall, "Industrial Design", McGraw Hill, 1992.
- 3. Niebel, "Product Design", McGraw Hill, 1974.
- 4. Asimov, "Introduction to Design", Prentice Hall, 1962.
- 5. Robert P. Merges, Peter S. Menell, Mark A. Lemley, "Intellectual Property in New TechnologicalAge", 2016.
- 6. T. Ramappa, "Intellectual Property Rights Under WTO", S. Chand, 2008



NRI INSTITUTE OF TECHNOLOGY

(An Autonomous Institution Permanently Affiliated to JNTUK, Kakinada) (Accredited by NAAC with "A" Grade and ISO 9001:2015 Certified Institution) POTHAVARAPPADU (V), (VIA) NUNNA, AGIRIPALLI (M), PIN – 521 212

DEPARTMENT OF MECHANICAL ENGINEERING

COURSE STRUCTURE FOR THIRD YEAR B.TECH PROGRAMME

III YEAR I SEMESTER

Sl. No	Course Code	Title of the Course	(Pe	Ins	heme truct s Per		E	Scheme xamina kimum		No. of Credits
			L	T	P	Total	CIA	SEA	Total	
1	PCC	Thermal Engineering-II	3	0	0	3	30	70	100	3
2	PCC	Design of Machine Members-I	3	0	0	3	30	70	100	3
3	PCC	Machining, Machine Tools & Metrology	3	0	0	3	30	70	100	3
4	OE-I	 Sustainable Energy Technologies Operations Research Nano Technology Thermal Management of Electronic systems 	3	0	0	3	30	70	100	3
5	PE-I	 Finite Element Methods Industrial Robotics Advanced Materials Renewable Energy Sources Mechanics of Composites MOOCs (NPTEL/ Swayam) Course (12 Week duration) 	3	0	0	3	30	70	100	3
6	PCC-L	Machine Tools Lab	0	0	3	3	15	35	50	1.5
7	PCC-L	Thermal Engineering Lab	0	0	3	3	15	35	50	1.5
8	soc	Advanced Communication Skills Lab	1	0	2	3	15	35	50	2
9	мс	Professional Ethics and Human Values	2	0	0	2	30	70	100	0
		ation of summer internship is completed at the end of II B.Tech II Semester								1.5
		Total	18	0	8	26	225	525	750	21.5
	H H	Honors/Minor courses	4	0	0	4	30	70	100	4

Processionical Department Sciencical Department Science of Technology Pothav Analythan Disk Pothav Analythan Disk

MECH B.TECH. III YEAR NRIA20 REGULATIONS SYLLABUS

1 $20A3203401$ (PCC)Heat Transfer300330701002 $20A3203402$ (PCC)Design of Machine Members-II300330701003 $20A3203403$ (PCC)CAD/CAM300330701003 $20A3203403$ (PCC)CAD/CAM300330701004 PE-II 1.Automobile Engineering 2.Smart Manufacturing 3.Advanced Mechanics of Solids 4.Statistical Quality Control 5.Industrial Hydraulics and Pneumatics 6.MOOCs (NPTEL/ Swayam) Course (12 Week duration)300330701005 OE-II 1.Industrial Robotics 2.Essentials of Mechanical Engineering 3.Advanced Materials 4.Introduction to Automobile Engineering 3.Advanced Materials 4.	SI. No	Course Code	Title of the Course	(Pe L	Ins	heme truct s Per P		E	Scheme xamina imum SEA		No. of Credits
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3 (PCC) 3 0 0 3 30 70 100 4 PE-II 1.Automobile Engineering 3.Advanced Mechanics of Solids 3.Advanced Mechanics of Solids 3 0 0 3 30 70 100 4 PE-II 4.Statistical Quality Control 5.Industrial Hydraulies and Pneumatics 3 0 0 3 30 70 100 5 OE-II 1.Industrial Robotics 2.Essentials of Mechanical Engineering 3.Advanced Materials 4.Introduction to Automobile Engineering 3 0 0 3 30 70 100 6 20A3203491 (PCC-L) Heat Transfer Lab 0 0 3 3 15 35 50 7 20A3203492 (PCC-L) CAE&CAM Lab 0 0 3 3 15 35 50 8 20A3203493 (PCC-L) Measurements & Metrology Lab 0 0 3 3 15 35 50 9 20A3203791 Mini Project (Design & 0 0 0 4 4 20 70 100	2		_	3	0	0	3	30	70	100	3
4PE-II2.Smart Manufacturing 3.Advanced Mechanics of Solids 4.Statistical Quality Control 5.Industrial Hydraulies and Pneumatics 6.MOOCs (NPTEL/ Swayam) Course (12 Week duration)300330701005OE-II1.Industrial Robotics 2.Essentials of Mechanical Engineering 3.Advanced Materials 4.Introduction to Automobile Engineering 9.Advanced Materials30033070100620A3203491 (PCC-L)Heat Transfer Lab (PCC-L)00333153550720A3203492 (PCC-L)CAE&CAM Lab Lab00333153550820A3203791 (PCC-L)Mini Project (Design & Lab00442070100	3		CAD/CAM	3	0	0	3	30	70	100	3
5 OE-II 2.Essentials of Mechanical Engineering 3.Advanced Materials 4.Introduction to Automobile Engineering 3 0 0 3 30 70 100 6 20A3203491 (PCC-L) Heat Transfer Lab 0 0 3 3 15 35 50 7 20A3203492 (PCC-L) CAE&CAM Lab 0 0 3 3 15 35 50 8 20A3203493 (PCC-L) Measurements & Metrology Lab 0 0 3 3 15 35 50 9 20A3203791 Mini Project (Design & 0 0 0 4 4 20 70 100	4	PE-II	 2.Smart Manufacturing 3.Advanced Mechanics of Solids 4.Statistical Quality Control 5.Industrial Hydraulics and Pneumatics 6.MOOCs (NPTEL/ Swayam) Course (12 Week 	3	0	0	3	30	70	100	3
6 20A3203491 (PCC-L) Heat Transfer Lab 0 0 3 3 15 35 50 7 20A3203492 (PCC-L) CAE&CAM Lab 0 0 3 3 15 35 50 8 20A3203493 (PCC-L) Measurements & Metrology Lab 0 0 3 3 15 35 50 9 20A3203791 Mini Project (Design & Mini	5	OE-II	2.Essentials of MechanicalEngineering3.Advanced Materials4.Introduction to	3	0	0	3	30	70	100	3
/ (PCC-L) 0 0 0 3 3 15 35 50 8 20A3203493 (PCC-L) Measurements & Metrology Lab 0 0 3 3 15 35 50 9 20A3203791 Mini Project (Design & Mini Project (Design	6			0	0	3	3	15	35	50	1.5
8 (PCC-L) Lab 0 0 3 3 15 35 50 9 20A3203791 Mini Project (Design & 0 0 4 4 20 70 100	7	(PCC-L)	CAE&CAM Lab	0	0	3	3	15	35	50	1.5
	8	1	07	0	0	3	3	15	35	50	1.5
	9	20A3203791 (MINI-PR)	Mini Project (Design & Fabrication)	0	0	4	4	30	70	100	2.0
10 20A3200802 Research Methodology and 2 0 0 2 30 70 100	10			2	0	0	2	30	70	100	0
Total 17 0 13 30 285 595 850 Honors/Minor courses 4 0 0 4 30 70 100				TTO MANAGEMENT					595	850	21.5

III YEAR II SEMESTER

L - LECTURE T -- TUTORIAL P - PRACTICAL

CIA – Continuous Internal Assessment SEA – Semester End Assessment At the end of III Year II Semester Students shall complete summer Internship spanning between 1 to 2 months (minimum of 4 weeks) at industry/ higher learning institutions/APSSDC.

Hechanical Department Hechanical Department BI Institute of Technology POTHAV ARAPPADU (Vill) POTHAV ARAPPADU (Vill) Actingabili (Netl), Krishnis Dist

MECH B.IECH. III YEAK NKIAZU REGULATIONS SYLLABUS

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COURSES FOR B. Tech. (MINOR) in MECHANICAL ENGINEERING

S No	Name of the Course	Pre-requisites			
1.	Basic Thermodynamics	NIL			
2.	Manufacturing Processes	NIL			
3.	Materials Science and Engineering	NIL			
4.	Basic Mechanical Design	NIL			
5.	Optimization Techniques	NIL			
6.	Power Plant Engineering	Basic Thermodynamics			
7.	Automobile Engineering	Basic Thermodynamics			
8.	Industrial Engineering and Management	NIL			
9.	Product Design & Development	NIL			
10.	Smart Manufacturing	NIL			
11.	Mechanical Measurements	NIL			
12.	Industrial Robotics	Engineering Mechanics			
13.	Mechatronics	NIL			

COURSES FOR B. Tech. (HONORS) in MECHANICAL ENGINEERING

		Pre-requisites				
S No	Name of the Course					
	POOL – 1 (in II-II)					
1.	Advanced Mechanics of Fluids	Fluid Mechanics				
2.	Green Manufacturing	Production Technology				
3.	Analysis and Synthesis of Mechanisms	Kinematics of Machinery				
4.	Alternative Fuels Technologies	Basic Thermodynamics				
5.	Gear Engineering	Kinematics of Machinery				
	POOL-2 (in III-I)					
1.	Experimental Methods in Fluid Mechanics	Fluid Mechanics				
2.	Advanced Optimization Techniques	Operations Research				
3.	Micro Electro Mechanical Systems	Nil				
4.	Tribology	Nil				
5.	Statistical Design in Quality Control	Nil				
	POOL-3 (in III-II)					
1.	Advanced Computational Fluid Dynamics	Fluid Mechanics				
2.	Material Characterization Techniques	Material Science and Metallurgy				
3.	Product Design	Nil				
4.	Electric & Hybrid Vehicles	Thermal Engineering				
5.	Mechanical Vibrations & Acoustics	Nil				
	POOL-4 (in IV-I)	april 1944				
1. 🗠	Advanced Thermodynamics	Nil				
2.	Design for Manufacturing and Assembly	Production Technology				
3.	Robotics and Control	Kinematics of Machinery				
4.	Turbo Machines	FM&HM —				
5.	Materials Technology	Nil				

III B.TECH I SEMESTER

Course Code: THERMAL ENGINEERING-II (Steam Tables and Mollier chart is allowed)

Lectu	re-	Pract	ical:	3-0	Hour	S		In	ternal N	Marks:	30		
Credi	its			3				E	ternal I	Marks:	70		
Prere	quisi	ites: 7	Гhern	nodyr	amic	s, Th	erma	l Engi	neering	-I			
Cour													
1) To	unde	rstand	d the l	oasic	conce	pts of	thern	nal en	gineering	g and boi	lers.		
2) To	gain	know	ledge	abou	t the c	once	pts of	steam	nozzles	and stea	m turb	ines.	
3) To	gain	know	ledge	abou	t the c	conce	pts of	reacti	on turbi	ne and st	eam co	ondensers.	
4) To	unde	rstand	d the o	conce	pts of	recip	rocati	ng and	i rotary	type of c	ompre	ssors.	
5) To	acqu	ire kn	owlea	ige al	- oout ti	ie cer	ntrifug	gal and	l axial fl	ow com	ressor	s.	
Cour	se Oi	itcon	les	-				-					
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CO3	Ap	oly the	e basi	c con	cepts	of rea	ction	turbin	es and s	team con	denser	'S.	
					1								
CO4	Dev	/elop	the co	ncept	ts of r	ecipro	ocatin	g and	rotary ty	pe of co	npress	sors.	
CO5	Exp	olain t	he co	ncept	s of ce	ntrifi	igal a	nd axi	al flow o	compress	ors.		
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BASIC CONCEPTS: Rankine cycle - schematic layout, thermodynamic analysis, concept of mean temperature of heat addition, methods to improve cycle performance – regeneration & reheating. combustion: fuels and combustion, concepts of heat of reaction, adiabatic flame temperature, Stoichiometry, flue gas analysis.

BOILERS: Classification – working principles of L.P & H.P boilers with sketches – mountings and accessories – working principles, boiler horse power, equivalent evaporation, efficiency and heat balance – Draught: classification – height of chimney for given draught and discharge, condition for maximum discharge, efficiency of chimney – artificial draught, induced and forced.

UNIT II

STEAM NOZZLES: Function of a nozzle – applications - types, flow through nozzles, thermodynamic analysis – assumptions -velocity of fluid at nozzle exit-Ideal and actual expansion in a nozzle, velocity coefficient, condition for maximum discharge, critical pressure ratio, criteria to

MECH B.TECH. HEYEAK NRIAZU REGULATIONS SYLLABUS

decide nozzle shape: Super saturated flow - its effects, degree of super saturation and degree of under cooling, Wilson line.

STEAM TURBINES: Classification – impulse turbine; mechanical details – velocity diagram – effect of friction – power developed, axial thrust, blade or diagram efficiency – condition for maximum efficiency. De-laval turbine - methods to reduce rotor speed-velocity compounding, pressure compounding and velocity & pressure compounding, velocity and pressure variation along the flow – combined velocity diagram for a velocity compounded impulse turbine, condition for maximum efficiency.

UNIT III

REACTION TURBINE: Mechanical details – principle of operation, thermodynamic analysis of a stage, degree of reaction –velocity diagram – Parson's reaction turbine – condition for maximum efficiency – calculation of blade height.

STEAM CONDENSERS: Requirements of steam condensing plant – classification of condensers – working principle of different types – vacuum efficiency and condenser efficiency – air leakage, sources and its affects, air pump, cooling water requirement.

UNIT IV

COMPRESSORS: Classification – fan, blower and compressor – positive displacement and non-positive displacement type – reciprocating and rotary types.

RECIPROCATING: Principle of operation, work required, Isothermal efficiency, volumetric efficiency and effect of clearance, multi stage compression, saving of work, minimum work condition for two stage compression.

ROTARY:Roots Blower, vane sealed compressor, Lysholm compressor –mechanical details and principle of working – efficiency considerations.

UNIT V

CENTRIFUGAL COMPRESSORS: Mechanical details and principle of operation –velocity and pressure variation. Energy transfer-impeller blade shape-losses, slip factor, power input factor, pressure coefficient and adiabatic coefficient–velocity diagrams – power.

AXIAL FLOW COMPRESSORS: Mechanical details and principle of operation – velocity triangles and energy transfer per stage degree of reaction, work done factor – isentropic efficiency-

pressure rise calculations - Poly tropic efficiency.

Text Book:

1) Thermodynamics and Heat Engines/R.Yadav, Volume -II /Central Publishing House

2) Heat Engineering /V.P Vasandani and D.S Kumar/Metropolitan Book Company, New Delhi.

REFERENCE BOOKS:

THE REAL PROPERTY OF

1) Thermal Engineering-M.L.Mathur & Mehta/Jain bros. Publishers

- 2) Thermal Engineering-P.L.Ballaney/ Khanna publishers.
- 3) Thermal Engineering / RK Rajput/ Lakshmi Publications
- 4) Thermal Engineering-R.S Khurmi, &J S Gupta/S.Chand.

III B.TECH I SEMESTER

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Course Code: DESIGN OF MACHINE MEMBERS-I (Design Data book allowed)

Lectu	re – T	Praci	ical·	3-0	Hour	8		Tr	nternal N	Marke.	30		
Credi		LIAU	LCAL.	3	Hour	3		_	xternal]		70		
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Cour													
				nateri	als ar	nd the	ir prot	pertie	s along v	vith man	ufactur	ing considera	tions.
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and k				TT J					00				
4) To	unde	rstand	1 and	apply	the k	nowle	edge i	n desi	gning th	e shafts a	nd sha	ft couplings.	
										e mechar			
Cours	se Ou	tcom	ies										
Upon	succ	essfu	l com	pletio	n of t	the co	urse,	the s	tudent v	vill be at	ole to:		
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CO2	Dev	elop	the kn	lowle	dge al	bout t	he str	ength	of mach	ine elem	ents.		
CO3	App join		e knov	wledg	e in d	esign	ing th	e rive	ted and v	welded jo	oints, k	eys, cotters a	nd knuckle
CO4	Ana	lyze	the kn	owled	lge in	desig	gning	the sh	afts and	shaft cou	plings	*	
CO5			e knov	wledg	e in d	esign	ing th	e mec	hanical s	springs.			
Conti				Cours			mes	towa	rds ac	hieveme	ent o	f Program	Outcomes
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conce	ntrati	on fa	ctor –	fatig	ue str	ress c	oncen	tratio	S: Stres n factor	notch se	nsitivit	on – theory y – design fo n's line – Sod	or fluctuating

MECH B. TECH, III YEAR INRIAZU REGULATIONS SYLLABUS

- modified goodman's line

UNIT III

RIVETED AND WELDED JOINTS – design of joints with initial stresses – eccentric loading. Bolted joints – design of bolts with pre-stresses – design of joints under eccentric loading – locking devices – both of uniform strength, different seals.

KEYS, COTTERS AND KNUCKLE JOINTS: Design of keys-stresses in keys-cotter jointsspigot and socket-sleeve and cotter-jib and cotter joints- knuckle joints.

UNIT IV

SHAFTS: Design of solid and hollow shafts for strength and rigidity – design of shafts for combined bending and axial loads – shaft sizes – BIS code- Use of internal and external circlips-gaskets and seals (stationary & rotary).

SHAFT COUPLING: Rigid couplings – muff, split muff and flange couplings, flexible couplings – flange coupling (modified).

UNIT V

MECHANICAL SPRINGS:

Stresses and deflections of helical springs – extension -compression springs – springs for fatigue loading, energy storage capacity – helical torsion springs – co-axial springs, leaf springs.

Text Book:

- 1. Machine design / NC Pandya & CS Shah/Charotar Publishing House Pvt. Limited
- 2. Machine Design/V.B.Bhandari/ McGraw-Hill Education

REFERENCE BOOKS:

- 1. Design of Machine Elements / V.M. Faires/McMillan
- 2. Machine design / Schaum Series/McGraw-Hill Professional
- 3. Machine Design/ Shigley, J.E/McGraw Hill.
- 4. Design data handbook/ K.Mahadevan & K. Balaveera Reddy/ CBS publishers.
- 5. Machine Design -Norton/ Pearson publishers

III B.TECH I SEMESTER

Course Code: MACHINING, MACHINE TOOLS & METROLOGY

Lecture - Practical	: 3-0 Hours	Internal Marks:	30
Credits	3	External Marks:	70
Prerequisites: None			
Course Objectives	1		- Friday
1) To gain fundament	tal knowledge of mach	ining processes.	
2) To understand the	principles of lathe, sha	ping, slotting and plan	ning machines.
3) To demonstrate th	e principles of drilling	milling and boring pro	cesses.
4) To understand the	concepts of finishing	processes and the system	m of limits and fits.
			optical measuring instruments.
Course Outcomes	A BERT		and the second sec
Upon successful con	npletion of the course	, the student will be a	ble to:
CO1 Demonstrate	the concepts of machin	ing processes.	
			4
CO2 Apply the pri	nciples of lathe, shapin	g, slotting and planning	g machines.
CO2 4 1 4 .	· · · · · · · · · · · · · · · · · · ·	· •	
CO3 Apply the pri	nciples of drilling, mill	ing and boring process	es.

MECH B.IECH. III YEAR NRIA20 REGULATIONS SYLLABUS

CO4	Ana	alyze	the co	ncept	s of fi	nishir	ig pro	ocesse	s and th	e system of li	imit	s and fits.	
CO5	Uno	lersta	nd the	e conc	epts o	f surf	ace n	oughn	ess and	optical measu	urin	g instruments	•
Cont	ribut	ion	of (Cours	ie O	utcor	nes	towa	rds a	chievement	of	Program	Outcomes
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	0	0	0	0	0	0	0	0	9	10		11	
	1	2	3	4	5	6	7	8					
CO 1	$$	$ $ \vee	\checkmark	\checkmark									V
CO2	\checkmark	V	\checkmark	\checkmark									V
CO3		\checkmark	\checkmark	\checkmark									V
CO4	V	\checkmark	\checkmark	1									V
CO5	V	V	\checkmark	V									1
								UN	I IT T				

FUNDAMENTAL OF MACHINING:

Elementary treatment of metal cutting theory – element of cutting process – Single point cutting tools, nomenclature of single point cutting tool, tool signature, tool angles, mechanism of metal cutting, types of chips and chip formation – built up edge and its effects, chip breakers, mechanics of orthogonal and oblique cutting –Merchant's force diagram, cutting forces, velocity ratio, cutting speeds, feed, depth of cut, tool life, Taylor's tool life equation, simple problems - Tool wear, tool wear mechanisms, machinability, economics of machining, coolants, tool materials and properties.

LATHE MACHINES:

Introduction- types of lathe - Engine lathe - principle of working - construction - specification of lathe - work holders and tool holders - accessories and attachments - lathe operations - taper turning methods and thread cutting - drilling on lathes - cutting speed and feed-depth of cut. SHAPING, SLOTTING AND PLANNING MACHINES: Introduction - principle of working -

UNIT II

principle parts – specifications - operations performed - slider crank mechanism - machining time calculations.

UNIT III

DRILLING & BORING MACHINES: Introduction – construction of drilling machines – types of drilling machines – principles of working – specifications- types of drills – geometry of twist drill - eperations performed –cutting speed and feed – machining type calculations - Boring Machines – fine Boring Machines – jig boring machines - deep hole Drilling Machines.

MILLING MACHINES: Introduction - principle of working – specifications – milling methods - classification of Milling Machines –types of cutters - geometry of milling cutters – methods of indexing, accessories to milling machines - cutting speed and feed – machining time calculations

UNIT IV

FINISHING PROCESSES: Introduction - theory of grinding – classification of grinding machines- cylindrical and surface grinding machines- tool and cutter grinding machines- different types of abrasives- bonds, specification and selection of a grinding wheel-lapping, Honing & Broaching operations- comparison to grinding.

SYSTEMS OF LIMITS AND FITS: Introduction, nominal size, tolerance, limits, deviations, different types of fits -Unilateral and bilateral tolerance system, hole and shaft basis systems-interchangeability, deterministic & statistical tolerances, selective assembly- International standard system of tolerances, selection of limits and tolerances for correct functioning, simple

MECH B. IECH. III YEAK INKIAZU REGULATIONS SYLLABUS

problems related to limits and fits, Taylor's principle – design of go and no go gauges; plug, ring, snap, gap, taper, profile and position gauges – inspection of gauges.

UNIT V

SURFACE ROUGHNESS MEASUREMENT: Differences between surface roughness and surface waviness –Numerical assessment of surface finish-CLA, Rt., R.M.S. Rz, R10 values, simple problems - method of measurement of surface finish – Profilograph, Talysurf, ISI symbols for indication of surface finish.

OPTICAL MEASURING INSTRUMENTS: Tools maker's microscope, Autocollimators, Optical projector, Optical flats-working principle, construction, merits, demerits and their uses. optical comparators.

Text Book:

1) Manufacturing Processes / JP Kaushish/ PHI Publishers-2nd Edition

2) Manufacturing Technology Vol-II/P.N Rao/Tata McGraw Hill

3) Engineering Metrology - R.K. Jain/Khanna Publishers

REFERENCE BOOKS:

1) Metal cutting and machine tools /Geoffrey Boothroyd, Winston A.Knight/ Taylor & Francis

- 2) Production Technology / H.M.T. Hand Book (Hindustan Machine Tools).
- 3) Production Engineering/K.C Jain & A.K Chitaley/PHI Publishers

4) Technology of machine tools/S.F.Krar, A.R. Gill, Peter SMID/ TMH

5) Manufacturing Processes for Engineering Materials-Kalpak Jian S & Steven R Schmid/Pearson Publications 5th Edition

III B.TECH I SEMESTER

Course Code: SUSTAINABLE ENERGY TECHNOLOGIES (OPEN ELECTIVE-I)

Lectu	re – Practical:	3-0 Hours	Internal Marks:	30		
Credi	its	3	External Marks:	70		
Prere	quisites: None				1	
Cours	se Objectives					
1) To	demonstrate the	importance of sola	r energy collection and st	orage.	1	
2) To	understand the p	rinciples of wind e	nergy and biomass energy	y.	1	
-3)-To	gain knowledge	on geothermal and	ocean energy.			
Statements & sure	-	•	ficient systems	ц.		
	· · · · · · · · · · · · · · · · · · ·		anufacturing systems.			-
	se Outcomes		0,		-	
<u> </u>		letion of the cour	se, the student will be a	ble to:	(DISECT)	,2.
CO1			ergy collection and stora			-
CO2	Apply the princ	iples of wind energy	gy and biomass energy.		1	
CO3	Analyze knowle	edge on geotherma	l and ocean energy.			
CO4	Develop the know	owledge about ene	rgy efficient systems.			
CO5	Define the conc	epts of green man	ufacturing systems.			

MECH B.TECH. III YEAK INKIAZU REGULATIONS SYLLABUS

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CO2	\checkmark	\checkmark	\checkmark	1			V					. V
CO3	\checkmark	\checkmark	\checkmark	1			1					1
CO4	\checkmark	V	1	\checkmark								1
CO5	\checkmark	V	1	\checkmark			V					1
								UN	IT I			112

SOLAR RADIATION: Role and potential of new and renewable sources, the solar energy option, Environmental impact of solar power, structure of the sun, the solar constant, sun-earth relationships, coordinate systems and coordinates of the sun, extraterrestrial and terrestrial solar radiation, solar radiation on titled surface, instruments for measuring solar radiation and sun shine, solar radiation data, numerical problems. Photo voltaic energy conversion – types of PV cells.

SOLAR ENERGY COLLECTION: Flat plate and concentrating collectors, classification of concentrating collectors, orientation.

SOLAR ENERGY STORAGE AND APPLICATIONS: Different methods, sensible, latent heat and stratified storage, solar ponds, solar applications- solar heating/cooling technique, solar distillation and drying, solar cookers, central power tower concept and solar chimney.

UNIT II

WIND ENERGY: Sources and potentials, horizontal and vertical axis windmills, performance characteristics, betz criteria, types of winds, wind data measurement.

BIO-MASS: Principles of bio-conversion, anaerobic/aerobic digestion, types of bio-gas digesters, gas yield, utilization for cooking, bio fuels, I.C. engine operation and economic aspects.

UNIT III

GEOTHERMAL ENERGY: Resources, types of wells, methods of harnessing the energy. **OCEAN ENERGY:** OTEC, Principles of utilization, setting of OTEC plants, thermodynamic cycles. Tidal and wave energy: Potential and conversion techniques.

UNIT IV

ENERGY EFFICIENT SYSTEMS:

(A) **ELECTRICAL SYSTEMS**: Energy efficient motors, energy efficient lighting and control, selection of luminaries, variable voltage variable frequency drives (adjustable speed drives), controls for HVAC (heating, ventilation and air conditioning), demand site management.

(B) MECHANICAL SYSTEMS: Fuel cells- principle, thermodynamic aspects, selection of fuels & working of various types of fuel cells, Environmental friendly and Energy efficient compressors and pumps.

UNIT V

GREEN MANUFACTURING SYSTEMS: Environmental impact of the current manufacturing practices and systems, benefits of green manufacturing systems, selection of recyclable and environment friendly materials in manufacturing, design and implementation of efficient and sustainable green production systems with examples like environmental friendly machining, vegetable based cutting fluids, alternate casting and joining techniques, zero waste manufacturing.

MECH B. IECH. III YEAK NKIAZU REGULATIONS SYLLABUS

Text Book:

<u>É1.</u>

1) Solar Energy – Principles of Thermal Collection and Storage/Sukhatme S.P. and J.K.Nayak/TMH.

2) Non-Conventional Energy Resources- Khan B.H/ Tata McGraw Hill, New Delhi, 2006.

3) Green Manufacturing Processes and Systems - J. Paulo Davim/Springer 2013.

REFERENCE BOOKS:

1) Alternative Building Materials and Technologies - K.S Jagadeesh, B.V Venkata Rama Reddy and K.S Nanjunda Rao/New Age International.

2) Principles of Solar Engineering - D.Yogi Goswami, Frank Krieth & John F Kreider /Taylor & Francis.

3) Non-Conventional Energy - Ashok V Desai /New Age International (P) Ltd.

4) Renewable Energy Technologies -Ramesh & Kumar /Narosa.

5) Non-conventional Energy Source- G.D Roy/Standard Publishers.

6) Renewable Energy Resources-2nd Edition/ J.Twidell and T. Weir/ BSP Books Pvt.Ltd.

7) Fuel Cell Technology -Hand Book / Gregor Hoogers / BSP Books Pvt. Ltd.

III B.TECH I SEMESTER

Course Code: OPERATIONS RESEARCH (OPEN ELECTIVE-I)

Credit Prereo Course 1) To u				3									
Course	Juisi			3				E	ternal I	Marks:	70		
		tes: N	lone	0									
1) To u													
												programming	
2) To u	inde	rstand	l and a	pply	the k	nowle	dge i	n solv	ing prob	lems of	transpo	rtation, assign	ment and
sequen	icing	*											
3) To u	inde	rstand	l the re	eplace	ement	t and g	game	theori	es and a	pply the	knowle	edge to solve p	roblems.
4) To g	gain	know	ledge	about	the v	vaiting	g line	mode	els and p	roject m	anagen	nent techniques	s.
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				lacer	nent a	ind ga	me th	еогіе	s and app	ply the l	mowled	lge to solve pro	oblems.
CO4	Den	nonst	rate th	e wai	ting l	ine mo	odels	and p	roject m	anagem	ent tech	niques.	
												g and simulati	ion.
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MECH B. TECHTIII YEAR NRIAZU REGULATIONS SYLLABUS

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CO5	V	V	1	1	V				-	 		
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INTRODUCTION - definition - characteristics and phases - types of operation research models applications.

LINEAR PROGRAMMING: Problem formulation – graphical solution – simplex method – artificial variables techniques -two-phase method, big-M method - duality principle.

UNIT II

TRANSPORTATION PROBLEM: Formulation - optimal solution, unbalanced transportation problem - degeneracy, assignment problem - formulation - optimal solution - variants of assignment problem- travelling salesman problem.

SEQUENCING – Introduction – flow –shop sequencing – n jobs through two machines – n jobs through three machines - job shop sequencing - two jobs through 'm' machines.

UNIT III

REPLACEMENT THEORY: Introduction – replacement of items that deteriorate with time when money value is not counted and counted - replacement of items that fail completely, group replacement.

GAME THEORY: Introduction – mini. max (max. mini) – criterion and optimal strategy solution of games with saddle points - rectangular games without saddle points - 2 x 2 games dominance principle $-m \ge 2 \& 2 \ge n$ games -graphical method.

UNIT IV

WAITING LINES: Introduction - single channel - poison arrivals - exponential service times with infinite population and finite population models- multichannel - poison arrivals - exponential service times with infinite population single channel.

PROJECT MANAGEMENT: Basics for construction of network diagram, Program Evaluation and Review Technique (PERT), Critical Path Method (CPM) - PERT Vs. CPM, determination of floats- Project crashing and its procedure.

UNIT V

DYNAMIC PROGRAMMING: Introduction – Bellman's principle of optimality – applications of dynamic programming-shortest path problem - linear programming problem.

SIMULATION: Definition – types of simulation models – phases of simulation – applications of simulation – inventory and queuing problems – advantages and disadvantages.

Text Book:

1. Operations Research-An Introduction/Hamdy A Taha/Pearson publishers

2. Operations Research - Theory & publications / S.D.Sharma-Kedarnath/McMillan publishers India Ltd.

REFERENCE BOOKS:

1. Introduction to O.R/Hiller & Libermann/TMH

2. Operations Research / A.M. Natarajan, P. Balasubramani, A. Tamilarasi / Pearson Education.

3. Operations Research: Methods & Problems / Maurice Saseini, Arhur Yaspan & Lawrence Friedman/Wiley

4. Operations Research / R.Pannerselvam/ PHI Publications.

5. Operations Research / Wagner/ PHI Publications.

- 6. Operation Research /J.K.Sharma/Macmillan Publ.
- 7. Operations Research/ Pai/ Oxford Publications

MECH B.TECH. III YEAK NRIAZU REGULATIONS SYLLABUS

- 8. Operations Research/S Kalavathy / Vikas Publishers
- 9. Operations Research / DS Cheema/University Science Press
- 10. Operations Research / Ravindran, Philips, Solberg / Wiley publishers

III B.TECH I SEMESTER

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Course Code: NANO TECHNOLOGY (OPEN ELECTIVE-I)

Lectu	re – 1	Pract	ical:	3-0	Hours	S		In	ternal Ma	rks:	30				
Credi				3				Ex	ternal Ma	arks:	70				
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MECH B. TECH. III YEAR INRIAZU REGULATIONS SYLLABUS

UNIQUE PROPERTIES OF NANO MATERIALS: Microstructure and Defects in Nano crystalline Materials: Dislocations, Twins, stacking faults and voids, Grain Boundaries, triple and declinations. Effect of Nano-dimensions on Materials Behavior: Elastic properties, Melting Point, Diffusivity, Grain growth characteristics, enhanced solid solubility. Magnetic Properties: Soft magnetic nanocrystalline alloy, Permanent magnetic nanocrystalline materials, Giant Magnetic Resonance, Electrical Properties, Optical Properties, Thermal Properties and Mechanical Properties.

UNIT III

SYNTHESIS ROUTES: Bottom up approaches: Physical Vapor Deposition, Inert Gas Condensation, Laser Ablation, Chemical Vapor Deposition, Molecular Beam Epitaxy, Sol-gel method, Self-assembly. Top down approaches: Mechanical alloying, Nano-lithography. Consolidation of Nano powders: Shock wave consolidation, Hot iso-static pressing and Cold iso-static pressing, Spark plasma sintering.

UNIT IV

TOOLS TO CHARACTERIZE NANOMATERIALS: X-Ray Diffraction (XRD), Small Angle X-ray scattering, Scanning Electron Microscopy (SEM), Transmission Electron Microscopy (TEM), Atomic Force Microscopy (AFM), Scanning Tunneling Microscope (STM), Field Ion Microscope (FEM), Three-dimensional Atom Probe (3DAP), Nano indentation

UNIT V

APPLICATIONS OF NANO MATERIALS: Nano-electronics, Micro- and Nanoelectromechanical systems (MEMS/NEMS),Nano sensors, Nano catalysts, Food and Agricultural Industry, Cosmetic and Consumer Goods, Structure and Engineering, Automotive Industry, Water-Treatment and the environment, Nano-medical applications, Textiles, Paints, Energy, Defense and Space Applications, Concerns and challenges of Nanotechnology.

Text Book:

Introduction to Nano Technology by Charles. P. Poole Jr& Frank J. Owens.Wiley India Pvt. Ltd.
 Nano Materials- A.K.Bandyopadhyay/ New Age Publishers.

3) Nano Essentials- T.Pradeep/TMH.

REFERENCE BOOKS:

1. Solid State physics by Pillai, Wiley Eastern Ltd.

2. Introduction to solid state physics 7th edition by Kittel. John Wiley & sons (Asia) Pvt Ltd.

III B.TECH I SEMESTER

Course Code:

THERMAL MANAGEMENT OF ELECTRONIC SYSTEMS (OPEN ELECTIVE-I)

Lecture - Practical:	3-0 Hours	Internal Marks:	30	
Credits	3	External Marks:	70	
Prerequisites: None		75.1-2.	241	- statistic + -
Course Objectives				
1) To understand the b	asics of heat transfer a	nd analyze heat transf	fer through fins	\$1
2) To understand the b	asics of convection and	d radiation modes of l	heat transfer.	
3) To gain knowledge	about the thermal analy	ysis of printed circuit	boards and their co	ooling.
4) To understand the p	rinciples of two-phase	cooling and heat pipe	es.	And a second second
5) To gain knowledge	about the thermoelectr	ic coolers.		
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CO2	Ana	alyze	the ba	isics o	of con	vectio	on and	radia	tion mod	es of heat tra	ansfer.	
CO3	Ana	alyzel	know	ledge	about	t the tl	herma	l anal	ysis of pi	rinted circuit	boards and the	heir cooli
CO4									g and hea	t pipes.		
CO5				~								
Contribution of Course Outcomes towards achievement of Program (1 – Low, 2- Medium, 3 – High)												
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CO3	V	V	V	V	V							V
CO4	V	V	\checkmark	V	V							V
CO5	V	V	V	V	V							V
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MECH B. TECH. III YEAR NRIAZU REGULATIONS SYLLABUS

Thermo Electric coolers: Basics theories – Thermo electric effect – Operation Principles Phase change materials, Thermal Interface materials, Heat Spreaders and Heat Sinks – Working Principles, Mini and Micro Channels. Use of nano fluids in electronic cooling.

Text Book:

1. Thermal Analysis and Control of Electronic Equipment – Allan D. Kraus and Avram BarCohen, McGraw Hill, New York, NY, 1983.

2. Fundamentals of Microelectronics Packaging – Ed: Rao Tummala, McGraw Hill, New York, NY, 2001.

REFERENCE BOOKS:

1) Packaging of Electronic Systems - James W. Dally, McGraw Hill, New York, NY, 1990.

III B.TECH I SEMESTER

Course Code: FINITE ELEMENT METHODS (PROFESSIONAL ELECTIVE-I)

Lectu	re –]	Pract	ical:	3-0	Hour	S		In	ternal M	arks:	30		
Credi	ts			3				E	tternal M	larks:	70		
Prere	quisi	tes: N	one										
Cours	se Ob	jectiv	ves										
1) To	unde	rstand	the b	asic j	princi	ples of	f finit	e eler	nent meth	ods.			
-						-			ly to analy				
								•	and solve	-	roblem	18.	
4) To	gain	know	ledge	abou	t two	dimen	isiona	1 stres	ss analysis	5.			
				ipply	stead	y state	e anal	ysis a	nd dynam	ic anal	ysis.		
Cours													
									tudent wi	ll be a	ble to:		
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CO5	2	2		1					10				2
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Finite	Elei	nent	Meth	ods:	Introd	luctio	n to f	inite	element n	nethod,	stress	and equilibriu	m, strain –
displa	ceme	nt rel	ations	, stre	ess-str	ain re	lation	s, pla	ne stress	and pla	ane stra	in conditions,	variational
-													

MECH B.TECH. III YEAK INRIAZU REGULATIONS SYLLABUS

and weighted residual methods, concept of potential energy, one dimensional problems.

UNIT II

Discretization: Bar element formulation, Discretization of domain, element shapes, discretization procedures, assembly of stiffness matrix, band width, node numbering, mesh generation, interpolation functions, local and global coordinates, convergence requirements, treatment of boundary conditions.

Analysis of Trusses: Finite element modeling, coordinates and shape functions, assembly of global stiffness matrix and load vector, finite element equations, treatment of boundary conditions, stress, strain and support reaction calculations

UNIT III

Analysis of Beams: Element stiffness matrix for Hermite beam element, derivation of load vector for concentrated and UDL, simple problems on beams.

UNIT IV

Finite element modeling: Finite element modeling of two dimensional stress analysis with constant strain triangles and treatment of boundary conditions, formulation of axi-symmetric problems.

Higher order and iso-parametric elements: One dimensional, quadratic and cubic elements in natural coordinates, two dimensional four node iso-parametric elements and numerical integration.

UNIT V

Steady state heat transfer analysis: One dimensional analysis of a fin.

Dynamic Analysis: Formulation of finite element model, element consistent and lumped mass matrices, evaluation of eigen values and eigen vectors, free vibration analysis.

Text Book:

1) The Finite Element Methods in Engineering /S.S.Rao /Pergamon.

2) Introduction to Finite Elements in Engineering, Second Edition/ Tirupati Reddy Chandrupatla/ Prentice-Hall.

REFERENCE BOOKS:

1) Finite Element Method with applications in Engineering / YM Desai, Eldho & Shah /Pearson publishers

2) An introduction to Finite Element Method /JNReddy/McGraw-Hill

3) The Finite Element Method for Engineers-Kenneth H. Huebner, Donald L. Dewhirst, DouglasE. Smith and Ted G. By rom/John Wiley & sons (ASIA) Pvt Ltd.

4) Finite Element Analysis: Theory and Application with Ansys, Saeed Moaveniu, Pearson Education

5) Finite Element Analysis: for students & Practicing Engineers / G.Lakshmi Narasaiah.

III B.TECH I SEMESTER

Course Code: INDUSTRIAL ROBOTICS (PROFESSIONAL ELECTIVE-I)

Lecture – Practical:	3-0 Hours	Marks:	30	
Credits	3	External Marks:	70	
Prerequisites: None				
Course Objectives		the second second	~	
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MECH B. IECH. III YEAK INRIAZU REGULATIONS SYLLABUS

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1) To understand the concepts of robotics and its systems.

2) To gain knowledge about the motion analysis and manipulator kinematics.

3) To understand the differential transformations.

4) To understand the basics about path description and generation.

5) To acquire knowledge about the actuators, feedback components and robotic applications.

Course Outcomes

Upon successful completion of the course, the student will be able to:

CO1 Perceive the concepts of robotics and its systems.

CO2 Apply knowledge about the motion analysis and manipulator kinematics.

CO3 Analyze the differential transformations.

CO4 Apply the basics about path description and generation.

CO5 Judge about the actuators, feedback components and robotic applications.

Contr	ibuti	on of	Cours	se Ou	tcomes	toward	s ach	ievemer	nt of	Progra	m Ou	tcomes
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CO3		3	2		1							
CO4		2	3									1
CO5	2				3						1	

UNIT I

INTRODUCTION: Automation and Robotics, CAD/CAM and Robotics – An overview of Robotics – present and future applications – classification by coordinate system and control system. **COMPONENTS OF THE INDUSTRIAL ROBOTICS:** Robot anatomy, work volume, components, number of degrees of freedom - robot drive systems, function line diagram representation of robot arms, common types of arms –-requirements and challenges of end effectors, determination of the end effectors, comparison of Electric, Hydraulic and Pneumatic types of actuation devices.

UNIT II

MOTION ANALYSIS: Homogeneous transformations as applicable to rotation and translation – problems.

MANIPULATOR KINEMATICS: Specifications of matrices, D-H notation joint coordinates and world coordinates Forward and inverse kinematics problems

UNIT III

DIFFERENTIAL TRANSFORMATION: Jacobians – problems, robot dynamic arm dynamics: Lagrange –Euler and Newton – Euler formulations–Problems – generalized D – Alembert's Equation of motion.

UNIT IV

GENERAL CONSIDERATIONS IN PATH DESCRIPTION AND GENERATION: Trajectory planning and avoidance of obstacles, path planning, Skew motion, joint integrated motion –straight line motion –Robot programming, languages and software packages-description of paths with a robot programming language.

UNIT V

ROBOT ACTUATORS AND FEED BACK COMPONENTS: Actuators: Pneumatic, Hydraulic actuators, electric & stepper motors. Feedback components: position sensors-potentiometers, resolvers, encoders-Velocity sensors.

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ROBOT APPLICATIONS IN MANUFACTURING: Material Transfer - Material handling, loading and unloading- Processing -spot and continuous arc welding &spray painting- Assembly and Inspection.

Text Book:

A Chical Co

1) Industrial Robotics / Groover MP /Pearson Edu.

2) Robotics and Control /Mittal R K & Nagrathi J /TMH.

REFERENCE BOOKS:

1) Robotics/Fu KS/ McGraw-Hill.

2) Robotic Engineering /Richard D. Klafter, Prentice Hall

3) Robot Analysis and Control/ H. Asada and J.J.E. Slotine /BSP Books Pvt.Ltd.

4) Introduction to Robotics/John JCraig/Pearson Edu.

III B.TECH I SEMESTER

Course Code: ADVANCED MATERIALS (PROFESSIONAL ELECTIVE-I)

Lectu	re – P	ractic	al:	3-0 Ho	urs			In	terna	l Mar	ks: 3	0		
Credi	its			3				Ex	terna	l Mar	: ks: 7	/0		
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· ·	-		_								~ -	lications.		
3) To	analyz	ze com	posite	e mater.	ials al	ong	with	n reinf	forcen	nents a	and the	rir application	s.	
4) To	under	stand t	he ba	sics of s	shape	men	nory	alloy	vs and	funct	ionally	graded mater	rials.	
5) To	gain k	nowle	dge al	bout the	e nanc	omat	erial	ls and	their	applic	ations	•		
Cour	se Out	come	5											
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		UNIT I			
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POLYMERS: Natural glass-transition temp polymers-Elastomers- I CERAMICS: Applic preparations- consolid application.	erature-Thermosets Processing of plast eations-characterist	s-Thermoplastics- ics. ics- classificatio	characterist n-Processing	ics & applica of ceramics-	tions of Powd
		UNIT III			
COMPOSITE MATI matrix composites, co composites and nature- REINFORCEMENTS carbide fibers.	eramic matrix com made composites,	mposites, carbon- and applications	-carbon com	posites, fiber- 1	einforce
		UNIT IV			
SHAPE MEMORY A	LLOYS: Introduc		v effect-classi	fication of shape	memor
alloys-composition-pro FUNCTIONALLY (classification different	perties and applica	tions of shape men ERIALS: Types	nory alloys. of function	ally graded m	naterials-
materials.					
		UNIT V	1 1		1
NANO MATERIAL	-	-		-	-
applications in compari	son with bulk mat	erials (nano-struct	ure, wires, tu	bes, composites).	
Text Book: 1) Nanomaterial /A.K. 2) Material science and 3) Engineering Mechar REFERENCE BOOK 1) Mechanics of Comp 2) Analysis of Laminat 3) Analysis and perform Inter science, New Yor 4) Mechanics of Comp /CRC Press.	Technology: A co ics of Composite I S: osite Materials / R. ed Composite Stru- nance of fibre Con k, 1980.	M. Jones/ Mc Gra ctures / L. R. Calc posites /B. D. Ag	nd M Daniel/(w`Hill Comp ote/Van Nost arwal and L.	Dxford University any, New York, rand Rainfold, NY Broutman/Wil	1975. 7 1969. ey-
III B. TECH I SEMES	TER				
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Lecture – Practical:	3-0 Hours	Internal M	arks: 30	The second second	
Credite	3		arks, 50	10000 - 3.5	

External Marks: 70

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solar radiation data, numerical problems. Photo voltaic energy conversion + types of PV cells.

SOLAR ENERGY COLLECTION: Flat plate and concentrating collectors, classification of concentrating collectors, orientation.

SOLAR ENERGY STORAGE AND APPLICATIONS: Different methods, sensible, latent heat and stratified storage, solar ponds, solar applications- solar heating/cooling technique, solar distillation and drying, solar cookers, central power tower concept and solar chimney.

UNIT II

WIND ENERGY: Introduction, History of Wind Energy, Wind Energy Scenario of World and India. Basic principles of Wind Energy Conversion Systems (WECS), Types and Classification of WECS, Parts of WECS, Power, torque and speed characteristics, Electrical Power Output and Capacity Factor of WECS, Stand alone, grid connected and hybrid applications of WECS, Economics of wind energy utilization, Site selection criteria, Wind farm, Wind rose diagram.

UNIT III ---

BIOMASS ENERGY: Photosynthesis process, Biomass fuels, Biomass energy conversion

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technologies and applications, Urban waste to Energy Conversion, Biomass Gasification, Types and application of gasifier, Biomass to Ethanol Production, Biogas production from waste biomass, Types of biogas plants, Factors affecting biogas generation, Energy plantation, Environmental impacts and benefits, Future role of biomass, Biomass programs in India.

UNIT IV

TIDAL ENERGY: Introduction, Capacity and Potential, Principle of Tidal Power, Components of Tidal Power Plant, Classification of Tidal Power Plants. Ocean Thermal Energy: Introduction, Ocean Thermal Energy Conversion (OTEC), Principle of OTEC system, Methods of OTEC power generation.

UNIT V

GEOTHERMAL ENERGY: Introduction, vapor and liquid dominated systems, binary cycle, hot dry rock resources, magma resources, advantages and disadvantages, applications, MHD Power generation: concept and working principle, Environmental impacts, Economic and social considerations, Financing mechanisms, Carbon credits, clean development mechanisms.

Text Book:

1) Solar Energy – Principles of Thermal Collection and Storage/Sukhatme S.P. and J.K.Nayak/TMH.

2) Non-Conventional Energy Resources- Khan B.H/ Tata McGraw Hill, New Delhi, 2006.

3) Green Manufacturing Processes and Systems - J. Paulo Davim/Springer 2013.

REFERENCE BOOKS:

1) Alternative Building Materials and Technologies - K.S Jagadeesh, B.V Venkata Rama Reddy and K.S Nanjunda Rao/New Age international.

2) Principles of Solar Engineering - D.Yogi Goswami, Frank Krieth & John F Kreider /Taylor & Francis.

3) Non-Conventional Energy - Ashok V Desai /New Age International (P) Ltd.

4) Renewable Energy Technologies -Ramesh & Kumar /Narosa.

5) Non-conventional Energy Source- G.D Roy/Standard Publishers.

6) Renewable Energy Resources-2nd Edition/ J.Twidell and T. Weir/ BSP Books Pvt.Ltd.

7) Fuel Cell Technology -Hand Book / Gregor Hoogers / BSP Books Pvt. Ltd.

III B.TECH I SEMESTER

Course Code: MECHANICS OF COMPOSITES (PROFESSIONAL ELECTIVE-I)

Lecture - Practic	al: 3-0 Hours	Internal Marks:	30			a spinite
Credits	3 3	External Marks:	70	A CHECUM ENTER		HINH
Prerequisites: No	one			11.00	100	12
Course Objective	25	2.22			14/5	
1) To understand	about the composite mat	erials and their classifica	tion.			81
2) To illustrate mi	cro mechanical analysis	of a lamina.				
3) To gain knowle	edge about the two dimen	nsional angle lamina.				
4) To illustrate ma	acro mechanical analysis	of a lamina.				
5) To gain knowle	edge in designing the lan	ninates.				
Course Outcome	s					
Upon successful	completion of the cours	e, the student will be a	ble to:			
CO1 Discuss the	e composite materials an	d their classification.		M		

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1) Engineering Mechanics of Composite Materials by Isaac and M Daniel, Oxford University Press,

MECH B. IECH. III YEAK NKIAZU REGULATIONS SYLLABUS

1994.

2) B. D. Agarwal and L. J. Broutman, Analysis and performance of fiber Composites, Wiley-Interscience, New York, 1980.

3) Mechanics of Composite Materials, Second Edition (Mechanical Engineering), By Autar K. Kaw, CRC press.

REFERENCE BOOKS:

R. M. Jones, Mechanics of Composite Materials, Mc Graw Hill Company, New York, 1975.
 L. R. Calcote, Analysis of Laminated Composite Structures, Van Nostrand Rainfold, New York, 1969.

III B.TECH I SEMESTER

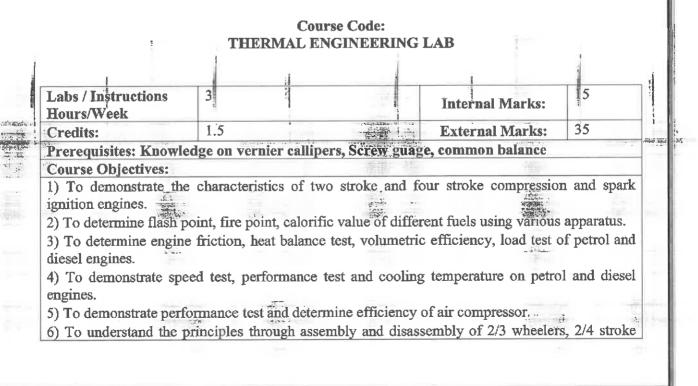
Course Code: MACHINE TOOLS LAB

	/ Instru s/Week		3						Interna	l Marl	ks:	15
Credi			1.	5					Externa	l Mar	ks:	35
Prere	quisites	: Knov	wledge	on vern	ier call	ipers, S	screw g	uage,	commo	ı balar	ice	
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Mean	um, 3 – PO	Hign) PO	PO	PO	. no	PO	PO	PO	DO	PO	PO	PO
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		<u> </u>	-			of Expe			1			

MECH B. IECH. III YEAR NRIAZU REGULATIONS SYELABUS

1) Introduction of general purpose machines -Lathe, Drilling machine, Milling machine, Shaper, Planing machine, Slotting machine, Cylindrical grinder, Surface grinder and Tool and cutter grinder. 2) Operations on Lathe machine a) Step turning and Knurling b) Taper turning and Knurling c) Thread cutting and knurling d) Drilling and tapping 3) Operations on Drilling machine a) Drilling, reaming and tapping b) Rectangular drilling c) Circumferential drilling 4) Operations on Shaping machine a) Round to square b) Round to Hexagonal 5) Operations on Slotter a) Keyway (T-slot) b) Keyway cutting 6) Operations on milling machines a) Indexing b) Gear manufacturing **TEXT BOOKS:** 1. Department Manual. **REFERENCE BOOKS:**

III B.TECH I SEMESTER



MECH B.IECH. III YEAR NRIAZU REGULATIONS SYLLABUS

Cours	se Outc	omes:										
CO1			vith two		and for	ur strok	e comp	ression	and spa	rk ignit	ion eng	ines for
CO2	Perce	ive flas	h point,	fire po:	int, calo	rific va	lue of o	lifferen	t fuels u	sing va	rious aj	oparatus.
CO3		fy engine		on, hea	t balanc	e test, v	volume	tric effi	ciency,	load tes	t of pet	rol and
CO4	Categ engin		peed tea	st, perfo	rmance	e test an	d cooli	ng temp	erature	on petr	ol and o	diesel
CO5	Utiliz	e air co	mpresso	or for it	s perfor	mance	test and	l to dete	rmine e	fficienc	y.	
CO6								sembly heir mo				
Contr	ibution	of Co	urse Ou	tcome	s towar	ds achi	ieveme	nt of Pr	ogram	Outco	nes (1 -	- Low, 2-
Medi	um, 3 –	High)										
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List of Experiments

1. To determine the actual Valve Timing diagram of a four stroke Compression/Spark Ignition Engine.

2. To determine the actual Port Timing diagram of a two stroke Compression/Spark Ignition Engine.

3. Determination of Flash & Fire points of Liquid fuels / Lubricants using (i) Abels Apparatus; (ii) Pensky Martin's apparatus and (iii) Cleveland's apparatus.

4. Determination of Viscosity of Liquid lubricants/Fuels using (i) Saybolt Viscometer and (ii) Redwood Viscometer.

5. Determination of Calorific value of Gaseous Fuels using Junkers Gas Calorimeter.

6. Evaluation of engine friction by conducting Morse test on 4-stroke multicylinder petrol/diesel engine.

7. Evaluation of Engine Friction by Motoring/Retardation Test on a Single Cylinder 4 Stroke Petrol/Diesel Engine.

8. To perform the Heat Balance Test on Single Cylinder four Stroke Petrol/Diesel Engine.

9. Determination of Air/Fuel Ratio and Volumetric Efficiency on a four Stroke Petrol/Diesel Engine.

10. To conduct a load test on a single cylinder Petrol/Diesel engine to study its performance under various loads.

11. To determine the optimum cooling temperature of a Petrol/Diesel engine.

12. To conduct economical speed test on a four stroke Petrol/Diesel engine.

13. To conduct a performance test on a VCR engine, under different compression ratios and

MECH B. TECH. III YEAR INRIAZU REGULATIONS SYLLABUS

determine its heat balance sheet.

14. To conduct a performance test on an air compressor and determine its different efficiencies. 15. Dis-assembly / assembly of different parts of two wheelers. 3 wheelers & 4 wheelers. Tractor & Heavy duty engines covering 2-stroke and 4 stroke, SI and CI engines.Study of Boilers with mountings and accessories.

TEXT BOOKS:

1. Department Manual

REFERENCE BOOKS:

III B.TECH I SEMESTER

Course Code: ADVANCED COMMUNICATION SKILLS LAB

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MECH BETECH. III YEAR INRIAZU REGULATIONS SYLLABUS

1. Inter-personal Communication and Vocabulary Building - Starting a Conversation – Responding Appropriately and Relevantly – Role Play in Different Situations - Synonyms and Antonyms, One- word Substitutes, Prefixes and Suffixes, Idioms and Phrases and Collocations.

2. Reading Comprehension and Listening Skills –General Vs Local Comprehension, Techniques- Reading for Facts, Guessing Meanings from Context, Skimming, Scanning, Inferring Meaning-Listening Comprehension(Video/Audio talks)

3. **Technical Writing Skills** – Structure and Presentation of Different Types of Writing – Letter Writing/Resume Writing/ e-correspondence/ Technical Report Writing- Circular writing/ Meeting agenda/ Minutes of Meeting.

4. **Presentation Skills** – Public speaking-Oral Presentations (individual or group) through JAM Sessions/Seminars/PPTs and Written Presentations through Posters/Projects/Reports/ e-mails/Assignments... etc.,- Stage dynamics- Body Language- Para Language.

5. Getting Ready for the Job:

a. Group Discussion and Interview Skills – Dynamics of Group Discussion, Intervention, Summarizing, Modulation of Voice, Body Language, Relevance, Fluency and Organization of Ideas and Rubrics of Evaluation- Concept and Process, Pre-interview Planning, Opening Strategies, Answering Strategies, Interview through Tele-conference & Video-conference and Mock Interviews.

b. Soft Skills: Inter and Intra Personal Skills.

TEXT BOOKS:

REFERENCE BOOKS:

1. Technical Communication by Meenakshi Raman & Sangeeta Sharma, Oxford University Press2009.

2. Technical Communication by Paul V.Anderson.2007. Cengage Learning pvt. Ltd. NewDelhi.

3. Business and Professional Communication: Keys for Workplace Excellence .Kelly M. Quintanilla& ShawnT.Wahl. SageSouth AsiaEdition. SagePublications.2011.

4. The Basics of Communication: A Relational Perspective. Steve Duck & David T.McMahan. Sage South AsiaEdition.SagePublications.2012.

5. English Vocabulary in Use series, CambridgeUniversityPress2008.

6. Management Shapers Series by Universities Press (India) Pvt Ltd., Himayatnagar, Hyderabad2008.

 Handbook for Technical Communication by David A.McMurrey & Joanne Buckley.2012.
 Handbook for Technical Writing by David A McMurrey & JoanneBuckely CENGAGE Learning 2008.

9. Job Hunting by Colm Downes, Cambridge University Press2008.

10. Master Public Speaking by Anne Nicholls, JAICOPublishingHouse, 2006.

11. English for Technical Communication for Engineering Students, Aysha Vishwamohan, Tata Mc Graw-Hil 2009.

12. Books on TOEFL/GRE/GMAT/CAT/IELTS/SAT by Barron's/DELTA/Cambridge University Press.

13. The Definitive Book of body Language - by Allan Pease, Barbara Pease.

III B.TECH I SEMESTER

Course Code: PROFESSIONAL ETHICS AND HUMAN VALUES

Lecture - Practical:	2-0 Hours	Internal Marks:	30	10000
Credits	0	External Marks:	70	

MECH B.TECH. III YEAR NRIAZU REGULATIONS SYLLABUS

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Risk- Delayed v/s Immediate Risk- Safety and the Engineer – Designing for Safety – Risk-Benefit Analysis-Accidents.

UNIT V

ENGINEERS' RESPONSIBILITIES AND RIGHTS: Collegiality-Techniques for Achieving Collegiality –Two Senses of Loyalty-obligations of Loyaltymisguided Loyalty – professionalism and Loyalty-Professional Rights –Professional Responsibilities – confidential and proprietary information-Conflict of Interest-solving conflict problems – Self-interest, Customs and Religion- Ethical egoism-Collective bargaining-Confidentiality-Acceptance of Bribes/Gifts-when is a Gift and a Bribe-examples of Gifts v/s Bribes-problem solving-interests in other companies-Occupational Crimes-industrial espionageprice fixing-endangering lives-Whistle Blowing-types of whistle blowing-when should it be attempted-preventing whistle blowing.

Text Book:

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1) Engineering Ethics and Human Values by M.Govindarajan, S.Natarajan and V.S.SenthilKumar-PHI Learning Pvt. Ltd-2009.

2) Professional Ethics and Morals by Prof.A.R.Aryasri, Dharanikota, Suyodhana-Maruthi Publications.

REFERENCE BOOKS:

1) Professional Ethics and Human Values by A.Alavudeen, R.Kalil Rahman and M.Jayakumaran-Laxmi Publications.

2) Professional Ethics and Human Values by Prof. D. R. Kiran, TMH.

3) Indian Culture, Values and Professional Ethics by P.S.R. Murthy-BS Publication.

4) Ethics in Engineering by Mike W. Martin and Roland Schinzinger- Tata McGraw-Hill - 2003.

5) Engineering Ethics by Harris, Pritchard and Robins, CENGAGE Learning, Indian Edition, 2009.

III B.TECH II SEMESTER

Course Code: HEAT TRANSFER

Lecture – Practical:	3-0 Hours	Internal Marks:	30
Credits	3	External Marks:	70
Prerequisites: None			1
Course Objectives	1		
1) To gain knowledge	about mechanism and	modes of heat transfe	r.
2) To understand the c	oncepts of conduction	and convective heat t	ransfer.
3) To gain knowledge	about the forced and fi	ree convection.	A day and a set of the set
And the second sec			nd condensation along with heat
exchangers.			
· ·			
5) To gain knowledge	about radiation mode	of heat transfer.	
5) To gain knowledge Course Outcomes	about radiation mode of	of heat transfer.	attraction of the
Course Outcomes			ble to:
Course Outcomes Upon successful com		the student will be a	
Course Outcomes Upon successful com	detion of the course,	the student will be a	
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Course Outcomes Upon successful comj CO1 Apply knowled CO2 Understand the	Détion of the course, ge about mechanism a	the student will be a and modes of heat tran on and convective heat	sfer.

MECH B.IECH, III YEAR INRIAZU REGULATIONS SYLLABUS

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	exc	hange	ers.									
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CO5	\checkmark	V	\checkmark							_		1
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Introduction: Modes and mechanisms of heat transfer – Basic laws of heat transfer –General discussion about applications of heat transfer.

Conduction Heat Transfer: Fourier rate equation – General heat conduction equation in Cartesian, Cylindrical and Spherical coordinates – simplification and forms of the field equation – steady, unsteady and periodic heat transfer – Initial and boundary conditions

One Dimensional Steady State Conduction Heat Transfer: Homogeneous slabs, hollow cylinders and spheres- Composite systems- overall heat transfer coefficient – Electrical analogy – Critical radius of insulation. Variable Thermal conductivity – systems with heat sources or Heat generation-Extended surface (fins) Heat Transfer – Long Fin, Fin with insulated tip and Short Fin, Application to error measurement of Temperature.

UNIT II

One Dimensional Transient Conduction Heat Transfer: Systems with negligible internal resistance – Significance of Biot and Fourier Numbers –Infinite bodies- Chart solutions of transient conduction systems- Concept of Semi-infinite body.

Convective Heat Transfer: Classification of systems based on causation of flow, condition of flow, configuration of flow and medium of flow – Dimensional analysis as a tool for experimental investigation – Buckingham π Theorem and method, application for developing semi – empirical non- dimensional correlation for convection heat transfer – Significance of non-dimensional numbers – Concepts of Continuity, Momentum and Energy Equations

UNIT III

Forced convection: External Flows: Concepts about hydrodynamic and thermal boundary layer and use of empirical correlations for convective heat transfer -Flat plates and Cylinders. Internal Flows: Concepts about Hydrodynamic and Thermal Entry Lengths – Division of internal flow based on this –Use of empirical relations for Horizontal Pipe Flow and annulus flow. Free Convection: Development of Hydrodynamic and thermal boundary layer along a vertical plate - Use of empirical relations for Vertical plates and pipes.

UNIT IV

Heat Transfer with Phase Change: Boiling: – Pool boiling – Regimes – Calculations on Nucleate boiling, Critical Heat flux and Film boiling

Condensation: Film wise and drop wise condensation --Nusselt's Theory of Condensation on a vertical plate - Film condensation on vertical and horizontal cylinders using empirical correlations. **Heat Exchangers:** Classification of heat exchangers - overall heat transfer Coefficient and fouling factor - Concepts of LMTD and NTU methods - Problems using LMTD and NTU

MECH B. TECH. III YEAK NKIAZU KEGULATIONS SYLLABUS

methods.

UNIT V

Radiation Heat Transfer: Emission characteristics and laws of black-body radiation – Irradiation – total and monochromatic quantities – laws of Planck, Wien, Kirchhoff, Lambert, Stefan and Boltzmann– heat exchange between two black bodies – concepts of shape factor – Emissivity – heat exchange between grey bodies – radiation shields – electrical analogy for radiation networks.

Text Book:

1) Heat Transfer by HOLMAN, Tata McGraw-Hill.

2) Heat Transfer by P.K.Nag, TMH.

REFERENCE BOOKS:

1) Fundamentals of Heat Transfer by Incropera& Dewitt, John Wiley.

2) Fundamentals of Engineering, Heat& Mass Transfer by R.C.Sachdeva, NewAge.

3) Heat& Mass Transfer by Amit Pal – Pearson Publishers.

4) Heat Transfer by Ghoshadastidar, Oxford University press.

5) Heat Transfer by a Practical Approach, YunusCengel, Boles, TMH.

6) Engineering Heat and Mass Transfer by Sarit K. Das, DhanpatRai Pub

III B.TECH II SEMESTER

Course Code: DESIGN OF MACHINE MEMBERS-II

Lectu	ire –	Practi	cal:	3-0	Hour	S		In	ternal Mar	rks:	30	
Credi	its			3				Ex	ternal Ma	rks:	70	
Prere	quisi	ites: N	one									
Cour	se Ol	ojectiv	es									
1) To	gain	knowl	edge	abou	t the d	lesign	of be	arings				
2) To	unde	rstand	the c	once	pts in	desig	ning v	arious	engine pa	rts.		
3) To	gain	knowl	edge	to de	sign c	urved	beam	s and	power scre	ws.		
4) To	unde	rstand	powe	er trai	nsmis	sion s	ystem	s and	to design p	ulleys	s and gear drives	8
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CO4	Just	tify por	wer t	ransm	nission	1 syste	ems ar	nd to a	lesign pulle	eys ar	d gear drives.	4
CO5	App	oly the	conc	epts i	n des	igning	vario	us ma	chine tool	eleme	ents.	
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BEARINGS: Classification of bearings- applications, types of journal bearings – lubrication – bearing modulus – full and partial bearings – clearance ratio – heat dissipation of bearings, bearing materials – journal bearing design – ball and roller bearings – static loading of ball & roller bearings, bearing life.

UNIT II

ENGINE PARTS: Connecting Rod: Thrust in connecting rod – stress due to whipping action on connecting rod ends – cranks and crank shafts, strength and proportions of over hung and center cranks – crank pins, crank shafts.

Pistons, forces acting on piston – construction design and proportions of piston, cylinder, cylinder liners,

UNIT III

DESIGN OF CURVED BEAMS: introduction, stresses in curved beams, expression for radius of neutral axis for rectangular, circular, trapezoidal and t-section, design of crane hooks, c –clamps. **DESIGN OF POWER SCREWS:** Design of screw, square ACME, buttress screws, design of nut, compound screw, differential screw, ball screw- possible failures.

UNIT IV

POWER TRANSMISSIONS SYSTEMS, PULLEYS: Transmission of power by belt and rope drives, transmission efficiencies, belts – flat and V types – ropes - pulleys for belt and rope drives, materials, chain drives

SPUR & HELICAL GEAR DRIVES: Spur gears- helical gears – load concentration factor – dynamic load factor, surface compressive strength – bending strength – design analysis of spur gears – estimation of centre distance, module and face width, check for plastic deformation, check for dynamic and wear considerations.

UNIT V

MACHINE TOOL ELEMENTS: Levers and brackets: design of levers – hand levers-foot lever – cranked lever – lever of a lever loaded safety valve- rocker arm straight – angular- design of a crank pin – brackets- hangers- wall boxes.

Wire Ropes: Construction, Designation, Stresses in wire ropes, rope sheaves and drums.

Text Book:

1. Machine Design/ W-Bhandari/TMH Publishers

2. Machine Design/NG Pandya & CS Shaw/ Charotar publishers

REFERENCE BOOKS:

1. Machine Design: An integrated Approach / R.L. Norton / Pearson Education

- 2. Mech. Engg. Design / JE Shigley/Tata McGraw Hill education
- 3. Design of machine elements- spots/Pearson Publications
- 4. Machine Design-Norton/Pearson Publications.

III B.TECH II SEMESTER

Course Code: Introduction to CAD/CAM.

Lecture – Practical: 3-0 Hours

Internal Marks: 30

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COMPUTER GRAPHICS: Raster scan graphics coordinate system, database structure for graphics modeling, transformation of geometry, 3D transformations, mathematics of projections, clipping, hidden surface removal

GEOMETRIC MODELING: Requirements, geometric models, geometric construction models,

MECH B. TECH. III YEAR INRIAZU REGULATIONS SYLLABUS

curve representation methods, surface representation methods, modeling facilities desired. **UNIT II** DRAFTING AND MODELING SYSTEMS: Basic geometric commands, layers, display control commands, editing, dimensioning and solid modeling. PART PROGRAMMING FOR NC MACHINES: NC, NC modes, NC elements, CNC machine tools, structure of CNC machine tools, features of Machining center, turning center, CNC Part Programming: fundamentals, manual part programming methods, Computer Aided Part Programming. Direct Numerical Control UNIT III GROUP TECHNOLOGY: Part family, coding and classification, production flow analysis, types and advantages. Computer aided processes planning - importance, types. FMS: Introduction, Equipment, Tool management systems, Layouts, FMS Control UNIT IV COMPUTER AIDED QUALITY CONTROL: Terminology used in quality control, use of computers in Quality control. Inspection methods- contact and noncontact types, computer aided testing, integration of CAQC with CAD/CAM UNIT V **COMPUTER INTEGRATED MANUFACTURING SYSTEMS:** Types of manufacturing systems, machine tools and related equipment, material handling systems, material requirement planning, computer control systems, human labour in manufacturing systems, CIMS benefits. **Text Book:** 1. CAD/CAM: Principles and Applications: Rao P N, Tata McGraw Hill Higher Education P

- 1. CAD/CAM: Principles and Applications: Rao P N, Tata McGraw Hill Higher Education P Ltd 2002
- 2. CAD/CAM: Groover, Mikell P and Zimmer's Emory W, Prentice Hall India (P) Ltd, 2001
- 3. CAD/CAM/CIM: Radhakrishnan P, New Age International Publishers 1994

REFERENCE BOOKS:

- 1. Mastering CAD / CAM / Ibrahim Zeid / McGraw-Hill
- 2. Principles of Computer Aided Design and Manufacturing / FaridAmirouche / Pearson
- 3. Computer Numerical Control Concepts and programming / Warren S Seames / Thomson learning, Inc

4. Product manufacturing and cost estimation using CAD/CAE/ KuangHua Chang/Elsevier Publishers

5. CAD/CAM Concepts & applications/Alavala/PHI

III B.TECH II SEMESTER

Course Code: AUTOMOBILE ENGINEERING (PROFESSIONAL ELECTIVE-II)

Lecture - Practical:	3-0 Hours	1.11.1	Internal Marks:	30	2111
Credits	3	and the second	External Marks:	70	
Prerequisites: None					
Course Objectives		1 Martines			
1) To understand vario	ous compone	nts of fou	r wheeler automobile.		
2) To gain knowledge	of different p	parts of tra	ansmission system.		
3) To understand the c	_		have -		
				em used in automobiles.	

5) To understand the concepts about engine specifications and service, safety and electronic system used in automobiles.

Course Outcomes Upon successful completion of the course, the student will be able to: **CO1** Illustrate various components of four wheeler automobile. CO2 Apply the knowledge of different parts of transmission system. CO3 Judge about steering and suspension systems. CO4 Justify the braking system and electrical system used in automobiles. CO5 Analyze the concepts about engine specifications and service, safety and electronic system used in automobiles. Contribution of Course Outcomes towards achievement Program of Outcomes (1 - Low, 2- Medium, 3 - High) PO PO PO P P Ρ P P P PO 12 Р P 0 0 0 0 0 0 0 0 9 10 11 2 3 4 5 6 7 8 V V $\sqrt{}$ CO1 V CO2 V V V $\sqrt{}$ V **CO3** V V $\sqrt{}$ **CO4** V V V V

UNIT I

V

V

CO5

V

V

INTRODUCTION: Components of four wheeler automobile – chassis and body – power unit – power transmission – rear wheel drive, front wheel drive, 4 wheel drive – types of automobile engines, engine construction, turbo charging and super charging – engine lubrication, splash and pressure lubrication systems, oil filters, oil pumps – crank case ventilation – engine service, reboring, decarbonisation, Nitriding of crank shaft.

UNIT II

TRANSMISSION SYSTEM: Clutches, principle, types, cone clutch, single plate clutch, multi plate clutch, magnetic and centrifugal clutches, fluid fly wheel – gear boxes, types, sliding mesh, construct mesh, synchro mesh gear boxes, epicyclic gear box, over drive torque converter. propeller shaft – Hotch – Kiss drive, Torque tube drive, universal joint, differential rear axles – types – wheels and tyres and their making.

UNIT III

STEERING SYSTEM: Steering geometry – camber, castor, king pin rake, combined angle toein, centre point steering. types of steering mechanism – Ackerman steering mechanism, Davis steering mechanism, steering gears – types, steering linkages.

SUSPENSION SYSTEM: Objects of suspension systems – rigid axle suspension system, torsion bar, shock absorber, Independent suspension system.

UNIT IV

BRAKING SYSTEM: Mechanical brake system, hydraulic brake system, master cylinder, wheel cylinder tandem master cylinder requirement of brake fluid, pneumatic and vacuum brakes.

MECH B. TECH. III YEAR NKIAZU KEGULATIONS SYLLABUS

MECH BILECH. III YEAR NRIAZU REGULATIONS SYLLABUS

ELECTRICAL SYSTEM: Charging circuit, generator, current – voltage regulator – starting system, Bendix drive mechanism solenoid switch, lighting systems, horn, wiper, fuel gauge – oil pressure gauge, engine temperature indicator etc.

UNIT V

ENGINE SPECIFICATION AND SAFETY SYSTEMS: Introduction- engine specifications with regard to power, speed, torque, no. of cylinders and arrangement, lubrication and cooling etc. **SAFETY:** Introduction, safety systems - seat belt, air bags, bumper, anti-lock brake system (ABS), wind shield, suspension sensors, traction control, mirrors, central locking and electric windows, speed control.

ENGINE SERVICE: Introduction, service details of engine cylinder head, valves and valve mechanism, piston-connecting rod assembly, cylinder block, crank shaft and main bearings, engine reassembly-precautions.

AUTOMOBILE ELECTRONIC SYSTEMS:

Concept of CPU and computer memory used in automobiles, sensors- Pressure sensor, Throttle position sensor, fuel flow sensor, thermistor sensor, oxygen sensor, speed sensors, knock detecting sensor, actuators solenoids and stepper motor, Electronic dash board instruments - Onboard diagnosis system, security and warning system.

Text Book:

1) Automotive Mechanics - Vol. 1 & Vol. 2 / Kirpal Singh/standard publishers

2) Automobile Engineering / William Crouse/TMH Distributors

3) Automobile Engineering/P.S Gill/S.K. Kataria& Sons/New Delhi.

REFERENCE BOOKS:

1) Automotive Engines Theory and Servicing/James D. Halderman and Chase D. Mitchell Jr.,/ Pearson education inc.

2) Automotive Engineering / K Newton, W.Steeds& TK Garrett/SAE

3) Automotive Mechanics: Principles and Practices/ Joseph Heitner/Van Nostrand Reinhold 4.

Automobile Engineering / C Srinivasan/McGraw-Hill.

III B.TECH II SEMESTER

Course Code: SMART MANUFACTURING (PROFESSIONAL ELECTIVE-II)

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Lecture - l	Practical:	3-0 Hours	Internal Ma	arks:	30	
Credits		3	External M	arks:	70	1
Prerequisi	tes: None				21	8
Course Ob	jectives		-		igen (1)	aland A
1).To under	rstand conce	epts of smart	manufacturing.			
2) To gain	knowledge a	about smart m	achines and sensors.	a fire astron		
3) To under	stand the pr	rinciples of Io	T connectivity to indust	ry 4.0.		
4) To acqui	re knowled	ge about digit	al twin and its application	ons and	l machine learning a	nd artificial
intelligence			165	- ELS		
		A State of a second	of metaverse.			1 1
Course Ou	tcomes	244				12
Upon succ	essful comp	letion of the	course, the student wi	ll be at	ole to:	1
CO1 App	ly the basic	concepts of s	mart manufacturing.			
						with the second
CO2 Ana	lyze about s	smart machine	es and sensors.			

MECH B. IECH. III YEAR NKIA20 REGULATIONS SYLLABUS

CO3	Util	lize th	e prin	ciples	s of Ic	T cor	nnect	ivity to	o industr	y 4.0.		
CO4		-			digita e in m				plication	s and machin	ne learning and	
CO5	Der	nonst	rate th	ne bas	ic cor	cepts	ofm	etaver	se.			
Contr (1 – L					se C High)		mes	towa	irds ac	hievement	of Program	Outcomes
	P O 1	P O 2	P 0 3	P O 4	P O 5	P O 6	P 0 7	P 0 8	PO 9	PO 10	PO 11	PO 12
CO1	V	1	V	V			1			_		V
CO2		\checkmark	V	1								V
CO3	\checkmark	V	\checkmark			1						V
CO4	V		\checkmark	1								V
CO5	V	V	V	\checkmark								V
Cana		of Car			feetr		Defi		IT I	ahamataniat	ics of smart mar	

Concepts of Smart Manufacturing: Definition and key characteristics of smart manufacturing, Corporate adaptation processes, manufacturing challenges, challenges vs technologies, Stages in smart manufacturing. Minimizing Six big losses in manufacturing with Industry 4.0, and their benefits

UNIT II

Smart Machines and Smart Sensors: Concept and Functions of a Smart, Machine Salient features and Critical Subsystems of a Smart Machine, Smart sensors; smart sensors ecosystem, need, benefits and applications of sensors in industry, Introduction to IoT, IIoT, and Cyber physical systems, Sensing for Manufacturing Process in IIoT, Block Diagram of an IoT Sensing Device, Sensors in IIoT Applications, Smart Machine Interfaces,

UNIT III

IoT connectivity for Industry 4.0: Industrial communication requirement and its infrastructure, an overview of different types of networks, mesh network in industrial IoT, IoT protocols and the internet, TCP/IP (transmission control protocol/internet protocol) model, IoT connectivity standards: common protocols, application layer protocols, internet/network layer protocols, physical layer IoT protocols, choosing the right IoT connectivity protocol.

UNIT IV

Digital Twin: Introduction, applications of digital twins, impact zones of digital twins in manufacturing (factories/plants and OEMs), advantages of digital twins, basic steps of digital twin technology

Machine Learning (ML) and Artificial Intelligence (AI) in Manufacturing: Introduction, benefits and applications of ML in industries, common approaches of ML; supervised and unsupervised, semi-supervised and reinforced ML.

UNIT V

Metaverse – Basic concepts, AR/VR, Social Metaverse, Industrial Metaverse, How Web 3.0 is changing the Internet, Asset Classes Inside the Metaverse, Land, Coins, Characters/ Avatars, Skins, Utility, Industries Disrupted by the Metaverse, Smart wearables,

Text Book:

1) Stuart Russell and Peter Norvig, Artificial Intelligence: A Modern Approach, 2/e, Pearson

MECH B.TECH. III YEAK NRIAZU REGULATIONS SYEFABUS

Education, 2010.

2) Tom M. Mitchell, Machine Learning, McGraw Hill, 2013.

3) Ethem Alpaydin, Introduction to Machine Learning (Adaptive Computation and Machine Learning), The MIT Press, 2004.

4) AurélienGéron, Hands on Machine Learning with Scikit-Learn and TensorFlow [Concepts, Tools, and Techniques to Build Intelligent Systems], Published by O'Reilly Media, 2017.

5) Artificial Intelligence and Machine Learning, Principles and applications by Vinod Chandra S.S., Anand Hareendran S., PHI.

REFERENCE BOOKS:

1) Elaine Rich, Kevin Knight and Shivashankar B. Nair, Artificial Intelligence, 3/e, McGraw Hill Education, 2008.

2) Dan W. Patterson, Introduction to Artificial Intelligence and Expert Systems, PHI Learning, 2012.

3) MACHINE LEARNING: A practitioner's approach, by Vinod Chandra S.S., Anand Hareendran S., PHI.

4) M.C. Trivedi, A Classical Approach to Artifical Intelligence, Khanna Publishing House, New Delhi, 2018.

5) S. Kaushik, Artificial Intelligence, Cengage Learning India, 2011.

III B.TECH II SEMESTER

Course Code: ADVANCED MECHANICS OF SOLIDS (PROFESSIONAL ELECTIVE-II)

Lectur	re – Practica	I: 3-0 I	Hours		l Iv	ternal Ma	arks:	30		
Credit	S	3			E	ternal M	arks:	70		
Prerec	uisites: Non	e								
Cours	e Objectives									
1) To 1	understand th	e princip	les of fai	lure cri	teria.					
2) To d	letermine the	stresses	and defle	ection i	n unsy	mmetrica	l bendi	ng of b	eams.	
3) To s	ain knowled	ge about	curved b	eam th	eory.			-		
/	inderstand co								Ŧ	
· ·	malyze the co	-								9
	e Outcomes	SHeater But		i						
	successful co	moletion	t of the c	course.	the st	tudent wi	l be at	le to?	1	
CO1	Explain the					rata circ in a	100 40			
	Explain the	-	, or runu	i contes			and the second	÷		
CO2	Determine th	ne stresse	s and def	lection	in un	symmetric	al ben	ding of	beams.	
13					-	and the second s		0		
CÓ3	Apply the ki	nowledge	about cu	irved b	eam tl	ieory.	12		100	
		111.	1		1	12			123	10
CO4	Interpret the	concept	of torsion	1.	-		241		SHERE .	1
CO5	Analyze the	contact s	tresses.						-	
Contri	ibution of	Course	Outco	omes	towa	rds ach	ieveme	ent of	Program	Outcome
(1 - Le	ow, 2- Mediu	ım, 3 – H	ligh)							
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	1 2 3	.4	5 6	.7	8	_				

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						171				10.01
CO1	V	V	\checkmark	V	V					\checkmark
CO2	\checkmark	\checkmark	1	1	1		_			V
CO3	\checkmark	\checkmark	\checkmark	\checkmark	1					\checkmark
CO4	.√		V	V	1					٧.
CO5	V	1	1	1	1					1
							UNI	ГТ		

FAILURE CRITERIA: Modes of failure, Excessive deflections, Yield initiation, fracture, Progressive fracture, High Cycle fatigue for number of cycles N > 106, buckling. Concept of Creep. Application of energy methods: Elastic deflections and statically indeterminate members and structures: Principle of stationary potential energy, Castiglione's theorem on deflections, Castiglione's theorem on deflections for linear load deflection relations, deflections of statically determinate structures.

UNIT II

UNSYMMETRICAL BENDING: Bending stresses in Beams subjected to Non-symmetrical bending; Deflection of straight beams due to non-symmetrical bending.

UNIT III

CURVED BEAM THEORY: Winkler Bach formula for circumferential stress – Limitations – Correction factors –Radial stress in curved beams – closed ring subjected to concentrated and uniform loads-stresses in chain links.

UNIT IV

TORSION: Linear elastic solution; Prandtl elastic membrane (Soap-Film) Analogy; Narrow rectangular cross Section; Hollow thin wall torsion members, Multiply connected Cross Section.

UNIT V

CONTACT STRESSES: Introduction; problem of determining contact stresses; Assumptions on which a solution for contact stresses is based; Expressions for principal stresses; Method of computing contact stresses; Deflection of bodies in point contact; Stresses for two bodies in contact over narrow rectangular area (Line contact), Loads normal to area; Stresses for two bodies in line contact, Normal and Tangent to contact area.

Text Book:

1) Advanced Mechanics of materials by Boresi& Sidebottom-Wiley International.

2) Theory of elasticity by Timoshenko S.P. and Goodlier J.N. McGraw-Hill Publishers 3rdEdition.

3) Advanced Mechanics of Solids, L.S Srinath.

REFERENCE BOOKS:

1. Advanced strength of materials by Den Hortog J.P.

2. Theory of plates - Timoshenko.

3. Strength of materials & Theory of structures (Vol I & II) by B.C Punmia.

4. Strength of materials by Sadhu Singh.

III B.TECH II SEMESTER

Course Code:

MECH B.TECH. III YEAR INKIAZU REGULATIONS SYLLABUS

STATISTICAL QUALITY CONTROL (PROFESSIONAL ELECTIVE-II)

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Cred				3			E	xternal M	arks: 7	0		
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		bjecti										
-								· · ·	•	ring in desi	-	
2) To	acqu	ire kr	owle	dge al	out the	statistic	al proc	cess control	l charts a	nd sampling	g techni	ques.
3) To	anal	yze th	e loss	s funct	ion and	l quality	function	on deployn	nent.			
4) To	expl	ore th	e moo	lels of	reliabi	lity engi	neerin	g.				
5) To	gain	know	ledge	abou	t the co	ncepts c	f comp	olex system	and reli	ability engin	neering	techniques
Cour	se Oi	utcom	ies									
Upon	succ	essfu	l com	pletio	n of th	e cours	e, the s	student wil	ll be able	to:		
CO1	Dis	cuss t	he co	ncepts	s of qua	lity syst	ems ar	nd quality e	ngineerii	ng in design	and pro	ocesses.
CO2	Uti	lize ki	nowle	dge al	bout the	e statisti	cal pro	cess contro	ol charts a	ind samplin	g techni	iques.
001	A	1	4 h = 1	aa £	ation			tion days				
CO3	Ana	aiyze i	une 10	ss 1 01)	cuon a	na duan	y runc	tion deploy	ment.			
CO4	Jud	ge the	e mod	els of	reliabil	ity engi	neering	7				
CO5	_					<u> </u>			tem and a	eliability er	ngineeri	ng
		mique		-94 40							-0	0
Cont		ion		Cours	e Ou	tcomes	tow	ards achi	ievement	t of Pro	gram	Outcome
				1, 3 –]							Brann	outronic
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	0 1	0 2	P O 3	P	P							PO 12
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	0 1 1	0 2 √	P O 3 √	P O	P O	0 0	0					PO 12
	0 1	0 2	P O 3	P O	P O	0 0	0				2	PO 12
CO2	0 1 √	0 2 √	P O 3 √	P O	P O	0 0	0				2	PO 12
CO2	0 1 1	0 2 √	P O 3 √	P O	P O	0 0	0				12	PO 12
CO2 CO3	0 1 √	0 2 √	P O 3 √	P O	P O	0 0	0				2	PO 12
CO2 CO3 CO4	0 1 V V	0 2 √ √	P O 3 √ √	P O	P O	0 0	0				-2	PO 12
CO2 CO3 CO4	0 1 V V	0 2 √ √	P O 3 √ √	P O	P O	0 0	0					PO 12
CO1 CO2 CO3 CO4 CO5	0 1 V V	0 2 √ √	P O 3 √ √	P O	P O	0 0	08	9				PO 12
CO2 CO3 CO4 CO5			P 0 3 √ √ √ √	P 0 4	P 0 5	0 0 6 7 	0 8 	9	10			
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CO2 CO3 CO4 CO5 Quality produ	O 1 √ √ √ √ √ v ty va ction	O 2 V V V V V V U u ent.	P O 3 V V V V V nd er ess –	P O 4	P O 5	Quality	UN Systen UN	9 TIII ns – qualit design – to	10 y engine lerance c	ering in pr lesign, qual	ity cost	lesign and s – quality
CO2 CO3 CO4 CO5 Quality produ	O 1 √ √ √ √ v ty va ction veme	O 2 V V V V V V V V V V V V V V V V V V	P O 3 V V V V V nd en ess –	P O 4	P O 5	O O 6 7	UN system UN harts, (9 IIII Is – qualit design – to IIIII other types	10 y engine lerance c	ering in pr lesign, qual rol charts,	ity cost	lesign' and s – quality capability
CO2 CO3 CO4 CO5 Qualiti produ mpro	O 1 √ √ √ √ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓	O 2 V V V V V V V V V V V V V V V V V V	P O 3 V V V V V V N SS CO	P O 4	P O 5	O O 6 7 7 1 1	UN systen meter UN arts, (ity ind	9 II I Is – qualit design – to IT II other types ex. (SQC t	10 y engine lerance c of cont ables can	ering in pr lesign, qual rol charts, be used in	ity cost process the exa	lesign' and s – quality capability mination)
CO2 CO3 CO4 CO5 Quality produ mpro	O 1 √ √ √ √ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓	O 2 V V V V V V V V V V V V V V V V V V	P O 3 V V V V V V N SS CO	P O 4	P O 5	O O 6 7 7 1 1	UN systen meter UN arts, (ity ind	9 II I Is – qualit design – to IT II other types ex. (SQC t	10 y engine lerance c of cont ables can	ering in pr lesign, qual rol charts,	ity cost process the exa	lesign' and s – quality capability mination)
CO2 CO3 CO4 CO5 Quality produ mpro Statisty proces	O 1 V V V V ty va ction veme tical ss cap	O 2 V V V V V V V V V V V V V V V V V V	P O 3 V V V V V V V V SS – SS co ty ana	P O 4	P O 5	O O 6 7 7 7 9 7 9 1 9 1 9 1 9 1 9 1 9 1 9 1 9 1 9 1 9 1 9 1 9 1 9 1 9 1 10 1 10 1 11 1 12 1 13 1 14 1 15 1 15 1 16 1 16 1 16 1 17 1 18 1 19 1 10 1 10 1 10 1 10 1 10 1 10 1	UN system meter UN harts, (ity ind attribu	9 II I Is – qualit design – to IT II other types ex. (SQC t	10 y engine lerance of ables cam n of sar	ering in pr lesign, qual rol charts, be used in npling plar	ity cost process the exa	lesign' and s – quality capability mination)
CO2 CO3 CO4 CO5 Quality produ mpro Statisty proces	O 1 V V V V ty va ction veme tical ss cap	O 2 V V V V V V V V V V V V V V V V V V	P O 3 V V V V V V V V SS – SS co ty ana	P O 4	P O 5	O O 6 7 7 7 9 7 9 1 9 1 9 1 9 1 9 1 9 1 9 1 9 1 9 1 9 1 9 1 9 1 9 1 9 1 10 1 10 1 11 1 12 1 13 1 14 1 15 1 15 1 16 1 16 1 16 1 17 1 18 1 19 1 10 1 10 1 10 1 10 1 10 1 10 1	UN system meter UN arts, (ity ind attribu design	9 TI I ns – qualit design – to TT II other types fex. (SQC ta ites, design	10 y engine lerance of ables cam n of sar	ering in pr lesign, qual rol charts, be used in npling plar	ity cost process the exa	lesign' and s – quality capability mination)

Online quality control – variable characteristics, attribute characteristics, parameter design. Quality function deployment – house of quality, QFD matrix, total quality management concepts. Quality information systems, quality circles, introduction to ISO 9000 standards. MECH B.IECH. III YEAR NRIAZU REGULATIONS SYLLABUS

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Reliability – Evaluation of design by tests - Hazard Models, Linear, Releigh, Weibull. Failure Data Analysis, reliability prediction based on Weibull distribution, Reliability improvement.

UNIT V

Complex system, reliability, reliability of series, parallel & standby systems & complex systems & reliability prediction and system effectiveness.

Maintainability, availability, economics of reliability engineering, replacement of items, maintenance costing and budgeting, reliability testing.

Text Book:

1. Quality Engineering in Production Systems / G Taguchi /McGraw Hill.

2. Reliability Engineering/ E.Bala Guruswamy/Tata McGraw Hill.

3. Statistical Quality Control: A Modern Introduction/ Montgomery/Wiley.

REFERENCE BOOKS:

1) Jurans Quality planning & Analysis/ Frank.M.Gryna Jr. / McGraw Hill.

2) Taguchi Techniques for Quality Engineering/ Philipposs/ McGraw Hill.

3) Reliability Engineering / LS Srinath / Affiliated East West Pvt. Ltd.

4) Statistical Process Control/ Eugene Grant, Richard Leavenworth / McGraw Hill.

5) Optimization & Variation Reduction in Quality / W.A. Taylor / Tata McGraw Hill.

6) Quality and Performance Excellence/ James R Evans/ Cengage learning

III B.TECH II SEMESTER

Course Code: INDUSTRIAL HYDRAULICS AND PNEUMATICS (PROFESSIONAL ELECTIVE-II)

Lecture - Practical:	3-0 Hours	Internal Marks:	30
Credits	3	External Marks:	70
Prerequisites: None			
Course Objectives			
1) To understand the p	rinciples and laws of flu	id power.	
2) To explore the hydr	aulic and pneumatic eler	ments and their acce	essories.
3) To analyze and des	ign the hydraulic and pno	eumatic circuits.	
4) To understand and	apply the principles of hy	ydraulic and pneuma	atic devices.
5) To gain knowledge	about installation, maint	tenance and trouble	shooting of hydraulic and
pneumatic systems.			
Course Outcomes			
Upon successful com	pletion of the course, th	ne student will be a	ble to:
CO1 Discuss the pri	nciples and laws of fluid	power.	
CO2 Judge the hydra	aulic and pneumatic elen	nents and their acces	ssories.
CO3 Analyze and do	esign the hydraulic and p	neumatic circuits.	Ser. 1
CO4 Apply the prine	ciples of hydraulic and p	neumatic devices.	
CO5 Analyze know pneumatic syst	-	maintenance and t	rouble shooting of hydraulic and
Contribution of ((1 – Low, 2- Medium		owards achievem	ent of Program Outcomes

MECH B.IECH. III YEAK NRIAZU REGULATIONS SYLLABUS

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	P 0 1	P 0 2	P 0 3	P 0 4	P 0 5	P 0 6	P 0 7	P 0 8	PO 9	PO 10	РО 11	PO 12
CO1	\checkmark	V	V									V
CO2		V	\checkmark									V
CO3	V	V	V									V
CO4	V	1	1									V
CO5	V	V	V				1					V
								UN				

Fluid Power: Power transmission modes, hydraulic systems, pneumatic systems, laws governing fluid flow: Pascal's law, continuity equation, Bernoulli's theorem, Boyle's, Charles', Gay-Lussec' laws, flow through pipes - types, pressure drop in pipes, Working fluids used in hydraulic and pneumatic systems- types, ISO/BIS standards and designations, properties.

UNIT II

Hydraulic and Pneumatic Elements: Hydraulic pipes-Types, standards, designation methods and specifications, pressure ratings, applications and selection criteria, pumping theory, Hydraulic Pumps - types, construction, working principle, applications, selection criteria and comparison, hydraulic Actuators, Control valves, Accessories - their types, construction and working, pneumatic Pipes - materials, designations, standards, properties and piping layout, air compressors, Air receivers, air dryers, Air Filters, Regulators, Lubricators (FRL unit): their types, construction, working, specifications and selection criteria of following air preparation and conditioning elements, pneumatic Actuators and Control valves - types, construction, working, materials and specifications

UNIT III

Hydraulic and Pneumatic Circuits: ISO symbols used in hydraulic and pneumatic circuit, basic Hydraulic Circuits – types (such as intensifier, regenerative, synchronizing, sequencing, speed control, safety), circuit diagram, components, working and applications, basic Pneumatic Circuits – types (such as speed control, two step feed control, automatic cylinder reciprocation, time delay, quick exhaust), circuit diagram, components, working and applications, pneumatic Logic circuit design - classic method, cascade method, step counter method, Karnaugh- Veitch maps and combinational circuit design.

UNIT IV

Hydraulic and Pneumatic Devices: Hydraulic and Pneumatic devices – Concept and applications, construction, working principle, major elements, performance variables of Automotive hydraulic brake, Industrial Fork lift, Hydraulic jack, Hydraulic press, Automotive power steering, Automotive pneumatic brake, Automotive air suspension, Pneumatic drill, Pneumatic gun.

UNIT V

Installation, Maintenance and Trouble-Shooting: Installation of hydraulic and pneumatic system causes and remedies for common troubles arising in hydraulic elements, maintenance of hydraulic systems, causes and remedies for troubles arising in pneumatic elements, maintenance of pneumatic systems.

18.62

MECH B.IECH. III YEAK NKIAZU KEGULAHUNS SYLLABUS

Text Book:

1) Majumdar, S.R. Oil Hydraulic Systems Tata McGraw-Hill Publication, New Delhi, 3/e, 2013.

2) Majumdar, S.R. Pneumatic Systems Tata McGraw-Hill Publication, New Delhi, 3/e, 2013. **REFERENCE BOOKS:**

1) Srinivasan, R. Hydraulic and Pneumatic Controls Vijay Nicole Imprints Private, New Delhi, Limited, 2/e, 2008.

2) Jagadeesha, T. Fluid Power Generation, Transmission and Control Universities Press (India) Private Limited, New Delhi, 1/e, 2014.

3) Jagadeesha, T. Pneumatics Concepts, Design and Applications Universities Press (India) Private Limited, New Delhi, 1/e, 2014.

4) Parr, Andrew Hydraulic and Pneumatics, A Technician's and Engineer's Guide, Jaico Publishing House, New Delhi, 2/e, 2013.

5) Shanmuga Sundaram, K. Hydraulic and Pneumatics Controls - Understanding Made Easy S. Chand Company Ltd., New Delhi, 1/e, 2006.

III B.TECH II SEMESTER

Course Code: INDUSTRIAL ROBOTICS (OPEN ELECTIVE-II)

Lectu	re – P	ractica	al:	3-0 H	ours				ernal arks:	30		
Credit	ts			3		1			ternal arks:	70		
Prerec	quisit	es: Noi	10									
Cours	e Obj	ectives	\$									
1) To ι	inder	stand th	ne basic c	oncept	s and con	1ponent	s of indu	ustrial ro	botics ar	d auton	nation.	
2) To a	cquir	e know	ledge ab	out rob	ot actuato	ors and	feedbacl	c compo	nents.			
3) To a	nalyz	the n	notion of	robot a	and manip	ulator l	kinemati	cs.				
4) To I	know	the ger	neral cons	siderati	ons of pat	th descr	iption a	nd gener	ation.			
5) To §	gain k	nowled	lge about	t the im	age proce	essing, 1	nachine	vision a	nd robot	ic applic	cations.	
Cours	e Out	comes								ī	-	
Upon	succe	ssful c	ompletio	n of th	e course,	the stu	ident wi	ll be ab	le to:			
COL	Exp	lain the	e basic co	oncepts	and comj	ponents	of indus	strial rob	otics and	l automa	ation.	
CO2	Judg	ge the l	cnowledg	e abou	t robot ac	tuators	and feed	back co	mponent	s.	and the second	-
*CO3	Ana	lyze th	e motion	of rob	ot and ma	nipulat	or kinem	atics.	in			- Sector
CO4	Ana	lyze th	e genera	consid	lerations of	of path	descripti	on and	generatio	n.	1451.	
CO5					e image j						pplicatio	ns.
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MECH B, IECH, III YEAK INKIAZO REGULATIONS SYLLABUS

CO3		3	2	1					
CO4		2	3						1
CO5	2			3				1	
					UNIT I				
INTRO	DDUC	TION	: Automatio	n and Roboti	ics, CAD/CA	M and Rob	otics – An ov	verview of l	Robotics
					ion by coordi				
				INDUCTO					oluma

COMPONENTS OF THE INDUSTRIAL ROBOTICS: Robot anatomy, work volume, components, number of degrees of freedom - robot drive systems, functions, line diagram representation of robot arms, common types of arms --requirements and challenges of end effectors, determination of the end effectors.

UNIT II

ROBOT ACTUATORS AND FEEDBACK COMPONENTS: Actuators: Pneumatic, Hydraulic actuators, electric& stepper motors. Comparison of Electric, Hydraulic and Pneumatic types of actuation devices.

Feedback components: position sensors-potentiometers, resolvers, encoders-Velocity sensors.

UNIT III

MOTION ANALYSIS: Homogeneous transformations as applicable to rotation and translation – problems.

MANIPULATOR KINEMATICS: Specifications of matrices, D-H notation joint coordinates and world coordinates Forward and inverse kinematics-problems.

UNIT IV

GENERAL CONSIDERATIONS IN PATH DESCRIPTION AND GENERATION: Trajectory planning and avoidance of obstacles, path planning, Skew motion, joint integrated motion-straight line motion-Robot programming, languages and software packages-description of paths with a robot programming language.

UNIT V

IMAGE PROCESSING AND MACHINE VISION: Introduction to Machine Vision, Sensing and Digitizing function in Machine Vision, Training and Vision System, Robotic Applications.

Text Book:

1) Industrial Robotics/GrooverMP/Pearson Edu.

2) Robotics and Control /MittalR K & Nagrathi J /TMH.

REFERENCE BOOKS:

1) Robotics/Fu KS/ McGrawHill.

2) Robotic Engineering /Richard D. Klafter, PrenticeHal.

3) Robot Analysis and Control/ H. Asada and J.J.E. Slotine/BSP Books Pvt.Ltd.

4) Introduction to Robotics/John JCraig/Pearson Edu.

III B.TECH II SEMESTER

Course Code: ESSENTIALS OF MECHANICAL ENGINEERING (OPEN ELECTIVE-II)

Lecture - Practical:	3-0 Hours	Internal Marks:	30	
Credits	3	External Marks:	70	
Prerequisites: None	-2	- years wide		
Course Objectives				

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1) To understand the concepts about stresses and strains. 2) To gain knowledge about the components of transmission systems. 3) To acquire knowledge about project management techniques. 4) To gain knowledge about manufacturing processes and materials. 5) To understand the concepts of boilers, steam power plant, petrol and diesel engines. **Course Outcomes** Upon successful completion of the course, the student will be able to: Discuss the concepts about stresses and strains. **CO1** CO₂ Justify about the components of transmission systems. CO3 Analyze Problems related to project management techniques. CO4 Utilize knowledge about manufacturing processes and materials. CO5 | Explain the concepts of boilers, steam power plant, petrol and diesel engines. Contribution of Course Outcomes towards achievement of Program Outcomes (1 - Low, 2- Medium, 3 - High) Ρ P P P Ρ Ρ P PO PO PO PO 12 P 0 0 0 0 0 0 0 Ο 9 10 11 1 2 3 4 5 6 7 8 CO1 V V V CO2 V V V **CO3** V V V **CO4** V N V V CO5 V $\sqrt{}$ UNIT I STRESSES AND STRAINS: Types of stresses and strains, elasticity, plasticity, Hooke's law, stress-strain diagrams, modules of elasticity, Poisson's ratio, linear and volumetric strain, compound bars and temperature stresses. Types of supports - loads - Shear force and bending moment for cantilever and simply supported beams. UNIT II TRANSMISSION SYSTEMS: Belts - Ropes and chain: belt and rope drives, velocity ratio, slip, length of belt, open belt and cross belt drives, ratio of friction tensions, power transmitted by belts. Gears- Nomenclature, classification, Gear Trains- velocity ratio, classification. UNIT PROJECT MANAGEMENT: CPM, PERT, JIT, MRP, ERP, Work Study, Time study and sampling. **UNIT IV** MANUFACTURING PROCESSES: Introduction to metal casting, forming, welding and machining processes. Working of lathe, shaper, milling machines, CNC machines. Introduction to materials- metals- ferrous, non-ferrous and non-metals. UNIT V STEAM BOILERS: Introduction to boilers, working Babcock and Willcox and Cochran boilers. STEAM POWER PLANT: Plant layout, working of different circuits. Internal combustion Engines: classification of IC engines, basic engine components and nomenclature, working principle of engines, Four strokes and two stroke petrol and diesel engines,

MECH B.IECH. III YEAR INKIAZU REGULATIONS SYLLABUS

comparison of CI and SI engines, comparison of four stroke and two stroke engines.

Text Book:

1) Strength of Materials and Mechanics of Structures, B.C.Punmia, Standard Publications and distributions, 9 th Edition, 1991.

2) Thermal Engineering, Ballaney, P.L., Khanna Publishers, 2003.

3) Elements of Mechanical Engineering, A.R.Asrani, S.M.Bhatt and P.K.Shah, B.S. Pub. **REFERENCE BOOKS:**

1) Elements of Mechanical Engineering, M.L.Mathur, F.S.Metha& R.P.Tiwari Jain Brothers Publ., 2009.

2) Theory of Machines, S.S. Rattan, Tata McGraw Hill., 2004 & 2009.

III B.TECH II SEMESTER

Course Code: ADVANCED MATERIALS (OPEN ELECTIVE-II)

Lectu	re –	Pract	tical:	3-0	Hour	S		In	ternal	Marks:	30				
Credi	its			3				Ex	ternal	Marks:	70				
Prere	quisi	ites: I	None												
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4) To	unde	rstan	d the b	oasics	of sh	ape n	emor	y alloy	s and i	functiona	lly grad	led m	aterials.		
5) To	gain	know	ledge	abou	t the r	anon	nateria	ls and	their a	applicatio	ns.				
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MECH B. TECH. III YEAR INKIAZU REGULATIONS SYLLABUS

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UNIT I
<b>METALS &amp; ALLOYS:</b> Metallic materials- super alloys, Aluminium, Magnesium, titanium and Nickel based alloys and inter-metallics, Materials for cryogenic application, Materials for space environment, Evaluation of materials for extreme environment, Introduction to metallic foams.
UNIT II
<b>POLYMERS:</b> Natural Polymers-Synthetic polymers-Chemical & Physical structure, properties- glass-transitiontemperature-Thermosets-Thermoplastics- characteristics & applications of polymers-Elastomers- Processing of plastics. <b>CERAMICS:</b> Applications - characteristics- classification-Processing of ceramics- Powder preparations- consolidation- hot compaction-drying- sintering-finishing of ceramics-Areas of application.
UNIT III
<b>COMPOSITE MATERIALS</b> : Introduction, classification: polymer matrix composites, metal matrix composites, ceramic matrix composites, carbon–carbon composites, fiber- reinforced composites and nature-made composites, and applications <b>REINFORCEMENTS</b> : Fibers- glass, silica, Kevlar, carbon, boron, silicon carbide, and borncarbide fibers.
UNIT IV
SHAPE MEMORY ALLOYS: Introduction-shape memory effect-classification of shape memory alloys-composition-properties and applications of shape memory alloys. FUNCTIONALLY GRADED MATERIALS: Types of functionally graded materials- classification different systems-preparation-properties and applications of functionally graded materials.
UNIT V
NANO MATERIALS: Introduction-properties at nano scales-advantages & disadvantages applications in comparison with bulk materials (nano – structure, wires, tubes, composites). state of art nano advanced- topic delivered by student.
<ul> <li>Text Book:</li> <li>1) Nano material /A.K. Bandyopadyay/New age Publishers.</li> <li>2) Material science and Technology: A comprehensive treatment/Robert W.Cahn, /VCH.</li> <li>3) Engineering Mechanics of Composite Materials / Isaac and M Daniel/Oxford University Press.</li> <li>REFERENCE BOOKS:</li> </ul>
<ol> <li>Mechanics of Composite Materials / R. M. Jones/ Mc Graw Hill Company, New York, 1975.</li> <li>Analysis of Laminated Composite Structures / L. R. Calcote/Van Nostrand Rainfold, NY 1969.</li> <li>Analysis and performance of fibre Composites /B. D. Agarwal and L. J. Broutman /Wiley-</li> <li>Interscience, New York, 1980.</li> <li>Mechanics of Composite Materials - Second Edition (Mechanical Engineering) /Autar K.Kaw /CRC Press.</li> </ol>
III B.TECH II SEMESTER
Course Code: INTRODUCTION TO AUTOMOBILE ENGINEERING

(OPEN ELECTIVE-II)

Lecture – Practical:	3-0 Hours	Internal Marks:	30	
Credits	3	External Marks:	70	age of all o

MECH B.TECH. III YEAK NKIAZU REGULATIONS SYLLABUS

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engino pressu TRAI plate constr shaft	NSM clutcl ruct n – Hc	h, ma nesh, otch	gnetic synch Kiss	and ro me drive	centri sh gea	fugal ar boz que (	clute kes, e	hes, f picycl	luid fly ic gear b	wheel – gea oox; over driv	r boxes, types, s /e torque conver	sliding mes ter, propell

STEERING SYSTEM: Steering geometry – camber, 'castor, king pin rake,' combined angle toein, centre point steering. types of steering mechanism – Ackerman steering mechanism, Davis steering mechanism, steering gears – types, steering linkages.

SUSPENSION SYSTEM: Objects of suspension systems – rigid axle suspension system, torsion bar, shock absorber, independent suspension system.

UNIT IV

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## MECH B.IECH. III YEAR NKIAZU REGULATIONS SYLLABUS

**BRAKING SYSTEM:** Mechanical brake system, hydraulic brake system, master cylinder, wheel cylinder tandem master cylinder requirement of brake fluid, pneumatic and vacuum brakes. **ELECTRICAL SYSTEM:** Charging circuit, generator, current – voltage regulator – starting system, bendix drive mechanism solenoid switch, lighting systems, horn, wiper, fuel gauge – oil pressure gauge, engine temperature indicator etc.

#### UNIT V

ENGINE SPECIFICATION AND SAFETY SYSTEMS: Introduction- engine specifications with regard to power, speed, torque, no. of cylinders and arrangement, lubrication and cooling etc. SAFETY: Introduction, safety systems - seat belt, air bags, bumper, anti-lock brake system (ABS), wind shield, suspension sensors, traction control, mirrors, central locking and electric windows, speed control.

#### **Text Book:**

1) Automotive Mechanics - Vol. 1 & Vol. 2 / Kirpal Singh/standard publishers

2) Automobile Engineering / William Crouse/TMH Distributors

3) Automobile Engineering/P.S Gill/S.K. Kataria& Sons/New Delhi.

#### **REFERENCE BOOKS:**

1) Automotive Engines Theory and Servicing/James D. Halderman and Chase D. Mitchell Jr.,/ Pearson education inc.

2) Automotive Engineering / K Newton, W.Steeds& TK Garrett/SAE

3) Automotive Mechanics: Principles and Practices/ Joseph Heitner/Van Nostrand Reinhold 4.

Automobile Engineering / C Srinivasan/McGraw-Hill.

## **III B.TECH II SEMESTER**

## Course Code: HEAT TRANSFER LAB

Labs / Instructions Hours/Week	3	Internal Marks:	15
Credits:	1.5	External Marks:	35
Prerequisites: Knowle	dge on vernier callipers, Screw (	guage, common balance	
Course Objectives:			
1) To determine the liea	t transfer rate and coefficient.		
2) To determine the the	rmal conductivity, efficiency and	effectiveness.	
3) To determine the em	issivity and Stefan-Boltzman cons	tant.	
4) To determine critical	heat flux and investigate Lambert	's cosine law.	
5) To experiment with V	Virtual labs and analyze conductio	n, HT coefficient.	
6) To experiment with	Virtual labs and investigate Lambe	ert's laws.	- Soli
<b>Course Outcomes:</b>			
CO1 Determine the h	eat transfer rate and coefficient.	A State of the second	- Statis
CO2 Demonstrate the	thermal conductivity, efficiency a	and effectiveness.	
CO3 Determine the e	missivity and Stefan-Boltzman co	nstant.	
CO4 Identify critical	heat flux and investigate Lambert	's cosine law.	
CO5 Experiment with	Nirtual labs and analyse conduct	ion, HT coefficient.	
CO6 Build the knowl	edge with Virtual labs and investi	gate Lambert's laws.	-
<b>Contribution of Cours</b>	e Outcomes towards achievement	nt of Program Outcomes	(1 – Low, 2-
Medium, 3 – High)			

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	<b>PO</b> 1	<b>PO</b> 2	<b>PO</b> 3	<b>PO</b> 4	<b>PO</b> 5	<b>PO</b> 6	<b>PO</b> 7	<b>PO</b> 8	PO 9	<b>PO</b> 10	PO 11	PO 12
CO1	V	$\checkmark$	V									
CO2	V	$\checkmark$										
CO3	1	1	1									
CO4	1	1	V									
CO5	V	V	$\checkmark$						· · · · · · · · · · · · · · · · · · ·			
CO6	V											

1. Determination of overall heat transfer co-efficient of a composite slab

2. Determination of heat transfer rate through a lagged pipe.

3. Determination of heat transfer rate through a concentric sphere

4. Determination of thermal conductivity of a metal rod.

5. Determination of efficiency of a pin-fin

6. Determination of heat transfer coefficient in natural and forced convection

7. Determination of effectiveness of parallel and counter flow heat exchangers.

8. Determination of emissivity of a given surface.

9. Determination of Stefan-Boltzmann constant.

10. Determination of heat transfer rate in drop and film wise condensation.

11. Determination of critical heat flux.

12. Determination of Thermal conductivity of liquids and gases.

13. Investigation of Lambert's cosine law.

PART-B

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Virtual labs (https://mfts-iitg.vlabs.ac.in/) on

1) Conduction Analysis of a Single Material Slab

2) Conduction Analysis of a Single Material Sphere

3) Conduction Analysis of a Single Material Cylinder

4) Conduction Analysis of a Double Material Slab

5) Conduction Analysis of a Double Material Sphere

6) Conduction Analysis of Double Material Cylinder

7) To determine the overall heat transfer coefficient (U) in the (i) parallel flow heat exchanger and (ii) Counter flow heat exchanger

8) To investigate the Lambert's distance law.

9) To investigate the Lambert's direction law (cosine law).

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Note: Virtual labs are only for learning purpose, and are not for external examination.

**TEXT BOOKS:** 

**REFERENCE BOOKS:** 

MECH B.TECH. III YEAR NRIAZU REGULATIONS SYLLABUS

## **III B.TECH II SEMESTER**

## Course Code: CAE & CAM LAB

	/ Instru s/Week		3						Intern	al Marl	ks:	15	
Credi	ts:		1.	5					Extern	al Mar	ks:	35	
Prere	quisites	s: Know	ledge	on veri	nier cal	lipers,	Screw §	guage, (	commo	n balar	ice		
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		ient wit						ess, def	lection,	natural	freque	mcies,	
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CO2	V	V	V				1						
CO3	V	V	V										
CO4	V	$\checkmark$	V	1				1					
CO5	V	V	V										
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List of Experiments

1. Experiments to determine stresses, deflection, natural frequencies, harmonic analysis, HT analysis and buckling analysis (Any three experiments to be done).

a) Determination of deflection and stresses in 2D and 3D trusses and beams.

b) Determination of principal and Von-mises stresses in plane stress, plane strain and axisymmetric components.

c) Determination of stresses in 3D and shell structures (at least one example in each case)

d) Estimation of natural frequencies and mode shapes, harmonic response of 2D beam.

e) Steady state heat transfer analysis of plane and axisymmetric components.

f) Buckling analysis

MECH B. TECH. III YEAK NKIA20 KEGULATIONS SYLLABUS

2. Study of CNC part programming fundamentals and write part programmes for simple components on CNC lathe and Mill and Study of RP machine. (Any three experiments to be done).

A. CNC part programming for turned components using FANUC Controller

(i) Plain turning and facing

(ii) Step Turning Operation

(iii) Taper turning

B. CNC programming for milled components using FANUC Controller

(i) circular interpolation

(ii) End milling

(iii) Pocket milling

3. Automated CNC Tool path and G-Code generation using CAM packages.

4. Study and demonstration of RP machine-creation of simple parts.

5. Virtual 3D Printing Simulation lab using Vlabs.

https://3dp-dei.vlabs.ac.in/List%20of%20experiments.html

**TEXT BOOKS:** 

**REFERENCE BOOKS:** 

#### **III B.TECH II SEMESTER**

## Course Code: MEASUREMENTS & METROLOGY LAB

	Labs /	Instructions	3	Internal Marks:	15
	Hours	/Week		Internal wlarks:	
	Credit	ts:	1.5	<b>External Marks:</b>	35
	Preree	uisites: Knowled	ge on vernier callipers, Screw guag	e, common balance	
		e Objectives:			i
	and ter	nperature detector	libration experiments with different g		mocouple
No the work	gauges		libration experiments with vernier ca	lipers, micrometer, heig	ht and dial
4	4) To a	analyze various ma	chine tools for their alignment.	2 mil	
	5) To 1	measure angular ar	d taper measurements, straightness, s	surface roughness.	
12 IL	Cours	e Outcomes:		-51	6 83
	CO1		Calibration experiments with differen temperature detector.	t gauges, transducers,	
1	CO2	Illustrate the calib	pration experiments with rotameter, s	eismic apparatus.	
	CO3	Demonstrate the	calibration experiments with vernier	calipers, micrometer, he	ight and
		dial gauges.			
-	CO4	Analyze various	nachine tools for their alignment.	1	
	CO5	Measure angular	and taper measurements, straightness	, surface roughness.	

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	PO	PO	PO 3	PO	PO	PO	PO 7	PO	PO	<b>PO</b>	PO 11	PO 12
CO1		2 √	√	4	5	6	/	8	9	10	11	12
CO2	1	1	V									
CO3	$\checkmark$		V									
CO4	V	1	V									
CO5	V		V									
CO6	V	1	1									

## List of Experiments

#### Note: At least 8 experiments from each lab are to be conducted MEASUREMENTS LABORATORY

- 1. Calibration of pressure gauge.
- 2. Calibration of transducer for temperature measurement.
- 3. Study and calibration of LVDT transducer for displacement measurement.
- 4. Calibration of strain gauge.
- 5. Calibration of thermocouple.
- 6. Calibration of capacitive transducer.
- 7. Study and calibration of photo and magnetic speed pickups.
- 8. Calibration of resistance temperature detector.
- 9. Study and calibration of a rotameter.

10. Study and use of a seismic pickup for the measurement of vibration amplitude of an engine bed at various loads.

#### **METROLOGY LABORATORY**

1. Calibration of vernier calipers, micrometer, vernier height gauge and dial gauges.

2. Measurement of bores by internal micrometers and dial bore indicators.

3. Use of gear tooth vernier caliper for tooth thickness inspection and flange micrometer for checking the chordal thickness of spur gear.

- 4. Machine tool alignment test on the lathe.
- 5. Machine tool alignment test on drilling machine.
- 6. Machine tool alignment test on milling machine.
- 7. Angle and taper-measurements with bevel protractor, Sine bar, rollers and balls.
- 8. Use of spirit level in finding the straightness of a bed and flatness of a surface.
- 9. Thread inspection with two wire/ three wire method & tool makers microscope.
- 10. Surface roughness measurement with roughness measuring instrument.

**TEXT BOOKS:** 

1.Department manual

## **REFERENCE BOOKS:**



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# DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

## DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING COURSE STRUCTURE FOR THIRD YEAR B.TECH PROGRAMME III YEAR I SEMESTER

2022 - 22

SI No		Title of the Course	S	chem (Perio	e of I ods Po	nstruction er Week)	n Exa	Schem aminati Mark	on (Max	No. of Credit
			L	T	' P	Total	CIA	SEA	Total	Crean
1	PC 20A3104401	Linear and Digital Integrated Circuits	1 3	-	-	3	30	70	100	3
2	PC 20A310440 2	Antennas and Wave Propagation	3	•	-	3	30	70	100	3
3	PC 20A310440 3	Digital Communications	3	-		3	30	70	100	3
4	OE	Open Elective	3	-		3	30	70	100	3
5	PE 20A3104511	i) Computer architecture and Organization	3	-	-	3	30	70	100	3
	PE 20A3104512	ii) Biomedical Engineering								
	PE 20A3104513	iii) Electromagnetic Interference and Electromagnetic Compatibility								
6	PC LAB 20A3104491	Linear and Digital Integrated Circuits Lab	-	-	3	3	15	35	50	1.5
7	PC LAB 20A3104492	Digital Communications Lab	-	-	3	3	15	35	50	1.5
	SC* 20A3104991	Internet of Things	1	-	2	3	-	50	50	2
- 10	MC 20A3100803	Intellectual Property Rights and Patents	-	-	2	3	30	70	100	0
(n	nandatory)af evaluated d	ernship two months ter second year (to be uring V semester) 0A3104791	0	0	0	0	15	35	50	1.5
		Total	16	-	10	27 .	255	595	850	21. 5

Head, EVE Department NRI Institute of Technology POTHAVABAPPADI (VIII)



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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

	II Year - I Semester Skill Course (SC)		LTPC
		INTERNET (	OF THINGS 1 0 2 2
Teed			
Cred	ure – Practical:	1-2 Hours	Internal Marks: 15
		Votoma Mini	
Coui	rse Objectives:	ystems, Microcontrollers,	External Marks: 35 , Operating Systems, Programming.
•		Objects and IoT architect	
•	To introduce the conc	ent of M2M (machine to	ure.
• }	To acquaint with the y	various security concepts i	machine) with necessary protocols.
•	To build simple IOT s	ystem using Arduino and	in loT architecture.
•	To understand data and	alytics and cloud in the co	Raspberry PI platform.
Cour	se Outcomes:	arylics and cloud in the co	ontext of IOT.
COI	Summarize on the t	of the course, the stude	nt will be able to:
	Things with the hole	erm internet of things' in	different contexts and to learn about Internet of
CO2		vor radunto and Masoben	IV P1
CO3	Underste 14	alyze Software defined ne	etworks.
·····.	Understand the comm	nunication between micro	ocontroller and pc using serial communication.
CO4	Analyze various prot	ocols for IoT.	
CO5	Acquire knowledge	to interface sensors and	actuator with microcontroller based Arduino
	*		
<b>CO</b> 6	Apply data analytics	and use cloud offerings	related to design and develop a solution for a
	given application using	ng APIs and test for error	s in the application
		Course Content(	Syllahus)
		TINTER T	
rodu	ction to IoT: Introdu	ction to IoT, Architectu	ural Overview, Design principles and needed
	· • • • • • • • • • • • • • • • • • • •	aspects in IoT, Elemen	ts of IoT Hardware Components - Computing
duino,	Raspberry Pi.		Italanare Components- Computing-
-	annan an a		
T and	M2M: Software doffer	<u>UNIT II</u>	
NFV	for IOT Basics of IC	ed networks, Network Fu	nction Virtualization, Difference between SDN
TOPE	/	of system management	with NETCONF, YANG-NETCONF, YANG,
	~~~ .		
-	annan Mary II.	UNIT III	

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IoT Application Development: Communication, IoT Applications, Sensing, Actuation, I/O interfaces. Software Components- Programming API's (using Python/Node.js/Arduino) for Communication Protocols-MQTT, ZigBee, CoAP, UDP, TCP, Bluetooth overview, Bluetooth Key Versions, Bluetooth Low Energy (BLE) Protocol, Bluetooth, Low Energy Architecture, PSoC4 BLE architecture and Component Overview.

UNIT IV

BUILDING IOT APPLICATIONS: Introduction to Arduino IDE - writing code in sketch, compiling-debugging, uploading the file to Arduino board, role of serial monitor. Embedded 'C' Language basics. Interfacing sensors - The working of digital versus analog pins in Arduino platform, interfacing LED, Button, Sensors-DHT, LDR, MQ135 interfacing HC-05(Bluctooth module) Control/handle 220v AC supply - interfacing relay module.

UNIT V

Cloud Analytics for IoT Application: Introduction to cloud computing, Difference between Cloud Computing and Fog Computing: The Next Evolution of Cloud Computing, Role of Cloud Computing in IoT, Connecting IoT to cloud, Cloud Storage for IoT Challenge in integration of IoT with Cloud.

IoT Case Studies: IoT case studies and mini projects based on Industrial automation, Transportation, Agriculture, Healthcare, Home Automation.

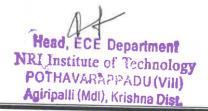
TEXT BOOKS:

- Raj Kamal, "Internet of Things: Architecture and Design Principles", 1st Edition, McGraw 1. HillEducation, 2017.
- The Definitive Guide to the ARM Cortex-M0 byJosephYiu,2011 2.
- Vijay Madisetti, Arshdeep Bahga, Internet of Things, "A Hands on Approach", 3. University Press, 2015.

REFERENCES:

Cypress Semiconductor/PSoC4BLE (Bluetooth Low Energy)Product Training Modules.

- 1. Pethuru Raj and AnupamaC.Raman, "The Internet of Things: EnablingTechnologies, Platforms, and Use Cases", CRC Press,2017.
- 2. Macro Schwartz, "Internet of Things with Arduino", Open Home Automation





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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING COURSE STRUCTURE FOR THIRD YEAR B.TECH PROGRAMME III YEAR II SEMESTER

Sl. No		Title of the Course	Sc (,	ehemo Perio	e of In ds Pe	struction r Week)	Exa	Schem minati Mark	on (Max	No. of
				Т	P	Total	CIA	SEA	Total	Credits
1	PC 20A3204401	Microprocessors and Microcontrollers	3	-	-	3	30	70	100	3
2	PC 20A3204402	Digital Signal Processing	3	-	-	3	30	70	100	3
3	PC 20A3204403	VLSI Design	3	-	-	3	30	70	100	3
4	PE 20A3204511	i) Optical Communicati ons	3	-	-	3	30	70	100	3
	PE 20A3204512	ii) Embedded Systems								
	PE 20A3204512	iii) Radar Systems								
5	OE	Open Elective	3	-	-	3	30	70	100	
6	PC LAB 20A3204491	VLSI Lab	-		3	3	15	35	50	3
7	PC LAB 20A3204492	Microprocessors and Microcontrollers Lab	-	-	3	3	15	35	50	1.5
8	PC LAB 20A3204493	Digital Signal Processing Lab	-	-	3	3	30	70	100	1.5
9	SC* 20A3204991	Sensors and Instrumentation	2	-	-	2	-	50	50	2
10	MC 20A3200803	Professional Ethics and Human Values	2	-	-	2	30	70	100	0
ŗ		Total Courses(the hours	19	-	9	28	240	630	900	21. 5
d	istribution can	be 3-0-2 or 3-1-0)	4	-	-	4	30	70	100	4





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III Y	'ear -	II	Semester
Skill	Cou	rse	(SC)

L T P C 1 0 2 2

SENSORS AND INSTRUMENTATION

(Skill Course)

Lecture-Practical:	1-2	Internal Marks: 15
Credits:	2	External Marks: 35
ter was an and the state of the		

Prerequisites: Basic electrical and electronics engineering, basics of measuring systems and method of measurement.

Course Objectives:

- To make students familiar with the constructions and working principle of different types of sensors and transducers.
- To make students aware about the measuring instruments and the methods of measurement and the use of different transducers.
 - To make students aware of the latest trends in sensor technology.
- To make the students identify the necessary sensor for various applications.

Course Outcomes:

Upon successful completion of the course, the student will be able to:

- CO1 Understanding the concept of measurement system
- CO2 Identifying concepts in common methods for converting a physical parameter into an electrical quantity.
- CO3 Applying concepts in advances in transducers for various engineering applications.
- CO4 Choose proper sensor comparing different standards and guidelines to make sensitive measurements of physical parameters like pressure, flow, acceleration, etc.
- CO5 Applying knowledge on advanced sensor which related to detect the enhanced parameters using sensors.
- CO6 Set up testing strategies to evaluate performance characteristics of different types of sensors and transducers and develop professional skills in acquiring and applying the knowledge outside the classroom through design of a real-life instrumentation system.

Course Content (Syllabus)

UNITI

INTRODUCTION TO INSTRUMENTATION: Functional elements of the Measurement system, Static and dynamic characteristics, Errors in measurements - systematic, gross, random; Loading effect, Calibration.

UNIT II

Transducers-1: Introduction to transducers, Classification, Characteristics, working principles of strain gauge, Displacement measurement using Potentiometer and LVDT, Temperature measurement using thermocouple, RTD and thermistor.

UNIT III

Transducers-2: Piezoelectric transducer for force and pressure measurement, Speed measurement, Capacitive transducer and Inductive transducers.

UNIT IV

SENSORS-1:

Introduction to sensors, Light sensors using LDR and photo diode, Level and distance measurement using Ultrasonic sensor, Accelerometer.

UNIT V

SENSORS-2: Proximity sensor, Humidity sensor, Analog, soil moisture sensor, Digital data acquisition, Single channel, multi-channel data acquisition, PC based data acquisition. Experiments:

- 1. Strain gauge.
- 2. Linear Displacement using LVDT
- 3. Temperature calibration using thermocouple.
- 4. Pressure measurement.
- 5. Speed measurement.
- 6. Capacitance trainer module:
- 7. Light sensor.
- 8. Distance measurement using ultrasonic sensor.
- 9. Accelerometer.
- 10. Proximity sensor.
- 11. Humidity measurement.
- 12. Soil moisture sensor.

TEXT BOOKS:

Doebelin, E.O., "Measurement systems – Application and Design", McGraw Hill.
 D. Patranabis, "Sensors and Transducers", PHI, 2nd Edition.

REFERENCES:

- 1. Instrumentation Measurement & Analysis, by B.C. Nakra, K.K. Choudry, (TMH).
- 2. Transducers and Instrumentation, by D.V.S. Murthy (PHI).

Contribution of Course Outcomes towards achievement of Program Outcomes (PO) and Program Specific outcomes (PSO) (1 – Low, 2- Medium, 3 – High)

(A . A).		THE OWNER OF A LE	9 W A.B.	8/										
	PO	PO	PO	PO	PO	PO	PO	РО	PO	PO	PO	PO	PS	PSO
	1	2	3	4	5	6	7	8	9	10	11	12	Q1	2
CO1	3	2	-	-	3	-		-		-		-	3	-
CU2	-	3	-	-	3		-	್ತಾ	-	3		ID	-	-
CO3	2	-	2	-	- 3	2	-	-	3	-	Ξ.	3		-
CO4	-	-	-	2	-	3	2	-	4	-	-	-	3	-
CO5	3	3	-	2	- 3	-	3	-		-	2	-	-	2
CO6	3	-	3	-	- 3	-	~	-	-	-	-	-	2	-
					-					1				

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DEPARTMENT OF COMUTER SCIENCE AND ENGINEERING B.TECH PROGRAMME PRPOPSED STRUCTURE FOR THIRD YEAR

III YEAR I SEMESTER

SI. No	Course Code	Title of the Course			Instru 'er W		Scheme o (Maxim	No. of Credits		
110			L	Τ	P/D	Total	CIA	SEA	Total	Credita
1	20A3105402	Artificial Intelligence	3	0	0	3	30	70	100	3
2	20A3105401	Computer Networks	3	0	0	3	30	70	100	3
3	20A3105403	Design and Analysis of Algorithms	3	0	́0	3	30	70	100	3
4	20A310560X	OE-1	3	0	0	3	30	70	100	3
5	20A310551X	PE-1	3	0	0	3	30	70	100	3
6	20A3105491	Computer Networks lab	0	0	3	3	15	35	50	1.5
7	20A3105492	AI Programming Lab	0	0	3	3	15	35	50	1.5
8	20A3105991	DEVOPS	0	0	4	4	15	35	50	2
10	20A3105801	Employability Skills-1	2	0	0	2	30	70*	100	0
	Summer Internship 2 Months (Mandatory) after second year (to be evaluated during V semester)		0	0	0	0	30	70	100	1.5
	Total			.0	10	27	255	595	850	21.5
	Honors/Mino	r courses - 2	3	0	2	5	30	70	100	4

Code	Professional Elective - 1	
20A3105511	1.1 Cloud computing	
20A3105512	1.2 Software Testing Methodologies and Tools	
20A3105513	1.3 Data Warehousing and Data Mining	
20A3105514	1.4 Advanced Data Structures	

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DEPARTMENT OF COMUTER SCIENCE AND ENGINEERING

PRPOPSED STRUCTURE FOR THIRD YEAR B.TECH PROGRAMME

III YEAR I SEMESTER

SI. No	Course Code	Course Code Title of the Course			lnstruc er We		Scheme (Maxin	No. of Credits		
			L	T	P/D	Total	CIA	SEA	Total	Credits
1	20A3105402	Artificial Intelligence	3	0	0	3	30	70	100	3
2	20A3105401	Computer Networks	3	0	0	3	30	70	100	3
3	20A3105403	Design and Analysis of Algorithms	3	0	0	3	30	70	100	3
4	20A310560X	OE-1	3	0	0	3	30	70	100	3
5	20A310551X	PE-1	3	0	0	3	30	70	100	3
6	20A3105491	Computer Networks lab	0	0	3	3	15	35	50	1.5
7	20A3105492	AI Programming Lab	0	0	3	3	15	35	50	1.5
8	20A3105991	DEVOPS	0	0	4	4	15	35	50	2
10	20A3105801	Employability Skills-1	2	0	0	2	30	70*	100	0
Summ		Mandatory) after second year (to ring V semester)	0	0	0	0	30	70	100	1.5
Total		17	0	10	27	255	595	850	21.5	
Honors/Minor courses - 2			3	0	2	5	30	70	100	4

ž

Code	Professional Elective - 1
20A3105511	1.1 Cloud computing
20A3105512	1.2 Software Testing Methodologies and Tools
20A3105513	1.3 Data Warehousing and Data Mining
20A3105514	1.4 Advanced Data Structures



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Course Title: Artificial Intelligence

Lecture-Tutorial-Practical::	3-0-0	Internal Marks:	30
Credits:	3	External Marks:	70
Prerequisites: None			
Course Objectives			
• To learn the difference between op	timal reasoning v	s human like reasoning	
• To understand the notions of stat with the time and space complexi		tation, exhaustive search, heuris	tic search along

- To learn different knowledge representation techniques
- To understand the applications of AI: namely Game Playing, Theorem Proving, Expert Systems, Machine Learning and Natural Language Processing

Course Outcomes:

Upon Completion of the course, the students will be able to

CO1 Possess the ability to formulate an efficient problem space for a problem expressed in English.

- CO 2 Possess the ability to select a search algorithm for a problem and characterize its time and space complexities.
- CO3 Possess the skill for representing knowledge using the appropriate technique
- CO4 Possess the ability to apply AI techniques to solve problems of Game Playing, Expert Systems, Machine Learning and Natural Language Processing
- CO5 Apply the knowledge to develop the solutions for real life problems CO6 Develop new algorithms to contribute to the research arena

Contril (1 — Lo		of edium		ourse ligh)	Out	comes	tov	vards	ach	ieveme	ent	of	Program	01	itcomes
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO1 2	PSO 1	PSO 2	PSO 3
CO1	3	-	2	-	2	-	-	-	-	2	-	-	2	-	-
CO2	3	2	-	2	-	-	-	-	2	-	2	-	-	3	-
CO3	3	-	2	-	-	-	-	2	-	-	-	-	-	3	-
CO4	3	2	-	2	1-	-	-		-	-	-	-	-	2	-
CO5	3	-	2	-	2	-	-	2	2	2	-	-	2	-	2



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Unit–I

Introduction, History, Intelligent Systems, Foundations of AI, Sub areas of AI, Applications. Problem Solving –State-Space Search and Control Strategies: Introduction, General Problem Solving, Characteristics of Problem, Exhaustive Searches, HeuristicSearchTechniques,Iterative-DeepeningA*,ConstraintSatisfaction

UNIT II:

LogicConceptsandLogicProgramming:Introduction,PropositionalCalculus,Propositional Logic,NaturalDeduction System, Resolution Refutation in Propositional Logic, Predicate Logic,Logic Programming. RepresentingKnowledgeUsingRules:Logicprogramming,ProceduralVsDeclarativeknowledge,Forward Vs Backward Reasoning, Matching,Control Knowledge

UNIT III:

Knowledge Representation: Introduction, Approaches to Knowledge Representation, Knowledge RepresentationusingSemanticNetwork,ExtendedSemanticNetworksforKR, Knowledge Representation usingFrames,Conceptualdependencies,Scripts

UNIT IV:

Natural Language Processing: Steps in The Natural Language Processing, Syntactic Processing and AugmentedTransitionNets,SemanticAnalysis,NLPUnderstandingSystems;

Fuzzy Logic: CrispSets, Fuzzy Sets, Fuzzy Logic Control, Fuzzy Inferences & Fuzzy Systems Planning with state-spacesearch-partial-orderplanning-planninggraphs-planningandactingintherealworld

UNIT V:

Experts Systems: Overview of an Expert System, Architecture of an Expert Systems, Different Types of ExpertSystems, Architectures, Knowledge Acquisition and Validation Techniques, Knowledge System Building Tools, ExpertSystemShells. AIProgramminglanguages: Overview of LISP and PROLOG, Production System in Prolog

Text Book:

- 1. Artificial Intelligence, Elaine Rich and Kevin Knight, Tata Mcgraw-Hill Publications
- 2. Introduction To Artificial Intelligence & Expert Systems, Patterson, PHI publications

REFERENCE BOOKS:

- 1. ArtificialIntelligence,GeorgeFLuger,PearsonEducationPublications
- 2. ArtificialIntelligence: AmodernApproach, RussellandNorvig, PrenticeHall
- 3. ArtificialIntelligence,RobertSchalkoff,Mcgraw-HillPublications

4. ArtificialIntellige	nceandMachineLear	ning, VinodCha	andraS.S.,Anand	HareendranS.
E-RESOURCES		T AND A AND	1	

- 1. https://onlinecourses.nptel.ac.in/noc22_cs56/preview
- 2. https://nptel.ac.in/courses/106105077
- 3. https://nptel.ac.in/courses/106102220
- 4. https://onlinecourses.nptel.ac.in/noc19_me71/preview
- 5. https://nptel.ac.in/courses/106106126



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Course Title: Computer Networks

Lectur	re – Tutorial:	3-0-0	Internal Marks:	30	
Credi	ts:	3	External Marks:	70	
Ргеге	quisites: Computer	Networks			
Cours	e Objectives:				
	Understand state-c	of-the-art in network protocols, arc	hitectures, and applications.		
•	Process of networl	king research			
•	Constraints and the	ought processes for networking res	search		
•	Problem Formulat	ion—ApproachAnalysis			
Cours	e Outcomes:				
CO 1	Able to understand	d OSI and TCP/IP models.			
CO2	Understand data li	ink layer protocols and flow contro	bl		
CO3					
	Understand routin	g and network layer protocols and	IPV4		
CO4					
	Understand transp	ort layer congestion, flow control a	and protocols		
CO5	Understand appli		· · · · · · · · · · · · · · · · · · ·		

UNIT I: INTRODUCTION

OSI, TCP/IP and other networks models, Examples of Networks: Novell Networks, Arpanet, Internet, Network Topologies WAN, LAN, MAN.

PHYSICAL LAYER Transmission media copper, twisted pair wireless, switching and encoding asynchronous communications

UNIT II: DATA LINK LAYER:

Design issues, framing, error detection and correction, CRC, Elementary Protocol-stop and wait, Sliding Window. Medium Access Sub Layer: ALOHA, MAC addresses, Carrier sense multiple access, IEEE 802.X Standard Ethernet, Bridges.

UNIT III: NETWORK LAYER		I	1				·			
Virtual circuit and Datagram subnets-I		n snorte	si pain	routing,	Flooding, HI	ierarchical rout	ing, Broad			
cast, Multi cast, distance vector routing	. OSPF. IPV4									
				2.5						
				· · · · · · · · · · · · · · · · · · ·						
UNIT IV TRANSPORT LAYER										
Transport Services, Connection	management,	TCP	and	UDP	protocols	congestion	control.			
	-									
UNIT V APPLICATION LAYER										
Network Security, Domain name syster	n. SNMP. Electro	onic Mai	l: the V	Vorld WI	EB. Multi Me	edia.				
······································	,		1		,					
Text Book:										
1. Tanenbaum and David J Wether	all. Computer Ne	tworks,	5 th Edit	ion, Pear	son Edu, 201	10.				
REFERENCE BOOKS:	, ,	,								
REPERENCE DOURS:										



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- 1. Computer Networks: A Top-Down Approach, Behrouz A. Forouzan, FirouzMosharraf, McGraw Hill Education.
- 2. Computer Networks, 5ed, David Patterson, Elsevier.
- 3. Larry L. Peterson and Bruce S. Davie, "Computer Networks- A Systems Approach" 5th Edition, Morgan Kaufmann/Elsevier, 2011.
- 4. Computer Networks, Mayank Dave, CENGAGE.
- 5. An Engineering Approach to Computer Networks-S.Keshav, 2nd Edition, Pearson Education.
- 6. Understanding communications and Networks, 3rd Edition, W.A. Shay, Thomson

E-RESOURCES

- 1. www.tutorialspoint.com
- 2. nptl.ac.in/courses/



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	ure–Tu	torial	Prac	tical::			3-0-0)		rnal M					30
Cred			_				3		Exte	rnal M	larks:				70
	uisites:														
Course	e Object														
•	Analy	ze the	asymp	iotic pe	rforma	nce of al	gorith	ms and o	compo	nents					
•						digm ap						algorith	ms		
•						used to						1		1	41
•						used to						anaryze	and desi	gn algor	unms
- I.												alvze ar	nd design	algorith	ms
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	e Outc Comple			course	e, the s	student	s will	be able	e to						
:01:A	nalyze v	/orst-c	ase run	ining tir	mes of	algorith	ms usii	ng asym	ptotic	analysi	s and c	ompone	nts		
								2 22 2							
:02· D)escribe	the div	ide an	d condi	ier met	hod exn	lains w	hen an a	algorit	hmic de	esign si	tuation	demands	it.	
	- whet I've	WALTER TABLE	. orw total	- ourste		now with	WAAAN Y								
:03: D)escribe	the gre	edy m	ethod e	xplains	when a	n algoi	ithmic o	design	situatio	on dem	ands it.			
CO4: D	Describe	the dyn	1amic-	prograr	nming	paradig	n expl	ains whe	en an a	lgorith	mic des	sign derr	nands it.		
CO5: D	Describe	the bac	k traci	king me	ethod e	xplains	when a	n algori	thmic	design	demano	ls it.			
:O6: D emand		the bra	nch an	d boun	d parad	ligm and	l deteri	ministic	metho	ds e-pla	ain whe	en an alg	gorithmic	design	
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Contril	w, 2- M PO	edium PO			PO 5	PO 6	PO 7	PO 8	РО				PSO 1	PSO 2	
Contril 1 – Lo	w, 2- M PO 1	edium PO 2	PO 3	PO 4	5	6	7	8	РО 9	PO 10	PO 11	PO1 2	1	2	PS (3
Contril 1 – Lo CO1	w, 2- M PO 1 3	edium PO 2 -	PO 3 2	PO 4 -	1	6	7	8	PO 9	PO 10 2	PO 11 -	PO1 2 -	1 2	2	PS
Contril 1 – Lo CO1	w, 2- M PO 1	edium PO 2	PO 3	PO 4 - 2	5	6	7	8	PO 9 - 2	PO 10	PO 11	PO1 2	1	2 - B	PS 0 3
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Contril 1 – Lo CO1 CO2	w, 2- M PO 1 3 3	edium PO 2 - 2	PO 3 2 -	PO 4 - 2	5 2 -	6 - -	7	8	PO 9 - 2	PO 10 2 -	PO 11 - 2	PO1 2 -	1 2 -	2 - B	PS0 3
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Contril 1 – Lo CO1 CO2 CO3	PO 1 3 3 3 3	edium PO 2 - 2 - 2 2 - 2	PO 3 2 - 2	PO 4 - 2 - 2	5 2 -	6 - - -	7	8 - - 2	PO 9 - 2	PO 10 2 - -	PO 11 - 2 - -	PO1 2 - - - -	1 2 - - -	2 - - - - - - - - - - - - - - - - - - -	PS0 3 - - -

UNIT I Introduction to Algorithms

Fundamentals of algorithmic problem solving – Analysis framework - Performance Analysis: - Space complexity, Time complexity - Growth of Functions: Asymptotic Notation- Big oh notation, Omega notation, Theta notation, little oh.





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UNIT II Divide and Conquer:Divide and conquer: General method, applications-Binary search, Quick sort, Merge sort, Finding the Maximum and Minimum

Unit III Greedy method: The General Method, Knapsack Problem, Job Sequencing with Deadlines, Minimum-cost Spanning Trees, Prim's Algorithm, Kruskal's Algorithms, Optimal Merge Patterns, Single Source Shortest Paths

UNIT IV Dynamic Programming: General method, applications-Matrix chain multiplication, Optimal binary search trees, 0/1knapsack problem, All pairs shortest path problem, Travelling sales person problem, Reliability design.

UNIT V Backtracking: General method, applications-n-queen problem, sum of subsets problem, graph coloring, Hamiltonian cycles.

Branch and Bound: General method, applications - Travelling sales person problem, 0/1 knapsack problem- LC Branch and Bound solution, FIFO Branch and Bound solution

TEXT BOOKS:

Fundamentals of Computer Algorithms, Ellis Horowitz, SatrajSahni and Rajasekaran, University press **REFERENCE BOOKS**:

- 1. Introduction to The Design and Analysis of Algorithms, 3rd Edition, Anany Levitin, Pearson Education, 2017.
- 2. Introduction to Algorithms, second edition, T.H.Cormen, C.E.Leiserson, R.L. Rivest, and C.Stein, PHI Pvt. Ltd./ Pearson Education
- 3. Design and Analysis of algorithms, Aho, Ullman and Hopcroft, Pearson education.
- 4. Algorithms Richard Johnson Baugh and Marcus Schaefer, Pearson Education



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Course Code-Cloud Computing

Lecture – Tutorial- Pra	ctical:: 3-0-0		Internal Marks:	30
Credits:	3		External Marks:	70
Prerequisites: C- Progr	amming, Data Structi	ures, Statistics fundament	tals	
Course Objectives:				

The student will learn about the cloud environment, building software systems and components that scale to millions of users in modern internet cloud concepts capabilities across the various cloud service models including Iaas, Paas, Saas, and developing cloud based software applications on top of cloud platforms.

Course Outcomes:

Course O			40 - 100-0-10-00 - Jajapanaa ma		·····			NUTA PATIAN INTER ANT INTERATION				
Upon suc	cessful com	pletion o	f the cour	rse, the st	udent wi	ll be able	to:	ada				
CO1							Cloud Co					_
CO2	Asses	sment of	the econo	mics, fina	ancial, an	d technol	ogical imp	olications	for select	ing cloud	computin	g for own
		zation										
CO3	Asses	sing the	financial,	technolog	gical, and	l organiza	tional cap	bacity of (employer	's for act	ively initi	ating and
	install	ing cloud	-based ap	plications								
CO4	Asses	sment of	own orgai	nizations'	needs for	capacity	building a	nd trainin	g in clou	d computi	ng-related	IT areas
CO5	Descr	ibe the fea	atures of I	Resource I	Managem	ient syster	ns					
Contribu	tion of Cou	rse Outco	mes tow	ards achie	evement	of Progra	am Outco	mes (1 – 1	Low, 2- N	Aedium, 3	3 – High)	
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CO2	3	2	3		2	 	 	 	÷
CO3	2	2	3	m.m.		 -	 	 	ļ
CO4	3	-3	2	2	2	 	 	 	
CO5	2	3	3	3	2	 	 	 	
	+								

UNIT-1: Systems modeling, Clustering and virtualization Scalable Computing over the Internet, Technologies for Network based systems, System models for Distributed and Cloud Computing, Software environments for distributed systems and clouds, Performance, Security And Energy Efficiency

UNIT-2: Implementation Levels of Virtualization, Virtualization Structures/ Tools and mechanisms, Virtualization of CPU, Memory and I/O Devices, Virtual Clusters and Resource Management, Virtualization for Data Center Automation.

UNIT-3: Cloud Computing and service Models, Architectural Design of Compute and Storage Clouds, Public Cloud Platforms, Inter Cloud Resource Management, Cloud Security and Trust Management. Service Oriented Architecture, Message Oriented Middleware.

UNIT-4 :Cloud Programming and Software Environments Features of Cloud and Grid Platforms, Parallel & Distributed Programming Paradigms, Programming Support of Google App Engine, Programming on Amazon AWS and Microsoft Azure, Emerging Cloud Software Environments.

UNIT-5: Policies and Mechanisms for Resource Management Applications of Control Theory to Task Scheduling on a Cloud, Stability of a Two Level Resource Allocation Architecture, Feedback Control Based on Dynamic Thresholds. Coordination of Specialized Autonomic Performance Managers, Resource Bundling, Scheduling Algorithms for Computing Clouds, Fair Queuing, Start Time Fair Queuing, Borrowed Virtual Time, Cloud Scheduling Subject to Deadlines, Scheduling MapReduce Applications Subject to Deadlines.

TEXT BOOKS:

- 1. Distributed and Cloud Computing, Kai Hwang, Geoffry C. Fox, Jack J. Dongarra MK Elsevier.
- 2. Cloud Computing, Theory and Practice, Dan C Marinescu, MK Elsevier.





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3. Cloud Computing, A Hands on approach, ArshadeepBahga, Vijay Madisetti, University Press **REFERENCE BOOKS:**

- 1. Cloud Computing, A Practical Approach, Anthony T Velte, Toby J Velte, Robert Elsenpeter, TMH
- 2. Mastering Cloud Computing, Foundations and Application Programming, Raj Kumar Buyya, Christen vecctiola, S Tammaraiselvi, TMH

e-Resources:

- 1. https://nptel.ac.in
- 2. https://onlinecourses.nptel.ac.in/noc21_cs87/preview

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Course Title: Software Testing Methodologies and Tools

Lecture – P	ractica	l:	3-0-0)				nternal Iarks:		30				
Credits			3				E	xternal farks:	l	70				
Prerequisit	es: Sofi	ware	e Engi	neeri	1g									
Course Obj	ectives													
Fundamenta	ls for v	ariou	s testir	ıg me	thodol	ogies.								
• Describe tl				-		-	ming 1	test case	s.					
• Provide su			-											
 Acts as the 				-		techni	ques a	nd strat	egies.					
Course Out	comes													
Upon succe	ssful co	mple	etion o	f the	course	e, the s	studer	nt will b	e able	to:				
CO1 Unde	erstand	the ba	asic te	sting _l	proced	ures.								
CO2 Able	to supp	ort ir	n gene	rating	test ca	ases an	nd test	suites.						
CO3 Able	e to test	the a	pplica	tions	manua	lly by	apply	ing diffe	erent te	esting r	methods an	d automation	n tools	
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CO2 3	2	2	2	-	-							-	3	2
CO3 2	2	3	2	-	-							2	2	-
CO4 3	3	2	-	-						-			2	3
UNIT I: Intr Flow graphs Sensitizing,	and Pa	th tes	sting: I	Basics	Conc	epts of	Path	Testing,	Predic	esting, cates, I	Consequer Path Predic	nces of Bugs ates andAch	,Taxonomy ievable Path	of Bugs. s, Path
UNIT II:														
Fransaction	Élow T	esting	g: Trar	isactio	on Flor	ws, Tr	ansact	ion Flo	w Testi	ing Tea	chniques [] I	Dataflow test	ing: Basics	of Dataflow
Testing, Stra	tegies i	n Dat	taflow	Testi	ng, Ap	plicați	ion of	Dataflo	w Test	ing.			2	
Domain Tes	ting: Do	omair	ns and	Paths	, Nice	& Ugl	ly Dor	nains, I	Domain	testin	g, Domain	s andInterfac	es Testing, l	Domain an
Interface Te	sting, D	omai	ins and	l Testa	ability									
										cts & I	Path Expre	ssion, Reduc	tion Procedu	ure,
Applications	, Regul	ar Ex	cpressi	ons &	Flow	Anom	aly D	etection	l					
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Testability T											****	10	101	
UNIT IV:. I	Logic B	ased	Testin	g: Ov	erview	v, Deci	ision T	ables, I	ath E	cpressi	ons, KV C	harts, and Sp	ecifications	iter Time
												tate Testing,		
		Lesti	no To	ois: In	troduc	tion to	o i esti	ng, Aut	omated	i resti	ng, Concer	ns of Test A	utomation, I	mouncilo
UNIT V: So	fitware	175-	16 I U	T a - 1	Dame	- T	-t A	hours 327	In Date	TT most	aina Win	Insucos Mar-	ing the CLU	Decondin
UNIT V: So to list of tool	ls like V	Vin ri	unner,	Load	Runn	er, Jme	eter, A	bout W	in Run	ner ,U	sing Win r	unner, Mapp	ing the GUI	, Recordin
UNIT V: So to list of tool Fest, Workin	ls like V 1g with	Vin rı Test,	unner, , Enha	Load ncing	Test, (Check	points.	, Test Se	cript L	anguag	ge, Putting	unner, Mapp it all togethe	ing the GUI r, Running a	, Recordin Ind
UNIT V: So o list of tool	ls like V 1g with	Vin rı Test,	unner, , Enha	Load ncing	Test, (Check	points.	, Test Se	cript L	anguag	ge, Putting	unner, Mapp it all togethe	ing the GUI r, Running a	, Recordin Ind





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1. Software testing techniques - Boris Beizer, Dreamtech, second edition.

2. Software Testing- Yogesh Singh, Camebridge **REFERENCE BOOKS:**

The Craft of software testing - Brian Marick, Pearson Education.

- 2. Software Testing, 3rd edition, P.C. Jorgensen, Aurbach Publications (Dist.by SPD).
- 3. Software Testing, N.Chauhan, Oxford University Press.
- 4. Introduction to Software Testing, P.Ammann&J.Offutt, Cambridge Univ.Press.
- 5. Effective methods of Software Testing, Perry, John Wiley, 2nd Edition, 1999.
- 6. Software Testing Concepts and Tools, P.NageswaraRao, dreamtech Press
- 7. Win Runner in simple steps by Hakeem Shittu, 2007Genixpress.
- 8. Foundations of Software Testing, D.Graham& Others, Cengage Learning.

E-RESOURCES





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Course Title: Data Warehousing and Data Mining

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3-0-0 Internal 30 Lecture - Practical: Marks: 3 70 External Credits Marks: **Prerequisites: Data Structures Course Objectives** The objective of this course is to provide knowledge of techniques and strategies to create and use the data warehouses, to understand, learn different data mining techniques and to understand the applicability of these techniques. **Course Outcomes** Upon successful completion of the course, the student will be able to: Understand the basic concepts of warehousing and data preprocessing techniques CO1 CO2 Derive various interesting patterns and associations in datasets. CO3 Design and develop classifier models to predict future trends. CO4 Apply unsupervised learning techniques for a given application. of Course Outcomes Contribution towards achievement of Program Outcomes (1 - Low, 2- Medium, 3 - High) PO PO PO **PO12** PO PO PO PO PO PO PO PO **PSO1** PSO₂ PSO3 2 3 4 5 6 7 8 0 10 11 1 **CO1** 2 2 3 _ _ **CO2** 2 2 -3 . _ -. . _ -3 2 2 CO3 2 2 3 2 ---. . -2 2 -**CO4** 3 2 3 2 . ------2 3 UNIT I: DATAWAREHOUSING AND BUSINESSANALYSIS Data Warehouse and Online Analytical Processing: Data Warehouse basic concepts, Data Warehouse Modeling: Data cube and OLAP, Data Warehouse Implementation, Data Generalization by Attribute Oriented Induction. Data Preprocessing: Overview, Data Cleaning, Data Integration, Data Reduction, Data Transformation and Data Discretization. UNIT II: DATA MINING OVERVIEW AND ADVANCEDPATTERN MINING Data Mining Introduction: Introduction, Why Data Mining, kinds of Data that can be mined, Patterns that can be Mined, technologies where it can be used, major issues in data Mining. Mibing Frequent Patterns, Associations, and Correlations: Basic Concepts, Frequent Item-set Mining Methods. (Apriori and FP growth algorithms) UNIT III: CLASSIFICATION AND PREDICTION Classification: Introduction, Decision tree induction, Bayesian Classification, Rule-Based Classification, Techniques to improve Classification Accuracy, Classification by Back propagation, Support Vector Machines UNIT IV: CLUSTERING ANALYSIS Cluster Analysis: Introduction, overview of basic clustering methods, Partitioning methods, Hierarchical methods, Density-Based Methods: DBSCAN& OPTICS, introduction to outlier analysis UNIT V: WEB AND TEXT MINING Multidimensional Analysis and Descriptive Mining of Complex Data Objects-Introduction, web mining, web content mining, web structure mining, we usage mining, Text mining, unstructured text, episode rule discovery for texts, hierarchy of categories, text clustering. **Text Books**



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[1].Jiawei Han and Micheline Kamber, -Data Mining Concepts and Techniquesl, Third Edition, Elsevier, 2012. **REFERENCE BOOKS:**

[1].G.K.Gupta,—IntroductiontoDataMiningwithCaseStudiesI,EasterEconomyEdition,Prentice Hall of India, 2006 [2].APang-Ning Tan, Michael Steinbach and Vipin Kumar, -Introduction to DataMiningl, Second Edition Pearson Education, 2016

[3].K.P. Soman, ShyamDiwakar and V. Ajay -Insight into Data mining Theory and Practicel, Easter Economy Edition, Prentice Hall of India, 2006

E-RESOURCES

Data Warehouse Tutorial For Beginners | Data Warehouse Concepts | Data Warehousing | Edureka (2017)https://www.youtube.com/watch?v=J326LIUrZM8&t=4s

How Artificial Neural Network (Ann) Algorithm Work | Data Mining | Introduction To Neural Network(2016)https://www.youtube.com/watch?v=fwnaijgpih,



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Course Title: Advanced Data Structures

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	re – F	Practic	al:	3-0-	0				Inter Marl		30				
Credi	its			3					xternal Iarks:	1	70				
Prere	quisit	es: Da	ta Str	uctur	es										
Cour	se Obj	jective	5												
•	tre An	es, digi alyze t	ital sea he spa	arch tr ice an	rees). d time c	compl	exity o	of the :	algorith	ms stuc	lied in	the course.	,	eues, balanced	
Cours	se Out	comes	;		<u>.</u>										
J pon	succe	ssful c	omple	etion (of the c	ourse	e, the s	studen	ıt will b	e able	to:				
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202	Ab	le to ui	ndersta	and in	plemer	ntatio	n of sk	ip list	S						
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	ind	exing e	etc.	-	-										
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	III: E Trees: ations,	alanc Maxi introc	ed Tro mum luction	ees Heigi 1 to R		n AV	/L Tre	-				ns. 2-3 Tr	ees : Ins	ertion,Deletion	n,
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VL pplica NIT inary inom	ial Qu	s : Imj ieues :	blemer Bino	ntation mial (Queue (Operat	d Dele tions, i	te mir Binorr	n, Creati nial Am	ng Hea ortized	ap. Analy	sis, Lazy E	Binomial	Jueues	
VL oplica NIT inary inom NIT	Heap Heap Heap Heap Heap Heap	s : Imp ueues : ittern	blemer Binor match	ntation mial (ning a	Queue (nd Tria	Operat es	tions, i	Binon	nial Am	ortized	Analy	sis, Lazy F -Pratt algo		Jueues	



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Tries: Definitions and concepts of digital search tree, Binary trie, Patricia , Multi-way trie

Text Book

1. Fundamentals of DATA STRUCTURES in C: 2 nded, , Horowitz , Sahani, Anderson-freed, Universities Press.

2. Data structures and Algorithm Analysis in C, 2 nd edition, Mark Allen Weiss, Pearson **REFERENCE BOOKS**:

- 1. Data Structures, a Pseudocode Approach, Richard F Gilberg, Behrouz A Forouzan, Cengage.
- 2. Introduction to Algorithms, 3rd Edition by Thomas H. Cormen, Charles E. Leiserson, Ronald L.Rivest, Clifford Stein

E-RESOURCES

- 1. Web : http://lcm.csa.iisc.ernet.in/dsa/dsa.html
- 2. http://utubersity.com/?page_id=878
- 3. <u>http://fr</u>eevideolectures.com/Course/2519/C-Programming-and-Data-Structures
- 4. http://freevideolectures.com/Course/2279/Data-Structures-And-Algorithms

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Course Title: Computer Networks Lab

Lecture – Practical::	Tutorial- 0-0-3	Internal Marks:	15
Credits:	1,5	External Marks :	35
	owledge of C Programming, Basic con rogramming, Basic commands of UNI		

Course Objectives:

The object of this course is to provide hands-on practice on implementing different network related commands (like netstat, ping, arp, telnet, etc.,) and programming (like socket programming, routing algorithms, etc.,) in C programming and Java.

Course Outcomes:

Upon successful completion of the course, the student will be able to:

CO1 Should be able to Calculate Data link layer farming methods like bit stuffing and byte stuffing.

CO2 Should be able to Analyze Cyclic redundancy check on different polynomials.

CO3	Should	i be able i	to understa	and Socke	t Program	nming Im	plementa	tion by us	ing TCP	and UDP	Protocols.	
Contri	bution of	Course C)utcomes	towards	achieven	ient of P	rogram C)utcomes	(1 - Low	, 2- Medi	um, 3 – H	ligh)
	PO	PO	PO	PO	РО	PO	PO	PO	РО	РО	PO	PO
	1	2	3	4	5	6	7	8	9	10	11	12
COI	2	2	-	2	-	-	-	-	-	-	-	-
CO2	-	2	2	-	-	-	_	~	-	-	2	2
CO3	3		-	2	2	-	-		-	-	2	2

List of Programs

1. Understanding and using of commands like ifconfig, netstat, ping, arp, telnet, ftp, finger, traceroute, whois etc. Usage of elementary socket system calls (socket (), bind(), listen(),

accept(),connect(),send(),recv(),sendto(),recvfrom()).

2. Implementation of Connection oriented concurrent service (TCP).

3. Implementation of Connectionless Iterative time service (UDP).

4. Implementation of Select(), of getpeername () system call.

5. Implementation of gesockopt (), setsockopt () system calls.

6. Implementation of remote command execution using socket system calls.

7. Implement the data link layer framing methods such as character stuffing and bit stuffing.

8. Implement on a data set of characters the three CRC polynomials - CRC 12, CRC 16 and CRC CCIP.

9. Implement Dijkstra's algorithm to compute the Shortest path thru a graph.

10. Implementation of Distance Vector Routing Algorithm.

11. Implementation of SMTP.

12. Implementation of FTP.

Note: Implement programs 2 to 6 in C and 8 to 12 in JAVA.

TEXT BOOKS:

Tanenbaum and David J Wetherall, Computer Networks, 5th Edition, Pearson Edu, 2010.
 Computer Networks: A Top Down Approach, Behrouz A. Forouzan, FirouzMosharraf, McGraw Hill Education.

E-RESOURCES:

- http://www.softpanorama.org/Internals/unix_system_calls.shtml
- https://www.tutorialspoint.com/system-calls-in-unix-and-windows



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Course Title: Artificial Intelligence Lab

Lecture-Tutorial-Practical::	0-0-3	Internal Marks:	15						
Credits:	1.5	External Marks:	35						
Prerequisites: Artificial Intelligence con	cepts								
Course Objectives									
• To provide skills for designing and	analyzing AI l	based algorithms.							
• To enable students to work on vario	ous AI tools.								
• To provide skills to work towards s	olution of real	life problems.							
CourseOutcomes: UponCompletionofthecourse,thestuden	tswillbeableto								
CO1: Elicit, analyze and specify software requirements. CO2: Simulate given problem scenario and analyze its performance. CO3: Develop programming solutions for given problem scenario.									
Contribution of Course Outco	mes toward	s achievement of	Program Outcomes						

(1-Low, 2-Medium, 3-High)

	PO	PO	PO	PO	PO	РО	PO	РО	PO	РО	PO	PO1	PSO	PSO	PSO
	1	2	3	4	5	6	7	8	9	10	11	2	1	2	3
CO1	3	-	2	-	2	-	-	-	-	2	-	-	2	-	-
CO2	3	2	-	2	-	-	-	-	2	-	2	-	*	3	-
CO3	3	-	2	-	-	-	-	2	-	-	-	-	-	3	-

List of Experiments

Use any language such as C/C++/LISP/PROLOG

- 1. Solve "Water Jug Problem".
- 2. Write a program to solve 8 queens' problem
- 3. Solve any problem using depth first search.
- 4. Solve any problem using best first search
- 5. Solve 8-puzzle problem using best first search
- 6. Write A Program to Generate the output for A* Algorithm
- 7. Write a program to implement tower of Hanoi
- 8. Write predicates One converts centigrade temperatures to Fahrenheit, the other checks if a temperature is below freezing.
- 9. Write a program to solve the Monkey Banana problem
- 10. Write a program to solve Hill climbing.
- 11. Implementation of searching techniques in AI.
- 12. Installation and working on various AI tools viz. Python, R tool, GATE, NLTK, MATLAB, etc.
- 13. Data preprocessing and annotation and creation of datasets.
- 14. Learn existing datasets and Treebanks
- 15. Implementation of Knowledge representation schemes.
- 16. Application of Classification and clustering problem.
- 17. Natural language processing tool development.



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Note: The concerned Course Coordinator will finalize the actual list of experiments/problems at the start of semester based on above generic list.



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Course Title: DEVOPS LAB

Lecti	ıre I	Practio	cal:	0-0-	4				nterna /larks:		15				
Cred	its			2				E	arks:	al	35				
Work		owled						orogra	mming				PHP, Ruby	, Python, etc.)) Intermediat
Cour	se Ob	jective	es : T	he Ob	jective	e of thi	is cour	se is to	o give	a strong	, found	lation of th	ne Develop	pment and its (Operations.
	se Ou		-												
													the traditi	ional software	developmen
Learn										rpose or			ning the r	equirements f	or a softwar
	syste		e nup	01 0001104	- 01 w	8110 11			oropino	ne prae				oquitoino i	01 0 001000
CO2	Ana	lyze ar	nd exe	cute it	erative	e softw	are de	velop	ment p	rocesse	s to ma	mage soft	ware deve	lopment activi	ties.
CO3	App	ly a sy	stema	tic und	lerstan	ding o	of Agil	e prin	ciples a	and defi	ned pr	actices for	a specific	c circumstance	or need.
CO4	colla	borati	оп апс	softw	are qu	ality.								pment by imp	proving tear
CO5			_		^							ities at en			
	ributic .ow, 2		of ium. 3		urse (h)	0	utcom	es	towa	rds	achi	evement	of	Ргодгат	Outcome
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO12	PSO1	PSO2	PSO3
201	2	2	_	-	-	-	2	2	-	-		3	2	3	3
202	2	3	2	3	-	-	-	-	-	-	2	3	3	3	3
CO3	2	2	3	3	2	-	2	-	2	-	2	-	2	_	3
204	2	-	2	2	2	-	2	-	-	-		3	2	3	-
CO5	-		2	2	2	-	3	-	2	-	2	3	3	3	3
'nOC	RAM	S LIS	Т												
1)) In-	depth	know	ledge	of De	vOps	metho	dolog	у						
2)) Im	pleme	nting	Softw	are V	ersion	Cont	rol				1			
3) Co	ntaine	rizing	g Code	on pi	roduct	tion us	ing D	ocke			And the second sec			and the second
4)) Cro	eating	CI/C	D Pipe	elines	using	Jenki	ns							
) Co	nfigur	ation	Mana	geme	nt usiı	ıg Pup	opet a	nd An	sible	arite.				
5)							Solon	ium a	nd Ms	wen					
5) 6)) Au	tomat	ing bı	uld an	d test	using	Selen	ium a							
-			-	uild an hestra											
6)) Coi	ntaine form:	er Orc	hestra `uning	tion u	ising l Monit	Kuber oring	netes using	Nagio	s		ible,GitH			

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E-RESOURCES

https://www.guru99.com/



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Course Code-Employability Skills-I

Lecu	ıre – I	ractio	cal:	2-0-	0			-	nterna Aarks:		30				
Cred	its			0				E	xtern Iarks:	al	70*				
Prere	quisit	es: No	one												
	e Obje														
1	-			æ basi											
2.To 1	learn s	kills fo	or effe	ctive o	liscuss	sions &	k team	work							
3.To :	assess	and in	nprove	e perso	nal gr	oomin	g								
	se Out														
Upon				etion											
C01	Esta	blish e	ffectiv	e com	munic	ation	with e	mploy	ers, su	pervis	sors, ai	nd co-wor	kers		
CO2	Iden	tify to	explo	re thei	r value	es and	career	choic	es thro	ough ii	ndivid	ual skill as	ssessment	ts	
CO3	Adaj	ots pos	sitive a	ittitude	and a	ıpprop	riate b	ody la	inguag	e				2	
004	T	4.1						1.2		1 .					
CO4	Inter	pret tr	ie core	comp	etenci	es to s	uccee	a in pr	olessi	onal al		sonal life			
	ributic .ow, 2-		of ium, 3	Cou - Hig		Out	comes	s t	oward	ls	achie	vement	of	Program	Outcomes
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO12	PSO1	PSO2	PSO3
								2		2					
CO1								2		4					
CO1 CO2								2		2					
										2					2
CO2												2			2
CO2 CO3 CO4 UNIT An Ir Devel	' I: Son ntroduc	ction - it. Self	- Defi f-Disco	overy:	Disco			2 2 of Sol		2 2 is; Pro		2 Importanc fs, Values		leasurement o	
CO2 CO3 CO4 UNIT An In Devel Unit 2	I: Son ntroduc opmer	ction - it. Self	- Defi f-Disco and M	overy: otivati	Disco	vering	, the S	2 2 of Sof elf; Se	tting (2 2 Is; Pro Goals;	Belie	Importanc fs, Values	, Attitude	o, Virtue.	of Soft Skill
CO2 CO3 CO4 UNIT An In Devel Unit 2	I: Sof ntroduc opmer	tivity Positi	- Defi f-Disco and M ve Thi	overy: otivati	Disco	vering	, the S	2 2 of Sof elf; Se	tting (2 2 Is; Pro Goals;	Belie	Importanc fs, Values	, Attitude		of Soft Skill
CO2 CO3 CO4 UNIT An Ir Devel Unit 2 Devel Motiv	I: Son ntroduc opmer 2: Posi oping ation I	tivity Levels	- Defi f-Disco and M ve Thi	overy: otivati nking	Disco on: and A	ttitude	, the S	2 2 of Sof elf; Se	tting (2 2 Is; Pro Goals;	Belie	Importanc fs, Values	, Attitude	o, Virtue.	of Soft Skill
CO2 CO3 CO4 UNIT An Ir Devel Unit 2 Devel Motiv UNIT Interp	I: Son ntroduc opmer 2: Posi oping ation I 1111: In ersona onships	tivity tivity Positi Levels nterpe l relat s thro	- Defi f-Disco and M ve Thi rsonal ions; o ough	overy: otivati nking Common effecti	Disco on: and A nunication	ttitude ttion: ion mo	; the S ; Driv odels, nicatio	2 of Sof elf; Se ring ou process	atting (at Neg as and stening	2 2 S; Pro Goals; ativity	Belie ; Mea: rs; tea	Importanc fs, Values ning and 7 m commu	, Attitude	o, Virtue.	of Soft Skill ; Enhancing nterpersonal





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UNIT V: Non-Verbal Communication

Importance and Elements; Body Language. Teamwork and Leadership Skills: Concept of Teams; Building effective teams; Concept of Leadership and honing Leadership skills.

REFERENCE BOOKS:

1) Barun K. Mitra, Personality Development and Soft Skills, Oxford University Press, 2011.

2) S.P. Dhanavel, English and Soft Skills, Orient Blackswan, 2010.

3) R.S.Aggarwal, A Modern Approach to Verbal & Non-Verbal Reasoning, S.Chand & Company Ltd., 2018. 4) Raman, Meenakshi & Sharma, Sangeeta, Technical Communication Principles and Practice, Oxford University Press, 2011.

5) R.S.Aggarwal, A Modern Approach to Verbal & Non-Verbal Reasoning, S.Chand & Company Ltd., 2018.

6) Raman, Meenakshi & Sharma, Sangeeta, Technical Communication Principles and Practice, Oxford University Press, 2011.

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DEPARTMENT OF COMUTER SCIENCE AND ENGINEERING B.TECH PROGRAMME

III YEAR II SEMESTER

SI. No	Course Code	Title of the Course	Schem (Peri					heme of minatio 1um Ma	DL .	No. of Credits	
			L	Т	P/D	Tota l	CIA	SEA	Total	Creatts	
1	20A3205403	Machine Learning	3	0	0	3	30	70	100	3	
2	20A3205402	Compiler Design	3	0	0	3	30	70	100	3	
3	20A3205401	Cryptography and Network Security	3	0	0	3	30	70	100	3	
4	20A320560X	OE-2	3	0	0	3	30	70	100	3	
5	20A320551X	PE-2	3	0	0	3	30	70	100	3	
6	20A3205491	Machine Learning Lab	0	0	3	3	15	35	50	1.5	
7	20A3205492	R Programming lab	0	0	3	3	15	35	50	1.5	
8	20A3205493	Compiler Design Lab	0	0	3	3	15	35	50	1.5	
9	20A3205991	MEAN Stack Technologies	0	0	4	4	15	35	50	2	
10	20A3205801	Employability Skills - 2	2	0	0	2	30	70*	100	0	
	То	tal	17	0	13	30	240	560	800	21.5	
	Honors/Min	or courses - 3	3	0	2	5	30	70	100	4	

Code	Professional Elective -2
20A320551 1	2.1 Advanced Database Management Systems
20A3205512	2.2 Network Programming
20A3205513	2.3 Big data Analytics
20A3205514	2.4 Object Oriented Analysis and Design

H.O.D Head, CSE Department NRI Institute of Technology POTHAVARAPPADU (VIII) Agiripalli (Mdl.), Krishna Dis'





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III YEAR II SEMESTER

01 BL	Course Code	Title of the Course			nstruc er We		Scheme (Maxi	1.0.1	No. of	
Sl. No	Course Code	1 the of the Course	L	T	P/D	Total	CIA	SEA	Total	Credits
1	20A3205403	Machine Learning	3	0	0	3	30	70	100	3
2	20A3205402	Compiler Design	3	0	0	3	30	70	100	3
3	20A3205401	Cryptography and Network Security	3	0	0	3	30	70	100	3
4	20A320560X	OE-2	3	0	0	3	30	70	100	3
5	20A320551X	PE-2	3	0	0	3	30	70	100	3
6	20A3205491	Machine Learning Lab	0	0	3	3	15	35	50	1.5
7	20A3205492	R Programming lab	0	0	3	3	15 .	35	50	1.5
8	20A3205493	Compiler Design Lab	0	0	3	3	15	35	50	1.5
9	20A3205991	MEAN Stack Technologies	0	0	4	4	15	35	50	2
10	20A3205801	Employability Skills - 2	2	0	0	2	30	70*	100	0
10	To	17	0	13	30	240	560	800	21.5	
	Honors/Min	3	0	2	5	30	70	100	4	

Industrial/Research Internship (Mandatory) 2 Months during summer vacation

Code	Professional Elective -2	
20A3205511	2.1 Advanced Database Management Systems	
20A3205512	2.2 Network Programming	
20A3205513	2.3 Big data Analytics	
20A3205514	2.4 Object Oriented Analysis and Design	



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SI. No	Course Code	Title of the Course			l <mark>nstru</mark> er We		Scheme (Max		No. of Credits	
			Ĺ	T	P/D	Total	CIA	SEA	Total	Creatts
1	Professional Core courses	Machine Learning	3	0	0	3	30	70	100	3
2	Professional Core courses	Compiler Design	3	0	0	3	30	70	100	3
3	Professional Core courses	Cryptography and Network Security	3	0	0	3	30	70	100	3
4	Open Elective Course/Job oriented elective	OE-2	2	0	2	4	30	70	100	3
5	Professional Elective courses	PE-2	3	0	0	3	30	70	100	3
6	Professional Core courses Lab	Machine Learning Lab	0	0	3	3	15	35	50	1.5
7	Professional Core courses Lab	R Programming lab	0	0	3	3	15	35	50	1.5
8	Professional Core courses Lab	Compiler Design Lab	0	0	3	3	15	35	50	1.5
9	Skill advanced course/ soft skill course*	MEAN Stack Technologies	0	0	4	4	15	35	50	2
10	Mandatory course (AICTE suggested)	Employability Skills - 2	2	0	0	2	30	70	100	0
	Tot:	al	16	0	15	31	240	560	800	21.5
	Honors/Minor	- courses - 3	3	0	2	5	30	70	100	4
	Industr	ial/Research Internship (Mand	latory) 2	. Mon	ths du	ring sun	nmer vac:	ation		

III YEAR II SEMESTER

 Code
 Professional Elective -2

 2.1 Advanced Database Management Systems
 2.2 Network Programming

 2.3 Big data Analytics
 2.3 Big data Analytics

 2.4 Object Oriented Analysis and Design
 3

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Course Title: Machine Learning

Lectu	ure – I	Practi	cal:	3-0	-0				interna Marks:		30				
Cred	its			3					Extern: Marks:		70				
Prere	eq uisi	tes: C	alculu	s and	Proba	ıbility					51 				
Cour	se Ob	jectiv	es												
									predicti	ion					
					lels are										
									ising no		rity and	d ensemble	es		
4.	схріа			al lici	WOLKS	tielp it	1 incre	asing t	emeien	сy					
Cour	se Ou	tcome	S												
Upon	succe	essful	comp	etion	of the	cours	e, the	stude	nt will	be able	e to:				
COI									how da			essed			
							8	00 01.10		p	oproo	00000			
CO2	Ном	v linea	r mod	els hel	p in pr	edicti	on								
003	Dist	ance b	ased r	nodels	s comp	lexity									
CO4	Prob	abilist	ic mo	dels u	ndersta	anding	;								
005	Non	linear	model	s and	ensem	bles ir	nprove	e effici	ency						
	ibutio ow, 2	on - Med	of ium, 3		ourse gh)	0	utcom	es	towa	rds	achi	evement	of	Program	Outcome
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO12	PSO1	PSO2	PSO3
201	3	2	2	-	-	-	-	-	-	-	-	-	-	_	2
202	3	2	2	2	-	-	-	-	-	-	-	-	-	3	2
03	2	2	3	2	-	-	-	-	-	-	-	-	2	2	-
04	3	3	2	-	-	-	-	-	-	-	-	-	-	2	3
	2	21	3	2	2	2	•	-	-	-	-	-	13	3	
:05						·					1		114		1

Text data preprocessing, Bag of words, TF IDF, Word2vec, Plane and Hyper-plane for machine learning, Data Cleaning, Data Preprocessing (Min – Max Scaling), Normalizing, Standardize, Mean, Variance, Standard Deviation, One Hot Encoding

Unit III :

Beyond Binary Classification: Handling more than two classes, finding minimum and maximum of a function, Gradient Descent, Linear Regression, Multiple Regression, Calculating accuracy in regression (RMSE), Effect of outliers and noisy







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data, overfitting and underfitting models, K-fold cross validation, confusion matrix for cross validation imbalanced data, ROC_AUC curve for imbalanced data, F1 score

UNIT IV :

Logistic Regression: Sigmoid function in logistic regression, loss functions in logistic regression.

Linear Models: The Least Square method, Support Vector Machine (SVM)

Tree Model: Decision Trees, Ranking and Probability estimation trees,

UNIT V:

Distance Based Models: Distance Measures (Euclidean, Manhattan and Minkowski), Neighbors, KNN, Distance based clustering, Hierarchical Clustering, Agglomerative Clustering

Probabilistic model: Naive Bayes algorithm for classification, Laplace, smoothing

Model Ensembles: Bagging and Random Forest, Boosting

Text Book

- 1. Machine Learning: The art and science of algorithms that make sense of data, Peter Flach, Cambridge.
- 2. Machine Learning, Tom M. Mitchell, MGH.

REFERENCE BOOKS:

- 1. Understanding Machine Learning: From Theory to Algorithms, Shai Shalev-Shwartz, Shai Ben- David, Cambridge.
- 2. Machine Learning in Action, Peter Harington, 2012, Cengage.

E-RESOURCES

1.https://alex.smola.org/drafts/thebook.pdf

2.https://www.slideshare.net/liorrokach/introduction-to-machine-learning-13809045

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			Titl	e of the C	ourse: C	ompiler 1	Design					
Lectur Practi		Tut	torial- 3	-0-0]	internal N	larks:		30
Credit	ts:		3					1	External I	Marks:		70
Prereg	quisites: F	ormal La	nguage an	id Automa	ta Theor	у						
Course	e Objectiv	/es:						111-1 111-1 111				
1. To d	lescribe th	e design (of a comp	iler includ	ing its pl	nases and	compone	nts and ba	asic under	standing o	f	
Grar	mmars and	l language	e definitio	n.								
					among v	arious par	sing tech	niques an	d gramma	r transforr	nation	
	nniques.						0		- 8			
	-	the arms	w owol	a intam-	diata an f	a goment	on toma	hadrine	the sole -	f symbol 1	able and	
		·	ax anaiysi	s, interne	chate coo	le general	ion, type c	mecking,	the role o	a symbol i		
	rganizatio											
4. To U	Understand	l, design o	code gener	ration and	optimiza	ation sche	mes.					
Course	e Outcom	es:										-1-
Upon s	successful	complet	ion of the	course, t	he stude	nt will be	able to:					
CO1	To use	the know	vledge of	patterns, t	okens &	regular ex	pressions	for solvi	ng a prob	lem.		
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UNIT I :

Overview of Compilation: Structure of a compiler – Lexical Analysis – Role of Lexical Analyzer – Input Buffering – Specification of Tokens – Recognition of Tokens – Lex – Finite Automata – Regular Expressions to Automata – Minimizing DFA. Interpretation, bootstrapping, LEX - lexical analyzer generator and Boot Strapping. UNIT II:

SYNTAX ANALYSIS: Context free grammars, Top down parsing – Backtracking, LL (1), Recursive Descent Parsing, Predictive Parsing. Bottom up Parsing: Shift Reduce parsing, LR and LALR parsing, Operator Precedence parsing, Error recovery in parsing, handling ambiguous grammar, YACC – automatic parser generator.

UNIT III:

Semantic analysis: Intermediate forms of source Programs – abstract syntax tree, polish notation and three address codes. Attributed grammars, Syntax directed translation, Type checker.

Symbol Tables: Symbol table format, organization for block structures languages. Block structures and non block structure storage allocation: static, runtime stack and heap storage allocation. UNIT IV:

RUN-TIME ENVIRONMENT AND CODE GENERATION :

Storage Organization, Stack Allocation Space, Access to Non-local Data on the Stack, Heap Management – Issues in Code Generation – Design of a simple Code Generator.

UNIT V:

CODE OPTIMIZATION:

Semantic preserving transformations, global common sub expression elimination, copy propagation, dead code elimination, constant folding, strength reduction, loop optimization. Instruction scheduling, inter procedural optimization.

Principal Sources of Optimization – Peep-hole optimization – DAG- Optimization of Basic Blocks-Global Data Flow Analysis – Efficient Data Flow Algorithm.

TEXT BOOKS:

1. Alfred V. Aho, Ravi Sethi & Jeffrey. D. Ullman, "Compilers Principles, Techniques & Tools", Pearson

Education, third edition, 2007.

2 Andrew N. Appel, "Modern Compiler Implementation in C", Cambridge University Press, 2004.

REFERENCE BOOKS:

1. John R. Levine, Tony Mason, Doug Brown, "lex & yacc", O'Reilly Media, Inc., 1992.

2. Kenneth C. Louden, Compiler Construction: Principles and Practice, Course Technology Inc; International

edition, 1997

E-RESOURCES:

1. https://www.holub.com/software/compiler.design.in.c.html



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Course Title: Cryptography and Network Security

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Unit-1

Introduction, Computer Security Concepts, Security Attacks, Security Services, Security Mechanisms, A Model for Network Security, Mathematics of Cryptography

Classical Encryption Techniques, Symmetric Cipher Model, Substitution Techniques, Transposition Techniques

UNIT II:

Symmetric Encryption, Mathematics of Symmetric Key Cryptography, Introduction to Modern Symmetric Key Ciphers, Data Encryption Standard, Advanced Encryption Standard, BlowFish, IDEA, CAST-128 algorithms

UNIT III:

Asymmetric Encryption, Mathematics of Asymmetric Key Cryptography, Number Theory, Prime Numbers, Fermat's and Euler's Theorems, Testing for Primality, The Chinese Remainder Theorem, Discrete Logarithms, Asymmetric Key Ciphers Principles of Public-Key Cryptosystems, The RSA Algorithm, Diffie-Hellman Key Exchange, ElGamal Cryptosystem, EllipticCipher Block Chaining Mode, Cipher Feedback Mode, Output Feedback Mode, Counter Mode,

UNIT IV:

DATA INTEGRITY, Digital Signature schemes, & Key Management

Message Integrity and message authentication, Cryptographic hash functions, Digital Signature and Key Management UNIT V:

Network Security: Security at Application layer: PGP and MIME, Security at Transport layer: SSL and TLS, Security at Network layer: IPSec, System Security

Text Book:

- 1. Cryptography and Network Security Principles and Practice 6th Edition, William Stallings, Pearson Education
- 2. Cryptography and Network Security, Behrouz A Forouzan, DebdeepMukhopadhyay, 3E) Mc Gra Hill
- 3. AtulKahate, Cryptography and Network Security, TMH. (2003)

REFERENCE BOOKS:

- 1. Network Security Essentials: Applications and Standards, by William Stallings. Prentice Hall
- 2. Cryptography: Theory and Practice by Douglas R. Stinson, CRC press.
- 3. Charlie Kaufman, Radia Perlman, Mike Speciner, Network Security: Private Communication in Public World, 2 nd Edition, 2011, Pearson Education. 95
- 4. Network Security and Cryptography, Bernard Meneges, Cengage Learning

E-RESOURCES:

1. http://users.abo.fi/ipetre/crypto/



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- 2. https://www.vssut.ac.in/lecture_notes/lecture1428550736.pdf
- 3. https://analyticsindiamag.com/top-10-free-resources-to-learn-cybersecurity/
- 4. https://lecturenotes.in/subject/112/cryptography-and-network-security-cns
- 5. https://www.smartzworld.com/notes/cryptography-network-security-notes-pdf-cns-notes-pdf/
- 6. <u>https://studentsfocus.com/cs6701-cns-notes-cryptography-network-security-lecture-handwritten-notes-cse-7th-sem-anna-university/</u>
- 7. https://www.jntufastupdates.com/jntuk-r16-4-1-cns-material/



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		Course	Title: Au	ivanced	Database	Manager	nent Syste	ems				
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CO4	Demor	istrate the	issues in		n data inte							
CO5		p practical riate metho			of these me tr case	odels and	approache	s to be abl	e to sele	et and a	pply the	e
C06	Analys	ed interna	l structur	es, quer	v evaluatio	n and opti	mization.	· · · · · · · · · · · · · · · · · · ·	······			
ontributio						Progran						
	PO 1	PO 2	PO 3	4	PO 5	PO 6	PO 7	РО 8	PO 9	PO 10	PO 11	PC 12
COI	2	-	2	<u> </u>	-	-	_	-	2	-	-	-
CO2	3	-	2	-	2				2			_
CO2	2	2	4		2	-		-	-	-	3	-
CO4	2	-	-	-	-	-	-	-	-	-	-	2
CO5	2	-		- ;	-	-		-	-	-	-	2
CO6	2				-	-	- i	-	-	-	-	2
NIT – I NTRODUC atroduction aheritance. NIT – II RDBMS atabase de ODBMS a valuation: I ad parallel c	of object of sign for nd ORDB Data partiti	ORDBMS MS. Intro oning and	, ORBM	IS impl to Para	ementation llel databa	and chases, archi	allenges, (OODBMS or paralle	compa	arison ses, Pa	of RD	BMS
NIT-III ISTRIBUT	ED DAT	ABASES										
troduction tabases.			bases: Fe	atures o	of distribut	ed databa	ases vs ce	entralized	database	s, Wh	y distri	bute
DBMS: Lev or read-only												
atabases.					UNIT	- IV						
ISTRIBUT	ED DAT	ABASE D	ESIGN		VIIII.	¥						
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of fragments; Distributed Query processing: Equivalence of transformations for queries, transforming global queries into fragment queries, distributed grouping and aggregation functions.

UNIT – V

QUERY OPTIMIZATION

A framework for query optimization, join queries and general queries. non-join queries in a distributed DBMS, joins in a distributed DBMS, cost based query optimization. DBMS Vs IR systems, Introduction to Information retrieval, Indexing for text search, web search engine, managing text in a DBMS, a data model for XML, Querying XML data, and efficient evaluation of XML queries.

TEXT BOOKS:

1. Raghuramakrishnan and Johannes Gehrke, "Database Management Systems", 3rd Edition, TMH, 2006.

2. S Ceri and G Pelagatti, "Distributed databases principles and systems", 1st Edition, TMH, 2008. REFERENCE BOOKS:

- 1. Silberschatz, Korth, "Database System Concepts", 6th Edition, TMH, 2010.
- 2. Elmasri R, Navathe S B, Somayajulu D V L N, and Gupta S K, "Fundamentals of Database Systems", 5th Edition, Pearson Education, 2009.

3. C. J. Date, "Introduction to Database Systems", 8th Edition, Pearson Education, 2009.

E-RESOURCES:



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NAAC

Course Title: Network Programming

Lectu	ıre – I	Practic	ical: 3-0-0 Internal 30 Marks:													
Cred	its			3					Externa Marks:		70					
Prere	quisit	es: No	ne	-											1	
Cour	se Ob	jective	s													
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CO2 CO3										ho client ograms.	-server	programs	3.			
CO4	Expl	ain So	cket o	ptions	and al	bility t	o under	stand	I IPC.							
CO5										to desig	n simpl	le applica	ations like F	TP, TELNET		
	etc.	· .														
	ibutio		of um 3	Cours - Hig		Outco	mes	tow	/ards	achiev	ement	of	Program	Outcomes		
(1 * 1	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO12	ŀ	PSO1	PSO2	PS
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CO2	-	2	3	3	-	-	-	~	-	-	-	-		2	2	
CO3	-	2	2	3	2	-	-	-	-	-	-			2	2	
CO4	2	2	3	-	-	-	-	-	-	-	-	-		3	-	-
CO5	2	2	2	2	3	-	-	-	-	-	-	-		3	2	
archite value UNIT TCP:	uction ecture: result II: introd	client argum uction	-serve ents-B	r and tyte or CP-TC	peer-to dering P com	o-peer functi nectior	system ons-By establ	s, So te ma ishm	ent and	ocket Ad ion funct termina	dress st ions-Ad tionTIM	ructures: ldress coi 1E_WAI	IPv4, IPv6 nversion fun T State. Ele	CTP-network and Generic- ctions mentary TCP ead and write		

UNIT IV:

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UDP: Introduction to UDP-difference between TCP and UDP-recvfrom() and sendto() functions-UDP echo client server program-UDP echo client server using select function. Socket Options: IPv4 socket options-IPv6 socket options

UNIT V:

Generic socket options-TCP socket options. IPC: Introduction to IPC-forms of IPC-UNIX kernel support for pipes, FIFO, message queues, semaphores and shared memory Network programming concepts Implementation: FTP-ping-arp-SMTP-TELNET

Text Book:

Unix Network programming, the socket networking API, W.Richard Stevens, bill fenner, Andrew m.rudoff ,PHI.

REFERENCE BOOKS:

Advanced programming in the UNIX environment, W.Richard Stevens ,pearson education



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Course Title: Big Data Analytics

Lectu	re – F	Practic	cal:	3-0-	-0				Inter Mar		30				
Credi	its			3					Externa Aarks:		70	1.3			
Prere	quisit	es: No	one												
Cours	se Obj	jective	S												
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Cours	se Out	come	5												
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CO1			the k		ies in '	big da	ta man	agem	ent and	its asso	ciated a	application	is in intellig	ent business	and
CO2		uire fi analy		ental e	enablir	ng tech	nique	s and	scalable	e algori	thms li	ke Hadooj	o, Map Red	uce and NO	SQL in big
CO3	analy	/tics	•										oly software		-
CO4		ieve ad cation		e persj	pectivo	es of b	ig data	ı analy	tics in v	various	applica	tions like	recommend	ler systems, :	social media
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CO2				3					3						2
CO3		3				3				2				3	
CO4				3					2			2	2	4	
UNIT	I:						÷			-		0		Manager year	

Evolution of Big data — Best Practices for Big data Analytics — Big data characteristics — Validating — The Promotion of the Value of Big Data — Big Data Use Cases- Characteristics of Big Data Applications — Perception and Quantification of Value -Understanding Big Data Storage — A General Overview of High-Performance Architecture — HDFS — MapReduce and YARN — Map Reduce Programming Mode

UNIT II:

Advanced Analytical Theory and Methods: Overview of Clustering — K-means — Use Cases — Overview of the Method — Determining the Number of Clusters — Diagnostics — Reasons to Choose and Cautions .- Classification: Decision Trees — Overview of a Decision Tree — The General Algorithm — Decision Tree Algorithms — Evaluating a Decision Tree — Decision Trees in R — Naïve Bayes — Bayes? Theorem — Naïve Bayes Classifier.



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UNIT III:

Advanced Analytical Theory and Methods: Association Rules — Overview — Apriori Algorithm — Evaluation of Candidate Rules — Applications of Association Rules — Finding Association& finding similarity — Recommendation System: Collaborative Recommendation- Content Based Recommendation — Knowledge Based Recommendation- Hybrid Recommendation Approaches.

UNIT IV:

Introduction to Streams Concepts — Stream Data Model and Architecture — Stream Computing, Sampling Data in a Stream — Filtering Streams — Counting Distinct Elements in a Stream — Estimating moments — Counting oneness in a Window — Decaying Window — Real time Analytics Platform(RTAP) applications — Case Studies — Real Time Sentiment Analysis, Stock Market Predictions. Using Graph Analytics for Big Data: Graph Analytics

UNIT V:

NoSQL Databases : Schema-less Models?: Increasing Flexibility for Data Manipulation-Key Value Stores- Document Stores — Tabular Stores — Object Data Stores — Graph Databases Hive — Sharding — Hbase — Analyzing big data with twitter — Big data for E-Commerce Big data for blogs — Review of Basic Data Analytic Methods using R

Text Book:

1. Jure Leskovec, AnandRajaraman, Jeffrey David Ullman, "Mining of Massive Datasets", Cambridge University Press, Second Edition, 2014.

REFERENCE BOOKS:

1. Jiawei Han, MichelineKamber, Jian Pei, "Data Mining Concepts and Techniques", Morgan Kaufman Publications, Third Edition, 2011.

2. Ian H.Witten, Eibe Frank "Data Mining – Practical Machine Learning Tools and Techniques", Morgan Kaufman Publications, Third Edition, 2011.

3. David Hand, HeikkiMannila and Padhraic Smyth, "Principles of Data Mining", MIT Press, 2001

E-RESOURCES

Big Data Analytics Tutorial (tutorialspoint.com) Big Data Analytics Notes Pdf Download & List of Reference Books for BDA (ncertbooks.guru)

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Course Code-OBJECT ORIENTED ANALYSIS AND DESIGN

Lecture Practic		Tute	orial- 3	-0-0								Internal Marks:		30	
Credits			3									Externa Marks:	I	70	
Prerequ	uisites:														
No parti	icular skil	lls are req	uired as a	prerequi	site before	e learning	UML.								
Course	Objectiv	es:													
	-	-		-	-	-	ited appro	ach							
	To understand how to solve complex problems Analyze and design solutions to problems using object oriented approach Study the notations of Unified Modeling Language Specify, analyze and design the use case driven requirements for a particular system. Model the event driven state of object and transform them into implementation specific layouts. Identify, Analyze the subsystems, various components and collaborate them interchangeably. urse Outcomes: on successful completion of the course, the student will be able to: 11 Analyse, design, document the requirements through use case driven approach 22 Identify, analyse, and model structural concepts of the system														
• Mo	Analyze and design solutions to problems using object oriented approach Study the notations of Unified Modeling Language Specify, analyze and design the use case driven requirements for a particular system. Model the event driven state of object and transform them into implementation specific layouts. Identify, Analyze the subsystems, various components and collaborate them interchangeably. urse Outcomes: on successful completion of the course, the student will be able to: 01 Analyse, design, document the requirements through use case driven approach 02 Identify, analyse, and model structural concepts of the system														
• Ider	ntify, Ana	lyze the s	ubsystem	is, variou	s compone	ents and c	ollaborate	them in	iterchange	ably.					
Course	Outcom	es:													
Upon su	iccessful	completi	on of the	course, t	he studer	nt will be	able to:								
CO1	To understand how to solve complex problems Analyze and design solutions to problems using object oriented approach Study the notations of Unified Modeling Language Specify, analyze and design the use case driven requirements for a particular system. Model the event driven state of object and transform them into implementation specific layouts. Identify, Analyze the subsystems, various components and collaborate them interchangeably. urse Outcomes: on successful completion of the course, the student will be able to: 1 Analyse, design, document the requirements through use case driven approach 2 Identify, analyse, and model structural concepts of the system 3 Develop, explore the conceptual model into various scenarios and applications. 4 Apply the concepts of architectural design for deploying the code for software.														
COI	Analys	e, design	, documei	n me req	uirements	tarougn i	ise case d	nven apj	proacn						
CO2	Identif	y, analyse	and mo	del struct	ural conce	pts of the	system								
CO3	Develo	n explore	the conc	entual mo	del into y	arious so	enarios an	d applic	ations						
005	Develo	p,expiore		optuar m	7401 IIIO V	anous 50		a apprio	actoris.						
CO4	Apply	the conce	pts of arc	hitectural	design fo	or deployi	ng the coo	le for so	ftware.						
CO5	Identif	y, analyse	, and mo	lel Archi	tectural co	oncepts of	the syste	m							
Contrib	ution of	Course O	utcomes	towards	achieven	nent of P	rogram O	utcome	s (1 – Low	, 2- Medium	n, 3 – H	igh)			
	POJ	P O2	PO3	PO4	PO5	P06	P07	PO8	PO9	PO10	PO1 1	PO12	PSO 1	PSO 2	
CO1				_			-					2		3	-
	2	2	2		2										
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CO5	3	3	3		2	3					2	2			





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UNIT I:

Introduction to UML:

The meaning of Object-Orientation, object identity, encapsulation, information hiding, polymorphism, genericity, importance of modeling, principles of modeling, object oriented modeling, conceptual model of the UML, Architecture

UNIT II:

Basic structural Modeling: Classes, relationships, common mechanisms, diagrams, Advanced structural modeling: advanced relationships, interfaces, types & roles, packages, instances.

Class & object diagrams: Terms, concepts, examples, modeling techniques, class & Object diagrams.

UNIT III:

Collaboration diagrams: Terms, Concepts, depicting a message, polymorphism in collaboration Diagrams, iterated messages, use of self in messages.

Sequence diagrams: Terms, concepts, differences between collaboration and sequence diagrams, depicting synchronous messages with/without priority call back mechanism broadcast message.

UNIT IV:

Behavioral Modeling: Interactions, use cases, use case diagrams, activity diagrams.

Advanced Behavioral Modeling: Events and signals, state machines, processes & threads, time and space, state chart diagrams.

UNIT V:

Architectural Modeling: Terms, concepts, examples, modeling techniques for component diagrams and deployment diagrams.

FEXT BOOKS:	
I. The Unified Modeling Language User Guide, Grady Booch, Rambaugh, Ivar Jacobson, PEA	2
2. Fundamentals of Object Oriented Design in UML, Meilir Page- Jones, Addison Wesley	
REFERENCE BOOKS:	
I. Head First Object Oriented Analysis & Design, Mclaughlin, SPD OReilly, 2006	





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3. The Unified Modeling Language Reference Manual, 2/e, Rambaugh, GradyBooch, etc., PEA

- 4. Object Oriented Analysis & Design, Satzinger, Jackson, Thomson
- 5 Object Oriented Analysis Design & implementation, Dathan., Ramnath, University Press
- 6. Object Oriented Analysis & Design, John Deacon, PEA
- 7. Fundamentals of Object Oriented Analysis and Design in UML, M Pages-Jones, PEA
- 8. Object-Oriented Design with UML, Barclay, Savage, Elsevier, 2008

E-RESOURCES:

1.https://www.geeksforgeeks.org/unified-modeling-language-uml-introduction/

2.https://www.javatpoint.com/uml

3.https://www.uml-diagrams.org/

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Course Title: Machine Learning Lab

Lecture Practical::	– Tutorial-	0-0-3	Internal Marks:	15
Credits:		1.5	External Marks:	75
Prerequisite	s: Knowledge of C I	Programming, Basic commands of UNIX.		
Knowledge of	of C Programming, E	Basic commands of UNIX		
Course Obje	ctives:	OUNDORCOMEDAPONYSIDMORDEDIGENEEDEMINEREDEMINEREDEMINEREDEMINEREDEE - EITOPMERED-AARDONSKUUMSENEEDEMINE DISKUUM-	ar-94 maxdoorowallowalay and immonohily provincing series with a series of the series of which are	

The object of this course is to provide hands-on practice on implementing different machine learning models and using different accuracy techniques to improve the prediction percentage.

Course Outcomes:

Upon successful completion of the course, the student will be able to:

CO1 Should be able to do data cleaning and data preprocessing

CO2 Should be able to apply imbalanced data sets accuracy

CO3 Should be able to apply machine learning techniques to large data sets

Contrik	oution of (Course (Dutcomes	towards	achieven	nent of P	годгат С	Jutcomes	(1 – Low	, 2- Medi	ium, 3 – F	ligh)
	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO
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CO1	2	2	-	2	-	-	-	-	-	-	-	-
CO2	-	2	2	-	-	-	-	-	-	-	2	2
CO3	3	-	-	2	2	-	-	-	-	-	2	2

List of Programs

- 1. Implement data cleaning techniques
- 2. Implement data preprocessing techniques.
- 3. Make your data ready for model training.
- 4. Train, validate and test KNN model using gridsearchev
- 5. Train, validate and test naïve bayes model
- 6. Train Validate and test logistic regression model.
- 7. Train Validate and test SVM model.
- 8. Train Validate and test random forest ensemble.

TEXT BOOKS:

- 1) Hands-On Machine Learning with Scikit-Learn, Keras and Tensor Flow: Concepts, Tools and Techniques to Build Intelligent Systems (Colour Edition) Paperback 23 October 2019 by <u>AurelienGeron</u>(Author)
- 2) Introduction to Machine Learning with Python: A Guide for Data Scientists (Greyscale Indian Edition) Paperback – 1 January 2016 by <u>Andreas Muller</u>

E-RESOURCES: www.numpy.org www.pandas.org





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NAAC

Course Code-R Programming Lab

Lectur		Tutoria	I- 0-0-3					Ir	iternal N	larks:		15
Credits			1.5					E	xternal N	farks:		35
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2.	Use of S	Sorting ar	id Searchin	ng techniq	ques.							
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4.	Use of (Classifica	tions.									
5.			Regression	s.								
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			ion of the	course, t	he studer	nt will be	able to:					
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CO2			Sorting an		ing techni	oves.	· ····		1999			
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E-Resources:

- 1. https://onlinecourses.nptel.ac.in/noc19_ma33/preview
- 2. https://nptel.ac.in/courses/111104100.
- 3. https://ict.iitk.ac.in/courses/r-programming-a-practical-approach/





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			Course	Code-	Compli	er Desig	<u>n Lab</u>					
Lectur	re —	Tutoria	- 0-0-3					Ir	ternal M	arks:		15
Practic												
Credit			1.5						xternal N	farks:		35
		C- Progra	mming, I)ata Stru	ctures, S	tatistics f	undamen	tals				
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CO2	To ap	ply the kn	owledge (of lex tool	& yacc t	ool to dev	elop a sca	mner & pa	arser.			
					ALTERNA A STRATE. SALL			-		www.rewww.wa.watebblic.tec.ch	a ak pasalak ak iki i	
CO3	To wi	ite the ne	w code oj	otimizatio	on techniq	ues to im	prove the	performa	nce of a j	program i	n terms o	f speed
	space											
						herdenskanska Markkanska processionista						
CO4	To en	ploy the l	cnowledge	e of mode	rn compi	ler & its fo	eatures.					
		nar-11a 20-11a-20-20-20-20-20-20-20-20-20-20-20-20-20-						1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	8			
CO5	То ра	rticipate in	n GATE, I	PGECET	and other	competit	ive exami	nations				
	1	Course (and of D.			(1 L one	1 Madi	um 3 – E	liah)
JOUTLE	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO
	10	2	3	4	5	6	7	8	9	10	11	12
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	- 1 3	3	2	••••	_				i 	and the space of the second		
CO1	<u>^</u>		2		2							
CO1 CO2 CO3	3	3 2 2	3		2							
CO1 CO2	3	3	1 3	 : 2 : 3	_							

List of Experiments

1. Design a lexical analyzer for given language and the lexical analyzer should ignore redundant spaces, tabs and new lines. It should also ignore comments. Although the syntax specification states that identifiers can be arbitrarily long, you may restrict the length to some reasonable value. Simulate the same in C language.

2.

TEXT BOOKS:

3. The Art of R Programming, Norman Matloff, Cengage Learning.

4. R for Everyone, Lander, Pearson.

REFERENCE BOOKS:

1. R Cookbook, PaulTeetor, Oreilly.

2. R in Action, RobKabacoff, Manning

E-Resources:





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- 4. https://onlinecourses.nptel.ac.in/noc19_ma33/preview
- 5. https://nptel.ac.in/courses/111104100.

maiti

6. https://ict.iitk.ac.in/courses/r-programming-a-practical-approach/





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Course Title: MEAN STACK TECHNOLOGY -LAB

Lectu	ire —]	Practi	cal:	0-0-	-4				nterna /larks:	1	15				
Credi	its			2					Externs Aarks:	ıl	35				
	Pr	erequ	isites:	11											
					edge o	on deve	loping	z web:	applica	tions					
						web la									
•									le Inter	face (C	LI)				
•									ng lang		,				
				-		-									
				he Ot	ojectiv	e of thi	s cour	se is t	o give a	a strong	; found	ation of the	e Develop	ment and its O	perations.
Cours	se Ou	tcome	S												
									at will	be able	to:				
						e deve	lopme	nt.							
	rn the														
	ine an														•
CO1	Toc	ode a	MEAI	V Stac	k App	licatio	n								
CO2	Deve	elopin	g Sing	le Pag	e App	licatio	ns (SP	'As) vi	a MEA	N Stac	k				
CO3	Setu	p routi	ng wi	thin A	ngula	r & Ex	press								
								ish Dar		Noda					
CO4	Writ	е Ехрі	ess B	ack-Ei	nd We	b Serv		ith Ex	press &	2 Node					
CO4 CO5	Writ Emp	e Expi loy Ex	ess B	ack-Ei Web (nd We Servic	b Serv es		ith Ex	press &	2 Node					
CO4 CO5	Writ Emp	e Expi loy Ex	ess B	ack-Ei	nd We Servic	b Serv es		ith Ex	press &	2 Node					
CO4 CO5 CO6	Writ Emp Unde	e Expi loy Ex erstanc	ess B	ack-Ei Web fango	nd We Servic	b Serv es S			press &		achie	evement	of	Program	Outcomes
CO4 CO5 CO6	Writ Emp Unde	e Expi loy Ex erstanc	ress Barress press ling M of	ack-Ei Web S fango Co	nd We Servic DBM urse	b Serv es S	ices w				achie	evement	of	Program	Outcomes
CO4 CO5 CO6	Writ Emp Unde ibutic ow, 2- PO	e Expi loy Ex erstand n - Med PO	ress Barress press ling M of ium, 3 PO	ack-Ea Web S fango Co G – Hij	nd We Servic DBM urse gh) PO	b Serv es S Ou	ices w utcom	es PO	towa PO		achie PO	evement PO12	of PSO1	Program PSO2	Outcomes PSO3
CO4 CO5 CO6	Writ Emp Unde ibutic ow, 2-	e Expi loy Exerstance on - Med	ress Barress apress ling M of ium, 3	ack-Ei Web fango Co i – Hi	nd We Servic DBM urse gh)	b Serv es S Or	ices w	es	towa	rds					
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CO4 CO5 CO6 Contr (1 – L	Writ Emp Unde ibutic ow, 2- PO 1	e Expi loy E> erstand • Med PO 2	of ium, 3 PO 3	ack-Ei Web fango Co i – Hi PO 4	nd We Servic DBM ourse gh) PO 5	b Serv es S On PO 6	ices w utcom	es PO	towa PO	rds PO	PO		PSO1		PSO3
CO4 CO5 CO6 Coutr (1 – L CO1 CO2	Writ Emp Unde ibutic ow, 2- PO 1 3	e Expr loy Ex erstand Med PO 2 2	of pross of ium, 3 PO 3	ack-Ei Web S fango Co 5 – Hij PO 4	nd We Servic DBM urse gh) PO 5 -	b Serv es S O PO 6 -	ices w utcom	es PO	towa PO	rds PO	PO	PO12	PSO1	PSO2	PSO3
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CO3 CO4 CO5 CO6 Coutr (1-L CO1 CO2 CO3 CO4 CO5 CO6	Writ Emp Unde ibutic ow, 2- PO 1 3 3 2 3	e Expi loy Exerstance on PO 2 2 2 2 3 2,2	ress Barress press ding M of ium, 3 PO 3 2 2 2 3 2 2 3 2	ack-Ei Web S fango Co 5 – Hij PO 4 - 2 2 2	nd We Servic DBM urse gh) PO 5 - - - - -	b Serves S PO 6 - - -	ices w utcom	es PO	towa PO	rds PO	PO	PO12 3 3	PSO1	PSO2	PSO3 2 2 - 3
CO4 CO5 CO6 Coutr (1 – L CO1 CO2 CO3 CO4 CO5	Writ Emp Unde ibutic ow, 2- PO 1 3 3 2 3	e Expi loy Exerstance on Med PO 2 2 2 2 2 3	ress Barress press ding M of ium, 3 PO 3 2 2 2 3 2 2 3 2	ack-Ei Web S fango Co i – Hi PO 4 - 2 2 2 - 2	nd We Servic DBM urse gh) PO 5 - - - - 2	b Serv es S PO 6 - - - 2	ices w utcom	es PO	towa PO	rds PO	PO	PO12	PSO1	PSO2	PSO3 2 2 - 3
CO4 CO5 CO6 Contr (1 – L CO1 CO2 CO3 CO4 CO5	Writ Emp Unde ibutic ow, 2- PO 1 3 3 2 3 2 3 2	e Expr loy Ex- erstand PO 2 2 2 2 2 3 2 2 3	of ium, 3 PO 3 2 2 3 2 3	ack-Ei Web S fango Co i – Hi PO 4 - 2 2 2 - 2	nd We Servic DBM urse gh) PO 5 - - - - 2	b Serv es S PO 6 - - - 2	ices w utcom	es PO	towa PO	rds PO	PO	PO12 3 3	PSO1	PSO2	PSO3 2 2 - 3

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•	Angular :
•	Getting Started with Angular
•	Introduction to Components
•	Templates, Interpolation, and Directives
•	Data Binding & Pipes
•	More on Components
•	Building Nested Components
•	Forms
•	Services and Dependency Injection
•	Retrieving Data Using HTTP
	Navigation and Routing Basics
•	Node Js :
•	Introduction
•	Exploring language additions to the V8 JavaScript engine
•	Understanding NodeJS
•	HTTP and File System
•	Buffers, Streams, and Events

- Using Express Framework
- Working with Models, Views, and Routes
- Database
- Working with MongoDB
- Working with RESTful web services
 - Angular With Node







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Course Title: EMPLOYABILITY SKILLS -II 2-0-0 30 Internal Lecture - Practical: Marks: 70* Ω External Credits Marks: **Prerequisites:** None **Course Objectives** To learn skills for discussing and resolving problems on the work site To assess and improve personal grooming To promote safety awareness including rules and procedures on the work site To develop and practice self management skills for the work site **Course Outcomes** Upon successful completion of the course, the student will be able to: Recite the corporate etiquette. CO1 CO₂ Make presentations effectively with appropriate body language CO3 Be composed with positive attitude **CO4** Apply their core competencies to succeed in professional and personal life Contribution Course Outcomes towards achievement of of Program Outcomes (1 - Low, 2 - Medium, 3 - High)PO PO **PO12 PSO1** PSO₂ PSO3 1 2 3 4 5 6 7 8 9 10 11 2 CO1 2 2 3 2 2 CO2 2 3 2 CO3 2 3 3 3 CO4 2 3 3 2 2 UNIT I: Interview Skills: Interviewer and Interviewee - in-depth perspectives. Before, During and After the Interview. Tips for Success. Presentation Skills: Types, Content, Audience Analysis, Essential Tips-Before, During and After, Overcoming Nervousness UNIT II:

Etiquette and Manners – Social and Business. Time Management – Concept, Essentials, Tips. Personality Development – Meaning, Nature, Features, Stages, Models; Learning Skills; Adaptability Skills.

UNIT III:

Decision-Making and Problem-Solving Skills: Meaning, Types and Models, Group and Ethical Decision-Making, Problems and Dilemmas in application of these skills. Conflict Management: Conflict - Definition, Nature, Types and Causes; Methods of Conflict Resolution.





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UNIT IV:

Stress Management: Stress - Definition, Nature, Types, Symptoms and Causes; Stress Analysis Models and Impact of Stress; Measurement and Management of Stress Leadership and Assertiveness Skills: A Good Leader; Leaders and Managers; Leadership Theories; Types of Leaders; Leadership Behavior; Assertiveness Skills.

UNIT V: Emotional Intelligence: Meaning, History, Features, Components, Intrapersonal and Management Excellence; Strategies to enhance Emotional Intelligence

Text Book:

1) Barun K. Mitra, Personality Development and Soft Skills, Oxford University Press, 2011.

REFERENCE BOOKS:

1) S.P. Dhanavel, English and Soft Skills, Orient Blackswan, 2010.

2) R.S.Aggarwal, A Modern Approach to Verbal & Non-Verbal Reasoning, S.Chand & Company Ltd., 2018.

3) Raman, Meenakshi & Sharma, Sangeeta, Technical Communication Principles and Practice, Oxford University Press, 2011.

4) R.S.Aggarwal, A Modern Approach to Verbal & Non-Verbal Reasoning, S.Chand & Company Ltd., 2018.
5) Raman, Meenakshi & Sharma, Sangeeta, Technical Communication Principles and Practice, Oxford University Press, 2011.



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PROGRAMME III YEAR I SEMESTER – B.Tech – CSE (AI & ML)

SI. No	Course Code	Title of the Course	Schen (Peri		Instru ?er W		Sc Exa (Maxin	No. of Credits		
			L	Т	P/D	Tota 1	CIA	SEA	Total	Creans
1	20A3142401	Big-data Analytics	3	0	0	3	30	70	100	3
2	20A3105401	Computer Networks	3	0	0	3	30	70	100	3
3	20A3242401	Design and Analysis of Algorithms	3	0	- 0	3	30	70	100	3
4	20A314260X	OE-1	2	0	2	4	30	70	100	3
5	20A314251X	PE-1	3	0	0	3	30	70	100	3
6	20A3142491	Operating systems & Computer Networks lab	0	0	3	3	15	35	50	1.5
7	20A3142492	Big-data Analytics Lab	0	0	3	3	15	35	50	1.5
8	20A3105991	DEVOPS	0	0	4	4	15	35	50	2
10	20A3142801	Employability Skills	2	0	0	2	30	70	100	0
		hs (Mandatory) after d during V semester)	0	0	0	0	30	70	100	1.5
	Tot	al	16	0	12	28	255	595	850	21.5
	Honors/Mino	Honors/Minor courses - 2			2	5	30	70	100	4

Code	Professional Elective - 1
20A3142511	1.5 Compiler design
20A3142512	1.6 Internet of Things
20A3242402	1.7 Deep Learning and its Applications
20A3142514	1.8 Advanced Data Structures



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PRPOPSED STRUCTURE FOR THIRD YEAR B.TECH CSE (AI&ML) PROGRAMME III YEAR II SEMESTER – B.Tech – CSE (AI & ML)

Sl. No	Course Code Title of the Course		Scheme of Instruction (Periods Per Week)				Scheme of Examination (Maximum Marks)			No. of Credits
			L	Т	P/D	Tota l	CIA	SEA	Total	Creuns
1	20A3242402	Deep learning and its Applications	3	0	0	3	30	70	100	3
2	20A3205401	Cryptography and Network Security	3	0	0	3	30	70	100	3
3	20A3242401	Design and Analysis of Algorithms	3	0	0	3	30	70	100	3
4	20A324260X	OE-2	2	0	2	4	30	70	100	3
5	20A324251X	PE-2	3	0	0	3	30	70	100	3
6	20A3242493	Deep learning Lab	0	0	3	3	15	35	50	1.5
7	20A3242492	Cryptography and Network Security Lab	0	0	3	3	15	35	50	1.5
8	20A3242491	Algorithms Lab	0	0	3	3	15	35	50	1.5
9	20A3242991	MEAN stack Technologies	0	0	4	4	15	35	50	2
10	20A3242801	Employability Skills -	2	0	0	2	30	70	100	0
	То	tal	16	0	15	31	240	560	800	21.5
	Honors/Mino	er courses - 3	3	0	2	5	30	70	100	4

Industrial/Research Internship (Mandatory) 2 Months during summer vacation

Code	Professional Elective -2
20A3242511	2.1 Natural Language Processing
20A3242512	2.2 Intelligent Information Retrieval
20A3242513	2.3 Reinforcement Learning
20A3242514	2.4 Object Oriented Analysis and Design

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PRPOPSED STRUCTURE FOR THIRD YEAR B.TECH CSE (DS) PROGRAMME III YEAR I SEMESTER – B.Tech – CSE (DS)

SI. No	Course Code Title of the Course		Scheme of Instruction (Periods Per Week)				Scheme of Examination (Maximum Marks)			No. of
			L	Т	P/D	Tota l	CIA	SEA	Total	Credits
1	20A3105402	Artificial Intelligence	3	0	0	3	30	70	100	3
2	20A3105401	Computer Networks	3	0	0	3	30	70	100	3
3	20A3142401	Operating System	3	0	0	3	30	70	100	3
4	20A314460X	OE-1	3	0	0	3	30	70	100	3
5	20A314451X	PE-1	3	0	0	3	30	70	100	3
6	20A3142491	Operating System & Computer Networks lab	0	0	3	3	15	35	50	1.5
7	20A3144491	Artificial Intelligence Lab	0	0	3	3	15	35	50	1.5
8	20A3105991	DEVOPS	0	0	4	4	15	35	50	2
10	20A3144801	Employability Skills-1	2	0	0	2	30	70*	100	0
		ths (Mandatory) after ed during V semester)	0	0	0	0	30	70	100	1.5
	То	tal	17	0	10	27	255	595	850	21.5
	Honors/Mino	r courses - 2	3	0	2	5	30	70	100	4

Code	Professional Elective - 1	
20A3144511	1.1. Compiler Design	
20A3144512	1.2 Internet of Things	
20A3144513	1.3 Data Warehousing and Data Mining	
20A3144514	1.4 Advanced Data Structures	

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PROOPSED STRUCTURE FOR THIRD YEAR B.TECH CSE (DS) PROGRAMME III YEAR II SEMESTER – B.Tech – CSE (DS)

SI. No	Course Code Title of the Course		Scheme of Instruction (Periods Per Week)				Scheme of Examination (Maximum Marks)			No. of Credits
INU			L	Т	P/D	Tota l	CIA	SEA	Total	Creuits
1	20A3244401	Data Visualization Techniques	3	0	0	3	30	70	100	3
2	20A3242401	Design and Analysis of Algorithms	3	0	0	3	30	70	100	3
3	20A3244402	Foundations of Data Science	3	0	0	3	30	70	100	3
4	20A324460X	OE-2	3	0	0	3	30	70	100	3
5	20A324451X	PE-2	3	0	0	3	30	70	100	3
6	20A3244492	Data Visualization Lab	0	0	3	3	15	35	50	1.5
7	20A3244491	Algorithms Lab	0	0	3	3	15	35	50	1.5
8	20A3242493	Advanced Data Science Lab	0	0	3	3	15	35	50	1.5
9	20A3242991	MEAN stack Technologies	0	0	4	4	15	35	50	2
10	20A3244801	Employability Skills -	2	0	0	2	30	70*	100	0
	То	otal	17	0	13	30	240	560	800	21.5
	Honors/Min	or courses - 3	3	0	2	5	30	70	100	4

Code	Professional Elective -2
20A3244511	2.1 Deep Learning and its Applications
20A3244512	2.2 Big Data Analytics
20A3244513	2.3 Predictive Analytics
20A3244514	2.4 Object Oriented Analysis and Design

H.O.D Head, CSE Department NRI Institute of Technology POTHAVARAPPADU (VIII) Agiripalli (Mdl.), Krishna Dist.

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DEPARTMENT OF COMUTER SCIENCE AND ENGINEERING PROFESSIONAL ELECTIVES

III YEAR – I SEMISTER CSE

Code	Professional Elective - 1	
20A3105511	1.5 Cloud computing	
20A3105512	1.6 Software Testing Methodologies and Tools	
20A3105513	1.7 Data Warehousing and Data Mining	
20A3105514	1.8 Advanced Data Structures	_

III YEAR - II SEMISTER CSE

Code	Professional Elective -2
20A3205511	2.1 Advanced Database Management Systems
20A3205512	2.2 Network Programming
20A3205513	2.3 Big data Analytics
20A3205514	2.4 Object Oriented Analysis and Design

H.O.D

Head, CSE Department NRI Institute of Technology POTHAVARAPPADU (VIII) Agiripalii (Mcl.), Krishna Dist.



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DEPARTMENT OF COMUTER SCIENCE AND ENGINEERING PROFESSIONAL ELECTIVES

III YEAR - I SEMISTER CSE(AIML)

Code	Professional Elective - 1	
20A3142511	1.1 Compiler design	
20A3142512	1.2 Internet of Things	
20A3242402	1.3 Deep Learning and its Applications	
20A3142514	1.4 Advanced Data Structures	

III YEAR - II SEMISTER

Code	Professional Elective -2
20A3242511	2.1 Natural Language Processing
20A3242512	2.2 Intelligent Information Retrieval
20A3242513	2.3 Reinforcement Learning
20A3242514	2.4 Object Oriented Analysis and Design

. 9 Head, CH.O.Dartment NRI Institute of Technology POTHAVARAPPADU (VIII) Agiripalli (Edl.), Krishna Dist.



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DEPARTMENT OF COMUTER SCIENCE AND ENGINEERING PROFESSIONAL ELECTIVES - NRIA20

III YEAR - I SEMISTER CSE(DS)

Code	Professional Elective - 1	
20A3144511	1.1. Compiler Design	
20A3144512	1.2 Internet of Things	
20A3144513	1.3 Data Warehousing and Data Mining	
20A3144514	1.4 Advanced Data Structures	

III YEAR - II SEMISTER

Code	Professional Elective -2
20A3244511	2.1 Deep Learning and its Applications
20A3244512	2.2 Big Data Analytics
20A3244513	2.3 Predictive Analytics
20A3244514	2.4 Object Oriented Analysis and Design

O H.O.D Head, CSE Department **NRI Institute of Technology** POTHAVARAPPADU (VIII) Agiripalli (MdB.), Krishna Dist.





DEPARTMENT OF COMUTER SCIENCE AND ENGINEERING OPEN ELECTIVES (NRIA20)

III YEAR – I SEMISTER

Code	Open Elective -1
20A3105601	1.1 Data Structures

III YEAR - II SEMISTER

Code	Open Elective -2
20A3205602	2.1 OOPS through C++
20A3205603	2.2 Software Engineering

Head, CSE Depifritm NRI Institute of 19 mology na Dist H.O.D





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<u>III సంవత్సరం I సెమిస్టర్</u>

DEPARTMENT OF COMUTER SCIENCE AND ENGINEERING

PRPOPSED STRUCTURE FOR THIRD YEAR B.TECH PROGRAMME

III YEAR I SEMESTER

క.సం.	కేర్పు కోడ్	కోరుస్ష యొక్క శీర్షిక	స్కీమ్ (వారా		ఇన్(రై రియ		పరీక్షా కి మ	క్రెడిట్స్		
నం	ടയുടരം		ఎల్	ස්	P/D	మొ తం	CIA	సము ద	మొ తం	సంఖ్య
1	20A3105402	ఆర్జిఫిషియల్ ఇంటెలిజెన్స్	3	0	0	3	30	70	100	3
1	20A3105401	కంప్యూటర్ నెట్ట్ చర్కలు	3	0	0	3	30	70	100	3
2	20A3105403	అల్గో రిథంల రూపకల్పన మరియు విశ్లేషణ	3	0	0	3	30	70	100	3
	20A310560X	OE-1	3	0	0	3	30	70	100	3
5	20A310551X	PE-1	3	0	0	3	30	70	100	3
ú	20A3105491	కంప్యూటర్ నెట్ వర్క్స్ ల్యాబ్	0	0	3	3	15	35	50	1.5
7	20A3105492	AI (పోగ్రామింగ్ ల్యాబ్	0	0	3	3	15	35	50	1.5
8	20A3105991	DEVOPS	0	0	4	4	15	35	50	2
10	20A3105801 ఉపాధి నైపుణ్యాలు-1		2	0	0	2	30	70*	100	0
	నెలలు (తప్పని	ం తర్వాత సమ్మర్ ఇంటర్న్ షిష్ 2 సరి) (V సెమిస్టర్ సమయంలో ల్యాంకనం చేయాలి)	0	0	0	0	30	70	100	1.5
	మొత్తం			0	10	27	255	595	850	21.5
	అనర్స్/మైనర్ కోర్సులు - 2			0	2	5	30	70	100	4

20	2	

55	వృత్తిపరమైన ఎంపిక - 1
20A3105511	1.1 క్లోడి కంప్యూటింగ్
20A3105512	1.2 సాఫ్ట్ వేర్ టెస్టింగ్ మెథడాలజీస్ మరియు టూల్స్
20A3105513	1.3 డేటా పేర్హాసింగ్ మరియు డేటా మైనింగ్
20A3105514	1.4 అడ్వాన్స్ డ్ డేటా (స్థక్ఫర్స్

I T P/D Tetal CIA SEA Total Creat	54. No	Course Code	Title of the Course			lnstru er We		Scheme of Examination (Maximum Marks)		No. of	
				I .	T	P/D	Tetal	CIA	SEA	Total	Credits

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డిపార్ట్ మెంట్ ఆఫ్ కంప్ర్యూటర్ సైన్స్ అండ్ ఇంజినీరింగ్

మూడవ సంవత్సరం B.TECH పోగ్రామ్ కోసం ఉద్దేశించిన నిరాజంం

<u>III సంవత్సరం I సెమిస్టర్</u>

DEPARTMENT OF COMUTER SCIENCE AND ENGINEERING

PRPOPSED STRUCTURE FOR THIRD YEAR B.TECH PROGRAMME

క్ర.సం.	ന്ഹ നില	కోర్సు కోడ్ కోర్సు యొక్క శీర్తిక	స్కీమ్ (వారా	ఆఫ్ నికి ీ	ఇన్[දි ාරිయ	<u>ఫ్రక్షన్</u> డ్స్)	పరీక్షా కి మ	ເకెడిట్స్		
నం	2.00 2.09	క రుని యొకకి శనిక	ఎల్	ස්	P/D	మొ తం	CIA	సము ద	మొ తం	సంఖ్య
1	20A3105402	ఆర్టిపిషియల్ ఇంటెలిజెన్స్	3	0	0	3	30	70	100	3
2	20A3105401	కంప్యూటర్ నెట్వర్క్ లు	3	0	0	3	30	70	100	3
3	20A3105403	అల్లో రిథంల రూపకల్పన మరియు విశ్లేషణ	3	0	0	3	30	70	100	3
4	20A310560X	OE-1	3	0	0	3	30	70	100	3
5	20A310551X	PE-1	3	0	0	3	30	70	100	3
6	20A3105491	కంప్యూటర్ నెట్ వర్క్స్ ల్యాబ్	0	0	3	3	15	35	50	1.5
7	20A3105492	AI ట్రోగ్రామింగ్ ల్యాబ్	0	0	3	3	15	35	50	1.5
8	20A3105991	DEVOPS	0	0	4	4	15	35	50	2
10	20A3105801	ఉపాధి నెఫుణ్యాలు-1	2	0	0	2	30	70*	100	0.
రెండవ సంవత్సరం తర్వాత సమ్మర్ ఇంటర్న్ షిప్ 2 నెలలు (తప్పనిసరి) (V సెమిస్టర్ సమయంలో మూల్యాంకనం చేయాలి)		0	0	0	0	30	70	100	1.5	
మొత్తం		17	0	10	27	255	595	850	21.5	
ఆనర్స్/మైనర్ కోర్పులు - 2			3	0	2	5	30	.70	100	4

III YEAR I SEMESTER

కోడ్	వృత్తిపరమైన ఎంపిక - 1
20A3105511	1.1 క్లౌడ్ కంప్యూటింగ్
20A3105512	1.2 సాఫ్ట్ వేర్ టెఫ్టింగ్ మెథడాలజీస్ మరియు టూల్స్
20A3105513	1.3 డేటా వేర్హౌసింగ్ మరియు డేటా మైనింగ్
20A3105514	1.4 అడ్వాన్స్ డ్ డేటా (స్ట్రక్ఫర్స్

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SI. No	Course Code Title of the Course			Instruc 'er We		Scheme (Maxi	No. of			
			L	Т	P/D	Total	CIA	SEA	Total	Credits
1	20A3105402	Artificial Intelligence	3	0	0	3	30	70	100	3
2	20A3105401	Computer Networks	3	0	0	3	30	70	100	3
3	20A3105403	Design and Analysis of Algorithms	3	0	0	3	30	70	100	3
4	20A310560X	OE-1	3	0	0	3	30	70	100	3
5	20A310551X	PE-1	3	0	0	3	30	70	100	3
6	20A3105491	Computer Networks lab	0	0	3	3	15	35	50	1.5
7	20A3105492	AI Programming Lab	0	0	3	3	15	35	50	1.5
8	20A3105991	DEVOPS	0	0	4	4	15	35	50	2
10	20A3105801	Employability Skills-1	2	0	0	2	30	70*	100	0
Summer Internship 2 Months (Mandatory) after second year (to be evaluated during V semester)		0	0	0	0	30	70	100	1.5	
Total			17	0	10	27	255	595	850	21.5
Honors/Minor courses - 2		3	0	2	5	30	70	100	4	

Code	Professional Elective - 1	
20A3105511	1.5 Cloud computing	
20A3105512	1.6 Software Testing Methodologies and Tools	
20A3105513	1.7 Data Warehousing and Data Mining	
20A3105514	1.8 Advanced Data Structures	

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<u>III సంవత్సరం II సెమిస్థర్</u>

క.సం.	<u>ମ</u> ିନ କରିଥିଲେ ଅନ୍ୟ ହିନ୍ଦ		స్కీమ్ (వారా				పరీక్షా వ	ලියිදා		
్నం	కోర్సు కోడ్	కోర్సు యొక్క శీర్షిక	ఎల్	ස්	P/D	మొ తం	CIA	సము ద్రద	మొ తం	సంఖ్య
1	20A3205403	మెషిన్ లెర్నింగ్	3	0	0	3	30	70	100	3
2	20A3205402	కంపైలర్ డిజైన్	3	0	0	3	30	70	100	3
3	20A3205403	్రకిఫ్లోగ్రఫీ మరియు నెట్ వర్క్ సెక్యూరిటీ	3	0	0	3	30	70	100	3
4	20A320560X	OE-2	3	0	0	3	30	70	100	3
5	20A320551X	PE-2	3	0	0	3	30	70	100	3
6	20A3205491	మెషిన్ లెర్నింగ్ ల్యాబ్	0	0	3	3	15	35	50	1.5
7	20A3205492	R పోగ్రామింగ్ ల్యాబ్	0	0	3	3	15	35	50	1.5
8	20A3205493	కంపైలర్ డిజైన్ ల్యాబ్	0	0	3	3	15	35	50	1.5
9	20A3205991	మీన్ స్టాక్ టెక్నాలజీస్	0	0	4	4	15	35	50	2
10	20A3205801	ఉపాధి నెపుణ్యాలు - 2	2	0	0	2	30	70*	100	0
	మె	ာခဲ့ဝ	17	0	13	30	240	560	800	21.5
	ఆనర్స్/మైనర్ కోర్సులు - 3		3	0	2	5	30	70	100	4·
	බංවල	శామిక/పరిశోధన ఇంటర్న్ షి	స్ (తప్పగి	ఎసరి)	వేసవి	, సెల్ల	్రల్లో 2 నె	లలు		

కోడ్	వృత్తిపరమైన ఎంపిక -2					
20A3205511	2.1 అధునాతన డేటాబేస్ మేనేజ్ మెంట్ సిస్టమ్స్					
20A3205512	2.2 నెట్వర్/ పోగ్రామింగ్					
20A3205513	2.3 బిగ్ డేటా అనలిటిక్స్					
20A3205514	2.4 ఆభ్జెక్ట్ ఓరియెంటెడ్ విశ్లేషణ మరియు డిజైన్					

III YEAR II SEMESTER

SI. No	Course Code	Title of the Course			lnstruc er We			of Exami mum Mai		No. of
			Lege	Т	P/D	Total	CIA	SEA	Total	Credits
1°	20A3205403	Machine Learning	3	0	0	3	30	70	100	3
2	20A3205402	Compiler Design	3	0	0	3	30	70	100	3
3	20A3205401	Cryptography and Network Security	3	0	0	3	30	70	100	3
4	20A320560X	OE-2	3	0	0	3	30	70	100	3
5	20A320551X	PE-2	3	0	0	3	30	70	100	3
6	20A3205491	Machine Learning Lab	0	0	3	3	15	35	50	1.5
7	20A3205492	R Programming lab	0	0	3	3	15	35	50	1.5
8	20A3205493	Compiler Design Lab	0	0	3	3	15	35	50	1.5
9	20A3205991	MEAN Stack Technologies	0	0	4	4	15	35	50	2
10	20A3205801	Employability Skills - 2	2	0	0	2	30	70+	100	0

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Total	17	0	13	30	240	560	800	21.5
Honors/Minor courses - 3	3	0	2	5	30	70	100	4

Industrial/Research Internship (Mandatory) 2 Months during summer vacation

Code	Professional Elective -2	
20A3205511	2.1 Advanced Database Management Systems	×.
20A3205512	2.2 Network Programming	
20A3205513	2.3 Big data Analytics	
20A3205514	2.4 Object Oriented Analysis and Design	

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C Chairman-BOS Department of Computer Science & Engineering NRI Institute of Technology Agiripalli-521 212, Andhra Pradesh.

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కోర్పు శీర్షిక: ఆర్థిఫిషియల్ ఇంటెలిజెన్స్

	న్యాసం కల్::)–టు	్రటోర	రియల్	5_		3-0-0	C	യഠ	తర్గత	మార	్కులు:			30
N	ట్ప్:						3		బాప	°.s ሰነላ	రులు:				70
	వస్తు అ	వసరా	ူးး	ා ස්	మ					0					
	లక్ష్మాల														
స హ వి AI	ళ్యారిస్టే భిన్న శ్ర	ం మర క్ శోధ గౌన (కె ఓ అన	రియు సన దె రాతిని సవర్త	్శల మిక్క శ ద్య పర్త నాలన	సంక్షి భావాల స్థతుల పతుల	స్టతలం లను ఆ లను నేం ం చేస	తో పా ంర్థం చె ర్చుకో ఎకోవం	టు రా వేసుకో వడం శానికి:	్రఫ్ట్ ఆ వడాని అవి గె	ంతరి)కి 1మ్ క్లే	<u>క</u> ప్ర యిం	ాతినిధ గ్, థియ	్యం, సం మరమ్ (-	
ీరు్స	ఫల్ పూర్తం ఆంగ్లం	యిన	తరా	-	•	-			ుర్తవం	తమైన	న సవ	ుస్య స్థ	පෙතිාූ	రూపొం	ಂದಿಂಸ
O 2	సమస	్య కోస	ం శోడ	నన అ	ల్గారిఢ	ప్ష్	ಎಂಭ	పుకునే	సామ	ర్యాని	ු	ಗಿ ಹಂಕಿ	ుుంది శ	మరియ	ు దాని
03 e	సమయ కగిన సా	ುಂ ಎ ಇಂತೆ ಟಿ	ంయి కతన	ు నిల ఎ ఉపరే	సంక్ష్ణ యోగిం	స్టితిలన సిచి జా	ນ ລ໐ ລາຽງ	సరాన్తు సూచి	೦ದ. ೦ವ ಸ	యణా	:ని క	වරි සං	ంటుండ	3	
04 7	ేమ్ ప్లే	000	గ్, ఎ	క్సెపర్ట్	సిస్టవ్	స్స్ వే	ນໍລໍລັ້	<u>ප</u> ರಿ)	ంగ్ చ	రియ	ు నేచ	აරల్ ඉ	ಲಾಂಗ್ವೇ	జ్ (పా	సిసింగ్
													සංධ.		•
	ఎజ జి. పరిశోద												వర్తింపం మండి	కియంగ	3 CO
								<u>с</u> тс							
പിട്			ఫలిత			సాధన	రకు		కోరు	ລ	q	సలితాల	פ	స్త	
- 09	కు <u>న</u> ,2 ∣ PO	- మిధ	SOO.		1										ాకారం
		PO		PO		PO	DO D	PO	PO	PO	PO	PO1	PSO	PSO	
		PO 2	PO 3	РО 4	PO 5	PO 6	PO 7	РО 8	PO 9	PO 10	PO 11	PO1 2	PSO 1	PSO 2	ონიდ PSO 3
			РО		1.0				1.0						PSO
CO1	1	2	РО 3	4	5	6	7	8	9	10	11	2	1	2	PSO 3
CO1 CO2 CO3	1 3	2	PO 3 2	4	5	6	7	8	9	10 2	11	2	1 2	2 -	PSO 3
CO1 CO2	1 3 3	2 - 2	PO 3 2 -	4 - 2	5 2 -	6 - -	7 -	8	9 - 2	10 2 -	11 - 2	2	1 2 -	2 - 3	PSO 3 -

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యూనిట్-I

పరిచయం, చరిత్ర, ఇంటెలిజెంట్ సిస్టమ్స్, AI యొకక్త పునాదులు, AI యొకక్త ఉప (ప్రాంతాలు, అప్లికేషన్లు. సమస్య పరిష్కారం - స్టేట్-స్పేస్ శోధన మరియు నియంత్రణ వ్యూహాలు: పరిచయం, సాధారణ సమస్య పరిష్కారం, సమస్య యొకక్త లక్షణాలు, సమగ్ర శోధనలు, హ్యూరిస్టిక్ సెర్చ్ టెక్నిక్స్, పునరుక్తి-డీపెనింగ్A*, నిర్మంధ సంతృప్తి

యూనిట్ II:

లాజిక్ కాన్సెఫ్ట్ మరియు లాజిక్ ట్రోగ్రామింగ్: పరిచయం, ట్రపోజిషనల్ కాలిక్కులస్, ప్రపోజిషనల్ లాజిక్, నేచురల్ డిడక్షన్ సిస్టమ్, రిజల్యూషన్ రిఫ్యూటేషన్ ఇన్ ప్రపోజిషనల్ లాజిక్, టిడికేట్ లాజిక్, లాజిక్ పోగ్రామింగ్. జ్ఞానానికి ప్రాతినిధ్యం వహించే నియమాలు: లాజిక్పోగ్రామింగ్, ప్రాసీడ్యూరల్Vs డిక్లరేటివ్ నాలెడ్డ్, ఫార్వర్డ్Vs బ్యాక్వర్డ్ రీజనింగ్, మ్యాచింగ్, కంట్లోల్ నాలెడ్డ్

యూనిట్ III:

నాలెడ్డ్ రిప్రజెంటేషన్: పరిచయం, నాలెడ్డ్ ప్రాతినిధ్యానికి సంబంధించిన విధానాలు, సెమాంటిక్ నెట్వర్క్, ఎక్స్ టెండెడ్ సెమాంటిక్ నెట్వర్కెల కోసం కెఆర్ ఉపయోగించి నాలెడ్డ్ రిప్రజెంటేషన్, (ఫేమ్లు, కాన్సెఫ్ట్యువల్ డిపెండెన్సీలు, (స్కిఫ్ట్లను ఉపయోగించి నాలెడ్డ్ రిప్రజెంటేషన్

యూనిట్ IV:

నేచురల్ లాంగ్వేజ్ (ప్రాసెసింగ్: నేచురల్ లాంగ్వేజ్ (ప్రాసెసింగ్, సింటాక్టిక్ (ప్రాసెసింగ్ మరియు ఆగ్మెంటెడ్ (టాన్సిషన్ నెట్స్, సెమాంటిక్ ఎనాలిసిస్, ఎన్ఎల్పిఅండర్స్టాండింగ్ సిస్టమ్స్లో దశలు:

మసక తర్కం: క్రిస్ప్ సెట్లు, మసక సెట్లు, అస్పష్టమైన లాజిక్ కంట్రోల్, అస్పష్టమైన అనుమితులు & అస్పష్టమైన సిస్టమ్లు స్టేట్-స్పేస్ సెర్చ్-పాక్షిక-ఆర్డర్ ప్లానింగ్-ప్లానింగ్గాఫ్లతో ప్లాన్ చేయడం-అంతర్జాతీయంగా మరియు కార్యాచరణ

యూనిట్ V:

నిపుణుల వ్యవస్థలు: నిపుణుల వ్యవస్థ యొక్క అవలోకనం, నిపుణుల వ్యవస్థల నిర్మాణం, వివిధ రకాల నిపుణుల వ్యవస్థలు, ఆర్కిటెక్ఫర్లు, జ్ఞాన సముపార్థన మరియు (ధువీకరణ పద్ధతులు, నాలెడ్డ్ సిస్టమ్ బిల్డింగ్ టూల్స్, ఎక్స్ట్ర్ఫ్ స్టాస్ట్మమ్ షెల్డ్స్ల్ లాగ్

ເມຣົລ, ເມຣົ:

- ఆర్టీఫిషియల్ ఇంటెలీజెన్స్, ఎలైన్ రిచ్ మరియు కెవిన్ నైట్గ్, టాటా మెక్ట్ హిల్ పబ్లికేషన్స్
- 2. ఆర్టీఫిషియల్ ఇంటెలీజెన్స్ & బ్రీక్స్ పర్ట్ సిస్టమ్స్, ప్యాటర్స్ స్, PHI ప్రచురణలకు పరిచయం

రిఫరెన్స్ పుస్తకాలు:

- ఆర్టిఫిషియల్ ఇంటెలిజెన్స్, జార్జ్ ఫ్లూగర్, పియర్సన్ ఎడ్యుకేషన్ పబ్లికేషన్స్,
- 2. ఆర్టీఫిషియల్ ఇంటెలిజెన్స్: అమోడర్న్ అప్రోచ్, రస్సెల్లాండ్ నార్విగ్, డెంటీస్ హాల్
- ఆర్టీఫీషియల్ ఇంటెలిజెన్స్, రాబర్జ్ షాల్కోఫ్, మెక్(గా-హిల్ పబ్లికేషన్స్)
- ఆర్టీఫీషియల్ ఇంటెలిజెన్స్ అండ్ మెషిన్ లెర్నింగ్, వినోద్ చంద్ర ఎస్.ఎస్., ఆనంద్ హరీందన్.

E-వనరులు

- 1. https://onlinecourses.nptel.ac.in/noc22_cs56/preview
- 2. https://nptel.ac.in/courses/106105077
- 3. https://nptel.ac.in/courses/106102220
- 4. https://onlinecourses.nptel.ac.in/noc19_me71/preview
- 5. https://nptel.ac.in/courses/106106126

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Course Title: Artificial Intelligence

Lecture-Tutorial-Practical::	3-0-0	Internal Marks:	30
Credits:	3	External Marks:	70
Prerequisites: None			
Course Objectives			
• To learn the difference between op	timal reasoning v	s human like reasoning	
• To understand the notions of stat	e space represen ities	tation, exhaustive search, heuris	tic search along

- To learn different knowledge representation techniques
- To understand the applications of AI: namely Game Playing, Theorem Proving, Expert Systems, Machine Learning and Natural Language Processing

Course Outcomes:

Upon Completion of the course, the students will be able to

- CO1 Possess the ability to formulate an efficient problem space for a problem expressed in English.
- CO 2 Possess the ability to select a search algorithm for a problem and characterize its time and space complexities.
- CO3 Possess the skill for representing knowledge using the appropriate technique
- CO4 Possess the ability to apply AI techniques to solve problems of Game Playing, Expert Systems, Machine Learning and Natural Language Processing
- CO5 Apply the knowledge to develop the solutions for real life problems CO6 Develop new algorithms to contribute to the research arena

Contril (1 – Lo		of ledium		ourse ligh)	Out	comes	tov	wards	ach	ieveme	ent	of	Program	O	itcomes
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO1 2	PSO 1	PSO 2	PSO 3
CO1	3	-	2	-	2	-	-	-	-	2	-	-	2	-	-
CO2	3	2	-	2	-	•	-	-	2	-	2	-	•	3	-
CO3	3	-	2	-	-	-	-	2	-	-	-	-	-	3	-
CO4	3	2	-	2	-	-	-		-	-	-	-	-	2	-
CO5	3	-	2	-	2	-	-	2	2	2	5	-	2	-	2
and the second se									1	(and				

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Unit-I

Introduction, History, Intelligent Systems, Foundations of AI, Sub areas of AI, Applications. Problem Solving -State-Space Search and Control Strategies: Introduction, General Problem Solving, Characteristics of Problem, Exhaustive Searches, HeuristicSearchTechniques,Iterative-DeepeningA*,ConstraintSatisfaction

UNIT II:

LogicConceptsandLogicProgramming:Introduction,PropositionalCalculus,Propositional Logic, Natural Deduction System, **Resolution Refutation Propositional** in Logic, Predicate Logic,Logic Programming. RepresentingKnowledgeUsingRules:Logicprogramming,ProceduralVsDeclarativeknowledge,Forward Vs Backward Reasoning, Matching, Control Knowledge

UNIT III:

Knowledge Representation: Introduction, Approaches to Knowledge Representation, Knowledge RepresentationusingSemanticNetwork,ExtendedSemanticNetworksforKR, Knowledge Representation usingFrames,Conceptualdependencies,Scripts

UNIT IV:

Natural Language Processing: Steps in The Natural Language Processing, Syntactic Processing and AugmentedTransitionNets,SemanticAnalysis,NLPUnderstandingSystems;

Fuzzy Logic: CrispSets, Fuzzy Sets, Fuzzy Logic Control, Fuzzy Inferences & Fuzzy Systems Planning with state-spacesearch-partial-orderplanning-planninggraphs-planningandactingintherealworld

UNIT V:

Experts Systems: Overview of an Expert System, Architecture of an Expert Systems, Different Types of ExpertSystems, Architectures, Knowledge Acquisition and Validation Techniques, Knowledge Building Tools, ExpertSystemShells. AIProgramminglanguages: Overview of System LISPandPROLOG, ProductionSysteminProlog

Text Book:

- 3. Artificial Intelligence, Elaine Rich and Kevin Knight, Tata Mcgraw-Hill Publications
- 4. Introduction To Artificial Intelligence & Expert Systems, Patterson, PHI publications

REFERENCE BOOKS:

- 5. ArtificialIntelligence,GeorgeFLuger,PearsonEducationPublications
- 6. ArtificialIntelligence: AmodernApproach, RussellandNorvig, PrenticeHall
- 7. ArtificialIntelligence,RobertSchalkoff,Mcgraw-HillPublications

8. ArtificialIntelligenceandMachineLearning,VinodChandraS.S.,AnandHareendranS.

E-RESOURCES

- https://onlinecourses.nptel.ac.in/noc22_cs56/preview 6.
- 7. https://nptel.ac.in/courses/106105077
- https://nptel.ac.in/courses/106102220 8
- https://onlinecourses.nptel.ac.in/noc19_me71/preview g
- 10. https://nptel.ac.in/courses/106106126

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కోర్సు శీర్షిక: కంప్ర్యూటర్ నెట్వర్క్స్

ఉపన ట్యుట్	్యాసం - రోరియల్:	3-0-0	అంతర్గత మార్కులు:	30
ලියික්	ົລ:	3	బాహ్య గుర్తుల	ນ: 70
అవస	రమైనవి: కంపు	్యాటర్ నెట్వర్క్ లు		
కోర్పు	లక్ష్మాలు:			
•	నెట్ వర్క్ ప్రోటో	ీకాల్లు, ఆర్కి టెక్చర్లు మరియ	ు అప్లికేషన్లలో స్టేట్ ఆఫ్ ది ఆర్ట్,	ను అర్థం చేసుకోండి.
•	నెట్ వర్కింగ్ పరి	రిశోధన ప్రక్రియ		
•	35 KALAE KI	రిశోధన కోసం పరిమితులు మరిం	X	
•	\sim	ວະ ດັ້ນ 2 ທົດ ຫຼາງຫຼາງຄາ ຫຼາງ ເ	ໝ ອບນດ ພເຣເມເນ	
•	సమస్య సూతీక	రణ-విధానంవిశ్లేషణ	කා සටහර ලැදිගාන	
•	సమస్య సూతీక ఫ లితాలు :	రణ-విధానంవిశ్లేషణ	యా ఆలాబన (ఎక్రయిలు	
• కోరుఎ	సమస్య సూత్రీక ఫలితాలు:	రణ-విధానంవిశ్లేషణ CP/IP మోడల్లను అర్థం చేసుకో		
• రెయ్య CO1	సమస్య సూత్రీక ఫలితాలు: OSI మరియు To	రణ-విధానంవిశ్లేషణ	ీగలుగుతారు.	
• ເວັດ ເວັດ ເວັດ ເວັດ ເວັດ ເວັດ ເວັດ ເວັດ	సమస్య సూత్రీక ఫలితాలు: OSI మరియు To	రణ-విధానంవిశ్లేషణ CP/IP మోడల్లను అర్థం చేసుకో	ీగలుగుతారు.	
• ເວັດ ເວັດ ເວັດ ເວັດ ເວັດ ເວັດ ເວັດ ເວັດ	సమస్య సూత్రీక ఫలితాలు: OSI మరియు To డేటా లింక్ లేం	కరణ-విధానంవిశ్లేషణ CP/IP మోడల్లను అర్థం చేసుకో కుర్ ప్రోటోకాల్లు మరియు ఫ్లో ని	ీగలుగుతారు.)Å
• CO1 CO2 CO3	సమస్య సూత్రీక ఫలితాలు: OSI మరియు To డేటా లింక్ లేం	కరణ-విధానంవిశ్లేషణ CP/IP మోడల్లను అర్థం చేసుకో కుర్ ప్రోటోకాల్లు మరియు ఫ్లో ని	గలుగుతారు. యం(తణను అర్థం చేసుకోండి	රයි
•	సమస్య సూత్రీక ఫ లితాలు: OSI మరియు Tr డేటా లింక్ లేది రూటింగ్ మరిది	కరణ-విధానంవిశ్లేషణ CP/IP మోడల్లను అర్థం చేసుకో పుర్ పోటోకాల్లు మరియు ఫ్లో ని ము నెట్వర్క్ లేయర్ ప్రోటోకాల్ల్	గలుగుతారు. యం(తణను అర్థం చేసుకోండి	ායී

యూనిట్ I : పరిచయం

OSI, TCP/IP మరియు ఇతర నెట్వర్క్ ల నమూనాలు, నెట్వర్క్ ల ఉదాహరణలు: నోవెల్ నెట్వర్క్ లు, అర్ఫానెట్, ఇంటర్నెట్, నెట్వర్క్ టోపోలాజీలు WAN, LAN, MAN.

ఫిజికల్ లేయర్ ట్రాన్స్ మిషన్ మీడియా కాపర్, ట్వి స్టెడ్ పెయిర్ వైర్ లెస్, ఎస్కిన్స్ కమ్యూని కేషన్ లను మార్చడం మరియు ఎన్కోడింగ్ చేయడం

యూనిట్ II: డేటా లింక్ లేయర్:

డిజైన్ సమస్యలు, (ఫేమింగ్, ఎర్రర్ డిటెక్షన్ మరియు కరెక్షన్, CRC, ఎలిమెంటరీ (పోటోకాల్-స్టాప్ అండ్ వెయిట్, స్టైడింగ్ విండో. మీడియం యాక్సెస్ సబ్ లేయర్: ALOHA, MAC చిరునామాలు, కారియర్ సెన్స్ మల్టిపుల్ యాక్సెస్, IEEE 802.X స్టాండర్డ్ ఈథర్నెట్, బ్రిడ్డ్ఆు.

యూనిట్ III: నెట్వర్క్ లేయర్

వర్ఫువల్ సర్క్యూట్ మరియు డేటాగ్రామ్ సబ్నౌట్లు-రూటింగ్ అల్గోరిథం షార్ట్ పాత్ రూటింగ్, ఫ్లడింగ్, హైరార్కికల్ రూటింగ్, బ్రూడ్ కాస్ట్, మల్జీ కాస్ట్, డిస్టెన్స్ వెక్టార్ రూటింగ్. OSPF. IPV4

యూనిట్ IV ట్రాన్స్పోర్డ్ లేయర్

రవాణా సేవలు, కనౌక్షన్ నిర్వహణ, TCP మరియు UDP ట్రోటోకాల్స్ రద్దీ నియంత్రణ.

యూనిట్ v అప్లికేషన్ లేయర్

నెట్వర్క్ సెక్యూరిటీ, డొమైన్ నేమ్ సిస్టమ్, SNMP, ఎల్కక్షానిక్ మెయిల్; వరల్డ్ వెబ్, మల్జీ మీడియా.

ెటెక్స్ట్ బుక్:

¥.,

1. టానెన్బామ్ మరియు డేవిడ్ J వెథెరాల్, కంప్యూటర్ నెట్వర్క్స్, 5 వ ఎడిఫన్స్లోయర్సన్ ఎడు, 2010.

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రిఫరెన్స్ పుస్తకాలు:

- కంప్యూటర్ నెట్వర్క్ లు: ఎ టాప్-డౌన్ అప్రోచ్, బెప్రూజ్ ఎ. ఫోరౌజాన్, ఫిరౌజ్ మోపారఫ్, మెక్గా హిల్ ఎడ్యుకేషన్.
- కంప్యూటర్ నెట్వర్క్స్, 5ed, డేవిడ్ ప్యాటర్సన్, ఎల్సెవియర్.
- లారీ L. పీటర్సన్ మరియు బ్రూస్ S. డేవి, "కంప్యూటర్ నెట్వర్క్స్- ఎ సిస్టమ్స్ అట్రోచ్" 5 ^వ ఎడిషన్, మార్గాన్ కౌఫ్మాన్/ఎల్సేవియర్, 2011.
- 3. కంప్యూటర్ నెట్వర్క్స్, మయాంక్ డేవ్, CENGAGE.
- 4. An ఇంజినీరింగ్ అప్రోచ్ టు కంప్యూటర్ నెట్వర్క్స్-S.కేశవ్, 2వ ఎడిషన్, పియర్సన్ ఎడ్యుకేషన్.
- 5. కమ్యూనికేషన్స్ మరియు నౌట్వర్క్ లను అర్థం చేసుకోవడం, 3వ ఎడిషన్, WA షే, థామ్సన్

E-వనరులు

- 1. www.tutorialspoint.com
- 2. nptl.ac.in/courses/

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Course Title: Computer Networks

Lectur	e – Tutorial:	3-0-0	Internal Marks:	30
Credit	S:	3	External Marks:	70
Prereq	uisites: Computer	· Networks		
Course	Objectives:			
٠	Understand state-o	of-the-art in network protocols, arch	itectures, and applications.	
	Process of network	king research		
•	Constraints and the	ought processes for networking rese	arch	
•	Problem Formulat	ion—ApproachAnalysis		
Course	Outcomes:			
COI	T	d OSI and TCP/IP models.		
CO2		nk layer protocols and flow control		
CO3				
	Understand routin	g and network layer protocols and I	PV4	
CO4				Ð
	Understand transp	ort layer congestion, flow control ar	nd protocols	
CO5		ication layer protocols		
CO5	Understand appli	ication layer protocols		

UNIT I : INTRODUCTION

OSI, TCP/IP and other networks models, Examples of Networks: Novell Networks, Arpanet, Internet, Network Topologies WAN, LAN, MAN.

PHYSICAL LAYER Transmission media copper, twisted pair wireless, switching and encoding asynchronous communications

UNIT II: DATA LINK LAYER:

Design issues, framing, error detection and correction, CRC, Elementary Protocol-stop and wait, Sliding Window. Medium Access Sub Layer: ALOHA, MAC addresses, Carrier sense multiple access, IEEE 802.X Standard Ethernet, Bridges.

UNIT III: NETWORK LAYER

Virtual circuit and Datagram subnets-Routing algorithm shortest path routing, Flooding, Hierarchical routing, Broad cast, Multi cast, distance vector routing. OSPF. IPV4

TCP

and

UDP

UNIT IV TRANSPORT LAYER

UNIT V APPLICATION LAYER

Transport Services, Connection ma

on management,

Network Security, Domain name system, SNMP, Electronic Mail; the World WEB, Multi Media.

Text Book:

1. Tanenbaum and David J Wetherall, Computer Networks, 5th Edition, Pearson Edu, 2010.

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SAP

protocols

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control.

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URL: www.nriit.edu.in. email: principal@nriit.edu.in. Mobile: + 91 8333882444

REFERENCE BOOKS:

- 6. Computer Networks: A Top-Down Approach, Behrouz A. Forouzan, FirouzMosharraf, McGraw Hill Education.
- 7. Computer Networks, 5ed, David Patterson, Elsevier.
- 8. Larry L. Peterson and Bruce S. Davie, "Computer Networks- A Systems Approach" 5th Edition, Morgan Kaufmann/Elsevier, 2011.
- 9. Computer Networks, Mayank Dave, CENGAGE.
- 10. An Engineering Approach to Computer Networks-S.Keshav, 2nd Edition, Pearson Education.
- 11. Understanding communications and Networks, 3rd Edition, W.A. Shay, Thomson

E-RESOURCES

- 3. www.tutorialspoint.com
- 4. nptl.ac.in/courses/



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కోర్సు శీర్షిక: అల్గారిథమ్ల రూపకల్పన మరియు విశ్లేషణ

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UNIT I అల్గారిథమ్లకు పరిచయం

అల్గారిథమిక్ సమస్య పరిష్కారం యొక్క ప్రాథమిక అంశాలు – విశ్లేషణ (ఫేమ్వర్క్ - పనితీరు విశ్లేషణ: - స్పేస్ సంక్షిష్టత, సమయ సంక్షిష్టత - ఫంక్షన్ల పెరుగుదల: అసింఫ్టోటిక్ సంజ్ఞామానం- పెద్ద ఓహ్ సంజ్ఞామానం, ఒమేగా సంజ్ఞామానం, తీటా సంజ్ఞామానం, కొద్దిగా ఓహ్.

UNIT II **విభజించి జయించండి:** విభజించి జయించండి: సాధారణ పధ్ధతి, అప్లికేషన్లు-బైనరీ శోధన, త్వరిత క్రమబద్ధీకరణ, విలీన క్రమబధ్ధీకరణ, గరిష్ట మరియు కనిష్టాన్ని కనుగొనడం

యూనిట్ III **అత్యాశ పద్దతి:** సాధారణ పద్ధతి, నాప్సాక్ సమస్య, గడువుతో జాబ్ సీక్వెన్సింగ్, కనిష్ఠ-వ్యయం స్పేనింగ్ ట్రీస్, ట్రిమ్స్ అల్గోరిథం, క్రుస్కాల్ యొక్క అల్గారిథమ్స్, ఆఫ్టిమల్ మెర్డ్ ప్యాటర్న్స్, సింగిల్ సోర్స్ షార్టెస్ట్ పాత్**లు**

UNIT IV **డైనమిక్ (పోగ్రామింగ్:** సాధారణ పద్ధతి, అప్లికేషన్లు-మ్యాటిక్స్ చైన్ మల్టిప్లికేషన్, ఆఫ్టిమల్ బైనరీ సెర్ఫ్ టీలు, 0/1క్నాప్సాక్ సమస్య, అన్ని జతల షార్జెస్ట్ పాత్ సమస్య, టూవెలింగ్ సేల్స్ పర్సన్ సమస్య, విశ్వసనీయత డిజైన్.

UNIT V బ్యాక్[టాకింగ్: సాధారణ పద్ధతి, అప్లికేషన్లు-n-క్వీన్ సమస్య, ఉపసమితుల మొత్తం సమస్య, గ్రాఫ్ కలరింగ్, హామిల్జో నియన్ సైకిల్స్.

[బాంచ్ మరియు బౌండ్: సాధారణ పద్ధతి, అప్లికేషన్లు - [టావెలింగ్ సేల్స్ పర్సన్ సమస్య, 0/1 నాప్సాక్ సమస్య- LC [బాంచ్ మరియు బౌండ్ సొల్యూషన్, FIFO [బాంచ్ మరియు బౌండ్ సొల్యూషన్

టెక్స్ట్ పుస్తకాలు:

ఫండమెంటల్స్ ఆఫ్ కంప్యూటర్ అల్గారిథమ్స్, ఎల్లీస్ హూరోవిల్హ్, స్రతాజ్ సాహ్ని మరియు రాజశేఖరన్, యూనివర్సిట్రీ (పెస్

రిఫరెన్స్ పుస్తకాలు:

- అల్గారిథమ్స్ రూపకల్పన మరియు విశ్లేషణకు పరిచయం, 3వ ఎడిషన్, అననీ లెవిటిన్, పియర్సన్ ఎడ్యుకేషన్, 2017.
- 2. అల్గారిథమ్స్ పరిచయం, రెండవ ఎడిషన్, THCormen, CELeiserson, RL Rivest, మరియు C.Stein, PHI Pvt. Ltd./ పియర్సన్ ఎడ్యుకేషన్
- అల్గోరిథంల రూపకల్పన మరియు విశ్లేషణ, అహో, ఉల్మాన్ మరియు హాప్ క్రాఫ్ట్, పియర్సన్ విద్య.
- 4. అల్గోరిథంలు రిచర్డ్ జాన్సన్ బాగ్ మరియు మార్కస్ స్కేఫర్, పియాక్సన్ ఎడ్యుకేషన్

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Course Title: Design and Analysis of Algorithms

Lectu	ure–Tu	itorial	-Prac	tical::			3-0-()	Inter	nal M	larks:				30
Cred	lits:						3		Exte	rnal N	larks:				70
Prereg	uisites:	None													
Course	e Objec	tives													
•	Analy	ze the	asymp	totic per	formanc	e of al	gorith	ms and	compo	nents					
•	To sta	udy div	ide and	d conque	er paradig	gm ap	proacl	h used t	o analy	ze and		algorith	ms		
٠					proach u		-		-	-					
٠					nming p							analyze	and desig	gn algor	ithms
•					roach us										
•	To sti	ıdy bra	nch an	d bound	paradig	m and	Detern	ninistic	approa	ach use	ed to an	alyze an	d design	algorith	ms
	e Out														
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201:A	nalyze	worst-c	ase rui	ining tir	nes of alg	gorithr	ns usi	ng asyn	nptotic	analysi	s and c	omponei	nts		
202: D	Describe	the div	vide an	d conqu	er metho	d expl	ains w	hen an	algorit	hmic de	esign si	tuation d	lemands	it.	
CO3: D	Describe	the gre	edy m	ethod e	xplains w	hen a	n <mark>algo</mark> i	rithmic	design	situatio	on dema	ands it.			
		_							-						
CO4: D	escribe	the dy	namic-	program	nming pa	radign	n expl	ains wh	en an a	lgorith	mic des	sign dem	ands it.		
				F- 6.	Ø.F					0		0			
			_				_	_							
:05: D	escribe	the bac	ck trac	king me	thod exp	lains v	when a	n algor	ithmic	design	demano	ls it.			
'06' D	escribe	the hrs	nch ar	nd hour	1 paradig	m and	deter	ministic	metho	ds e-nl:	ain whe	en an alo	orithmic	design	
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	bution	of	C	ourse	Outco	mes	tov	vards	ach	ieveme	ent	of I	Program	.01	itcom
1 – Lo	w, 2- M	ledium	, 3 – F	ligh)									-		
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CO2	3	2	-	2		•	-	-	2	-	2	-	-	3	-
CO3	3	-	2	-			-	2	2.7	-	-	-	-	3	-
CO4	3	2	-	2			-		-	-	-	-	-	2	-
CO5	3	-	2	~	2 -		-	2	2	2	-		2	-	2
	3		3						-	ļ			3	3	3
CO6	13		3	3		-	-	-		-	-	- 33	2	13	1.2

UNIT I Introduction to Algorithms

Fundamentals of algorithmic problem solving – Analysis framework - Performance Analysis: - Space complexity, Time complexity - Growth of Functions: Asymptotic Notation- Big oh notation, Omega notation, Theta notation, little oh.

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UNIT II Divide and Conquer: Divide and conquer: General method, applications-Binary search, Quick sort, Merge sort, Finding the Maximum and Minimum

Unit III Greedy method: The General Method, Knapsack Problem, Job Sequencing with Deadlines, Minimum-cost Spanning Trees, Prim's Algorithm, Kruskal's Algorithms, Optimal Merge Patterns, Single Source Shortest Paths

UNIT IV Dynamic Programming: General method, applications-Matrix chain multiplication, Optimal binary search trees, 0/1knapsack problem, All pairs shortest path problem, Travelling sales person problem, Reliability design.

UNIT V Backtracking: General method, applications-n-queen problem, sum of subsets problem, graph coloring, Hamiltonian cycles.

Branch and Bound: General method, applications - Travelling sales person problem, 0/1 knapsack problem- LC Branch and Bound solution, FIFO Branch and Bound solution

TEXT BOOKS:

Fundamentals of Computer Algorithms, Ellis Horowitz, SatrajSahni and Rajasekaran, University press **REFERENCE BOOKS:**

- 5. Introduction to The Design and Analysis of Algorithms, 3rd Edition, Anany Levitin, Pearson Education, 2017.
- 6. Introduction to Algorithms, second edition, T.H.Cormen, C.E.Leiserson, R.L. Rivest, and C.Stein, PHI Pvt. Ltd./ Pearson Education
- 7. Design and Analysis of algorithms, Aho, Ullman and Hopcroft, Pearson education.
- 8. Algorithms Richard Johnson Baugh and Marcus Schaefer, Pearson Education

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<u>కోర్స్ కోడ్- క్లౌడ్ కంప్రూటింగ్</u>

ఉపన్యాసం ట్యూటోరియల్- ప్రాక్టికల్::	3-0-0	అంతర్గత మార్కు	లు:	30
(కెడిట్స్: అవసరమైనవి: సి- (పోగ్రామిం	³ గ్, డేటా (స్టక్ఫర్స్, స్షాటిస్టిక్స్ పండమెంటల్స్	బాహ్య గుర్తులు:	Ξ.	70
కోర్సు లక్ష్యాలు:				

Iaas, Paas, Saas మరియు క్లౌడ్ ప్లాట్ఫారమ్ల పైన క్లౌడ్ ఆధారిత సాఫ్ట్ వేర్ అప్లికేషన్లను అభివృధ్ధి చేయడం వంటి వివిధ క్లౌడ్ సర్వీస్ మోడల్లలో ఆధునిక ఇంటర్నెట్ క్లౌడ్ కాన్సెఫ్ట్ ల సామర్థ్యాలలో మిలియన్ల మంది వినియోగదారులకు స్కేల్ చేసే క్లౌడ్ పర్యావరణం, సాఫ్ట్ వేర్ సిస్టమ్లు మరియు భాగాలను రూపొందించడం గురించి విద్యార్థి నేర్చుకుంటారు. .

కోర్సు ఫలితాలు:

కోర్సు విజయవంతంగా పూర్తి చేసిన తర్వాత, విద్యార్థి వీటిని చేయగలరు:

CO1	క్లౌడ్ కంప్యూటింగ్ యొక్క సవాలు యొక్క ముఖ్య పరిమాణాలను అర్థం చేసుకోవడం
CO2	సొంత సంస్థ కోసం క్లౌడ్ కంప్యూటింగ్ని ఎంచుకోవడానికి ఆర్థిక శాస్త్రం, ఆర్థిక మరియు సాంకేతికపరమైన
	చిక్కుల అంచనా
CO3	క్లౌడ్-ఆధారిత అప్లికేషన్లను చురుకుగా ప్రారంభించడం మరియు ఇన్స్టాల్ చేయడం కోసం యజమాని
	యొక్క ఆర్థిక, సాంకేతిక మరియు సంస్థాగత సామర్థ్యాన్ని అంచనా వేయడం
CO4	క్లౌడ్ కంప్యూటింగ్-సంబంధిత IT ప్రాంతాలలో సామర్థ్యం పెంపుదల మరియు శిక్షణ కోసం సొంత సంస్థల
	అవసరాలను అంచనా వేయడం
CO5	వనరుల నిర్వహణ వ్యవస్థల లక్షణాలను వివరించండి

బ్రోగ్రామ్ ఫలితాల సాధనకు కోర్సు ఫలితాల సహకారం (1 - తక్కువ, 2- మధ్యస్థం, 3 - అధికం)

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	1	2	3	4	5	6	7	8	9	10	·11	12
CO1	3	3	2		3	-			-			F
CO2	3	2	3		2				· ••			
CO3	2	2	3				-					
CO4	3	-3	2	2	2							
CO5	2	3	3	3	2					•=		

UNIT-1: సిస్టమ్స్ మోడలింగ్, క్లస్టరింగ్ మరియు వర్ఫువలైజేషన్ ఇంటర్నెట్ ద్వారా స్కేలబుల్ కంప్యూటింగ్, నెట్వర్క్ ఆధారిత సిస్టమ్ల కోసం సాంకేతికతలు, డి(స్టిబ్యూ టెడ్ మరియు క్లౌడ్ కంప్యూటింగ్ కోసం సిస్టమ్ మోడల్స్, పంపిణీ చేయబడిన సిస్టమ్లు మరియు క్లౌడ్ల కోసం సాఫ్ట్ వేర్ పరిసరాలు, పనితీరు, భదత మరియు శక్తి సామర్థ్యం UNIT-2: వర్ఫువలైజేషన్ యొక్క అమలు స్థాయిలు, వర్ఫువలైజేషన్ (స్టక్ఫర్స్/టూల్స్ మరియు మెకానిజమ్స్, CPU యొక్క వర్ఫువలైజేషన్, మెమరీ మరియు I/O పరికరాలు, వర్ఫువలైజేషన్ (స్టక్ఫర్స్/టూల్స్ మరియు మెకానిజమ్స్, CPU సెంటర్ ఆటోమేషన్ కోసం వర్ఫువలైజేషన్.

UNIT-3: క్లోడ్ కంప్యూటింగ్ మరియు సర్వీస్ మోడల్స్, ఆర్కి టెక్ఫరల్ డిజైన్ ఆఫ్ కంప్యూట్ మరియు స్టోరేజ్ క్లౌడ్స్, పబ్లిక్ క్లౌడ్ ప్లాట్ఫారమ్లు, ఇంటర్ క్లౌడ్ రిసోర్స్ మేనేజ్ మెంట్, క్లౌడ్ సెక్యూరిటీ అండ్ ట్రస్ట్ మేనేజ్ మెంట్. సర్వీస్ ఓరియెంటెడ్ ఆర్కిటెక్ఫర్, మెసేజ్డ్ ఓరియెంటెడ్ మీడిల్ వేర్.

UNIT-4 : క్లౌడ్ మరియు గ్రిడ్ ప్లాట్ఫారమ్ల క్లౌడ్ ప్రోగ్రామింగ్ మరియు సాఫ్ట్ వేర్ ఎన్విరాన్మెంట్స్ ఫీచర్లు, సమాంతర & పంపిణీ చేయబడిన ప్రోగ్రామింగ్ నమూనాలు, Google యాప్ ఇంజిన్కి ప్రోగ్రామింగ్ సపోర్ట్, Amazon AWS మరియు Microsoft Azureలో ప్రోగ్రామింగ్, ఎమర్జింగ్ క్లౌడ్ సాఫ్ట్ వేర్ ఎన్విరాన్మెంట్స్.

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UNIT-5: పాలసీలు మరియు మెకానిజమ్స్ రిసోర్స్ మేనేజ్ మెంట్ అప్లికేషన్స్ ఆఫ్ కంట్రోల్ థియరీ టు టాస్క్ షెడ్యూలింగ్ ఆన్ క్లౌడ్, స్టెబిలిటీ ఆఫ్ ఎ టూ లెవెల్ రిసోర్స్ అలో కేషన్ ఆర్కి టెక్ఫర్, ఫీడ్బ్యాక్ కంట్రోల్ ఆధారిత డైనమిక్ (థెషోల్స్). స్పెషల్రెజ్డ్ అటానమిక్ పెర్ఫార్మెన్స్ మేనేజర్ల సమన్వయం, రిసోర్స్ బండ్లింగ్, కంప్యూటింగ్ క్లౌడ్స్ కోసం షెడ్యూలింగ్ అల్గారిథమ్లు, ఫెయిర్ క్యూయింగ్, స్టార్ట్ టైమ్ ఫెయిర్ క్యూయింగ్, అరువు తెచ్చుకున్న వర్చువల్ టైమ్, క్లౌడ్ షెడ్యూల్ డెడ్లైన్లకు లోబడి, మ్యాప్రిడ్యూస్ అప్లికేషన్స్ సభౌక్ష్ కు షెడ్యూల్ చేయడం.

టెక్స్ట్ పుస్తకాలు:

- 1. డి(స్టిబ్యూ టెడ్ మరియు క్లౌడ్ కంప్యూటింగ్, కై హ్వాంగ్, జియోట్లీ సి. ఫాక్స్, జాక్ జె. డొంగర్రా ఎంకె ఎల్సెవియర్.
- 2. క్లౌడ్ కంప్యూటింగ్, థియరీ అండ్ (ప్రాక్టీస్, డాన్ సి మారినెస్కు, MK ఎల్సెవియర్.

3. క్లౌడ్ కంప్యూటింగ్, ఎ హ్యాండ్స్ ఆన్ అమ్రోచ్, అర్జదీప్ బాగా, విజయ్ మాడిశెట్టి, యూనివర్సిటీ (పెస్

రిఫరెన్స్ పుస్తకాలు:

- 1. క్లైడ్ కంప్యూటింగ్, ఎ ప్రాక్టికల్ అప్రోచ్, ఆంథోనీ టి వెల్టే, టోబీ జె వెల్జే, రాబర్జ్ ఎల్సెన్పీటర్, TMH
- మాస్టరింగ్ క్లౌడ్ కంప్యూటింగ్, ఫౌండేషన్స్ అండ్ అప్లికేషన్ ప్రోగ్రామింగ్, రాజ్ కుమార్ బుయ్య, క్రిస్టెన్ వెక్టియోలా, S తమ్మరైసెల్ఫి, TMH

ఇ-వనరులు:

- 1. https://nptel.ac.in
- 2. https://onlinecourses.nptel.ac.in/noc21_cs87/preview



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Course Code-Cloud Computing

Lecture – Tutorial- Pra	ctical:: 3-0-0	; Int	ternal Marks:	30
Credits:	3	Ex	ternal Marks:	70
Prerequisites: C- Progr	amming, Data Structure	es, Statistics fundamentals	efaleOffaleerverleikeraeDelaerver raken ansatz an sammer er en er	

Course Objectives:

The student will learn about the cloud environment, building software systems and components that scale to millions of users in modern internet cloud concepts capabilities across the various cloud service models including Iaas, Paas, Saas, and developing cloud based software applications on top of cloud platforms.

Course Outcomes:

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Upon success	sful com	pletion of	the cour	se, the stu	ident wil	l be able	to:					
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CO2	organi	zation		·						ting cloud		
CO3	install	ing cloud-	based ap	plications			-		_	r's for act		
CO4	Assess	ment of c	wn organ	izations'	needs for	capacity	building a	ind traini	ng in clou	d computi	ng-related	IT areas
CO5	Descri	be the fea	tures of F	Resource N	Aanagem	ent syster	ns					
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UNIT-1: Systems modeling, Clustering and virtualization Scalable Computing over the Internet, Technologies for Network based systems, System models for Distributed and Cloud Computing, Software environments for distributed systems and clouds, Performance, Security And Energy Efficiency

UNIT-2: Implementation Levels of Virtualization, Virtualization Structures/ Tools and mechanisms, Virtualization of CPU, Memory and I/O Devices, Virtual Clusters and Resource Management, Virtualization for Data Center Automation.

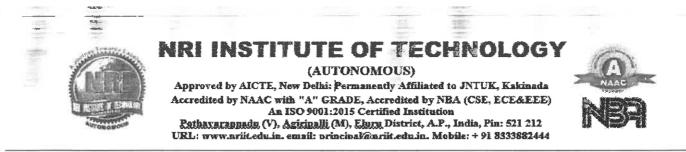
UNIT-3: Cloud Computing and service Models, Architectural Design of Compute and Storage Clouds, Public Cloud Platforms, Inter Cloud Resource Management, Cloud Security and Trust Management. Service Oriented Architecture, Message Oriented Middleware.

UNIT-4 :Cloud Programming and Software Environments Features of Cloud and Grid Platforms, Parallel & Distributed Programming Paradigms, Programming Support of Google App Engine, Programming on Amazon AWS and Microsoft Azure, Emerging Cloud Software Environments.

UNIT-5: Policies and Mechanisms for Resource Management Applications of Control Theory to Task Scheduling on a Cloud, Stability of a Two Level Resource Allocation Architecture, Feedback Control Based on Dynamic Thresholds. Coordination of Specialized Autonomic Performance Managers, Resource Bundling, Scheduling Algorithms for Computing Clouds, Fair Queuing, Start Time Fair Queuing, Borrowed Virtual Time, Cloud Scheduling Subject to Deadlines, Scheduling MapReduce Applications Subject to Deadlines.

TEXT BOOKS:

- 4. Distributed and Cloud Computing, Kai Hwang, Geoffry C. Fox, Jack J. Dongarra MK Elsevier.
- 5. Cloud Computing, Theory and Practice, Dan C Marinescu, MK Elsevier.
- 6. Cloud Computing, A Hands on approach, ArshadeepBahga, Vijay Madisetti, University Press



REFERENCE BOOKS:

- 3. Cloud Computing, A Practical Approach, Anthony T Velte, Toby J Velte, Robert Elsenpeter, TMH
- 4. Mastering Cloud Computing, Foundations and Application Programming, Raj Kumar Buyya, Christen vecctiola, S
- Tammaraiselvi, TMH

e-Resources:

- 3. https://nptel.ac.in
- 4. https://onlinecourses.nptel.ac.in/noc21_cs87/preview



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కోరు, శీర్తిక: సాఫ్ట్ వేర్ టెస్టింగ్ మెథడాలజీస్ మరియు టూల్స్

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సింటాక్స్ టెస్టింగ్: ఎందుకు, ఏమిటి మరియు ఎలా, ఫార్మాట్ల్ కోసం ఒక గ్రామర్, టెస్ట్ కేస్ జనరేషన్, అమలు మరియు అఫ్జికేషన్ మరియు టెస్టరబిలీటీ చిట్కాలు

యూనిట్ IV: . లాజిక్ బేస్డ్ టెస్టింగ్: ఓవర్వ్యూ, డెసిషన్ టేబుల్స్, పాత్ ఎక్స్ సెషన్స్, కెఫి చార్డ్ లు మరియు స్పెసిఫికేషన్లు.

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రా(ఫ్రం, రా(ఫ్ర గ్రాఫ్లు మరియు ట్రాన్సిషన్ టెస్టింగ్: స్టేట్ గ్రాఫ్లు, గుడ్ & బ్యాడ్ స్టేట్ గ్రాఫ్లు, స్టేట్ టెస్టింగ్ మరియు టెస్టిబిలిటీ చిట్కాలు.

యూనిట్ v: సాఫ్ట్ వేర్ టెస్టింగ్ టూల్స్: టెస్టింగ్ పరిచయం, ఆటో మేటెడ్ టెస్టింగ్, టెస్ట్ ఆటో మేషన్ కాన్సెఫ్ట్*ట,* విన్ రన్నర్, లోడ్ రన్నర్, జెమీటర్, ఎబౌట్ విన్ రన్నర్ వంటి సాధనాల జాబితా పరిచయం టెస్ట్, చెక్పాయింట్లు, టెస్ట్ (స్కిఫ్ట్ లాంగ్వేజ్, అన్నింటినీ కలిపి ఉంచడం, రన్నింగ్ మరియు డీబగ్గింగ్ టెస్ట్ర్లు, ఫలితాలు విశ్లేషించడం, బ్యాచ్ టెస్ట్లు, రాపిడ్ టెస్ట్ (స్కిఫ్ట్ విజార్డ్.

టెక్స్ట్ బుక్

1. సాఫ్ట్ వేర్ పరీక్ష పద్ధతులు - బోరిస్ బీజర్, (డీమ్ టెక్, రెండవ ఎడిషన్. 2. సాఫ్ట్ వేర్ టెస్టింగ్- యోగేష్ సింగ్, కేం[బిడ్డ్

రిఫరెన్స్ పుస్తకాలు:

సాఫ్ట్ వేర్ టెస్టింగ్ యొక్క క్రాఫ్ట్ - బ్రియాన్ మారిక్, పియర్సన్ ఎడ్యుకేషన్.

- 2. సాఫ్ట్ వేర్ టెస్టింగ్, 3వ ఎడిషిన్, PC జోర్గెన్ సెన్, ఔర్భాచ్ పబ్లీ కేషన్స్ (Dist.by SPD).
- 3. సాఫ్ట్ వేర్ టెస్టింగ్, ఎన్.చౌహాన్, ఆక్స్ ఫర్డ్ యూనివర్సిటీ (పెస్.
- 4. సాఫ్ట్ వేర్ టెస్టింగ్ పరిచయం, P.Ammann&J.Offutt, Cambridge Univ.Press.
- 5. సాఫ్ట్ వేర్ టెస్టింగ్ యొక్క ప్రభావవంతమైన పద్ధతులు, పెర్రీ, జాన్ విలే, 2వ ఎడిషన్, 1999.
- 6. సాఫ్ట్ వేర్ టెస్టింగ్ కాన్సెఫ్ట్స్ అండ్ టూల్స్, పి.నాగేశ్వరరావు, (డీమ్ టెక్ (పెస్
- 7. హకీమ్ షిట్టు, 2007Genixpress ద్వారా సింపుల్ స్టెప్స్ లో రన్నర్ ను గెలుచుకోండి.
- 8. సాఫ్ట్ వేర్ టెస్టింగ్ యొక్క పునాదులు, D.(గహ & ఇతరులు, Cengage లెర్నింగ్.

ఇ -రిసోర్సెస్



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Course Title: Software Testing Methodologies and Tools

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Test, Working with Test, Enhancing Test, Checkpoints, Test Script Language, Putting it all together, Running and Debugging Tests, Analyzing Results, Batch Tests, Rapid Test Script Wizard.

Text Book

- 1. Software testing techniques Boris Beizer, Dreamtech, second edition.
- 2. Software Testing- Yogesh Singh, Camebridge

REFERENCE BOOKS:

The Craft of software testing - Brian Marick, Pearson Education.

- 2. Software Testing, 3rd edition, P.C. Jorgensen, Aurbach Publications (Dist.by SPD).
- 3. Software Testing, N.Chauhan, Oxford University Press.
- 4. Introduction to Software Testing, P.Ammann&J.Offutt, Cambridge Univ.Press.
- 5. Effective methods of Software Testing, Perry, John Wiley, 2nd Edition, 1999.
- 6. Software Testing Concepts and Tools, P.NageswaraRao, dreamtech Press
- 7. Win Runner in simple steps by Hakeem Shittu, 2007Genixpress.
- 8. Foundations of Software Testing, D.Graham& Others, Cengage Learning.

E-RESOURCES

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Rathavarappadu (V), Agiripalli (M), Elury District, A.P., India, Pin: 521 212 URL: www.nriit.edu.in. email: principal@nriit.edu.in. Mobile: + 91 8333882444

కోర్సు శీర్షిక: డేటా వేర్హాసింగ్ మరియు డేటా మైనింగ్

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మోడ ద్వార టాన్, యూగ డేటా ఉపరె మైని (లింగ్: ా డేట స్టఫర్మే నిట్ 1 మైనిం మెగిం ంగ్ త	ా సాధ షన్ వ I: డే ల ంగ్ పరి చగల రచు	్ క్యూ సారణీక మరియ పారణ్ సాంకే గా చే	బ్ మరి కరణ. దె ఎ డేటా నింగ్ ఆ లి: పరి తికతం సే నవ	యు (శీటా (శ్రీ డి(సి) 9వల్ చయం బు, డేం బూనా	DLAP, రే సిప్రా సెన్ <u>క</u> ై బైజేషన్ క నం వ రా, ఎంద టా మైని లు, సం	డేటా సంగ్: స్. పిరిది పికు రె ంగ్లో సిఫూణ	వేర్హా ఓఫర్ ము అ కేటా శ్	"ోస్ ఇ వ్యూ, రె <mark>ధునా</mark> ప్రినింగ్ న సవ సిరియ	ంప్లిమెం కేట క్లీ తన నవ గ్, తవ్య సుస్యలు. సుస్యాలు. సి సహాన	ేటేషన్ నింగ్, మూనా గల డేం	, అటిబు డేటా ఇం సి మెనింగ్ టా రకాలు లధాలు: ట	్యాట్ ఓరిదె టిగ్రేషన్, రె	టెంటెడ్ ఇ కేటా తగ్గింద్ నమూనాల	ుండక్షన్ పు, డేటా ఎు, దానిని
మోడ ద్వార లూన్ యూగ డేటా ఉపరె మైని వస్తుప	లింగ్: • డేట ఎఫర్మే నిట్ I మైనిం మాగిం ంగ్ త	ా సాధ షన్ వ I: డేట ఎగ్ పరి చగల రచు ర్ మైని	్ క్యూ రారణిక మరియ లా మెద సాంకే గా చే ఎంగ్ ప	బ్ మరి కరణ. దె మ డేటా నింగ్ ఆ సిం: పరిశ తికతల సే నవ బద్ధతుల	యు (శీటా డ్రి డి(సి) 9వల్ చయం ఎ. డేం ఎ. (అ	DLAP, రే సిప్రా సెన్ <u>క</u> ై బైజేషన్ క నం వ రా, ఎంద టా మైని లు, సం	డేటా సంగ్: న్. మరిద ు సుకు రె ంగ్లో సమాల	వేర్హా ఓఫర్ ము అ కేటా శ్	"ోస్ ఇ వ్యూ, రె <mark>ధునా</mark> ప్రినింగ్ న సవ సిరియ	ంప్లిమెం కేట క్లీ తన నవి గ్, తవ్వగ మస్యలు.	ేటేషన్ నింగ్, మూనా గల డేం	, అటిబు డేటా ఇం సి మెనింగ్ టా రకాలు లధాలు: ట	్యాట్ ఓరిదె టిగ్రేషన్, రె , తవ్వగల	టెంటెడ్ ఇ కేటా తగ్గింద్ నమూనాల	ుండక్షన్ పు, డేటా ఎు, దానిని
మోడ ద్వార టూన్, యూట్ డేటా ఉపరె మైని వస్తుప్ యూట్	లింగ్: • డేట ఎఫర్మే నిట్ I మైనిం మాగిం ంగ్ త	ా సాధ షన్ వ I: డేట ఎగ్ పరి చగల రచు ర్ మైని	్ క్యూ రారణిక మరియ లా మెద సాంకే గా చే ఎంగ్ ప	బ్ మరి కరణ. దె మ డేటా నింగ్ ఆ సిం: పరిశ తికతల సే నవ బద్ధతుల	యు (శీటా డ్రి డి(సి) 9వల్ చయం ఎ. డేం ఎ. (అ	DLAP, రే సిప్రాసెని కైటెజేషన్ క నం వ రా, ఎంద టా మైని లు, సం టియోరి	డేటా సంగ్: న్. మరిద ు సుకు రె ంగ్లో సమాల	వేర్హా ఓఫర్ ము అ కేటా శ్	"ోస్ ఇ వ్యూ, రె <mark>ధునా</mark> ప్రినింగ్ న సవ సిరియ	ంప్లిమెం కేట క్లీ తన నవ గ్, తవ్య సుస్యలు. సుస్యాలు. సి సహాన	ేటేషన్ నింగ్, మూనా గల డేం	, అటిబు డేటా ఇం స్థామినింగ్ పారకాలు సాధాలు: ట్ర	్యాట్ ఓరిదె టిగ్రేషన్, రె , తవ్వగల	టెంటెడ్ ఇ కేటా తగ్గింద్ నమూనాల	ుండక్షన్ పు, డేటా ఎు, దానిని
మోడ ద్వార టూన్, యూగ డేటా ఉపరె వైనిస్తి వస్తున వస్తున వస్తున వస్తున	లింగ్: • డేట ఎఫర్మే నిట్ I మైనిం హిగిం ంగ్ త నిట్ I	ా సాధ షన్ వ 1: డేట ంగ్ పరి చగల ర మెగి వ్ మెగి II: వ	్ క్యూ సారణిక మరియ సాంకే సాంకే గా చే ఎంగ్ ప	బ్ మరి కరణ. దె మి డేటా నింగ్ ఆ లె: పరిశ తికతల సే నవ సద్దతుల విరితుల విరితుల	యు (కేటా (కే డి(సి) 9వల్ చయ లు, డేం లు, డేం లు, (అ యు ల	DLAP, రే సిప్రాసెని కైటెజేషన్ క నం వ రా, ఎంద టా మైని లు, సం టియోరి	డేటా సంగ్: న్. మరిద ు సుకు రె ంగ్లో సమాల	వేర్హా ఓఫర్ ము అ కేటా శ్	"ోస్ ఇ వ్యూ, రె <mark>ధునా</mark> ప్రినింగ్ న సవ సిరియ	ంప్లిమెం కేట క్లీ తన నవ గ్, తవ్య సుస్యలు. సుస్యాలు. సి సహాన	ేటేషన్ నింగ్, మూనా గల డేం	, అటిబు డేటా ఇం స్థామినింగ్ పారకాలు సాధాలు: ట్ర	్యాట్ ఓరిదె టిగ్రేషన్, రె , తవ్వగల	టెంటెడ్ ఇ కేటా తగ్గింద్ నమూనాల	ుండక్షన్ పు, డేటా ఎు, దానిని
మోడ ద్వార టూన్, యూగ డేటా ఉపరె మైనిల వస్తుప వస్తుప వస్తుప వస్తుప వస్తుప యూగ	లింగ్: • డేట స్టఫర్మే నిట్ I మైనిం హిగిం ంగ్ త నిట్ I నిట్ I	ా సాధ షన్ వ I: డేట రగ్ పర్ చగల ర మెగి II: వ V: క్ర	క్యూ సారణిక మరియ సాంకే గా చే ఎంగ్ ప ఫిరింగ్	బ్ మరి కరణ. దె మ డేటా నింగ్ ఆ లికతల పే వరి విశ్రేషుల విశ్రీషుల విశ్రీషుల	యు (కేటా (కే డి(సి) 9వల్ చయం బు, డేం బు, డేం యు ల యు ల యు ల	DLAP, రె సిప్రాసెని కైటెజేషన క నం వ రా మైని లు, సం టియోరి అంచనా	వేటా సంగ్: న్. మకు రె ంగ్లో ంఘాణ ఎ మరి	వేర్ ^{హా} ఓఫర్ ము అ శేటా శ్ ్రహధా యు I	‴్స ఇ వ్యూ, రే మైనింగ్ •న సవ ు8య హె⊔్గోల్	ంప్లిమెం కేట క్లీ తన నవ గ, తవ్యగ సుస్యలు. సి సహన క్ అల్లో రీ	ేటషన్ నింగ్, మూనా గల డేం రంబం థంలు	, అట్రిబు డేటా ఇథ పెనింగ్ బా రకాలు అధాలు: ట్ర	్యాట్ ఓరిదె టి(గేషన్, రె , తవ్వగల ప్రాథమిక ఇ	పెంటెడ్ ఇ కేటా తగ్గింద్ నమూనాల గావనలు, ల	ుండక్షన్ పు, డేటా మ, దానిని తరచుగా
మోడ ద్వార ట్రాన్, యోగ డేటా ఉపరె మైనిం వస్తుం వస్తుం వస్తుం వస్తుం వస్తుం వస్తుం వస్తుం వస్తుం	లింగ్: • డేట స్టఫర్మే నిట్ I మైనిం మాగిం ంగ్ త సిల్ I నిట్ I విశ్లేషణ	ా సాధ షన్ వ ఎగ్ పరి చగల ర్ మెగి 11: వ V: క్లస్త్ర ణ: (పౌ	కర్యాణ రారణిక మరియ పాంకే గా చే ఎంగ్ ప ఫ్రీ కరణ ఫ్రీ రింగ్ స్త్ర రింగ్	బ్ మరి కరణ, దె మ డేటా నింగ్ ఆ సిం: పరిశ్ తికతం సే నవ స్త్రతులు ప్రత్తులు ప్రత్తులు ప్రత్తులు ప్రత్తులు ప్రత్య ప్రత్య ప్రత్య ప్రత్య ప్ర ప్రత్య ప్రత్య ప్ర ప్రత్య ప్రత్య ప్ర ప్రత్య ప్రత్య ప్ర ప్రత్య ప్రత్య ప్రత్య ప్ర ప్ర ప్ర ప్ర ప్ర ప్ర ప్ర ప్ర ప్ర ప్ర	యు (శీటా (శ్రీ డి(సి) 9వల్ చయం ని, డేం ని, డేం ని, (అ ని, (అ ని, (అ ని, శ్రీ ని, శ్రీ స్ర స్ర స్ర స్ర స్ర స్ర స్ర స్ర స్ర స్ర	DLAP, రె స్పిప్రాసెని కైటెజేషన్ రం, ఎంద టా మైని లు, సం పియోరి అంచనా ఫతుల ప	వేటా సంగ్: న్. సురిది సినిలి సినిలి సినిలి సినిలి సినిలి సినిలి సినిలి సినిలి సినిలి సినిలి సినిలి సినిలి సినిలి సినిలి సినిలి సినిలి సినిల సిన సినిల సిన సిన సిన సిన సిన సిన సిన సిన సిన సిన	వేర్ ^{హా} ఓఫర్ ము అ శేటా శే కి ప్రధా యు I	‴్స ఇ వూక, రే యైనింగ్ న సవ ురియు ఈె గోజ్ అవలి	ంప్లిమెం కేట క్లీ తన నవ గ్, తవ్యగ సుస్యాలు సుస్యాలు సి సహాగ క్ అల్లో రి	ేటషన్ నింగ్, మూనా గల డేం సంబం థంలు	, అ(టిబు డేటా ఇం పారకాలు పారకాలు: (ప్రాలు: (ప్రాలు: (ప్రాలు: (ప్రద్రతుల	్యాట్ ఓరిదె టి(గేషన్, రె , తవ్వగల ప్రాథమిక ఇ ఎ, క్రమాను	పెంటెడ్ ఇ కేటా తగ్గింద్ నమూనాల గావనలు, ల	ుండక్షన్ పు, డేటా మ, దానిని తరచుగా
మోడ ద్వార ట్రాన్, యోగ డేటా ఉపరె మైనిం వస్తుం వస్తుం వస్తుం వస్తుం వస్తుం వస్తుం వస్తుం వస్తుం	లింగ్: • డేట స్టఫర్మే నిట్ I మైనిం మాగిం ంగ్ త సిల్ I నిట్ I విశ్లేషణ	ా సాధ షన్ వ ఎగ్ పరి చగల ర్ మెగి 11: వ V: క్లస్త్ర ణ: (పౌ	కర్యాణ రారణిక మరియ పాంకే గా చే ఎంగ్ ప ఫ్రీ కరణ ఫ్రీ రింగ్ స్త్ర రింగ్	బ్ మరి కరణ, దె మ డేటా నింగ్ ఆ సిం: పరిశ్ తికతం సే నవ స్త్రతులు ప్రత్తులు ప్రత్తులు ప్రత్తులు ప్రత్తులు ప్రత్య ప్రత్య ప్రత్య ప్రత్య ప్ర ప్రత్య ప్రత్య ప్ర ప్రత్య ప్రత్య ప్ర ప్రత్య ప్రత్య ప్ర ప్రత్య ప్రత్య ప్రత్య ప్ర ప్ర ప్ర ప్ర ప్ర ప్ర ప్ర ప్ర ప్ర ప్ర	యు (శీటా (శ్రీ డి(సి) 9వల్ చయం ని, డేం ని, డేం ని, (అ ని, (అ ని, (అ ని, శ్రీ ని, శ్రీ స్ర స్ర స్ర స్ర స్ర స్ర స్ర స్ర స్ర స్ర	DLAP, రె స్పిప్రాసెని కైటెజేషన్ రం, ఎంద టా మైని లు, సం పియోరి అంచనా ఫతుల ప	వేటా సంగ్: న్. సురిది సినిలి సినిలి సినిలి సినిలి సినిలి సినిలి సినిలి సినిలి సినిలి సినిలి సినిలి సినిలి సినిలి సినిలి సినిలి సినిలి సినిల సిన సినిల సిన సిన సిన సిన సిన సిన సిన సిన సిన సిన	వేర్ ^{హా} ఓఫర్ ము అ శేటా శే కి ప్రధా యు I	‴్స ఇ వూక, రే యైనింగ్ న సవ ురియు ఈె గోజ్ అవలి	ంప్లిమెం కేట క్లీ తన నవ గ్, తవ్యగ సుస్యాలు సుస్యాలు సి సహాగ క్ అల్లో రి	ేటషన్ నింగ్, మూనా గల డేం సంబం థంలు	, అట్రిబు డేటా ఇథ పెనింగ్ బా రకాలు అధాలు: ట్ర	్యాట్ ఓరిదె టి(గేషన్, రె , తవ్వగల ప్రాథమిక ఇ ఎ, క్రమాను	పెంటెడ్ ఇ కేటా తగ్గింద్ నమూనాల గావనలు, ల	ుండక్షన్ పు, డేటా మ, దానిని తరచుగా
మోడ ద్వార టూన్, యూన్ డేటా ఉపరె మైని వస్తుప వస్తుప వస్తుప వస్తుప వస్తుప నిస్తు వస్తుప నిస్తు ని నిస్తు ని నిస్తు ని నిస్తు ని నిస్తు ని నిస్తు ని ని నిస్తు ని ని ని ని ని ని ని ని ని ని ని ని ని	లింగ్: • డేట స్టఫర్మే సైర్మ్ సైల్ సైల్ సిల్ సిల్ సిల్ సిల్ సిల్ సిల్ సిల్ సి	ా సాధ షన్ వ ఎగ్ పర్ చగల ర మెగి ర మెగి II: వ V: క్లస్త ణారిం	క్ కర్యా సారణిక మరియ సాంకే గా చే ఎంగ్ ప ఫిరింగ్ ఫిరింగ్ ఫిరింగ్ ఫిరింగ్ ఫిరింగ్ ఫిరింగ్	బ్ మరి కరణ. దె మ డేటా నింగ్ ఆ రి: పరిశ్ తికతల సే నిశ్లేషుల ప్రత్తుల ప్రత్తులు ప్రత్తిప్రదిం తులు:	యు (శీటా (శ్రీ డి(సి) 9వల్ చయం ను, డేం సు, డేం సు, (అ ను, డిం సు, (అ ను, డిం సు, దిల సు, దెల సు, దెల సి, దెల స స స స స స స స స స స స స స స స స స స	DLAP, రె స్పిప్రాసెని కైటెజేషన్ రం, ఎంద టా మైని లు, సం పియోరి అంచనా ఫతుల ప	జేటా సంగ్: న్. మరింద్ లగ్లో లాహ్ ల మరి లాగ్గా లాగ్గా	వేర్ ^{హా} ఓఫర్ ము అ శేటా శే కి ప్రధా యు I	‴్స ఇ వూక, రే యైనింగ్ న సవ ురియు ఈె గోజ్ అవలి	ంప్లిమెం కేట క్లీ తన నవ గ్, తవ్యగ సుస్యాలు సుస్యాలు సి సహాగ క్ అల్లో రి	ేటషన్ నింగ్, మూనా గల డేం సంబం థంలు	, అ(టిబు డేటా ఇం పారకాలు పారకాలు: (ప్రాలు: (ప్రాలు: (ప్రాలు: (ప్రద్రతుల	్యాట్ ఓరిదె టి(గేషన్, రె , తవ్వగల ప్రాథమిక ఇ ఎ, క్రమాను	పెంటెడ్ ఇ కేటా తగ్గింద్ నమూనాల గావనలు, ల	ుండక్షన్ పు, డేటా మ, దానిని తరచుగా

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కాం ప్లెక్స్ డేటా ఆభ్రెక్ట్లల మల్టీడైమెన్షనల్ విశ్లేషణ మరియు డిస్కిఫ్టివ్ మైనింగ్-పరిచయం, వెబ్ మైనింగ్, వెబ్ కంటెంట్ మైనింగ్, వెబ్ (స్టక్ఫర్ మైనింగ్, వి యూ సేజ్ మైనింగ్, టెక్స్ట్ మైనింగ్, అన్(స్టక్ఫర్డ్ టెక్స్ట్, టెక్స్ట్ ఎపిసోడ్ రూల్ డిస్కవరీ, వర్గాల సోపానక్రమం, టెక్స్ట్ క్లస్టరింగ్ .

టెక్స్ట్ బుక్స్

[1]_Jiawe i Han and Micheline Kamber, -Data Mining Concepts and Techniques I, 英复 ふ ざ i on, Elsevier, 2012.

రిఫరెన్స్ పుస్తకాలు:

[1].GKGupta,—Introductionto DataMiningwithCaseStudiesI,EsterEconomyEdition, Prenice Hall of India, 2006 [2].AP ఆంగ్-నింగ్ టాన్, మైకేల్ స్టెయిన్బాచ్ మరియు విపిన్ కుమార్, - ఇంట్రడక్ష న్ టు డేటా మైనింగ్! , సెకండ్ ఎడిషన్ పియర్సన్ ఎడ్యుకేషన్, 2016

[3].KP సోమన్, శ్యామ్ దివాకర్ మరియు V. అజయ్ – ఇన్ సైట్ ఇన్ డేటా మైనింగ్ థియరీ అండ్ (పాక్టీస్I , ఈస్టర్ ఎకానమీ ఎడిషన్, (పెంటిస్ హాల్ ఆఫ్ ఇండియా, 2016

ఇ -రిసోర్సెస్

బిగినర్స్ కోసం డేటా వేర్హౌస్ ట్యుటోరియల్ | డేటా వేర్హౌస్ కాన్సెఫ్ట్ లు | డేటా వేర్హౌసింగ్ | ఎదురుకా (2017) https://www.youtube.com/watch?v=J326L1UrZM8&t=4s

ఆర్థిఫిషియల్ న్యూరల్ నెట్వర్క్ (Ann) అల్గోరిథం ఎలా పని చేస్తుంది | డేటా మైనింగ్ | న్యూరల్ నెట్వర్క్ పరిచయం(2016)https://www.youtube.com/watch?v=fwnaijgpih ,



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Course Title: Data Warehousing and Data Mining

Lecture - Practical:				3-0-0					Internal Marks:						
Credits				3				External Marks:			70				
_	_			uctures											
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Upon			-	etion of											
CO1	Und	erstand	l the b	asic con	cepts	of ware	housin	ig and	data pi	reproce	essing t	echniques	i		
CO2	Deri	ve vari	ious ir	terestin	g patte	erns and	assoc	iations	s in dat	asets.					
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Cluster Analysis: Introduction, overview of basic clustering methods, Partitioning methods, Hierarchical methods, Density-Based Methods: DBSCAN& OPTICS, introduction to outlier analysis

UNIT V: WEB AND TEXT MINING

Multidimensional Analysis and Descriptive Mining of Complex Data Objects-Introduction, web mining, web content

Chairman-BOS Department of Computer Science & Engineering NRI Institute of Technology Agiripalli-521 212, Andhra Pradesh.

AND

NRI INSTITUTE OF TECHNOLOGY (AUTONOMOUS)

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mining, web structure mining, we usage mining, Text mining, unstructured text, episode rule discovery for texts, hierarchy of categories, text clustering.

Text Books

[1].Jiawei Han and Micheline Kamber, -Data Mining Concepts and Techniquesl, Third Edition, Elsevier, 2012. REFERENCE BOOKS:

[1].G.K.Gupta,—IntroductiontoDataMiningwithCaseStudiesI,EasterEconomyEdition,Prentice Hall of India, 2006 [2].APang-Ning Tan, Michael Steinbach and Vipin Kumar, –Introduction to DataMiningl, Second Edition Pearson Education, 2016

[3].K.P. Soman, ShyamDiwakar and V. Ajay -Insight into Data mining Theory and Practicel, Easter Economy Edition, Prentice Hall of India, 2006

E-RESOURCES

Data Warehouse Tutorial For Beginners | Data Warehouse Concepts | Data Warehousing | Edureka (2017)https://www.youtube.com/watch?v=J326L1UrZM8&t=4s

How Artificial Neural Network (Ann) Algorithm Work | Data Mining | Introduction To Neural Network(2016)https://www.youtube.com/watch?v=fwnaijgpih,

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కోర్సు శీర్షిక: అధునాతన డేటా నిర్మాణాలు

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[ຈື່ງດົກິດ ສວເລີຣິ TRIE'S ເ ລົ້ ນ	మ్యాచిం స్పెంగ్ షె యొక్క	ంగ్ వం మదలైం (పాము ఫలితా	టి విషి నవి. ుఖ్యత)ధ (పె - మరిం	ాంతా యు «	වෙ	అల్గారిఢ రర్తనాలన	ఫమ్ల మ అర్హ	అస్లికే	పుకోగలరు			
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[ຈື່ວດົ້ ຊ ຈວເລີຣິ ກີ ເ ເ ເ ເ ເ ເ ເ ເ ເ ເ ເ ເ ເ ເ ເ ເ ເ ເ	మ్యాచిం సంగ్ మె యొక్క - మధ్త 0 PO 2 3 2 2 2 2 2 3	ంగ్ వం మదలైం (పాము (సాయ (సిలితా (స్థిం, 3 స్థిం, 3 స్థిం, 3 స్థిం, 3 స్థిం, 3 స్థిం, 3 స్థిం, 3 స్థిం, 3 స్థిం, 3 స్థిం, 3 స్థిం (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	టి విష నవి. ఎఖ్యత 20 3 - అర 5 - -)ధ (పె - మరిం - మరిం 	ాంతా యు « సాం PO 7 -	లలో అనువ ధనక PO 8 -	అల్గారిఢ సర్తనాలన ు PO 9 -	ఫమ్ల మ అర్డ కో PO 10 -	అప్లికే రం చేస రుఎ PO 11 - -	సుకోగలరు PO12 - , -	ఫ లితాల PSO1 -	PSO2	సహకార PSO3 2 2
[ຈືວດົດ ຈວເຜີຣິ TRIE'S ຣັນະ ວັ, 2 PO P 0 1 2 3 2 3 2 3 2 3 3	మ్యాచిం స్టంగ్ మె యొక్క రా మధ్య 2 2 2 2 2 2	ుగ్ వం మదలైం (పాము ఫలితా ఫలితా ఫలిం (ఫిలిలా (ఫిలిలా (ఫిలిలా) (ఫలె) (ఫలె)(ఫలె) (ఫల) (ఫల) (ఫల) (ఫల) (ఫల) (ఫల) (ఫల) (ఫల	టి విష నవి. ఎఖ్యత 20 3 - అర 5 - -)ధ (పె - మరిం - మరిం 	ాంతా యు « సాం PO 7 -	లలో అనువ ధనక PO 8 -	అల్గారిఢ సర్తనాలన ు PO 9 - - - -	ఫమ్ల మ అర్డ కో PO 10 -	అప్లికే రం చేస రుఎ PO 11 - -	సుకోగలరు PO12 - , -	ఫ లితాల PSO1 -	PSO2	సహకార PSO3 2 2
	వివరిం సాధా విశ్లేషిం గుర్తిం సతితా పతిక పోషింగ్ స్కిప్ జ	వివరించండి ప్రాధాన్యత కు విశ్లేషించడాని గుర్తించండి శి ప్రతికూలతల ఫలితాలు ఫిజియవంతం హాషింగ్ యొక సి _{కి} ప్ జాబితాల	వివరించండి మరిం స్రాధాన్యత క్యూలు, విశ్లేషించడానికి స్థల గుర్తించండి భిన్న వై ప్రతికూలతలు కు శ ఫలితాలు విజయవంతంగా పు హాషింగ్ యొక్క ప్రావ స్కిప్ జాబితాల అమ	వివరించండి మరియు అ ప్రాధాన్యత క్యూలు, సమత విశ్లేషించడానికి స్థలం మర గుర్తించండి భిన్నమైనది ప్రతికూలతలు కు భిన్నఫై ఫలితాలు విజయవంతంగా పూర్తి చే హాషింగ్ యొక్క ప్రాముఖ్య స్కిప్ జాబితాల అమలును	వివరించండి మరియు అమలు ప్రాధాన్యత క్యూలు, సమతుల్యన విశ్లేషించడానికి స్థలం మరియు గుర్తించండి భిన్నమైనది పరిషా ప్రతికూలతలు కు భిన్నమైనది ఫలితాలు విజయవంతంగా పూర్తి చేసిన ల హాషింగ్ యొక్క ప్రాముఖ్యత, కార స్కిప్ జాబితాల అమలును అర్థం	వివరించండి మరియు అమలు a వివి ప్రాధాన్యత క్యూలు, సమతుల్యవెతకర విశ్లేషించడానికి స్థలం మరియు సమం గుర్తించండి భిన్నమైనది పరిష్కారాల ప్రతికూలతలు కు భిన్నమైనదిపరిషా ఫలితాలు విజయవంతంగా పూర్తి చేసిన తర్వా హాషింగ్ యొక్క ప్రాముఖ్యత, కార్యకలా స్కిప్ జాబితాల అమలును అర్థం చేస	వివరించండి మరియు అమలు a వివిధ యె ప్రాధాన్యత క్యూలు, సమతుల్యవేతకండి TF విశ్లేషించడానికి స్థలం మరియు సమయం న గుర్తించండి భిన్నమైనది పరిష్కారాలు కోస ప్రతికూలతలు కు భిన్నమైనదిపరిష్కారాల ఫలితాలు విజయవంతంగా పూర్తి చేసిన తర్వాత, విణ హాషింగ్ యొక్క ప్రాముఖ్యత, కార్యకలాపాలు స్కిప్ జాబితాల అమలును అర్థం చేసుకోగం	వివరించండి మరియు అమలు a వివిధ యొక్క ఆడ ప్రాధాన్యత క్యూలు, సమతుల్యవెతకండి TREES, డి విశ్లేషించడానికి స్థలం మరియు సమయం సంక్లిఫ్టత గుర్తించండి భిన్నమైనది పరిష్కారాలు కోసం a ఇచ ప్రతికూలతలు కు భిన్నమైనదిపరిష్కారాలు. ఫలితాలు విజయవంతంగా పూర్తి చేసిన తర్వాత, విద్యార్థి వీ హాషింగ్ యొక్క ప్రాముఖ్యత, కార్యకలాపాలు మరియ స్కిప్ జాబితాల అమలును అర్థం చేసుకోగలరు	వివరించండి మరియు అమలు a వివిధ యొక్క ఆధునిక న ప్రాధాన్యత క్యూలు, సమతుల్యవెతకండి TREES, డిజిటల్ విశ్లేషించడానికి స్థలం మరియు సమయం సంక్లిష్టత యొక్క గుర్తించండి భిన్నమైనది పరిష్కారాలు కోసం a ఇచ్చిన స ప్రతికూలతలు కు భిన్నమైనదిపరిష్కారాలు. ఫలితాలు విజయవంతంగా పూర్తి చేసిన తర్వాత, విద్యార్తి వీటిని చె హాషింగ్ యొక్క ప్రాముఖ్యత, కార్యకలాపాలు మరియు అన స్కిప్ జాబితాల అమలును అర్థం చేసుకోగలరు	వివరించండి మరియు అమలు a వివిధ యొక్క ఆధునిక సమాచ ప్రాధాన్యత క్యూలు, సమతుల్యవెతకండి TREES, డిజిటల్ శోధన విశ్లేషించడానికి స్థలం మరియు సమయం సంక్లిష్టత యొక్క ది అ గుర్తించండి భిన్న మైనది పరిష్కారాలు కోసం a ఇచ్చిన సమస్య ప్రతికూలతలు కు భిన్న మైనదిపరిష్కారాలు. ఫలితాలు విజయవంతంగా పూర్తి చేసిన తర్వాత, విద్యార్తి వీటిని చేయగ హాషింగ్ యొక్క ప్రాముఖ్యత, కార్యకలాపాలు మరియు అనువర్తం స్కిప్ జాబితాల అమలును అర్థం చేసుకోగలరు	వివరించండి మరియు అమలు a వివిధ యొక్క ఆధునిక సమాచారం నిరా ప్రాధాన్యత క్యూలు, సమతుల్యవెతకండి TREES, డిజిటల్ శోధన TREES). విశ్లేషించడానికి స్థలం మరియు సమయం సంక్లిష్ఠత యొక్క ది అల్గోరిథంల గుర్తించండి భిన్న మైనది పరిష్కారాలు కోసం a ఇచ్చిన సమస్య; విశ్లేషించ ప్రతికూలతలు కు భిన్న మైనదిపరిష్కారాలు. ఫలితాలు విజయవంతంగా పూర్తి చేసిన తర్వాత, విద్యార్తి వీటిని చేయగలరు: హాషింగ్ యొక్క ప్రాముఖ్యత, కార్యకలాపాలు మరియు అనువర్తనాన్ని అర్థ	వివరించండి మరియు అమలు a వివిధ యొక్క ఆధునిక సమాచారం నిరా్మణాలు (హా ప్రాధాన్యత క్యూలు, సమతుల్యవెతకండి TREES, డిజిటల్ శోధన TREES). విశ్లేషించడానికి స్థలం మరియు సమయం సంక్లిష్టత యొక్క ది అళ్లోరిథంలు లో చదువ గుర్తించండి భిన్నమైనది పరిష్కారాలు కోసం a ఇచ్చిన సమస్య; విశ్లేషించడానికి (పర ప్రతికూలతలు కు భిన్నమైనదిపరిష్కారాలు. ఫలితాలు విజయవంతంగా పూర్తి చేసిన తర్వాత, విద్యార్థి వీటిని చేయగలరు: హాషింగ్ యొక్క ప్రాముఖ్యత, కార్యకలాపాలు మరియు అనువర్తనాన్ని అర్థం చేసుకోగ స్కిప్ జాబితాల అమలును అర్థం చేసుకోగలరు	వివరించండి మరియు అమలు a వివిధ యొక్క ఆధునిక సమాచారం నిర్మాణాలు (హాష్ పట్టికలు ప్రాధాన్యత క్యూలు, సమతుల్యవెతకండి TREES, డిజిటల్ శోధన TREES). విశ్లేషించడానికి స్థలం మరియు సమయం సంక్లిష్టత యొక్క ది అల్గోరిథంలు లో చదువుకున్నారు గుర్తించండి భిన్నమైనది పరిష్కారాలు కోసం a ఇచ్చిన సమస్య; విశ్లేషించడానికి (పయోజనాలు ప్రతికూలతలు కు భిన్నమైనదిపరిష్కారాలు. ఫలితాలు విజయవంతంగా పూర్తి చేసిన తర్వాత, విద్యార్థి వీటిని చేయగలరు: హాషింగ్ యొక్క ప్రాముఖ్యత, కార్యకలాపాలు మరియు అనువర్తనాన్ని అర్థం చేసుకోగలరు స్కిప్ జాబితాల అమలును అర్థం చేసుకోగలరు

డైనమిక్ హాషింగ్- డైనమిక్ హ్యాషింగ్, డైనమిక్ కోసం (పెరణ హాషింగ్) ఉపయోగించి డైరెక్టరీలు, డైరెక్టరీ తక్కువ డైనమిక్ హ్యాషింగ్, హాష్ పట్టిక పునర్నిర్మాణం, దాటవేయి జాబితాలు, విశ్లేషణ యొక్క జాబితాలను దాటవేయి.

UNIT III: సమతుల్యం TREES

AVL TREES: గరిష్టం ఎత్తు యొక్క ఒక AVL TREE, చొప్పించడం మరియు తొలగింపులు. 2-3 TREES : చొప్పించడం,తొలగింపు, అప్లికేషన్లు, ఎరుపు-నలుపు చేట్లకు పరిచయం

Chairman-80S Department of Computer Science & Engineering NRI Institute of Technology Agiripalli-521 212, Andhra Pradesh.



(AUTONOMOUS)

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UNIT IV: ప్రాధాన్యత క్యూలు

బైనరీ హీప్స్ : ఇన్సర్ట్ అండ్ డిలీట్ నిమి, హీప్ క్రియేట్ చేయడం. ద్విపద క్యూలు : ద్విపద క్యూ ఆపరేషన్లు, ద్విపద విమోచన విశ్లేషణ, లేజీ ద్విపద క్యూలు

UNIT V: నమూనా సరిఫోలే మరియు ప్రయత్ని స్తుంది

ప్యాటర్న్ మ్యాచింగ్ అల్గోరిథంలు- బోయర్-మూర్ అల్గోరిథం, నూత్-మోరిస్-(ప్రాట్ అల్గోరిథం ప్రయత్నాలు: డిజిటల్ శోధన TREE యొక్క నిర్వచనాలు మరియు భావనలు, బైనరీ (జై, ప్యాటిసియా , మల్జీ-వే (జై

టెక్స్ట్ బుక్

1. ఫండమెంటల్స్ యొక్క సమాచారం నిర్మాణాలు లో సి: 2 ned, , హూరోవిల్త్ , సహాని, అండర్సన్-విముక్తివిశ్వవిద్యాలయాలు నొక్కండి.

2. సమాచారం నిర్మాణాలు మరియు అల్గోరిథం విశ్లేషణ లో సి, 2 nd సంచిక, మార్క్ అలెన్ వీస్, పియర్సన్ **రిఫరెన్స్ ఫుస్తకాలు:**

- 1. సమాచారం నిర్మాణాలు, ఎ సూడోకోడ్ విధానం, రిచర్డ్ ఎఫ్ గిల్బర్గ్, బెబ్రూజ్ ఎ ఫోరౌజన్, సెంగేజ్.
- 2. పరిచయం కు అల్గోరిథంలు, 3వ ఎడిషన్ ద్వారా *థామస్ హెచ్* కోర్మెన్ , చాల్లెస్ జ. లీజర్సన్, రోనాల్డ్ ఎల్. రివెస్ట్ క్షిఫోర్డ్ స్టైయిన్

ఇ -రిసోర్సెస్

- 1. ටින්: http://lcm.csa.iisc.ernet.in/dsa/dsa.html
- 2. http://utubersity.com/?page_id=878
- 3. http://fr ee videolectures.com/Course/2519/C-Programming-and-Data-Structures
- 4. http://fr ee videolectures.com/Course/2279/Data-Structures-And-Algorithms

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Course Title: Advanced Data Structures

Lectu	ı re – F	•ractio	cal:	3-0-	•0				Inter Mar		30				
Cred	its			3					Externa Aarks:	I	70				
Prere	equisit	es: Da	ita Sti	ructur	es			10							
Cour	se Obj	jective	es												
•	tre An	es, dig alyze 1	ital se the spa	arch tr ace an	rees). d time	comp	lexity	of the	algorith	ms stu	died in	the course.	riority queue sadvantages		
Cours	se Out	tcome	s												
Upon	succe	ssful o	compl	etion	of the	cours	e, the	studer	nt will b	e able	to:				
CO1	Ab	le to u	nderst	and th	e impo	ortance	, oper	ations	and app	olicatio	n of Ha	ashing			
CO2	Ab	le to u	nderst	and in	npleme	entatio	n of sk	cip list	S						
CO3	Abi	le to g	et a go	ood un	dersta	nding a	about o	differe	nt balar	nced tre	es.				
CO4	Ab	le to u	nderst	and th	e impl	ement	ation c	of hear	s and b	inomia	l queue	es.			
CO5	Hav ind	ve an exing	idea etc.	on ap	plicati	ions o	f algo	orithms	s in a	variety	-		tring match	ing,	
CO6				and th	e impo	ortance	and a	pplica	tions of	tries					
Contr (1 – L	ibutio	n	of	Co	urse		utcom	·	towar		achie	vement	of Pr	ogram	Outcome
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	РО 9	PO 10	PO 11	PO12	PSO1	PSO2	PSO3
CO1	3	2	2	-	-	-	-	-	-	-	-	-	-	-	2
CO2	3	2	2	2	-	-	-	-	-	-	-	-	-	3	2
-	2	2	3	2	-	-	-	-	-	-	-	-	2	2	-
CO3	3	3	2	÷	-	-	-	-	- 1	-	-	-	- į	2	3
CO3 CO4	~				0	2	-	-		-	- 10	_	a:	2	
	2	2	3	2	2	2	-	-		-		-	3	3	-

Dictionaries: Sets, Dictionaries, Static Hashing- Hash Table, Hash Functions- Secure Hash Function, Overflow Handling, Theoretical Evaluation of Overflow Techniques

UNIT II: Dynamic Hashing and Skip Lists

Dynamic Hashing- Motivation for Dynamic Hashing, Dynamic Hashing Using Directories, Directory less Dynamic Hashing, Hash Table Restructuring, Skip Lists, Analysis of Skip Lists.

UNIT III: Balanced Trees

AVL Trees: Maximum Height of an AVL Tree, Insertions and Deletions. 2-3 Trees : Insertion, Deletion, applications, introduction to Red-black trees

UNIT IV: Priority Queues

Binary Heaps : Implementation of Insert and Delete min, Creating Heap. Binomial Queues : Binomial Queue Operations, Binomial Amortized Analysis, Lazy BinomialQueues

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UNIT V: Pattern matching and Tries

Pattern matching algorithms- the Boyer –Moore algorithm, the Knuth-Morris-Pratt algorithm Tries: Definitions and concepts of digital search tree, Binary trie, Patricia, Multi-way trie

Text Book

3. Fundamentals of DATA STRUCTURES in C: 2 nded, , Horowitz , Sahani, Anderson-freed, Universities Press.

4. Data structures and Algorithm Analysis in C, 2 nd edition, Mark Allen Weiss, Pearson **REFERENCE BOOKS**:

- 3. Data Structures, a Pseudocode Approach, Richard F Gilberg, Behrouz A Forouzan, Cengage.
- 4. Introduction to Algorithms, 3rd Edition by Thomas H. Cormen, Charles E. Leiserson, Ronald L.Rivest, Clifford Stein

E-RESOURCES

- 5. Web : http://lcm.csa.iisc.ernet.in/dsa/dsa.html
- 6. http://utubersity.com/?page_id=878
- 7. http://freevideolectures.com/Course/2519/C-Programming-and-Data-Structures
- 8. <u>http://fr</u>eevideolectures.com/Course/2279/Data-Structures-And-Algorithms

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కోర్పు శీర్షిక: కంప్ర్యూటర్ నెట్వర్క్స్ ల్యాబ్ 0-0-3 15 ఉపన్యాసం అంతర్గత మార్కులు: ట్యుటోరియల్- ప్రాక్టికల్:: 1.5 35 1కెడిట్స్: బాహ్య గుర్తులు: ముందస్తు అవసరాలు: సి (పోగ్రామింగ్, UNIX యొక్క (పాథమిక ఆదేశాలు. సి ప్రోగ్రామింగ్ పరిజ్ఞానం, UNIX యొక్క ప్రాథమిక ఆదేశాలు కోర్పు లక్ష్మాలు: C ట్రోగామింగ్ మరియు జావా కోర్పు ఫలితాలు: కోర్పు విజయవంతంగా పూర్తి చేసిన తర్వాత, విద్యార్థి వీటిని చేయగలరు: బిట్ స్టఫింగ్ మరియు బైట్ స్టఫింగ్ వంటి డేటా లింక్ లేయర్ ఫార్మింగ్ పద్ధతులను లెక్కించగలగాలి. CO1 CO2 విభిన్న బహుపదాలమై చక్రీయ పునరావృత తనిఖీని విశ్లేషించగలగాలి. TCP మరియు UDP (పోటో కాల్ లను ఉపయోగించడం ద్వారా సాకెట్ (పోగ్రామింగ్ ఇంప్లీమెంటేషన్ను CO3 అర్థం చేసుకోగలగాలి.

ಡ್ಗಗಾವ	っちの品	ల నాధ్ర	ຎຎ s ຒ	ఎ లలల	ాల నిహ	5.00 (1 - అనుసిం	റ, 2 - പാ (ၣၟႄၹၙႍႍႍ႙ၟ	- မာ်င်ာနေ)	
	PO	PO	PO	PO	PO	PO	РО	PO	PO	PO	PO	PO
	1	2	3	4	5	6	7	8	9	10	11	12
CO1	2	2	-	2	-	-	· –	-	-	-	-	-
CO2	-	2	2		-	-	-	-	-	-	2	2
CO3	3	-	-	2	2	-		-	-	e Internetional	2	2

ట్రోగ్రామ్ల జాబితా

1. ifconfig, netstat, ping, arp, telnet, ftp, finger, traceroute, whois మొదలైన కమాండ్లను అర్థం చేసుకోవడం మరియు ఉపయోగించడం. ప్రాథమిక సాకెట్ సిస్టమ్ కాల్ల వినియోగం (socket (), bind(), listen(),

అంగీకరించు(),కనెశ్ద్(),పంపు(),recv(),sendto(),recvfrom()).

2. కనెక్షన్ ఓరియెంటెడ్ కాకరెంట్ సర్వీస్ (TCP) అమలు.

3. కనెక్షన్లెస్ ఇటరేటివ్ టైమ్ సర్వీస్ (UDP) అమలు.

4. సెలెక్ట్(),గెట్పీర్నేమ్ () సిస్టమ్ కాల్ని అమలు చేయడం.

5. gesockopt (), setsockopt () సిస్టమ్ కాల్ ల అమలు.

6. సాకెట్ సిస్టమ్ కాల్లను ఉపయోగించి రిమోట్ కమాండ్ ఎర్జిక్యూషన్ అమలు.

7. క్యారెక్టర్ స్టఫింగ్స్ మరియు బిట్ స్టఫింగ్ వంటి డేటా లింక్ లేయర్ (ఫేమింగ్ పద్దత్తులను అమలు చేయండి.

8. మూడు CRC బహుపదాలు - CRC 12, CRC 16 మరియు CRC CCIP అక్షరాల డేట్గా సెట్ పై అమలు చేయండి.

9. గ్రాఫ్ ద్వారా చిన్నదైన మార్గాన్ని గణించడానికి Dijkstra యొక్క అల్గారిథమ్ను అమలు చేయండి.

- 10. డిస్టెన్స్ వెక్టర్ రూటింగ్ అల్గోరిథం అమలు.
- 11. SMTP అమలు.

12. FTP అమలు.

గమనిక: Cలో 2 నుండి 6 వరకు మరియు JAVAలో 8 నుండి 12 వరకు (పోగ్రామ్లను అమలు చేయండి.

టెక్స్ట్ పుస్తకాలు:

1.టానెన్బామ్ మరియు డేవిడ్ J వెథెరాల్, కంప్యూటర్ నెట్వర్క్స్, 5 వ ఎడిషన్, పియర్సన్ ఎడు, 2010. 2.కంప్యూటర్ నెట్వర్క్ర్ లు: ఎ టాప్ డౌన్ అప్రోచ్, బెహూజ్ ఎ. ఫోరౌజన్ , ఫిరౌజ్ మోషారఫ్, మెక్గా హిల్ ఎడ్యుకేషన్.

e-వనరులు:

• http://www.softpanorama.org/Internals/unix_system_calls.shtml

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 <u>https://www.tutorialspoint.com/system-calls-in-unix-and-windows</u> Course Title: Computer Networks Lab

Lecture – Practical::	Tutorial-	0-0-3	Internal Marks:	15
Credits:		1.5	External Marks:	35
Prerequisites: Kno	wledge of C P	rogramming, Basic com	nands of UNIX.	
Knowledge of C Pr	ogramming, Ba	isic commands of UNIX		

Course Objectives:

The object of this course is to provide hands-on practice on implementing different network related commands (like netstat, ping, arp, telnet, etc.,) and programming (like socket programming, routing algorithms, etc.,) in C programming and Java. Course Outcomes:

Upon successful	completion of	the course.	the student will	be able to:

CO1 Should be able to Calculate Data link layer farming methods like bit stuffing and byte stuffing.

CO2 Should be able to Analyze Cyclic redundancy check on different polynomials.

CO3 Should be able to understand Socket Programming Implementation by using TCP and UDP Protocols. Contribution of Course Outcomes towards achievement of Program Outcomes (1 – Low, 2- Medium, 3 – High)

Contribu	ition of C	course U	Jutcomes i	owards a	achieveme	ent of PJ	rogram Ou	itcomes (I - LOW	z- meuin	ш, 5 – п	ign)
t an process constant a set	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO
	1	2	3	4	5	6	7	8	9	10	11	12
CO1	2	2	-	2	-		-	-	-	-	-	en Mali I ali in in internet en in
CO2	-	2	2	-		-	-	-	-	-	2	2
CO3	3	-	-	2	2	-	-	-	-		2	2

List of Programs

1. Understanding and using of commands like ifconfig, netstat, ping, arp, telnet, ftp, finger, traceroute, whois etc. Usage of elementary socket system calls (socket (), bind(), listen(),

accept(),connect(),send(),recv(),sendto(),recvfrom()).

2. Implementation of Connection oriented concurrent service (TCP).

3. Implementation of Connectionless Iterative time service (UDP).

4. Implementation of Select(), of getpeername () system call.

5. Implementation of gesockopt (), setsockopt () system calls.

6. Implementation of remote command execution using socket system calls.

7. Implement the data link layer framing methods such as character stuffing and bit stuffing.

8. Implement on a data set of characters the three CRC polynomials - CRC 12, CRC 16 and CRC CCIP.

9. Implement Dijkstra's algorithm to compute the Shortest path thru a graph.

- 10. Implementation of Distance Vector Routing Algorithm.
- 11. Implementation of SMTP.
- 12. Implementation of FTP.

Note: Implement programs 2 to 6 in C and 8 to 12 in JAVA.

TEXT BOOKS:

Tanenbaum and David J Wetherall, Computer Networks, 5th Edition, Pearson Edu, 2010.
 Computer Networks: A Top Down Approach, Behrouz A. Forouzan, FirouzMosharraf, McGraw Hill Education.

E-RESOURCES:

http://www.softpanorama.org/Internals/unix_system_calls.shtml

https://www.tutorialspoint.com/system-calls-in-unix-and-windows

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కోర్పు శీర్షిక: ఆర్జిఫిషియల్ ఇంటెలిజెన్స్ ల్యాబ్

ఉపన్యాసం-టు ప్రాక్టికల్::	్యటోరియల్-	0-0-3	అంతర్గత మార్కుల	ند: 15
ເຮັດືຍ້າງ:		1.5	బాహ్య గుర్తులు:	35
ముందస్తు అవసర	ా లు: కృతిమ మేద	నస్సు భావనలు		
కోర్సు లక్ష్యాలు				
• AI ఆధారిత ఆ	ుల్గారిథమ్ల రూశ	సకల్పన మరియ	ు విశ్లేషణ కోసం నైపుణా	్యలను అందించడం.
 ವಿದ್ಯాರ್ಯಲು ವಿ 	విద AI సాదనాల	పె పని చేయడ	•నికి పీలు కల్పించడం.	•
			రెపుణ్యాలను అందించడ	
కొర్పు ఫలితాలు	•			
	తర్వాత, విద్యార	స్థులు చేయగలు	ుగుతారు	
CO1: సాఫ్వేర్ అవ	సరాలను గుర్తించ	ండి, విశ్లేషించం	ండి మరియు ేపర్కొన్నండి.	
CO2: ఇచ్చిన సమ	స్పషాంతాను	అనుకరించండి	మరియు దాని పనితీరుం	ను విశేషించండి.
CO3: 20 J. 5 . 5 . 5 . 5 . 5 . 5 . 5 . 5 . 5 .	స్తరుపాంశంకో	ວດເອຍການດົ	పరిషాకరాలను అభివృర్త	ి చేయండి
ເờ້ເຕັລົ້ນ	ఫలితాల	సాధనకు	కోర్పు ఫలిం	తాల సహకారం

(1 - తక్కువ, 2- మధ్యస్థం, 3 - అధికం)

	PO	PO	PO	PO1 2	PSO 1	PSO 2	PSO 3								
0.01		2	3	4	5	0	/	8	9	10	11				
CO1	3	-	2	-	2	-	-	-	-	2	-	-	2	-	-
CO2	3	2	-	2	-	-	-	-	2	-	2	-	-	3	-
CO3	3	-	2	-	-	-	-	2	-	-	-	-	-	3	•

8. ట్రిడికేట్లను వ్రాయండి ఒకటి సెంటీగ్రేడ్ ఉఫ్హోగ్రతలను ఫారెన్హీట్గా మారుస్తుంది, మరొకటి ఉఫ్హోగత

12. వివిధ AI సాధనాలపై ఇన్స్టాలేషన్ మరియు పని చేయడం. పైథాన్, R టూల్, గేట్, NLTK,

్రపయోగాల జాబితా

"వాట్టర్ జగ్ సమస్య" పరిష్కరించండి.

C/C+++/LISP/PROLOG వంటి ఏదైనా భాషను ఉపయోగించండి

డెఫ్ట్ ఫస్ట్ సెర్ఫ్ సి ఉపయోగించి ఏదైనా సమస్యను పరిష్కరించండి.

7. హనోయి టవర్ని అమలు చేయడానికి ఒక ప్రోగ్రామ్ను వ్రాయండి

13. డేటా ప్రిప్రాసెసింగ్ మరియు ఉల్లేఖనం మరియు డేటాసెట్ల సృష్టి. 14. ఇప్పటికే ఉన్న డేటా సెట్లు మరియు ట్రిబ్యాంక్ లను తెలుసుకోండి

9. మంక బనానా సమస్యను పరిష్కరించడానికి (పోగ్రామ్ రాయండి 10. హిల్ క్లెంబింగ్ను పరిష్కరించడానికి ఒక ప్రోగ్రామ్ను ట్రాయండి.

4. ఉత్తమ మొదటి శోధనను ఉపయోగించి ఏదైనా సమస్యను పరిష్కరించండి. 5. ఉత్తమ మొదటి శోధనను ఉపయోగించి 8-పజిల్ సమస్యను పరిష్కరించండి A* అల్గోరిథం కోసం అవుట్పుట్ను రూపొందించడానికి [పోగ్రామ్ను (వాయండి

AIలో శోధన పద్ధతుల అమలు.

15. నాలెఢ్ (పాతినిధ్య పథకాల అమలు.

MATLAB, మొదలైనవి.

2. 🛛 8 క్విన్స్ సమస్యను పరిష్కరించడానికి ఒక ప్రోగ్రామ్ను (వాయథీడి

🌆 గడ్డకట్టే స్థాయి కంటే తక్కువగా ఉంటే తనిఖీ చేస్తుంది.

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16. వర్గీకరణ మరియు క్లస్టరింగ్ సమస్య యొక్క అప్లికేషన్.
17. సహజ భాషా ప్రాసెసింగ్ సాధనం అభివృద్ధి.

గమనిక: సంబంధిత కోర్స్ కోఆర్డినేటర్ పైన ేపర్కొన్న సాధారణ జాబితా ఆధారంగా సెమిస్టర్ ప్రారంభంలో ప్రయోగాలు/సమస్యల వాస్తవ జాబితాను ఖరారు చేస్తారు.

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Course Title: Artificial Intelligence Lab

Lecture-Tutorial-Practical::	0-0-3	Internal Marks:		15
Credits:	1.5	External Marks:		35
Prerequisites: Artificial Intelligence con	ncepts			
Course Objectives				
 To provide skills for designing and To enable students to work on vari To provide skills to work towards 	ous AI tools.			
CourseOutcomes: UponCompletionofthecourse, the stude CO1: Elicit, analyze and specify softwar CO2: Simulate given problem scenario a CO3: Develop programming solutions for	e requirements. and analyze its p	performance.		
	omes toward		of Program	Outcomes

	PO	PO	PO	PO	PO-	PO	PO	PO	PO	PO	PO	PO1	PSO	PSO	PSO
	1	2	3	4	5	6	7	8	9	10	11	2	1	2	5
CO1	3	-	2	-	2	-	-	-	-	2	-	-	2	-	-
CO2	3	2	-	2	-	-	-	-	2	-	2	-	-	3	-
CO3	3	-	2	-	-	-	-	2	-	-	-	-	-	3	-

List of Experiments

and the

Use any language such as C/C++/LISP/PROLOG

- 1. Solve "Water Jug Problem".
- 2. Write a program to solve 8 queens' problem
- 3. Solve any problem using depth first search.
- 4. Solve any problem using best first search.
- 5. Solve 8-puzzle problem using best first search
- 6. Write A Program to Generate the output for A* Algorithm
- 7. Write a program to implement tower of Hanoi
- 8. Write predicates One converts centigrade temperatures to Fahrenheit, the other checks if a temperature is below freezing.
- 9. Write a program to solve the Monkey Banana problem
- 10. Write a program to solve Hill climbing.
- 11. Implementation of searching techniques in AI.
- 12. Installation and working on various AI tools viz. Python, R tool, GATE, NLTK, MATLAB, etc.
- 13. Data preprocessing and annotation and creation of datasets.
- 14. Learn existing datasets and Treebanks
- 15. Implementation of Knowledge representation schemes.
- 16. Application of Classification and clustering problem.
- 17. Natural language processing tool development.

Note: The concerned Course Coordinator will finalize the actual list of experiments/problems at the start of semester based on above generic list.

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కోరు_{ని} శీర్షిక: DEVOPS LAB

ఉపం ప్రాక్టి	ర్యాస గార్	0	-	0-0-	4				ంతర్గ రూర్కు		15				
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ముం	దస్తు	అవర	సరాల తర్మా	נג: אר רי	5.5 X	<u> </u>					ັງ <u>ຄ</u> າ (I	C#. Java.	PHP, Ruby	, Python, Z	మిదలైనచి)
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పరిజ్ఞ			,0		~~~~		1012	,			2.0 8				- <u>E</u>
) లక్ష ఎంచడ):ĕ	ණ	స్సు రే	ໝັນຮັຽ	లక్ష	so e	9భివృ <i>ర్శ్</i>	స్త్రి మర	రియు	దాని కాం	ర్యకలాపాలకి	ను బలమైన	ప్రనాదిని
) ఫ లి)												
కోరు:) ລືສ	యవ	ంతం	గా పు	-ರಿ ವ	ీసిన	తర్వా	త, ష)ଘ୍ୟୁତ୍ରି	వీటిని) చేయ	ంగలరు:	సాంప్రదాయ	ప సాఫ్ట్ వే ర్	అభివృద్ధిని
అర్థం	్ చేస	<u></u> ుకోవ	చ్చు.	చుర	৩ই্ট্র্র	మెథ	ଙ୍କତଃ	දුව	పెరుగు	దలన) මිෆ	ుసుకోండి	3. •DevOp	s యొక్క	<u> </u>
నిర్వా	చించ	ండి వ	సురియ	ు రూ	పకల్ల)న చే	యండి	9. •							
CO1	ిపా	່ນນອນແ	తను	గహిం	చంది	3						-	స్ట్రవేర్ అభివ		
CO2	సాఫ్ట్	వేర్ ఆ	అభివ అమల	ාුරි සං	ర్యకల	ాపాల	ను నిర	్వహిం	ుచడాని	కి పున	రుక్తి సా	్ఫ్ వేర్ అ	భివృధ్ధి (పట్ర	కియలను వి	శ్లేషించండి
CO3	ఒక	నిర్దిష్ట	పరిశ్రీ	්ම ව	ರೆದ್ ಅ	అవసర	రం కోన ఎపజేయ			సూట	తాలు	మరియు	నిర్వచించి	ఎన అభ్యాసా	ల గురించి
CO4	ಬೃಂ	ుదం	సహ	కారం	మరి	ుయు	సాఫ్ట్	వేర్	నాణ్య లి పభావాన	కను ర్పెపర్	మెరుగ ఎశీలిం	ుపరచడ చండి.	೦ ದ್ವಾರ್	సాఫ్ట్ వే ర్	అభివృద్ధిని
CO5	ఎండ	ນຄົເຈັ	ນຂໍ້ ຈັ	ియిల్	Dev	Ops ते	ూమరా	1000	ు వర్తించి	ుజేయ	പ്പം പ	్యరా సాక్	స్ట్రవేర్ ప్రక్రియ	పను మెరుగ	ుపరచండి.
ស្រីក្រ (1 - ខ័	ామ్		ě.	ාවෂ	0		సా	ధనక		1	కోర్సు		ఫలితాల		సహకారం
(-	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO12	PSO1	PSO2	PSO3
CO1	2	2	-	-	-	-	2	2	-	-		3	2	3	3
CO2	2	3	2	3		-	-	-	-	-	2	3	3	3	3
CO3	2	2	3	3	2	-	2	-	2	-	2	-	2	-	3
CO4	2:	-	2	2	2	-	2	-	-	-	-	3	2	3	-
CO5	1	-	2	2	2	-	3	-	2	-	2	3	3	3 5	3
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				ණි	5 OJ	52 e	ో తైన	జాన	0				A15-41		
÷,		ŕ				-		-							
2)) ন্ট	ఫ్ట్ వేర్	5 వెర్టి	న్ నిం	రుంత	తణన	ు అవ	ນອນ i	చేస్తోంర్	3					
3)) (3	້ ຮົ ລ ເ	• పద	ზიე	చి ఉం	త్పత్తి	పై కం	ඩිරා	ునరైజి	০নি ষ্ট	5				
4)) 230	ంకిన్న)ని ఉ	పయో	າໃດເ) CI/O	D වි්	ప్రలైన్	స్లను గ	స్పష్టిశ్	సింది				
5)) పె	ప్పట్	మరి	యు క	అన్ని	සාව්	ఉపం	యోగిం	ంచి కాని	১১পর্ব	షన్ వే	ు న ేజ్ మె	ంట్		
6) え	లినిం	యం ఎ	పురిం	ము మ	ూవెన్	ని ఉహ	సయో	ಗಿಂವಿ ಆ	ఆటో వే	ుట్ బి	ల్డ్ మరిం	యు ఔస్ట్		

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8) Nagios ఉపయోగించి పనితీరు ట్యూనింగ్ మరియు మానిటరింగ్

9) డెవొప్స్ టూల్స్: జెంకిన్స్, డాకర్. ఫాంటమ్.,నాగియోస్ వాగ్రాంట్,అన్నిబుల్,గిట్హబ్.

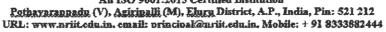
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Course Title: DEVOPS LAB

Lectu	1 re —]	Practi	cal:	0-0-	-4				nterna Marks:		15				
Cred	its			2					Extern: Marks:		35				
Work		iowlea						progra	mming	, langu		C#, Java, I ne level	PHP, Ruby	, Python, etc.)	Intermedia
Cour	se Ob	jectiv	es : T	The Ob	jectiv	e of th	is cou	se is t	o give	a strong	g found	dation of t	he Develo	pment and its (Operations.
Cour	se Ou	tcome	s				_								
-			-										l the traditi	onal software	developmen
										rpose o				c:	
CO1	Real	lize the	e impo	rtance	ofagi	le soft	ware d	eveloj	pment p	oractice	s in de	termining	the require	ements for a so	ftware system
CO2	Ana	lyze a	nd exe	cute it	erativ	e softv	vare de	velop	ment p	rocesse	s to m	anage soft	ware deve	lopment activit	ties.
CO3	Арр	ly a sy	/stema	tic uno	derstar	nding o	of Agil	e prin	ciples a	and def	ined p	ractices fo	r a specific	circumstance	or need.
CO4	Exa	nine	the im	apact	of De	vOns	in the	e suco	cessful	compl	etion	of softwa	re develo	pment by imp	proving tear
,			ion and											o, in	
CO5								y appl	ying D	evOps	capabi	lities at en	terprise lev	vel.	
Conti			of		urse	0	utcom	es	towa	rds	achi	evement	of	Program	Outcome
(1 – L	.ow, 2	- Med	ium, 3	3 – Hi _i	gh)										
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	РО 9	PO 10	PO 11	PO12	PSO1	PSO2	PSO3
CO1	2	2	-	-	-	-	2	2	-	-		3	2	3	3
CO2	2	3	2	3	-	-	-	-	-	-	2	3	3	3	3
CO3	2	2	3	3	2	-	2	-	2	-	2	_	2	_	3
CO4	2	-	2	2	2	-	2	-	-	-	-	3	2	3	-
CO5	_	_	2	2	2	-	3	-	2	-	2	3	3	3	3
PROG	RAM	S LIS		1											
10	0) In-	depth	know	ledge	of De	vOps	metho	dolog	у					2	į
1	1) Im	nlama	nting	Softa	aro V	oreion	Cont	rol						1	i.i.i.i
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12	2) Co	ntaine	erizing	g Code	e on p	roduc	tion u	sing D	ocke						
		-										4			
1.	3) Cr	eating		D Pip	elines	using	Jenki	ns							
14	4) Co	nfigu	ration	Mana	igeme	nt usi	ng Puj	ppet a	nd An	sible					
14	5) Au	tomat	ing bi	uild aı	nd tes	using	g Selen	ium a	and Ma	iven					
10	6) Co	ntaine	er Orc	hestr	ation	using]	Kuber	netes							
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Chaiter & 3100 Department of Computer Science & Engineering NRI Institute of Technology Agiripalli-521 212, Andhra Pradesh.

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కోర్సు కోడ్-ఎంప్లాయబిలిటీ స్కిల్స్-I

పాక్టిక కైడిట్ ముండ కోర్సు ఆ ఓ. ప్రాఢ	స్తు రాజ్యా సమిక	అవన		0					సూర్కుం						
- ముండ కోద్పు అ	రస్తు లక్ష్మా రమిక	అవన							ూహ్య		70*				
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సమర్థవంతమైన పబ్లిక్ స్పీకింగ్ కోసం నైపుణ్యాలు, పద్ధతులు, వ్యూహాలు మరియు అవసరమైన చిట్కాలు. సమూహ చర్చ: ప్రాముఖ్యత, ప్రణాళిక, అంశాలు, నైపుణ్యాలు అంచనా వేయబడ్డాయి; ప్రభావవంతంగా విభేదించడం,ప్రారంభించడం, సంగ్రహించడం మరియు లక్ష్యాన్ని సాధించడం.

యూనిట్ V: నాన్-వెర్బల్ కమ్యూనికేషన్

(పాముఖ్యత మరియు అంశాలు; శరీర భాష. టీమ్ వర్క్ మరియు లీడర్ షిప్ స్కిల్స్: టీమ్ కాన్సెఫ్ట్; సమర్థవంతమైన బృందాలను నిర్మించడం; నాయకత్వం యొక్క భావన మరియు నాయకత్వ నైపుణ్యాలను మెరుగుపరుస్తుంది.

రిఫరెన్స్ పుస్తకాలు:

1) బరున్ కె. మీత్ర, పర్సనాలిటీ డెవలప్మెంట్ అండ్ స్టాఫ్ట్ స్కిల్స్, ఆక్స్ఫోర్డ్ యూనివరికటీ (పెస్, 2011.

2) SP ధనవేల్, ఇంగ్లీష్ మరియు సాఫ్ట్ స్కిల్స్, ఓరియంట్ బ్లౌక్స్యాన్, 2010.

3) RSAggarwal, వెర్నల్ & నాన్-వెర్నల్ రీజనింగ్, S.Chand & Company Ltd., 2018కి ఆధునిక విధానం.

4) రామన్, మీనాక్షి & శర్మ, సంగీత, టెక్నికల్ కమ్యూనికేషన్ (పిన్సిపల్స్ అండ్ (పాక్టిస్, ఆక్స్ఫర్డ్ యూనివర్సిటీ (పెస్, 2011.

5) RSAggarwal, వెర్మల్ & నాన్-వెర్భల్ రీజనింగ్కు ఆధునిక విధానం, S.Chand & Company Ltd., 2018.

6) రామన్, మీనాక్షి & శర్మ, సంగీత, టెక్నికల్ కమ్యూనికేషన్ ట్రిన్సిపల్స్ అండ్ ప్రాక్టీస్, ఆక్స్ఫర్డ్ యూనివర్శిటీ 1 పెస్, 2011.

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Course Title-Employability Skills-I

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CO2 I	Ideni	ify to	exploi	re then	r value	s and	career	choic	es thro	ougn 11	naiviai	Jai skill as	ssessments		
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	Int-	الدغميدي			ator at	aa 4		1	oforal	anala	ad nor	ional life			
CO4 I	Inter	pret th	ne core	comp	etenci	es to s	ucceed	ı in pr	Olessi	onal al	na pers	sonal life			
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UNIT V: Non-Verbal Communication

Importance and Elements; Body Language. Teamwork and Leadership Skills: Concept of Teams; Building effective teams; Concept of Leadership and honing Leadership skills.

REFERENCE BOOKS:

1) Barun K. Mitra, Personality Development and Soft Skills, Oxford University Press, 2011.

2) S.P. Dhanavel, English and Soft Skills, Orient Blackswan, 2010.

3) R.S.Aggarwal, A Modern Approach to Verbal & Non-Verbal Reasoning, S.Chand & Company Ltd., 2018. 4) Raman, Meenakshi & Sharma, Sangeeta, Technical Communication Principles and Practice, Oxford University Press, 2011. 5) R.S.Aggarwal, A Modern Approach to Verbal & Non-Verbal Reasoning, S.Chand & Company Ltd., 2018.

6) Raman, Meenakshi & Sharma, Sangeeta, Technical Communication Principles and Practice, Oxford University Press, 2011.

E-RESOURCES

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PRPOPSED STRUCTURE FOR THIRD YEAR B.TECH PROGRAMME

III YEAR I SEMESTER

SI. No	Course Code	Title of the Course	1 20		Instruc er We		Scheme (Maxi	No. of		
			L	T	P/D	Total	CIA	SEA	Total	Credit
1	20A3105402	Artificial Intelligence	3	0	0	3	30	70	100	3
2	20A3105401	Computer Networks	3	0	0	3	30	70	100	3
3	20A3105403	Design and Analysis of Algorithms	3	0	0	3	30	70	100	3
4	20A310560	OE-1	3	0	0	3	30	70	100	3
5	20A310551	PE-1	3	0	0	3	30	70	100	3
6	20A3105491	Computer Networks lab	0	0	3	3	15	35	50	1.5
7	20A3105492	AI Programming Lab	0	0	3	3	15	35	50	1.5
8	20A3105991	DEVOPS	0	0	4	4	15	35	50	2
10	20A3105801	Employability Skills-1	2	0	0	2	30	70*	100	0
Summe	er Internship 2 Months (N be evaluated du	Mandatory) after second year (to ring V semester)	0	0	0	0	30	70	100	1.5
	To	tal	17	0	10	27	255	595	850	21.5
Honors/Minor courses - 2			3	0	2	5	30	70	100	4

Code	Professional Elective - 1
20A3105511	1.1 Cloud computing
20A3105512	1.2 Software Testing Methodologies and Tools
20A3105513	1.3 Data Warehousing and Data Mining
20A3105514	1.4 Advanced Data Structures

Head, IT Department NRI Institute of the obsology POTHAUARAA CLUD (V) Agiripalii (#), Krislina Dist



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DEPARTMENT OF INFORMATION TECHNOLOGY PRPOPSED STRUCTURE FOR THIRD YEAR B.TECH PROGRAMME

III YEAR I SEMESTER

SI. No	Course Code	Title of the Course		me of . riods F			Scheme (Maxi	No. of		
			L	T	P/D	Total	CLA	SEA	Total	Credit
1	Professional Core courses	Artificial Intelligence	3	0	0	3	30	70	100	3
2	Professional Core courses	Computer Networks	3	0	0	3	30	70	100	3
3	Professional Core courses	Design and Analysis of Algorithms	3	0	0	3	30	70	100	3
4	Open Elective Course/Job oriented elective	OE-1	2	0	2	4	,30	70	100	3
5	Professional Elective courses	PE-1	3	0	0	3	30	70	100	3
6	Professional Core courses Lab	Computer Networks lab	0	0	3	3	15	35	50	1.5
7	Professional Core courses Lab	AI Programming Lab	0	0	3	3	15	35	50	1.5
8	Skill advanced course*	DEVOPS	0	0	4	4	1.5			
10	Mandatory course ` (AICTE suggested)	Employability Skills-1	2	0	4	2	<u>15</u> 30	35 70		2
Summe be evalu	r Internship 2 Months (Ma ated during V semester)	indatory) after second year (to	0	0	0	0	30	70	100	1.5
Total				0	12	28	255	595	850	21.5
Honors/Minor courses - 2			3	0	2	5	30	70	100	4

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Code	Professional Elective – 1	
	1.1 Cloud computing	8
	1.2 Software Testing Methodologies and Tools	
	1.3 Data Warehousing and Data Mining	•
	1.4 Advanced Data Structures	

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URL ; www.nrigroupofcolleges.ac.in, Ph : 0866 2469666, Email : principal@nriit.edu.in

Course Title: Artificial Intelligence

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Unit–I

Introduction, History, Intelligent Systems, Foundations of AI, Sub areas of AI, Applications. Problem Solving –State-Space Search and Control Strategies: Introduction, General Problem Solving, Characteristics of Problem, Exhaustive Searches, HeuristicSearchTechniques,Iterative-DeepeningA*,ConstraintSatisfaction

UNIT II:

LogicConceptsandLogicProgramming:Introduction,PropositionalCalculus,Propositional Logic,NaturalDeduction System, Resolution Refutation in Propositional Logic, Predicate Logic,Logic Programming. RepresentingKnowledgeUsingRules:Logicprogramming,ProceduralVsDeclarativeknowledge,Forward Vs Backward Reasoning, Matching,Control Knowledge

UNIT III:

Knowledge Representation: Introduction, Approaches to Knowledge Representation, Knowledge RepresentationusingSemanticNetwork,ExtendedSemanticNetworksforKR, Knowledge Representation usingFrames,Conceptualdependencies,Scripts

UNIT IV:

Natural Language Processing: Steps in The Natural Language Processing, Syntactic Processing and AugmentedTransitionNets, SemanticAnalysis, NLPUnderstandingSystems;

Fuzzy Logic: CrispSets, Fuzzy Sets, Fuzzy Logic Control, Fuzzy Inferences & Fuzzy Systems Planning with state-spacesearch-partial-orderplanning-planninggraphs-planningandactingintherealworld UNIT V:

Experts Systems: Overview of an Expert System, Architecture of an Expert Systems, Different Types of ExpertSystems, Architectures, Knowledge Acquisition and Validation Techniques, Knowledge System Building Tools,ExpertSystemShells.AIProgramminglanguages:Overviewof LISPandPROLOG, ProductionSysteminProlog

Text Book:

1. Artificial Intelligence, Elaine Rich and Kevin Knight, Tata Mcgraw-Hill Publications

2. Introduction To Artificial Intelligence & Expert Systems, Patterson, PHI publications

REFERENCE BOOKS:

- 1. ArtificialIntelligence,GeorgeFLuger,PearsonEducationPublications
- 2. ArtificialIntelligence: AmodernApproach, RussellandNorvig, PrenticeHall
- 3. ArtificialIntelligence,RobertSchalkoff,Mcgraw-HillPublications
- 4. ArtificialIntelligenceandMachineLearning, VinodChandraS.S., AnandHareendranS.

E-RESOURCES

- 1. https://onlinecourses.nptel.ac.in/noc22_cs56/preview
- 2. https://nptel.ac.in/courses/106105077
- 3. https://nptel.ac.in/courses/106102220
- 4. https://onlinecourses.nptel.ac.in/noc19_me71/preview
- 5. https://nptel.ac.in/courses/106106126

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Course Title: Computer Networks

Lectu	re – Tutorial:	3-0-0	Internal Marks:	30
Credi	ts:	3	External Marks:	70
Prere	quisites: Computer	Networks		
Cours	e Objectives:			
•	Understand state-o	f-the-art in network protocols, an	chitectures, and applications	
	Process of networl	ting research		
•	Constraints and the	ought processes for networking r	esearch	
٠	Problem Formulati	on—ApproachAnalysis		
Cours	e Outcomes:			
CO1	Able to understand	OSI and TCP/IP models.		
CO2		nk layer protocols and flow contr		
CO3			· ·	
	Understand routing	and network layer protocols and	1 IPV4	3
CO4				
12	Understand transpo	ort layer congestion, flow control	and protocols	
CO5	Understand applie	cation layer protocols	and Protocols	

UNIT I : INTRODUCTION

OSI, TCP/IP and other networks models, Examples of Networks: Novell Networks, Arpanet, Internet, Network Topologies WAN, LAN, MAN.

PHYSICAL LAYER Transmission media copper, twisted pair wireless, switching and encoding asynchronous communications

UNIT II: DATA LINK LAYER:

Design issues, framing, error detection and correction, CRC, Elementary Protocol-stop and wait, Sliding Window. Medium Access Sub Layer: ALOHA, MAC addresses, Carrier sense multiple access, IEEE 802.X Standard Ethernet, Bridges.

UNIT III: NETWORK LAYER

Virtual circuit and Datagram subnets-Routing algorithm shortest path routing, Flooding, Hierarchical routing, Broad cast, Multi cast, distance vector routing. OSPF. IPV4

UNIT IV TRANSPORT LAYER Transport Services, Connection management, TCP and UDP protocols congestion control.

UNIT V APPLICATION LAYER

Network Security, Domain name system, SNMP, Electronic Mail; the World WEB, Multi Media.

Text Book:

1. Tanenbaum and David J Wetherall, Computer Networks, 5th Edition, Pearson Edu, 2010. **REFERENCE BOOKS:**



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- 1. Computer Networks: A Top-Down Approach, Behrouz A. Forouzan, FirouzMosharraf, McGraw Hill Education.
- 2. Computer Networks, 5ed, David Patterson, Elsevier.
- Larry L. Peterson and Bruce S. Davie, "Computer Networks- A Systems Approach" 5th Edition, Morgan Kaufmann/Elsevier, 2011.
- 4. Computer Networks, Mayank Dave, CENGAGE.
- 5. An Engineering Approach to Computer Networks-S.Keshav, 2nd Edition, Pearson Education.
- 6. Understanding communications and Networks, 3rd Edition, W.A. Shay, Thomson

E-RESOURCES

- 1. www.tutorialspoint.com
- 2. nptl.ac.in/courses/



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Course Title: Design and Analysis of Algorithms

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UNIT I Introduction to Algorithms

Fundamentals of algorithmic problem solving – Analysis framework - Performance Analysis: - Space complexity, Time complexity - Growth of Functions: Asymptotic Notation- Big oh notation, Omega notation, Theta notation, little oh.

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UNIT II Divide and Conquer:Divide and conquer: General method, applications-Binary search, Quick sort, Merge sort, Finding the Maximum and Minimum

Unit III Greedy method: The General Method, Knapsack Problem, Job Sequencing with Deadlines, Minimum-cost Spanning Trees, Prim's Algorithm, Kruskal's Algorithms, Optimal Merge Patterns, Single Source Shortest Paths

UNIT IV Dynamic Programming: General method, applications-Matrix chain multiplication, Optimal binary search trees, 0/1knapsack problem, All pairs shortest path problem, Travelling sales person problem, Reliability design.

UNIT V Backtracking: General method, applications-n-queen problem, sum of subsets problem, graph coloring, Hamiltonian cycles.

Branch and Bound: General method, applications - Travelling sales person problem, 0/1 knapsack problem- LC Branch and Bound solution, FIFO Branch and Bound solution

TEXT BOOKS:

Fundamentals of Computer Algorithms, Ellis Horowitz, SatrajSahni and Rajasekaran, University press REFERENCE BOOKS:

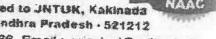
- 1. Introduction to The Design and Analysis of Algorithms, 3rd Edition, Anany Levitin, Pearson Education, 2017.
- 2. Introduction to Algorithms, second edition, T.H.Cormen, C.E.Leiserson, R.L. Rivest, and C.Stein, PHI Pvt. Ltd./ Pearson Education
- 3. Design and Analysis of algorithms, Aho, Ullman and Hopcroft, Pearson education.
- 4. Algorithms Richard Johnson Baugh and Marcus Schaefer, Pearson Education



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Course Code-Cloud Computing

Lecture – Tutorial- Practical::	3-0-0		
Credits:		Internal Marks:	30
Prerequisites: C- Programming,	Data Structures, Statistics fundamentals	External Marks:	70
Course Objectives:			

The student will learn about the cloud environment, building software systems and components that scale to millions of users in modern internet cloud concepts capabilities across the various cloud service models including laas, Paas, Saas, and developing cloud based software applications on top of cloud platforms. Course Outcomes

CO1	sful completion of the course, the student will be able to:
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~~1	Understanding the key dimensions of the challence of Cloud Comments
CO2	Assessment of the economics financial and the original computing
	Assessment of the economics, financial, and technological implications for selecting cloud computing for own organization
CO3	Assessing the financial, technological, and organizational capacity of employer's for actively initiating and installing cloud-based applications
CO4	Assessment of own organizations' needs for consolite le 'd'
CO5	Assessment of own organizations' needs for capacity building and training in cloud computing-related IT areas Describe the features of Resource Management systems

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UNIT-1: Systems modeling, Clustering and virtualization Scalable Computing over the Internet, Technologies for Network based systems, System models for Distributed and Cloud Computing, Software environments for distributed systems and clouds, Performance, Security And Energy Efficiency

UNIT-2: Implementation Levels of Virtualization, Virtualization Structures/ Tools and mechanisms, Virtualization of CPU, Memory and I/O Devices, Virtual Clusters and Resource Management, Virtualization for Data Center Automation.

UNIT-3: Cloud Computing and service Models, Architectural Design of Compute and Storage Clouds, Public Cloud Platforms, Inter Cloud Resource Management, Cloud Security and Trust Management. Service Oriented Architecture, Message Oriented

UNIT-4 :Cloud Programming and Software Environments Features of Cloud and Grid Platforms, Parallel & Distributed Programming Paradigms, Programming Support of Google App Engine, Programming on Amazon AWS and Microsoft Azure, Emerging Cloud Software Environments.

UNIT-5: Policies and Mechanisms for Resource Management Applications of Control Theory to Task Scheduling on a Cloud, Stability of a Two Level Resource Allocation Architecture, Feedback Control Based on Dynamic Thresholds. Coordination of Specialized Autonomic Performance Managers, Resource Bundling, Scheduling Algorithms for Computing Clouds, Fair Queuing, Start Time Fair Queuing, Borrowed Virtual Time, Cloud Scheduling Subject to Deadlines, Scheduling MapReduce Applications Subject to Deadlines.

TEXT BOOKS:

1. Distributed and Cloud Computing, Kai Hwang, Geoffry C. Fox, Jack J. Dongarra MK Elsevier.

2. Cloud Computing, Theory and Practice, Dan C Marinescu, MK Elsevier.





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3. Cloud Computing, A Hands on approach, ArshadeepBahga, Vijay Madisetti, University Press REFERENCE BOOKS:

- 1. Cloud Computing, A Practical Approach, Anthony T Velte, Toby J Velte, Robert Elsenpeter, TMH
- Mastering Cloud Computing, Foundations and Application Programming, Raj Kumar Buyya, Christen vecctiola, S Tammaraiselvi, TMH

e-Resources:

- 1. https://nptel.ac.in
- 2. https://onlinecourses.nptel.ac.in/noc21_cs87/preview



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MAAC

Course Title: Software Testing Methodologies and Tools

-	ure –	Pract	ical:	3-0)-0				Interna		30				
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- 1. Software testing techniques Boris Beizer, Dreamtech, second edition.
- 2. Software Testing- Yogesh Singh, Camebridge

REFERENCE BOOKS:

- The Craft of software testing Brian Marick, Pearson Education.
- 2. Software Testing, 3rd edition, P.C. Jorgensen, Aurbach Publications (Dist.by SPD).
- 3. Software Testing, N.Chauhan, Oxford University Press.
- 4. Introduction to Software Testing, P.Ammann&J.Offutt, Cambridge Univ.Press.
- 5. Effective methods of Software Testing, Perry, John Wiley, 2nd Edition, 1999.
- 6. Software Testing Concepts and Tools, P.NageswaraRao, dreamtech Press
- 7. Win Runner in simple steps by Hakeem Shittu, 2007Genixpress.
- 8. Foundations of Software Testing, D.Graham& Others, Cengage Learning.

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LA AF

Course Title: Data Warehousing and Data Mining

Lect	are –	Practi	ical:	. 3-0-0						ernal Irks:	30				
Cred	lits			3					Extern	nal	70_				
Prer	equisi	tes: D	ata St	ructure	s						-				
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CO2	Deri	ive var	ious ii	aterestin	g patte	erns and	assoc	iation	s in da	tasets.					
CO3	Desi	ign and	1 deve	lop class	sifier r	nodels t	o pred	lict fut	ture tre	ends.					
CO4	App	ly uns	upervi	sed learn	ing te	chnique	es for a	agive	n appli	cation					
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[1].Jiawei Han and Micheline Kamber, -Data Mining Concepts and Techniquesl, Third Edition, Elsevier, 2012. REFERENCE BOOKS:

[1].G.K.Gupta,—IntroductiontoDataMiningwithCaseStudiesl,EasterEconomyEdition,Prentice Hall of India, 2006 [2].APang-Ning Tan, Michael Steinbach and Vipin Kumar, -Introduction to DataMiningl, Second Edition Pearson Education, 2016

[3].K.P. Soman, ShyamDiwakar and V. Ajay -Insight into Data mining Theory and Practicel, Easter Economy Edition, Prentice Hall of India, 2006

E-RESOURCES

Data Warehouse Tutorial For Beginners | Data Warehouse Concepts | Data Warehousing | Edureka (2017)https://www.youtube.com/watch?v=J326LIUrZM8&t=4s

How Artificial Neural Network (Ann) Algorithm Work | Data Mining | Introduction To Neural Network(2016)https://www.youtube.com/watch?v=fwnaijgpih,



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NAAC

Course Title: Advanced Data Structures

Lecture – P	ractical:	3-(0-0					ernal rks:	30				
Credits		3					Extern Marks:	al	70				
Prerequisit	es: Data S	Structu	res				LTRONT HUT	•					
Course Obj	ectives												
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Course Out	comes												
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	e to under									ashing			
CO2 Able	e to under	stand in	mplem	entatio	on of s	kip lis	ts						
CO3 Able	to get a j	good ur	ndersta	nding	about	differ	ent bala	nced tro	es.				
CO4 Able	to under	stand th	ne imp	ement	tation	ofbea	ns and k	vinomia	1 (11)(01)	20			
CO5 Have	e an idea xing etc.	on aj	pplicat	ions c	of algo	orithm	s in a	variety	of ar	eas, like s	tring mate	hing,	
	to under	stand th	e imp	vrtance	and a	nnlics	ations of	ftriog					
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Tries: Definitions and concepts of digital search tree, Binary trie, Patricia, Multi-way trie

Text Book

1. Fundamentals of DATA STRUCTURES in C: 2 nded, , Horowitz , Sahani, Anderson-freed, Universities Press.

2. Data structures and Algorithm Analysis in C, 2 nd edition, Mark Allen Weiss, Pearson **REFERENCE BOOKS:**

- 1. Data Structures, a Pseudocode Approach, Richard F Gilberg, Behrouz A Forouzan, Cengage.
- 2. Introduction to Algorithms, 3rd Edition by Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, Clifford Stein

E-RESOURCES

- 1. Web : http://lcm.csa.iisc.ernet.in/dsa/dsa.html
- 2. http://utubersity.com/?page_id=878
- 3. http://freevideolectures.com/Course/2519/C-Programming-and-Data-Structures
- 4. http://freevideolectures.com/Course/2279/Data-Structures-And-Algorithms

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Course Title: Computer Networks Lab

Lectu	re –	Tut	orial- O	-0-3								16
Practi	cal::							1	nternal N	farks:		15
Credit				.5		- Allente Angel (L.B. L. Marine		I	External I	Jarks		35
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CO2	Should	be able t	o Analyz	e Cvelie r	edundanc	v check o	n differen	nt polynoi	niele	yte stunn	ıg.	
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CO3	Should	be able t	o underst	and Sock	et Program	nming Im	nlemento	tion by w	ing TCP		D	
Contri	bution of	Course O	utcomes	towards	achieven	ent of P	rogram (lion by us			PTOLOCOIS.	
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CO2	-	2	2	-	-	-	-	······································			2	
CO3	. 3	-	-	2	2							<u></u>

List of Programs

1. Understanding and using of commands like ifconfig, netstat, ping, arp, telnet, ftp, finger, traceroute, whois etc. Usage of elementary socket system calls (socket (), bind(), listen(),

accept(),connect(),send(),recv(),sendto(),recvfrom()).

- 2. Implementation of Connection oriented concurrent service (TCP).
- 3. Implementation of Connectionless Iterative time service (UDP).
- 4. Implementation of Select(), of getpeername () system call.
- 5. Implementation of gesockopt (), setsockopt () system calls.
- 6. Implementation of remote command execution using socket system calls.
- 7. Implement the data link layer framing methods such as character stuffing and bit stuffing.
- 8. Implement on a data set of characters the three CRC polynomials CRC 12, CRC 16 and CRC CCIP.
- 9. Implement Dijkstra's algorithm to compute the Shortest path thru a graph.
- 10. Implementation of Distance Vector Routing Algorithm.
- 11. Implementation of SMTP.
- 12. Implementation of FTP.

Note: Implement programs 2 to 6 in C and 8 to 12 in JAVA.

TEXT BOOKS:

1. Tanenbaum and David J Wetherall, Computer Networks, 5th Edition, Pearson Edu, 2010.

2. Computer Networks: A Top Down Approach, Behrouz A. Forouzan, FirouzMosharraf, McGraw Hill Education.

E-RESOURCES:

- http://www.softpanorama.org/Internals/unix_system_calls.shtml
- https://www.tutorialspoint.com/system-calls-in-unix-and-windows



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URL : www.nrigroupofcolleges.ac.in, Ph : 0866 2469666, Email : principal@nrilt.edu.in

Course Title: Artificial Intelligence Lab

Lecture-Tutorial-Practical::	0.0.7			
	0-0-3	Internal Marks:		15
Credits:	1.5	External Marks:		35
Prerequisites: Artificial Intelligence con	cepts			
Course Objectives				
 To provide skills for designing and To enable students to work on varia To provide skills to work towards statements 	ous AI tools.	_		
CourseOutcomes:				
UponCompletionofthecourse, the studen	ntswillbea bleto			
CO1: Elicit, analyze and specify software CO2: Simulate given problem scenario an CO3: Develop programming solutions for	e requirements. nd analyze its po	erformance		
Contribution of Course Outco (1 - Low, 2- Medium, 3 - High)	mes towards	achievement of	Program Out	comes

	PO	PO1	PSO	PSO	PSO										
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CO3	3	-	2	-	-	-	1-	2	-	-	<u> </u>	-		3	

List of Experiments

Use any language such as C/C++/LISP/PROLOG

- 1. Solve "Water Jug Problem".
- Write a program to solve 8 queens' problem
 Solve any problem using depth first search.
- 4. Solve any problem using best first search.
- 5. Solve 8-puzzle problem using best first search
- 6. Write A Program to Generate the output for A* Algorithm
- 7. Write a program to implement tower of Hanoi
- 8. Write predicates One converts centigrade temperatures to Fahrenheit, the other checks if a temperature is below freezing.
- 9. Write a program to solve the Monkey Banana problem
- 10. Write a program to solve Hill climbing.
- 11. Implementation of searching techniques in AI.
- 12. Installation and working on various AI tools viz. Python, R tool, GATE, NLTK, MATLAB, etc.
- 13. Data preprocessing and annotation and creation of datasets.
- 14. Learn existing datasets and Treebanks
- 15. Implementation of Knowledge representation schemes.
- 16. Application of Classification and clustering problem.
- 17. Natural language processing tool development.

Note: The concerned Course Coordinator will finalize the actual list of experiments/problems at the start of semester based on above generic list.



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Course Title: DEVOPS LAB

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Cred	Credits 2									nal	35					
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Course Code-Employability Skills-I

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REFERENCE BOOKS:

1) Barun K. Mitra, Personality Development and Soft Skills, Oxford University Press, 2011.

2) S.P. Dhanavel, English and Soft Skills, Orient Blackswan, 2010.

3) R.S.Aggarwal, A Modern Approach to Verbal & Non-Verbal Reasoning, S.Chand & Company Ltd., 2018. 4) Raman, Meenakshi & Sharma, Sangeeta, Technical Communication Principles and Practice, Oxford University Press, 2011.

5) R.S.Aggarwal, A Modern Approach to Verbal & Non-Verbal Reasoning, S.Chand & Company Ltd., 2018.

6) Raman, Meenakshi & Sharma, Sangeeta, Technical Communication Principles and Practice, Oxford University Press, 2011.

E-RESOURCES

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III YEAR II SEMESTER

SI. No	Course Code	Title of the Course			lnstruc er We		Scheme (Max	No. of		
			L	T	P/D	Total	CIA	SEA	Total	Credits
1	20A3205403	Machine Learning	3	0	0	3	30	70	100	3
2	20A3205402	Compiler Design	3	0	0	3	30	70	100	3
3	20A3205401	Cryptography and Network Security	3	0	0	3	30	70	100	3
4	20A320560	OE-2	3	0	0	3	30	70	100	3
3	20A320551	PE-2	3	0	0	3	30	70	100	3
6	20A3205491	1 Machine Learning Lab		0	3	3	15	35	50	1.5
7	20A3205492	R Programming lab	0	0	3	3	15	35	50	1.5
8	20A3205493	Compiler Design Lab		0	3	3	15	35	50	1.5
9	20A3205991	MEAN Stack Technologies	0	0	4	4	15	35	50	2
10	20A3205801	Employability Skills - 2	2	0	0	2	30	70*	100	0
	Total				13	30	240	560	800	21.5
	Honors/Mine	or courses - 3	3	0	2	5	30	70	100	4

Code	Professional Elective -2
20A3205511	2.1 Advanced Database Management Systems
20A3205512	2.2 Network Programming
20A3205513	2.3 Big data Analytics
20A3205514	2.4 Object Oriented Analysis and Design

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Course Title: Machine Learning

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Beyond Binary Classification: Handling more than two classes, finding minimum and maximum of a function, Gradient



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Descent, Linear Regression, Multiple Regression, Calculating accuracy in regression (RMSE), Effect of outliers and noisy data, overfitting and underfitting models, K-fold cross validation, confusion matrix for cross validation imbalanced data, ROC AUC curve for imbalanced data, F1 score

UNIT IV:

Logistic Regression: Sigmoid function in logistic regression, loss functions in logistic regression. Linear Models: The Least Square method, Support Vector Machine (SVM) Tree Model: Decision Trees, Ranking and Probability estimation trees,

UNIT V:

Distance Based Models: Distance Measures (Euclidean, Manhattan and Minkowski), Neighbors, KNN, Distance based clustering, Hierarchical Clustering, Agglomerative Clustering

Probabilistic model: Naive Bayes algorithm for classification, Laplace, smoothing

Model Ensembles: Bagging and Random Forest, Boosting

Text Book

- .1. Machine Learning: The art and science of algorithms that make sense of data, Peter Flach, Cambridge.
- 2. Machine Learning, Tom M. Mitchell, MGH.

REFERENCE BOOKS:

- 1. Understanding Machine Learning: From Theory to Algorithms, Shai Shalev-Shwartz, Shai Ben- David, Cambridge.
- 2. Machine Learning in Action, Peter Harington, 2012, Cengage.

E-RESOURCES

1.https://alex.smola.org/drafts/thebook.pdf

2.https://www.slideshare.net/liorrokach/introduction-to-machine-learning-13809045



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Gram	mars and	language d	lefinition									
2. To Ide	entify the	similaritie	s and dif	ferences a	mong va	rious pars	ing techn	iques and	grammar	transform	ation	
Techn	iques.	99.										
3. To Ur	derstand	the syntax	analysis	, intermed	iate code	e generatio	on, type c	hecking,	the role of	symbol ta	able and	
its org	anization	*						34				
4. To Ur	iderstand,	design co	de genera	ation and (optimizat	tion schen	nes.					
Course	Outcome	s:					4++ Matter/Had				нон он на манит и Кулданск (Ме. – 11	alle fraktet van 'n franktenskelde finde fan te ANA -
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CO2	То арр	ly the know	vledge o	f lex tool	& yacc to	ool to deve	elop a sca	nner & p	arser.			
CO3	To writ	te the new	code op	timization	techniq	ues to imp	prove the	performa	ince of a j	orogram i	1 terms of	f speed &
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CO4	3	2	3	2	3	1				2	2	2
CO5	3 .	3	3	1		2	1	1	-	2	-	2
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Course Title: Cryptography and Network Security

• •	re-Tutorial-Practical::	3-0-0	InternalMarks:	30
Cred		3	ExternalMarks:	70
Theory,	, Computer Networks, Problem Solving Skills		e following topics: Engineering Mathematics, plogies	Number
	Objectives			
 thr Th preof Th pul Th Me Th Ke Preof Th 	eats & attacks, understand ethical hacking e Objectives of second unit is to under esent an overview of the Feistel Cipher a DES, Triple DES, Blowfish, IDEA e objectives of third unit is to present the blic key cryptosystems e objectives of fourth unit is to Present essage Authentication Codes, Understand e objectives of fifth unit is to Present erberos, Summarize Web Security threats esent an overview of electronic mail security	g stand the di- ind explain t ie basic prind it overview t he operation t an overvie and Web tra- rity.	the main concepts of cryptography, unders fference between stream ciphers & block he encryption and decryption, present an o ciples of public key cryptography, Distinc of the basic structure of cryptographic fit n of SHA-512, HMAC, Digital Signature wo of techniques for remote user auther affic security approaches, overview of SSL w of IP Security, concept of security ass	ciphers, overview t uses of unctions, ntication, & TLS.
	eOutcomes: Completionofthecourse,thestudentswill	haahlata	-	
	. Understand the principles of cryptogra		urity, with enciphering Techniques and a	nalyze a
ĊOI.	. Understand the principles of cryptogra variety of threats and attacks.	aphy and sec	urity, with enciphering Techniques and a d apply them on a various symmetric crypt	
CO1. CO2.	 Understand the principles of cryptogra variety of threats and attacks. Distinguish the black ciphers and streat technique. 	aphy and sec n ciphers and tical models		ographic
CO1. CO2. CO3.	 Understand the principles of cryptogravariety of threats and attacks. Distinguish the black ciphers and strear technique. Understand the principle and mathemat on different (various) types of algorithm 	aphy and sec n ciphers an tical models ns.	d apply them on a various symmetric crypt	ographic ing them
CO1. CO2. CO3. CO4. CO5.	 Understand the principles of cryptogravariety of threats and attacks. Distinguish the black ciphers and strear technique. Understand the principle and mathemat on different (various) types of algorithm. Analyze the message authentication communication. Understand the user authentications principle. 	aphy and sec n ciphers an tical models ns. functions w nciples and s	d apply them on a various symmetric crypt used in public-key cryptosystems by apply	ographic ing them or secure 1.

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Unit–I

Introduction, Computer Security Concepts, Security Attacks, Security Services, Security Mechanisms, A Model for Network Security, Mathematics of Cryptography

Classical Encryption Techniques, Symmetric Cipher Model, Substitution Techniques, Transposition Techniques

UNIT II:

Symmetric Encryption, Mathematics of Symmetric Key Cryptography, Introduction to Modern Symmetric Key Ciphers, Data Encryption Standard, Advanced Encryption Standard, BlowFish, IDEA, CAST-128 algorithms

UNIT III:

Asymmetric Encryption, Mathematics of Asymmetric Key Cryptography, Number Theory, Prime Numbers, Fermat's and Euler's Theorems, Testing for Primality, The Chinese Remainder Theorem, Discrete Logarithms, Asymmetric Key Ciphers Principles of Public-Key Cryptosystems, The RSA Algorithma, Diffie-Hellman Key Exchange, ElGamal Cryptosystem, EllipticCipher Block Chaining Mode, Cipher Feedback Mode, Output Feedback Mode, Counter Mode,

UNIT IV:

DATA INTEGRITY, Digital Signature schemes, & Key Management

Message Integrity and message authentication, Cryptographic hash functions, Digital Signature and Key Management UNIT V:

Network Security: Security at Application layer: PGP and MIME, Security at Transport layer: SSL and TLS, Security at Network layer: IPSec, System Security

Text Book:

- 1. Cryptography and Network Security Principles and Practice 6th Edition, William Stallings, Pearson Education
- 2. Cryptography and Network Security, Behrouz A Forouzan, DebdeepMukhopadhyay, 3E) Mc Gra Hill
- 3. AtulKahate, Cryptography and Network Security, TMH. (2003)

REFERENCE BOOKS:

- 1. Network Security Essentials: Applications and Standards, by William Stallings. Prentice Hall
- 2. Cryptography: Theory and Practice by Douglas R. Stinson, CRC press.
- 3. Charlie Kaufman, Radia Perlman, Mike Speciner, Network Security: Private Communication in Public World, 2 nd Edition, 2011, Pearson Education. 95
- 4. Network Security and Cryptography, Bernard Meneges, Cengage Learning

E-RESOURCES:

- 1. http://users.abo.fi/ipetre/crypto/
- 2. https://www.vssut.ac.in/lecture_notes/lecture1428550736.pdf
- 3. https://analyticsindiamag.com/top-10-free-resources-to-learn-cybersecurity/
- 4. https://lecturenotes.in/subject/112/cryptography-and-network-security-cns
- 5. https://www.smartzworld.com/notes/cryptography-network-security-notes-pdf-cns-notes-pdf/
- https://studentsfocus.com/cs6701-cns-notes-cryptography-network-security-lecture-handwritten-notes-cse-7th-semanna-university/
- 7. https://www.jntufastupdates.com/jntuk-r16-4-1-cns-material/





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		C	ourse 1	fitle: Ad	vanced	Datab	ase Ma	anageme	ent Systen	15	
Lecture – T	Tutorial-Pr	actical:			3-	0-0		Inte	rnal Marks:	30	
Credits:3								Exte	rnal Marks:	70	
Prerequisit	es: DBMS,	Program	ming co	ncepts				LAU	inai mai ko,	70	
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2.Distinguis	sh between	centralize	ed and o	listribute	d databas	es					
3.Implemen 4.Do query	it appication	ons involv	'ing con	iplex tra	nsaction p	rocessing	a				
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CO2	Implen wareho	nent practi using and	cal solu data min	tions to C	GIS databas oaches	e problem	is using O	O/OR datab	ase, spatial dat	tabase, o	lata ·
CO3	Evalua		strategie			tributed q	uery to sel	lect the strat	egy that minin	nizes th	ð
CO4	Demon	strate the	issues i	nvolved i	n data integ	ration for	distribute	d query pro	cessing		***********************************
CO5	Develo	p practical	skills in	1 the use	of these mo	dels and a	approaches	s to be able	to select and a	pply the	
	appropr	iate metho	ds for a	. particula	r case						
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DISTRIBUTED DATABASE DESIGN

Distributed database design: framework for distributed database design, the design of database fragmentation, allocation of fragments; Distributed Query processing: Equivalence of transformations for queries, transforming global queries into fragment queries, distributed grouping and aggregation functions.

UNIT - V

UNIT - IV

QUERY OPTIMIZATION

A framework for query optimization, join queries and general queries. non-join queries in a distributed DBMS, joins in a distributed DBMS, cost based query optimization. DBMS Vs IR systems, Introduction to Information retrieval, Indexing for text search, web search engine, managing text in a DBMS, a data model for XML, Querying XML data, and efficient evaluation of XML queries.

TEXT BOOKS:

1. Raghuramakrishnan and Johannes Gehrke, "Database Management Systems", 3rd Edition, TMH, 2006.

The many states and the second s

2. S Ceri and G Pelagatti, "Distributed databases principles and systems", 1st Edition, TMH, 2008.

REFERENCE BOOKS:

- 1. Silberschatz, Korth, "Database System Concepts", 6th Edition, TMH, 2010.
- 2. Elmasri R, Navathe S B, Somayajulu D V L N, and Gupta S K, "Fundamentals of
- Database Systems", 5th Edition, Pearson Education, 2009.

3. C. J. Date, "Introduction to Database Systems", 8th Edition, Pearson Education, 2009.

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Course Title: Network Programming

Lecture -	3-0-	Tetternel	20
Practical:	0	Internal Marks:	30
,	3	External	70
Credits		Marks:	
Prerequisites: Non			
Course Objectives			
Students w protocols 1	ill gain ti ike TCP	he understanding o and UDP	of core network programming by using sockets and transport layer
Students w forms of IF	ill gain t C in clie	he understanding o nt-server environn	of inter process communication and implementation of different ment
 Students w 	ill get an	exposure to variou	us application layer protocols which are designed using sockets and
transport la			
Course Outcomes			
	mpletior	of the course, the	e student will be able to:
CO1	Expla	in the client-server	paradigm and socket structures.
CO2	Donor	ibo tho bosic source	
002	Desci	the the basic conce	pts of TCP sockets and TCP echo client-server programs.
CO3	Discu	ss the UDP sockets	s and UDP echo client-server programs.
CO4	Expla	in Socket options a	and ability to understand IPC.
CO5	Apply FTP, 1	the applications c TELNET etc.	of sockets and demonstrate skill to design simple applications like
UNIT I:	÷		
Introduction to Net	work Pr	ogramming: OSI	model-transport layer protocols: TCP, UDP and SCTP-network
architecture: client-s	server an	d peer-to-peer syst	tems, Sockets-socket Address structures: IPv4, IPv6 and Generic,
value result argument	its-Byte	ordering functions-	Byte manipulation functions-Address conversion functions
UNIT II:			
TCP: introduction t	o TCP-T	CP connection est	tablishment and terminationTIME WAIT State Flementary TCP

sockets – Socket-connect-bind-listen-accept-fork-exec function-concurrent servers-Close function-read and write functions

UNIT III:

TCP echo client server program-getsockname and getpeername functions I/O multiplexing: I/O models-Select function-TCP echo server using select function-shutdown function-Poll function

UNIT IV:

UDP: Introduction to UDP-difference between TCP and UDP-recvfrom() and sendto() functions-UDP echo client server program-UDP echo client server using select function. Socket Options: IPv4 socket options-IPv6 socket options



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Course Title: Big Data Analytics

	re – F	ractic	al:	3-0-	0				Inter Mar		30	2			
Cred	its			3					xterna Iarks:	1	70				
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Cours	se Out	comes													
				etion (f the	COURSE	the	tuder	t will b	o oblo	to:				
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CO2	Acq data	uire fu analyt	ndam	ental e	nablir	ig tech	mique	s and	scalable	algori algori	thms lil	ke Hadoop	o, Map Redu	ce and NO	SQL in bi
CO3	analy	/tics											ly software t	-	
CO4	Ach: appli	ieve ac cation	lequat s	e persj	oective	es of b	ig data	ı analy	tics in v	various	applica	tions like	recommende	r systems, s	ocial media
Contr	ibutio ow 2.	n Medi	of um, 3		urse (h)	01	itcom	es	towar	ds	achiev	ement	of Pr	ogram	Outcome
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(1 – L CO1	РО					6	7	8	9		11	2 .	2		
(1 L	PO 1			4		6		8	9 3		11		2		
(1 – L CO1 CO2	PO 1			4		6 3		8			11		2	3	2
(1 – L CO1	PO 1	2		4				8		10	11		2	3	

Quantification of Value -Understanding Big Data Storage — A General Overview of High-Performance Architecture — HDFS — MapReduce and YARN — Map Reduce Programming Mode

UNIT II:

Advanced Analytical Theory and Methods: Overview of Clustering — K-means — Use Cases — Overview of the Method — Determining the Number of Clusters — Diagnostics — Reasons to Choose and Cautions - Classification: Decision Trees — Overview of a Decision Tree — The General Algorithm — Decision Tree Algorithms — Evaluating a Decision

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Tree --- Decision Trees in R --- Naïve Bayes --- Bayes? Theorem --- Naïve Bayes Classifier.

UNIT III:

Advanced Analytical Theory and Methods: Association Rules — Overview — Apriori Algorithm — Evaluation of Candidate Rules — Applications of Association Rules — Finding Association& finding similarity — Recommendation System: Collaborative Recommendation- Content Based Recommendation — Knowledge Based Recommendation- Hybrid Recommendation Approaches.

UNIT IV:

Introduction to Streams Concepts — Stream Data Model and Architecture — Stream Computing, Sampling Data in a Stream — Filtering Streams — Counting Distinct Elements in a Stream — Estimating moments — Counting oneness in a Window — Decaying Window — Real time Analytics Platform(RTAP) applications — Case Studies — Real Time Sentiment Analysis, Stock Market Predictions. Using Graph Analytics for Big Data: Graph Analytics

UNIT V:

NoSQL Databases : Schema-less Models?: Increasing Flexibility for Data Manipulation-Key Value Stores-Document Stores — Tabular Stores — Object Data Stores — Graph Databases Hive — Sharding — Hbase — Analyzing big data with twitter — Big data for E-Commerce Big data for blogs — Review of Basic Data Analytic Methods using R

Text Book:

1. Jure Leskovec, AnandRajaraman, Jeffrey David Ullman, "Mining of Massive Datasets", Cambridge University Press, Second Edition, 2014.

REFERENCE BOOKS:

1. Jiawei Han, MichelineKamber, Jian Pei, "Data Mining Concepts and Techniques", Morgan Kaufman Publications, Third Edition, 2011.

2. Ian H. Witten, Eibe Frank "Data Mining – Practical Machine Learning Tools and Techniques", Morgan Kaufman Publications, Third Edition, 2011.

3. David Hand, HeikkiMannila and Padhraic Smyth, "Principles of Data Mining", MIT Press, 2001

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Big Data Analytics Tutorial (tutorialspoint.com) Big Data Analytics Notes Pdf Download & List of Reference Books for BDA (ncertbooks.guru)



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Course Code-OBJECT ORIENTED ANALYSIS AND DESIGN

Lectur Practi		3-0-0 Inter Mark	 30
Credit	s:	3 Exter Mark	 70
Prereq	uisites:		
No par	ticular skills are required a	as a prerequisite before learning UML.	
Course	Objectives:	5	
• To	understand how to solve a	complex problems	
• An	alyze and design solutions	s to problems using object oriented approach	
 Stu 	dy the notations of Unifie	d Modeling Language .	
 Spo 	ecify, analyze and design t	the use case driven requirements for a particular system.	
• Mo	del the event driven state	of object and transform them into implementation specific layouts.	
• Ide	ntify, Analyze the subsyst	ems, various components and collaborate them interchangeably.	
Course	Outcomes:		
Upon s	uccessful completion of t	he course, the student will be able to:	
CO1	Analyse, design, docun	nent the requirements through use case driven approach	
CO2	Identify, analyse, and n	nodel structural concepts of the system	
CO3	Develop, explore the co	nceptual model into various scenarios and applications.	
cd. –	Apply the concepts of a	architectural design for deploying the code for software.	
CO5	Identify, analyse, and m	nodel Architectural concepts of the system	
UNIT I	:		

Introduction to UML:

The meaning of Object-Orientation, object identity, encapsulation, information hiding, polymorphism, genericity, importance of modeling, principles of modeling, object oriented modeling, conceptual model of the UML, Architecture

UNIT II:

Basic structural Modeling: Classes, relationships, common mechanisms, diagrams, Advancedstructural modeling: advanced relationships, interfaces, types & roles, packages, instances.



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Class & object diagrams: Terms, concepts, examples, modeling techniques, class & Object diagrams.

UNIT III:

Collaboration diagrams: Terms, Concepts, depicting a message, polymorphism in collaboration Diagrams, iterated messages, use of self in messages.

Sequence diagrams: Terms, concepts, differences between collaboration and sequence diagrams, depicting synchronous messages with/without priority call back mechanism broadcast message.

Ulvaf IV:

Behavioral Modeling: Interactions, use cases, use case diagrams, activity diagrams.

Advanced Behavioral Modeling: Events and signals, state machines, processes & threads, time and space, state chart diagrams.

UNIT V:

Architectural Modeling: Terms, concepts, examples, modeling techniques for component diagrams and deployment diagrams.

TEXT BOOKS:

1. The Unified Modeling Language User Guide, Grady Booch, Rambaugh, Ivar Jacobson, PEA

2. Fundamentals of Object Oriented Design in UML, Meilir Page- Jones, Addison welson

RENCE BOOKS:

- 1. Head First Object Oriented Analysis & Design, Mclaughlin, SPD OReilly, 2006
- 2. Object oriented Analysis& Design Using UML, Mahesh, PHI
- 3. The Unified Modeling Language Reference Manual, 2/e, Rambaugh, GradyBooch, etc., PEA
- 4. Object Oriented Analysis & Design, Satzinger, Jackson, Thomson
- 5 Object Oriented Analysis Design & implementation, Dathan., Ramnath, University Press
- 5. Object Oriented Analysis & Design, John Deacon, PEA
- 7. Fundamentals of Object Oriented Analysis and Design in UML, M Pages-Jones, PEA



www.numpy.org www.pandas.org

NRI INSTITUTE OF TECHNOLOGY

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Object-Oriented Design with UML, Barclay, Savage, Elsevier, 2008		
DESOURCES	•	
RESOURCES: www.numpy.org		
www.pandas.org		

Course Title: Machine Learning Lab

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Course Code-R Programming Lab

Lecture – Tutorial- 0-0-3 Practical::								In	 Iternal M		15	
Credits: 1.5												
Prerequisites: C- Programming, Data Structures, Statistics fundamentals								tala	xternal N	larks:		35
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2	 Learn the fundamentals of 'R'. Use of Sorting and Searching techniques. 											
3.		-		÷	ques.			•				
 Learn the basic Statistical functions. Use of Classifications. 												
 Use of Classifications. Applications of Regressions. 												
5. Applications of Regressions. Course Outcomes:												
Upon successful completion of the course, the student will be able to: CO1 Perform basic 'R' operations												
: 	I DITOTAL DUDIC IL OPOLUTIONS.											
	CO2 Understand the Sorting and Searching techniques.											
CO3	2O3 Perform Statistical functions on datasets. 2O4 Apply Classification and Regression techniques.											
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2. Implementation of Matrix operations.

3. Implementation of Factors.

4. Implementation of Quick Sort, Merge Sort.

5. Implementation of Binary Search Tree.

6. Implementation of Reading and Writing files.

7. Implementation of Descriptive and Summary Statistics.

8.Implement Charts- Bar(Side by Side, Stacked), Line.

9. Implementation of Correlation, T-test, ANOVA.

10. Implementation of Decision tree, Support Vector Classifications.

11. Implementation of Linear, Random Forest Regressions.

12. Implementation of Clustering.



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Code-Complier Design Lab

Lecture Practica		Tutorial-	0-0-3					- 1	nternal M	larks:		15
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Prerequ	isites: C	- Program	ming, Da	ata Struc	tures. Sta	tistics fi	undament	als		141 65.		33
Prerequisites: C- Programming, Data Structures, Statistics fundamentals Course Objectives:												
1. To de	1. To describe the design of a compiler including its phases and components and basic understanding of											
Gram	Grammars and language definition.											
2. To Ide	Identify the similarities and differences among various parsing techniques and grammar transformation											
l echn	l echniques.											
3. To Understand the syntax analysis, intermediate code generation, type checking, the role of symbol table and												
its organization.												
4. To Understand, design code generation and optimization schemes.												
	Outcome						Providence of the second se					
Upon successful completion of the course, the student will be able to:												
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CO3	To writ	te the new	code opt	imization	ı techniqu	es to imj	prove the p	performa	nce of a p	program in	i terms o	f speed &
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List of Experiments

 Design a lexical analyzer for given language and the lexical analyzer should ignore redundant spaces, tabs and new lines. It should also ignore comments. Although the syntax specification states that identifiers can be arbitrarily long, you may restrict the length to some reasonable value. Simulate the same in C language.

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9. Contraction (1997)



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Course Title: MEAN STACK TECHNOLOGY -LAB

Lectu	ire – I	Practi	cal:	0-0	-4				interna Marks:		15				
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	Angular :	3	-
	Getting Started with Angular		
•	Introduction to Components		
•	Templates, Interpolation, and Directives		
•	Data Binding & Pipes		
•	More on Components		
•	Building Nested Components		
•	Forms		
•	Services and Dependency Injection		
•	Retrieving Data Using HTTP		
	Navigation and Routing Basics		
	Node Js :		
	Node Js : Introduction		
	Node Js : Introduction Exploring language additions to the V8 JavaScript engine		
	Node Js :		
	Node Js : Introduction Exploring language additions to the V8 JavaScript engine Understanding NodeJS HTTP and File System		
	Node Js : Introduction Exploring language additions to the V8 JavaScript engine Understanding NodeJS HTTP and File System Buffers, Streams, and Events		
	Node Js : Introduction Exploring language additions to the V8 JavaScript engine Understanding NodeJS HTTP and File System Buffers, Streams, and Events Using Express Framework		
	Node Js : Introduction Exploring language additions to the V8 JavaScript engine Understanding NodeJS HTTP and File System Buffers, Streams, and Events Using Express Framework Working with Models, Views, and Routes		
	Node Js : Introduction Exploring language additions to the V8 JavaScript engine Understanding NodeJS HTTP and File System Buffers, Streams, and Events Using Express Framework Working with Models, Views, and Routes Database		
	Node Js : Introduction Exploring language additions to the V8 JavaScript engine Understanding NodeJS HTTP and File System Buffers, Streams, and Events Using Express Framework Working with Models, Views, and Routes Database Working with MongoDB		
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Course Title: EMPLOYABILITY SKILLS -II

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UNIT II:

Etiquette and Manners - Social and Business. Time Management - Concept, Essentials, Tips. Personality Development - Meaning, Nature, Features, Stages, Models; Learning Skills; Adaptability Skills.

UNIT III:

Decision-Making and Problem-Solving Skills: Meaning, Types and Models, Group and Ethical Decision-Making, Problems and Dilemmas in application of these skills. Conflict Management: Conflict - Definition, Nature, Types and



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Causes; Methods of Conflict Resolution.

UNIT IV:

Stress Management: Stress - Definition, Nature, Types, Symptoms and Causes; Stress Analysis Models and Impact of Stress; Measurement and Management of Stress Leadership and Assertiveness Skills: A Good Leader; Leaders and Managers; Leadership Theories; Types of Leaders; Leadership Behavior; Assertiveness Skills.

UNIT V: Emotional Intelligence: Meaning, History, Features, Components, Intrapersonal and Management Excellence; Strategies to enhance Emotional Intelligence

Text Book:

1) Barun K. Mitra, Personality Development and Soft Skills, Oxford University Press, 2011.

REFERENCE BOOKS:

1) S.P. Dhanavel, English and Soft Skills, Orient Blackswan, 2010.

2) R.S.Aggarwal, A Modern Approach to Verbal & Non-Verbal Reasoning, S.Chand & Company Ltd., 2018.

3) Raman, Meenakshi & Sharma, Sangeeta, Technical Communication Principles and Practice, Oxford University Press, 2011.

4) R.S.Aggarwal, A Modern Approach to Verbal & Non-Verbal Reasoning, S.Chand & Company Ltd., 2018. 5) Raman, Meenakshi & Sharma, Sangeeta, Technical Communication Principles and Practice, Oxford University Press, ł

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COURSE STRUCTURE

I MBA I SEMESTER

S.No.	Course Code	Course Title	L	M	Р	С	I	E	T
1	22E1198401	Management and Organizational Behavior	4	0	0	4	25	75	100
2	22E1198402	Managerial Economics	4	0	0	4	25	75	100
3	22E1198403	Accounting for Managers	4	0	0	4	25	75	100
4	22E1198404	Quantitative Analysis for Business Decisions	4	0	0	4	25	7.5	100
5	22E1198405	Legal and Business Environment	4	0	0	4	25	7.5	100
6	22E1198406	Business Communication and Soft skills	4	0	0	4	25	75	100
7	OPEN ELECTIVE 22E1198511 22E1198512 22E1198001	Cross Cultural Management Rural Innovation Projects MOOCs:SWAYAM/NPTEL- Related to Management Courses other than listed courses in the syllabus	4	0	0	4	25	7.5	100
8	22E1198491	Information Technology LAB & Tally	0	0	2	2	20	30	50
9	22E1198492 _j	Business Communication & Soft Skills LAB	0	0	2	2	20	30	50
			28	0	4	32	215	585	800

L: Lecture

M: Mini Project

P: Practicals

C: Credits

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I MBA I SEMESTER

22E1198401 Management and Organizational Behavior

L'ecture :		4 hrs/week Internal Assessme									25	
	:					Final	Exami	nation	•		75	
Practical :			-				Credit			pts of N	4	
Course Objectives2. To help the students gain understanding of the functions and responsibilities of managers. 3. To provide them tools and techniques to be used in the performance of the managerial job. 4. To enable them to analyze and understand the environment of the organization. 5. To help the students to develop cognizance of the importance of managementprinciples.CO1: To acquire knowledge on the principles and functions of management CO2: To familiarize techniques of Motivation, Leadership, Communication												
Course Outcomes:	CC cor CC att CC Te CC an CC hu	D2: To ntrol. D3: To titudes a O4: To am bui O5: To d clima D6: Un	familia analyz and val analyz lding. master ide towa idersta esouro	rize teo e indivi ues in t e Group the str ards up and the ces in t	chnique idual be he com p dynar ucture dating e comp the org	es of M ehavior text of mics in variable organiz olexitio ganiza	otivatio variab OB. the are es like ational es asso	on, Lea les like a of co Change effectioniated	dership person nflicts, e manag veness l with	, Comm nality per power a gement,	unication reeption and politi OD, Cul ement o	n and cs, ture f
	1.116	ndling	these	; comp	lexitie	es.						1
Courses Outcomes	PO1	ndling PO2	PO3	PO4		PO6	PO7	PO8	PO9	PO10	PO11	1 PO12
		ndling						PO8	PO9			
Outcomes	P01	ndling PO2						PO8	PO9			
Outcomes CO1	PO1 2	ndling PO2		PO4				PO8				
Outcomes CO1 CO2	PO1 2 1	ndling PO2	PO3	PO4				PO8			PO11	
Outcomes CO1 CO2 CO3	PO1 2 1 1	ndling PO2	PO3	PO4			PO7	PO8	2		PO11	
Outcomes CO1 CO2 CO3 CO4	PO1 2 1 1 1 1	ndling PO2	PO3	PO4 2 2 2		PO6	PO7	PO8	2	PO10	PO11	
Outcomes CO1 CO2 CO3 CO4 CO5	PO1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	ndling PO2	PO3	PO4 2 2 2		PO6	PO7		2	PO10	PO11 2	

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Unit – I

Definition, Nature, Functions and Importance of Management -Evolution of Management thought – Scientific management, administrative management, Haw throne experiments – systems approach -Levels of Management - Managerial Skills - Planning – Steps in PlanningProcess – importance and Limitations – Types of Plans - Characteristics of a sound Plan - Management By Objectives (MBO) -Techniques and Processes of Decision Making - Social Responsibilities of Business Unit-II

Organizing – Principles of organizing – Organization Structure and Design – Types of power-Delegation of Authority and factors affecting delegation – Span of control – Decentralization – Line and staff structure conflicts - Coordination definition and principles -Emerging Trends in Corporate Structure – Formal and Informal Organization- Nature and importance of Controlling, process of Controlling, Requirements of effective control and controlling techniques. Unit – III

Organizational behavior: Nature and scope – Linkages with other social sciences – Individualroles and organizational goals – perspectives of human behavior - Perception– perceptual process – Learning - Learning Process- Theories - Personality and Individual Differences - Determinants of Personality - Values, Attitudes and Beliefs - Creativity and Creative thinking. Unit – IV

Motivation and Job Performance – Content and process Theories of Motivation - Leadership- Styles - Approaches – Challenges of leaders in globalized era – Groups – stages formation of groups – Group Dynamics - Collaborative Processes in Work Groups - Johari Window- Transactional Analysis.

Unit - V:

Organizational conflict-causes and consequences-conflict and Negotiation Team Building, Conflict Resolution in Groups and problem solving Techniques - Organizational change - change process resistance to change - Creating an Ethical Organization.

Relevant cases have to be discussed in each unit and in examination case is compulsoryfrom any unit.

References:

- 1. Harold Koontz, Heinz Weihrich, A.R. Aryasri, Principles of Management, TMH, 2010.
- 2. Dilip Kumar Battacharya, Principles of Management, Pearson, 2012.
- 3. Kumar, Rao, Chhaalill -Introduction to Management Sciencel Cengage Publications, New Delhi
- 4. V.S.P.Rao, Management Text and Cases, Excel, Second Edition, 2012.
- 5. K. Anbuvelan, Principles of Management, University Science Press, 2013.
- 6. K.Aswathappa Organisational Behaviour-Text, Cases and Gamesl, Himalaya Publishing House, New Delhi, 2008.
- 7. Steven L Mc Shane, Mary Ann Von Glinow, Radha R Sharma: —Organisational Behaviourl, TMH Education, New Delhi, 2008

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22E1198402 MANAGERIAL ECONOMICS

ecture :		4 hrs/	week		Inter	nal As	sessmen	t:	25					
Aini Project	:	4						Fina	Exam	ination:		75		
ractical :					-			Cred	its:			4		
COURSE O	BJEC?	FIVES	8		 To inculcate the basic knowledge of the concepts economics to make them effective decision maket To a rigorous foundation in microeconomics which becomes the basis for a way of thinking about managerial problems. To examine market behavior and focus on the actions and reactions of business firms and consumers in a variety of market environments. To emphasize the quantitative and qualitative applications of economic principles to business analysis. 									
					CO2: variou CO3: metho	Outlin is econ Relate	e vario ornic co the apj nicroec	us busin oncepts plication onomic	ness situ n of mo s to rea	n making uations v odern pris l-world	vith the l nciples a	nd		
Con	urse Ou	itcomes	8:		and d	emand ions, m	analysi	s; firms	' produ	icroecon action an market s	d pricing	5		
					CO5: Develop a framework for understanding the role and consequences of government policy in a market economy.									
					CO6: Use economic reasoning to explain the strategic choices of individuals or organisation, markets structure in influencing resource allocation for attaining organisational goals.									
Courses	PO1	PO2	PO3	PO4	PO5	PO6	PO7	POS	PO 9	PO10	PO11	PO12		

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C01	1		-1-		2	-					
CO2	1	2		2						2	
CO3	1			2	2						1
CO4	1		2				2				
CO5	1					2		3			
CO 6	1								2	1	
Total	6	2	3	4	4	2	2	3	2	3	1
Average	1.71	2.00	2.00	2.67	2.67	2.00	2.00	3.00	2.00	2.00	1.00

UNIT-I:

Introduction to Managerial Economics: Nature and Scope- Fundamental Concepts: Incremental reasoning, Concept of Time Perspective, Discounting Principle, Opportunity Cost Principle, Equi -Marginal Concept,-Theory of Firm.

UNIT-II:

Demand Analysis and Forecasting: Concepts of Demand, Supply, Determinants of Demandand Supply, Elasticities of Demand and Supply- Methods of demand forecasting for established and new products. UNIT-III:

Cost and Production Analysis: Cost: Concept and types, Cost-Output Relationships, CostEstimation, Reduction and Control- Economies and Diseconomies of Scale- Law of Variable Proportions- Returns to Scale- Isoquants-Cobb- Douglas and CES Production functions. **UNIT-IV:**

Theory of Pricing: Price determination under Perfect Competition, Monopoly, Oligopolyand Monopolistic Competitions- Methods of Pricing- Game Theory basics- Dominant Strategy-Nash Equilibrium and Prisoner's Dilemma.

UNIT-V:

Macro Economics and Business: Concept, Nature and Measurement of National Income-Inflation and Deflation: Inflation - Meaning and Kinds, Types, Causes and measurement of inflation Measures to Control Inflation, Deflation -- Philips curve- Stagflation-Theory of Employment- Business cycles: Policies to counter Business Cycles.

Relevant cases have to be discussed in each unit and in examination case is compulsory from any unit.

References:

- 1. D.M.Mithani, Managerial Economics, Himalaya Publishing House
- 2. H.Craig Peterson, W.Cris Lewis, Managerial Economics, Pearson, 2005.
- 3. Gupta G.S., Managerial Economics, TMH, 1988.
- 4. P.L. Mehta, Managerial Economics, PHI, 2001.
- 5. K.K Dawett, Modern Economic Theory, Sultan Chand & Sons.
- 6. D.N. Dwivedi, Managerial Economics, 7th Ed, Vikas Publishing.
- 7. Rangarajan and Dholkia, Macroeconomics, TMH.

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22E1198403 Accounting for Managers

	Final Examination:	75
-	Credits:	4
accounting managerial 2. To enable a financial an applicabilit 3. To introduce ventures to statements 4. To enable a financial st conclusion company. 5. To develop as per the p	concepts and its application in decision making. the students understand the variound cost accounting principles and ty. ce prospective managers of new prepare and analyse financial and various budgets. the students to analyze a company atements and come to a reasoned about the financial situation of the the skill of preparing various representations of the various	their y's l
financial statement Statement of Fina Flows, and the Sta CO2: Develop at accounting prod principles that u statements (e.g. a definition, recogn assets, liabilities, methods, provis intangibles); CO3: Ability to	nts (i.e., the Income Statement ancial Position, the Statement of tement of Changes in Equity); in awareness and understanding cess and fundamental accor- inderpin the development of fin- accrual accounting vs. cash acco- nition, measurement and disclose revenues, expenses; inventory va- tions, depreciation; accounting read, interpret and analyse fin-	of the of the punting nancial unting, sure of luation ag for nancial
	accounting managerial 2. To enable a financial an applicabilit 3. To introdu- ventures to statements 4. To enable a financial st conclusion company. 5. To develop as per the a stakeholde CO1: Understand financial statemen Statement of Fina Flows, and the Sta CO2: Develop a accounting prod principles that u statements (e.g. a definition, recogn assets, liabilities, methods, provis intangibles); CO3: Ability to	 To acquaint the students regarding various accounting concepts and its application in managerial decision making. To enable the students understand the variou financial and cost accounting principles and applicability. To introduce prospective managers of new ventures to prepare and analyse financial statements and various budgets. To enable the students to analyze a company financial statements and come to a reasoned conclusion about the financial situation of the company. To develop the skill of preparing various repares per the requirements of the various stakeholders. CO1: Understand the nature and role of the four performancial statements (i.e., the Income Statement of Financial Position, the Statement of Flows, and the Statement of Changes in Equity); CO2: Develop an awareness and understanding accounting process and fundamental accounting process and fundamental accounting process inventory vamethods, provisions, depreciation; accounting

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information to assess the financial performance and position of a company;
CO4: Understand and apply course concepts to analyse common business management decisions such as pricing and outsourcing decisions from a financial perspective;
CO5: Understand the role of budgets in organisations, their limitations and the behavioural issues to consider when developing and using budgets for planning and control;
CO6: Develop an awareness of the need to consider ethical, social and other relevant issues, in addition to financial information, in the management decision- making process.

Courses Outcome 5	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2
CO1	1		3		2							
CO2	1	2		2							2	
CO3	1			2	2							1
CO4	1		2				2					
C05]					2		3				
CO6	2			2					2]	
Total	7	2	3	6	4	2	2.	3	2		3	1
Average	1.17	2	1.5	2	2	2	2	3	2		1.5	1

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Financial Accounting- concept, Importance and scope, accounting principles, accounting cycle, journal ledger, trial balance, Preparation of final accounts with adjustments.

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Unit – II:

Analysis and interpretation of financial statements – meaning, importance and techniques, ratio analysis, Fund flow analysis, cash flow analysis (AS - 3).

Unit – III:

Cost accounting-meaning, importance, methods, techniques; classification of costs and cost sheet; Inventory valuation methods- LIFO, FIFO, HIFO and weighted average method, an elementary knowledge of activity based costing.

Unit – IV:

Management accounting – concept, need, importance and scope; budgetary control-meaning, need, objectives, essentials of budgeting, different types of budgets and their preparation.

Unit-V:

Standard costing and variance analysis (materials, labour)-Marginal costing and its application in managerial decision making, Break Even Analysis.

Relevant cases have to be discussed in each unit and in examination case is compulsory from any unit.

References:

- 1. MAHESWARI AND MAHESWARI" Financial Accounting", Vikas Publishing House, New Delhi, 2013.
- 2. Pandey, I.M. Management Accounting, Vikas Publishing House, New Delhi.
- 3. Horngen, Sundem & Stratton, Introduction to Management Accounting, Pearson Education, New Delhi.
- 4. Hansen & Mowen, Cost Management, Thomson Learning.
- 5. Mittal, S.N. Management Accounting and Financial management, Shree Mahavir Book Depot, New Delhi.
- 6. Jain S.P. and Narang K.L. Advanced Cost Accounting, Kalyani Publishers Ludhiana.
- 7. Khan M.Y. and Jain, P.K. Management Accounting, TMH, N. Delhi.

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22E1198404 Quantitative Analysis for Business Decisions

Lecture :	4 hrs/week	Internal Assessment:	25
Mini Project :		Final Examination:	75
Practical :	-	Credits:	4
COURSE OBJECTIVES	using various sta techniques for b 2. To enable bet 3. To highlight th quantitative ana 4. To orient the s	sic knowledge of analyzing data atistical and mathematical usiness decisions. ter reporting for decision making the benefits as well as the limits of lysis in a real-world context. astudents to various statistical nd where appropriately they car	f
Course Outcomes:	problem solving knowledge about of dispersion. CO2: Appl distributions in s CO3:. Recall the large and small s CO4: Extend the problems by gray CO5: Outline quant and problem and transportation pre- CO6: Understand	a formal quantitative approa and decision making and acqui it mean, median, mode and mea by the concepts of probab olving problems. The knowledge of hypothesis testing amples. The ability to solve linear program phical and simple methods. The antitative models to decision means the and game theory. The day business decisions.	re the asures oilistic ng for nming naking ns in

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			Cou	rse O	utcom	les vs.	POs	Mapp	ing:			
Courses Outcome s	РО 1	PO 2	РО 3	РО 4	РО 5	РО 6	PO 7	PO 8	РО 9	PO1 0	PO1 1	PO1 2
CO1	1	2	2	2	2							
CO2	1		2	3								
CO3	1			3	3							
CO4	1	2	2	3	2							
CO5	1		2				1					1
CO6	1		3									1
Total	6.00	4	11	11	7		1					2
Average	1.00	2.00	2.20	2.75	2.33		1.00					1.00

Unit I

Basic Mathematical & Statistical Techniques: Linear, Quadratic, Logarithmic and Exponential Functions- Permutations and Combinations – Matrices - Elementary operations of matrices.

Unit II

Measures of Central Tendency – Measures of Dispersion –Simple Correlation and Regression Analysis Concept of Probability- Probability Rules – Joint and Marginal Probability – Baye's Theorem- Probability Distributions- Binomial, Poisson, Normal and Exponential Probability Distributions:

UNIT III

Introduction to Decision Theory: Steps involved in Decision Making, different environments in which decisions are made, Criteria for Decision Making, Decision making under uncertainty, Decision making under conditions of Risk-Utility as a decision criterion, Decision trees, Graphic displays of the decision making process, Decision making with an active opponent.

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Unit-IV

Sampling and Sampling Distributions – Estimation – Point and Interval Estimates of Averages and proportions of small and Large Samples –Concepts of Testing Hypothesis—One Sample Test for Testing Mean and Proportion of Large and Small Samples.

Unit-V

Tests Two Samples – Tests of Difference between Mean and Proportions of Small and Large Samples – Chi- square Test of Independence and Goodness of Fitness- Analysis Variance.

Relevant cases have to be discussed in each unit and in examination case is

compulsoryfrom any unit.

References:

- 1. N.D.Vohra: -Quantitative Techniques in Managementl, Tata-McGraw Hill Private Limited, New Delhi, 2011.
- 2 Gupta S.P: --Statistical Methodsl, S. Chand and Sons, New Delhi.
- 3. Anand Sharma: -Quantitative Techniques for Business decision Makingl, Himalaya Publishers, New Delhi, 2012.
- 4. D P Apte: -Operation Research and Quantitative Techniquesl, Excel Publication, New Delhi, 2013.
- Hamdy, A.Taha: —Operations Research: An Introductionl, Prentice-Hall of India, NewDelhi 2003.
- 6 Anderson: -Quantitative Methods for Business , Cengage Learning, New Delhi 2013.
- 7. Sancheti, Dc & VK Kapoor, -Business Mathematicsl, S Chand and Sons, New Delhi.

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4 hrs/week Internal Assessment: 25 Lecture : **Final Examination:** 75 Mini Project : Credits: 4 Practical : ... 1. To develop an understanding of how various environmental factors influence the business. 2. To acquaint students with the functioning of various international trade organizations scales of business and emerging trends in business. COURSE 3. To familiarize students with the various **OBJECTIVES** important provisions of Indian Contract Act and Sale of Goods Act. 4. To familiarize students with the various important provisions of Consumer Protection Act and other environmental laws. CO1: Understand the various environmental factors that influence the business. CO2: Relate the influence exerted by international organizations on trade in the light of emerging trends. CO3: Utilize the knowledge of Indian Contract Act and other acts. **Course Outcomes:** CO4: Application of the knowledge of various provisions of consumer protection act for smooth functioning of the business. CO5: Analyze current economic conditions in developing emerging markets, and evaluate present and future opportunities. CO6: Gain knowledge about the operation of different institutions in international business environment. **Course Outcomes vs. POs Mapping:**

22E1198405 Legal and Business Environment

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Courses Outcome \$	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2
CO1	1	2	2	2	2							
CO2	I		2	3								
CO3	1			3	3					1		
CO4	1	2	2	3	2							
C05	1		2				1					1
CO6	1		3									1
Total	6.00	4	11	11	7		1					2
Average	1.00	2.00	2.20	2.75	2.33		1.00					1.00

UNIT-I

Introduction: Concept of Business Environment-Definition-Characteristics-Environmental factors, Importance at national and international level - problems and challenges -Environmental Scanning: Importance, Process of scanning- NITI Aayog: It's Role in Economic Development of India- Technological Environment: Features, Its impact on Business, Restraints on Technological Growth.

UNIT-H

Economic and Political Environment: Concept-Definition of Economic Environment-Economic SystemsRelative merits and demerits of each systems-Economic Policies-Monetary-Fiscal-Industrial policies since independence and their significance - regulatory and promotional framework . Structure of Indian EconomyNature and significance. Economic Planning-Objectives, Merits, Limitations- Concept and Meaning of Political Environment.

UNIT-III

Legal Environment: - Business Law: Meaning, scope and need for Business Law- Source of Business LawIndian Contract Act 1872: Its Essentials, Breach of Contract and remedies. Intellectual Property Rights. Negotiable Instruments Act 1881.

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UNIT-IV

Company Act 2013: Memorandum and alteration of Articles of Association-Partnership Act 1932: Duties of Partners- Dissolution of Partnership-Information Technology Act 2000: Digital signature-Cyber Frauds.

UNIT-V

Miscellaneous Acts: Sales of Goods Act 1930-Sale- agreement to Sale – Implied Conditions and WarrantiesConsumer Protection Act 1986- Competition Act- Environment (Protection) Act 1986- Foreign Exchange Management Act (FEMA)

Relevant cases have to be discussed in each unit and in examination case is compulsory from any unit.

References:

1. Francis Cherunillam, Business Environment, Himalaya Publishers.

2. K. Aswathappa, Essentials of Business Environment, Himalaya Publishers.

3. P.K.Dhar, Indian Economy Growing Dimensions, Kalyani Publishers 4.

4. N.D.Kapoor, Mercantile Law, Sultan Chand Publishers.

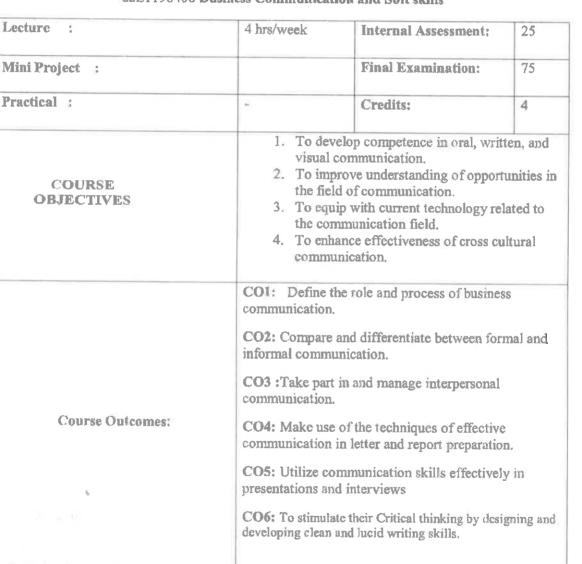
5. Chaula and Garg, Mercantile Law, Kalyani Publishers

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22E1198406 Business Communication and Soft skills

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Courses Outcome s	РО 1	PO 2	PO 3	РО 4	PO 5	PO 6	РО 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2
CO 1	2								2	2		
CO2	1	2	2							2		
CO3	1								3		3	
CO4	1			2			3					
CO5	1		2								2	
CO6	1		3									1
Total	7	2	7	2			3		5	4	5	1
Average	2.00	2.00	3.50	2.00			3.00		4.00	3.00	3.33	1.00

Course Outcomes vs. POs Mapping:

Unit – I

Purpose and process of communication: Objectives of Communication-Process of Communication-Types of communication; noise, listening skills, Types of listening, essentials of good listening and tips.

LAB: LISTENING AND SPEAKING SKILLS- Conversational skills (formal and informal) – group discussion. Listening to lectures, discussions, talk shows, news programmes, dialogues from TV/radio/Ted talk/Podcast – watching videos on interesting events on YouTube.(Presenting before the class).

Unit – Π

Managing Organizational Communication: Formal and Informal Communication- Interpersonal and Intrapersonal communication- Role of Emotion in Interpersonal Communication- Barriers to Interpersonal Communication- Exchange Theory-Gateways for Effective Interpersonal Communication.

LAB: Choosing the organization – goal setting - time management — leadership traits – team work – communicating across teams- designing career and life planning.

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Unit – III

Non verbal communication and Body Language: Kinesics, Proxemics, Paralanguage, Haptics, handshakes, appropriate body language and mannerisms for interviews: business etiquettes-across different cultures.

LAB: Understanding Body Language Aspects and presenting oneself to an interviewer, Proper handshakes,

Unit – IV

Written communication: mechanics of writing, report writing- business correspondence-business letter format- Meetings and managing meetings- Resume writing-Formats and Skills.

LAB: Writing job applications – cover letter – resume – emails – letters – memos – reports – blogs – writing for publications.

Unit-V

Presentation skills: prerequisites of effective presentation, format of presentation; Assertiveness –strategies of assertive behavior; Communication skills for group discussion and interviews, Interview Techniques.

LAB: Designing presentations and enhancing presentation skills.

Relevant cases have to be discussed in each unit and in examination case is compulsory from any unit.

References: 1. Mallika Nawal: "Business Communication", Cengage Learning, New Delhi, 2012.

2.Edwin A. Gerloff, Jerry C. Wofford, Robert Cummins Organisational Communication: The key stone to managerial effectiveness.

3. Meenakshi Rama: "Business Communication", Oxford University Press, NewDelhi

4. C.S.G. Krishnamacharyulu and Dr. Lalitha Ramakrishnan, Business Communication, Himalaya Publishing House, Mumbai

5. Paul Turner: "Organisational Communication", JAICO Publishing House, New Delhi.

6. SathyaSwaroopDebasish, Bhagaban Das" "Business Communication", PHIPrivate Limited, New Delhi, 2009.

7. R.K.Madhukar: "Business Communication", Vikas Publishing House, New Delhi, 2012

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Head, MBA Department NRJ Institute of Technology POTHAVARAPPADU (Vill) Agiripatli (Mdl), Krishna Dist



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22E1198511 OPEN ELECTIVE: Cross Cultural Management

Lecture :	4 hrs/week	Internal Assessment:	25
Mini Project :		Final Examination:	75
Practical :	•	Credits:	4
COURSE OBJECTIVES	visual 2. To imp the fie 3. To equ the con 4. To end	velop competence in oral, writ communication. prove understanding of oppor ld of communication. up with current technology re mmunication field. hance effectiveness of cross cu unication.	tunities in lated to
Course Outcomes:	CO2: Be able differences CO3 : Unders business theories CO4: Assess a management and CO5: Learn applications such CO6: Is able differences in	sh between different levels of the to measure culture and thand the role of culture is and leverage the impact of l other business functions to manage cultural differ h as cross-border alliances to employ social and mu order to solve problems social activities.	l cultural n various culture in rences in ulticultural
Cou	irse Outcomes vs. PO	s Mapping:	

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Caller !!

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Website: www.nriit.edu.in e-mail: nrihitech@rediffmail.com

Courses Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2								2	2		
CO2	1	2	2					1		2		
CO3	1								3		3	
CO4	1			2			3					
CO5	1		2								2	
CO6	1		3									1
Total	7	2	7	2			3	1	5	4	5	1
Average	2.00	2.00	3.50	2.00			3.00	1.00	4.00	3.00	3.33	1.00

Unit – I

Introduction – Concept of Culture for a Business Context; Brief wrap up of organizational culture & its dimensions; Cultural Background of business stakeholders [managers, employees, shareholders, suppliers, customers and others] – An Analytical framework.

Unit – II

Culture and Global Management – Global Business Scenario and Role of Culture. Framework for Analysis; Elements & Processes of Communication across Cultures; Communication Strategy for/ of an Indian MNC and Foreign MNC & High-Performance Winning Teams and Cultures; Culture Implications for Team Building.

Unit – III

Cross Culture – Negotiation & Decision Making – Process of Negotiation and Needed Skills & Knowledge Base – Overview with two illustrations from multicultural contexts [India – Europe/ India – US settings, for instance]; International and Global Business Operations- Strategy Formulation & Implementation; Aligning Strategy, Structure & Culture in an organizational Context.

Unit-IV

Global Human Resources Management – Staffing and Training for Global Operations – Expatriate – Developing a Global Management Cadre.. Motivating and Leading; Developing the values and behaviours necessary to build high-performance organization personnel [individuals and teams included] – Retention strategies.

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Unit – V

Corporate Culture – The Nature of Organizational Cultures Diagnosing the As is Condition; Designing the Strategy for a Culture Change Building; Successful Implementation of Culture Change Phase; Measurement of ongoing Improvement.

Relevant cases have to be discussed in each unit and in examination case is compulsory from any unit.

References:

1. Cashby Franklin, Revitalize your corporate culture: PHI, Delhi

2. Deresky Helen, International Management: Managing Across Borders and Cultures, PHI, Delhi

3. Esenn Drlarry, Rchildress John, The Secret of a Winning Culture: PHI, Delhi

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22E1198512 Open Elective: Rural Innovation projects

Lecture :	4 hrs/week	Internal Assessment:	25					
Mini Project :		Final Examination:	75					
Practical :	-	Credits:	4					
COURSE OBJECTIVES	Rural I 2. To get socio-e 3. To mak	 To introduce students with the basic concepts of Rural Development: To get an exposure to a new rural area and the socio-economic condition of people To make aware about rural social institutions, its function and changing nature. 						
Course Outcomes:	CO2: Be able to Rural Developmen Sustaining skills de CO4: Analyse the and their Remedie CO5: Learn to m Applications such	d the role of works in promoti velopment in rural areas. e challenges of Panchayati Raj li s; nanage cultural differences in as cross-border alliances ontribute significantly to employ	ng and					
Cour	se Outcomes vs. POs	Mapping:						
Courses no no no								

Courses Outcome s	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	РО 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2
CO1	2								2	2		

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Total	7	2	7	2	3	1	5	4	5	1
CO6	1		3							1
C05	1		2						2	
C04	1			2	3					
C03	1						3		3	
CO2	1	2	2			1		2		

Unit-l

Definition and meaning of Resources, Types of Rural Resources, Natural and Manmade, Characteristics of Resources, Importance of different resources in Rural Development. Rural Governance and Administration in India- Pre & Post independenceElements of Indian constitution Constitutional amendment to Panchayati Raj systemDevelopment (Department) Administration in Rural India.

Unit-II

Land Resources development experience: Classification of land based on utility, Soils – Structure and importance, Properties of Soil- Physical and Chemical, Soil Conservationmethods and importance. Status of Rural Development in the SAARC countries.

Unit-III

Human Resources Dimensions of Rural Development-Quantitative aspects of rural human resource (Gender & Age wide classification, Density, Issue in rural human resources- Scarcity, lack of skill, attitude, and social status). Food security and public distribution system-Rural Financial Sector –Sources of Rural Credit: Institutional and Non Institutional - Service Delivery System in Rural areas, Rural Infrastructural Sector and Millennium Development Goals Housing in Rural Areas.

Unit-IV

Approaches of Rural Development in India- institutional, technological, area and target group, participatory, individualistic. Rural Development Policies during different plan periods.

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Strategies of Rural Development – growth oriented strategy, Welfare strategy, Responsive strategy, Holistic strategy, right-based strategy. PURA Model.

Unit-V

Review of Rural Development Programmes in the area of agricultural sector – crop, noncrop, livestock, fishery, forestry. Review of Rural Development Programmes in area of Social Sectors – Health, Sanitation and Education. Project Planning and Management.

Relevant cases have to be discussed in each unit and in examination case is compulsory from any unit. References:

1. Rural Development: Principles, Policies and Management, Katar Singh, Sage Publications India Pvt. Ltd., 2009.

2. Soil & Water Conservation & Watershed Management Hardcover - 2012, Singh PK Mahnot

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22E1198491 Information Technology - Lab1 (Spreadsheet and Tally)

Lab Evaluation:

- i) For practical (LAB) subject the distribution shall be 20 marks for internal evaluation and 30 marks for the semester end examinations. There shall be continuous evaluation by the internal subject teacher during the semester for 20 internal marks. Out of the 20 marks internal, 10 marks shall be for day-today performance (5 marks for day-to-day evaluation and 5 marks for Record) and 10 marks shall be evaluated by conducting an internal test towards the end of semester.
- ii) Semester End examination shall be conducted by the teacher concerned and external examiner for 30 marks. Three QUESTIONS will be given in the external examination from the experiments based on the syllabus. Each question carries 10 marks. Duration of the examination is 90 minutes

UNIT-1

Introducing spreadsheet: Choosing the correct tool; Creating and Saving; Spreadsheet workspace; Managing the workspace; Entering and editing data; Data entry; Selecting cells; Saving time when entering data. Presenting a spreadsheet; Number and date/time format tools; Percentages; Dates and Times; Currency; Text; Performing calculations; Basic arithmetic; Using functions; Replicating formulae; Absolute cell addressing; References between worksheets.

UNIT –II

Ranges and functions: Creating named ranges; Using named ranges; Finding and inserting functions; Excel – Functions: what if, Conditional count, sum and average, Multiple criteria with count, sum and if. Time and date calculations.

UNIT-III

Basic of Accounting: Type of Accounts, Rules of Accounting, Principles of concepts and conventions, double entry system, book keeping Mode of Accounting, Financial Statements, Transaction, Recording Transactions. Getting the functional with Tally, Creation and setting up of company in Tally.

UNIT- IV

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Accounting Masters in Tally- Features- Configurations- Setting up Account Heads. UNIT- V

Inventory in Tally- Stock – groups – Stock Categories - Godowns / Location Units of Measure - Stock Items - Creating Inventor y Masters for National Traders

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22E1198492 Business Communication and Soft skills Lab

(LAB): Evaluation Process: i) For practical (LAB) subject the distribution shall be 20 marks for internal evaluation and 30 marks for the semester end examinations. There shall be continuous evaluation by the internal subject teacher during the semester for 20 internal marks. Out of the 20 marks internal, 10 marks shall be for day-today performance (5 marks for day-to-day evaluation and 5marks for Record) and 10 marks shall be evaluated by conducting an internal test towards the end of semester. ii) Semester End examination shall be conducted by the teacher concerned and external examiner for 30 marks. Three QUESTIONS will be given in the external examination from the activities listed in each unit. Each question carries 10 marks. Duration of the examination is 90 minutes.

Unit: 1

Listening and speaking skills- Conversational skills (formal and informal) – group discussion. Listening to lectures, discussions, talk shows, news programmes, dialogues from TV/radio/Ted talk/Podcast – watching videos on interesting events on YouTube. (Presenting before the class). Activities for Unit-1:

1) Dos and Don'ts of Group Discussions.

2) Tell me about yourself.

3) Self SWOT Analysis

4) Analysis of Academic Video clip uploaded on the system for the student.

5) News Presentation- Current affairs.

Unit – II

Organizational Communication: Choosing the organization – goal setting - Time management – leadership traits – Team work – communicating across teams- designing career and life planning.

Activities for Unit-II:

1) Individual goal setting - process / SMART goals.

2) Designing a team activity to be conducted in the class.

3) Preparing a schedule plan for conducting an event (with proper time management).

4) Designing a self career plan.

5) Prepare a time management chart for your daily schedule. (Prioritization)

Unit – III

Non verbal communication and Body Language: Understanding Body Language Aspects and presenting oneself to an interviewer, Proper handshakes.

Activities for Unit-III:

1) Maintaining the body language for interviews.

2) Presenting oneself to an interviewer.

3) Importance of kinesics in an interview.

4) Role plays on cross cultural communication.

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Unit – IV

Written communication: Writing job applications – cover letter – resume – emails – letters – memos – reports – blogs – writing for publications.

Activities for Unit-IV:

1) Preparation of effective Resume.

2) Write dialogues for the following situation: Mr. A calls a Hotel in Shimla to make a reservation for four people.

3) Write dialogues for the following situation: Mr.K gives direction to his friend how to reach the JNTUK University.

4) Write a covering letter for job application in TCS.

5) Write at least 5 E-mail etiquette.

Unit- V

Presentation skills: Designing presentations and enhancing presentation skills.

Activities for Unit-V:

1) Prepare a PowerPoint presentation on presentation skills.

2) How to make an effective presentation.

3) Prepare and present a PPT on any topic given by the examiner.

References: 1.Mallika Nawal: "Business Communication", Cengage Learning, New Delhi, 2012.

2.Edwin A. Gerloff, Jerry C. Wofford, Robert Cummins Organisational Communication: The key stone to managerial effectiveness.

3. Meenakshi Rama: "Business Communication", Oxford University Press, NewDelhi

4. C.S.G. Krishnamacharyulu and Dr. Lalitha Ramakrishnan, Business Communication, Himalaya Publishing House, Mumbai

5. Paul Turner: "Organisational Communication", JAICO Publishing House, New Delhi.

6. SathyaSwaroopDebasish, Bhagaban Das" "Business Communication", PHIPrivate Limited, New Delhi, 2009.

7. R.K.Madhukar: "Business Communication", Vikas Publishing House, New Delhi, 2012.

8. Kelly M Quintanilla, Shawn T.Wahl:"Business and Professional Communication", SAGE, New Delhi, 2012.

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22E1298401 FINANCIAL MANAGEMENT

Lecture :	4 hrs/week	Internal Assessment:	25					
Mini Project :		Final Examination:	75					
Practical :		Credits:	4					
	1. To understand the tasks performed by organizations.	ne competencies, responsibilit financial managers in busine	ties, and ess					
COURSE		nanagers in understanding the and their interface with finance						
OBJECTIVES	3. To explain financial tools and techniques, to help the firms to maximize its value by improving decisions relating to capital budgeting,							
	4. Application and analysis of dividend decision.							
	5. To analyse working capital management and cash management techniques.							
	Financial Managen Managerial Decisio CO 2. Analyse a co	the applicability of the conce ment and their necessities for ons ompany's performance and m mendations regarding its capit	ake					
Course Outcomes:		organizations make important ns needs with the practical sit						
	CO 4. Summaries various dividend theories and their impact on effective decision-making.							
c	CO5. Analyze the working capital requirements and cash problems effecting organizations to deal with more complex financial bottlenecks that arise from them							

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I: Internal Assessment E: End Examination T: Total Marks

IMBA II SEMESTER

S.No.	Course Code	Course Title	L	М	Р	С	I	Ė	T
1	22E1298401	Financial Management	4	0	0	4	25	75	100
3	22E1298402	Human Resource Management	4	0	0	4	25	75	100
3	22E1298403	Marketing Management	4	0	0	4	25	75	100
4	22E1298404	Operations Management	4	0	0	4	25	75	100
5	22E1298405	Business Research Methods	4	0	0	4	25	75	100
6	OPEN ELECTIVE 22E1298511 22E1298512 22E1298513	Project Management Technology Management Lean Management Database Management System	4	0	0	4	25	75	100
7	22E1298514 22E1298491	IT-lab 2(Programming R)	0	0	2	2	20	30	50
			24	-	2	26	170	480	650

L: Lecture

M: Mini Project

P: Practicals

C: Credits

I: Internal Assessment

E: End Examination

T: Total Marks

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22E1298401 FINANCIAL MANAGEMENT

Lecture :	4 hrs/week	Internal Assessment:	25
Mini Project :		Final Examination:	75
Practical :	-	Credits:	4
COURSE OBJECTIVES	 tasks performed organizations. 2. To help future of an organisation 3. To explain fin firms to maximiz relating to capita 4. Application and 	nd analysis of dividend decision orking capital management and	sss finances ce. help the ons
Course Outcomes:	Financial Manag Managerial Deci CO 2. Analyse a appropriate reco structure. CO3. Relate how investment decis CO 4. Summarie impact on effect CO5. Analyze th problems effecti	ate the applicability of the conc gement and their necessities for isions a company's performance and m mmendations regarding its capi w organizations make important sions needs with the practical sit es various dividend theories and ive decision-making. The working capital requirements ing organizations to deal with m al bottlenecks that arise from the	ake tal uations. their and cash ore

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CO 6: Apply financial management concepts and tools to the financing decisions and dividend decisions faced by the firm.

Courses Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO1	PO1	PO1
5	1	2	3	4	5	6	7	8	9	0	1	2
C01	1		2	2								
CO2	1			3							3	2
CO3	1			2	2							
CO4	1		3								3	
C05	I		2	2	2							2
CO6	1			3							3	2
Total	6		7	12	4						9	6
Average	1.00		2.33	2.40	2,00						3.00	2.00

UNIT-I

Financial Management: Concept - Nature and Scope - Evolution of financial Management -The new role in the contemporary scenario – Goals and objectives of financial Management -Firm's mission and objectives - Profit maximization Vs. Wealth maximization – Maximization Vs Satisfying - Major decisions of financial manager.

UNIT-II

Financing Decision: Sources of finance - Concept and financial effects of leverage – EBIT – EPS analysis. Cost of Capital: Weighted Average Cost of Capital– Theories of Capital Structure.

UNIT -III

Investment Decision: Concept and Techniques of Time Value of Money – Nature and Significance of Investment Decision – Estimation of Cash flows – Capital Budgeting Process – Techniques of Investment Appraisal – Discounting and Non Discounting Methods.

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UNIT-IV

Dividend Decision: Meaning and Significance – Major forms of dividends – Theories of Dividends – Determinants of Dividend – Dividends Policy and Dividend valuation – Bonus Shares –Stock Splits – Dividend policies of Indian Corporate.

UNIT-V

Liquidity Decision: Meaning - Classification and Significance of Working Capital – Components of Working Capital – Factors determining the Working Capital – Estimating Working Capital requirement – Cash Management Models – Accounts Receivables – Credit Policies – Inventory Management.

Relevant cases have to be discussed in each unit and in examination case is compulsory from any unit. References:

1. I.M. Pandey: "Financial Management", Vikas Publishers, New Delhi, 2013.

2. Khan and Jain: Financial Management, Tata McGraw Hill, New Delhi,

3. Prasanna Chandra: "Financial Management Theory and Practice", Tata McGrawHill 2011.

4. P.Vijaya Kumar, M.Madana Mohan, G. Syamala Rao: "Financial Management", Himalaya Publishing House, New Delhi, 2013.

5. Brigham, E.F: "Financial Management Theory and Practice", Cengae Learning, New Delhi, 2013

6. RM Srivastava, Financial Management, Himalaya Publishing house, 4 th edition

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22E1298402 Human Resource Management

Lecture :	4 hrs/week	Internal Assessment:	25
Mini Project :		Final Examination:	75
Practical :	-	Credits:	4
COURSE OBJECTIVES	 management at competitive advance 2. To develop competitive, and organizational effective advance 3. To discuss employee beneric retention. 4. To explain in the second s	ce the evolution in human nd its role in gaining s antage through people. I developing the human reso ffectiveness. theory and practice of com efits, performance developm detail how to establish pay rates nd and apply the concept of system in which its operates.	sustainable selecting, purces for pensation, nent and s.
Course Outcomes:	resources need objectives. CO2. Compare recruitment, sel CO3. Select performance an CO4. Appraise	ow to strategically plan for the d to meet organizational and evaluate the right and compensation systems.	goals and planning, 1g. employee

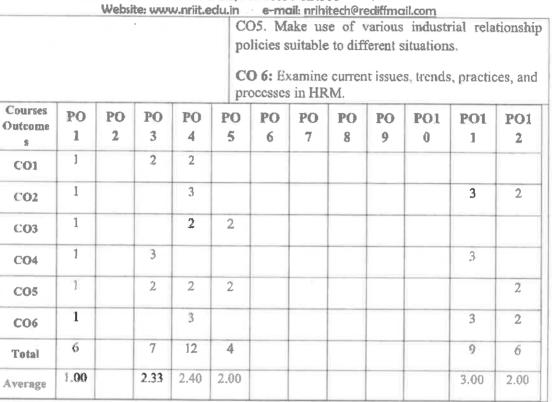
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UNIT -I

HRM: Significance - Definition and Functions – evolution of HRM- Principles - Ethical Aspects of HRM- - HR policies, Strategies to increase firm performance - Role and position of HR department –aligning HR strategy with organizational strategy - HRM –changing , global perspective challenges, environment – crosscultural problems – emerging trends in HRM.

UNIT -II

Investment perspectives of HRM: HR Planning – Demand and Supply forecasting - Recruitment and Selection- Sources of recruitment - Tests and Interview Techniques - Training and Development – Methods and techniques– Job design, evaluation and Analysis - Management development - HRD concepts.

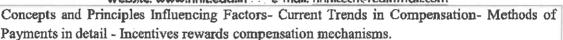
UNIT -III

Performance Appraisal: Importance – Methods – Traditional and Modern methods – Latest trends in performance appraisal - Career Development and Counseling- Compensation -

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UNIT -IV

Wage and Salary Administration: Concept- Wage Structure- Wage and Salary Policies- Legal Frame WorkDeterminants of Payment of Wages- Wage Differentials - Incentive Payment Systems. Welfare management: Nature and concepts – statutory and non-statutory welfare measures.

UNIT -V

Managing Industrial Relations: Trade Unions - Employee Participation Schemes-Collective Bargaining- Grievances and disputes resolution mechanisms - Safety at work - nature and importance - work hazards - safety mechanisms - Managing work place stress.

Relevant cases have to be discussed in each unit and in examination case is compulsory from any unit.

References:

1. K Aswathappa: "Human Resource and Personnel Management", Tata McGraw Hill, New Delhi, 2013. 2. N.Sambasiva Rao and Dr. Nirmal Kumar: "Human Resource Management and Industrial Relations", Himalaya Publishing House, Mumbai.

3. Mathis, Jackson, Tripathy: "Human Resource Management: A south-Asin Perspective", Cengage Learning, New Delhi, 2013.

4. Subba Rao P: "Personnel and Human Resource Management-Text and Cases", Himalaya Publications, Mumbai, 2013.

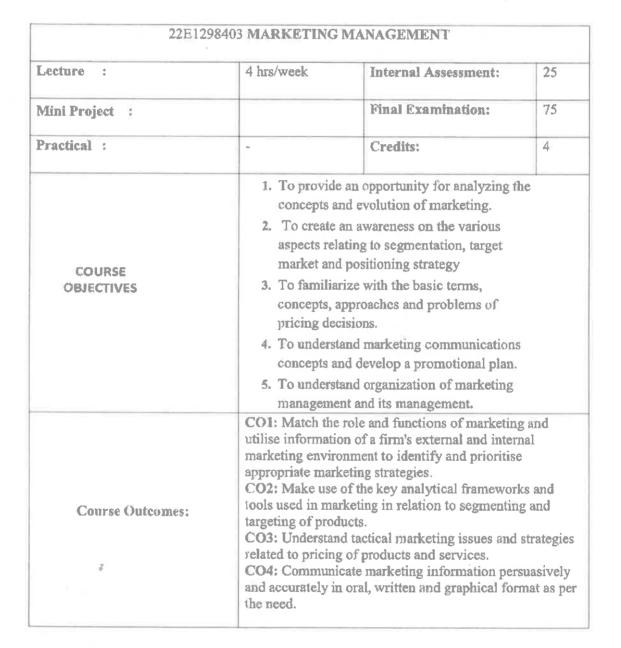
5. MadhurimaLall, Sakina QasimZasidi: "Human Resource Management", Excel Books, New Delhi, 2010.

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CO5: Understand evolution, organizing implementation controlling and efficiency measurement of marketing management.

CO6: Know the consumer behavior and their decision making process

Courses Outcomes	P01	POZ	PO3	PO4	P05	PO6	P07	P08	PO9	PO10	PO11	P012
CO1	2	2						1		1		1
CO2	1	1		1				1	2	2		
CO3	1		2					1	1	1	2	
CO4	1	1		1			1	1	2			
CO5	1			1		2				1		
CO6	1		2					1			1	1
Total	7	4	4	3		2	1	5	5	5	3	2
Average	1.17	1.33	2.00	1.00		2.00	1.00	1.00	1.67	1.25	1.50	1.00

UNIT –I

Introduction to Marketing: Needs - Wants - Demands - Products - Exchange - Transactions -Concept of Market and Marketing and Marketing Mix - Production Concept - Product Concept - Sales and Marketing Concept - Societal Marketing Concept - Green Marketing concept - Indian Marketing Environment.

Unit-II

Market Segmentation, Targeting and Positioning: Identification of Market Segments -Consumer and Institutional/corporate Clientele - Segmenting Consumer Markets -Segmentation Basis – Evaluation and Selection of Target Markets – Positioning significance -Developing and Communicating a Positioning Strategy.

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Unit – III

Product and Pricing Aspects: Product – Product Mix - Product Life cycle Obsolescence- Pricing-Objectives of Pricing - Methods of Pricing - Selecting the Final price - Adopting price - Initiating the price cuts – Imitating price increases-Responding to Competitor's price changes.

Unit - IV

Marketing Communication: Communication Process – Communication Mix – Integrated Marketing Communication - Managing Advertising Sales Promotion - Public relations and Direct Marketing - Sales force – Determining the Sales Force Size - Sales force Compensation

Unit – V

Distribution, Marketing Organization and Control: Channels of Distribution-Intensive, Selective and Exclusive Distribution- Organizing the Marketing Department - Marketing Implementation - Control of Marketing Performance - Annual Plan Control - Profitability Control - Efficiency Control - Strategic Control.

Relevant cases have to be discussed in each unit and in examination case is compulsory from any unit.

References:

Phillip Kotler: "Marketing Management", Pearson Publishers, New Delhi, 2013.

Rajan Saxena: "Marketing Management", Tata McGraw Hill, New Delhi, 2012.

VS Ramaswamy & S Namakumari, Marketing Management Global Perspective Indian Context 4th Edition, Mac Millan Publishers 2009.

Tapan K Panda: "Marketing Management", Excel Books, New Delhi, 2012

Paul Baines, Chris Fill, Kelly Page Adapted by Sinha K: "Marketing". Oxford University Press, Chennai, 2013

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22E1298404 Operations Management

Lecture :	4 hrs./week	Internal Assessment:	25
Mini Project :		Final Examination:	75
Practical :	-	Credits:	4
COURSE OBJECTIVES	functional operations manufactu services se 2. To ec knowledge Optimal P 3. To fami use of com 4. Better manageme 5. Plan materials	up the students with the e of production layout and roduction Strategies liarize the students about the trol charts understanding of quality ent. and implement suitable	
Course Outcomes:	process as it rela Operations Man CO2: To Ana alternatives and balanced line	overall view of the decision- ates to the major areas of Pro- agement. lyze and evaluate various their capacity decisions, de of production & scheduli niques in operation environm	duction/ facility evelop a ng and

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 e-mail: nrihitech@rediffmail.com

 CO3: To provide a basis for current decision on

*	www. to provide a value for callent devision on
	acceptances or rejections in manufacturing or
	purchasing using various control charts
	CO4: To Plan and implement suitable quality control
	measures in production.
	CO5: To understand the Materials Management
	function starting from Demand Management through
	Inventory Management.
	CO6: Able to Plan and implement suitable quality
	control measures in Quality Circles to TQM.

Course Outcomes vs. POs Mapping:

Courses Outcome s	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	РО 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2
C01	2.	2			1			1		1		1
CO2	1	1		1				1	2	2	1	
CO3	1		2		2			1	1	1	2	
CO4	2	1		1	1		1	1	2			
C05	1			1		2				1		
CO6	1		2					1			1	
Total	8	4	4	3	4	2	1	5	5	5	4	1
Average	1.33	1.33	2.00	1.00	1.33	2.00	1.00	1.00	1.67	1.25	1.33	1.00

UNIT-I:

Introduction to Operation Management: Nature & Scope of Operation/ Production Management, Relationship with other functional areas, Recent trend in Operation Management,

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Manufacturing & Theory of Constraint, Types of Production System, Just in Time (JIT) & lean system.

UNIT -II:

Product Design & Process Selection: Stages in Product Design process, Value Analysis, Facility location & Layout: Types, Characteristics, Advantages and Disadvantages, Work measurement, Job design.

UNIT-III:

Forecasting & Capacity Planning: Methods of Forecasting, Overview of Operation Planning, Aggregate Production Planning, Production strategies, Capacity Requirement Planning, MRP, Scheduling, Supply Chain Management, Purchase Management, Inventory Management.

Unit-IV:

Productivity: Factors, Affecting Productivity – Job Design – Process Flow Charts – Methods Study – Work Measurement – Engineering and Behavioral Approaches.

UNIT -V:

Quality Management: Quality- Definition, Dimension, Cost of Quality, Quality Circles-Continuous improvement (Kaizen), ISO (9000&14000 Series), Statistical Quality Control: Variable & Attribute, Process Control, Control Charts -Acceptance Sampling Operating Characteristic Curve (AQL, LTPD, Alpha & Beta risk), Total Quality Management (TQM).

Relevant cases have to be discussed in each unit and in examination case is compulsory from any unit.

References:

1. Krajewski & Ritzman (2004). Operation Management -Strategy and Analysis. Prentice Hall of India.

2. Panner Selvem, Production and Operation Management, Prentice Hall of India.

3. Chunnawals, Production & Operation Management Himalaya, Mumbai

4. Charry, S.N (2005). Production and Operation Management- Concepts, Methods Strategy. John Willy & Sons Asia Pvt Limited.

5. K Aswathappa & Sridhar Bhatt, Production & Operations Management, Himalaya, Mumbai.

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Lecture :	4 hrs/week	Internal Assessment:	25
Mini Project :		Final Examination:	75
Practical :	-	Credits:	4
COURSE OBJECTIVES	different a research manageme sciences. 2. To der various res techniques 3. To orga a more a survey rese 4. Have hypothesis analysis th 5. To far statistical	ent, business and the social velop an understanding of search designs and sampling	
Course Outcomes:	research process CO2: Have ader and measurement quantitative data CO3: Apply sampling questi research work re	various methodologies i oning, empirical techniques ports. t the data for hypothesis tes	n designs well as ncluding in their

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CO5: Construct the data using various multi-variate and bi-variate techniques and ANOVA for complex experimental designs.

CO6: Be able to write & develop independent thinking for critically analyzing research reports.

Courses Outcome s	PO 1	PO 2	PO 3	PO 4	PO 5	РО 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2
CO1	2	1			1							1
CO2	1	1		1					2		1	1
CO3	1		2		2				1		2	1
CO4	2	1		1	1		1		1	1		1
CO5	1			1		2						1
CO6	1							1			1	1
Total	8	3	2	3	4	2	1	1	4	1	4	6
Average	1.33	1.00	2.00	1.00	1.33	2.00	1.00	1.00	1.33	1.00	1.33	1.00

UNIT -I

Introduction : Nature and Importance of Research, The role of Business Research, Aims of social research, Types of Research- Pure research vs. Applied research, Qualitative research vs. Quantitative research, Exploratory research, Descriptive research and Experimental research, ethical issues in business research- Defining Research Problem, Steps in Research process.

UNIT -II

Data Base: Discussion on primary data and secondary data, tools and techniques of collecting data. Methods of collecting data. Sampling design and sampling procedures. Random vs. Non-random sampling techniques, determination of sample size and an appropriate sampling design. Designing of Questionnaire –Measurement and Scaling – Nominal Scale – Ordinal Scale – Interval Scale – Ratio Scale – Guttmann Scale – Likert Scale – Schematic Differential Scale.

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UNIT-III

Survey Research and data analysis: Selection of an appropriate survey research design, the nature of field work and Field work management. Media used to communicate with Respondents, Personal Interviews, Telephone interviews, Self-administered Questionnaires-Editing – Coding – Classification of Data – Tables and Graphic Presentation – Preparation and Presentation of Research Report.

UNIT -IV

Statistical Inference: Formulation of Hypothesis – Tests of Hypothesis - Introduction to Null hypothesis vs. alternative hypothesis, parametric vs. non-parametric tests, procedure for testing of hypothesis, tests of significance for small samples, application, t-test, Chi Square test.

UNIT -V

Multivariate Analysis: Nature of multivariate analysis, classifying multivariate techniques, analysis of dependence, analysis of interdependence. Bi-Variate analysis-tests of differences-t test for comparing two means and z-test for comparing two proportions and ANOVA for complex experimental designs.

Relevant cases have to be discussed in each unit and in examination case is compulsory from any unit.

References

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1. C.R. Kothari: Research Methodology, methods and Techniques New Age International Publisher.

2. Navdeep and Guptha : "Statistical Techniques & Research Methodology", Kalyani Publishers

3. Willam G.Zikmund, Adhkari: "Business Research Methods", Cengage Learning, New Delhi, 2013.

4. A.N. Sadhu, Amarjit singh, Research methodology in social sciences, 7th Edition Himalaya Publications.

5. A Bhujanga rao, Research methodology, Excel Books, 2008.

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22E1298511 Open Elective : Project Management

Lecture :	4 hrs/week	Internal Assessment:	25				
Mini Project :		Final Examination:	75				
Practical :	-	Credits:	4				
	execute, projects the project 2. Manager manager ensuring	the PM processes to initia monitor and control, an and to coordinate all the ele- ect s projects effectively inclu- nent of scope, time, costs, an- s satisfying the needs for way was undertaken	d close ments of ding the d quality,				
COURSE OBJECTIVES	 Applies processes required to manage the procurement of a project, including acquiring goods and services from outside the organization Manages project risk, including identifying. 						
	analyzin 5. Analyze expectat	g and responding to risk	keholder				
		cally applies project mar a variety of organization tings.					
Course Outcomes:	CO2: Following this course, students will be able to describe a project life cycle, and can skillfully map each stage in the cycle						
	CO3: Students will identify the resources needed for each stage, including involved stakeholders, tools and supplementary materials						

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CO4 :Students will describe the time needed to successfully complete a project, considering factors such as task dependencies and task lengths

CO5: Students will be able to provide internal stakeholders with information regarding project costs by considering factors such as estimated cost, variances and profits

CO6: Students will be able to develop a project scope while considering factors such as customer requirements and internal/external goals

Courses Outcome s	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	РО 7	РО 8	РО 9	PO1 0	PO1 1	PO1 2
CO1	1	1			1							1
CO2	1	1		1					1		1	1
CO3	1		2		2				1		2	1
CO4	1	1		1	1		1		1	1	1	1
CO5	1					2				-		1
CO6	1							1			1	1
Total	6	3	2	2	4	2	1	1	3	1	5	6
Average	1.00	1.00	2.00	1.00	1.33	2.00	1.00	1.00	1.00	1.00	1.25	1.00

Unit -I:

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Basics of Project Management -Concept- Project environment - Types of Projects - Project life cycle - Project proposals - Monitoring project progress - Project appraisal and Project selection - Causes of delay in Project commissioning- Remedies to avoid overruns.

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Identification of Investment opportunities – Sources of new project ideas, preliminary screening of projects – Components for project feasibility studies.

Unit-II:

Market feasibility -Market survey – Categories of Market survey – steps involved in conducting market survey – Demand forecasting techniques, sales projections.

Unit- III:

Technical and Legal feasibility: Production technology, materials and inputs, plant capacity, site selection, plant layout, Managerial Feasibility Project organization and responsibilities. Legalities – Basic legal provisions. Development of Programme Evaluation & Review Technique (PERT) –Construction of PERT (Project duration and valuation, slack and critical activities, critical path interpretation) – Critical Path Method (CPM) Unit- IV:

Financial feasibility – Capital Expenditure – Criteria and Investment strategies – Capital Investment Appraisal Techniques (Non DCF and DCF) – Risk analysis – Cost and financial feasibility – Cost of project and means of financing — Estimation of cash flows – Estimation of Capital costs and operating costs; Revenue estimation – Income – Determinants – Forecasting income – Operational feasibility - Breakeven point – Economics of working. Unit -V:

Project Implementation and Review: Forms of project organization – project planning – project control – human aspects of project management – prerequisites for successful project implementation – project review – performance evaluation – abandonment analysis.

Relevant cases have to be discussed in each unit and in examination case is compulsory from any unit.

References:

1. Prasanna Chandra, "Projects, Planning, Analysis, Selection, Financing, Implementation and Review", Tata McGraw Hill Company Pvt. Ltd., New Delhi 1998.

2. Gido: Effective Project Management, 2e, Thomson, 2007.

3. Singh M.K, "Project Evaluation and Management".

4. Vasanth Desai, Project Management, 4th edition, Himalaya Publications 2018.

5. Clifford F. Gray, Erik W. Larson, "Project Management, the Managerial Emphasis", McGraw Hill, 2000.

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Lecture :	4 hrs/week	Internal Assessment:	25
Mini Project :		Final Examination:	75
Practical :	~	Credits:	4
COURSE OBJECTIVES	of or in or im 2. To to the lex or 3. T pr Pr 4. D pr in m 5. T le in ac eco	understand lean management neiples & provides an understanding factors that contribute to ganizational wastes, examining ways eliminate wastes, & developing & plementing an improved ganizational processes, for significant pact to the company's bottom line. understand how lean management lay represents a profound change in competitive business culture and a dding indicator of excellence in the ganization. o understand how lean management neiples is developed from Toyota oduction System(TPS) eveloping an understanding of basic neiples of lean management strategy. POM (production & operations magement) & supply chain magement. o understand how by implementing an management organizations car prove product & processes withour ding any more money, people uipment, inventory or space and aim r perfection.	

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	CO1: To understand issues & challenges in								
	implementing & developing lean manufacturing								
	techniques from TPS & its contribution for improving								
	organizational performance.								
	CO2: Apply lean techniques to bring competitive								
	business culture for improving organization								
	performance CO3: Analyze how lean techniques can be								
Course Outcomes:	applied to manufacturing & service industry								
	CO4: Developing lean management strategy for Supply								
	chain management								
	CO5: Analyzing how lean technique can create value								
	generation for organization.								
	CO6: Apply appropriate approaches to project using								

CO6: Apply appropriate approaches to project using Lean tools and techniques.

Courses Outcome s	РО 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2
2	2			1			1		1		1	2
1	1		1				1	2	2	1		1
1		2		2			1	1	1	2		1
2	1		1	1		1	1	2				2
1			1		2				1			1
1		2					1			1		1

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	8	4	4	3	4	2	1	5	5	5	4	1	8
	1.33	1.33	2.00	1.00	1.33	2.00	1.00	1.00	1.67	1.25	1.33	1,00	1.33
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Unit- I

Introduction: Mass production system, Craft Production, Origin of Lean production system, Why Lean production, Lean revolution in Toyota, Systems and systems thinking, Basic image of lean production, Customer focus, Waste Management.

UNIT-II

Just In Time: Why JIT, Basic Principles of JIT, JIT system, Kanban, Six Kanban rules, Expanded role of conveyance, Production leveling, Three types of Pull systems, Value stream mapping. JIDOKA, Development of Jidoka concept, Why Jidoka, Poka, Yoke systems, Inspection systems and zone control – Types and use of Poka-Yoke systems, Implementation of Jidoka

UNIT -HI

Kaizen: Six – Sigma philosophy and Methodologies ,QFD, FMEA Robust Design concepts; SPC, QC circles standardized work in lean system , Standards in the lean system, 5S system.

UNIT-IV

Total Productive Maintenance: Why Standardized work, Elements of standardized work, Charts to define standardized work, Kaizen and Standardized work Common layouts. UNIT- V

Hoshin Planning & Lean Culture: Involvement, Activities supporting involvement, Quality circle activity, Kaizen training, Key factors of PKT success, Hoshin Planning System, Four Phases of Hoshin Planning, Why Lean culture – How lean culture feels.

Relevant cases have to be discussed in each unit and in examination case is compulsory from any unit.

References:

1. Jeffrey Liker, The Toyota Way: Fourteen Management Principles from the World's Greatest Manufacturer, McGraw Hill, 2004.

2. Debashish Sarkar, Lessons in Lean Management,

3. Dale H., Besterfield, Carol, Besterfield, etal, Total Quality Management (TQM) 5e by Pearson 2018.

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22E1298491 JT Lab 2 (Programming R)

Lecture :	-	Internal Assessment:	20				
Mini Project :	-	Final Examination:	30				
Practical :	2 hrs/week	Credits:	4				
COURSE OBJECTIVES	 Use R for statistical programming, computation, graphics, and modeling, Write functions and use R in an efficient way, Fit some basic types of statistical models Use R in their own research, Be able to expand their knowledge of Departure 						
Course Outcomes:	R on their own. CO1:Access online resources for R and import ne function packages into the R workspace CO2:Import, review, manipulate and summarize data-sets in R CO3:Explore data-sets to create testable hypothes and identify appropriate statistical tests CO4 :Perform appropriate statistical tests using R CO5: Create and edit visualizations						

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Course Outcomes vs. POs Mapping:												
Courses Outcome	РО 1	PO 2	PO 3	РО 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2
CO1	1	1	1		1							
CO2	1	1		2					1		1	
CO3	1	1	2	1	2				1		2	
CO4	1	1	2	1	1		1		1	1	1	
CO5	1	2		1		2						
CO6	1	1	1					1			1	1
Total	6	7	6	5	4	2	1	1	3	1	5	1
Average	1.00	1.17	1.50	1.25	1.33	2.00	1.00	1.00	1.00	1.00	1.25	1.00

UNIT-I:

All the theory content here below shall be executed with examples. Introduction, How to run R, R Sessions and Functions, Basic Math, Variables, Data Types, Vectors, Conclusion, Advanced Data Structures, Data Frames, Lists, Matrices, Arrays, Classes.

UNIT-II:

All the theory content here below shall be executed with examples. R Programming Structures, Control Statements, Loops, - Looping Over Non vector Sets,- If-Else, Arithmetic and Boolean Operators and values, Default Values for Argument, Return Values, Deciding Whether to explicitly call return- Returning Complex Objects, Functions are Objective, No Pointers in R, Recursion, A Quicksort Implementation-Extended Extended Example: A Binary Search Tree.

UNIT-III:

All the theory content here below shall be executed with examples. Doing Math and Simulation in R, Math Function, Extended Example Calculating Probability- Cumulative Sums and Products-Minima and Maxima- Calculus, Functions Fir Statistical Distribution, Sorting, Linear

Head, MBA Department nology NRJ Institute (Vill) POTHAVAL Agiripalli (Mdl), Kushna Dist



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Website: www.nriit.edu.in e-mail: nrihitech@rediffmail.com

Algebra Operation on Vectors and Matrices, Extended Example: Vector cross Product-Extended Example: Finding Stationary Distribution of Markov Chains, Set Operation, Input /out put, Accessing the Keyboard and Monitor, Reading and writer Files,

UNIT-IV:

All the theory content here below shall be executed with examples. Graphics, Creating Graphs, The Workhorse of R Base Graphics, the plot() Function -Customizing Graphs, Saving Graphs

UNIT-V:

All the theory content here below shall be executed with examples. Probability Distributions, Normal Distribution- Binomial Distribution- Poisson Distributions Other Distribution, Basic Statistics, Correlation and Covariance, T-Tests,-ANOVA.

Note: From all the theory content above three examples from each unit has to be taken as lab exercises. Out of all the 15 programs, the lab exam has to be conducted.

REFERENCE BOOKS:

1) The Art of R Programming, Norman Matloff, Cengage Learning

2) R for Everyone, Lander, Pearson

3) R Cookbook, PaulTeetor, Oreilly

4) R Programming By Dr.T. Murali Mohan, S.Chand Publications.

5) Garrett Grolemund, Hands on Programming with R, Oreilly

Head, MBA Department NRI Institute of Technology POTHAVARAPPADU(VIII) Agiripalli (Mdl), Krishna Dişt



