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Dindigul—Palani Highway, Dindigul 624002

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Anna University Regulations 2021 FirstYearCourses(I&IISemester)

CourseOutcomes(COs)

C101 HS3152	ProfessionalEnglish-I
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CourseOutcomes(Cos)

C101.1	Touseappropriatewordsinaprofessionalcontext
	Togainunderstandingofbasicgrammaticstructuresandusetheminrightcontext.
C101.2	
C101.3	To read and infer the denotative and connotative meanings of technical texts
C101.4	To write definitions, descriptions, narrations and essays on various topics

C102 MA3151	MatricesandCalculus
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C102.1	Use the matrix algebra methods for solving practical problems
C102.2	Apply differential calculus tools in solving various application problems.
C102.3	Able to use differential calculus ideas on several variable functions.
C102.4	Applydifferentmethodsofintegrationinsolvingpractical problems.
C102.5	Applymultipleintegralideasinsolvingareas, volumes and other practical problems.



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C103	PH3151	EngineeringPhysics
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CourseOutcomes(Cos)

C103.1	Understandtheimportanceofmechanics
C103.2	Expresstheirknowledgeinelectromagneticwaves.
C103.3	Demonstrate a strong foundational knowledge in oscillations, optics and lasers.
C103.4	Understandtheimportanceofquantumphysics.
C103.5	Comprehendandapplyquantummechanicalprinciplestowardstheformationofenergybands.

C104 CY3151	EngineeringChemistry
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CourseOutcomes(Cos)

C104.1	Toinferthequalityofwaterfromqualityparameterdataandproposesuitabletreatment methodologies to treat water.
C104.2	Toidentifyandapplybasicconceptsofnanoscienceandnanotechnologyindesigningthe synthesis of nanomaterials for engineering and technology applications.
C104.3	Toapplytheknowledgeofphaseruleandcompositesformaterialselectionrequirements.
C104.4	To recommend suitable fuels for engineering processes and applications.
C104.5	To recognize different forms of energy resources and apply them for suitable applications inenergy sectors

C105	GE3151	ProblemSolvingandPython Programming
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C105.1	Develop algorithmic solutions to simple computational problems.
C105.2	DevelopandexecutesimplePythonprograms.
C105.3	WritesimplePythonprogramsusingconditionalsandloopsforsolvingproblems
C105.4	DecomposeaPythonprogramintofunctions.
C105.5	Represent compound data using Python lists, tuples, dictionaries etc.
C105.6	Read and write data from/to files in Python programs.



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C107	GE3171	ProblemSolvingandPython Programming Laboratory
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CourseOutcomes(Cos)

C107.1	Developalgorithmicsolutionstosimplecomputationalproblems
C107.2	Develop and execute simple Python programs.
C107.3	ImplementprogramsinPythonusingconditionalsandloopsforsolvingproblems
C107.4	DeployfunctionstodecomposeaPythonprogram.
C107.5	ProcesscompounddatausingPythondatastructures.
C107.6	UtilizePythonpackagesindevelopingsoftwareapplications.

C108 BS3171 PhysicsandChemistryLaboratory

CourseOutcomes(Cos)

Understand the functioning of various physics laboratory equipment.
To analyse the quality of water samples with respect to their acidity,
alkalinity, hardness and DO.
Use graphical models to analyze laboratory data.
To determine the amount of metal ions through volumetric and spectroscopic techniques
Use mathematical models as a medium for quantitative reasoning and describing physical reality.
To analyse and determine the composition of alloys.
Access, process and analyze scientific information.
To learn simple method of synthesis of nanoparticles
 Solve problems individually and collaboratively. To quantitatively analyse the impurities in solution by electroanalytical techniques

C109	GE3172	${f English Laboratory}^{f \$}$

C109.1	To listen to and comprehend general as well as complex academic information
C109.2	Tolistentoandunderstanddifferentpointsofviewina discussion
C109.3	To speak fluently and accurately in formal and informal communicative contexts
C109.4	Todescribeproductsandprocessesandexplaintheirusesandpurposesclearlyand accurately
C109.5	Toexpresstheiropinionseffectivelyinbothformalandinformaldiscussions



C112.4

C112.5

devices

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C110	HS3252	ProfessionalEnglish-II
CourseOutco	omes(Cos)	
C110.1	Tocompareandco	ontrastproductsandideasintechnical texts.
C110.2	To identify and retexts	eport cause and effects in events, industrial processes through technical
C110.3	To analyse proble them in the written	ems in order to arrive at feasible solutions and communicate en format.
C110.4	To present their i	deas and opinions in a planned and logical manner
C110.5	To draft effective	e resumes in the context of job search.
C111	N# 4 2051	Carata at a sur INI and a INI at a
C111	MA3251	StatisticsandNumericalMethods
CourseOutco	omes(Cos)	
C111.1	Apply the concep	ot oftesting of hypothesis for small and large samples in real life problems
C111.2	Apply the basic cagriculture.	concepts of classifications of design of experiments in the field of
C111.3		umerical techniques of interpolation in various intervals and cal techniques of differentiation and integration for engineering
C111.4	Understandthekn- ordinary different	owledgeofvarioustechniquesandmethodsforsolvingfirstandsecond order tial equations.
C111.5	_	andordinarydifferential equations with initial and boundary conditions echniques with engineering applications
C112	PH3254	PhysicsforElectronics Engineering
	tcomes (Cos)	Thysics of Dicertonics Engineering
C112.1	1 , ,	crystallography and its importance for varied materials properties
C112.2	gain knowledge applications	on the electrical and magnetic properties of materials and their
C112.3		ly of semiconductor physics and functioning of semiconductor devices
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appreciate the importance of nanotechnology and nanodevices.

understand the optical properties of materials and working principles of various optical



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C113	BE3254	ElectricalandInstrumentation Engineering
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CourseOutcomes(Cos)

C113.1	Explaintheworkingprincipleofelectricalmachines
C113.2	Analyze the output characterizes of electrical machines
C113.3	Choose the appropriate electrical machines for various applications
C113.4	Explainthetypesandoperatingprinciplesofmeasuringinstruments
C113.5	Explain the basic power system structure and protection schemes

C114 GE3251 EngineeringGraphics

CourseOutcomes(Cos)

C114.1	UseBISconventionsandspecificationsforengineeringdrawing
C114.2	Construct the conic curves, involutes and cycloid.
C114.3	Solve practical problems involving projection of lines.
C114.4	Draw the orthographic, isometric and perspective projections of simple solids.
C114.5	Draw the development of simple solids.

C115 EC3251 CircuitAnalysis	
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C115.1	ApplythebasicconceptsofcircuitanalysissuchasKirchoff'slaws,meshcurrentand node voltage method for analysis of DC and AC circuits.
C115.2	ApplysuitablenetworktheoremsandanalyzeACandDCcircuits
C115.3	AnalyzesteadystateresponseofanyR,LandC circuits



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C115.4	Analyze the transient response for any RC, RL and RLC circuits and frequency response of parallel and series resonance circuits.
C115.5	Analyzethecoupledcircuitsandnetworktopologies

C117	GE3271	EngineeringPracticesLaboratory
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CourseOutcomes(Cos)

C117.1	Drawpipeline plan; layand connect various pipefittings usedincommonhouseholdplumbing work; Saw; plan; make joints in wood materials used in common household wood work.
C117.2	Wirevariouselectricaljointsincommonhouseholdelectricalwirework.
C117.3	Weld various joints in steel plates using arc welding work; Machine various simple processes like turning, drilling, tapping in parts; Assemble simple mechanical assembly of common household equipments; Make a tray out of metal sheet using sheet metal work.
117.4	Solder and test simple electronic circuits; Assemble and test simple electronic components on PCB.

C118	EC3271	CircuitsAnalysisLaboratory
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CourseOutcomes(Cos)

	DesignRLandRC circuits.	
C118.1		
C118.2	Verify The vinin & Norton theorem KVL & KCL, and Super Position Theorems.	

C119	GE3272	CommunicationLaboratory/ Foreign Language \$
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C119.1	Speakeffectivelyingroupdiscussionsheldinformal/semiformalcontexts.	
C119.2	Discuss, analyse and present concepts and problems from various perspectives to arrive at suitable solutions	
C119.3	Writeemails, letters and effective job applications.	
C119.4	Writecriticalreportstoconveydataandinformationwithclarityandprecision	
C119.5	Giveappropriateinstructionsandrecommendationsforsafeexecutionoftasks	



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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Anna University Regulations 2021SecondYearCourses(III&IVSemeste r) Course Outcomes (COs)

C201	MA3355	RandomProcessesand LinearAlgebra

CourseOutcomes(Cos)

C201.1	Explainthefundamentalconceptsofadvancedalgebraandtheirroleinmodernmathematics and applied contexts.	
C201.2	Demonstrateaccurateandefficientuseofadvancedalgebraictechniques.	
C201.3	Applytheconceptofrandomprocessesinengineering disciplines.	
C201.4	Understand the fundamental concepts of probability with a thorough knowledge of standard distributions that can describe certain real-life phenomenon.	
C201.5	Understandthebasicconceptsofoneandtwodimensionalrandomvariablesand apply themto model engineeringproblems.	

C202	CS3353	CProgrammingand Data Structures	
G(G)			

CourseOutcomes(Cos)

C202.1	DevelopCprogramsforanyrealworld/technicalapplication.	
C202.2	ApplyadvancedfeaturesofCinsolving problems.	
C202.3	Writefunctionstoimplementlinearandnon-lineardatastructureoperations.	
C202.4	•4 Suggestanduseappropriatelinear/non–lineardatastructureoperationsforsolvingagiven pro	
C202.5 Appropriately uses or tandsear chalgorithms for a given application.		
C202.6	Apply appropriate hash functions that resultina collision freescenario for data storage and retrieval.	

C203	EC3354	SignalsandSystems
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C203.1	determineifagivensystemislinear/causal/stable
C203.2	determine the frequency components present in a deterministic signal



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C203.3	characterizecontinuousLTIsystemsinthetimedomainandfrequencydomain	
C203.4	characterize discrete LTI systems in the time domain and frequency domain	
C203.5	compute the output of an LTI system in the time and frequency domains	

	C204	EC3353	ElectronicDevicesand Circuits
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CourseOutcomes(Cos)

C204.1	Explainthestructureandworkingoperationofbasicelectronic devices.	
C204.2	Designandanalyzeamplifiers.	
C204.3	Analyze frequency response of BJT and MOSFET amplifiers	
C204.4	Designandanalyzefeedbackamplifiersandoscillator principles.	
C204.5	Design and analyze power amplifiers and supply circuits	

C205	EC3351	ControlSystems
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CourseOutcomes(Cos)

C205.1	Compute the transfer function of different physical systems.	
C205.2	Analysethetimedomainspecificationandcalculatethesteadystateerror.	
C205.3	05.3 Illustratethefrequencyresponsecharacteristicsofopenloopandclosedloopsystem response.	
C205.4	AnalysethestabilityusingRouthandrootlocustechniques.	
C205.5	Illustratethe state spacemodel ofaphysical systemanddiscuss the conceptsofsampled data control system.	

C206 EC3352 DigitalSystemsDesign	
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C206.1	UseBooleanalgebraandsimplificationproceduresrelevanttodigitallogic.	
C206.2		
	Designvarious combinational digital circuits using logic gates.	
C206.3	Analyse and design synchronous sequential circuits.	
C206.4	Analyseanddesignasynchronoussequentialcircuits.	
C206.5	Build logic gates and use programmable devices	



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C207	EC3361	Electronic Devicesand CircuitsLaboratory
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CourseOutcomes(Cos)

C207.1	Characteristics of PN Junction Diode and Zener diode.	
C207.2	DesignandTestingofBJTandMOSFET amplifiers.	
C207.3	Operationofpoweramplifiers.	

C208	CS3362	CProgrammingandData StructuresLaboratory

CourseOutcomes(Cos)

C208.1	Use different constructs of C and develop applications	
C208.2	Writefunctionstoimplementlinearandnon-lineardatastructureoperations	
C208.3	Suggestandusetheappropriatelinear/non-lineardatastructureoperationsforagiven problem	
C208.4	Apply appropriate hash functions that result in a collision free scenario for data storage and Retrieval	
C208.5	ImplementSortingandsearchingalgorithmsforagivenapplication	

C209	GE3361	ProfessionalDevelopment ^{\$}	
CourseOutcon	CourseOutcomes(Cos)		
C209.1	Use MS Word to create quality documents, by structuring and organizing content for their date to day technical and academic requirements		
C209.2	UseMSEXCELtoperformdataoperationsandanalytics,record,retrievedataasper requirements and visualize data for ease of understanding		
C209.3	UseMSPowerPointtocreatehighqualityacademicpresentationsbyincludingcommon tables, charts, graphs, interlinking other elements, and using media objects.		

C210 EC3452 ElectromagneticFields

C210.1	Relatethefundamentalsofvector, coordinates ystem to electromagnetic concepts
C210.2	Analyze the characteristics of Electrostatic field
C210.3	Interprettheconceptsof Electric field in material space and solve the boundary conditions



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C210.4	Explain the concepts and characteristics of Magneto Static field in material space and solve boundary conditions.		
C210.5	Determinethesignificanceoftimevaryingfields		

C211	EC3401	NetworksandSecurity		
CourseOutco	CourseOutcomes(Cos)			
C211.1	Explain the Network Models, layers and functions.			
C211.2	Categorizeandclas	Categorizeandclassifytheroutingprotocols		
C211.3	Listthefunctionsofthetransportandapplicationlayer.			
C211.4	Evaluateandchoosethenetworksecuritymechanisms.			
C211.5	Discussthehardwa	resecurityattacksandcountermeasures.		

C212	EC3451	LinearIntegratedCircuits		
CourseOutcon	mes(Cos)			
C212.1	Designlinearandnonlinearapplications of OP-AMPS			
C212.2	Design applicati	Design applications using analog multiplier and PLL		
C212.3	Design ADC an	Design ADC and DAC using OP – AMPS		
C212.4	GeneratewaveformsusingOP-AMPCircuits			
C212.5	Analyze special function ICs			

C213	EC3492	DigitalSignalProcessing		
CourseOutcomes(Cos)				
C213.1	Apply DFT	Apply DFT for the analysis of digital signals and systems		
C213.2	DesignIIRan	DesignIIRandFIRfilters		
C213.3	Characterize	Characterizetheeffectsoffiniteprecisionrepresentationondigitalfilters		
C213.4	Designmulti	Designmultiratefilters		
C213.5	Apply adap	Apply adaptive filters appropriately in communication systems		

C214	EC3491	CommunicationSystems
CourseOutcor	nes(Cos)	
C214.1	Gain knowl	edge in amplitude modulation techniques
C214.2	UnderstandtheconceptsofRandomProcesstothedesignofcommunicationsystems	
C214.3	Gainknowled	lgeindigitaltechniques



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C214.4	Gainknowledgeinsamplingandquantization
C214.5	Understandtheimportanceofdemodulationtechniques

C215	GE3451	EnvironmentalSciencesand Sustainability		
CourseOutco	CourseOutcomes(Cos)			
C215.1	To recognize and understand the functions of environment, ecosystems and biodiversity and their conservation.			
C215.2	To identify the causes, effects of environmental pollution and natural disasters and contributeto the preventive measures in the society.			
C215.3	Toidentifyandapplytheunderstandingofrenewableandnon-renewableresourcesand contribute to the sustainable measures to preserve them for future generations.			
C215.4	Torecognizethedifferentgoalsofsustainabledevelopmentandapplythemforsuitable technological advancement and societal development.			
C215.5	To demonstrate the knowledge of sustainability practices and identify green materials, energy cycles and the role of sustainable urbanization.			

C216	EC3461	CommunicationSystems Laboratory		
CourseOutco	CourseOutcomes(Cos)			
C216.1	Design AM, FM & Digital Modulators for specific applications.			
C216.2	Computethesamplingfrequencyfordigitalmodulation			
C216.3	Simulate&validatethevariousfunctionalmodulesofCommunicationsystem.			
C216.4	Demonstrate their knowledge in base band signaling schemes through implementation of digital modulation schemes.			
C216.5	Applyvariouschannelcodingschemes&demonstratetheircapabilitiestowardsthe improvement of the noise performance of Communication system.			

C217	EC3462	LinearIntegratedCircuits Laboratory	
CourseOutco	omes(Cos)		
C217.1	Analyzevarioustypesoffeedbackamplifiers		
C217.2	Design oscillators, tuned amplifiers, wave-shaping circuits and multivibrators		
C217.3	Design and simulate feedback amplifiers, oscillators, tuned amplifiers, wave-shaping circuits and multivibrators, filters using SPICE Tool.		
C217.4	Designamplifiers, oscillators, D-A converters using operational amplifiers.		
C217.5	Designfiltersusingop-ampandperformanexperimentonfrequencyresponse		





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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Anna University Regulations 2021 ThirdYearCourses(V&VISemester) Course Outcomes (COs)

C301	EC3501	WirelessCommunication		
CourseOutcon	CourseOutcomes(Cos)			
C301.1	Understand TheConcept And Design Of A Cellular System.			
C301.2	UnderstandMob	Under stand Mobile Radio Propagation And Various Digital Modulation Techniques.		
C301.3	Understand The Concepts Of Multiple Access Techniques And Wireless Networks			
C301.4	Characterize a wireless channel and evolve the system design specifications			
C301.5	Design a cellular system based on resource availability and traffic demands.			

C302	EC3552	VLSIandChip Design
CourseOutcon	nes(Cos)	
C302.1	In depth knowle	dge of MOS technology
C302.2	UnderstandCombinationalLogicCircuitsandDesignPrinciples	
C302.3	Understand Sequential Logic Circuits and Clocking Strategies	
C302.4	Understand Memory architecture and building blocks	
C302.5	UnderstandtheA	SICDesignProcessandTesting.

C303	EC3551	TransmissionlinesandRF Systems	
CourseOutco	mes(Cos)		
C303.1	Explainthecharacteristicsoftransmissionlinesanditslosses.		
C303.2	Calculatethestandingwaveratioandinputimpedanceinhighfrequency transmission lines.		
C303.3	Analyze impedance matching by stubs using Smith Charts.		
C303.4	ComprehendthecharacteristicsofTEandTMwaves.		
C303.5	DesignaRFtransceiversystemforwirelesscommunication		



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C304	EC3561	VLSILaboratory
CourseOutco	mes(Cos)	
C304.1	WriteHDLcodeforbasicaswellasadvanceddigitalintegratedcircuit	
C304.2	Importthelogicn	nodulesintoFPGABoards
C304.3	SynthesizePlace	eandRoutethedigitalIps
C304.4	Design, Simulatools	ate and Extract the layouts of Digital & Analog IC Blocks using EDA
C304.5	Test and Verif	ication of IC design
C305	ET3491	Embedded Systemsand IOTDesign
ourseOutco	mes(Cos)	
C305.1	Explain the arc	hitecture and features of 8051.
C305.2	Develop a mod	lel of an embedded system.
C305.3	List the concepts of real time operating systems.	
C305.4	Learn the archit	ecture and protocols of IoT.
C305.5	Design an IoT based system for any application.	
C306	CS3491	ArtificialIntelligenceand MachineLearning
ourseOutco	mes(Cos)	
C306.1	Use appropriate search algorithms for problem solving	
C306.2	Applyreasoningunderuncertainty	
C306.3	Buildsupervisedlearningmodels	
C306.4	Buildensemblingandunsupervisedmodels	
C306.5	Build deep learning neural network models	
C333	CEC349	RFID SYSTEM DESIGN AND TESTING
ourseOutco	mes(Cos)	
C333.1	Classify RFID systems based on frequency, architecture and performance	
C333.2	Define standards for RFID technology	
C333.3	Illustrate the operation of various components of RFID systems	
C333.4	Describe the privacy and security issues in RFID Systems	
C333.5	Discuss the construction and applications of RFID enabled sensor	



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C356	CEC348	REMOTE SENSING
CourseOutco	omes(Cos)	
C356.1	To understand the principles of electromagnetic radiation	
C356.2	To learn the atmospheric radiation interactions.	
C356.3	To study the laws of planetary motion	
C356.4	To classify the different types of resolution	
C356.5	To know the concepts of digital interpretation	

C358	CEC345	OPTICAL COMMUNICATION & NETWORKS	
CourseOutco	omes(Cos)		
C358.1	Realize Basic Elements In Optical Fibers, Different Modes And Configurations.		
C358.2	Analyze The Transmission Characteristics Associated With Dispersion And Polarization Techniques.		
C358.3	Design Optical Sources And Detectors With Their Use In Optical Communication System.		
C358.4	Construct Fiber Optic Receiver Systems, Measurements And Techniques		
C358.5	Design Optical Communication Systems And Its Networks.		

C369	MX3089	INDUSTRIAL SAFETY	
CourseOutco	CourseOutcomes(Cos)		
C369.1	Understand the basic concept of safety.		
C369.2	Obtain knowledge of Statutory Regulations and standards.		
C369.3	Know about the safety Activities of the Working Place		
C369.4	Analyze on the i	mpact of Occupational Exposures and their Remedies	
C369.5	Obtain knowledge of Risk Assessment Techniques.		





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Course Outcomes (COs)

C401	GE3791	HumanValuesandEthics	
CourseOutco	omes(Cos)		
C401.1	Identify the importance of democratic, secular and scientific values in harmonious functioning of social life		
C401.2	Practice democratic and scientific values in both their personal and professional life.		
C401.3	Find rational solutions to social problems.		
C401.4	Behave in an ethical manner in society		
C401.5	Practice critical thinking and the pursuit of truth		

C509	EC3711	Summer internship	
CourseOutco	omes(Cos)		
C509.1	System-level design processes, verification and validation techniques, manufacturing and		
	production processes in the firm or research facilities in the laboratory/research institute		
C509.2	Analysis of industrial / research problems and their solutions		
C509.3	Documentation of system specifications, design methodologies, process parameters, testing parameters and results		
C509.4	Preparing of technical report and presentation		

C510	EC3811	PROJECT WORK/ INTERNSHIP	
CourseOutcon	mes(Cos)		
C510.1	Formulate and analyze problem / create a new product/ process.		
C510.2	Design and conduct experiments to find solution		
C510.3	Analyze the results and provide solution for the identified problem, prepare project report and make presentation.		