PSN College of Engineering and Technology (Autonomous)



Melathediyoor, Tirunelveli - 627 152, Tamilnadu Approved by AICTE and Affiliated to Anna University Accredited by NAAC and Recognised by UGC under section 2(f) and 12(B) mostorial section 2(f) and 12(B) An ISO 9001 : 2015 Certified Institution





Website:www.psncet.ac.in Phone: 04634 279009, 04634 279680.

E-Mail: principal@psncet.ac.in

Feedback on Curriculum: Action Taken Report

Department	Link to Document
Aeronautical Engineering	View Document
Civil Engineering	View Document
Computer Science and Engineering	View Document
Electronics and Communication Engineering	View Document
Electrical and Electronics Engineering	View Document
Electronics and Instrumentation Engineering	View Document
Marine Engineering	View Document
Mechanical and Automation Engineering	View Document
Mechanical Engineering	View Document
Business Administration	View Document



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 DEPARTMENT OF AERONAUTICAL ENGINEERING

16-03-2018

STAKEHOLDER FEEDBACK ON CURRICULUM & TEACHING-LEARNING ANALYSIS

Academic Year 2017-18

The following points were suggested by the stakeholders in feedback on curriculum & teaching-learning:

- Practical oriented teaching methodology may be incorporated to Propulsion II (Semester V) subject for better understanding.
- 2. In Experimental Aerodynamics (Semester V) subject basics of measurement may be added.
- 3. Practical oriented training can be given in VII semester Aero Engine Maintenance & Repair subject.
- 4. As far as possible, practical training shall be given to the students when teach the subjects.
- 5. Personality development related courses may be included in the curriculum to enhance job skills.
- 6. More number of new electives can be added to curriculum.
- 7. Inplant trainings should be mandatory to understand industrial scenario.
- 8. Subjects for developing soft skills may be included. That will be very helpful for getting job.
- 9. If the students undergone more number of inplant trainings, internships, employability skills will be developed. These can be included curriculum.
- 10. Some new subjects related to advancement in aeronautical engineering, may be introduced as electives.

TIRUNELVE DISTRICT 627 152

THEDING

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Head of the Department Department of Aeronautical Engineering PSN College of Engineering and Technology Melathediyoor, Tirunelveli - 627152.

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28-03-2018

ACTION TAKEN REPORT ON STAKEHOLDER FEEDBACK ON

CURRICULUM & TEACHING-LEARNING

		Stakeholders Suggestion	Action Taken
	1.	Practical oriented teaching methodology may be	
		incorporated to Propulsion - II (Semester V) subject for	The suggestions received from stake
		better understanding.	holders on the curriculum and
	2.	Practical oriented training can be given in VII semester	syllabus feedback was taken up in
		Aero Engine Maintenance & Repair subject.	the Programme Assessment
	3.	As far as possible, practical training shall be given to the	Committee (PAC) of department of
		students when teach the subjects.	Aeronautical Engineering. All the
	4.	If the students undergone more number of inplant trainings,	suggestions were unanimously
		internships, employability skills will be developed. These	accepted by the faculty members and
		can be included curriculum.	it is decided to incorporate them in
	5.	Inplant trainings should be mandatory to understand	the 2018 regulation. Hence the
		industrial scenario.	faculties were requested to
	6.	More number of new electives can be added to curriculum.	incorporate the suggestions in the
	7.	Some new subjects related to advancement in aeronautical	respective courses and frame the
		engineering, may be introduced as electives.	syllabus. This will be implemented
1	8.	In Experimental Aerodynamics (Semester V) subject basics	from the academic year 2018-19
		of measurement may be added.	under 2018 regulation for the
	9.	Personality development related courses may be included in	students of Aeronautical Engineering
		the curriculum to enhance job skills.	after getting the approval from board
	10). Subjects for developing soft skills may be included. That	of studies and academic council.
		will be very helpful for getting job.	

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23-03-2019

<u>NOTE</u>

As per the action taken report dated 28-03-2018, the suggestions of stake holders on curriculum and syllabus are incorporated in the courses offered under 2018 regulation and approved by board of studies and academic council.

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Head of the Department Department of Aeronautical Engineerin PSN College of Engineering and Technolog

Enclosures:

1. Curriculum (Regulation 2018) of department of Aeronautical Engineering. Melathediyoor, Tirunelveli - 627152

2. Syllabus of Experimental Aerodynamics (Semester V).

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CURRICULUM - B.E. / AERO - I TO VIII SEMESTER

(Applicable to students those who are admitted from AY 2018-19)

SEMESTER I

S. No	Course Code	Course Title	L	Т	Ρ	C
		THEORY				
1	501001	Technical English	3	0	0	3
2	501002	Elementary Mathematics for Engineers	3	0	0	3
3	501003	Applied Physics I	3	0	0	3
4	501004	Applied Chemistry I	3	0	0	3
5	501005	Engineering Graphics	2	0	2	3
6	501006	Fundamentals of Computers and Python Programming	3	0	0	3
		PRACTICAL				
7	501101	Applied Physics & Chemistry Lab - I	0	0	3	2
8	501102	Computer Lab	0	0	3	2
9	501103	Workshop Practice	0	0	3	2
]	TOTAL	17	0	11	24

SEMESTER II

ſ	S. No	Course Code	Course Title	L	Т	P	С
			THEORY				
	1	501007	Business Communication and Presentation	3	0	0	3
	-		Skills				
	2	501008	Engineering Mathematics – I	3	0	0	3
	3	501009	Applied Physics II	3	0	0	3
	4	501010	Applied Chemistry II	3	0	0	3
	5	501011	Engineering Mechanics	3	0	0	3

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			-		~ 1		
6	501012	Programming in C	2	0	0	2	
7	501013	Basic Engineering (Coming under EEE Board)	2	0	0	2	
		PRACTICAL					
8	501104	Applied Physics & Chemistry Lab II	0	0	3	2	
	501105		0,	0	2	1	745
9	501105	C Programming Lab	0				S. M.
10	501106	Basic Electrical and Electronics Lab	0	0	3	2	
		тоты	10	0	8	24	
		IOIAL	17		Ū		
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SEMESTER III

S.	Course	Course Title	L	Т	P	C
No.	Code					
		THEORY				
1.	501014	Engineering Mathematics-II	3	1	0	4
2.	501015	Aero Engineering Thermodynamics	3	0	0	3
3.	501016	Fluid Mechanics And Machinery	3	1	0	4
4.	501017	Solid Mechanics	3	0	0	3
5.	501018	Fundamentals of Aeronautics	3	0	0	3
6.	501019	Aircraft Materials and Processes	3	0	0	3
		PRACTICAL		J		
7.	501107	Fluid Mechanics and Machinery Lab	0	0	3	2
8.	501108	Solid Mechanics & Thermal Engineering Lab	0	0	3	2
9.	501109	Career Skill Development Training – I	0	0	2	1
DISTRI	52 JSS	TOTAL	18	2	8	25

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		MANDATORY COURSE				
10.	501801	Environmental Studies	2	0	0	2

SEMESTER IV

S.No	Course code	Course title	L	Т	Р	С
		THEORY				
1	501020	Engineering Mathematics – III	3	1	0	4
2	501021	Aerodynamics - I	3	0	0	3
3	501022	Aircraft Structures - I	3	0	0	3
4	501023	Control Engineering	3	0	0	3
5	501024	Propulsion - I	3	0	0	3
6	501025	Aircraft Systems And Instruments	3	0	0	3
		PRACTICAL		-	1	1
7	501110	Aerodynamics Lab	0	0	3	2
8	501111	Manufacturing Technology Lab	0	0	3	2
9	501112	Aircraft Structures Lab	0	0	3	2
10	501113	Career Skill Development Training – II	0	0	2	1
		TOTAL	18	1	11	26
MAN	DATORY COUL	RSE				
INDU	STRIAL VISIT					
DIST	ier jol					

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N Dave Head of the Department Department of Aeronautical Engineering PSN College of Engineering and Technology Melathediyoor, Tirunelveli - 627152.

SEMESTER-V

C No	Course code	Course title	L	Т	Р	С
S.No	Course coue	THEORY				
1	501026	Experimental Aerodynamics	3.	0	0	3
2	501027	Aircraft Performance	3	0	0	3
3	501028	Aerodynamics II	3	0	0	3
4	501029	Aircraft Structures –II	3	0	0	3
5	501029	Propulsion II (With Practical Component)	3	0	2	4
6	501031	Air Traffic Control and Planning	3	0	0	3
7	501051	Open Elective – I	3	0	0	3
		PRACTICAL				
8	501114	English Language Lab For Engineers	0	0	3	2
9	501115	Career Skill Development Training – III	0	0	2	1
-	501115	TOTAL	21	0	7	25
MAND	ATORY COUR	SE	τ.			
10	501802	Value Education and Human Rights	2	0	0	2
11		Inplant Training				

SEMESTER VI

CN	Course code	Course title	L	Т	P	С
5.10	Course coue	THEORY				
1	501032	Avionics	3	0	0	3
2	501033	Flight Dynamics	3	0	0	3
Belle	501034	Heat Transfer	3	0	0	3
1 SI 4 TIRU	NEL 501035	Finite Element Analysis	3	0	0	3
1131 0	27 501036	Vibrations and Aero Elasticity	3	0	0	3
110%	8-11		L			

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Head of the Department

6		Elective – I	3	0	0	3
7		Open Elective –II	3	0	0	3
		PRACTICAL		e dita ta		
8	501116	Aircraft Design Project – I Laboratory	0	0	3	2
9	501117	Aircraft Structural And Modeling Lab	0	0	3	2
10	501118	Career Skill Development Training – IV	0	0	2	1
	1	1	21	0	8	26
		TOTAI				

SEMESTER-VII

S.No	Course code	Course title	L	T	P	С
THEOR	Y		l			
1	501037	Composite Materials And Structures	3	0	0	3
2	501038	Aero Engine Maintenance & Repair(With Practical Component)	3	0	2	4
3	501039	Rockets and Missiles	3	0	0	3
4	501040	Computational Fluid Dynamics	3	0	0	3
5	501041	Airframe Maintenance & Engineering	3	0	0	3
6		Elective – II	3	0	0	3
7.		Elective-III	3	0	0	3
PRACT	ICAL				1	
8	501119	Aircraft Design Project – II Laboratory	0	0	3	2
9	501120	Aircraft Systems Lab	0	0	3	1
10	501301	Mini Project / Seminar (Internal Evaluation only)	0	0	2	
		TOTAL	21	0	10	+

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SEMESTER VIII

S No	Course code	Course title		L	T	P	С
1	501302	Project Work		0	0	15	6
1	501502		TOTAL	0	0	15	6

TOTAL CREDITS: 184

LIST OF ELECTIVES-VI SEMESTER

S. No.		COURSE TITLE	L	Т	Р	С
1	501201	Hypersonic Aerodynamics	3	0	0	3
2	501202	Experimental Stress Analysis	2	0	0	2
3	501203	Industrial Aerodynamics	3	0	0	3
4	501204	Aircraft High Temperature Materials	1	0	0	1
5	501205	Aircraft General Engineering & Maintenance Practices	3	0	0	3
6.	501206	Aircraft Stress Analysis	3	0	0	3
7	501207	Theory of Elasticity	3	0	0	3



Head of the Department Head of the Department Department of Aeronautical Engineering PSN College of Engineering and Technology Metathediyoor, Tirunelveli - 627152.

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LIST OF ELECTIVES SEMESTER VII

S. No.	Course Code	Course Title	L	Τ	P	C
1	501208	Fatigue & Fracture Mechanics	3	0	0	3
2	501209	Total Quality Management	3	0	0	3
3	501210	Space Mechanics	3	0	0	3
4	501211	Optimization Techniques	3	0	0	3
5	501212	Civil Aviation Requirements	2	0	0	2
6	501213	Cryogenic Engineering	3	0	0	3
7	501214	Aircraft Overhauling	1	0	0	1
8	501215	Aircraft Production & Planning Management	3	0	0	3
9	501216	Airport Engineering	3	0	0	3
10	501217	Crisis Management In Aviation Industry	3	0	0	3
11	501218	Helicopter Engineering	3	0	0	3
12	501219	Project Management	3	0	0	3
13	501220	Air Transportation & Aircraft Maintenance Engineering	3	0	0	3
14	501221	Helicopter Maintenance	3	0	0	3
15	501222	Operational Management	3	0	0	3
16	501223	Sensors & Instrumentation	3	0	0	3

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501026 EXPERIMENTAL AERODYNAMICS

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OBJECTIVE:

- To provide extensive treatment of the operating principles and limitations of pressure and temperature measurements.
- To cover both operating and application procedures of hot wire anemometer.
- To describe flow visualization techniques and to highlight in depth discussion of analog methods.
- To understand about special flows and uncertainty analysis.

UNIT I BASIC MEASUREMENTS IN FLUID MECHANICS

Objective of experimental studies – Fluid mechanics measurements – Properties of fluids – Measuring instruments – Performance terms associated with measurement systems – Direct measurements - Analogue methods – Flow visualization – Components of measuring systems – Importance of model studies.

UNIT II WIND TUNNEL MEASUREMENTS

Characteristic features, operation and performance of low speed, transonic, supersonic and special tunnels - Power losses in a wind tunnel – Instrumentation and calibration of wind tunnels – Turbulence-Wind tunnel balance – Wire balance – Strut-type – Platform-type – Yoke-type – Pyramid type – Strain gauge balance – Balance calibration.

UNIT III FLOW VISUALIZATION AND ANALOGUE METHODS

Visualization techniques – Smoke tunnel – Hele-Shaw apparatus - Interferometer – Fringe Displacement method – Schlieren system – Shadowgraph - Hydraulic analogy – Hydraulic jumps –
 Electrolytic tank.

UNIT IV PRESSURE, VELOCITY AND TEMPERATURE MEASUREMENTS

Pitot - static tube characteristics - Velocity measurements - Hot-wire anemometry – Constant current and Constant temperature Hot-Wire anemometer – Pressure measurement techniques - Pressure transducers – Temperature measurements.

UNIT V SPECIAL FLOWS AND UNCERTAINTY ANALYSIS

Experiments on Taylor-Proudman theorem and Ekman layer – Measurements in boundary avers acquisition and processing – Signal conditioning – Uncertainty analysis – Estimation of



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measurement errors - External estimate of the error - Internal estimate of the error - Uncertainty **TOTAL:45 PERIODS** calculation - Uses of uncertainty analysis.

COURSE OUTCOMES: At the end of this course the students will be able to:

- Gain Knowledge on measurement techniques in aerodynamic flow.
- Acquiring basics of wind tunnel measurement systems ٠
- Understand instruments for flow parameter measurement like pressure and velocity.
- Analyze the model measurements, Lift and drag measurements through various techniques and testing of different models.
- Apply the Wind tunnel boundary corrections and Scale effects.

TEXT BOOKS:

- 1. Rathakrishnan, E., "Instrumentation, Measurements and Experiments in Fluids," CRC Press - Taylor & Francis, second new edition 2016.
- 2. Robert B Northrop, "Introduction to Instrumentation and Measurements", Third Edition, CRC Press, Taylor & Francis, 2017.

REFERENCE BOOKS:

- 1. Bradsaw "Experimental Fluid Mechanics", Elsevier science, 2nd edition, 2016.
- 2. Pope, A., and Goin, L., "High Speed Wind Tunnel Testing", John Wiley, 1985.

CO-PO MAPPING:

	P01	PO2	PO3	P04	PO5	PO6	P07	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2								- 3
CO2	3	2	2	2					2			2
CO3	3	1	3	3	3				2			2
CO4	3	3	3	3	3		- NCI	1	2			2
CO5	3	3	3	3		3	OF ENVE	A CO	2			2

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DISTRICT 627 152

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Stakeholder Feedback on Curriculum & Teaching – Learning Analysis

Academic Year 2017 - 2018

The following points were suggested by the stakeholder in feedback on Curriculum & Teaching – Learning:

- 1. Latest technologies like Total Stations we introduced
- 2. Career skill development related courses may be included in the curriculum to
- enhance job skills

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- 3. Inplant trainings should be mandatory to understand industrial scenario
- 4. Smart class rooms may also introduced
- 5. More number of soft skill development programmes may be included
- 6. Some new subjects which will meet the industries needs may be introduced as core and electives
- Subjects for developing communications skills may be included. That will be very helpful for getting job
- 8. Practical oriented training can be given
- 9. Practical component subjects may also included
- 10. Some new experiments are added in the laboratories



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HoD / Civil

WEAU OF THE DEPART VENT CPARTMENT OF CIVIL ENGINEERING IN COLLEGE OF ENGG & TECK JELA THEORYOOP 027152



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Action Taken Report on Stakeholder Feedback on Curriculum & Teaching – Learning

	- 11 C	Action Taken
Stake	holder Suggestions	i manipud from stakeholder on the
1	Latest technologies like Total Stations we	The suggestions received from suitements
1.	introduced	curriculum and syllabus feedback was taken up in
2.	Career skill development related courses may	the programme assessment committee (PAC) of the
	be included in the curriculum to commence jes	department of civil engineering. All the suggestions
3.	Inplant trainings should be mandatory to	were unanimously accepted by the faculty members
	understand industrial scenario	and its decided to incorporate them in the 2018
4.	Smart class rooms may also inforduced More number of soft skill development	regulation. Hence the faculties were requested to
5.	programmes may be included	incorporate the suggestions in the respective courses
6.	Some new subjects which will meet the	and frame the syllabus. This will be implemented in
	electives	the academic year 2018 - 2019 under 2018
7.	Subjects for developing communications skill	s regulation for the students of civil engineering after
	may be included. That will be very helpful to	getting the approval from board of studies and
	getting job	academic council.
8	Practical oriented training can be given	
9	. Practical component subjects may also include	d
10	, some new experiments are added in t	he



laboratories

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NOTE

As per the action taken report dated 09.04.2018, the suggestions of stakeholders on curriculum and syllabus are incorporated in the courses offered under 2018 regulation and approved by board of studies and academic council.

HoD / Civil

MEAU OF THE DEPARTNENT EPARTMENT OF CIVIL ENGINEERING ISN COLLEGE OF ENGG & TECK JELS THEORYOOP 627152

Enclosures: Curriculum (Regulation 2018) of department of civil engineering

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Melathediyoor, Tirunelveli - 627 152

DEPARTMENT OF CIVIL ENGINEERING

B.E CIVIL

CURRICULUM

SEMESTER I - VIII

REGULATION - 2018

FULL TIME PROGRAMME

(Applicable to students those who are admitted from AY - 2018-2019)

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UG CURRICULUM (I – VIII) SEMESTER

SEMESTER I

S.No	Course Code	Course Title	L	T	P	С
	No Course Code THEORY 1 501001 2 501002 3 501003 4 501004 4 501005 5 501005 6 501006 Fundamentals of Computers and Python Program PRACTICAL 7 501101 8 501102 9 501103			1		
1	501001	Technical English	3	0	0	3
2	501002	Elementary Mathematics for Engineers	3	. 0	0	3
3	501003	Applied Physics I	3	0	0	3
4	501004	Applied Chemistry I	3	0	0	3
5	501005	Engineering Graphics	2	0	2	3
6	501006	Fundamentals of Computers and Python Programming	3	0	0	3
		PRACTICAL				
7	501101	Applied Physics & Chemistry Lab - I	0	0	3	2
8	501102	Computer Lab	0	0	3	2
9	501103	Workshop Practice	0	0	3	2
		TOTAL	17	0	11	24

SEMESTER II

S.No	Course Code	Course Title	L	T	Р	С
		THEORY			×912	
1	501007	Business Communication and Presentation Skills	3	0	0	3
2	501008	Engineering Mathematics – I	3	0	0	3
3	501009	Applied Physics II	3	0	0	3
4	501010	Applied Chemistry II	3	0	0	3
5	501011	Engineering Mechanics	3	0	0	3
6	501012	Programming in C	2	0	0	2
7	501013	Basic Engineering (Coming under EEE Board)	2	0	0	2
		PRACTICAL				
8	501104	Applied Physics & Chemistry Lab II	0	0	3	2
9	501105	C Programming Lab	0	0	2	1
10	501106	Basic Electrical and Electronics Lab	0	0	3	2
		TOTAL	19	10	8	24



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SEMESTER III

		C Title		L	T	P	C
No	Course Code	Course The					
		THEORY	25 	3	1	0	4
1	501014	Engineering Mathematics - II		3	0	0	3
1	502001	Geology & Construction Materials		2	0	0	3
2	502002	Concrete Technology		3	0	0	3
3	502002	Mechanics of Materials – I			0	0	3
4	502003	Transportation Engineering-I		2	0	0	3
3	502001	Engineering Surveying – I		<u> </u>		<u> </u>	1-
6	302003	PRACTICAL			1 0	12	12
	502101	Engineering Survey Practical – I		0	0	3	2
1	502101	Computer Aided Building Drawing		0		1	1
8	502102	Career Skill Development Training – I		0	0	2	
9	501109	Career Skin Develop	TOTAL	18	1	8	24
		MANDATORY COURSE					- 1 - 0
		Environmental studies		2	0	0	2
10	501801	Environmental statics					

SEMESTER IV

		Course Title		L	T	P	C
S.No	Course Code	Course Thic					
	<u> </u>	THEORY		3	1	0	4
1	501020	Engineering Mathematics - III		3	0	0	3
2	502006	Soil Mechanics		3	0	0	3
2	502007	Mechanics of Materials – II		3	1	-0	4
3	502008	Fluid Mechanics and Machinery		3	1	0	1
4	502000	Engineering Surveying – II	- Contraction of the second	3	0	0	
<u> </u>	502007	Transportation Engineering-II		3	0	0	<u> </u> 3
6	502010	PRACTICAL	and the second				T _
		II	A DEPARTMENT	0	0	3	2
7	502103	Engineering Survey Hackedar 11		0	0	3	2
8	502104	Fluid Mechanics and Machinery Lab		0	0	3	2
9	502105	Strength of Materials Lab		0	0	2	1
10	501113	Career Skill Development Training – II	TOTAL	18	2	11	27



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PRINCIPAL PSN COLLEGE OF ENGINEERING & TECHNOLOGY MELATHEDIYOOR, PALAYAMKOTTAI TALUK TIRUNELVELI DIST. - 627 152.

SEMESTER V

O11 O12 013 014 2015 #	Course Thic THEORY Design of RC Elements Structural Analysis – I Environmental Engineering Construction Techniques Equipment and Practice Foundation Engineering (Practical Component) Open Elective –I	3 3 3 3 3 3 3	0 0 0 0 0	0 0 0 2 0	3 3 3 3 4
011 012 013 014 2015 #	THEORY Design of RC Elements Structural Analysis – I Environmental Engineering Construction Techniques Equipment and Practice Foundation Engineering (Practical Component) Open Elective –I	3 3 3 3 3 3 3	0 0 0 0 0	0 0 0 2 0	3 3 3 4
011 012 013 0014 2015 #	Design of RC Elements Structural Analysis – I Environmental Engineering Construction Techniques Equipment and Practice Foundation Engineering (Practical Component) Open Elective –I	3 3 3 3 3 3	0 0 0 0	0 0 0 2 0	3 3 3 4
012 013 014 2015 #	Structural Analysis – I Environmental Engineering Construction Techniques Equipment and Practice Foundation Engineering (Practical Component) Open Elective –I	3 3 3 3	0 0 0	0 0 2 0	3 3 4
013 2014 2015 #	Environmental Engineering Construction Techniques Equipment and Practice Foundation Engineering (Practical Component) Open Elective –I	3 3 3	0 0 0	0 2 0	3 4 2
2014 2015 #	Construction Techniques Equipment and Tracted Foundation Engineering (Practical Component) Open Elective –I	3 3	0	2	4
2015 #	Foundation Engineering (Practical Component) Open Elective –I	3	0	0	2
#	Open Elective –I			CARLES STREET	2
			1		
	PRACTICAL	0	0	3	2
2106	Concrete and Highway Engineering Lab	0	0	3	2
2107	Soil Mechanics Lab	0	0	0	2
2108	Survey Camp (10 days)	0	0	2	1
1115	Career Skill Development Training – III TOTAL	18	0	10	20
	THE TOPY COURSE				
	MANDATORY COURSE	2	0	0	2
01802	Value Education and Human Rights				
	Inplant Training		N/c	antion	
	2108 1115 1802	2108 Survey Camp (10 days) 1115 Career Skill Development Training – III TOTAL MANDATORY COURSE 01802 Value Education and Human Rights Inplant Training Inplant Training Camp to Be Conducted For a Period of 10 Days during 4 th Semester	2108 Survey Camp (10 days) 0 1115 Career Skill Development Training – III 0 TOTAL 18 MANDATORY COURSE 01802 Value Education and Human Rights 2 Inplant Training Inplant Training Inplant Training Camp to Be Conducted For a Period of 10 Days during 4 th Semester Sum	2108 Survey Camp (10 days) 0 0 1115 Career Skill Development Training – III 0 0 TOTAL 18 0 MANDATORY COURSE 01802 Value Education and Human Rights 2 0 Inplant Training Inplant Training Inplant Training Inplant Training	2108 Survey Camp (10 days) 0 0 2 1115 Career Skill Development Training – III 0 0 2 TOTAL 18 0 10 MANDATORY COURSE 01802 Value Education and Human Rights 2 0 0 11802 Inplant Training Camp to Be Conducted For a Period of 10 Days during 4 th Semester Summer Vacation

SEMESTER VI

	- 14	Course Title	L	T	P	C
S.No	Course Code			÷?		
1.1.1		THEORY	3	1	0	4
1	502016	Structural Analysis – II	3	1	0	4
2	502017	Design of Steel Structures	2	0	0	3
2	502018	Construction Planning and Scheduling	3	0	0	3
3	502019	Pollution Control and Waste Management	3		0	3
4	302017	Open Elective –II	3	0	0	1 3
5	#	PRACTICAL				1 0
1.20		E list Language Lab for Engineers	0	0	3	2
6	502109	English Language Lao for English	0	0	3	2
7	502110	Environmental Engineering Lab	0	0	3	2
8	502111	Estimation and quantity surveying Lab	0	0	2	1
9	501118	Career Skill Development Training – IV	15	2	11	24
9	501118	Career Skill Development Training – IV TOTAL	15	2		11

HNOLOG TIRUNELVEL DISTRICT 627 152 HALL

PRINCIPAL PSN COLLEGE OF ENGINEERING & TECHNOLOGY MELATHEDIYOOR, PALAYAMKOTTAI TALUK TIRUNELVELI DIST. - 627 152.

WEAT OF THE DEPARTMENT EPARTMENT OF CIVIL ENGINEERIN

SN COLLEGE OF ENGG & TECH

SEMESTER VII

S.No	Course Code	Course Title	L	T	P	C
		THEORY				
1	502020	Principles of Management	3	0	0	3
2	502021	Design of RC Structures (Practical Component)	3	0	2	4
3	502022	Irrigation & Water Resource Engineering	3	0	0	3
4	502023	Dynamics and Seismic Design of Structures	3	0	0	3
5	502024	Prestressed Concrete Structures	3	1	0	4
6	. #	Elective – I	3	0	0	3
7	##	Elective – II	3	0	0	3
		PRACTICAL				
8	502112	Computer Aided Design and Drafting Lab	0	0	3	2
9	502301	Design Project	0	0	3	2
		TOTAL	18	1	8	27
MAND	DATORY COUR	SE			5.00 C	
10		Internship Training				
			Ar provide the second	Service of the service of the	A-1.	A state of the state

*Minimum duration of Internship Training 45 Hours

SEMESTER VIII

S.No	Course Code	Course Title		L	T	P	C
		PRACTICAL			e e e e e e e e e e e e e e e e e e e		
1	502302	Project Work		0	0	15	6
			TOTAL	0	0	15	6

TOTAL CREDITS: 182

Semester	· I	II	III	IV	V	VI	VII	VIII
Credit	24	24	24	27	26	24	27	6
Total Credit								182

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LIST OF OPEN ELECTIVES

			T.	T	P	C
S.No	Course Code	Course Title	<u> </u>	<u> </u>		
5.140	Course cour	THEORY	-	10	0	3
	502901	Disaster Management	3		0	3
	502902	Environmental Impact Assessment	3	0	0	3
2	502903	Industrial waste management	3			<u> </u>

LIST OF ELECTIVES I # SEMESTER VII

		Course Title	L	T	P	C
S.No	Course Code	THEODY		1		
	·	THEORY	12	10	0	2
1	502201	Traffic Engineering Management	1	0	0	1
2	502202	House Planning & Management	1	0		1
2	502203	Safety in Civil Engineering	1	0	0	
3	502203	Building Valuation	1	0	0	1
4	502204	Building Variation	3	0	0	3
5	502205	Ground Implovement recomment of Civil				Γ,
	502206	Environmental Impact Assessment of Civit	3	0	0	3
6	502200	Engineering Projects		10	10	12
7	502207	Coastal Zone Management	2			$+\frac{2}{1}$
0	502208	Hydrology	1.	0		$\frac{1}{2}$
0	502200	Ground Water Engineering	3	0	0	3
9	302209	Air Bollution Management	1	0	0	1
10	502210	All Folidion Management	3	0	0	3
11	502211	Municipal Solid waste Management				

LIST OF ELECTIVES II ## SEMESTER VII

		Course Title		T	<u>P</u>	C
S.No	Course Code	THEORY				
		INCOM	3	0	0	3
1	502212	Bridge Structures	3	0	0	3
2	502213	Storage Structures		0	0	3
	502214	Tall Buildings	<u> </u>			1 2
	502211	Prefabricated structures	3	0	0	5
4	502215	Ticlabileate Management	3	0	0	3
5	502216	Industrial waste waitagement	3	0	0	3
6	502217	Repair and Rehabilitation of Structure			<u> </u>	1



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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

28-03-2018

STAKEHOLDER FEEDBACK ON CURRICULUM & TEACHING-LEARNING ANALYSIS

Academic Year 2017-18

The following points were suggested by the stakeholders in feedback on curriculum & teaching-learning:

- 1. Latest technologies like Network Security, IoT may be added
- 2. Now Python is ruling the software industry so it may be added in our curriculum
- 3. In addition with JAVA lab, JAVA theory may also included.
- 4. Practical oriented training can be given "
- 5. Career skill development related courses may be included in the curriculum to enhance job skills.
- 6. Inplant trainings should be mandatory to understand industrial scenario.
- 7. Smart class rooms may also introduced
- 8. More number of Soft Skill development programmes may be included.
- 9. Some new subjects which will meet the industry needs may be introduced as electives.
- 10. Subjects for developing Communication skills may be included. That will be very helpful for getting job.



Head of the Department Department of Computer Science & Engineering PSN College of Engineering & Technology (Autonomous Institution) Melathediyoor, Tirunelveli - 627 152.

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

09-04-2018

ACTION TAKEN REPORT ON STAKEHOLDER FEEDBACK ON CURRICULUM & TEACHING-LEARNING

Stakeholders Suggestion	Action Taken
1. Latest technologies like Network Security, IoT may be	
added	The suggestions received from stake
2. Now Python is ruling the software industry so it may be	holders on the curriculum and
added in our curriculum	syllabus feedback was taken up in
3. In addition with JAVA lab, JAVA theory may also	the Programme Assessment
included.	Committee (PAC) of department of
4 Practical oriented training can be given	Computer Science and Engineering.
5. Career skill development related courses may be	All the suggestions were
included in the curriculum to enhance job skills.	unanimously accepted by the faculty
6 Inplant trainings should be mandatory to understand	members and it is decided to
industrial scenario.	incorporate them in the 2018
7. Smart class rooms may also introduced	regulation. Hence the faculties were
8. More number of Soft Skill development programmes	requested to incorporate the
may be included.	suggestions in the respective courses
9. Some new subjects which will meet the industry needs	and frame the syllabus. This will be
may be introduced as electives.	implemented from the academic year
10 Subjects for developing Communication skills may be	2018-19 under 2018 regulation for
included. That will be very helpful for getting job.	the students of Computer Science
	and Engineering after getting the
	approval from board of studies and
	academic council.
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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

23-03-2019

JOTE

As per the action taken report dated 09-04-2018, the suggestions of stake holders on curriculum and syllabus are incorporated in the courses offered under 2018 regulation and approved by board of studies and academic council.

Hell Df the Department Department of Computer Science & Enginee PSN College of Engineering & Technol (Autonomous Institution)

Enclosure:

Curriculum (Regulation 2018) of department of Computer Science and Wightedlygor, Tirunelveli - 627 1



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Melathediyoor, Tirunelveli - 627 152

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

B.E-CSE

CURRICULUM (SEMESTER I TO SEMESTER VIII)

R-2018

(Applicable to the students admitted to first year B.E. from the academic year 2018-2019 onwards)



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epartment Head of Department of Computer Science & Engineering PSN College of Engineering & Technology (Autonomous Institution) Melathediyoor, Tirunelveli - 627 152

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UG - CURRICULUM – 1st TO 8th SEMESTER

I – SEMESTER

Sl. No	Subject Code	Subject Name	L	T	P	С
The	ory					
.1	501001	Technical English	3	0	0	3
2	501002	Elementary Mathematics for Engineers	3	0	0	3
3	501003	Applied Physics I	3	0	0	3
4	501004	Applied Chemistry I	3	0	0	3
5	501005	Engineering Graphics	2	0	2	3
6	501006	Fundamentals of Computers and Python Programming	3	0	0	3
Pra	ctical					
7	501101	Applied Physics & Chemistry Lab - I	0	0.	3	2
8.	501102	Computer Lab	0	0	3	2
.9	501103	Workshop Practice	0	0	3	2
		Total	17	0	11	24

II – SEMESTER

Sl. No	Subject Code	Subject Name	L	Т	P	С			
The	Theory								
1	501007	Business Communication and Presentation Skills	3	0 V	0	3			
2	501008	Engineering Mathematics – I	3	0	0	3			
3	501009	Applied Physics II	3	0	0	3			
4	501010	Applied Chemistry II	3	0	0	3			
5	501011	Engineering Mechanics	3	0	0	3			
6	501012	Programming in C	2	0	0	2			



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Head of the Department Department of Computer Science & Engineering PSN College of Engineering & Technology (Autonomous Institution) Melathediyoor, Tirunelveli - 627 152.

PSN COLLEGE OF ENGINEERING & TECHNOLOGY MELATHEDIYOOR, PALAYAMKOTTAI TALUK TIRUNELVELI DIST. - 627 152.

501013	Basic Engineering (Coming under EEE Board)	2	0	0	2					
					2					
Practical										
501104	Applied Physics & Chemistry Lab II	0	0	3	2					
501105	C Programming Lab	0	0	2	1					
501106	Basic Electrical and Electronics Lab	0	0	3	2					
	Total	19	• 0	8	24					
_	501105 . 501106	501105 C Programming Lab 501106 Basic Electrical and Electronics Lab Total	501105C Programming Lab0501106Basic Electrical and Electronics Lab0Total 19	501105C Programming Lab00501106Basic Electrical and Electronics Lab00Total19	501105C Programming Lab002501106Basic Electrical and Electronics Lab003Total1908					

III – SEMESTER

Sl. No	Subject Code	Subject Name	L	Т	P	C		
The	Гћеогу							
1	501014	Engineering Mathematics - II	4	· 0	0	4		
2	503001	Computer Architecture	3	0	0	3		
3	503002	Database Management Systems	.3	0	0	3		
. 4	503003	OOPs and Data Structures	3	0	0	3		
5	503004	Operating Systems	3	0	0	3		
6.	503005	Digital Electronics and Microprocessor	3	0 [.]	0	3		
Pra	ctical							
7	503101	Database Management Systems Lab	0	0	3	2		
8	503102	OOPs and Data Structures Lab	0	0	3	2		
9	503103	Digital and Microprocessor Lab	0	· 0	3 ·	2		
10	501109	Career-Skill Development-I	0	0	2	1		
		Total	18	1	11	26		
Ma	ndatory Course	•						
11	501801	Environmental Science	2	0	0	2		



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IV – SEMESTER

Sl. No	Subject Code	Subject Name	L	Т	P	C
The	eory					
1	501020	Engineering Mathematics - III	3	1	0	4
2.	503006	Computer Networks	3	0	0	.3
3	503007	Java Programming	3	0	0	3
4	503008	Design and Analysis of Algorithms (Practical Component Paper)	3	0	2	4
5	503009	Software Engineering	3	0	0	3
6.	503010	Microcontroller and Embedded Systems	3	0	0	3
Pra	ctical					
7	503104	Computer Networks Lab	0	0	3	2
8	503105	Java Programming Lab	0	0	3	2
9	503106	Microcontroller and Embedded Systems Lab	0	0	3	2
10	501113	Career Skill Development Training—II	0	0	2	1
	Total				13	27

V-SEMESTER

			· ·	•		
SI. No	Subject Code	Subject Name	L	T	P	С
Theory						
1	503011	Numerical Methods	3	0	0	3
2	503012	Compiler Design (Practical Component Paper)	3	0	2	4
3	503013	Internet Programming	3	0	0	3
4	503014	Object Oriented Analysis and Design	3	0	0	3
5	503015	Digital Signal Processing	3	1	0	4
6	×.	Open Elective – I	3	0	0	3
Prac	etical			•		
7 ·	503107	Internet Programming Lab	0	0	3	2
·8	503108	Object Oriented Analysis and Design Lab	0	0	3	2
		UCINICA			D	



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9.	501115	Career Skill Development Training-III	0	0 [.]	2	1					
		• Total	18	1	10	25					
Man	Mandatory Course										
10	501802	Value Education and Human Rights	2	0	0	2					
		In-plant Training									

Sl. No	Subject Code	Subject Name	L	Т	Р	C
The	ory					
1	503016	Discrete Mathematics	3	0	0	3
.2	503017	Computer Graphics and Multimedia	3	0	0	3
3	503018	Data Warehousing and Data Mining	3	0	0	3
4		Elective - I	3	[.] 0	0	3
5	1142a	Elective - II	3	0	0	3
6		Open Elective – II	3	0	0	3
Pra	ctical					
7	503109	Computer Graphics and Multimedia Lab	0	0	3	2
8	503110	Data Warehousing and Data Mining Lab	0	0	3	2
9.	501118	Career Skill Development Training IV	0	0	2	1
I		Total	18	0	8	23

VI – SEMESTER

VII - SEMESTER

SI. No	Subject Code	Subject Name	\mathbf{L}	Т	Р	С
The	Theory .					
1	503019	Total Quality Management	3	0	0	3
2	503020	Cloud Computing	3	0	0	3
3	503021	C# and .NET Programming	3	0	0	3
4	503022	Mobile Computing (Practical Component)	3	0	2	4

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5		Elective –III		3	0	0	3
6.		Elective – IV		3	o	0	3
7		Elective – V		3	0	0	3
Pra	ctical	· ·					
8	503111	C# and .NET Programming Lab		0	0	3	2
9	503301	Mini Project		0	0	3	2
			Total	21	0	8	26
Mai	ndatory Cours	e .					
		Internship Training		2	0	0	2

VIII - SEMESTER

SI. No	Subject Code	Subject Name	2	L	Т	Р	С				
Practical											
1	503302	Project Work		0	0	15	6				
		L	Total	0	0	15	6				

Total Credits:133

Open Electives (OE) (For other Departments)

Sl. [.] No	Subject Code	Subject Name	L	Т	P	C
1	503901	Cloud Computing	3	0	0	3
2	503902	Java Programming	3	0	0	3
3	503903	Operating Systems	3	0	0	3

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Head pit the Department Department of computer Science & Engineering PSN College of Engineering & Technology, (Autonomous positivition) epartment Melathediyoor, Tirunciveli - 622/110

LIST OF ELECTIVES

	Semester – VI (Elective - I)										
Sl.· No	Subject Code	Subject Name	L	Т	P	C					
1	503201	Advanced Database Technology	3	0	0	3					
2	503202	Bio-Informatics	3	0	0	3					
3	503203	Cryptography and Information Security	3	0	0	3					
4	503204	Object Oriented Software Engineering	2	. 0	0	2					
5	503205	Pervasive Computing	2	0	0	2					
6	503206	Supply Chain Management	1	0	0	1					
7	503207	Web Applications Development	1	0	0	1					

•		Semester – VI (Elective - II)				
SI. No	Subject Code	Subject Name	L	Т	P	С
1	503208	Big Data	3	.0	0	3
2	503209	Soft Computing Techniques	3	. 0	0	3
3	503210	Wireless Networks	3	0	0	3
4	503211	Graph Theory	2	0	0	2
5	503212	Software Metrics	2	0	0	2
6	503213	Multimedia Techniques	· 1	0.	0	1
7	503214	UNIX Internals	1	0	0	1

	Semester – VII (Elective - III)										
Sl. No	Subject Code	Subject Name	L	Т	P	C					
1	503215	Advanced Computer Architecture	3	· 0	0	3					
2	503216	Digital Image Processing	3	0	0	3					
3	503217	Software Testing	3	0	0	3					
4	503218	Distributed Systems	2	0	0	2					



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5	503219	Robotics	Ż	0	0	2
6	503220	User Interface Design	2	0	0	2
7	503221	Information Retrieval Techniques	1	0	0	1
8.	503222	Software Reliability	1	0	0	1
9	503223	Team Software Process and Personal Software Process	1	0	0	1

		Semester – VII (Elective - IV)				
SI. No	Subject Code	Subject Name	L	·T	Р	С
1	503224	Advanced Operating Systems	3	0	0	3
2	503225	Software Project Management	3	0	0 ·	3
3	503226	Theory of Computation	3	0	0	3
4.	503227	Component Based Development	2	0	0	2
5.	503228	Real Time Systems	2	0	0	2
.6	503229	Software Quality Assurance	2	0	0	2
7	503230	Network Security	1	0	0	1
8	503231	Professional Ethics	1	0	0	1
9	503232	Semantic Web	1	0	0	1

		Semester – VII (Elective - V)				
SI. No	Subject Code	Subject Name	L	Т	Р	С
1 .	503234	High Speed Networks	3	0	0	3
2 .	503235	Human Computer Interface	3	0	0	3
3	503236	Internet of Things	3	0	0	3
.4	503237	Parallel Computing	2	0	0	2
5	503238	Software Architecture	2	0	0	2
6	503239	Software Design	2	. 0	0	2
7	503240	E-Commerce	1	0	0	1
8	503241	Enterprise Resource Planning	1	0	0	1
9	503242	Grid Computing	1	0	0	1

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Head on the Dipartment Department of Computer science & Engineering PSN College of Engineering & Technology (Autonomous Institution) Melathediyoor, Tirunelveli - 627 152

PSN College of Engineering and Technology (AUTONOMOUS)

Melathediyoor, Tirunelveli

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

27/04/2018

NOTE

As per the action taken report dated, the suggestions of stake holders on curriculum and syllabus are incorporated in the courses offered under 2018 regulation and approved by board of studies and academic council.

PROF AND HEAD Department of ECE PSN College Of Engs & Tech Rielsthadtycor Tirunelveli - 617 152

Enclosure:

Curriculum (Regulation 2018) of department of Electronics and Communication Engineering.



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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

STAKEHOLDER FEEDBACK ON

CURRICULUM & TEACHINGLEARNING ANALYSIS

Academic Year 2017-18

20/04/2018

The following points were suggested by the stakeholders in feedback on curriculum& teaching-learning:

- 1) Subjects for developing communication skills may be included.
- 2) Some new subjects related to develop the entrepreneurship skill may be introduced as electives.
- 3) Smart class rooms may also introduced.
- 4) In plant trainings should be mandatory to understand industrial scenario.
- 5) Practical oriented training can be given.
- 6) Project based assignments to be given to the students
- 7) Latest topics which are required in the industry to be included in curriculum.
- 8) More number of new electives can be added to curriculum.
- 9) Mini project is included as mandatory course
- 10) Latest technologies like Low Power VLSI design, robotics and automation may be included.
- 11) Practical oriented teaching methodology may be incorporated to embedded system with practical components (Semester VI) subject for better understanding.



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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

27/04/2018

ACTION TAKEN REPORT ON STAKEHOLDER FEEDBACK ON

CURRICULUM & TEACHING-LEARNING

	Stakeholders Suggestion	Action Taken
1)	Subjects for developing communication skills may	The Suggestions received from
	be included.	stake holders on the curriculum and
2)	Some new subjects related to develop the	syllabus feedback was taken up in
	entrepreneurship skill may be introduced as	the Programme Assessment
	electives.	Committee (PAC) of department of
3)	Smart class rooms may also introduced.	Electronics and Communication
4)	In plant trainings should be mandatory to	Engineering All the suggestion
	understand industrial scenario	Lingineering. All the suggestions
5)	Practical oriented training can be given	were unanimously accepted by the
6)	Project based assignments to be given.	faculty members and it is decided to
	students	incorporate them in the 2018
7)		regulation. Hence the faculties were
(')	Latest topics which are required in the industry to be	requested to incorporate the
	included in curriculum.	suggestions in the respected courses
8)	More number of new electives can be added to	and frame the syllabus. This will be
	curriculum.	implemented from the academic
9)	Mini project is included as mandatory course	year 2018 -19 under 2018
10) Latest technologies like Low Power VLSI design,	regulation for the students of
	robotics and automation may be included.	Electronics and Communication
11)	Practical oriented teaching methodology may be	Engineering after getting the
	incorporated to embedded system with practical	approval from board of studies and
	components (Semester VI) subject for better	academic council.
	understanding.	

PROF AND HEAD Department Of ECE PSN College Of Entracher Melathedi Of 152 Tirunelvell 0,7 152 Tirunelvell 0,7 152 Tirunelvell 0,7 152 0,7 152

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

20-04-2018

STAKEHOLDER FEEDBACK ON CURRICULUM & TEACHING-LEARNING ANALYSIS Academic Year 2017-18

The following points were suggested by the stakeholders in feedback on curriculum & teaching-learning:

- 1. A core course may be included in the curriculum to study and encourage the usage of Electric Vehicles among students.
- 2. In the Power Electronics course, topics on the conventional power diodes may be replaced by integrated gate-commutated thyristor.
- 3. In the Power Electronics course, the applications ac to ac converter can be incorporated.
- 4. In the Power Electronics Laboratory course, the characteristics of GTO & IGCT may be included.
- 5. The students of EEE must study the power plant engineering as a core subject. Hence it can be included as core subject.
- 6. The power system simulation laboratory may be conducted in two phases.
- 7. Personality development related courses may be included in the curriculum to enhance job skills.
- 8. More number of new electives can be added to curriculum.
- 9. Inplant trainings should be mandatory to understand industrial scenario.
- 10. Subjects for developing soft skills may be included. That will be very helpful for getting job.

HoD/EEE

Head of the Department. Dept. of EEE PSN College of Engg & Tech Tiruneivell 627152



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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

27-04-2018

ACTION TAKEN REPORT ON STAKEHOLDER FEEDBACK ON CURRICULUM & TEACHING-LEARNING

Action Taken **Stakeholders Suggestion** 1. A core course may be included in the curriculum to study The suggestions received from stake and encourage the usage of Electric Vehicles among holders on the curriculum and students. syllabus feedback was taken up in 2. In the Power Electronics course, topics on the conventional Assessment Programme power diodes may be replaced by integrated gatethe Committee (PAC) of Department of commutated thyristor. and Electronics Electrical 3. In the Power Electronics course, the applications ac to ac Engineering. All the suggestions converter can be incorporated. 4. In the Power Electronics Laboratory course, were unanimously accepted by the the faculty members and it is decided to characteristics of GTO & IGCT may be included. 5. The students of EEE must study the power plant engineering incorporate them in the 2018 as a core subject. Hence it can be included as core subject. regulation. Hence the faculties were 6. The power system simulation laboratory may be conducted requested incorporate the to suggestions in the respective courses in two phases. 7. Personality development related courses may be included in and frame the syllabus. This will be the curriculum to enhance job skills. implemented from the academic year 8. More number of new electives can be added to curriculum. 2018-19 under 2018 regulation for 9. Inplant trainings should be mandatory to understand the students of Electrical and Electronics Engineering after getting industrial scenario. Subjects for developing soft skills may be included. the approval from board of studies 10. That will be very helpful for getting job. and academic council. TIRUNELVEL DISTRICT PRINCIPAL HoD/EEE 627 152

Head of the Department, Dept. of EEE PSN College of Engg & Teco Tiruneivel: 527152

Tiruneiveli 627152 PSN COLLEGE OF ENGINEERING & TECHNOLOGY

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

27-04-2018

NOTE

As per the action taken report dated 27-04-2018, the suggestions of stake holders on curriculum and syllabus are incorporated in the courses offered under 2018 regulation and approved by board of studies and academic council.

HOD/EEE

Head of the Department. Dept. of EEE

Enclosures:

Curriculum (Regulation 2018) of Department of Electrical and Electronics Engineering. e.ge of Engg & Tech
 Syllabus of Power Electronics course (Semester V).



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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

CURRICULUM AND SYLLABUS

PRINCIPAL PSN COLLEGE OF ENGINEERING & TECHNOLOGY (Regulation-2018) TIRUNELVELI DIST. - 627 YS2.

I semester to VIII semester



6	501012	Programming in C	2	0	0	2
7	501013	Basic Engineering (Coming under EEE Board)	2	0	0	2
	-	PRACTICAL				
8	501104	Applied Physics & Chemistry Lab II	0	0	3	2
9	501105	C Programming Lab	0	0	2	1
10	501106	Basic Electrical and Electronics Lab	0	0	3	2
		TOTAL	19	0	8	24

SEMESTER III

S. No	Course code	Course title	L	T	P	C
THEO	RY					
1	501014	Engineering Mathematics II	3	1	0	4
2	504001	Electric circuits and Networks (Practical	3	0	2	4
		Component)				10.23
3	504002	Electrical Machines –I	3	0	0	3
4	504003	Electromagnetic Field theory	3	0	0	3
5	504004	Electronic Devices and circuits	3	0	0	3
6	504005	Measurements & Instrumentation	3	0	0	3
		PRACTICAL				
7	504101	Electrical Machines - I Laboratory	0	0	3	2
8	504102	Electronic Devices and Circuits Laboratory	0	0	3	2
9	504103	Measurements and Instrumentation	0	0	2	1
		Laboratory				
10	501109	Career Skill Development Training – I	0	Q	2	1
		TOTAL	18	1	12	26
	1ª s					
MANI	DATORY COUR	RSE				
11	501801	Environmental studies	2	0	0	0
-		SEMESTER IV			-	
S. No	Course code	Course title	L	Т	P	C
THEO	DRY			1	1	
1	501020	Engineering Mathematics – III	3	1	0	4
	1	1/3				-

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PRINCIPAL PSM COLLEGE OF ENGINEERING & TECHNOLOGY NIELATHEDIYOOR, PALAYAMKOTTAI TALUK TIRUNELVELI DIST. - 627 152.

2	504006	Electrical Machines –II	3	0	0	3
3	504007	Control System (Practical Component)	3	0	2	4
4	504008	Transmission and Distribution	3	0	0	3
5	504009	Conventional and Non-conventional Energy Sources	3	0	0	3
6	504010	Linear Integrated and Digital logic Circuits	3	0	0	3
PRAC	CTICAL					
7	504104	Electrical Machines - II Laboratory	0	0	3	2
8	504105	Linear Integrated and Digital Circuits Laboratory	0	0	3	2
9	501113	Career Skill Development Training – II	0	0	2	1
		TOTAL	18	1	10	25
MAN	DATORY COL	JRSE				
INDU	STRIAL VISIT			_	-	_

SEMESTER V

S.No	Course code	Course title	L	T	Р	С
THEO	RY					
1	504011	Power System Analysis	3	1	0	4
2	504012	Power Electronics	3	0	0	3
3	504013	Design of Electrical Machines	3	1	0	4
4	504014	Object Oriented Programming	2	0	0	2
5	503015	Digital Signal Processing	3	1	0	4
6		Open Elective –I	3	0	0	3
PRAC	TICAL					
7	504106	Object Oriented Programming Laboratory	0	0	3	2
8	504107	Power Electronics Laboratory	0	0	3	2
9	501115	Career Skill Development Training – III	0	0	2	1
		TOTAL	17	3	8	25
MANI	DATORY COUL	RSE				
10	501802	Value Education and Human Rights	2	0	0	2

Inplant Training

SEMESTER VI

S. No	Course code	Course title	L	Т	P	C
THEO	RY	-P-	1			
1	504015	Industrial Automation	3	0	0	3
2	504016	Power system operation and control	3	1	0	4



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3	504017	Microprocessor and Microcontroller	3	0	0	3
4	504018	Solid State Drives	3	0	0	3
5		Open Elective –II	3	0	0	3
6		Elective – I	3	0	0	3
7		Elective – II	3	0	0	3
PRAC	TICAL					
8	504108	Micro Processor and Micro Controller Laboratory	0	0	3	2
9	504109	English Language Lab for Engineers	0	0	3	2
10	504110	Power system Simulation Laboratory – I (Internal Evaluation only)	0	0	2	1
11	501116	Career Skill Development Training – IV	0	0	2	1
		TOTAL	21	1	9	28

MANDATORY COURSE

Mini Project / Seminar (Internal Evaluation only)

SEMESTER VII

S. No	Course code	Course title	L	T	P	C
THEO	RY					
1	504019	Power system Transients	3	0	0	3
2	504020	Conservation and Utilization of Electrical energy	3	0	0	3
3	504021	Special Electrical Machines	3	0	0	3
4	504022	Protection and switch gear	3	0	0	3
5	504023	Electric Vehicles	3	0	0	3
6		Elective – III	3	0	0	3
7		Elective – IV	3	0	0	3
PRAC	TICAL					
8	504111	Power System Simulation Laboratory – II	0	0	3	2
9	504112	Electrical Estimation, Costing and power wiring Laboratory (Internal Evaluation only)	0	0	2	1
10	504113	Embedded and Intel system lab (Internal Evaluation only)	0	0	2	1
		TOTAL	21	0	9	25

MANDATORY COURSE

Internship Training



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		SEMESTER VIII				
S.No	Course code	Course title	L	T	P	C
1	504301	Project Work	0	0	15	6
		TOTAL	0	0	15	6
		TOTA LIST OF ELECTIVE – I	AL CH	REDIT	'S: 18	5
S. No	Course code	Course title	L	T	P	C
1	504201	Principles of Management	3	0	0	3
2	504202	Professional Ethics in Engineering	3	0	0	3
3	504203	Computer networks	3	0	0	3
4	504204	Fundamentals of NANO Technology	3	0	0	3
5	504205	Power Quality	3	0	0	3
		LIST OF ELECTIVE – II		-		
S. No	Course code	Course title	L	Т	P	C
1	504206	Bio medical Instrumentation	3	0	0	3
2	504207	Total Quality Management	3	0	0	3
3	504208	Microcontroller based system design	3	0	0	3
4	504209	Power system dynamics	3	0	0	3
5	504210	Flexible AC Transmission Systems	3	0	0	3
		LIST OF ELECTIVE – III		_	-	
S. No	Course code	Course title	L	T	P	C
THEO	RY					
1	504211	Power System Deregulation	3	0	0	3
2	504212	Photonics	3	0	0	3
3	504213	Modern Control System	3	0	0	3
4	504214	Smart grid	3	0	0	3
5	504215	Solar Photovoltaic Systems	3	0	0	3
		LIST OF ELECTIVE - IV		-	-	
S. No	Course code	Course title	L	T	P	C
гнео	RY				-	
	504216	Soft Computing Techniques	3	0	0	3
2	504217	Sensors and Transducers	3	0	0	3
3	504218	Power Electronic applications in power	3	0	0	3
		system				
1	504219	Vehicular Power Systems	3	0	0	3
5	504220	MEMS and NEMS	3	0	0	3
		LIST OF OPEN ELECTIVES		_		
S. No	Course code	Course title	L	Т	P	C
THEO	RY	N.		-		

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DISTRIBUTION SYSTEM

UNIT V

9

Feeders - distributors and service mains- DC 2-wire distributor – radial and ring main distribution. AC distribution – single phase (with concentrated and distributed loads) and three phase 3-wire and 4-wire distribution with balanced and unbalanced loads.

TOTAL: 45 PERIODS

COURSE OUTCOMES:

Upon completion of this Course the students will able to,

CO1: Explain the fundamentals of transmission system

CO2: Calculate the value of Transmission line parameters

CO3: Design and analyze the performance of Transmission lines

CO4: Discuss the functions of insulators and cables.

CO5: Explain the features of Distribution Systems

TEXT BOOKS:

- 1. V.K.Mehta, Rohit Mehta, "Principles of power system", S. Chand, New Delhi, 4 th revised edition, 2008.
- 2. S.L. Uppal, "Electrical Power" Khanna Publishers, 13 th edition, 2014.

REFERENCES:

- Hadi Saadat, "Power System Analysis," Tata McGraw Hill Publishing Company", 2nd edition, 2008.
- S.N. Singh, "Electric Power Generation, Transmission and Distribution", Prentice Hall of India Pvt. Ltd, New Delhi, fourth printing 2005.
- 3. C.L.Wadhwa, "Electrical power system", New age international, first Edition, 2016.

504009 CONVENTIONAL AND NON-CONVENTIONAL ENERGY L T P

COURSE OBJECTIVES:

To impart knowledge on the various energy resources and their applications.

To impart knowledge on the construction and operation of various conventional power generation.

To impart knowledge on the construction and operation of various non-conventional power generation.

CO-PO MAPPING:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	POIL	PO12	PSO1	PSO2
COI	3	1	1	1	-	3	-	-	1	1	1	3		
CO2	3	1	1	1		3		-	1	1	1	3		
CO3	3	1	1	1	-	3	-	-	1	1	1	3		
CO4	3	1	1	1	-	3		-	1	1	1	3		
CO5	3	1	1	1	-	3	-	-	1	1	1	3		

UNIT I THERMAL AND HYDRO POWER PLANTS

Basic thermodynamic cycles- Various components of steam power plant-layout - pulverized coal



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PRIME I PAL PRI COLLEGE DE ENGINEERING & TECHNOLOGY MELATHEDIYOOR, PALAYAMKOTTAI TALUK TIRUNELVELI DIST. - 627 152. 1. John J. Grainger, William D. Stevenson, Jr, 'Power System Analysis', Mc Graw Hill Education (India) Private Limited, New Delhi, 2015.

2. Hadi Saadat, 'Power System Analysis', Tata McGraw Hill Education Pvt. Ltd., New Delhi, 21st reprint, 2010

REFERENCE BOOKS:

1. John.J.Grainger, William D. Stevenson, "Power System Analysis", Tata McGraw Hill, New Delhi 2008.

2. Pai M A, 'Computer Techniques in Power System Analysis', Tata McGraw-Hill Publishing Company Ltd., New Delhi, Second Edition, 2007.

3. J. Duncan Glover, Mulukutla S.Sarma, Thomas J. Overbye, 'Power System Analysis & Design', Cengage Learning, Fifth Edition, 2012.

504012

POWER ELECTRONICS

COURSE OBJECTIVES:

To understand the importance and the functioning of electronic devices for conversion, control, applications and conditioning of electronic power.

1200	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
COL	3	3	-	-	I	-	-	1	-	-	1	-		
CO2	3	3	-	-	1	-	1		-	-	-	2	1	1
CO3	3	3	-	-	1		-	-	-	-	-	-	2	1
CO4	3	3	-	-	1	1	-	-	1	2	-	-	-	1
CO5	3	3	-	-	1	1	-	-	1	-	1	2	-	2

CO-PO MAPPING:

UNIT 1 POWER SEMI - CONDUCTOR DEVICES

Operation and characteristics - power transistor- power diode - SCR- TRIAC- power MOSFET-Power IGBT- GTO – IGCT-turn-on and turn-off methods- two transistor model of SCRswitchingcharacteristics of MOSFET - IGBT-Introduction to Driver and Snubber circuits.

UNITII AC TO DC CONVERTERS

Introduction to half wave- full wave and bridge rectifiers- Single phase half controlled and Fully controlled converters (R-RL-RLE Load with and without freewheeling diode)-Three phase(semi and full converter)— twelve pulse converter- Effect of source impedance – performance parameters – Dual converters – Applications-Battery charger

UNIT III CHOPPERS

Thyristor commutation techniques - natural and forced commutation – Principle of chopper operation – Step up and Step down choppers – Chopper Classification –Chopper Configuration Control Strategies- Switching mode regulators-Buck-Boost-Buck-Boost converter- Applications-Switching Mode Power Supplies- Battery operated vehicles



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UNIT IV INVERTERS & UPS

Single phase and three phase (both 120[°] mode and 180[°] mode) Voltage Source inverters -Current source inverter - Voltage and harmonic control- PWM techniques: Sinusoidal PWMmodified sinusoidal PWM - multiple PWM - Introduction to Space vector Modulation -Applications- Induction heating, UPS.

UNIT V AC TO AC CONVERTERS

Single phase and Three Phase AC voltage controllers – Multistage sequence control - single and three phase cyclo converters –Introduction to Integral cycle control- Power factor control and Matrix converters- Application- light dimmers.

LECTURES: 45

TOTAL: 45 PERIODS

9

COURSE OUTCOMES:

Upon completion of this Course, the students will have the able to

- CO1: Understand the different types of power semi-conductor devices and their switching characteristics.
- CO2: Study the operation- characteristics and performance parameters of controlled rectifiers and their real time applications.
- CO3: Learn the operation- switching techniques, the real time applications and basic topologies of DC-DC switching regulators.
- CO4: Study the different modulation techniques of pulse width modulated inverters and the harmonic reduction methods and the inverters real time applications.
- CO5: Attain the knowledge about the operation of AC voltage controller, real time application and Matrix converters.

TEXT BOOK

- 1. Muhammad H. Rashid., "Power Electronics: Circuits, Devices and Applications", Prentice Hall of India, Pearson education, 4rd edition, 2014
- 2. P.S. Bimbhra, "Power Electronics", Khanna Publishers, 5rd Edition, 2017.

3. Ashfaq Ahmed 'Power Electronics for Technology', Pearson Education, India, reprint, 2013.

REFERENCE BOOKS

- 1. Singh.M.D and Kanchandani, "Power Electronics", Tata McGraw Hill publication Company Ltd, New Delhi, 2014 Third edition.
- 2. L. Umanand, "Power Electronics Essentials and Applications", Wiley, 2012.
- 3. Ned Mohan Tore. M. Undel and, William. P. Robbins, 'Power Electronics: Converters, Applications and Design', John Wiley and sons, third edition, 2015.

504013 DESIGN OF ELECTRICAL MACHINES

L	Т	Р	C
3	1	0	4

COURSE OBJECTIVES:

To understand the design and applications of DC &AC machines

To introduce the basic design concepts and cooling arrangement of transformers.

To understand the computer aided design.



- 7. AC to DC half controlled converter
- 8. Step down and step up MOSFET based choppers
- 9. IGBT based single phase PWM inverter
- 10. Characteristics of GTO & IGCT.
- 11. Simulation of PE circuits ($1\Phi \& 3\Phi$ semi converters, $1\Phi \& 3\Phi$ full converters, DC-DC converters).
- 12. Resonant de de converter by zero voltage switching
- 13. Resonant dc to dc converter by zero current switching

COURSE OUTCOMES:

After completing this course, the student will be able to:

- CO1: Attain practical knowledge in the operation of switching devices
- CO2: Able to study the characteristics of power electronics devices.
- CO3: Measure the various waveform of AC-DC half and full converters.
- CO4: Acquire the knowledge on simulation software.
- CO5: Understand the concept of DC-DC converter and chopper

501115 CAREER SKILL DEVELOPMENT – III L T P C

0 0 2 1

TOTAL: 45 PERIODS

COURSE OBJECTIVE:

To empower the students with skill sets required for their overall personality development To improve the standard of students for their employability.

CO-PO MAPPING:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	2	2	2	1	2		1	3	1	2	2		
CO2	2	2	2	2	1	2		1	3	1	2	2		
CO3	2	2	2	2	1	2		1	3	1	2	2		
CO4	2	2	2	1	2		1	3	1	2	2	2		
CO5	2	2	2	2	1	2		1	3	1	2	2		

UNIT I LINGUISTICS SKILLS

Logical sequence of words, higher level Reading Comprehension, Paragraph writing, Jumbled words, Sentence Rearrangement, Error Spotting, Idioms & Phrases, Word Substitution, and Synonyms & Antonyms.

UNIT II QUANTITATIVE ABILITY

Number theory, Percentage, Profit loss and discount, Simple and compound interest, Problems on Average & Ages, Ratio & Proportions, Mixtures and allegation, Time speed and distance-Train problems-boats and streams, Time and work -Pipes and cisterns, Probability, Permutation and combination, Mensuration, Clocks, Calendars,

UNIT III REASONING ABILITY

Analytical reasoning - Linear and circular arrangement, Blood relation, Direction Problems Logical reasoning - Number and Alpha series, coding and decoding, syllogisms, cubes, Ranking



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- 5.1. Body language and communication
- 5.2. Dyadic communication exercises
- 5.3. Soft skills (Work place)
- 5.4. Technical Report preparation

TOTAL: 45 PERIODS

COURSE OUTCOMES:

At the end of the course, the students will be able to

CO1: Communicate using right pronunciation.

CO2: Communicate with one or many listeners' using appropriate communicative strategies.

CO3: Write cohesively and coherently and flawlessly avoiding grammatical errors

CO4: To acquire through knowledge in Technical writing skills.

CO5: To acquire knowledge to enhance communication skills.

TEXT BOOK:

1. Lab Manual Prepared by English Department. PSNCET

REFERENCE BOOKS:

1. Dr.R.Senapathi Communication Skills Lakshmi Publications, Chennai, 2012

- 2. Lesikar ,Raymond V.John Pettit ,and Mary E Flatly Lesikar's,Basie Business Communication,10th ed.Tata McGraw-Hill, New Delhi, 2007.
- 3. Bovee, Courtland and John V Thill, Business Communication Today, 8 th ed., Pearson Education, New Delhi, 2008.
- 4. William Sanborn, Technical Communications Pearson education, 2006

504110 POWER SYSTEM SIMULATION LABORATORY – 1



COURSE OBJECTIVE:

To develop simple Matlab programs for the basic power system formulation.

To acquire experience in the usage of standard packages for power transmission and Distribution/ Simulation / control functions.

CO-PO MAPPING:

				1	Ince	Inch	DO7	POS	PO9	PO10	PO11	PO12	PSO1	PSO2
	PO1	PO2	PO3	PO4	PO5	POo	101	100	107	1010	1011	1		1
001	1	2	1	2	2		1		1	1	1	3	2	1
:01	3	3			-		1		1	1	1	3	1	
:02	3	3	1	1	2		1			1	1	2		2
02	3	2	2	1	2		1		1	1	1	3		-
03		-		12	17		1		1	1	1	3	2	3
:04	3	2	1	12	4				1	1	1	3	1	1
05	3	2	1	1	2		1		1	1	1	3	1	1.

LIST OF EXPERIMENTS:

1. Formation of Bus Admittance Matrix for given networks

- 2. Formation of Bus Impedance Matrix for given networks
- 3. Computation parameters of single Phase two wire transmission system
- 4. Computation parameters of three Phase symmetrical and unsymmetrical transmission system
- 5. Computation parameters of three Phase horizontal conductors of transmission system





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CO5: Compare the different type of circuit breakers performance based on which selection of circuit breaker can be made for a given application

TEXT BOOKS:

1. Badri Ram, B.H. Vishwakarma, 'Power System Protection and Switchgear', New Age International Pvt Ltd Publishers, Second Edition, 2011.

2. Y. G. Parithankar & S. R. Bhide, "Fundamentals of Power System Protection", 2nd edition, PHI, 2010

3. B.Rabindranath and N.Chander, 'Power System Protection and Switchgear', New Age International (P) Ltd., First Edition 2011.

REFERENCES:

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1. Y.G.Paithankar and S.R.Bhide, 'Fundamentals of power system protection', Second Edition, Prentice Hall of India Pvt. Ltd., New Delhi, 2010.

2. C.L.Wadhwa, 'Electrical Power Systems', 6th Edition, New Age International (P) Ltd., 2010

3. Ravindra P.Singh, 'Switchgear and Power System Protection', PHI Learning Private Ltd., New Delhi, 2009.

ELECTRIC VEHICLES

COURSE OBJECTIVES:

To introduce the fundamental concepts, principles, analysis and design of hybrid, electric and fuel cell vehicles.

CO-PO MAPPING:

CO/PO	POI	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	POII	PO12	PSO1	PSO2
COI	3	3		-	1	-	-	I	-	-	1	-		
CO2	3	3		-	1	-	1	-	2	-	-	2		
CO3	3	3		1	1	-	-		-	-	-	-		
CO4	3	3		-	1	1	-	-	1	2		-		
CO5	3	3			1	I	-	-	1	-	1	2		

UNIT I INTRODUCTION

Introduction, Components, vehicle mechanics – Roadway fundamentals, vehicle kinetics, Dynamics of vehicle motion - Propulsion System Design.

UNIT II BATTERY

Basics – Types, Parameters – Capacity, Discharge rate, State of charge, state of Discharge, Depth of Discharge, Technical characteristics, Battery pack Design, Properties of Batteries, operating features of Li-ion battery.

UNIT III DC & AC ELECTRICAL MACHINES

Motor and Engine rating, Requirements, DC machines, Three phase A/c machines, Induction machines, permanent magnet machines, switched reluctance machines.

UNIT IV ELECTRIC VEHICLE DRIVE TRAIN

Transmission configuration, Components - gears, differential, clutch, brakes regenerative



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braking, motor sizing.

UNIT V HYBRID ELECTRIC VEHICLES

Types – series, parallel and series, parallel configuration – Design – Drive train, sizing of components.

TOTAL: 45 PERIODS

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COURSE OUTCOMES:

After learning the course the students should be able to:

CO1: Understand the working of different configurations of electric vehicles.

CO2: Understand the hybrid vehicle configuration and its components, performance analysis

CO3: Understand the properties of batteries and its types

CO4: Understand the electric vehicle drive systems

CO5: Understand the hybrid electric vehicles

TEXT BOOKS

1. Larminie, James, and Lowry, John. Electric Vehicle Technology Explained. Germany, Wiley, 2012.

2. Iqbal Hussain, "Electric & Hybrid Vehicles – Design Fundamentals", Second Edition, CRC Press, 2011.

3. Muneer, Tariq, Electric Vehicles: Prospects and Challenges. Netherlands, Elsevier Science, 2017.

REFERENCES:

1. Mehrdad Ehsani, Yimin Gao, Ali Emadi, "Modern Electric, Hybrid Electric, and Fuel Cell Vehicles: Fundamentals", CRC Press, 2010.

2. Hybrid Electric Vehicles. Croatia, IntechOpen, 2017.

504111 POWER SYSTEM SIMULATION LABORATORY - II L T P C

COURSE OBJECTIVE:

To provide better understanding of power system analysis through digital simulation.

CO-PO MAPPING:

	POL	PO2	PO3	PO4	PO5	P06	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
COL	13	13	1	2	2		1	1200	1	1	1	3	2	1
001	3	3	1	1	2		1		1	1	1	3	1	
CO2	3	2	2	1	2	-	1		1	1	1	3		2
CO4	3	2	1	2	2		1		1	1	1	3	2	3
CO5	1	2	1	1	2	1725	1		1	1	1	3	1	1

LIST OF EXPERIMENTS:

- 1. Formation of Bus Admittance and Impedance Matrices and Solution of Networks
- 2. Power Flow Analysis using Gauss-Seidel Method

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- 3. Power Flow Analysis using Newton Raphson Method
- 4. Economic Dispatch in Power Systems

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DEPARTMENT OF ELECTRONICS AND INSTRUMENTATION ENGINEERING

March 28, 2018

STAKEHOLDER FEEDBACK ON CURRICULUM & TEACHING-LEARNING ANALYSIS

Academic Year 2017-18

The following points were suggested by the stakeholders in feedback on curriculum & teaching-learning:

- 1. A core course may be included in the curriculum to study and encourage the usage of Instrumentation System Design among students.
- 2. In the Industrial Instrumentation course, IC temperature sensor topic may be included in temperature measurement.
- 3. Control System Laboratory may be included.
- 4. MATLAB Course included as Career Skill Development III can be included
- 5. Embedded Programming using ARDUINO board Course included as Career Skill Development IV can be included
- 6. Cyber Security in Industrial Automation can be included as elective
- 7. Personality development related courses may be included in the curriculum to enhance job ENGINEA skills.
- 8. More number of new electives can be added to curriculum.

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- 9. Inplant trainings should be mandatory to understand industrial scenario.
- 10. Subjects for developing soft skills may be included. That will be very he

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DEPARTMENT OF ELECTRONICS AND INSTRUMENTATION ENGINEERING

27-07-2018

ACTION TAKEN REPORT ON STAKEHOLDER FEEDBACK ON **CURRICULUM & TEACHING-LEARNING**

	Stakeholders Suggestion	Action Taken
,	 A core course may be included in the curriculum to study and encourage the usage of Instrumentation System Design among students. 	The suggestions received from stake holders on the curriculum and syllabus feedback was taken up in
	 In the Industrial Instrumentation course, IC temperature sensor topic may be included in temperature measurement. 	the Programme Assessment Committee (PAC) of Department of Electronics and Instrumentation
	3. Control System Laboratory may be included.	Engineering. All the suggestions
	4. MATLAB Course included as Career Skill Development III can be included	t were unanimously accepted by the faculty members and it is decided to
	 Embedded Programming using ARDUINO board Course included as Career Skill Development IV can be included 	regulation. Hence the faculties were requested to incorporate the
4	 Cyber Security in Industrial Automation can be included as elective 	suggestions in the respective courses and frame the syllabus. This will be
	7. Personality development related courses may be included in the curriculum to enhance job skills.	e implemented from the academic year 2018-19 under 2018 regulation for
1	8. More number of new electives can be added to curriculum.	b the students of Electronics and Instrumentation Engineering after
	9. Inplant trainings should be mandatory to understand industrial scenario.	getting the approval from board of studies and academic council.
	10. Subjects for developing soft skills may be included That will be very helpful for getting job.	•
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Head Dep College	of the Department partment of EIE of Engineering and Technology	PRINCIPAL * SN COLLEGE OF ENGINEERING & TECHNOLOGY MELATHEDIYOOR, PALAYAMKOTTAI TALUF
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DEPARTMENT OF ELECTRONICS AND INSTRUMENTATION ENGINEERING

27-07-2018

<u>NOTE</u>

As per the action taken report dated 27-07-2018, the suggestions of stake holders on curriculum and syllabus are incorporated in the courses offered under 2018 regulation and approved by board of studies and academic council.

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Head of the Department Department of EIE PSN College of Engineering and Technology Metalnediy our.

Enclosures:

- 1. Curriculum (Regulation 2018) of Department of Electronics and Instrumentation Engineering.
- 2. Syllabus of Instrumentation System Design (Semester VII).



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05-04-2018

STAKEHOLDER FEEDBACK ON CURRICULUM & TEACHING-

LEARNING ANALYSIS

Academic Year 2017-18

The following points were suggested by the stakeholders in feedback on curriculum &

teaching-learning:

1.Better to implement the robotics related paper for next regulation.

2. To learn and improve skill in designing and placement oriented CAD/Cam paper to be implemented.

3.To improve the standard of students for their employability by improving their career skills.

4. To understand the various software tools ,process & Techniques.

5. To understanding advancing of biomedical instrumentation, from signal acquisition through to process control.

6. Derive the innovative ideas, right approach to the problem, project preparation and business approach.

7. To gain knowledge in machine learning algorithms for various heuristic and non heuristic algorithms.

8. To apply artificial intelligent techniques to real world problems to develop intelligent systems.

9. To help them to understand in broad outline of Nano machines and Nano devices .

10. Encourage Active & Practical learning. Make connections to real world of the course materials.

11. Provide for meaningful teacher-Students interaction.

12.Inplant training should be mandatory for III year students on upcoming Regulation.

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13.Utilized a variety of technology options

septement the innovative projects in automation and society related. RING & TA

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24-04-2018

ACTION TAKEN REPORT ON STAKEHOLDER FEEDBACK ON CURRICULUM & TEACHING-LEARNING

	Action Taken
Stakeholders Suggestion	
 Better to implement the robotics related paper for next regulation. To learn and improve skill in designing and placement oriented CAD/Cam paper to be implemented. To improve the standard of students for their employability by improving their career skills. To understand the various software tools ,process & Techniques To understanding advancing of Auto medical instrumentation, from signal acquisition through to process control. Derive the innovative ideas, right approach to the problem, project preparation and business approach. 	The suggestions received from stake holders on the curriculum and syllabus feedback was taken up in the Programme Assessment Committee (PAC) of department of Mechanical and Automation Engineering. All the suggestions were unanimously accepted by the faculty members and it is decided to incorporate them in the 2018 regulation. Hence the faculties were requested to incorporate the suggestions in the respective courses and frame the syllabus. This will be implemented from the academic year 2018-19 under 2018
7. To gain knowledge in machine learning algorithms for various heuristic and non heuristic algorithms.	Automation Engineering after getting the approval from board of studies and academic
8. To apply artificial intelligent techniques to real world problems to develop intelligent systems.	The following courses need to be approved
9. To help them to understand in broad outline of Nano machines and Nano devices.	1. Sensories 2. CAD/CAM
PRINCIPAL PSN COLLEGE OF ENGINEERING & TECHNOLOGY	 Career Skill Development Automated Medical Instrumentation 3D Printing Nano materials Science UNELVEL 6. Nano materials Science UNELVEL
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- 7. Artificial Intelligence
- 8. Machine Learning
- 9. Entrepreneurship development
- 10. Human rights and value education

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30-04-2019

NOTE

As per the action taken report dated 24-04-2018, the suggestions of stake holders on curriculum and syllabus are incorporated in the courses offered under 2018 regulation and approved by board of studies and academic council.

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Department of Mechanical and Automation Engine PSN College of Engineering & Technology Melathediyoor, Tirunelveli - 627152

Enclosures:

1. Curriculum (Regulation 2018) of department of Mechanical And Automation Engineering.

2. Syllabus of new Courses(Semester VI & VII).



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	L	Т	Р	C
SENSORICS	3	0	2	4

Pre requisite: Electrical Derives and Control, Electronics and Micro Processors, Applied Hydraulics and Pneumatics

COURSE OBJECTIVES

The students will be able to

1. Learn the measurement systems, errors of measurement, Explain working principles of sensors and transducers.

2. Study the working principle of displacement transducers and their applications.

3. Understand principle of working of various transducers used to measure Temperature, comparative study of various transducers.

4 Learn the various types of level measurement transducers and their applications, basic principle of working.

5. Understand applications of various transducers in industry.

COURSE OUTCOMES (COS)

After successful completion of this course the student will be able to:

CO1	Analyze open loop and closed loop system in Mechatronics system
CO2	Identify different types of sensors for measuring flow, position, velocity and Acceleration.
CO3	Represent the working principle and characteristics of force, magnetic and heading sensors
CO4	Construct Ladder programming using Programming logic controller for the given application
C05	Apply Mechatronics system design process for industrial requirement.

MAPPING OUTCOMES

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		PO'S													
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	
COI	1					2			2					3	
CO2	2	2					1				1	1	2	abil	
CO3	1			2	2	40							1	2	
CO4	1	2		3	2								2	2	
CO5	1	3			2		des.		14	1	3	3	2	1	

GINEERAT- I SENSORS AND TRANSDUCERS

TIRUNELVeeled of sensors. Motion Sensors - Potentiometers, Resolver, Encoders - Optical, Magnetic,

PRINCIPAL PSN COLLEGE OF ENGINEERING & TECHNOLOGY MELATHEDIYOOR, PALAYAMKOTTAI TALUK

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Department of Mechanical and Automation Engineering PSN College of Engineering & Technology Melathediyoor, Tirunelveli - 627152. Inductive, Capacitive, LVDT - RVDT - Synchro - Microsyn, Accelerometer - GPS, Bluetooth, Range Sensors - RF beacons Transducers: Acceleration Sensors, Force Measurement, Torque and Power Measurement, Flow Measurement, Temperature Measurements. Advanced sensors: RFID sensor-Sniff Sensor-Smart senor-types-Properties, Ultrasonic Ranging, Reflective beacons, Laser Range Sensor (LIDAR).

UNIT- II MOTION, PROXIMITY AND RANGING SENSORS

Strain Gage, Load Cell, Magnetic Sensors - types, principle, requirement and advantages: Magneto resistive - Hall Effect -Current sensor Heading Sensors - Compass, Gyroscope, Inclinometers. Performance measures of sensors - Sensor calibration techniques -Sensor Output Signal Types

UNIT - III SYSTEM MODELS AND CONTROLLERS

Building blocks of Mechanical, Fluid and Thermal Systems, Rotational -Translational Systems, Hydraulic - Mechanical Systems. Continuous and discrete process Controllers -Control Mode -Step mode -Proportional Mode - Derivative Mode - Integral Mode - PID Controllers - Digital Controllers - Micro Processors Control.

UNIT- IV PLC AND REAL TIME INTERFACING

Programming Logic Controllers: Relay logic, basic structure, input/output processing, timers, internal relays and counters, shift resisters, ladder diagram and programming, selection of a PLC problem, Applications

UNIT -V CASE STUDIES ON MECHATRONIC SYSTEM

Control of Washing machine - pH control system - Autofocus Camera, exposure control- Motion control using D.C. Motor& Solenoids - Engine management systems -Controlling temperature of a hot/cold reservoir using PID - Control of pick and place robot -Part identification and tracking using RFID. **Total Hours: 45**

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Text Books

- 1. Bolton, N., Mechatronics: A Multidisciplinary Approach, 4th edition, Pearson Education, 2013.
- 2. Nitaigour Premchand Mahalik., Mechatronics: Principles, Concepts and Applications, Tata Mc Graw Hill,2003



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Reference Books

- 1. Patranabis D., Sensor and Actuators, Prentice Hall of India (Pvt) Ltd., 2005.
- William Bolton, Mechatronics : Electronic control systems in mechanical and electrical engineering, By Pearson publication 2019
- Ernest O. Doeblin, Measurement system, Application and design, Tata McGraw Hill Publishing Company Ltd., Fiftieth Edition, 2004
- Devdas shetty, Richard A. Kolk, "Mechatronics System Design", 2nd Edition, Cengage Learning 2011
- 5. De Silva, "Mechatronics: A Foundation Course", Taylor & Francis, Indian Reprint, 2013.
- 6. A.K.Sawhney and P.Sawhney, A Course on Mechanical Measurement Instrumentation and Control, Dhanpat Rai and Co, New Delhi, 2011
- E. O. Doeblin, Measurement Systems: Applications and Design, Tata McGraw-Hill Publishing Company Limited, 2003
- C. Sujatha and Dyer, S.A., Survey of Instrumentation and Measurement, John Wiley & Sons, Canada, 2001
- 9. https://nptel.ac.in/courses/112103174/3

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CAD/ CAM		L	Т	Р	C
		3	0	0	3
Course Categories: Core	Course Type: Theory	1			L

Course Objective(s):

The objective of the course is to enable students to

- · To provide basic foundation in computer aided design / manufacturing
- · To understand the fundamentals used to create and manipulate geometric models
- To get acquainted with the basic CAD software designed for geometric modeling
- · To learn working principles of NC machines CNC control and part programming
- · To understand Computer integrated Manufacturing

Course Outcome(s):

At the end of the course, the student will be able to

- CO1 Explain the 2D and 3D transformations, clipping algorithm. Manufacturing models and Metrics
- CO2 Create and manipulating geometric models using curves, surfaces, solid and to apply concept of CAD systems for 3D modeling and visual realism.
- CO3 Create and adding geometric tolerances in assembly modeling and to Apply standard CAD practices in engineering design.
- CO4 Describe basic concepts of CAM application and understand CAM wheel
- CO5 Prepare CNC programs for manufacturing of different geometries on milling and lathe machines.

Mapping of Course Outcome(s):

						PC)'S						PSO'S	
ł	1	2	3	4	5	6	7	8	9	10	11	12	1	2
COI	3	2	2	3	2								3	2
CO2	3	3	2	2	2								3	2
CO3	3	2	2	2	2								2	2
CO4	3	3	2	3	2								2	2
CO5	3	2	2	2	3	1.1	1			-			2	2

Course Topics:

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ADAX - I: INTRODUCTION

Various phases in Product Design and CAD, CAM, Concepts of CAD/CAM -Computer DISTRICT Egraphics – co-ordinate systems- 2D and 3D transformations- homogeneous coordinates -627 157 graphic primitives (point, line, circle drawing algorithms) - Clipping- viewing transformation.

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Representation of curves - Hermite cubic spline curve, Bezier curve, B-spline curves, Surface Modeling - Surface Entities, Representation of Surface, Bezier Surface, B-Spline Surface and Coons Surface. Solid Modeling - Solid Entities, Solid Representation, Boundary Representation (BRep), Sweeps Representation, Constructive Solid Geometry (CSG).Hidden -Line-Surface-Solid removal algorithms - shading - colouring - computer animation. 9

Unit - 111: PART ASSEMBLY AND CAD STANDARDS Assembly modelling - interferences of positions and orientation - tolerance analysis-mass property calculations - mechanism simulation and interference checking. Standards for computer graphics- Graphical Kernel System (GKS) - Open Graphics Library (OpenGL) -Data exchange standards - IGES, STEP, ACIS and DXF - communication standards. 9

Unit - IV: COMPUTER AIDED MANUFACTURING

CAM Concepts, Objectives & scope, Nature & Type of manufacturing system, Evolution, Benefits of CAM, Role of management in CAM, Concepts of Computer Integrated Manufacturing, Impact of CIM on personnel, Role of manufacturing engineers, CIM Wheel to understand basic functions

Unit - V: NC/CNC MACHINE TOOLS AND PROGRAMMING

Introduction to NC systems and CNC - Machine axis and Co-ordinate system- CNC machine tools Principle of operation CNC- Construction features including structure- Drives and CNC controllers - 2D and 3D machining on CNC- Introduction of Part Programming, types. Fundamentals of Part programming, Types of format, Part Programming for drilling, lathe and milling machine operations.

TOTAL: 45 Periods

9

Text Book(s):

- 1. Mikell P Groover, "Automation, Production Systems and Computer Integrated Manufacturing", 4th edition, Prentice Hall, 2016.
- 2. S. Kalpakjian and R. Steven Schmid, "Manufacturing Engineering and Technology", 7th edition, Pearson, 2013.

Reference(s):

- 1. Chris McMahon and Jimmie Browne "CAD/CAM Principles, practice and manufacturing management" Pearson education Asia, 2001.
 - Donald Hearn and M. Pauline Baker "Computer Graphics". Prentice Hall, Inc, 1992.



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		L	Т	Р	C
CAREER SKILL DEVELOPMENT -III		0	0	2	1
Course Categories:	Course Type: Laboratory	1			

Course Objective(s):

- To empower the students with skill sets required for their careers.
- To improve the standard of students for their employability by improving their career skills.

Course Outcome(s):

At the end of the course, the student will be able to

- CO1 Acquire skills and knowledge in CATIA and Solve space.
- CO2 Understand the basic automobile maintenance and overhauling concepts .

MODULE I SOLVE SPACE

Introduction – Basic commands -Practice with 2 D drawings -3D solid Modelling – CAM design using plane and solid geometry.

MODULE II CATIA

ENGINTEXT BOOKS:

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MEDINDO#

Introduction to CATIA interface-Drawing practice-Sheet metal design concepts-Surface design and 3D modeling-Assembly with 3 views and BOM.

MODULE III AUTOMOBILE FUNDAMENTALS

Anatomy of two wheeler- four wheeler - Internal Combustion Engines - Engine parameters- Gyroscopic effects.

MODULE IV AUTOMOBILE MAINTENANCE

Brake systems - Engine performance and repair - Automative technology - Suspension and steering - Battery /automotive electricity

MODULE V AUTOMOBILE OVERHAULING

IC Engine overhauling -Two stroke –Four stroke –Function and constructions- Engine fuel and oil systems fundamentals –Clutch maintenance system.

Total: 30 Periods

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book of automobile engineering " R.K.Rajput Second edition Laxmi Publications

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PRINCIFAL PSN COLLEGE OF ENGINEERING & TECHNOLOGY MELATHEDIYOOR, PALAYAMKOTTAI TALUK THRUNELVELLOGT , 627 152 2.Handbook of automotive engineering "Hans Hermann Braess SAE publisher 2005.

REFERENCE BOOKS:

1."Hybrid electric vehicles-Principles and applications with practical perspectives" chris Mi Wiley 2005.

2."CATIA V5 -6R2015 for Engineers and Designers " Dreamtech press 13th edition 2016.

CO-PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	P011	PO12
CO1	2	2	2	3	3	2	2		3	3	2	3
001	2	2	2	2	3	2	2		3	3	2	3
COZ	3	12	2	2	5	~						

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Automated Modi-11	L	Т	Р	C
Automated Medical Instrumentation	3	0	0	3

COURSE OBJECTIVES

- This study aims to provide the student with an advanced understanding of biomedical instrumentation, from signal acquisition through to process control.
- 2. It will link electrical engineering and physiological systems course content by applying the theory-based coursework in a similar context.
- 3. The student will be prepared for a self-guided learning in this area.

COURSE OUTCOMES:

After successful completion of this course the student will be able to:

C01	Familiar with various DATA techniques and signal types amplifiers	
C02	Summarize the different COMPUTERIZED DATA ACQUISTION associated in measuring motion, proximity and ranging sensors signals	
C03	Represent the working principle and characteristics of Hardware of PC	
C04	Explain the basic principles of biomedical signals & electrodes	
C05	Represent the need for Medical Instrumentation applications	

MAPPING OF COURSE OUTCOME(S):

T	PO'S													
F	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	1				1	2			2					3
CO2	2				1		1					1	2 .	
CO3	1				2		2		1			2	2	2
CO4	2	1		1	2				2			1	1	3
CO5	1				2	3	2		1			2	2	1

UNIT-1 DATA ACQUISTION

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Generalized Instrumentation system - Feature of personal computer - PC based Instrumentation system - Principle of signal conditioning - Operational Amplifier – instrumentation amplifier- Bridge circuits –Half and Full Bridge Circuit, Filters - Noise

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UNIT -2 COMPUTERIZED DATA ACQUISTION

Sampling concepts – DAC- Weighted Resistor Network, R-2R Ladder Network, ADC – Successive Approximation ADC- Counting type, Successive approximation, parallel comparator ,Data acquisition system – Analog Input, Analog Output. Overview of GPIB – System and Implementation, commands – primary command, secondary commands, evice specific commands, expanding GPIB, Sharing GPIB,SCPI- Generalized Instrument Model.

UNIT -3 HARDWARE ORGANIZATION OF PC

Motherboard components – Microprocessor, memory, Chipset Chips, Interrupts, DMA Channel, System Control Chip, Peripheral Control Chip- Peripherals, Features of ISA and PCI buses

UNIT- 4 BIOMEDICAL SIGNALS & ELECTRODES

Sources of biomedical signals, Basic medical instrumentation system, Origin of bioelectric signals - ECG, EEG, EMG. Electrodes for ECG, EEG, EMG, Medical surface electrodes and problems, Microelectrodes. Electrocardiograph-block diagram, ECG leads, Faults and troubleshooting, Phonocardiograph-origin of heart sounds, microphones and amplifiers for PCG, Operating Rooms

UNIT -5 MEDICAL INSTRUMENTATION APPLICATIONS

Cardiac Pacemekers, Heart lung machine. Different types of Oxygenators, Pumps, and Monitoring Process. Hemodialyser- Principle of Hemodialysis, Membranes, Dialyasate, Different types of heamodialysers, Wearable Artificial Kidney, Implantable Type. Defibrillators, Implantable defibrillators, Functional electrical stimulator (FES) Digital radiography, Digital Fluroscopy, Mammography, Angiography, Bone densitometry, Endoscopy.

Total Hours: 45

TEXTBOOK:

ENGINE

RUNELVEL

 Joseph J Carr and John M Brown – Introduction to Biomedical equipment Technology -Pearson Education 4th edition New Delhi 2001.

Ibert M Cook and Webster J G - Therapeutic medical devices Prentice Hall Nee York

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 Webster J.G Medical Instrumentation application and design – John Wiley and sons New York 3rd edition 1999

REFERENCE BOOK:

- Jacobson B and Webster J G Medical and Clinical Engineering Prentice Hall of India New Delhi 1999
- John Denis Enderle, Joseph D. Bronzino, Susan M. Blanchard, 'Introduction to Biomedical Engineering:'Academic Press, 2005, 2nd Edition ISBN 0122386620,
- Mathivanan, PC-based instrumentation: concepts and practice, Prentice Hall India Pvt Ltd., 2007
- Patrick H. Garrett, High performance Instrumentation and Automation, CRC Press, Taylor & Francis Group, 2005.

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	L	T	Р	C
5D Printing	3	0	0	3

PRE-REQUISITES Computer Aided Design & Drafting Engineering Materials

COURSE OBJECTIVES:

The objectives of this course are to:

- 1. Understand the fundamentals of various Additive Manufacturing Technologies for application to various industrial needs.
- 2 Able to convert part file into STL format.
- 3. Able to understand the method of manufacturing of liquid based, powder based and solid based techniques.
- 4. Understand the manufacturing procedure of a prototype using FDM technique.

COURSE OUTCOMES:

After completion of the course, the student will be able to

C01	Understand the fundamentals of Additive Manufacturing Technologies for engineering applications.
C02	Understand the methodology to manufacture the products using SLA and SGC technologies and study their applications, advantages and case studies
C03	Understand the methodology to manufacture the products using LOM and FDM technologies and study their applications, advantages and case studies
C04	Understand the methodology to manufacture the products using SLS and 3D Printing technologies and study their applications, advantages and case studies

MAPPING OF COURSE OUTCOME(S):

	PO'S													
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
COI	1		2			2			2					3
CO2	2	2	2		2		1				2	1	2	
CO3	2		2	2	3						2	1.	2	2
CO4	1	2	2		2						2	1	2	2



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UNIT-I INTRODUCTION

Prototyping fundamentals, Historical development, Advantages of AMT, Commonly used terms, process chain, 3D modelling, Data Conversion, and transmission, Checking and preparing, Building, Post processing, RP data formats, Classification of AMT process, Applications to various fields

UNIT-II LIOUID BASED SYSTEMS

Stereo lithography apparatus (SLA): Models and specifications, process, working principle, photopolymers, photo polymerization, layering technology, laser and laser scanning, applications, advantages and disadvantages, case studies. Solid ground curing (SGC): Models and specifications, process, working ,principle, applications, advantages and disadvantages, case studies.

UNIT III SOLID BASED SYSTEMS

Laminated object manufacturing (LOM): Models and specifications, Process, Working principle, Applications, Advantages and disadvantages, Case studies. Fused Deposition Modeling (FDM): Models and specifications, Process, Working principle, Applications, Advantages and disadvantages, Case studies, practical demonstration

UNIT-IV POWDER BASED SYSTEMS

Selective laser sintering (SLS): Models and specifications, process, working principle, applications, advantages and disadvantages, case studies. Three dimensional printing (3DP): Models and specification, process, working principle, applications, advantages and disadvantages, case studies.

UNIT V LENS & RAPID TOOLING

Laser Engineering Net Shaping (LENS), Ballistic Particle Manufacturing (BPM) -Principle - Introduction to rapid tooling - direct and indirect method, software for RP - STL files, Magics, Mimics - Application of Rapid prototyping in Medical field.

Total Hours: 45

Learning Resources:

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DIYOO

- 1. Chua C.K., Leong K.F. and LIM C.S Rapid prototyping: Principles an Applications, World Scientific publications, 3rdEd., 2010
 - D.T. Pham and S.S. Dimov, "Rapid Manufacturing", Springer, 2001
 - erry Wohlers, "Wholers Report 2000", Wohlers Associates, 2000

Paul F. Jacobs, "Rapid Prototyping and Manufacturing"-, ASME Press, 1996

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NANO MATERIAL CONTRACT	L	T	P	C
STATERIAL SCIENCE	3	0	0	3

COURSE OBJECTIVES:

- 1. Impart knowledge on Nanoscience
- 2. Explore different techniques of producing nanomaterials
- 3. Create expertise on the applications of nanomaterials in various fields
- 4. To make the students acquire an understanding the Nanoscience and Applications
- 5. To help them understand in broad outline of Nano machines and Nano devices

COURSE OUTCOMES :

After completing this course students will be able to:

CO1	Summarize the origin and advance of nanomaterials and its classification
CO2	Compare the different types of methods adopted for synthesizing nanomaterials
CO3	Analyze the characterization techniques for analyzing nanomaterials
CO4	Explain the physical properties exhibited by nanomaterials
CO5	Organize the nanomaterials developed for advanced technological applications

MAPPING OF COURSE OUTCOME(S):

CO No	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2												
CO2	2	2		2		2	2				2	2		
CO3	2	2									2			
CO4	3	2			3						2	2		
CO5	2	2			3	2								

UNIT I NANO SCALE MATERIALS

Introduction-Feynman's vision-national nanotechnology initiative (NNI) - past, present, future - classification of nanostructures, nanoscale architecture - effects of the nanometer length scale - changes to the system total energy, and the system structures- effect of nanoscale ENGINE damensions on various properties -differences between bulk and nanomaterials and their physical



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UNIT II NANOMATERIALS SYNTHESIS METHODS

Top down processes - mechanical milling, nanolithography and types based on radiations - Bottom up process - physical method: physical vapour deposition, RF sputtering, CVDchemical method: colloidal and sol-gel methods - template based growth of nanomaterials ordering of nanosystems, self-assembly and self-organization- Safety issuses.

UNIT- III CHARACTERIZATION TECHNIQUES

General classification of characterization methods - analytical and imaging techniques microscopy techniques - electron microscopy, scanning electron microscopy, transmission electron microscopy, atomic force microscopy - diffraction techniques - X-ray spectroscopy thermo gravimetric analysis of nano materials.

UNIT- IV SEMICONDUCTOR NANOSTRUCTURES

Quantum confinement in semiconductor nanostructures - quantum wells, quantum wires, quantum dots, super lattices-epitaxial growth of nanostructures-MBE, metal organic VPE, LPE carbon nano tubes- structure, synthesis and electrical properties -applications- fuel cells quantum efficiency of semiconductor nano materials

UNIT V NANOMACHINES AND NANODEVICES

Micro electro mechanical systems (MEMS) and Nano electro mechanical systems (NEMS)-fabrication, actuators-organic FET- principle, description, requirements, integrated circuits- organic LED: basic processes, carrier injection, excitons, optimization - organic photovoltaic cells- particulate and geometrical nano magnets-magneto resistance.

Total Hours:45

Reference(s):

1. Willam A. Goddard, Donald W.Brenner, "Handbook of Nanoscience, Engineering, and Technology", CRC Press, 2012

2. Charles P. Poole Jr and. Frank J. Owens, "Introduction to Nanotechnology", Wiley Interscience, 2007

3. Guozhong Cao, Y. Wang, "Nanostructures and Nanomaterials-Synthesis, Properties & Applications", Imperials College Press, 2011.

Essentials "NANO: The Τ. Pradeep. 4. and Nanotechnology", McGraw - Hill Education (India) Understanding Nanoscience Ltd, 2012

5. Robert W. Kelsall, Ian W. Hamley, Mark Geoghegan, "Nanoscale Science and Technology", John Wiley and Sons Ltd, 2006

Viswanathan B, Aulice Scibioh M, "Fuel cells: Principles and Applications", University



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ARTIFICIAL INTELLICENCE	L	T	Р	C
A TELLIGENCE	3	0	0	3

COURSE OBJECTIVES:

- 1. To understand the various characteristics of intelligent agents
- 2. To understand the different search strategies in AI
- To represent knowledge in solving AI problems and understand the different ways of designing software agents
- 4. To know about the various applications of AI

COURSE OUTCOMES:

After successful completion of this course the student will be able to:

CO1	Represent a problem using first order and predicate logic
CO2	Select appropriate search algorithms for any Al problem
CO3	Choose the apt agent strategy to solve a given problem
CO4	Design software agents to solve a problem
CO5	Design applications for Natural Learning Process that uses Artificial Intelligence.

MAPPING OF COURSE OUTCOME(S):

CO No	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSOI	PSON
CO1	1	1	3					1		1	1	1	1	1302
CO2	1	1												
CO3	2	2				3					3	3		
CO4	3	3	2		2									2
CO5	1	3	2		2					1			12/201	2

UNIT-I INTRODUCTION

Introduction - Definition - Future of Artificial Intelligence - Characteristics of Intelligent ENGINE Sents - Typical Intelligent Agents - Problem Solving Approach to Typical AI problems



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UNIT II PROBLEM SOLVING METHODS

Problem solving Methods - Search Strategies- Uninformed - Informed - Heuristics -Local Search Algorithms and Optimization Problems - Searching with Partial Observations -Constraint Satisfaction Problems - Constraint Propagation - Backtracking Search - Game Playing - Optimal Decisions in Games - Alpha - Beta Pruning - Stochastic Games

UNIT III KNOWLEDGE REPRESENTATION

First Order Predicate Logic - Prolog Programming - Unification - Forward Chaining-Backward Chaining - Resolution - Knowledge Representation - Ontological Engineering-Categories and Objects - Events - Mental Events and Mental Objects - Reasoning Systems for Categories - Reasoning with Default Information

SOFTWARE AGENT UNIT IV

Architecture for Intelligent Agents - Agent communication - Negotiation and Bargaining - Argumentation among Agents - Trust and Reputation in Multi-agent systems

UNIT V APPLICATIONS

Al applications - Language Models - Information Retrieval- Information Extraction -Natural Language Processing - Machine Translation - Robot - Hardware - Perception - Planning - Moving

Total: 45 Hours

Reference(s)

- 1. Gerhard Weiss, Multi Agent Systems A Second Edition, MIT Press, 2013.
- 2. Bratko, Prolog: Programming for Artificial Intelligence, Fourth edition, Addison-Wesley Educational Publishers Inc., 2011.
- 3. David L. Poole and Alan K. Mackworth, Artificial Intelligence: Foundations of Computational Agents, Cambridge University Press, 2010
- 4. S. Russell and P. Norvig, Artificial Intelligence: A Modern Approach, Prentice Hall,
- 5. Third Edition, 2009
- 6. M. Tim Jones, Artificial Intelligence: A Systems Approach(Computer Science), Jones and Bartlett Publishers, Inc.; First Edition, 2008
- 7. https://nptel.ac.in/courses/106105079



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MACHINELEADNING	L	Т	Р	C
LEARNING	3	0	0	3

COURSE OBJECTIVES

1. To Understand the fundamentals of various machine learning algorithms

- 2. To gain knowledge on important methods in ANN, Fuzzy and Genetic algorithm
- 3. To study the machine learning algorithms for various heuristic and non heuristic algorithms.

COURSE OUTCOMES:

After successful completion of this course the student will be able to:

CO1	Differentiate the basics of supervised and semi supervised learning methods.
CO2	Retrieve the unsupervised and reinforcement learning methods involved in artificial learning
CO3	Interpret the concept of artificial neural networks and their control applications
CO4	Implement the fuzzy knowledge representation and multi objective decision making controllers
CO5	Compute the knowledge about various heuristic and non-heuristic algorithms.

MAPPING OF COURSE OUTCOME(S):

CO No	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	1		3		1					2			3	1001
CO2	1		3		3	2				1			2	
CO3	2		3		1					1			2	
CO4	3		2		3					2			2	
C05	1		3		3					2			2	

UNIT I SUPERVISED AND SEMI SUPERVISED LEARNING METHOD

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Introduction to learning & classifiers- LDA - ANN - Naive Bayes classifier- decision tree Regression- Ordinary Least Squares - linear and Logistic Regression- Gaussian process -Stepwise Regression - Multivariate Adaptive Regression Splines (MARS) - Locally Estimated Scatterplot Smoothing (LOESS) - overview of nearest neighbour - Support vector machines-Temporal difference learning - Q-learning IRLINELVEL

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UNIT II UNSUPERVISED

Expectation -maximization (EM) - Vector quantization, Clustering Fuzzy K & C means algorithm - Density-based spatial clustering of applications with noise (DBSCAN) - Conceptual clustering- Association rule learning - Apriori algorithm- SVD

UNIT III NEURAL NETWORK

Perceptron - Probabilistic Neural Network (PNN) - Back-Propagation (BPN) - Hopfield Network - Self-Organizing Map (SOM) - Learning Vector Quantization (LVQ) -Adaptive Resonance Theories 1 & 2 - Case studies on GA based algorithm development

FUZZY CLASSIFICATION UNIT IV

Basic concepts in Fuzzy Set theory-Fuzzy logic controllers - Principles - Various industrial Applications of Fuzzy logic control - Adaptive Fuzzy systems - Fuzzy Decision making - Fuzzy classification - Fuzzy pattern Recognition - Image Processing applications -Fuzzy optimization - Case studies on fuzzy based algorithm development

UNIT V HEURISTIC AND NON HEURISTIC ALGORITHM

Introduction to genetic algorithm -initialization, selection, mutation and termination Swarm intelligence - PSO-ACO - Tabu search - Reactive search optimization (RSO)- crossentropy (CE) methods. Case studies on GA based algorithm development.

Total Hours: 45

FOR FURTHER READING

Self-driving cars, Face recognition, Web search, Industrial robots, Missile guidance

Reference(s)

ENGINEER

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- 1. Ethem Alpaydin, Introduction to Machine Learning, The MIT Press, Cambridge, London.2014.
- 2. Klir, G.J. Yuan Bo, Fuzzy sets and Fuzzy Logic: Theory and Applications, Prentice Hallof India Pvt. Ltd.New jersey. 2005
- 3. Randy L. Haupt, Sue Ellen Haupt Practical Genetic Algorithms, Wiley interscience 2004
- 4. S. Rajasekaran, GA Vijayalakshmi Pai, Neural Networks, Fuzzy Logic and Genetic Algorithms, Prentice Hall of India Private Limited, 2003
 - Simon Haykin, Neural Networks A¢?? A comprehensive foundation, Prentice Hall, 3rd Edition, 2004

https://onlinecourses.nptel.ac.in/noc18_cs26/course

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Entrepreneurship Development	L	Т	Р	C
COURSE OB IE CO	3	0	0	3

- 1. To explain development of entrepreneurs. 2. To explain how financing for entrepreneurship is done

COURSE OUTCOMES:

After successful completion of this course the student will be able to:

C01	Acquire the knowledge for establish
C02	Derive the innovative ideas, right approach to the problem and arrive solution for
C03	Prepare the project report preparation and assessment of D
C04	Acquire the knowledge on costing, Techno-economic aspects, find out the sources of finance and opportunities in business.
C05	Identify the support system for Entrepreneurs by Government and venture capitals.

MAPPING OF COURSE OUTCOME(S):

						PC	D'S							
	1	2	3	4	5	6	7	8	0	10			PS	O'S
COL	1					2		0	9	10	11	12	1	2
001	1					2			2	2	2			3
CO2	2						1		2	2	3	1	2	-
CO3	1								1	1	3	1	1	2
CO4	2	2							2	1	2	1	1	-
CO5	2					1		3	1	2		2	1	1

ENTREPRENEURSHIP & MOTIVATION UNIT I

Entrepreneur - Types of Entrepreneurs - Difference between Entrepreneur and Intrapreneur Entrepreneurship in Economic Growth, Factors Affecting Entrepreneurial Growth. Major Motives Influencing an Entrepreneur - Achievement Motivation Training, Self-Rating, Business Games, Thematic Apperception Test - Stress Management, Entrepreneurship ENGINEERINDevelopment Programs - Need, Objectives.



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UNIT II INNOVATION, CREATIVITY, DEVELOPMENT PROCESS AND LEGAL ASPECTS 9

Innovation and Creativity- An Introduction, Innovation in Current Environment, Types of Innovation Sources of new Ideas, Methods of generating innovative ideas, creating problem solving, product planning and development process. Legal aspects of business (IPR, Labor law).

UNIT III BUSINESS

Small Enterprises – Definition, Classification – Characteristics, Ownership Structures – Project Formulation – Steps involved in setting up a Business – identifying, selecting a Good Business opportunity, Market Survey and Research, Techno Economic Feasibility Assessment – Preparation of Preliminary Project Reports – Project Appraisal – Sources of Information – Classification of Needs and Agencies.

UNIT IV FINANCING AND ACCOUNTING

Need – Sources of Finance, Term Loans, Capital Structure, Financial Institution, Management of working Capital, Costing, Break Even Analysis, Taxation – Income Tax, GST. Cost Accounting - Meaning - Distinction between Financial Accounting and Cost Accounting -Cost Terminology: Cost, Cost Centre, Cost Unit - Elements of Cost - Cost Sheet - Problems. Budget, Budgeting, and Budgeting Control - Types of Budgets - Preparation of Flexible and fixed Budgets, master budget and Cash Budget - Problems -Zero Base Budgeting.

UNIT V DEVELOPMENT TO ENTREPRENEURS

Sickness in small Business – Concept, Magnitude, Causes and Consequences, Corrective Measures - Business Incubators – Government Policy for Small Scale Enterprises – Growth Strategies in small industry – Expansion, Diversification, Joint Venture, Merger and Sub Contracting. Entrepreneurship Development and Government: Role of Central Government and State Government in promoting Entrepreneurship - Introduction to various incentives, subsidies and grants - Export Oriented Units - Fiscal and Tax concessions available. Women Entrepreneurs Reasons for low / no women Entrepreneurs their Role, Problems and Prospects

Total Hours: 45

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TEXT BOOKS:

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'EDIYOO'

 Khanka, S.S., "Entrepreneurial Development" S.Chand & Co. Ltd., Ram Nagar, New Delhi, 2013. 99

FENGINE Donald F Kuratko, "Entreprenuership – Theory, Process and Practice", 9 th Edition,

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REFERENCES:

- 1. Hisrich R D, Peters M P, "Entrepreneurship" 8th Edition, Tata McGraw-Hill, 2013.
- Mathew J Manimala, "Enterprenuership theory at cross roads: paradigms and praxis" 2 nd Edition Dream tech, 2005.
- 3. Rajeev Roy, "Entrepreneurship" 2 nd Edition, Oxford University Press, 2011.
- EDII "Faulty and External Experts A Hand Book for New Entrepreneurs Publishers: Entrepreneurship Development", Institute of India, Ahmadabad, 1986.
- 5. Innovation and Entrepreneurship Book by Peter Drucker,
- 6. Publishing House. R2. N.P.Srinivasan & G.P.Gupta," Entrepreneurial Development ",
- RI. Vasanth Desai " Dynamics of Entrepreneurial Development and Management Himalaya Sultanchand &Sons. R3. P.Saravanavelu "Entrepreneurship Development ",Eskapee Publications. R4. Satish Taneja, Entrepreneur Development ", New Venture Creation. R5.



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Date: 02-01-2018

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STAKEHOLDER FEEDBACK ON CURRICULUM & TEACHING-

LEARNING ANALYSIS

Academic Year 2017-18

The following points were suggested by the stakeholders in feedback on curriculum &

teaching-learning:

- 1. Thermal oil heater topic should be included in the syllabus which is a advancement in the Marine engineering.
- 2. Refrigerated Cargo ship topic should be included in the syllabus.
- 3. Add experiment on study of velocity ratio of Simple, Compound, Epicyclic and Differential gear trains.
- 4. Existing textbooks and reference editions to be changed to latest one instead of old editions.
- 5. Add subjects about logistics and NDT which will be helpful for marine engineering students.
- 6. Subjects for developing soft skills may be included. That will be very helpful for getting job.
- 7. Inplant trainings should be mandatory to understand marine scenario.
- 8 Some new subjects related to advancement in marine engineering.
- 9. If the students undergone more number of inplant trainings, internships, Cinplant skills will be developed. These can be included curriculum.

Sala PRINCIPAL HEAD OF THE DEPARTMESN COLLEGE OF ENGINEERING & TECHNOLOGY PRINCIPAL MARINE ENGINEERING MELATHEDIYOOR, PALAYAMKOTTAI TALUK HOD PRINCIPAL PSH COLLEGE OF ENGINEERING & TH NELATHEDIVOOR PALAKEMACT PSN COLLEGE OF ENGINEERING & TECHNOLOGY THRUNELIVELIN Deparmeethedigur. Falayamkottal taluk TRUNELVELI DIST tion or o Department Mission:

PSN COLLEGE OF ENGINEERING AND TECHNOLOGY (Autonopous)



Melathediyoor Tirunciveii 627 152 Approved by AICTL and Recognized by UGC under section 2 (1), 12 (B) An ISO 9001 2015 Certified Institution Accredited By NAAC, Affiliated to Anna University, Chennal **DEPARTMENT OF MARINE ENGINEERING**



hodmarine/a psncet.ac.in

Date: 12-01-2018

ACTION TAKEN REPORT ON STAKEHOLDER FEEDBACK ON

CURRICULUM & TEACHING-LEARNING

Thermal oil heater topic should be included in the syllabus which is a advancement in the Marine engineering.	In 2018 Regulation, the following subjects are included:
 Refrigerated cargo ship topic should be included in the syllabus. Add experiment on study of velocity ratio of Simple.Compound.Epicyclic and Differentia gear trains. If the students undergone more numb of inplant trainings. internship employability skills will be develope. These can be included curriculum. 	 a Thermal off fielder added in boiler and steam engineering subject boiler and steam engineering subject c Semester -III) 2. Refrigerated cargo ship unit is added af Marine refrigeration and air conditioning subject (Semester -III) 3 Study of velocity ratio of Simple.Compound.Epicyclic and Differential gear trains added in Dynamics Laboratory ber In 2018 Regulation, the tollowing ps. activities are made as mandatory: ed I. Industrial Visit in Semester III 2. Inplant Training in Semester IV 3. Internship Training in VI
 These can be included curriculum. Inplant trainings should be mandatory understand marine scenario 3. Existing textbooks and reference editions 	 2. Inplant Training in Semester IV 3. Internship Training in VI 4. Voyage trip in Semester VII ions In 2018 Regulation. The textbooks and cold reference books editions are updated to new and latest editions
4. Add subjects about logistics and N which will be helpful for the engineering students.	NDT In 2018 regulation. The RIN CURAL ATTRENET OF INTO DURSN COLLEGE OF ENGINEERING & T MELATHEDIYOOR, PALAYAMKOT TIRUNELVEL 1015T 627

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DEPARTMENT OF MARINE ENGINEERING



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	Some new subjects related to advancement in marine engineering, may	1 Logistics and supply chain management in program elective paper
	oe introduced as electives	2. NDT subject is added in syllabus for the II year (IV Semester)
5.	Subjects for developing soft skills may be included. That will be very helpful for getting job.	In 2018 regulation following courses were included 1 Swimming Practice in II semester
		 Forest Visit in IV semester Ship visit in IV semester Course on fire fighting in VI semester.

-CKO J12/1/18

HOD

HEAD OF THE DEPARTMENT MARINE ENGINEERING PSN COLLEGE OF ENGINEERING & TECHNOLOGY MELATHEDIYOOR, PALAYAMMOTTAL TALUK TIRUNELVELI DIGI.

PRINCIPAL PSN COLLEGE OF ENGINEERING & TECHNOLOGY MELATHEDIYOOR, PALAYAMKOTTAI TALUK TIRUNELVELI DIST. - 627 152

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PRINCIPAL **PSN COLLEGE OF ENGINEERING & TECHNOLOGY** MELATHEDIYOOR, PALAYAMAOTTAI TALUK TIRUNELVELI LIST



Department Vision:

To Produce in the state operation of the second standards in Minimu Lingung, out in participation of the com-

Department Mission:

To develop on the second state of a teadeet of the second second as a state of the second To promote research and known on the state of the

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PSN COLLEGE OF ENGINEERING AND TECHNOLOGY (Autonomous) Melathedixoor, Enunciveli 627 152 Approved by AICTE and Recognized by UGC under section 2 (f) 12 (B) An ISO 9001 2015 Certified Institution Accredited By NAAC Atfiliated to Anna University, Chennai

DEPARTMENT OF MARINE ENGINEERING

30-04-2019

NOTE

As per the action taken report dated 12-01-2018, the suggestion of stack holders on curriculum and syllabus are incorporated in the courses offered under 2018 regulation and approved by board of studies and academic council.

HEAD OF THE DEPARTMENT MARINE ENGINEERING PSN COLLEGE OF ENGINEERING & TECHNOLOGY MELATHEDIYOUR, FALAYOMKOTTAL TALUK TIRUNELVELI DIST.

Enclosures :

1.Currriculum(Regulation 2018) of department of Marine Engineeering.

2.Syllabus of new Courses

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SYLLABUS

PSN Co	ollege of Engineering and Te	chnology	Regulation 2014
Department	Marine Engineering	Branch Code/ Degree/Branch	08 / BE / Marine
Semester	IV	(mention all branches for which the subject is	
Subject Code:	208021	offerea)	
Subject Title:	MARINE BOILER & STE	AM ENGINEERING	L T P C
Objective.			J 1 0 4
 Waste heat boilers Operation and Main Construction of stell 	and boiler mountings. Itenance of boilers. am turbines and stoom one of		
 How Lubrication of Operation and main 	turbines carried out. Itenance of steam turbines	5.	
Unit 1 VARIO	OUS TYPES OF MARINE BOLLED		
Scotch Boiler, Cochran, S	panner, Clarkson thimble tub	S & BUILER MOUNTINGS	Total Hrs 12
Jnit 2 OPER. Pre-commissioning procedu water. Blowing down of renewals, etc., maintenance Refractory: Purposes of re Oil burning: Procedure of	er etc. ATION, CARE & MAINTENANCE ires, Hydraulic tests, steam rai boiler, Laying up a boiler; ge e, inspection and survey of boile efractory, types of refractory an f Liquid fuel burning in open	OF BOILERS sing and Operating procedure eneral maintenance, External ers ind reasons for failure.	Total Hrs 12 Ses, Action in the event of shortage of and internal tube cleaning - Tube
ourning, Boiler Control Syst	em i.e. master control fuel con	furnace, Various types of atc	omizer, Furnace arrangement for oil
Unit 3 MARIN	NE STEAM ENGINEERING	itroi, air control and viscosity	control, Introduction to Automation.
Reciprocating / Steam E	ngines: History of multiple exp	ansion marine reciprocation	Total Hrs 12
almerent types of steam t -ayout of Plant: General I modern use, open and close Selection of materials: Ma	urbines ayout of plant & description of d feed system. aterials used in blados, sotors of	a modern geared steam turbi	ne installation including auxiliaries in
Unit 4 LUBRI	CATION OF TURBINES	asings, sealing glands, gears	etc &their justification.
Suitable oils and their prope	erties, lubrication of main hearing	nas - thrust bearings and	Total Hrs 12
il system and emergency lu	ubrication arrangement	igs thrust bearings and gear	s - Gravity and pressure lubrication-
nit 5 CONDE	INSERS		Total Hrs 12
ffect of condensers, constr ffect of change of tempera nd Maintenance: Turbine d f propulsion, throttle valve narine steam turbine, steam	nuctional details, location & wor iture, circulating water quantity rain system, turbine gland syste control and nozzle control, en n turbine losses. Break down an	rking principles, contraction a y, change of main engine pov em, warming through a turbir nergency controls, emergency id faultfinding.	ver, condenser surface - Operation ne plant, control of speed and power y operation of turbines, vibration in
utcome:		Total Hours	to be taught : 60
t the end of this syllabus, condition and met Book.	adets will gather knowledge abo aintenance of boiler.	out various marine boilers, fur	nction of boiler, condenser, turbine
J.H. Milton & R.M. Leach. "Mi	arine Steam Boilers 1 1th Litrian Bailar	worth Las Las 1999	W
C. Mc Birnie, "Marine Sterror I	names and Lachard 1. I. Line D	essent rondon, 1980	
eference (s): GTH. Flanagan, "Marine Boiler K.M.B. Donald, "Marine Steam L. Jackson & F.D. Morton, "Ge Thomas D. Morton, "Steam Eng	ngines and Furbines . 4 T dition But (s" 3 rd I dition, Butter worth Kendon, 20 (Turbines", 1 st Edition, Institute of Marin neral Engineering Knowledge for Marin gineering Knowledge for Marine Engine	BALLED COLLEGE C BALLED COLLEGE C MELATHEDIYO MELATHED	PRINCIPAL DF ENGINEERING & TECHNOLOGY OOR, PALAYAMKOTTAI TALUK JELVELI DIST 627 152. ceds Publication. United Kingdom, 1986 cations. London 1979
	* ATELATI	EDIYOOR *	Board Chairman
	The carry	Signature of the E	Board Chairman

Chairman. Board of Studies

		PSN College of Engineer	ring a	and T	echn	ology	/						Real	latio	n - 20	18
Departme	nt:	Marine Engineering	Bran	ich Co	de /	Degre	e/B	ranch)				neg.		20	10
		2.2	(me	ntion	all br	anche	s for	which	i the s	ubje	ct is		08	- RF -	Marin	
Semester		03	offer	red)									00	01	marii	le
Subject Co	ode:	508014											1	т	D	C
Subject Ti	tle:	MARINE BOILER & STEAM ENG	SINE		G						-		2	0	P	C
Objective:													2	0	0	3
> Wa	aste heat	t boilers boiler mountings and acce	ssorie	es.												
> Op	peration	and Maintenance of boilers.														
> Co	nstructio	on of steam turbines and steam eng	gines													
	peration	ation of turbines carried out.														
CO's NO				000	000	DO 1	DOL	DOL	007		200					
60206.1	Student	s able to understand marine	104	P02	PO3	P04	P05	P06	P07	908	P09	PO10	PO11	PO12	PSO1	PSO2
CO306.1	boilers 8	& its functioning	3	2	1				2				1		1	1
CO306.2	Student	s able to understand operation &	3	2	1		1				1				2	1
	Student	ance of bollers	ļ		1		1	-			1	-			2	1
CO306.3	steam e	engines	3	2	1	-	-	-	-	-	-	-			-	-
	Studen	ts able to understand the														
CO306.4	lubricat	ion of marine components in	3	2	2	-	-	-	2	-	-	2				2
	turbine								-			-				-
CO306.5	Studen	ts able to understand the	3	2	2			-		1 4			1		2	
	Tunction	is a types of condensers			-										4	
Unit 1		DIQUE TYPES OF HERE	3	3	1		1		2	1	1	1	1	1-	2	1
Scotch Boi		RIOUS TYPES OF MARINE BOIL	ERS,	BOIL	ER M	IOUN	TING	S&/	ACCES	SOR	IES			Tot	al Hrs	9
tube boilor	ier, Spar	nner, Clarkson thimble tube, Waste	heat	recov	иегу с	alcula	tion,	Lamo	ont ext	naust	gas	boiler,	Compo	osite b	oilers,	Water
Boiler Mo	s - Dabl	Solatu Values	be, Do	ouble	Evapo	oratio	n boil	ers.								
Indicator	Automa	tic feed regulator, three elements	Lift,	Full lif	t and	full E	Bore t	ype	Gaug	e gla	SS -	Ordina	ry plat	e type	e and	remote
blower etc	, acomu	de reed regulator, three element i	High	& Lov	/ wate	er lev	el ala	irms,	Main	Stea	m sta	op valv	/e, Ret	ractab	le typ	e Soot
Accessorie	s: feed F	Pump Super Heater Economizer a	ad Au	Drok												
Unit 2	OF	PERATION, CARE & MAINTENAN		F POT												
Pre-comm	Issioning	procedures Hydraulic tests stop			LERS	>								Tota	I Hrs	9
Blowing d	lown of	boiler. Laving up a boiler: gener	ni rai rai m	sing a		perat	ing p	roced	lures,	Actio	n in	the ev	ent of	shorta	age of	water
maintenar	ice, insp	ection and survey of boilers		laintei	lance	, EXU	ernai	and	interr	ial tu	ibe c	leaning	g - Tu	be re	newals	s, etc.,
Refractor	y: Purp	oses of refractory, types of refracto	orv an	id rea	sons	for fai	lure									
Oil Burni	ng: Proc	edure of Liquid fuel burning in oper	n furn	ace, '	Variou	us typ	es of	atom	iizer, F	urna	ce arı	rangen	nent fo	r oil b	Irning	Bouler
Control Sy	ystem i.e	e. master control, fuel control, air	cont	rol an	d vis	cosity	cont	rol, I	ntrodu	iction	to A	Automa	tion.	Therm	al oil	neater-
Unit 3	M	ARINE STEAM ENGINEERING														
Reciproc	ating St	team Engineer History of million												Tota	al Hrs	9
different t	vnes of s	steam turbines	ne ex	pansi	on m	arine	recip	rocat	ing er	igine	s & 9	steam	turbine	es - D)escrip	tion of
Layout o	f Plant:	General layout of plant & description	ion of	a mo	darn	upard	d sto	DOD to	irbioa							
use, open	and clos	sed feed system.	011 01	u me	ucin	geare	u ste		libile	msta	liatio	n inclu	ding ai	uxiliar	es in i	nodern
Selection	of mat	erials: Materials used in blades, ro	tors,	casing	gs, se	aling	gland	s, aei	ars etc	&th	eriu	stificat	IOD			
Unit 4	LL	JBRICATION OF TURBINES												Tot		0
Suitable of	oils and	their properties, lubrication of ma	in be	aring	s · th	nrust	bear		and de	arc	Gra	with a	nd oro	100	di Hrs	9
system ar	nd emerg	ency lubrication arrangement.					2 Curr		ina ye	. ur 5	Grd	ivity di	iu pre	sure	IUDFICA	ition-oil
Unit 5	C	ONDENSERS												Tel		-
Types of	condense	ers, constructional details, location	& w(orking	DETCH	DIAS	TEAN!	Pactic	n and	evo	20510		1205.05	100	al Hrs	9
change of	tempera	ature, circulating water quantity, ch	hange	e of m	am é	Dame	powe	8 ,80	ndens	er su	rface	Oner	ation	and M	test t lainte	
Turbine d	rain sys	tem, turbine gland system, warmi	ng th	(roug	k a ti	Irbine	plan	t, eal	Norol d	of spe	eed a	ind por	wer of	Dropu	Ision.	throttle
turbine lo	sees Bra	nozzle control, emergency contro	ls, er	nerge	ficy-q	pperal	12VP	E this	pines,	vibra	ation	in ma	rine st	eam t	urbine	, steam
curbine to	55C5. DIC	tak down and raditinging.		-112		DIST	RICT		20							
Text Boo	k:			- He	j	627	152	- /	5				Tota	l Hou	rs 4	5
1 J.H. I	Milton &	R.M. Leach, "Marine Steam Boilers'	', 4 th	Editio	12 Du	tter w	orth.	Lond	an 10	980		R	1			
2. C. Mo	Birnie,	"Marine Steam Engines and Turbing	es" 4	th Edil	× 14	R/INT-OT	-WOVER	0ª/	7	1000		N/2	$\langle -$			
Referen	ce (s).			Lui		andidi	EDINA	Teo	nuon	1980	F	RIN	ICIP	AL		
I GTH	Construction of seem (Universe and seem engines) So NO Course Course Course (Intermed engines) Southers able to understand marine 3 2 1 1 1 1 1 1 1 1 2 1 Course Course Course (Intermed engines) Students able to understand the 3 2 1 1 1 1 1 1 1 1 1 2 1 Course Course Course (Intermed engines) Students able to understand the 3 2 1 1 1 1 1 2 1 1 1 1 1 2 1 Course Course (Intermed engines) Students able to understand the 3 2 1 1 1 1 2 1 1 1 1 1 2 1 Course Course (Intermed engines) Students able to understand the 3 3 1 1 1 1 2 2 1 1 1 1 1 2 1 1 Course Course (Intermed engines) Students able to understand the Course Course (Intermed engines) Students able to understand the Course Course (Intermed engines) Students able to understand the So Students able to understable type and															
2 K.M.	B Donal	d, "Marine Steam Turbines" 1 st Edit	tion	nui, L Inchte	undo ite of	n, 200 Mari	JT.	0.00	NAC1	ATU			DALAV	MKO	TTAL 7	ALUK
3 L Ja	ckson &	T.D. Morton, "General Engineering	Knov	wieda	ate Ul e for	Marin	e Ene	yinee	rsivito	PROPERT	C LADTA	YUR, I	- ALATA		462	
King	dom, 19	86		incug		i i ut i fi	e eng	meer	5 4	Eait	NU N	inovital	3 K(@)	s-Pan	Catton	United
4. Thom	as D Mo	rton, "Steam Engineering Knowledg	ge for	Mari	ne En	ginee	rs", 3	e Edu	tion T	hom	as Re	ed Pub	lication	is Inr	idon 1	979
														J, LUI	auri i	

Signature of the Board Chairman

SYLLABUS

Requi	ation	2014
negu	uns	a a

PSN (College of Engineering and	Technology	Regulation 2014
Department	Marine engineering	Branch Code/ Degree/Branch (mention all branches for	08 / BE / Manne
Semester	IV	offered)	
Subject Code:	208024	oneredy	L T P C
Subject Title:	MARINE REFRIGERATION	AND AIR CONDITIONING	3 1 0 4
Objective At the end of Compressors, M	the course the students ar arine refrigeration and air-co	e expected to have completed anditioning plants	the detailed study of Reciprocating Total Hrs 12
Ideal cycle for compress Effect of clearance and volume. Condition for m motors.	ors work transfer in a single Volumetric efficiency in sing inimum work input and per	e stage compressors - Mass flow de stage compressors. Multi star fect inter cooling. Tandem in line	e - volume flow - Free air Delivery ge compression neglecting clearance e arrangements in compressors - Air
Unit 2 BAS	IC REFRIGERATION AND AIF	CONDITIONING	Total Hrs 12
Reversed Carnot cycle - Refrigerants used in mar use of vapour Tables - A Unit 3 MAR Typical marine Refrigera	Vapour compression cycle - ine practice and their justific pplied Problems. INE REFRIGERATING PLANT ting plants with multiple cor	Refrigerating effect - Co-efficien ation - Rating of Refrigeration pl S npressions and evaporator system	t of performance - Cooling Capacity - ant - Methods for improving C.O.P - Total Hrs 12 m - heat pump cycles - Refrigeration method- Double-nine Shell and Tube
type, Condenser and Eva	porator - Problems Refrigera	ators and Refrigeration Cycle.	
Unit 4 MAR	INE AIR CONDITIONING		Total Hrs 12
Principles of Air condition Capacity - Calculation for Recirculation and Steam	ning – Psychrometric proper or ships plants. – Marine Air Heating Mode	ies of air - comfort conditions - Conditioning Centralized Unit -	control of humidity - airflow and A C Centralized Air conditioning Unit with
Automatic Direct Expans Seal – Float Controlled Separator – Solenoid Val	GO SHIP AIR CONDITIONIN sion Refrigeration System - Oil Trap - Thermostatic Exp ve - Oil Pressure Cut out -	G Refrigerating Compressor Unloa Dansion Valve - High Pressure C Container With Refrigeration Unit	ding Mechanism - Compressor Shaft Cut Out - Low Pressure Cut out - Oil
		Total Hou	rs to be taught : 60
Outcome: At the end of the syllabu ships. Text Book: 1. Arora C.F Patel Nag 2. J.R. Stol Engineer	s cadets' outcome with the P P., "Refrigeration & Air Cond gar, New Delhi- 110008, 200 (t, "Refrigerating Machiner s, London, 1974, Reprint 19	cnowledge of Air conditioning sys itioning", 7 th reprint, Tata McGra 06. y and Air Conditioning Plant", 98. (V-Unit)	item and its application on different w-Hill Publishing Company Ltd, 7 West 1 st Edition, The Institute of Marine
Reference (s): 1. H.D. Mc 2. D.A. Tay 3. Stoecker Delhi, 19	George, "Marine Auxiliary M or, "Introduction to Marine , Wilbert .F Jones, Jerold. V 85.	achinery", Butter worth- Heinen Engineering", 2 nd Edition, Butter V., "Refrigeration and Air Condit 627 52	hann, London, 2001. (V-Unit) Worth, London, 1993. tioning", 2 nd Edition, Tata McGraw-Hill,
	PSN COLLEGE OF ENGINEER MELATHEDIYOOR, PALAY, TIRUNELVELI DIST.	AL ING & TECHNOLOGY AMKOTTAI TALUK - 627 152. Signature	of the Board Chairman
		Chairm	an. Board of Studies

Dept. of Marine Engineering PSNCET (Autonomous) -

		PSN College of Enginee	ering	and	Tech	nolo	9Y			_ ~			Reg	latio	- 20	
epartm	ent	Marine engineering		(me	Bra	nch C all br	ode / anch	Deg es to	ree / white d	Bran In the	ch subj	ect	08	- BE -	Marin	e
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ubject (Code	508013			0	DIT	ONI	NG					3	0	U	3
ubject 1	Title	MARINE REFRIGERATION	ANI	JAIR	con	UIT										
bjective >	e: At the en refrigerat	d of the course the students ar ion and air conditioning system	e exi is & p	pecte plants	d to t in vä	nave mes s	comp hips	leted	the	detail	ed st	udy of	Heat	Exchar	iger, m	
O's NO		COURSE OUTCOME	PO1	PO2	PO3	PO4	P05	P06	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO.
0305 1	Students basic co condition	will be able to understand the ncepts of refrigeration & Air	5	3	3							2			1	
20305-2	Students marine re	will be able know about efrigeration plant		3	ţ.						-					2
0305.3	Students Psychron	 will be able to understand metric properties and systems 	3	3	1	-		-			1	2	2		1	2
CO305.4	Students REFRIGE	s will be able to understand the RATED CARGO SHIP	3	3	1				2							1
CO305.5	Students work on	s will be able to understand and heat exchangers	3	2	1	-		-	-	-	-	-	-	-	-	-
			3	2	1		-					1	Tot	al Hrs	()
Typical I Liquefied Unit 3	marine Re d gas carr MAF	errigerating plants with multiple lers - Applied problems. RINE AIR CONDITIONING		1.05		- (0	mfort	CON	dition	5 - 0	ontro	of h	To Uni art	ai Hrs y - ai	rt ow a	9 and A
Principle Capacity	es of Air c y - Calcul	onditioning - Psychrometric pr lation for ships plants - Mari Steam Heating Mode	ne A	ties o ir Co	or air nditic	ning	Cent	ralize	d Un	t -	Centr	alized	Air Ci	pháitio	ning L	
Recircui	ation and	DICEPATED CARGO SHIP											TO	tal Hrs	of Ref	9 Inera
Unit 4	REF	rigerated cargo ship - preparat	tion f	or loa	ading	refrig	gerate	ed ca	rgoes	- WO	with	Refrio	eratio	n Unit	of net	9.9
Introduc	– mainte	nance of cargo hold in reefer ca	argo-	hand	ling I	eefer	carg	oes-	Cont	anner						9
cargoes	DAG	STC DESIGN OF HEAT EXCHA	NGE	RS							ab 2.0	aar (onden	ser ar	d Eva	porat
Unit 5	BAS ction Th	ines - LMTD and NTU method	- Do	uble-	pipe,	Shei	and	Tub	e typ	be ex	chan	ger, c	onuci	50 0		
Problem	ns Refrige	rators and Refrigeration Cycle.														45
Problem	is item ge												T	otal H	ours	45
Text B	ook :	R S. Khurm. & J K. Gupta I Re Unit. 1 - 111)	efrige	eratio	n & A	ir Co	nditic	oning ta Mo	"S (Grav	Chano v-Hill	1 & C . Del ^a	ompa 11, 201	ny (P) 7 (Un	Lta, N nt IV	ew De - VI	n 2
	2	P.K. Nag "Engineering Thermo	μηλησ	,1111C3	2											
Refere	ence (s): 1 2 3	H D. Mc George, "Marine Auxi D.A. Taylor, "Introduction to f Stoecker, Webert - F Jones, J	liary Marin Ierolo	Maci ie En i W	inery ginee , ' Re	, By ring friger	tter w 2 %f	vorth ditio -and	AIT V	TCO T		Londol n Loni ng' 2	n, 200 don, 1 Eur	1 (V-1 993 900 T	un ti izta Mi	:Grav
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Dept. of Marine Conneerin PSNCET (An comous)

ment	MARINE	Branch code/	2015/201
	MARINE		
		Degree/Branch	
OF	02	(mention all branches for	08 – BE - MARINE
eri	03	which the subject is offered)	
Code:	208108		I T P C
Title:	DYNAMICS L	ABORATORY	
ve:			0 0 5 2
To supple	ement the princip	oles learn in kinematics and Dynamic	s of Machinery
To unders	stand how certai	n measuring devices are used for dy	namic testing.
		LIST OF EXPERIMENTS	
of gear pa	irameters.		
-			
io deter	mine the Natur	al Frequency of spring mass system	tem and to compare th
ineoretic	al and experime	ntal Natural Frequency	
T 1 ·			
io detern	nine the momen	t of inertia of unknown oscillation.	
To deterr	nine Gyroscopo	Couple of a motor events to the	
value	and Gyroscope	couple of a motor experimentally to	o compare with theoretic
lo deter	mine Radius d	of Gyration and mass moment	of Inartia of the -
ectangul	ar bar experime	entally	of mercia of the give
		incomy.	
lo determ	nine the Natural	frequency of any critical speed of the	a uvan Vibration tabla
	in a martine martar ar	inequency of any entited speed of the	given vibration table.
o determ	nine the gauge c	haracteristics of Hornell governor	
	0 0		
o draw t	he displacement	diagram experimentally for various	cam profile.
Balancing	of reciprocating	mass in various speeds	
Jananenig	or reciprocating	mass in valious speeds.	
		Tota	al Hours to be taught:4
NG OUT	COMES:		
nd Dynay	TOF CHIS SECTION	, cadets able to supplement the prin	iciples learn in kinematics
In Dynai	estino	y and understand now certain meas	uring devices are used fo
ynanne te	esting.	S TICHNEN E	
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MELATH	EDIYOOR, PALAYA	MKOTTAL TALLUS Signature of	of the Board Chairman
۲	IRUNELVELI DIST	- 627 150	
		- 947 10Z.	Roard of Studion
		Chairman	, DUATU OF Strutes
		Dept. of N	larine Engineering
		PSNCE	T (Autonomous)
	PSN COLL MELATH	of gear parameters. To determine the Natur Theoretical and experiment To determine the moment To determine Gyroscope value. To determine Radius of rectangular bar experime To determine the Natural To determine the Natural To determine the gauge of To determine the gauge of To determine the gauge of To determine the gauge of To determine the section To determine the section The	To understand how certain measuring devices are used for dy LIST OF EXPERIMENTS of gear parameters. To determine the Natural Frequency of spring mass syst Theoretical and experimental Natural Frequency To determine the moment of inertia of unknown oscillation. To determine Gyroscope Couple of a motor experimentally to value. To determine Radius of Gyration and mass moment rectangular bar experimentally Fo determine the Natural frequency of any critical speed of the for determine the gauge characteristics of Hornell governor. Fo draw the displacement diagram experimentally for various of draw the displacement diagram experimentally for various of data able to supplement the print ind Dynamics of Machinery and understand how certain meas lynamic testing. PRINCIPAL PSN COLLEGE OF ENGINEERING & TECHNOLOGY MELATHEDIYOOR, PALAYAMKOTTAI TALUK TIRUNELVELI DIST 627 152. Chairman Dept. of N

PSN	College of Engi	neering and Technology	Re	gulati	on: 20	18
Department	MARINE	Branch code/ Degree/Branch	0.8	_ BE .	MAD	INE
Semester	03	(mention all branches for which the subject is offered)	00	- 01	MAN	
Subject Code	508107		L	т	Ρ	С
Subject Title	DYNAMICS L	ABORATORY	0	0	3	2

Objective:

- To supplement the principles learn in kinematics and Dynamics of Machinery.
 - To understand how certain measuring devices are used for dynamic testing

CO's NO	COURSE OUTCOME	PO1	PO2	РО3	P04	P05	P06	PO7	P08	P09	PO10	PO11	PO12	P50:	PSC 2
CO308 1	At the end of this section, cadets able to supplement the principles learn in kinematics and Dynamics of Machinery.	3	2		-		1	1		1	-	-	-	-	
CO308.2	At the end of this section, cadets able to Understand how certain measuring devices are used for dynamic testing	3	2	-	-		1	1		1	-	-		-	•
		3	2	-	-	-	1	1		1	-	-	-	3	2

LIST OF EXPERIMENTS

- 1. To determine the Natural Frequency of spring mass system and to compare the Theoretical and experimental Natural Frequency
- 2. To determine the moment of inertia of unknown oscillation.
- 3. To determine Gyroscope Couple of a motor experimentally to compare with theoretical value.
- 4. To determine Radius of Gyration and mass moment of Inertia of the given rectangular bar experimentally
- 5. To determine the Natural frequency of any critical speed of the given Vibration table.
- 6. To determine the gauge characteristics of Hornell governor.
- 7. To draw the displacement diagram experimentally for various cam profile.
- 8. Balancing of reciprocating mass in various speeds.
- 9. Charts & models shall be prepared for governor, gyroscope couple and varies sectional beams & cam.



	PSN College of Engineer	ing and Technology	Regulation 2013.8 2014
Department	MARINE	Branch Code/	
Semester	05		OB BE MARINE
Schiest Code	208026	subject is offered)	
Subject Code	MARINE AUXILIAR	Y MACHINES - 1	4 0 0 1
Objective			Lo de reduct para dese
 Ship's Engine Various types 	Room Layout, Piping syste of Pumps and its applicati	ems and fittings ons	
Ship's steerin	g systems.	T	Total Hrs 12
Unit 1	engine ROOM LATOU	auxiliary machinery in Engine Rooms in	different ships
Engine Room Layo	na Arrangements & Fil	tings: Steam and condensate system.	water hammering in pipes, Expansion
ioints in pipelines. B	ilge – ballast and sewag	e. fuel oil bunkering and transfer system	n, bunkering procedure, precautions
taken, fuel oil servic	e system to main and au	ixiliary engines, lubricating oil and Engir	ne cooling system to main and
auxiliary engines, ce	ntral cooling and centra	priming systems, control and service a	r system, domestic fresh water and
sea water (Hydropho	ore) service system, drin	king water system, fire main system	
Unit 2	ALVES AND COCKS		Total Hrs 12
Valves and cocks:	Straight way cocks, righ	t angled cock, 'T' cock, spherical cock, E	oiler gauge glass cock (cylindrical
cock) and steam tra	ps.	-	
Valves: Globe valve	es, SDNR valve, swing cl	neck valve (storm valve), gate valves, b	utterfly valves, relief valves, quick
closing valves, press	sure reducing valves, cor	trol valves, ball valve change over valve	e chests, fuel oil transfer chest, valve
actuators, steam tra	ps.		
Joints and packing	: Types of Packings, var	ious joints materials for packings - Vario	ous applications of Seals - purpose of
bearing seal, descrip	tion and application of n	on rubbing seals and rubbing seals, sim	ple felt seal, seals suitable for various
peripheral speeds, V	-ring seals, Lip seals.		
Filters and straine	rs: Types of filters filter	elements basket strainers, duplex strain	ers, edge type strainers, auto-kleen
strainers, back flush	ing strainers, magnetic f	ilter, rotary filters, fine filters.	
Unit 3	PUMPS		Total Hrs 12
Pumps: Types of p	umps for various require	ments - their characteristics, performan	ce and application in ships -
centrifugal pumps -	gear pumps - screw pur	nps and reciprocating pumps - care and	maintenance of pumps.Water ring
air pump, axial flow	pump, vane pump, veloc	city pump.	
Unit 4	HEAT EXCHANGERS, I	EVAPORATORS AND DISTILLERS	Total Hrs 12
Heat Exchangers,	Evaporators and Distil	lers: Principle of surface heat transfer -	description, contact heat transfer,
construction of shell	and tube type – flat plat	e type, single and double pass - lubricat	ing oil coolers, fuel-oil heaters, fresh
water coolers, Main I	ngine charge air cooler,	Fresh water heaters, steam condensers	, evaporators and condensers in
refrigeration system	- materials used in all ti	ne above heat exchangers	
Evaporators and D	istillers: Distillation of	water, distilling equipment, problem of s	cale formation and method of
overster flesh over	or distillation, single end	calinity control system reverse estimation	desploation plant membranes
drinking water plant	treatment	samily control system reverse osmosis	desalination plant, memoranes,
			Total Her 12
Steering system: H	vdraulic Telemotor syste	m (Transmitter and receiver) Bypass y	alvo charging system budraulis
power unit Heleshaw	pump- principle constr	uction and operation. Param and Aaram a	alve - charging system, - nydraulic
gear of principle and	pump ² principle, constr loneration - Hunting de	ar and emergency steering dear. Princip	le construction, of Potary yang
steering gear - opera	ation - safety features is	teering gear system regulations and tes	ting - trouble shooting Basic
nrinciples of auto pilo	nt safe matric	teering gedraystern regulations and tes	ang - alouble shouling basic
principles of duto pile	A, sure matric.	Total	Hours to be taught 60
Outcome: At the end of	of this syllabus, the student	s will gather knowledge about Engine room p	iping systems available onboard together
with various component	s associated in the same sy	stem (valves & cocks, Filters & strainers, Pur	nps, Joints & Packing's), Principle and
operation of Heat Excha	ngers, Materials used & Typ	pes of Heat Exchangers, Fresh water product	on, treatment and supply to various
systems in ship. Steerin	g gear system used in ship	types, regulations & safeties together with .	vorking of the system in detail. Air
compressor constructio	in, operation, principles, typ	bes and the technical terms together with saf	eties in the system
1 H D McCoords	"Marine Auxiliary Machine		
Diesel Engines	7 th Edition Butter Worth	evy butter worth Heinemann, London, 23	JUI Wood yard, Doug, "Pounder's Marine. Lto III)
Reference (s):	, · Edition, Dutter worth	General and Disting, London, 2001 (Unit -	
1. H.D. McGeorge	, "General Engineering Kn	Widde" ButtelCtorth Steinemann London	1991
2. VikramGokhale	, N. Nanda, "Advanced Ma	ne Engineerite Knowledge Vol II', Engineer	Enterprices, Mumbai, 2001
3. VikramGokhale	& N. Nanda, "Marine Engine	Knowledge for Bylior Engineers, Engin	eer Enterprises, Mumbai, 1999
4. D.W. Smith, "M	larine Auxiliary Machinery",	Bruse worth Long Jr 1982	1
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	MELATHEDIYOOR, PAL	ATAMKUTIALIALUN Signature C	n the board Chairman
	TIDUMELVELLD	SL - 52/ 734. Chairman	Poord of Studios
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	PS	N College of Engi	neering a	nd T	echn	ology	Y						Re	equiat	ion:	2018	
Departme	ent	MARINE	Bran	ch Co	de/									guiat			
Semecto	-	C.	— Degr (men	ee/Br	anch	nche	s for	which	n fbe	eubro	ct					DING	
semester		C	is off	ered)	an Die	mene	a IUI	vviiiCl	- the	subje	CL .		01	0 – BE	- MA	RINE	
Subject C	ode	508022									+	L		т	P		С
Subject T	itle	MARINE AUXI	LIARY MA	CHIN	NES-1	[3		0	U		3
•	: To impart knowle	edge about Ship's	Engine Ro	om La	avout	Pini	nasv	/stem	is an	d fittu	nasi	n rea	Ltime	annlia	ation		
•	To gain knowledg	ge in using Various	types of	Pump	os and	d its a	applic	ation	is and	d Ship)'s st	eerir	ig syst	tems	ations	5	
CO6	со	URSE OUTCOME			000			0.05									
cos	Students can be	able to			PO2	PO3	PO4	PO5	P06	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
	Understand and	d apply about eng	ine room		+												
C01	In the engine ro	ineries and various om	pipelines	3	3	1	-	÷		2	-	2				-	1
	Remember &u	nderstand the co	nstruction	-													
CO2	and working of	various valves, f	ilters and	3	3	1		1				-	2		1	1	2
	Understand &	apply on various	types of		+												
CO3	pumps with the	eir construction and	d working	1													
	principle wi	th performance	e and	1 3	5		-				-		-	-	-	2	
	Rremember &	understand on	shell and							┼──┤							
CO4	tube, plate t	ype heat exchar	iger and	3	3	1		2	-			-	2			2	
	evaporators wit	h RO plant															
CO5	of various type	s of steering gear	operation system in	2	2	1											'n
	ships and safety	features				1											2
				3	3	1	-	1	-	1		1	2	-	1	2	2
nit 1	ENC	STNE BOOM LANO		-						1							1
naine Ro		out of main												Total	Hrs		
nit 4 eat Excl d tube ndensers stillers:	Types of pumps crew pumps and HE/ hangers, Evapo type - flat plate s, evaporators a Distillation of v	AT EXCHANGERS, rators and Distill type, single and nd condensers in water, distilling equ	ments – th is – care ar EVAPORA ers: Princip double pas refrigeratio inpment, pr	eir ch nd ma TORS ple of ss - li on sys	aracte intena 5 AND surfai ubrica stem n of si	DIS DIS ce hea ting ating cale f	s, per of pun TILLE at tra oil co terials ormal	formanps. V ERS Inster olers, Souse tion a	ance Water - des fuel d in	and ap ring a scription- oil he all the inethod	on, c ater abc of c	ontac s, Ma	in ship axial fli t heat iin Eng eat ex lling s	os - ce ow pun Total transfe gine ch cchange	ntrifug np, va I Hrs er, cor arge d ers E	al pum ne pum hstructic air cooli vapora	ps - g p in of s er, ste tors
ell type	evaporator, low	pressure vacuum	type evap	orato	r, flas	sh ev	apora	tors,	dete	ction	and	salını	ty con	trol sy	stem,	reverse	e osm
	n plant, drinking	water plant treatm	ent.											.			
nit 5 teering	system: Hydrau	ilic Telemotor syst	em (Tran	mitte	er and	1 rece	aver)	Byr	acc	مبادر	- ch	arour	0 646	lota	Hrs	aulic or	
eleshaw eering ge asic prin	pump- principle, ear- Hunting gea ciples of auto pilo	construction and c r and emergency s ot.	peration, teering ge	2-ram ar. Sa	and afety f	4-ran eatur	n stee es, st	ering teerin	gear g gea	- prir ar syst	nciple em r	and egula	opera ations	tion of and tes	electi sting -	ric & Ro trouble	itary v e shoc
															Tota	Hour	5
1 H E	(; ED Mc George, " ngines", 7 ¹⁵ Editio Seperal Engineeri	Marine Auxiliary Ma on, Butter Worth He	achinery", l einemann l	Butter	ENG	Tonde	inem 20 20	ann,)01 (1	Londo Unit -	on, 20 1 to 1	01 W II)	ood	yard, C)oug	Pound	ers Mar	ine. D
2 0 eference 1 H 2 V 3. V 4 D	Content Engineering (s): (1) Mc George, " (1) Mc Georg	General Engineerin I. Nanda, "Advance N. Nanda, "Marine ne Auxiliary Machin	g Knowled d Marind E Engineerit iery", Buty	Hoine	ering willing	kiłów kiłów leifioz ondo	FL He Tedge Junig n. 20	Vol Vol Eng Dy	iann, 11", E	Londo Ingine s. Eng	on, 1º er Er jinee	991 hterpr r Ente	nses, N erprise	1umbai s, Mum	2001 15ai, 2	005	
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PSN Co	llege of Engineering and T	echnology		Reg	ulation	- 201**
Department:	Marine Engineering	Branch Code Degree/Branch (mention all branche which the subject is	08 s for	BE M	anne	
Semester	V 1	offered		T	P	C
Subject Code: Subject Title:	208031 MARINE INTERNAL CO	OMBUSTION ENGINES-11	4	0	0	4
Objective: Marine fuel injecti Maneuvering syst Forces and stress: Construction and Unit 1 Jerk type fuel injection sy medium speed Marine en Effects of viscosit Measuring equipm Necessity of varia Necessity of varia Necessity for ado Comporation of H Unit 2 Mane Hydraulic governor fixed safety provisions Indicator diagrams a electronic analyzer signi diagrams, power balanci	on pumps and its application ems of various marine diesel as in slow speed and medium operation of various Marine's iumps and metering devices stems helical groove and spi gines, V.1.T.& Electronic inject y on liquid fuel combustion, nent and its working principle ible fuel injection system, ication on modern slow speed ption of fuel quality setting st QSL along with the VIT sy uvering Systems and variable speed, Maneu- ficance of diagram, power Cong, performance characterist	s. engines. low speed engines. low speed engines il valve type fuel pumps stion systems, common e. d long stroke engine. stem on the engine. vering systems of MAN Construction and work Calculations, fault detect ic curves, test bed and s	, system fo rail systems , B&W, suit ing principle tion, simple lea trials and	Total r burni Tota zer Ma e of in draw d rating	Hrs ng heav rine die idicator cards a g of dies	12 y oil in slow and sel engines with instrument and ind out of phase sel engines.
Unit 3 Force	s and strasses	ic curves, test bed and s		Tota	Hrs	12
Balancing, overloading, overloa	different types of vibration & ds of vibration Damping	its effects, forces and st	resses actin	g on va	arious ci	omponents of
Unit 4 Medi Different types of mediu speed engine, developm construction details. Unit 5 Cons	um Speed Engines m speed marine diesel engini ent in exhaust valve , V-type struction and Operation	es, couplings and reduct engine details. Develop	ion gear use ment in exh	Tota ed in co laust va	al Hrs injunctio alve ope al Hrs	12 on with medium gration and
Construction and Operat Sulzer RTA, B&W CMC & overhaul - U.M.S. Opera	tion of wartsila, Sulzer, B&W, & SMC, cam less concept, int tion of ships	MAN Diesel engine. Lat elligent engine improve	est developi ment in des	ment ir ign for	marine	e diesel engines - ed Time between
	terms for any second	То	tal Hours t	to be t	aught	: 60
At the end of th understand the Balancing, Perfo on engine due to systems. Detail diesel engine, Li Text Book: 1. Thomas D Morto 2 A J Wharton, "D	nis course the students will of Manoeuvring system with t irmance, characteristic curve o various operating condition s of V-type engine. It gives atest developments & U.M.S. on, "Reeds Motor Engineering resel Engines". Butter worth	get knowledge about Mi the safeties incorporate as & Indicator diagrams s. Types of Medium spe knowledge about cons operation of ships. 5 Knowledge for Marine I 5 Heinemann London	arine Fuel P d in the sy . Various ty ed marine d struction & Engineers .	umps & stem. pes of lesel ei operati	& Meter Power (Forces ngines a on of S s Reed	ing devices. They calculation, Power & Stresses acting and reduction gear Sulzer, B&W, MAN Publication (1994)
Reference (s): 1. S. H. Henshall, 1996. 2. Devnarayanan 3. D.K. Sanyal, Pr 4. C.C Pounder, "M 5. John Lamb, "Ma 6. Wood yard, Doi	"Medium and High Speed Die Marine Diesel Engine" nciple & Practice of Marine D farine Diesel Engines", Butter grine Diesel Engines", Butter ug, "Pounder's Marine Diesel	esel Engines Vol Manue TIR ING Vidante TIR ING Vidante TIR ING Vidante Bhandar r worth - Hanemann, S worth - Hanemann, S worth - Heinemann, Lo Engines (Sutter work)	ise", Institu San Publicat Cotland, 19 Sen 1990 Se nemann	ute of N Non, M 95. Pub' st	larine E umbai <mark>c</mark> ning co	ngineers. Mumbai, 1998. ndor <mark>. 2001</mark>
	PSN COLLEGE OF ENGINEERIN MELATHEDIYOOR, PALAYAI	IG & TECHNOLOGY	Signatu	reofth	e Board	Chairman
	TIRUNELVELI DIST	- 627 152.	Chairman	, Boa	rd of S	tudies

	PSN College Of Er	igineering and Technology		Keguia	tion : 20	10
Department	MARINE	Branch Code /Degree/Branch (mention all branches for which the		08 - E	E - MARI	NE
Semester	6	subject is offered)				
Subject Code	508026		L	Т	Р	С
Subject Title	MARINE INTERN	AL COMBUSTION ENGINE-II	3	0	0	3

Objective:

- To impart knowledge about Marine fuel injection pumps, its applications and Maneuvering systems of various marine diesel engines

• 1	o gain knowledge about forces and stresse	5 11 5	10 10 5	peed		neuru									
CO's NO	COURSE OUTCOME	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Students can be able to illustrate various fuel pumps.	i	3)	-					-			,	3	3
CO2	Students can be able to understand analyze maneuvering systems.	5	3	2	-		2	2		-	1			3	3
CO3	Students can be able to explain forces and stress in engine.	3	3	2	-		2	2			1		3	3	3
CO4	Students can be able to classify and study medium speed engine parts.	3	3	2	2	2	2	3		-	1		3	3	3
CO5	Students can be able to describe and summarize engine construction.	3	3	2	2	2		2		-	1		3	3	3
		3	3	2	0.8	0.8	2	2		-	1	-	3	3	3
11-14-1		CES		the base of the state								Tota	Hrs		9
	FUEL PUMPS AND METERING DEVI				(26 V	1 7 9	Floc	ronic	intect		stems	com	non rai
systems modern V.I.T. sy	. Effects of viscosity on liquid fuel combu slow speed long stroke engine. Necessity f rstem on the engine.	stion. or ad	optio	essity n of f	of v uel qu	ariabl uality	settir	ng sy	ction stem.	syste Inco	em, pr rporati	ocedur on of f	e of a QSL a	applica along	ation or with the
Unit 2	MANEUVERING SYSTEMS											Tota	I Hrs		9
analyze balancir	r significance of diagram, power Calculat ng, performance characteristic curves, test	tions, bed a	fault and se	t dete ea tria	ection als an	, sim d ratii	iple c ng of	lraw diese	cards Lengi	and nes.	out c	of phas Tota	se dia ai Hrs	grams	, powe 9
Unit 3	FORCES AND STRESSES	n & it	s effe	ects,	forces	and	stres	ses a	cting	on va	arious	compo	nents	of LC	Engin
parts, N	Aethods of vibration Damping											Tota	al Hrs		9
Differer	nt types of medium speed marine diesel	engin	es, co	ouplir	igs ai	nd rea	ductio	on ge	ar us	ed in	conju	nction	with	mediu tion d	m spee etails.
engine,	, development in exhaust valve , V-type en		letail	s. De	velop	nent		10,051	Varve	oper		Tot	al Hrs		9
Unit 5	Iction and Operation of wartsila, Sulzer, E	3&W,	MAN	Diese	el eng	gine	Lates	t dev	elopn	nent	n mar	ine die	sel er	gines	- Sulze
RTA, B	&W CMC & SMC, cam less concept, intellig	ent e	ngine	mpr	over	ient ir	n desi	ign fo	rincr	eased	1 Inne	Detwe			45
Operat												10		ours	43
Text B 1. 2.	Book: Thomas D Morton, "Reeds Motor Enginee A.J Wharton, "Diesel Engines", Butter wo	ering orth -	Know Hein	ledge iemar	for N In, Lo	1arine ndon	e Engi	neers 5	5", Th	omas	Reed	Publica	ition <mark>, i</mark>	2005	
Refere 1. 2. 3. 4. 5 6	ence (s): S. H. Henshall, "Medium and High Speed Devnarayanan " Marine Diesel Engine" D.K. Sanyal, Principle & Practice of Marin C.C Pounder, "Marine Diesel Engines", Bu John Lamb, "Marine Diesel Engines", Bu Wood yard, Doug, "Pounder's Marine Die	d Dies ne Die utter tter w esel	el En worth worth	nigines NGIN Hgine h - H IR HR E 627	for M EER/ einen einen Herter 152	tarine hang nan wort	Use" arkar Scotl orido	, Inst Public and, n, <mark>20</mark> 0 nema	ntute cation 2005 05 nn Pu	of Ma , Mur blishi	nne E mbai <mark>, 2</mark> ng, Lo	ngineei 2004 ndon, <mark>2</mark>	rs, Mu 2 <mark>006.</mark>	mbai	2008
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PSN College of Engineering and Technology									Regulation 2018							
	•	Marine		Branc	h Coo	le / l hes	Degre for w	hich t	he si	ibjec	t is		08 -	BE-	Marin	e
partmen	(04	offered)						L	т	-	Ρ	с			
bject Co	de	508015				3 0 0				3						
biect Tit	le	NON DESTRUCTIVE	TEST	ING								5				
bjective: the cours ethods su agnetic Flu	se end cadets kr uch as Visual, Pe ux Leakage Testi	now about the basic p enetrant Testing, Mag ng and specialized NC	orincip gnetic iT met	oles, I Parti hods	echn cle T such	iques estin as T	s, equ g, U herm	uipme Itraso lograj	ent, a onic 1 phy a	applic estin ind A	ation g, Ri coust	adiogr adiogr ac Emi	limita aphy, ssion	tions Eddy	of bas Curre	aic NDT ent and
O's NO	COURS	E OUTCOME	PO1	PO2	PO3	PO4	PO5	PO6	PO7	P08	PO9	PO10	PO11	PO12	PSOI	PS02
0401.1	Students will le	earn about the basic	3	1	-	-	-	1	1			-	-			
0101.2	At the end of un about DPT &	nit students will know MPI testing methods	3	1		1	-	1	1	•					-	
	and its application At the end of u	ions nit students will know	3	1		1	1	1	1	-	-	-		-	-	
;0401.3	about R1 test applications	ing methods and its	, ,	-												-
0401.4	about UT test applications	ing methods and its	5 3	1	-	1	1	1	1	-	-					
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C01	Explain the since to	cope of logistics in	3	3	2			-	-		2	2		2	1	2
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DEPARTMENT OF MANAGEMENT STUDIES

28-03-2018

STAKEHOLDER FEEDBACK ON CURRICULUM & TEACHING-LEARNING ANALYSIS Academic Year 2017-18

The following points were suggested by the stakeholders in feedback on curriculum & teaching-learning:

- 1. Updated subjects to be added especially for the specialization papers.
- 2. In addition with SPSS AND TALLY theory may also include.
- 3. Practical oriented training can be given
- Career skill development related courses may be included in the curriculum to enhance job skills.
- 5. Internship, Mini Project and Main Project is a Part of Curriculum and it should be mandatory to understand industrial scenario.
- 6. Smart class rooms may also introduced
- 7. More number of Soft Skill development programmes may be included.
- 8. Some more new subjects which will meet the industry needs may be introduced as electives.
- Subjects for developing Communication skills may be included. That will be very helpful for getting job.



Head of the Dopartment Department of Management Studies PSN College of Engineering and Technology Melathediyoor,

PRINCIPAL PSN COLLEGE OF ENGINEERING & TECHNOLOGY MELATHEDIYOC 2, PALAYAMKOTTAI TALUK TIRUNELVELI DIST. - 627 152.



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DEPARTMENT OF MANAGEMENT STUDIES

09-04-2018

ACTION TAKEN REPORT ON STAKEHOLDER FEEDBACK ON CURRICULUM & TEACHING-LEARNING

Stakeholders Suggestion	Action Taken
 Updated subjects to be added especially for the specialization papers. In addition with SPSS AND TALLY theory may also included. Practical oriented training can be given Career skill development related courses may be included in the curriculum to enhance job skills. Internship, Mini Project and Main Project is a Part of Curriculum and it should be mandatory to understand industrial scenario. Smart class rooms may also introduced More number of Soft Skill development programmes may be included. Some new subjects which will meet the industry needs may be introduced as electives. Subjects for developing Communication skills may be 	The suggestions received from stake holders on the curriculum and syllabus feedback was taken up in the Programme Assessment Committee (PAC) of department of Management Studies. All the suggestions were unanimously accepted by the faculty members and it is decided to incorporate them in the 2018 regulation. Hence the faculties were requested to incorporate the suggestions in the respective courses and frame the syllabus. This will be implemented from the academic year 2018-19
DEPT. OF MBA	Ander 2018 regulation for the students of Computer Science and Engineering after getting the approval from board of studies and academic council. HOD Head of the Department Department of Management Studies PSN College of Engineering and Technology

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DEPARTMENT OF MANAGEMENT STUDIES

23-03-2019

NOTE

As per the action taken report dated 09-04-2018, the suggestions of stake holders on curriculum and syllabus are incorporated in the courses offered under 2018 regulation and approved by board of studies and academic council.

Enclosure:

Curriculum (Regulation 2018) of department of management studies

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Head of the Department Department of Management Studies PSN College of Engineering and Technology Melathediyoor,

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25-02-2018

STAKEHOLDERS FEEDBACK ON CURRICULAM & TEACHING- LEARNING ANALYSIS Academic Year 2017-2018

The following points were suggested by the stake holder's feedback in curriculum & teaching- learning

1, Curriculum for Regulation 2018 is accepted and approved by BoS members with few changes.

2. The external expert suggested separating the practical course Strength of Materials and Fluid Mechanics & Machinery lab which is in 4th semester into two practical courses namely Fluid Mechanics & Machinery lab and Strength of Materials lab in 3rd and 4th semester respectively.

3. Few changes have been made in the syllabus content of Strength of Materials course as per suggestion of external expert.

4.External expert recommended "Mechanics of Materials" by Beer FP and Johnston R as text book and "Elements of Strength of Materials" by Timoshenko SP as reference book.

5. External expert recommended to add compression test on materials as an experiment in the Strength of Materials lab.

6. BoS members suggested to merge the Dynamics lab and Mechanical Measurement & Metrology lab. And also recommended to name that lab as Dynamics and Metrology lab.



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10.03.2018

NOTE

As per the action taken report dated 24.02.18, the suggestions of stake holders on curriculum and syllabus are incorporated in the course offered under 2018 regulation and approved by board of studies and academic council.

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HOD/Mechanical

Head of the Department Department of Mechanical Engineering PSN College of Engineering and Technology Melathedivoor, Tirunelveli - 627152

Enclosures:

- Curriculum (regulation 2018) of department of Mechanical 1. Engineering
- 2. Syllabus of new course (III, V & VI)



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13.03.18

ACTION TAKEN REPORT STAKEHOLDERS FEEDBACK ON CURRICULAM & TEACHING- LEARNING

	Stakeholders Suggestions	Action Taken
	1. Curriculum for Regulation 2018 is accepted and approved by BoS members with few changes.	1. Curriculum for Regulation 2018 is accepted and approved by BoS members with few changes mention below.
	2. The external expert suggested to separate the practical course Strength of Materials and Fluid Mechanics & Machinery lab which is in 4th semester into two practical courses namely Fluid Mechanics & Machinery lab and Strength of Materials lab in 3rd and 4th semester respectively.	2. The practical course Strength of Materials and Fluid Mechanics & Machinery lab which is in 4th semester is separated into two practical courses namely Fluid Mechanics & Machinery lab and Strength of Materials lab in 3rd and 4th semester respectively.
	3. Few changes have been made in the syllabus content of Strength of Materials course as per suggestion of external expert.	3. The changes suggested by the External Academic Expert have been made in the syllabus content of Strength of Materials course.
13/1-1	4. External expert recommended " Mechanics of Materials" by Beer FP and Johnston R as text book and "Elements of Strength of Materials" by Timoshenko SP as reference book.	4. The text and reference book recommended by External Academic Expert for "Strength of Material" ("Mechanics of Materials" by Beer FP and Johnston R as text and "Elements of Strength of Materials" by Timoshenko SP as reference) have been incorporated.
1/*/	5. ²⁷ External expert recommended to add compression test on materials as	5. The compression test on materials is added as one experiment in the
1	an experiment in the Strength of	Strength of Materials lab as per the

PSN COLLEGE OF ENGINEERING & TEO MELATHEDIYOOR, PALAYAMKOTTAL T TIRUNELVELI DIST. - 627 152.

Materials lab.	recommendation of the External Academic Expert.
6. BoS members suggested to merge the Dynamics lab and Mechanical Measurement & Metrology lab. And also recommended to name that lab as Dynamics and Metrology lab	6. The suggestion of BoS members in the matter of merging Dynamics lab and Mechanical Measurement & Metrology lab is done in the name of Dynamics and Metrology lab.
	 Fluid Mechanics & Machinery lab Strength of Materials lab Dynamics and Metrology lab.

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HOD/Mechanical

Department of Mechanical Engineering PSN College of Englandin and Technology Melathediyoor, Tiruneiveii - 627152

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03-10-2018

STAKEHOLDERS FEEDBACK ON CURRICULAM & TEACHING- LEARNING ANALYSIS Academic Year 2018-2019

The following points were suggested by the stake holder's feedback in curriculum & teaching- learning

- The revision in the curriculum of 4th Semester of B.E Mechanical Engineering programme under Regulation 2018.
 Revision: The course "Electronics and Microprocessor" is replace by the course "Applied Hydraulics and Pneumatics".
- The Change in the syllabus content of the 4th semester course "Manufacturing Technology" of B.E Mechanical Engineering programme under Regulation 2018.
 Change: The syllabus content in unit V "CNC Machining" is replace by "Additive Manufacturing" and CNC Maching shall be included in "CAD/ CAM" course in forthcoming semesters.
- 3. To Suggestions given by the BoS Members for syllabus of 5th Semester in the course outcome of the course "Design of Machine Elements"
- 4. The important and applications of Theories of Failure may be included in the Unit I.
- 5. The syllabus content of Design of Coupling in may be given elaborately the Unit II.
- 6. The fluctuating load may be removed from the syllabus content in the Unit III.
- 7. The syllabus "exercise problems in springs used for automobiles" may be replaced by "pre-stressing" in the Unit IV.
- 8. The syllabus content of the course "Heat and Mass Transfer" may be reduced.
- 9. Heat and Mass Transfer: Fundamentals and Applications (SIE) by Yunus A Cengel; Afshin J. Ghajar may be added for reference.
- 10. Theory of Machines by R.S. Khurmi and J. K. Gupta may added as reference for the course " Theory of Machines – II"
- 11. The book "Engineering Metrology and Instrumentation by R.K. Rajput" is recommended to add as reference book



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06.10.2018

NOTE

As per the action taken report dated 29.09.18, the suggestions of stake holders on curriculum and syllabus are incorporated in the course offered under 2018 regulation and approved by board of studies and academic council.

HOD/Mechanical

Head of the Department Department of Mechanical Engineering PSN College of Engineering and Technology Melathediyoor, Tirunelveli - 627152

Enclosures:

- 1. Curriculum (regulation 2018) of department of Mechanical Engineering
- 2. Syllabus of new course (IV & VI, VIII)



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06.10.2018

ACTION TAKEN REPORT STAKEHOLDERS FEEDBACK ON CURRICULAM & TEACHING- LEARNING

Stakeholders Suggestions	Action Taken
1. The revision in the curriculum of 4 th Semester of B.E – Mechanical Engineering programme under Regulation 2018. Revision: The course "Electronics and Microprocessor" is replace by the course "Applied Hydraulics and Pneumatics".	 The revised curriculum of 4th Semester of B.E – Mechanical Engineering programme under Regulation 2018. Revised: The course "Electronics and Microprocessor" is replaced by the course "Applied Hydraulics and Pneumatics".
2. The Change in the syllabus content of the 4 th semester course "Manufacturing Technology" of B.E – Mechanical Engineering programme under Regulation 2018.	2. The syllabus content in unit V "CNC Machining" is replacing by "Additive Manufacturing" and CNC Maching shall be included in "CAD/ CAM" course in forthcoming semesters.
3. To Suggestions given by the BoS Members for syllabus of 5 th Semester in the course outcome of the course " Design of Machine Elements"	3. Some changes may be done in the course outcome of the course " Design of Machine Elements"
4. The important and applications of Theories of Failure may be included in the unit I.	4. The changes suggested by the External Academic Expert have been made in the applications of Theories of Failure may be included in the unit I.
5. The syllabus content of Design of Coupling in may be given elaborately the Unit II.	5. The changes suggested by the Design of couplings- flange couplings –pushed pin type flexible coupling in the Unit II.
6. The fluctuating load may be removing from the syllabus content in the Unit III.7. The syllabus "exercise problems in springs.	6. The removed fluctuating load from the syllabus content in the Unit III.
used for automobiles" may be replacing by "pre-stressing" in the Unit IV. DISTRESS 8. The syllabus content of the course "Heat	7. The syllabus "exercise problems in springs used for automobiles" may be replaced by "pre – stressing" in the Unit IV NOLOGI TALUK
and Mass Transfer" may be given reducing.	8. The syllabus content of the course "Heat and Mass Transfer" may be done reduced.
and Applications (SIE) by Yunus A Cengel:	9. Heat and Mass Transfer: Fundamentals

Afshin J. Ghajar may be added for reference.	and Applications (SIE) by Yunus A Cengel; Afshin J. Ghajar may be added for reference.
 10.Theory of Machines by R.S. Khurmi and J. K. Gupta may added as reference for the course "Theory of Machines – II" 11. The book "Engineering Metrology and Instrumentation by R.K. Rajput" is recommended to add as reference book. 	 10.Theory of Machines by R.S. Khurmi and J. K. Gupta may added as reference for the course "Theory of Machines – II" 11. The book "Engineering Metrology and Instrumentation by R.K. Rajput" is recommended to add as reference book.
	 Applied Hydraulics and Pneumatics. Manufacturing Technology CAD/ CAM Design of Machine Elements Theories of machine Automobile Engineering Heat and Mass Transfer

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HOD/Mechanical

Head of the Department Department of Mechanical Engineering PSN College of Engineering and Technology Melathediyoor, Tirunelveli - 627152



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DEPARTMENT OF MECHANICAL ENGINEERING

B. E – MECHANICAL ENGINEERING

Regulation – 2018 (Full Time)

CURRICULUM

1st Semester

S. No	Course code	Course title	L	T	P	C
THEOR	Y		1			
1	501001	Technical English	3	0	0	3
2	501002	Elementary Mathematics for Engineers	3	0	0	3
3	501003	Applied Physics I	3	0	0	3
4	501004	Applied Chemistry I	3	0	0	3
5	501005	Engineering Graphics	2	0	2	3
6	501006	Fundamentals of Computers and Python Programming	3	0	0	3
PRACT	ICAL			1		
7	501101	Applied Physics & chemistry Lab I	0	0	3 .	2
8	501102	Computer lab	0	0	3	2
9	501103	Workshop Practice	0	0	3	2
	CERING & S	TOTAL	17	0	11	24

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2nd SEMESTER

S.No	Course code	Course title	L	T	Р	C
THEORY	I I		I	1		32.0
1	501007	Business Communication and presentation Skill	3	0	0	3
2	501008	Engineering Mathematics I	3	0	0	3
3	501009	Applied Physics II	3	0	0	3
4	501010	Applied Chemistry II	3	0	0	3
5	501011	Engineering Mechanics	2	0	2	3
6	501012	Programming in C	3	0	0	3
7	501013	Basic Engineering	2	0	0	2
PRACTIC	CAL			I		I
8	501104	Applied Physics & chemistry Lab II	0	0	3	2
9	501105	C Programming lab	0	0	3	2
10	501106	Basic Electrical and Electronics lab	0	0	3	2
]		TOTAL	19	0	11	26

3rd SEMESTER

S.No	Course code	Course title	L	T	Р	С				
THEOR	Y		1							
1	501014	Engineering Mathematics – II	3	1	0	4				
2	510001	Fluid Mechanics and Machinery	3	1	0	4				
3	510002	Engineering Thermodynamics	3	0	0	3				
4	510003	Material and Metallurgical Science (Theory with Practical Components)	3	0	2	4				
5	510004	Manufacturing Technology – I	3	0	0	3				
6	510005	Fundamentals of Electrical Drives	3	0	0	3				
PRACTI	CAL	2-	-			~~				
S.C.M.	510101	Fluid Mechanics and Machinery Lab	1. Pat	-0-5	CH3OL	UV2				
TIRUNEL	VEL 510102	Manufacturing Technology Lab – I	NEEQIN	and the	TP3	2				
627 1	PSN COLLEGE OF ENGY. PALAYAN 627 152									
9	510103	Electrical Machines Lab	0	0	3	2.				
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10	501109	Career Skill Development Training – I	0	0	2	1				
	1	TOTAL	18	2	13	28				
MANDA	TORY COU	RSE – I		1		1				
11	501801	Environmental Studies	2	0	0	2				

4th SEMESTER

S.No	Course code	Course title	L	T	Р	C
THEOR	Y		J	1		<u> </u>
1	501020	Engineering Mathematics – III	3	1	0	4
2	510006	Strength of materials	3	0	0	3
3	510007	Thermal Engineering	3	1	0	3
4	510008	Theory of Machines – I	3	0	0	3
5	510009	Manufacturing Technology – II	3	0	0	3
6	510010	Applied Hydraulics and Pneumatics	3	0	0	3
PRACTI	CAL			L		<u> </u>
7	510104	Strength of Materials Lab	0	0	3	2
8	510105	Manufacturing Technology Lab – II	0	0	3	2
9	510106	Thermal Engineering Lab	0	0	3	2
10	501113	Career Skill Development Training - II	0	0	2	1
		TOTAL	18	2	11	26

5th SEMESTER

TIRUNELVEL

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S.No	Course code	Course title	L	T	Р	С
THEOR	Y		l	1	L	L
1	510011	Numerical methods and Statistics	3	0	0	3
2	510012	Design of Machine Elements	3	0	0	3
3	510013	Heat and Mass Transfer	Q.M. 3	0	0	3
SEEN4INEE	510014	Theory of Machines – II		0	0	3

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5	510015	Mechanical Measurements and Metrology	3	0	0	3.
6	####	Open Elective – I	3	0	0	3
PRACT	ICAL	·		·		
7	510107	Dynamics and Metrology Lab	0	0	3	2
8	510108	Computer Aided Drafting and Machine drawing Lab	0	0	3	2
9	****	Career Skill Development Training – III	0	2	0	1
		TOTAL	20	0	8	23
MANDA	TORY COU	RSE – II				
10	501802	Value Education and Human Rights	2	0	0	2

6th SEMESTER

S.No	Course code	Course title	L	T	Р	С
THEOR	Y		1	1		
1	510016	Gas Dynamics and Jet Propulsion	3	1	0	3
2	510017	Design of Transmission Systems	3	0	0	3
3	510018	Industrial Automation	3	0	0	3
4	510019	CAD & CAM	3	0	0	3
5	****	Elective – I	3	0	0	3
6	####	Open Elective – II	3	0	0	3
PRACTI	CAL		L	L		
7	510109	CAD & CAM Lab	0	0	3	2
8	510301	Design & Fabrication Project	0	0	3	2
9	****	Career Skill Development Training – IV	0	1	1	1
		TOTAL	18	2	7	23

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7th SEMESTER

S.No	Course code	Course title	L	T	Р	С
THEOR	Y					1
1	510020	Renewable Source of Energy	3	0	0	3
2	510021	Mechatronics and Robotics	3	0	0	3
3	510022	Computer Integrated Manufacturing	3	0	0	3
4	510023	Finite Element Analysis	3	1	0	4
5	510024	Production Planning and Control	3	0	0	3
6	****	Elective – II	3	0	0	3
PRACTI	CAL					
7	510111	Computer Aided Simulation & Analysis Lab	0	0	3	2
8	510112	Mechatronics and Robotics Lab	0	0	3	2
I		TOTAL	18	1	6	23
MANDA	TORY COU	RSE – III				L
9	501803	Energy Studies	2	0	0	2

8th SEMESTER

S.No	Course code	Course title	L	T	Р	С
PRACTI	CAL	·				
1	510303	Project Work	0	0	12	6
1		TOTAL	0	0	12	6



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ELECTIVE LIST

S.No	Course code	Course title	L	T	Р	C
		Elective I (Semester: 06)		1		
1	510201	Operations Research	3	0	0	3
2	510202	Quality Control & Reliability Engineering	3	0	0	3
3	510203	Composite Materials	3	0	0	3
4	510204	Computational Fluid Dynamics	3	0	0	3
5	510205	Micro Electro Mechanical Systems (MEMS)	3	0	0	3
	1	Elective II (Semester: 07)	<u></u>			
1	510206	Maintenance Engineering	3	0	0	3
2	510207	Space Technology	3	0	0	3
3	510208	Additive Manufacturing	3	0	0	3
4	510209	Non Destructive testing	3	0	0	3
5	510210	Un Conventional Machining Processes	3	0	0	3
	Care	eer Skill Development Training - III (Semester:	05)	· · · · ·		
1	510214	Entrepreneurship Development	0	2	0	1
2	510215	Industrial Psychology	0	2	0	1
3	510216	Principles of Management	0	2	0	1
4	510217	Marketing Management	0	2	0	1
	Care	er Skill Development Training – IV (Semester:	06)			
1	510218	Programming for Robotics	0	1	1	1
2	510219	Heating, Ventilation and Air Condition (HVAC)	0	1	1	1
3	510220	Sensors and Engineering applications	0	1	1	1
4	510221	Android application development for mechanical systems	0	1	1	1



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	SEMESTE	R–III									
PSN College	of Engineering and Technology	Deg	ree: B.E.		Regu	lation	: 201	8			
Department	MECHANICAL ENGINEERING Branch Code						10				
Subject Code	510003		1		L	T	P	C			
Subject Title	Subject Title MATERIAL AND METALLURGICAL SCIENCE(Theory with Practical Components)							4			

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This course provides students an understanding of basic structure and crystal arrangement of materials, the phase diagrams, mechanical properties of materials through mechanical testing, effects of alloying elements, and advantages of heat treatment and the method of heat treatment processes.

UNIT I CRYSTALLOGRAPHY AND CRYSTAL DEFECTS

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PRINCIPAL PSN COLLEGE OF ENGINEERING & TECHNOLOGY

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ATHEDIYOOR, PALAYAMKOTTAI TALUK

Structure of metals and alloys - Molecules and bonding - Crystal structure - Inter atomic distance and ionic radii – Polymorphism – Miller indices of atomic planes – Bragg's law – crystal defects – points, line and plane defects - allotropy grain and grain boundaries.

UNIT II MECHANICAL PROPERTIES AND INELASTIC DEFORMATION 9

Stress strain curve - Elastic deformation - Characteristics of elastic deformations - Atomic mechanism of elastic deformation - Elastic deformation of an isotropic material - Modulus of elastic resilience. Straintimecurves- Damping capacity - Viscous deformation - Plastic deformation - Dislocation and stress strain curves - Schmids's law - Critical resolved shear stress - Work hardening -Grain boundary hardening - Solution hardening - Dispersion hardening.

UNIT III MECHANICAL TESTING, FATIGUE, CREEP AND FRACTURE

Stress strain curves for mild steel, brittle solids, concrete and rubber - Proof stress - upper and lower stress - Luder's band - Compression test - Hardness test and types - Impact test - Ductile, brittle transition. Stress cycles for fatigue testing - Endurance limit - Fatigue limit - S-N curve -Creep curve - Primary creep - Secondary creep - Tertiarycreep. Ideal fracture stress - Brittle fracture - Griffith's theory - fracture toughness - ductile failure

UNIT IV METALLURGY, FERROUS AND NON FERROUS ALLOYS

Solid solution - Inter metallic compound - Cooling curves - Non equilibrium - Phase rules -Interpretation of equilibrium diagram of Cu - Ni, Cu-Zn, Cu-Sn, Ag-Sn, Cu-Al.Iron - iron carbide diagram - Equilibrium diagram - Effect of alloying elements on properties of steels, tool steels, heat resisting anddiesteels - Grey CI- White CI- Malleableironand SGiron-Alloysof Cu, Al, Mg, Ni, Zn and Phandtheiruses - Bearing Materials - Brazingand Soldering alloys.

UNIT - V HEAT TREATMENT

Critical temperature on heating – Annealing – Spheroidizing – Normalizing – Hardening – Isothermal Transformation diagram – Martensitic transformation – Tempering, austempering and martempering – Hardenability and its testing – surface hardenability – surface hardening processes.

Total Periods: 45+15 = 60 hour

LIST OF EXPERIMENTS:

15

- 1. To study the microstructure of mild steel with the help of microscope.
- 2. To study the microstructure of aluminum with the use of suitable etchant.
- 3. To study the heat-treatment processes (annealing and tempering) applied to a steel sample.
- 4. To study the effects of heat treatment on the microstructure of steels.
- 5. To study the effects of heat treatment on the mechanical properties of steels (impact strength and hardness will be measured for heat treated specimen)

TEXT BOOK:

- 1. Smith, Foundations of Materials Science and Engineering, 4th Edition, McGraw Hill, 2017.
- 2. William D. Callister, Material science and Engineering and Introduction, Wiley, 2014.
- 3. S.H. Avner, introduction to Physical Metallurgy 2nd ed., Tata McGraw hill 2017

REFERENCE BOOK:

- 1. V.Raghavan, Materials Science and Engineering, , PHI, 2005
- Donald R. Askland and Pradeep.P. Phule, The Science and Engineering of Materials, Cengage Learning, 4th Ed., 2017.
- 3. George Ellwood Dieter, Mechanical Metallurgy, McGraw-Hill.
- 4. ASM Handbooks, American Society of Metals.

COURSE OUTCOME:

At the end of the course, the student will be able to

CO1: Classify the structure of materials at different levels

CO2: Identify the mechanism of fracture and deformation of crystalline materials.

CO3: Apply material testing and metallography technique for testing industrial components.

CO4: Interpret the concept of phase, phase diagrams & basic terminologies associated with metallurgy.

CO5: Summarize & classify different heat treatment and surface treatment techniques.

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PSN COLLEGE OF ENGINEERING & TECHNOLOGY

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	SEMESTE	R –III					
PSN College	of Engineering and Technology	Deg	ree: B.E.	Regu	lation	: 201	8
Department	MECHANICAL ENGINEER			10			
Subject Code	510101	<u></u>	<u>I</u>		Т	P	C
Subject Title	FLUID MECHANICS AND N	IACHI	NERY LAB	0	0	3	2

LIST OF EXPERIMENTS:

- 1. Determinationofthe Coefficientofdischargeof given Orificemeter.
- 2. Determinationofthe Coefficientofdischargeofgiven Venturimeter.
- 3. Calculation of the rate of flow using Rota meter.
- 4. Determination of friction factor for a given set of pipes.
- Conducting experiments and drawing the characteristic curves of centrifugal pump / submergible pump.
- 6. Conducting experiments and drawing the characteristic curves of reciprocating pump.
- 7. Conducting experiments and drawing the characteristic curves of Gear pump.
- 8. Conducting experiments and drawing the characteristic curves of Pelton wheel.
- 9. Conducting experiments and drawing the characteristics curves of Francis turbine.

LIST OF EQUIPMENT: (for a batch of 30 students)

- 1. Orifice meter setup
- 2. Venturi meter setup
- 3. Rota meter setup
- 4. Pipe Flow analysis setup
- 5. Centrifugal pump/submergible pump setup
- 6. Reciprocating pump setup
- 7. Gear pump setup
- 8. Pelton wheel setup
- 9. Francis turbine setup

Quantity: one each.



COURSE OUTCOME:

After successful completion of the course, the student would be able to

RING

- CO 1: Determine the discharge coefficient for Venture and Orifice meter.
- CO2: Calculate the frictional loss through pipes and draw the characteristic curves for pumps.
- CO3: Evaluate the performance of turbines and verify Bernoulli's theorem.



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Total Periods: 45 hour

	SEMEST	ER -	IV	in the second			
PSN College of	Engineering and Technology	Deg	gree: B.E.	Regi	lation	: 201	8
Department	artment MECHANICAL ENGINEERING Branch Code						
Subject Code	Subject Code 510006					P	C
Subject Title STRENGTH OF MATERIALS						0	3

To provide the basic concepts and principles of strength of materials, to give an ability to calculate stresses and deformations of objects under external loadings and to give an ability to applythe knowledge of strength of materials on engineering applications and design problems.

UNIT I SIMPLE STRESSES AND STRAINS

Types of stresses- properties of materials - Stress Stain Curve - Hook's Law - Stresses and strains in simple and compound bars under axial load - Thermal stress - Poisson's ratio - Volumetric strain and elastic constants. Strain energy - Uniaxial load.

UNIT II **BIAXIAL STRESSES**

Stress tensor, principle planes and stresses, Mohr's circle for biaxial stresses- Introduction to Theories of Failures Stress in thin cylindrical and spherical shells.

UNIT III BENDING AND SHEAR STRESS IN BEAMS

Shear force and Bending Moment diagrams for cantilever, simply supported beams and overhanging beams -Point loads and UDL-Theory of simple bending, bending stress distribution, flitched beams, shear stress distribution - circular, rectangular, I, T cross sections.

UNIT IV **DEFLECTION OF BEAMS AND COLUMNS**

slope and deflection of cantilever and simply supported beams - double integration, Macaulay and Moment areamethods - Columns and struts -Euler's and Rankine's formulae.

UNIT V SHAFTS AND SPRINGS

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Derivation of Torsional Equation, stresses and Deformation in Circular and Hollow Shafts - Stepped shaft, Shafts in Parallel and Series-Shafts Fixed at both ends- Stress and Deflection in helical Springs.

Total Periods: 45 Hours

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TEXT BOOK:

- 1. Beer FP and Johnston R," Mechanics of Materials", 3rd Edition, McGraw-Hill Book Co., 2002.
- 2. Popov EP, "Engineering Mechanics of Solids", 2nd Edition, Prentice-Hall of India, New Delhi, 2002 PSN COLLEGE OF ENGINEERING & TECHNOLOGY

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REFERENCE BOOK:

- Timoshenko SP, "Elements of Strength of Materials", Tata McGraw-Hill, New Delhi, 2004. 1.
- 2. S Rattan," Strength of Materials", 2nd Edition, McGraw-Hill Book Co., 2011
- 3. Hibbeler RC, "Mechanics of Materials", 8th Edition, Prentice Hall, 2011.
- 4. Ramamurtham S, "Strength of Materials", 14th Edition, Dhanpat Rai Publications, 2011.
- 5. Ryder GH, "Strength of Materials", 3rd Edition, Macmillan India Limited, 2002.
- 6. Bansal RK, "Strength of Materials", Laxmi Publications, New Delhi, 2012.

COURSE OUTCOME:

- CO1 : Determine stresses and straining in various axially loaded members
- CO2 : Able to apply failure theories in designing engineering systems like bars, beams, thinshells etc CO3 : Construct shear force and bending moment diagrams to estimate the shear stress and bending force respectively in beams.
- CO4 : Estimate slope and deflection of beams and buckling load in columns.
- CO 5: Determine the stresses and deformation in shafts and helical springs.

Mapping of COs with POs and PSOs

10-100		1												
s	P01	P02	PO3	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	DSO
CO1	3	3	3	2										1304
CO2	3	3		2	3		2				2	3	2	2
03	2		3	2	3	2	2				2	3	2	2
	3	3	3	2	3		2						4	2
.04	3	3	2	2	2						2	3	2	2
:05	3	3		2	2		2				2	3	2	2
			3	2	3		2				2	3	2	2



Chairman/Board of Studies **Mechanical Engineering** PSNCET (Autonomous)

PRINCIPAL PSN COLLEGE OF ENGINEERING & TECHNOLOGY MELATHEDIYOOR, PALAYAMKOTTAI TALUK TIRUNELVELI DIST. - 627 152.

	SEMEST	ER -	[V				
PSN College of	Engineering and Technology	Deg	gree: B.E.	Regu	lation	: 201	8
Department	MECHANICAL ENGINEERING		Branch Cod	e	10		
Subject Code	510007		I	L	T	P	C
Subject Title	THERMAL ENGINEERING			3	1	0	3

To integrate the concepts, laws and methodologies from the first course in thermodynamics, into analysis of cyclic processes, to apply the thermodynamic concepts into various thermal application like IC engines, Steam Turbines, Compressors and Refrigeration and Air conditioning systems

UNIT I GAS POWER CYCLES

Otto, Diesel, Dual, Brayton cycles, Calculation of mean effective pressure and air Standard efficiency – Comparison of Otto, Diesel, Dual, Brayton cycles - Actual and theoretical PV diagram of four stroke and two stroke engines

UNIT II INTERNAL COMBUSTION ENGINES

Classification, Components and their functions Valve timing diagram and Port timing diagram - Comparison oftwo stroke and four stroke engines – Working principle of simple carburetor, Properties of fuels used in engines – Combustion stages of SI and CI engines, Abnormal Combustion - Knocking and detonation, Scavenging and supercharging in engines, Diesel pump and injector system. - Comparison of petrol and diesel engine - Lubrication system and Cooling system – Battery and Magneto Ignition System – Performance calculation & Heat Balance Test - Formation and Control of exhaust emissions in SI and CI engines

UNIT III STEAM NOZZLES AND TURBINES

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Flow of steam through nozzles, shapes of nozzles, effect of friction, critical pressure ratio, supersaturated flow, Steam Turbines - Impulse and Reaction principles, compounding, degree of reaction, velocity diagram for simple and multi-stage turbines, speed regulations –Governors.

UNIT IV RECIPROCATING AND ROTARY AIR COMPRESSORS

Reciprocating Compressor - Classification and working principle, work of compression with and without clearance, Volumetric efficiency, Isothermal efficiency and Isentropic efficiency of reciprocating compressors, Multistage air compressor and inter cooling –working principles of Rotary Compressors, Fan and blowers (Description only).

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UNIT V REFRIGERATION AND AIR CONDITIONING

Air refrigeration system - Vapour compression refrigeration cycle- super heat, sub cooling – Performance calculations - working principle of vapour absorption system, Ammonia –Water, Lithium bromide – water systems (Description only) –Types & Properties of Refrigerants – Comparison between vapour compression and absorption systems. Psychrometry, Psychrometric chart, Psychrometry process-Types of Air conditioning systems - Requirements for comfort and industrial air- conditioning

Total Periods: 60 Hours

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(Use of standard thermodynamic tables, Mollier diagram, Psychrometric chart and refrigerant property tablesare permitted in the examination)

TEXT BOOK:

1. Rajput. R. K., "Thermal Engineering", Laxmi Publications, Ltd., 9th Edition, 2013.

2. Kothandaraman.C.P. Domkundwar.S, Domkundwar.S. A.V., "A course in Thermal Engineering," DhanpatRai & sons, 5th Edition, 2002.

REFERENCE BOOK:

- 1. B. K. Sarkar., "Thermal Engineering" Tata McGraw Hill Education, 1st Edition, 2001.
- Stoeckr W.P. and Jones J.W., "Refrigeration and Air conditioning", Tata McGraw-Hill, New Delhi, 1995.
- 3. Arora.C.P, "Refrigeration and Air Conditioning", Tata McGraw-Hill Publishers, 2nd Edition, 2008.
- 4. Ganesan V. "Internal Combustion Engines", Tata McGraw-Hill Publishers, 3rd Edition, 2007.
- 5. Rudramoorthy. R, "Thermal Engineering ", Tata McGraw-Hill, New Delhi, 2003.
- 6. NPTEL Lectures.

COURSE OUTCOME:

CO 1: Students will be able to identify and analyze some ideal cycles: e.g. Rankine's cycle, Otto's cycle, Diesel's cycle and the Brayton's cycle, Ideal vapor compression cycles.

CO 2: Able to know operational principles and elements of SI and CI engines and also to calculateperformance test.

CO 3: Understand the working of different types of steam nozzles and turbines, calculation of performanceparameters and methods of turbine compounding to reduce rotor speed of an impulse turbine

CO 4: To familiarize with the types of air compressors and governing equations of various forms. **CO 5**: To analyze the usage of Refrigeration and Air conditioning.





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	SEMEST	ER -	IV				
PSN College of	Engineering and Technology	De	gree: B.E.	Regul	lation:	201	8
Department	MECHANICAL ENGINEERING		Branch Cod	e	10		
Subject Code	510104			L	T	P	C
Subject Title	STRENGTH OF MATERIALS LA	B		0	0	3	2

- The experimental work involved in this laboratory should make the student understand the fundamental modes of loading of the structures and also make measurements of loads, displacements and strains. Relating these quantities, the student should be able to obtain the strength of the material and stiffness properties of structural elements.
- Student should be able to verify the principles studied in theory by conducting the experiments.
- The students should be able to perform basic measurements in fluid mechanics.
- They should also be able to write and extract dimensionless groups in fluid mechanics problems.
- In addition, the students should formulate and apply fluid mechanics equations in turbo machinery and compressible flow applications.
- The course lab provides skills in performing experiments and writing lab reports.

LIST OF EXPERIMENTS

1. Tension test on a mild steel rod

2. Compression test on wooden piece

- 3. Double shear test on Mild steel and Aluminium rods
- 4. Torsion test on mild steel rod
- 5. Impact test on metal specimen
- 6. Hardness test on metals Brinnell and Rockwell Hardness Number
- 7. Deflection test on beams

8. Compression test on helical springs

Total Periods: 45 Hours

COURSE OUTCOME:

CO1 : Introduce the concept of determining stresses and strains from the member forces.

CO2 : Provide the basic concepts and effects of axial loads, bending, shear, and torsion on structural components.

CO3 : Ability to determine the behavior of structural elements, such as bars, beams and columns subjected to tension, compression, shear, bending, and torsion by means of experiments.

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	SEME	STER -	- V						
PSN College	of Engineering and Technology	Deg	ree: B.E.	Regu	lation:	2018			
Department	MECHANICAL ENGINEER	ING	Branch Co	de	le 10				
Subject Code	510012			L	T	Р	C		
Subject Title	DESIGN OF MACHINE ELEN	MENTS	5	3	0	0	3		
To synergiz analyze, de UNIT I: SIMP Basics in Engin static and varyin allowable stress fatigue loading UNIT II: DESI Design of shafts couplings –push UNIT III: DESI Threaded joints tightening and e Welded joints:	ze forces, moments, torques, stres sign and/or select machine elemen LE STRESSES eering Design – preferred numbers ing loading – combined loading – t is – factor of safety – stress conce Soderberg, Goodman and Gerber r GN OF KEY, SHAFTS AND CO for combined loading – critical sp ied pin type flexible coupling IGN OF TEMPERORARY JOI : I.S.O. Metric screw threads- tre ccentrically loaded bolted joints. Types of welded joints- weld sym	s and stats. s, fits an cheories entratio relations DUPLII eed. De NTS AI eaded jo bols, sta	trength infor of tolerances of failures, in n factor – fl s. NGS sign of keys. ND PERMA bints in tens rength of we	- Types importan luctuating Design of NNET J ion- torq	o devel of simj ts and g stress of coup (OINT) ue req trally lo	op abil ple stre applica s- desig olings- f s uiremen paded jo	ity to 9 sses – tion – gn for 9 flange 9 nt for oints-		
JNIT IV: DES	IGN OF SPRINGS						0		
Helical springs a stress and deflect	and leaf springs: Stresses and defle	ection ir	helical sprii	ngs - Des	sign of	leaf spi	rings-		
Sliding contact lesign of hydrod nean load- varia bearings.	bearings: Theory of lubrication- l ynamic bearings. Rolling contact b ble load-probability of survival- so	hydrody bearings election	namic beari Static and d of deep groo	ings-Som lynamic l ove and a	nmer fi oad cap angular	eld nur pacity- contac	9 nber- cubic t ball		
TEXT BOO)K•			Total	Period	ls: 45 h	ours		
1. V. Bhand	ari, "Design of Machine Elements"	, Editio	n: 4, Tata Mo	cGraw-H	ill Boo	k Co,2	2016.		
2. Joseph S Engineering	higley, Charles Mischke, Richard Design", Edition: 9, Tata McGrav	Budyna v-Hill ,	as and Keith 2011.	Nisbett,	"Mech	anical			

REFERENCE BOOK:

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1. "Design Data book", Edition: 5, PSG College of Technology, Coimbatore , 2016.

2. T. V. Sundararajamoorthy, N. Shanmugam, "Machine Design", Edition: 1, Anuradha Publications, 2012.

3. C. Robert Juvinall and M. Kurt Marshek, "Fundamentals of Machine Design", Edition: 4, Wiley 2005. Wiley , 2005.

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COURSE OUTCOME:

On completion of the course the students will be able to

CO1: Describe the fundamental scientific principles of mechanical design (stress, strain, material properties, failure theories, fatigue phenomena, etc.) and their importance and use in design.

CO2: Calculate the diameter based on strength, rigidity and design various types of coupling based on application.

CO3: Calculate the design parameter of permanent and temporary joint on various loading application.

CO4: Select and design a mechanical spring based upon the application and requirements. **CO5:** Calculate the design parameter of various types of bearing

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P010	P011	PO12	PSO1	PSO2
CO1	3	2	2	-	-	-	-	2	-	-	-	2	-	-
CO2	3	2	2	-	-	-	-	2	-	-	-	2	-	-
CO3	3	2	2	-	-	-	-	2	-	-	-	2	-	-
CO4	3	2	2	-	-	-	-	2	-	-	-	2	-	-
CO5	3	2	2	-	-	-	-	2	-	-	-	2	-	-

Mapping of COs with POs and PSOs



Chairman/Board of Studies Mechanical Engineering PSNCET (Autonomous)

PRIMCIPAL PSN COLLEGE OF ENGINEERING & TECHNOLOGY MELATHEDIYOOR, PALAYAMKOTTAI TALUK TIRUNELVELI DIST. - 627 152.

	SEME	STER	- V				
PSN College	of Engineering and Technology	Deg	ree: B.E.	Regu	lation: 2	2018	*
Department	MECHANICAL ENGINEERI	NG	Branch Co	de		10	
Subject Code	510013				T	P	С
Subject Title	HEAT AND MASS TRANSFE	R		3	0	0	3

- To gather adequate knowledge of various modes of heat transfer that occurs in any physical systems.
- To identify the parameters that characterizes these problems and the methods to solve it in various practical systems and to analyze complex heat and mass transfer problems in any engineering systems.

UNIT I: CONDUCTION

Basic Concepts – Mechanism of Heat Transfer – Conduction, Convection and Radiation – General Differential equation of Heat Conduction – Fourier Law of Conduction – Cartesian and Cylindrical Coordinates – One Dimensional Steady State Heat Conduction – Conduction through Plane Wall, Cylinders and Spherical systems – Composite Systems - critical thickness of insulation – Conduction with Internal Heat Generation – Extended Surfaces – Unsteady Heat Conduction – Lumped Analysis – Infinite and Semi Infinite Solids.

UNIT II: CONVECTION

Convection – Introduction, governing equations, boundary layer concept – Dimensional analysis for free and forced convection - free convection - vertical plate, horizontal cylinder and horizontal plate - forced convection – laminar flow, turbulent flow, Reynolds analogy.

UNIT III: CONVECTIVE PHASE CHANGE HEAT TRANSFER AND HEAT EXCHANGERS

Condensation and boiling – Regimes of boiling, correlations, forced convection boiling, laminar film condensation on a vertical plate - heat exchangers – LMTD and NTU analysis, fouling factor, effectiveness.

UNIT IV: RADIATION

Radiation – laws of radiation, black body radiation, shape factor, radiation exchange between gray surfaces, radiosity, and irradiation.

UNIT V: MASS TRANSFER

Basic Concepts – Diffusion Mass Transfer – Fick's Law of Diffusion – Steady state Molecular Diffusion – Convective Mass Transfer – Momentum, Heat and Mass Transfer Analogy – Convective Mass Transfer Correlations.

TEXT BOOK:

Total Periods: 45 hours

1. Sachdeva, R.C., Fundamentals of Engineering Heat and Mass Transfer, New Age International, 4th edition Paperback, 2017.

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2. Kothandaraman, C.P., Eundamentals of Heat and Mass Transfer, New Age International, New Delhi, Multicolour Edition 2012;8

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REFERENCE BOOK:

1. Yadav, R., Heat and Mass Transfer, Central Publishing House, 1995.

2. Ozisik, M.N., Heat Transfer, McGraw-Hill Book Co., 1994.

- 3. Nag.P.K. Heat Transfer, Tata McGraw-Hill, New Delhi, 3rd edition, 2011.
- 4. Holman, J.P., Heat and Mass Transfer, Tata McGraw-Hill, 10th edition, 2011.
- 5. Heat and Mass Transfer: Fundamentals and Applications (SIE) by Yunus A Cengel; Afshin J. Ghajar may be added for reference

COURSE OUTCOME:

On completion of the course the students will be able to

CO1: Understanding the physics involved in various heat transfer mechanisms.

CO2: Applying the knowledge of mathematics, and analyze the different situations in which heat transfer is involved.

CO3: To analyze the effect of different boiling regimes and condensation and also through the proper use of modelling can able to choose different heat exchangers for specific applications. CO4: To be able to calculate heat transfer rate, time required for heating or cooling and obtaining the temperature distribution with respect to the domain of analysis under different situations.

CO5: Apply diffusive and convective mass transfer equations and correlations to solve problems for different applications.

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P010	P011	PO12	PSO1	PSO2
CO1	3	2	2	2	-	-	-	2	-	-	-	2	-	
CO2	3	2	2	2	-	-	-	2	-	-	-	2	-	
CO3	3	2	2	2	-	-	-	2	-	-	-	2	-	
CO4	3	2	2	2	-	-	-	2	-	-	-	2		
CO5	3	2	2	2	-	-	-	2	-	-	-	2		

Mapping of COs with POs and PSOs



Chairman/Board of Studies **Mechanical Engineering PSNCET** (Autonomous) PSN COLLEGE OF ENGINEERING & TECHNOLOGY

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MELATHEDIYOOR PALAYAMKOTTAI TALUK

	SEME	STER	- V				
PSN College	of Engineering and Technology	Deg	gree: B.E.	Regu	lation: 2	2018	
Department	MECHANICAL ENGINEERI	NG	Branch Co	de		10	
Subject Code	510014		1	L	T	P	С
Subject Title	THEORY OF MACHINES-II			3	0	0	3

• To acquire the knowledge in force analysis, energy stored in flywheel, balancing of machines, vibration and control mechanisms.

UNIT I: FORCE ANALYSIS AND FLYWHEELS

Static force analysis of mechanisms –D' Alembert's principle- Inertia force and Inertia torque –Dynamic force analysis - Dynamic Analysis in Reciprocating Engines –Gas Forces – Equivalent masses - Bearing loads - Crank shaft torque –Engine shaking forces. Turning moment diagrams –Fluctuation of energy, speed - Flywheels of engines and punching press UNIT II: BALANCING 9

Static and dynamic balancing –Balancing of rotating masses - Balancing of reciprocating masses in a single cylinder engine –Primary and secondary unbalanced forces - Balancing in multicylinder engines –Firing order –Balancing machines.

UNIT III: FREE VIBRATION

Basic features of vibratory systems - Basic elements and lumping of parameters - Degrees of freedom - Single degree of freedom - Free vibration - Equations of motion - Natural frequency - Whirling of shafts and critical speed - Torsional vibration of two and three rotor systems, torsionally equivalent shaft.

UNIT IV: DAMPED AND FORCED VIBRATIONS

Damped vibration - Types of damping –Logarithmic decrement - Response to periodic forcing - Harmonic Forcing –Forced vibration caused by unbalance - Support motion –Force transmissibility and amplitude transmissibility - Vibration isolation.

UNIT V: MECHANISMS FOR CONTROL

Governors - Types - Centrifugal governors –Porter &Proell governor, Hartnell & Hartung governor –Characteristics - Effect of friction - Controlling Force Gyroscopes - Gyroscopic couple - Gyroscopic stabilization - Gyroscopic effects in aeroplanes, ships and automobiles.

TEXT BOOK:

1. S.S Rattan, "Theory of Machines", Edition: 4, Tata McGraw-Hill Publishing Company Ltd 2017.

2. Thomas Bevan, "Theory of Machines", Edition: 3, CBS Publishers & Distributors , 2005.

REFERENCE BOOK:

1. W.L Cleghorn, "Mechanisms of Machines", Edition: 2, Oxford University Press, 2005.

2. L. Robert Norton, "Kinematics and Dynamics of Machinery", Edition: 1, Tata McGrawHill , 2009.

3. A. Ghosh and A.K Mallick, "Theory of Mechanisms and Machines", Edition, 1, Affiliated East- West Pvt. Ltd , 2008.

4. Theory of Machines by R.S. Khurmi and J. K

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Total Periods: 45 hours

	SEMESTE	R – VI						•
PSN College	of Engineering and Technology	Deg	ree: B.E.		Regu	lation	: 201	8
Department	MECHANICAL ENGINEER	ING	Branch Co	de			10	
Subject Code	510019		1		L	T	P	C
Subject Title	CAD & CAM				3	0	0	3

The general objectives of the course are to enable the students to

- Understand the basic fundamentals of computer aided design and manufacturing.
- To provide an overview of how computers are being used in mechanical component design
- To understand the application of computers in various aspects of Manufacturing viz., Design, Proper planning, Manufacturing cost, Layout & Material Handling system.

UNIT – I COMPUTER GRAPHICS

Raster scan graphics coordinate system, database structure for graphics modeling, transformation of geometry, 2D and 3D transformations, mathematics of projections, clipping, hidden surface removal.

UNIT – II GEOMETRIC MODELING

Requirements, geometric models, geometric construction models, curve representation methods, parametric representation of various curves: cubic spline, bezier curves. surface representation methods, Solid modelling.

UNIT – III 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, Adaptive Control.

UNIT – IV GROUP TECHNOLOGY

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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 - V PRODUCT DESIGN AND DEVELOPMENT

Automated 2D drafting - basics, Mechanical assembly - bill of materials generation. Mass

Total Periods: 45 hour

PRINCIPAL IOTAL PSN COLLEGE OF ENGINEERING & TECHNOLOGY MELATHEDIYOOR, PALAYAMKOTTAI TALUK TIRUNELVELI DIST. - 627 152: 9

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	SEMESTE	R VII						
PSN College	of Engineering and Technology	Deg	ree: B.E.		Regul	lation	: 201	8
Department	MECHANICAL ENGINEER	ING	Branch Co	de			10	
Subject Code	510112				L	T	P	C
Subject Title	MECHATRONICS AND ROL	BOTIC	S LAB		0	0	3	2

To Understand the method of programming the microcontroller and also to study the basics of hydraulic, Pneumatic and Robots systems which enable the students to understand the concept of mechatronics and Robotics

PRACTICAL EXPERIMENTS:

- 1. Design and testing of a pneumatic circuit for a single acting cylinder to operate in an OR gate & AND gate sequence.
- 2. Design and testing of a hydraulic circuit for the reciprocation of a double acting cylinder using solenoid valve.
- 3. Design and testing of an electro pneumatic circuit using PLC for extension and retraction of double acting cylinder using 5/2 single and double solenoid value.
- 4. Design and testing of an electro pneumatic circuit using PLC for extension and retraction of single acting cylinder using 3/2 single and double solenoid value.

OF ENGINEERING & TECHN

- 5. Clockwise and anticlockwise rotation of stepper motor using 8051 assembly language.
- 6. Speed control of DC and AC motor.
- 7. Robot programming for spot welding application
- 8. Robot programming for painting application
- 9. Design and programming for milling application
- 10. Design and programming for polishing tool interface with robot
- 11. Design and programming for sealant tool interface with robot
- 12. Programming for pick and place robot application

LIST OF EQUIPMENT FOR A BATCH OF 30 STUDENTS

10. D	esign and programming for polishing tool interface with robot	ALCIP AL
11. D 12. Pr	ogramming for pick and place robot application	PERISINEEN AVAN
IST OF	EQUIPMENT FOR A BATCH OF 30 STUDENTS PSN	ELATHEONYOOR, TELI DIST.
SI.	Name of the Equipment	Quantity
DISTRIC	HARDWARE	
647 152	Basic Pneumatic Trainer Kit (Electrical) VMT	4
2	Basic Pneumatic Trainer Kit (PLC) VMT	5
A3HEDI	Advanced Hydraulic Trainer Kit	1
4	8051 Micro Controller Training Kit	1
5	Stepper Motor Interface (VBMB – 013A)	2
6	Computerized Data Logging System (VMPA)	1
7	Speed control of AC Servo Motor (VPAT)	2
8	Digital PID Controller (VDPID)	1
9	DC Motor Speed Control Module (VPAT)	1
10	Robot with applications Kit	1 set
	Tot	al Periods: 45 hour