PDM UNIVERSITY
DEPARTMENT OF CIVILENGINEERING

SEMESTER-I

MODULE CODE	CATEGORY	SUB-CATEGORY	MODULE	L	T	P	C	INTERAL MARKS	EXTERNL MARKS	TOTAL
ENGL0101	G		ENGLISH	3	0	0	3	25	75	100
MATH0101	G		APPLIEDMATHEMATICS-I	3	1	0	3.5	50	100	150
CHEM0101	G		INDUSTRIALCHEMISTRY	3	0	0	3	25	75	100
CHEM0102	G		INDUSTRIALCHEMISTRYLAB	0	0	2	1	25	25	50
PHYS0101	G		APPLIEDPHYSICS–I	3	1	0	3.5	50	100	150
PHYS0102	G		APPLIEDPHYSICS–ILAB	0	0	2	1	25	25	50
ECEN1101	G		ELECTRICALTECHNOLOGY	2	0	0	2	25	50	75
ECEN1102	G		ELECTRICALTECHNOLOGYLAB	0		2	1	25	25	50
CSEN1101	G		FUNDAMENTALSOFCOMPUTERSANDPROGRAMMING(WITHC)	4	0	0	4	50	100	150
CSEN1102	G		FUNDAMENTALSOFCOMPUTERSANDPROGRAMMING(WITHC)LAB	0	0	2	1	25	25	50
	G		FOREIGNLANGUAGE–PART-I[#]	2	0	0	2	25	50	75
TOTAL				**20**	**2**	**8**	**25**	**350**	**650**	**1000**

L=Lecture
T=Tutorial
P=Practical
C=CreditPoint

#FOREIGNLANGUAGE

Oneforeignlanguageoutofthefollowing

MODULECOD	MODULENAME
LANF0101	French
LANG0102	German
LANS0103	Spanish

PDM UNIVERSITY
DEPARTMENT OF CIVILENGINEERING

SEMESTER-1

English

L	T	P
3	0	0

MODULE CODE	ENGL0101
CREDITPOINTS	3
FORMATIVEASSESMENT MARKS	25
SUMMATIVEASSESMENT MARKS	75
ENDSEMESTER EXAMDURATION	3 hrs
LASTREVISION DATE	

INSTRUCTIONS: TheQuestionpaperwillcompriseofsevenquestionsdistributedoverthreesectionsA,BandC.SectionAcomprisesofveryshortanswertypequestionsandiscompulsory.SectionBandSectionCCompriseofshortanswertypeandLonganswertype questionsand will have internal choices.

OBJECTIVES:

Theaimofthissubjectistodevelopunderstandingondifferentaspectsrelatedtovocabulary,synonyms,anatomize and to enhance Englishlanguage skills as mentionedbelow:

1. ToachieveknowledgeandunderstandingonfundamentalsofEnglishLanguageandvariousaspectsofit.
2. Togetfamiliarwith the rules of Grammarand their correct usage.
3. To enhance the creativityof thestudents related toverbal abilityand reasoningor fluencyof language.
4. ToacquireknowledgeandunderstandingthebasicconceptsofEnglishlanguageanditsapplicationinScience and&Engineering.
5. To acquireknowledgefor thecorrect usageof technical English.

LEARNINGOUTCOMES:

1. Ableto achieve knowledgeand understandingonfundamentals of EnglishLanguage.
2. Ableto get familiarwiththe rules of Grammar and their correct usage.
3. Enhancethecreativityofthe studentsrelated to verbal abilityandreasoning orfluencyofEnglish.
4. Abilitytoacquireknowledge for the correct usageof technical English.

MODULE CONTENTS:

Unit I:CommunicativeGrammar CommunicativeGrammar:Spottingtheerrorspertainingtopartsofspeech,nouns,pronouns,adjective,adverbs,preposition,conjunction,genders,infinitives,participles,formofTenses,useofarticles;Concord-grammaticalconcord,notionalConcordandtheprincipleofproximitybetween subject and verband other exceptionalusages.
Unit II: Lexis Lexis:Wordsoftenconfused;One-WordSubstitutes;ForeignWords(Aselectedlistmaybeincludedforalltheabovecomponents);FormationofWords(suffixes,prefixesandderivatives)..
Unit III:Introduction toprincipal components of spoken English IntroductiontoprincipalcomponentsofspokenEnglish–Phonetics,Word-stresspatterns,Intonation,Weakforms in English.
Unit IV:Developing listening and speaking skills through variousactivities Developinglisteningandspeakingskillsthroughvariousactivities,suchAs:RoleplayactivitiesPracticingshortdialoguesGroupdiscussionDebatesSpeechesListeningtonewsbulletinsViewingandreviewingT.V. programs etc.
Unit V:Written Communication WrittenCommunication:Developingreadingandwritingskillsthroughsuchtasks/activitiesasdevelopingoutlines,keyexpressions,situations,sloganwritingandthemebuildingexercises. Readingverbal and non-verbal texts like cartoons,Graphsand tabulated data etc.
Unit VI:TechnicalWriting BusinessLetters,FormatofBusinesslettersandBusinessletterwriting-Fully-blockedlayoutmaybeused-mailwriting;Reports,TypesofReportsandFormatofFormalReports;PressReportWriting.

RECOMMENDEDBOOKS:

TEXT BOOKS	1. BasicBusinessCommunication:RaymondVLesikarMcAGrawHillpublications. 2. CommunicationSkills:D G Saxena,KuntalTamangTopQuark,NewDelhi. 3. A textbook of EnglishPhoneticsfor IndianStudents: TBalasubramanian MacmillanIndiaLimited, NewDelhi.
REFERENCEBOOKS	1. LivingEnglishStructures:WS Allen PearsonPublications,NewDelhi. 2. HighSchoolEnglish Grammar and Composition: P C WrenandH MartinS.ChandPublications,NewDelhi. 3. EssentialsofCommunication:BRSharmaandSanjeevGandhiBharatpublications, Yamuna Nagar

PDM UNIVERSITY
DEPARTMENT OF CIVILENGINEERING

MAPPINGOFCOURSE LEARNINGOUTCOMES

ProgramOutcomes	a	b	c	d	e	f	G	h	i	j	k
Course LearningOutco	1,2,3 ,4	1,2,3 ,4	1,2, 3	1,2,3	2,4	3,4	1,4	3,4	2,5	1,2, 3,5	1,5

METHODS OFTEACHINGANDSTUDENTLEARNING

Thesubjectisdeliveredthroughlectures,on-linesupport,textbook/coursematerialreadingandpracticalexercises.Somevideoswillbeshowntodemonstratecertainconceptsandresearchareaswillbediscussed.Resource material is provided with the help of PDM Educational DirectoryServices (PEDS).

ASSESSMENTMETHODOLOGIES:

This subject will be evaluatedfora total of 100 marks fortheory.

Theory:

Assessment #	TypeOfAssessment	Per Semester	Maximum Mark
1.	Class Test	4	5
2.	SessionalTest	2	15
3.	GroupDiscussion	4	5
4.	End Semester Exam	1	75

MAPPINGOFASSESSMENTMETHODSAGAINST THELEARNINGOUTCOMES

Theory:

Assessments	1	2	3	4	5	6
Class Test	x		X		x	
Quiz			X		x	X
Assignment	x	x		x		

EVALUATION

Attheendofsemester,coursefacultywillsubmitanevaluation/reviewreport.Thepurposeofthisreportistoidentifyaspectsthatwillbehighlightedbystudentsandfaculty'sfeedbackforthecoursewithrespecttoitsstrengthsaswellas thoseareaswhichcould be improved. Thereviewreportcontains the following areas:

- Problemsencountered inthe contentdelivery;
- Suggested remedies / corrective measures;

- Approvedrefinement decisions due for implementation;
- Actionstakenbased on previous coursereview; and
- Reportdiscussedandanalysed actionstakenasaresultofthisprocessandarecommunicatedtothemain stakeholders.

PDM UNIVERSITY
DEPARTMENT OF CIVILENGINEERING

SEMESTER-I

AppliedMathematics-I

L T P
3 1 0

MODULE CODE	MATH0101
CREDITPOINTS	3.5
FORMATIVEASSESMENT MARKS	50
SUMMATIVE ASSESMENTMARKS	100
ENDSEMESTER EXAMDURATION	3 hrs
LASTREVISION DATE	

INSTRUCTIONS: TheQuestionpaperwillcompriseofsevenquestionsdistributedoverthreesectionsA,BandC.SectionAcomprisesofveryshortanswertypequestionsandiscompulsory.SectionBandSectionCComprise ofshort answertypeandLonganswertype questions and will have internal choices.

OBJECTIVES:

1. Toachieveknowledgeandunderstandingonfundamentalsofmatrices,theirvariouspropertiesandcapabilities to model andsolvewiderangeof problems in science andengineering.
2. To getfamiliarwithconcepts of differentialcalculus and develop abilitytosolve simple problems.
3. To understand multiple integrals and theirapplications in engineeringproblems.
4. To learnbasicconcepts of probabilityand its application in realistic decision making.
5. To acquireknowledgeofstatisticalhypothesistestingandassess their effectiveness in problemsolving.

LEARNINGOUTCOMES:

1. Ableto understand theevolution of matrices andtheir applications.
2. Exposureto differential calculusand their capabilities to solve problems.
3. Enhance the knowledgeofmultiple integrals.
4. Ableto understand concepts of probabilityand itsapplication.
5. Abilitytoacquireknowledgeof statistical hypothesis testingand assess theireffectiveness.

MODULE CONTENTS:

UNIT-I:Matrices&theirApplications Rankofamatrix,elementarytransformations,elementarymatrices,inverseusingelementarytransformations,normalformofamatrix,lineardependenceandindependenceofvectors,consistencyoflinearsystemofequations,linearandorthogonaltransformations,EigenvaluesandEigenvectors,propertiesofEigenvalues,Cayley-Hamiltontheorem and its applications.Determinants andtheir evaluations.
UNIT-II:Applications of Differentiation Taylor's and McLaurin'sseries,AsymptotesandCurvature. PartialDifferentiation&itsApplications:Functionsoftwoormorevariables;partialderivatives,Total differentialanddifferentiability,Derivativesofcompositeandimplicitfunctions, Jacobians, Higherorderpartial derivatives.
UNIT-III:Applications of Differentiationcontd. Homogeneous functions,Euler'stheorem,Taylor'sseries for functionsoftwo variables(withoutproof),maxima-minimaoffunction oftwo variables,Lagrange's method ofundeterminedmultipliers,Differentiation under integral sign..
UNIT-IV: Multiple Integration Doubleintegral,changeoforderofintegration,Doubleintegralinpolarcoordinates,Applicationsofdoubleintegral to find areaenclosedbyplanecurvesandvolumeofsolids of revolution.
UNIT-V: Multiple Integrationcontd. Tripleintegral,volume of solids, changeof variables,Betaandgammafunctionsandrelationshipbetween them.
UNIT-VI:Probability Distributions &Hypothesis Testing Conditionalprobability,Bayestheoremanditsapplications,expectedvalueofarandomvariable. Properties andapplication of Binomial, Poisson andNormal distributions. Testingofahypothesis,testsofsignificanceforlargesamples,Student'st-distribution(applicationsonly)andChi-squaretestofgoodnessoffit.Chi-squaretestofindependentevents,F-Test.

RECOMMENDEDBOOKS:

TEXT BOOKS	4. HigherEngineeringMathematics: B.S.Grewal,KhannaPublishers,NewDelhi. 5. Advanced Engineering Mathematics,Erwin Kreyszig,JohnWiley&Sons,Inc.,New York. 6. *Advanced Engineering Mathematics*, Peter

REFERENCEBOOKS	4. AdvancedEngineeringMathematics,R.K.JainandS.R.K.Iyengar,AlphascienceInternationalLtd.PangBourne,England. 5. AdvancedEngineeringMathematics,MichaelDGreenberg,Prentice-Hall,EnglewoodCliffs,NJ.

MAPPINGOFCOURSE LEARNINGOUTCOMES

ProgramOutcomes	A	b	c	d	e	f	g	h	I	j	k
Course LearningOutcomes	1,2,3,4,5	1,2,3,4,5	1,3,5	1,2,5	1,2,4	2,3	1,4,5	1,3	1,2,5	1,2,3	2,4

METHODS OFTEACHINGANDSTUDENTLEARNING

Thesubjectisdeliveredthroughlectures,on-linesupport,textbook/coursematerialreadingandpracticalexercises.Somevideoswillbeshowntodemonstratecertainconceptsandresearchareaswillbediscussed.Resource material is provided with the help of PDM Educational DirectoryServices (PEDS).

ASSESSMENTMETHODOLOGIES:

This subject will be evaluatedfora totalof150 marks fortheory.

Theory:

Assessment #	TypeOfAssessment	Per Semester	Maximum Mark
1.	Class Test	4	10
2.	SessionalTest	2	30
3.	GroupDiscussion	4	10
4.	End Semester Exam	1	100

MAPPINGOFASSESSMENTMETHODSAGAINSTTHE LEARNINGOUTCOMES

Theory:

Assessments	1	2	3	4	5	6
Class Test	x		x		X	
Quiz			x		X	X
Assignment	x	x		x		

EVALUATION

Attheendofsemester,coursefacultywillsubmitanevaluation/reviewreport.Thepurposeofthisreportistoidentifyaspect sthatwillbehighlightedbystudentsandfaculty'sfeedbackforthecoursewithrespecttoitsstrengthsaswellas thoseareaswhichcould be improved. Thereviewreportcontains the following areas:

- Problemsencountered inthe contentdelivery;
- Suggestedremedies / corrective measures;
- Approvedrefinement decisions due for implementation;
- Actionstakenbased on previous coursereview; and
- Reportdiscussedandanalysed;actionstakenasaresultofthisprocessandarecommunicatedtothemainstakeh olders.

PDM UNIVERSITY
DEPARTMENT OF CIVILENGINEERING

SEMESTER-I

IndustrialChemistry

L T P
3 0 0

MODULE CODE	CHEM0101
CREDITPOINTS	3
FORMATIVEASSESMENT MARKS	25
SUMMATIVEASSESMENT MARKS	75
ENDSEMESTER EXAMDURATION	3 hrs
LASTREVISION DATE	

INSTRUCTIONS: TheQuestionpaperwillcompriseofsevenquestionsdistributedoverthreesectionsA,BandC.SectionAcomprisesofveryshortanswertypequestionsandiscompulsory.SectionBandSectionCComprise ofshort answertypeandLonganswertype questions and will have internal choices.

OBJECTIVES:
Theaimofthissubjectistodevelopunderstandingondifferentaspectsrelatedtofuel,lubricantsandtoenhanceskills of industrial chemistryas mentioned below:

1. Toachieveknowledgeandunderstandingthephaserulefordifferentsystemsandfurtherforvariousengineeringapplications.
2. Togetfamiliarwiththeimportanceofwater,impuritiesinwater&theireffectslikehardness,alkalinity &biologicaleffects.
3. Tounderstand&solvetheproblemslikescaleandsludgeformation,boilercorrosionduetoimpuritiespresent in waterused forindustrial purpose.
4. Tolearnbasicconceptsabouttheprocessofcorrosionofdifferentmetals&itstypeswithmechanismandcause.
5. Toknowvariousfactorsthatcaneffectcorrosionandtobeabletoproducedifferentmethodsforprevention of corrosionofdifferentmetals used inmachines.
6. To have knowledgeof differentlubricants and touse differentlubricants for differentmachines.
7. To gain knowledgeof different fuels and theirefficiency.
8. Toacquireknowledgeaboutthepreparation&propertiesofdifferentpolymersandtobeabletorecognize the useof differentpolymers&their composites for engineering applications.

LEARNINGOUTCOMES:

1. Studentswillbeabletodevelopaninsightaboutthewaythechemistryisconnectedtootheroccupationsandappreciationoftheroleofchemistryindaytodaylifeinsocietyandtheskillsofsolvingrelated industrial problems.
2. Studentswillbeabletodemonstratetheirknowledgeofremovalofhardnessofwateranddifferentwatertreatments methods in energyandenvironmentrelated industries.

3. Graduateswillbeabletoapplytheirknowledgeofpreventionsofcorrosionsindifferentmachinerysystems.
4. Students will beableto demonstratetheapplicationofdifferent lubricants forvariousmachineryproblemsandenergyusageaswellastheinfluenceofhumanandindustrialactivitiesonthee nvironment.
5. Studentswillshowtheirinterestinmanufacturingdifferentpolymersandpolymercompositesbyusingdifferent polymerization techniquesand theirapplication in industries.
6. Graduateswillbeabletodeveloptheirchallengingcareersinthefieldofchemicals,petroleum,petrochemical,pol ymer,pharmaceutical,food,biotechnology,microelectronics,energyandnano-materialsprocessing.
7. Graduateswillbeabletoperformlaboratoryexperimentsandproperuseofstandardchemistryglasswareandequi pmentcompareandcollectquantitativedataobtainedfromexperimentationandusingvariousanalytical techniques.
8. Graduateswill beable tocommunicateeffectivelythroughassignments,presentationsand discussions intechnical as well as in non technicaldomain.

MODULE CONTENTS:

UNIT-I:PhaseRule Terminology,Gibb'sphaseruleequation,Onecomponentsystem(H_2OsystemandCO_2–system),Twocomponentssystem:simpleeutecticsystem(Pb–Ag),systemwithcongruentmeltingpoint(Zn–Mg),systemwithincongruentmeltingpoint(Na–K),Applicationsofthesesystemsandphaserule, Cooling curves.
UNIT-II: VWater&its treatment Impuritiesinwater&theireffects,hardnessofwateranditsdetermination(EDTAmethod),alkalinityofwateranditsdetermination,treatmentofwaterfordomesticuse:coagulation,sedimentation,filtrationanddisinfection,watersofteningmethods:Lime-Sodaprocess,Zeolite process,Ion–exchange process,Relatednumerical problems.
UNIT-III: Corrosion andits prevention Introduction,ChemicalandElectrochemicalcorrosion,Typesofcorrosion:oxidationcorrosion,galvaniccorrosion,differentialaerationcorrosion,pittingcorrosion,waterlinecorrosion,stresscorrosion(causticembrittlement),Factorsaffectingcorrosion,preventivemeasures (Cathodic& anodic protection,electroplating,tinning,galvanization).
UNIT-IV: Lubricants and Fuels Needforlubricants,Classification,generalproperties&applicationsoflubricants,Propertiesoflubricatingoils(Flash&Firepoint,ViscosityandViscosityindex,Saponificationvalue,Iodinevalue,Acidvalue,Anilinepoint),Definitionandclassificationoffuel,Calorificvalueoffuels,Dulong'formula,Determinationofcalorificvalueoffuels(Bomb'scalorimeter&Boy'sGascalorimeter),Relatednumericalproblems.
UNIT-V: Polymers and Composites Classificationofpolymers,types&mechanismofpolymerization(Additionandcondensation),preparationpropertiesandtechnicalapplicationofthermoplastics(PE,PVC,Teflon),thermosets(UF,PF)andelastomers(syntheticrubbers:SBR,Nitrilerubber),Inorganicpolymers(silicones),Polymericcomposites(composition,advantagesandapplicationareas),Introductionto conducting polymersandconducting polymercomposites.
UNIT-VI: InstrumentalMethods of Analysis Principle,instrumentation&generalapplicationsofthermalmethodsofanalysis(TGA,DTA,DSC),Basicconceptsofspectroscopy,Principal,instrumentationandgeneralapplicationsofspectroscopictechniques(UV-Visspectroscopy,IR-spectroscopy&Flamephotometery),Conductometric titrations, pH metry.

RECOMMENDEDBOOKS:

TEXT BOOKS	1. *Engineering Chemistry*, P.C. Jain Monica Jain(DhanpatRai&Co) 2. *FundamentalsofEngineeringChemistry*,ShashiChawla(DhanpatRai&Co) 3. *Chemistry for Engineers*, B.K. Ambasta (LuxmiPublication) 4. *ChemistryinEngineering&Tech*,Vol. I&II,Kuriacose(TMH)
REFERENCES	1. *InstrumentalmethodsofChemicalanalysis*,MERITT&WILLARD (EAST– WEST press) 2. *PhysicalChemistry*, P.WAtkin (ELBS,OXFORDPress) 3. *PhysicalChemistry*, W.J.Moore(OrientLongman)

MAPPINGOFCOURSE LEARNINGOUTCOMES

ProgramOutcomes	a	b	c	d	e	f	g	h	i	j	K
Course LearningOutcomes	1,2,3,4,5,6,7	1,2,5,6,7	1,3,5,7	1,2,7	2,4,6	1,2,3,7	1,4,6.7	1,3,4,5,	2,5,6,8	1,2,4,7,8	2,3,4

METHODS OFTEACHINGANDSTUDENTLEARNING

Thesubjectisdeliveredthroughlectures,on-linesupport,textbook/coursematerialreadingandpracticalexercises.Somevideoswillbeshowntodemonstratecertainconceptsandresearchareaswillbediscussed.Resource material is provided with the help of PDM Educational DirectoryServices (PEDS).

ASSESSMENTMETHODOLOGIES:

This subject will be evaluatedfora total of 100 marks fortheory.

Theory:

Assessment #	TypeOfAssessment	Per Semester	Maximum Mark
1.	Class Test	4	5
2.	SessionalTest	2	15
3.	GroupDiscussion	4	5
4.	End Semester Exam	1	75

MAPPINGOFASSESSMENTMETHODSAGAINST THE LEARNINGOUTCOMES

Theory:

Assessments	a	b	c	d	e	f	G	H
Class Test		x	x	x		x	X	
Quiz	x	x	x	x		x		
Assignment	x		x					X

EVALUATION

Attheendofsemester,Subjectteacherwillsubmitanevaluationreport.Thepurposeofthisreportistoidentifyaspectsthatwillbehighlightedbystudentsandfaculty'sfeedbackforthesubjectwithrespecttoitsstrengthsaswellas those areas whichcould be improved. The review report contains the following:

- Approvedrefinement decisions due for implementation,
- Actionstakenbased on previous subjectreview,
- Problemsencountered inthe subjectdelivery,
- Suggestedremedies / corrective measures,and
- Reportdiscussedandanalysed,actionstakenasaresultofthisprocessandarecommunicatedtothemainstakeholders.

PDM UNIVERSITY
DEPARTMENT OF CIVILENGINEERING

SEMESTER-I

AppliedPhysicsI

L T P
3 1 0

MODULE CODE	PHYS0101
CREDITPOINTS	3.5
FORMATIVEASSESMENT MARKS	50
SUMMATIVEASSESMENT MARKS	100
ENDSEMESTER EXAMDURATION	3 hrs
LASTREVISION DATE	

INSTRUCTIONS: TheQuestionpaperwillcompriseofsevenquestionsdistributedoverthreesectionsA,BandC.SectionAcomprisesofveryshortanswertypequestionsandiscompulsory.SectionBandSectionCComprise ofshort answertypeandLonganswertype questions and will have internal choices.

OBJECTIVES:

Theaimofthissubjectistodevelopunderstandingondifferentaspectsrelatedtomodernphysics,interference,difference, polarization and to enhance skills of different typeof laserand its applicationsasmentionedbelow:

1. TomakestudentsawareaboutModernPhysics,theirvariouspropertiesandcapabilitiestomodelandsolvewiderange of problems in scienceandengineering.
2. To acquireknowledgepolarizationand their applications in engineeringproblems.
3. To getfamiliarwith conceptsof interferenceanddiffractionanddevelopabilityto solve simpleproblems.
4. To learnbasicconcepts ofdifferenttypes of laserand its application in scientific problems.
5. Toacquireknowledgeofsuperconductivity implementationandassesstheireffectivenessinscienceandTechnology.

LEARNINGOUTCOMES:

1. Ableto applyknowledgein developing advancedmaterials and devices.
2. Ableto applyfundamentallaws ofsuperconductivityin engineering.
3. Ableto identifyand solve appliedphysics problems.
4. Ableto applyknowledgeto understand the concepts of fiberoptics.
5. Abilitytocreatenew problems and solvewith the help of applications used.

MODULE CONTENTS:

Unit I:Interference

Coherentsources,conditionsforsustainedinterference.DivisionofWave-Front,Fresnel'sBiprism,DivisionofAmplitude-Wedge-shapedfilm,Newton'sRings,MichelsonInterferometer,applications,Resolutionofcloselyspacedspectrallines,determinationofwavelengths.

Unit II:Diffraction Differencebetweeninterferenceanddiffraction,FraunhoferandFresneldiffraction,ZonePlate,Fraunhoferdiffractionthroughasingleslit,Planetransmissiondiffractiongrating,absentspectra,dispersivepower,resolvingpowerandRayleighcriterionof resolution.
Unit III:Polarization Polarizedandunpolarisedlight,Uni-axialcrystalsdoublerefraction,Nicolprism,quarterandhalfwaveplates,DetectionandProductionofdifferenttypesofpolarizedlight,Polarimetry,Optical and specificrotation,
Unit IV:Laser&FibreOptics Absorptionofradiation,spontaneousandstimulatedemission,Laseraction,EinsteinCoefficient,characteristicsoflaserbeam-conceptofcoherence,spatialandtemporalcoherence.He-Neandsemiconductorlasers(simpleideas),applicationsofLaser.Propagationoflightinopticalfibres, numericalaperture,V-number,singleandmultimodefibres,attenuationdispersion, applications.
Unit V: NuclearPhysics Introduction,Radioactivity,Alphadecay,Gamadecay,Qvalue,Thresholdenergy,Nuclearreactions, Nuclearfission:Liquiddropmodel,Nuclearfusion,Particleaccelerators:Linearaccelerator,Cyclotron.
Unit VI:TheoryofRelativity Introduction,Frameofreference,Galileantransformation, Michelson-Morleyexperiment,Postulatesofspecialtheoryofrelativity,Lorentztransformations,Lengthcontraction,Timedilation, Mass energyrelation.

RECOMMENDEDBOOKS:

TEXT BOOKS	1. Perspectives of ModernPhysics,ArthurBeiser(TMH) 2. ModernPhysicsforEngineers,S.P. Taneja(R. Chand). 3. ModernEngineeringPhysics, A.S. Vasudeva (S.Chand). 4. EngineeringPhysics,SatyaPrakash(PragatiPrakashan). 5. Optics, AjoyGhatak (TMH).
REFERENCEBOOKS	1. Fundamentalsof Physics, Resnick&Halliday (AsianBook). 2. IntroductiontoElectrodynamics,D.J.Griffith(PrenticeHall).

PDM UNIVERSITY
DEPARTMENT OF CIVILENGINEERING

MAPPINGOFCOURSE LEARNINGOUTCOMES

ProgramOutcomes	a	b	C	D	e	f	g	h	i	j	k
Course LearningOutcomes	1,2,3,4	1,3,5	1,2,4,5	1,2,3,4,5	1,3,4	1,4	1,2,5	1,3,5	1,4,5	1,2,5	1,3,5

METHODS OFTEACHINGANDSTUDENTLEARNING

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ASSESSMENTMETHODOLOGIES:

This subject will be evaluatedfora total of 150 marks fortheory.

Theory:

Assessment #	TypeOfAssessment	Per Semester	Maximum Mark
1.	Class Test	4	10
2.	SessionalTest	2	30
3.	GroupDiscussion	4	10
4.	End Semester Exam	1	100

MAPPINGOFASSESSMENTMETHODSAGAINST THE LEARNINGOUTCOMES

Theory:

Assessments	1	2	3	4	5	6
Class Test	x		X		x	
Quiz			X		x	X
Assignment	x	x		x		

EVALUATION

Attheendofsemester,coursefacultywillsubmitanevaluation/reviewreport.Thepurposeofthisreportistoidentifyaspectsthatwillbehighlightedbystudentsandfaculty'sfeedbackforthecoursewithrespecttoitsstrengthsaswellas thoseareaswhichcould be improved. Thereviewreportcontains the following areas:

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- Approvedrefinement decisions due for implementation;
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- Reportdiscussedandanalysed;actionstakenasaresultofthisprocessandarecommunicatedtothemainstakeholders.

PDM UNIVERSITY
DEPARTMENT OF CIVILENGINEERING

SEMESTER-I

ElectricalTechnology

L T P
2 0 0

MODULE CODE	ECEN1101
CREDITPOINTS	2
FORMATIVEASSESMENT MARKS	25
SUMMATIVEASSESMENT MARKS	50
ENDSEMESTER EXAMDURATION	3 hrs
LASTREVISION DATE	

INSTRUCTIONS: TheQuestionpaperwillcompriseofsevenquestionsdistributedoverthreesectionsA,BandC.SectionAcomprisesofveryshortanswertypequestionsandiscompulsory.SectionBandSectionCComprise ofshort answertypeandLonganswertype questions and will have internal choices.

OBJECTIVES:

Theaimofteachingthissubjectistoimpartknowledgeprimarilyrelatedtoapplicationofelectricitysothatlearnerwill be able to make basicelectricalcircuits in reallife. Some oftheobjectives of thecourse are:

1. To acquirebasic knowledge ofElectric Networks.
2. To inculcate theknowledgeofACandDC fundamentals.
3. To enable to solveelectric circuit usingvarioustheorems and methods.
4. To getfamiliarwith the concept of three phasecircuitand its variousconnections.
5. To understand the concept of resonance in electrical network.
6. To gain knowledgeofconstruction and workingofTransformer.
7. To getexposureabout workingofAC and DC machines.

LEARNINGOUTCOMES:

1. Ableto understandbasicaspectsofelectricaltechnologyusedinanykindofindustry.
2. Ableto understandvariouselectricalapplicationsindaytodaylife.
3. Getfamiliarwithworkingofvariouscomponents ofacircuit.
4. Abilityto analyzethebehaviorofelectricalparametersin differentforms.
5. Abletomeasurevariouselectricalparameters.
6. Ableto know thedifferencebetweensinglephaseandthreephaseelectricalsupply.
7. Acquiringproblemsolvingskills.

MODULE CONTENTS:

Unit I:D.C. Network Laws Ohm'sLaw,Kirchhoff'sLaws,NodalandLoopmethodsofanalysisStartoDelta&DeltatoStartransformation.
Unit II:Network Theorems Thevenin'stheorem,Norton'stheorem,superpositiontheorem,maximumpowertransfertheorem,Millman's theorem.
Unit III:SinglePhaseA.C. Circuits Sinusoidalsignal,instantaneousandpeakvalues,RMSandaveragevalues,crestandpeakfactor, Concept of phase,representation-polar&rectangular.
Unit IV:Series and Parallel A.C. circuits SeriesandParallelA.C.circuits.Conceptofactiveandreactivepower,powerfactor,seriesandparallelresonance, Qfactor,cut-offfrequencies and bandwidth.
Unit V:ThreePhaseA.C. Circuits ThreephaseA.C.circuit,staranddeltaconnection,phaseandlinevoltageandcurrents,balancedstarandcircuits,powerequation,measurementofpowerbytwowattmetermethod,introduction to unbalancedcircuits.
Unit VI:Transformers&Machines Construction, EMFequation, idealtransformer,Phasordiagram on no loadandfull load,equivalentcircuit,losses,regulation and efficiency,openand short circuit test. Introduction ofAC andDC machines.

RECOMMENDEDBOOKS:

TEXT BOOKS	1. ElectricalTechnology(Vol-I),byB.L.Thareja&A.K.Thareja, S. Chand publications. 2. ElectricalTechnology(Vol-II),byB.L.Thareja&A.K.Thareja, S. Chand publications. 3. BasicElectricalEngineering,IIedition,byV.N.Mittal &ArvindMittal, TMH Publications.
REFERENCEBOOKS	1. Electrical EngineeringFundamentals : Deltoro, PHI 2. Network Analysis ;Valkenburg,PHI. 3. ElectricalandElectronicTechnology(8th Edition):Hughes,Pearson. 4. AtextbookofElectricalTechnology,J.B.Gupta,Katsonpublication. 5. Electrical TechnologybyMukeshSaini.

METHODS OFTEACHINGANDSTUDENTLEARNING

Thesubjectisdeliveredthroughlectures,on-linesupport,textbook/coursematerialreadingandpracticalexercises.Somevideoswillbeshowntodemonstratecertainconceptsandresearchareaswillbediscussed.Resource material is provided with the help of PDM Educational DirectoryServices (PEDS).

ASSESSMENTMETHODOLOGIES:

This subject will be evaluatedfora totalof75marks for theory.

Theory:

Assessment #	TypeOfAssessment	Per Semester	Maximum Mark
1.	Class Test	4	5
2.	SessionalTest	2	15
3.	GroupDiscussion	4	5
4.	End Semester Exam	1	50

MAPPINGOFASSESSMENTMETHODSAGAINST THE LEARNINGOUTCOMES

Theory:

Assessments	1	2	3	4	5	6	7
Class Test				x	X	X	X
Quiz	x	x	x				
Assignment		x	x			X	X

MAPPINGOFCOURSE LEARNINGOUTCOMES

ProgramOutcomes	a	b	c	d	e	f	g	h	I	j	K
Course LearningOutco	1,7	2	5	3		1,6		7,4			

EVALUATION

Attheendofsemester,coursefacultywillsubmitanevaluation/reviewreport.Thepurposeofthisreportistoidentifyaspectsthatwillbehighlightedbystudentsandfaculty'sfeedbackforthecoursewithrespecttoitsstrengthsaswellas thoseareaswhichcould be improved. Thereviewreportcontains the following areas:

- Problemsencountered inthe contentdelivery;
- Suggestedremedies / corrective measures;
- Approvedrefinement decisions due for implementation;
- Actionstakenbased on previous coursereview; and
- Reportdiscussedandanalysed;actionstakenasaresultofthisprocessandarecommunicatedtothemainstakeholders.

PDM UNIVERSITY
DEPARTMENT OF CIVILENGINEERING

SEMESTER-I

FundamentalsofComputers(with‘C’)

L	T	P
4	0	0

MODULE CODE	CSEN0101
CREDITPOINTS	4
FORMATIVEASSESMENT MARKS	50
SUMMATIVEASSESMENT MARKS	100
ENDSEMESTER EXAMDURATION	3 hrs
LASTREVISION DATE	

INSTRUCTIONS: TheQuestionpaperwillcompriseofsevenquestionsdistributedoverthreesectionsA,BandC.SectionAcomprisesofveryshortanswertypequestionsandiscompulsory.SectionBandSectionCComprise ofshort answertypeandLonganswertype questions and will have internal choices.

OBJECTIVES:

Theaimofthissubjectistodevelopunderstandingondifferentaspectsrelatedtocomponentsofcomputers,computerlanguages andto enhance skills of programmingin ‘C’ languageasmentionedbelow:

1. To make students awareof the evolutionof computersin differentgenerationsincluding itsclassification in differentcategoriesbased on its capabilities.
2. To acquireknowledgeonmajor components of computershardware,software, data andprocesses.
3. To getfamiliarwithconcepts of microprocessorinterfacingand its applications.
4. To achievean understandingon basicconcepts ofoperatingsystemandnetworking.
5. To demonstrate theworkingof systemsoftware.
6. To understandsyntaxandsemantics of ‘C’ programminglanguage.
7. To enable learner to build logic for a given problem and finallydevelopprograms.

LEARNINGOUTCOMES:

1. Ableto understand theevolution of computerandbasicterminology.
2. Exposureto varioushardwareand softwareand their compatibilities.
3. Enhancethe knowledgeregardingcomponents andconnectorssuch asports etcto enablecommunicationbetweencomputers.
4. Ableto understand the basic functionalityof OS and the process of secureddatamanagement.
5. Abilityto differentiate the class of system software, its functionalityversus applicationsoftware.
6. Abilitytocreateprogramsinvolvingfilehandlingandtounderstandthescenarioofsequentialaswellasrandom data retrievalapproach.

MODULE CONTENTS:

Unit I: Computers system and its fundamentals Evolutionofcomputers,hardwareorganizationofacomputer;Introductiontomicroprocessors,generationsofmicroprocessors,Input/Outputdevices,Input/Outputportsandconnectors;Programminglanguages-machinelanguage,assemblylanguage,lowlevellanguages,highlevellanguages,types of high level languages.
Unit II:System software Translators-complier,interpreter,assembler;Macros,Loader,Linker,RelationshipbetweenCompiler,Interpreter,LoaderandLinker;OperatingSystem-fundamentalsofoperatingsystem,functionsofoperatingsystem,classificationofoperatingsystems,
Unit III:An overview of 'C' HistoryofC,importanceofC,basicstructureofCprograms,executinga'C'program,characterset,'C'tokens,keywordsandidentifiers,constants,variablesanddatatypes,declarationofvariables,declarationofstorageclass,operatorsandexpressions,managingI/Ooperations,decisionmakingwithIFstatement,theif..elsestatement,nestingofif…elsestatement,switchstatement,conditionalstatement,GOTOstatement,thewhilestatement,thedo statement, the for statement and jumps in loops.
Unit IV:Array, structureand union in 'C' Arrays:one-dimensionalarrays,two-dimensionalarrays,multi-dimensionalarrays,dynamicarrays,characterarraysandstrings,userdefinedfunctions,structure-definitionandinitialization,declaringvariables,accessingstructuremembers;copyingandcomparingstructurevariables;operationsonindividualmembers;arrayofstructure;structurewithinstructure; unions, sizeof structure.
Unit V: Functions in 'C' Basicsoffunctions,built-inanduserdefinedfunctions,usingstring,Mathandotherbuilt-infunctions,advantagesofusingfunctions, workingofafunction,declaring,definingandcallinguserdefinedfunctions-Thereturnstatement,callbyvalueandcallbyreference,functionas an
Unit VI:Pointers in 'C' Pointers-accessingtheaddressofavariable,declarationandinitializationofpointervariables,accessingavariablethroughitspointer;pointerExpressions;pointerandarrays,pointerandcharacterstrings;arraysofpointer;pointersasfunctionarguments;functionsreturningpointers; pointers to functions.

RECOMMENDEDBOOKS:

TEXT BOOKS	1. FundamentalofComputersandProgrammingwithC,byA.K. Sharma,DhanpatRaiPublications,Delhi. 2. Computer Networks (4th Edition), byAndrew S.Tanenbaum. 3. Balagurusamy-Programmingin ANSIC.
REFERENCEBOOKS	1. ANSIC, byDennis Ritchi. 2. Balagurusamy-Programmingin ANSI'C'.

METHODS OFTEACHINGANDSTUDENTLEARNING

Thesubjectisdeliveredthroughlectures,on-linesupport,textbook/coursematerialreadingandpracticalexercises.Somevideoswillbeshowntodemonstratecertainconceptsandresearchareaswillbediscussed.Resource material is provided with the help of PDM Educational DirectoryServices (PEDS).

ASSESSMENTMETHODOLOGIES:

This subject will be evaluatedfora total of 150 marks fortheory.

Theory:

Assessment #	TypeOfAssessment	Per Semester	Maximum Mark
1.	Class Test	4	10
2.	SessionalTest	2	30
3.	GroupDiscussion	4	10
4.	End Semester Exam	1	100

MAPPINGOFASSESSMENTMETHODSAGAINST THE LEARNINGOUTCOMES

Theory:

Assessments	1	2	3	4	5	6
Class Test	x		X		X	
Quiz			X		X	X
Assignment	x	x		x		

MAPPINGOFCOURSE LEARNINGOUTCOMES

ProgramOutcomes	a	b	C	d	e	F	g	h	i	J	K
Course LearningOutco	2	3	5	2	5	3					

EVALUATION

Attheendofsemester,coursefacultywillsubmitanevaluation/reviewreport.Thepurposeofthisreportistoidentifyaspectsthatwillbehighlightedbystudentsandfaculty'sfeedbackforthecoursewithrespecttoitsstrengthsaswellas thoseareaswhichcould be improved. Thereviewreportcontains the following areas:

- Problemsencountered inthe contentdelivery;
- Suggestedremedies / corrective measures;
- Approvedrefinement decisions due for implementation;
- Actionstakenbased on previous coursereview; and
- Reportdiscussedandanalysed;actionstakenasaresultofthisprocessandarecommunicatedtothemainstakeholders.

PDM UNIVERSITY
DEPARTMENT OF CIVILENGINEERING

SEMESTER-I

INDUSTRIALCHEMISTRYLAB

L T P
0 0 2

MODULE CODE	CHEM0102
CREDITPOINTS	1
FORMATIVEASSESMENT MARKS	25
SUMMATIVEASSESMENT MARKS	25
ENDSEMESTER EXAMDURATION	3 hrs
LASTREVISION DATE	

OBJECTIVES:

Theaimofthissubjectistodevelopunderstandingondifferentaspectsrelatedtochemistryasmentionedbelow:

1. Toachievethepracticalknowledgeoftheimportanceofwaterandit's,impuritiesinwater&theireffects like hardness, alkalinity&biologicaleffects.
2. Tobeabletounderstand&solvetheproblemslikescaleandsludgeformation,boilercorrosionduetoimpuritiesp resent in waterused for industrial purpose.
3. Togetfamiliarwith experimentalmethodsfortreatmentofdomesticwater,waterforindustrialpurpose.
4. Tohaveknowledgeofdifferentpropertiesoflubricantsandfurthertousedifferentlubricantsfordifferent machines.
5. Toobtaindata bycooling methodfor constructing aphasediagramwhichindicatesthesolidandliquidphase that is presentateachtemperatureandcomposition.
6. Tobeeffectiveinapplyingthebasicconceptofdifferentpolymerizationsynthesistechniquesforpreparation of differentpolymersand theirapplications.

LEARNINGOUTCOMES:

1. Abletodevelopaninsightaboutthewaythechemistryisconnectedtootheroccupationsandappreciationoftherole ofchemistryindaytodaylifeinsocietyandtheskillsofsolvingrelatedindustrial problems.
2. Abletoperformlaboratoryexperimentsandproperuseofchemicalsinremovalofhardnessofwateranddifferent water treatmentsmethods in energyandenvironmentrelatedindustries.
3. Abletocheckthewatersamplesforvariouspurposesinindustries,likechemicalindustry,ConstructionCompany ,pharmaceutical companyanddemonstrate the role of pure water in dayto daylife.
4. Ableto demonstrate theapplication of different lubricants forvarious machineryproblems.
5. Enhance the knowledgeof differentpolymersbyusingsomepolymerization techniques in industries.

6. Abilitytodeveloptheirchallengingcareersinthechemical,petroleum,petrochemical,polymer,pharmaceutical, foodandotherrelatedindustriescomparequantitativedatacollectedinthelabandinterpret the dataobtainedfromexperimentation and usingvariousanalyticaltechniques.

MODULE CONTENTS:

1.	Determination of Ca^{+2}andMg^{+2}hardness of water usingEDTA solution
2.	Determination ofalkalinityof watersample.
3.	Determination ofdissolved oxygen (DO)in thegivenwatersample.
4.	To determine TDS of Watersamples ofdifferentsources.
5.	Tofind the eutectic point for a two component system by using method of cooling curve.
6.	To PrepareUrea formaldehyde and Phenol–formaldehyde resin.
7.	Determination ofviscosityoflubricant byRed Wood Viscosity(No. 1&N0. 2).
8.	To find out saponification no. oflubricatingoil.
9.	Determination of concentration of KMnO4 solution spectrophotomererically.
10.	Determinationof strengthof HCl solution bytitratingagainst NaOHsolution conductometerically.
11.	To determineamountof sodium &potassiumin givenwatersamplebyflame photometer.
12.	Determination ofdissociation constant of aweakacidbypH-meter.
13.	Estimation of total iron inan iron alloy
Anyother experimentcarried out in the laboratory.	

RECOMMENDEDBOOKS:

TEXT BOOKS	1. *EssentialofExperimentalEngineeringChemistry*,ShashiChawla (DhanpatRai&Co.) 2. *Expeimentsin AppliedChemistry*, SunitaRatan(S.K.Kataria&Sons)
REFRENCEBOOKS	1. *Vogel'sTextBookofQuantitativeChemicalAnalysis*,A. I. Vogel,G.H.JefferyPublishedbyLongmanScientific &Technical, 5th Edition,1989. 2. *Theory&Practice Applied Chemistry*– O.P.Virmani, A.K.Narula (NewAge). 3. *ATextbookonExperimentsand Calculation– EngineeringChemistry*,S.S.Dara,(S.Chand&CompanyLtd).

MAPPINGOFCOURSE LEARNINGOUTCOMES

ProgramOutcomes	a	b	c	d	e	f	g	h	I	j	k
Course LearningOutcomes	1,2,3,4,6	1,2,4	1,3,6	1,2,4	2,4,6	1,4	1,2,4,6	1,2,5	1,3	1,2,3,6	1,2,3

METHODS OFTEACHINGANDSTUDENTLEARNING

Thesubjectisdeliveredthroughlectures,on-linesupport,textbook/coursematerialreadingandpracticalexercises.Somevideoswillbeshowntodemonstratecertainconceptsandresearchareaswillbediscussed.Resource material is provided with the help of PDM Educational DirectoryServices (PEDS).

ASSESSMENTMETHODOLOGIES:

Thissubject will be evaluatedfora total of 50 marks.

Practical

Assessment #	TypeOfAssessment	Per Semester	Maximum Mark
1	Internal Assessment	2	25
2	External Assessment	1	25

EVALUATION

Attheendofsemester,coursefacultywillsubmitanevaluation/reviewreport.Thepurposeofthisreportistoidentifyaspectsthatwillbehighlightedbystudentsandfaculty'sfeedbackforthecoursewithrespecttoitsstrengthsaswellas thoseareaswhichcould be improved. Thereviewreportcontains thefollowing areas:

- Problemsencountered inthe contentdelivery;
- Suggestedremedies / corrective measures;
- Approvedrefinement decisions due for implementation;
- Actionstakenbased on previous coursereview; and
- Reportdiscussedandanalysed;actionstakenasaresultofthisprocessandarecommunicatedtothemainstakeholders.

PDM UNIVERSITY
DEPARTMENT OF CIVILENGINEERING

SEMESTER-I

AppliedPhysicsLab I

L T P
0 0 2

MODULE CODE	PHYS0102
CREDITPOINTS	1
FORMATIVEASSESMENT MARKS	25
SUMMATIVEASSESMENT MARKS	25
ENDSEMESTER EXAMDURATION	3 hrs
LASTREVISION DATE	

OBJECTIVES:

1. Toachieveknowledgeandunderstanding onModernPhysics,theirvariouspropertiesandcapabilitiestomodel and solvewide range ofproblems in science andengineering.
2. To getfamiliarwith conceptsof interferenceanddiffractionanddevelopabilityto solve simpleproblems.
3. To understand polarizationand their applicationsin engineeringproblems.
4. To learnbasicconcepts ofdifferenttypes of laserand its application in scientific problems.
5. ToacquireknowledgeofsuperconductivityimplementationandassesstheireffectivenessinscienceandTechnolog y.

LEARNINGOUTCOMES:

1. Ableto applyknowledgefor findingwavelength of sodium, colours ofwhite light using advancedtechnology.
2. Ableto applyfundamentallaws ofsuperconductivityin engineering andtechnology.
3. Ableto identifynew problems and solve throughdifferent techniques.
4. Ableto applyknowledgeto understand the concepts of fiberoptics.
5. Ableto develop newexperiment using advancestechnology.

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DEPARTMENT OF CIVILENGINEERING

MODULE CONTENTS:

1. To find he wavelength ofsodium lightbyNewton's ringsexperiment.
2. To find the wavelength of sodium lightbyFresnel'sbiprismexperiment.
3. To find the wavelengthof variouscoloursof white lightwith the help of a planetransmissiondiffractiongrating.
4 To find the refractive indexandcauchey's constants of aprism byusingspectrometer.
5. To find the wavelength of sodium lightbyMichelsonInterferometer.
6. To find theresolvingpower of a telescope.
7. To find the pitch of ascrew using He-Nelaser.
8. To find the specificrotation of sugar solution byusingapolar meter.
9.Tocomparethecapacitancesoftwocapacitorsby De'sautybridgeandhencetofindthedielectricconstantof amedium.
10.Tofindtheflashingandquenchingpotentialsof Argonandalsotofindthecapacitanceofunknowncapacitor.
11. To studythephoto-conductingcell and hencetoveritythe inversesquare law.
12. To find the temperature co-efficient ofresistancebyusing platinum resistancethermometerandcalendar andGriffinbridge.

RECOMMENDEDBOOKS

TEXT BOOKS	1. AdvancedPractical Physics-B.L. Workshop and H.T.Flint(KPH)
REFERENCES	1. PracticalPhysics- S.L.Gupta&V. Kumar(PragatiPrakashan). 2.AdvancedPractical Physics Vol.I&II-Chauhan &Singh(PragatiPrakashan).

MAPPINGOFCOURSE LEARNINGOUTCOMES

ProgramOutcomes	a	b	c	D	e	f	g	h	i	J	k
Course LearningOutco	1,2,5	1,2,4	1,2,3 5	1,2,4	2,5	1,3,5	3,5	1,3,5	3	2	3,5

METHODS OFTEACHINGANDSTUDENTLEARNING

Thesubjectisdeliveredthroughlectures,on-linesupport,textbook/coursematerialreadingandpracticalexercises.Somevideoswillbeshowntodemonstratecertainconceptsandresearchareaswillbediscussed.Resource material is provided with the help of PDM Educational DirectoryServices (PEDS).

ASSESSMENTMETHODOLOGIES:
This subject will be evaluatedfora total of 50 marks.

Practical

Assessment #	TypeOfAssessment	Per Semester	Maximum Mark
1	Internal Assessment	2	25
2	External Assessment	1	25

EVALUATION
Attheendofsemester,coursefacultywillsubmitanevaluation/reviewreport.Thepurposeofthisreportistoidentifyaspect sthatwillbehighlightedbystudentsandfaculty'sfeedbackforthecoursewithrespecttoitsstrengthsaswellas thoseareaswhichcould be improved. Thereviewreport contains the following areas:

- Problemsencountered inthe contentdelivery;
- Suggestedremedies / corrective measures;
- Approvedrefinement decisions due for implementation;
- Actionstakenbased on previous coursereview; and
- Reportdiscussedandanalysed;actionstakenasaresultofthisprocessandarecommunicatedtothemainstakeh olders.

PDM UNIVERSITY
DEPARTMENT OF CIVILENGINEERING

SEMESTER-I

FundamentalsofComputers(with‘C’)Lab

L	T	P
0	0	2

MODULE CODE	CSEN0102
CREDITPOINTS	1
FORMATIVEASSESSMENTMARKS	25
SUMMATIVEASSESSMENT MARKS	25
ENDSEMESTER EXAMDURATION	3 hrs
LASTREVISION DATE	

OBJECTIVES:

Theaimofthissubjectistodevelopunderstandingondifferentaspectsrelatedtocomponentsofcomputers,computerlanguages andto enhance skills of programmingin ‘C’ languageasmentionedbelow:

1. To acquireknowledgeona programminglanguage.
2. To learnproblem solving techniques.
3. To understandsyntaxandsemantics of ‘C’ programminglanguage.
4. To getfamiliarwithprogramwritingin C.
5. To enable learner to build logic for a given problem and finallydevelop programs.

LEARNINGOUTCOMES:

1. Read,understandandtracethe execution ofprograms in C language.
2. Abilityto write code inCfor agivenalgorithm.
3. Implementprograms with pointersandarrays.
4. Perform pointerarithmetic,and useof pre-processor.
5. Write programsthatperformoperations usingderived data types.

LIST OFEXPERIMENTS

1.	Write aprogram to calculateSimpleInterest.
2.	Write aprogram to printlargest of threenumbers(if-then-else).
3.	Write aprogram to printwhethergiven number is prime or not.
4.	Write basicprogramsillustratingSwitch Case statement.
5.	Write aprogram to printlargest of ten numbers (for statement).
6.	Write aprogram to implementmatrixmultiplication.
7.	Write aprogram to printFibonacciSeries.
8.	Write aprogram to printfactorial ofa number.
9.	Write aprogram to implementdifferent stringfunctions.
10.	Write aprogram to checkwhethera stringis palindrome ornot.
11.	Write aprogram to swaptwo numbers using call byreference andcallbyvalue.
12.	Write aprogram to create records ofstudent (Name, Roll No., DOBandMarks) usingstruct and union.
Experimentsbased on advancedtopics:	
13.	Write aprogram to determinethe length ofa characterstringusingpointers.
14.	Write aC program to count the lines,wordsandcharacters in agiven text.

METHODS OFTEACHINGANDSTUDENTLEARNING

Thesubjectisdeliveredthroughlectures,on-linesupport,textbook/coursematerialreadingandpracticalexercises.Somevideoswillbeshowntodemonstratecertainconceptsandresearchareaswillbediscussed.Resource material is provided with the help of PDM Educational DirectoryServices (PEDS).

ASSESSMENTMETHODOLOGIES:

This subject will be evaluatedfora total of 50marks forpractical.

Practical:

Assessment #	TypeOfAssessment	Per Semester	Maximum Mark
1	Internal Assessment	2	25
2	External Assessment	1	25

MAPPINGOFCOURSE LEARNINGOUTCOMES

ProgramOutcomes	a	b	c	d	e	F	g	h	I	j	k
Course LearningOutco	3	2	4	1	1,2						

EVALUATION

Attheendofsemester,Subjectteacherwillsubmitanevaluationreport.Thepurposeofthisreportistoidentifyaspectsthatwillbehighlightedbystudentsandfaculty'sfeedbackforthesubjectwithrespecttoitsstrengthsaswellas those areas whichcould be improved. The review report contains the following:

- Approvedrefinement decisions due for implementation,
- Actionstakenbased on previous subjectreview,
- Problemsencountered inthe subjectdelivery,
- Suggestedremedies / corrective measures,and
- Reportdiscussedandanalysed,actionstakenasaresultofthisprocessandarecommunicatedtothemainstakeholders.

PDM UNIVERSITY
DEPARTMENT OF CIVILENGINEERING

SEMESTER-I

FrenchLanguage–Part1

L T P
2 0 0

MODULE CODE	LANF0101
CREDITPOINTS	2
FORMATIVEASSESMENT MARKS	25
SUMMATIVEASSESMENT MARKS	50
ENDSEMESTER EXAMDURATION	2 hrs
LASTREVISION DATE	

INSTRUCTIONS: Allquestionsarecompulsory.Eachquestionmayhavemultipleoptionsandwillcoverallunits.

OBJECTIVES:

Theaimofthissubjectistodevelopunderstandingondifferentaspectsrelatedtooralandwrittenskillsofexpressingandexchanginginformation/interactinginFrenchlanguageandtoenhanceskillsasmentionedbelow:

1. To prepare students to develop basic understandingonFrenchlanguage.
2. To acquireknowledgeonFrenchgrammar.
3. To understandsyntaxandsemantics of language.
4. To achievean understandingon basiccommunication in Frenchlanguage.
5. Tounderstandadialoguebetweentwonativespeakersandalsotakepartinshort,simpleconversationsusingthe skills acquired.

LEARNINGOUTCOMES:

1. Ableto understand the basic grammar of Frenchlanguageand differentiation of gendersand objects.
2. Exposureto varioussyntax&communication methods with others.
3. Abilityto read, write, speak&listen the basics ofFrenchlanguage.
4. Able to understand theFrenchhistory.

MODULE CONTENTS

UNIT I:- BASICCOMMUNICATION– This modulewilldevelopsoral and written skills ofunderstanding,expressingandexchanginginformation / interactingon thetopicsgivenbelow:-

- Establish contact with someone
- Introduce self and others
- Greet,congratulate,andexpresscondolences
- Spell
- Count

• Exchange simple information on self, preferences,feelings,plans, dreams
• Ask for information
• Tell the time
• Advice, order, suggest
• Buy, sell
• Make a reservation
• Orderfoodoranyarticle
• Invite,accept or refuse invitation
• Fixanappointment
• Locate aplace
• Give directions
• Give chronological order ofevents
• Preparean itinerary
• Ask for / Give explanations
• Describe aperson, an object, an event, a place
• Describethe weather
• Compare

UNITII:BASIC PHONETICS– This module willdevelop theabilityin thestudents:-
• To pronounce words, saysentences, questions andgiveorders usingthe rightaccentandintonation.
• To expresssurprise, doubt, fear, displeasureandall positiveor negative feelings usingtheright intonation
• To use 'liaison'and'enchainment'
• To distinguishvoiced and unvoicedconsonants
• To distinguishbetweenvowel sounds

UNIT III:BASIC GRAMMAR&FORMATION OF SENTENCES– This modulewilldevelopsthe abilityin thestudents to constructsentences and frame questions using:-
• Nouns– genderand number
• Articles – definiteand indefinite, partitif,articlescontractés
• Pronouns – personal, relative (qui,que,où),y,en
• Verbs – conjugation ofregularandirregular verbs (affirmativeandnegative) in the followingtenses(indicative mood)– present,present continuous, simple future,immediatefuture,recentpast, simple past, past continuous
• Verbs – the imperativemood
• Adjectives – numeric, qualitative, possessive,demonstrative,interrogative– genderandnumber
• Adverbs – simple adverbs of time,place, quantity
• Prepositions – simple prepositions(place, time)
• Interrogation – interrogative words,interrogative phrases, inversion

RECOMMENDEDBOOKS:

TEXT BOOKS	7. NouveauSansFrontières1 byPhilippe Dominique&JackyGirardet 8. "CONNEXIONS-1"byRegineMerieux&YvesLoiseauPublishedbyDidier.
REFERENCEBOOKS	6. Five in one Multilingual Glossary, published bySaraswati HousePvt.Ltd.NewDelhi 2011.

MAPPINGOFCOURSE LEARNINGOUTCOMES

ProgramOutcomes	a	b	C	d	e	f	G	H	i	j	k
Course LearningOutco										1,2	3,4

METHODS OFTEACHINGANDSTUDENTLEARNING

Thesubjectisdeliveredthroughlectures,on-linesupport,textbook/coursematerialreadingandpracticalexercises.Somevideoswillbeshowntodemonstratecertainconceptsandresearchareaswillbediscussed.Resource material is provided with the help of PDM Educational DirectoryServices (PEDS).

ASSESSMENTMETHODOLOGIES:

This subject will be evaluatedforatotal of 75marks fortheory.

Theory:

Assessment #	TypeOfAssessment	Per Semester	Maximum Mark
1.	Class Test	1	10
2.	Sessional Test	2	15
3.	End Semester Written Exam	1	50

MAPPINGOFASSESSMENTMETHODSAGAINST THELEARNINGOUTCOMES

Theory:

Assessments	1	2	3	4
Class Test	x	x	x	
Quiz	x	x	x	
Assignment			x	x

EVALUATION

Attheendofsemester,coursefacultywillsubmitanevaluation/reviewreport.Thepurposeofthisreportistoidentifyaspect sthatwillbehighlightedbystudentsandfaculty'sfeedbackforthecoursewithrespecttoitsstrengthsaswellas thoseareaswhichcould be improved. Thereviewreportcontains the following areas:

- Problemsencountered inthe contentdelivery;
- Suggestedremedies /corrective measures;
- Approvedrefinement decisions due for implementation;
- Actionstakenbased on previous coursereview; and
- Reportdiscussedandanalysed;actionstakenasaresultofthisprocessandarecommunicatedtothemainstakeh olders.

PDM UNIVERSITY
DEPARTMENT OF CIVILENGINEERING

SEMESTER-I

GermanLanguage–Part1

L	T	P
2	0	0

MODULE CODE	LANG0102
CREDITPOINTS	2
FORMATIVEASSESMENT MARKS	25
SUMMATIVEASSESMENT MARKS	50
ENDSEMESTER EXAMDURATION	2 hrs
LASTREVISION DATE	

INSTRUCTIONS: Allquestionsarecompulsory.Eachquestionmayhavemultipleoptionsandwillcoverallunits.

OBJECTIVES:

Theaimofthissubjectistodevelopunderstandingondifferentaspectsrelatedtooralandwrittenskillsofexpressingandexchanginginformation/interactinginGermanlanguageandtoenhanceskillsasmentionedbelow:

1. To prepare students to develop basic understandingonGermanlanguage.
2. To acquireknowledgeonGermangrammar.
3. To understandsyntaxandsemantics of language.
4. To achievean understandingon basiccommunication inGermanlanguage.
5. Tounderstandadialoguebetweentwonativespeakersandalsotakepartinshort,simpleconversationsusingtheskillsacquired.

LEARNINGOUTCOMES:

1. Ableto understand the basic grammar of Germanlanguage and differentiation of gendersand objects.
2. Exposureto varioussyntax&communication methods with others.
3. Abilityto read, write, speak&listen the basics ofGermanlanguage.
4. Ableto understand the Germanhistory.

MODULE CONTENTS

UNIT I:- BASICCOMMUNICATION– This modulewilldevelopsoral and written skills ofunderstanding,expressingandexchanginginformation / interactingon thetopicsgivenbelow:-

- Establish contact with someone
- Introduce self and others
- Greet,congratulate,andexpresscondolences
- Spell
- Count

• Exchange simple information on self, preferences,feelings,plans, dreams
• Ask for information
• Tell the time
• Advice, order, suggest
• Buy, sell
• Make a reservation
• Orderfoodoranyarticle
• Invite,accept or refuse invitation
• Fixanappointment
• Locate aplace
• Give directions
• Give chronological order ofevents
• Preparean itinerary
• Ask for / Giveexplanations
• Describe aperson, an object, an event, a place
• Describethe weather
• Compare

UNITII:BASIC PHONETICS– This module willdevelop theabilityin thestudents:-
• To pronounce words, saysentences, questions andgiveorders usingthe rightaccentandintonation.
• To expresssurprise, doubt, fear, displeasureandall positiveor negative feelings usingtheright intonation
• To use 'liaison'and'enchainment'
• To distinguishvoiced and unvoicedconsonants
• To distinguishbetweenvowel sounds

UNIT III:BASIC GRAMMAR&FORMATION OF SENTENCES– This modulewilldevelopsthe abilityin thestudents to constructsentences and frame questions using:-
• Nouns– genderand number
• Articles – definiteand indefinite, articles
• Pronouns – personal, relative
• Verbs – conjugation ofregularandirregular verbs (affirmativeandnegative) in the followingtenses(indicative mood)– present,present continuous, simple future,immediatefuture,recentpast, simple past, past continuous
• Verbs – the imperativemood
• Adjectives – numeric, qualitative, possessive,demonstrative,interrogative– genderandnumber
• Adverbs – simple adverbs of time,place, quantity
• Prepositions – simple prepositions(place, time)
• Interrogation – interrogative words,interrogative phrases, inversion

RECOMMENDEDBOOKS:

TEXT BOOKS	9. Tangram,KursbuchundArbeitsbuch,1A, 1B& 2A,MaxHueberVerlag 10. Tangram,KursbuchundArbeitsbuch,2B,3A&3B,MaxHueberVerlag
REFERENCEBOOKS	5. emAbschlusskurs,Kursbuchund Arbeitsbuch,MaxHueberVerlag

MAPPINGOFCOURSE LEARNINGOUTCOMES

ProgramOutcomes	a	b	C	d	e	f	G	H	i	J	k
Course LearningOutco										1,2	3,4

METHODS OFTEACHINGANDSTUDENTLEARNING

Thesubjectisdeliveredthroughlectures,on-linesupport,textbook/coursematerialreadingandpracticalexercises.Somevideoswillbeshowntodemonstratecertainconceptsandresearchareaswillbediscussed.Resource material is provided with the help of PDM Educational DirectoryServices (PEDS).

ASSESSMENTMETHODOLOGIES:

This subject will be evaluatedfora total of 75marks fortheory.

Theory:

Assessment #	TypeOfAssessment	Per Semester	Maximum Mark
1.	Class Test	1	10
2.	Sessional Test	2	15
3.	End Semester Written Exam	1	50

MAPPINGOFASSESSMENTMETHODSAGAINST THE LEARNINGOUTCOMES

Theory:

Assessments	1	2	3	4
Class Test	X	x	x	
Quiz	X	x	x	

Assignment			X	x

EVALUATION

Attheendofsemester,coursefacultywillsubmitanevaluation/reviewreport.Thepurposeofthisreportistoidentifyaspectsthatwillbehighlightedbystudentsandfaculty'sfeedbackforthecoursewithrespecttoitsstrengthsaswellas thoseareaswhichcould be improved. Thereviewreportcontains the following areas:

- Problemsencountered inthe contentdelivery;
- Suggestedremedies / corrective measures;
- Approvedrefinement decisions due for implementation;
- Actionstakenbased on previous coursereview; and
- Reportdiscussedandanalysed;actionstakenasaresultofthisprocessandarecommunicatedtothemainstakeholders.

PDM UNIVERSITY
DEPARTMENT OF CIVILENGINEERING

SEMESTER-I

SpanishLanguage–Part1

L T P
2 0 0

MODULE CODE	LANS0103
CREDITPOINTS	2
FORMATIVEASSESMENT MARKS	25
SUMMATIVEASSESMENT MARKS	50
ENDSEMESTER EXAMDURATION	2 hrs
LASTREVISION DATE	

INSTRUCTIONS: Allquestionsarecompulsory.Eachquestionmayhavemultipleoptionsandwillcoverallunits.

OBJECTIVES:

Theaimofthissubjectistodevelopunderstandingondifferentaspectsrelatedtooralandwrittenskillsofexpressingandexchanginginformation/interactinginSpanishlanguageandtoenhanceskillsasmentionedbelow:

1. To prepare students to develop basic understandingonSpanishlanguage.
2. To acquireknowledgeonSpanishgrammar.
3. To understandsyntaxandsemantics of language.
4. To achievean understandingon basiccommunication inSpanishlanguage.
5. Tounderstandadialoguebetweentwonativespeakersandalsotakepartinshort,simpleconversationsusingthe skills acquired.

LEARNINGOUTCOMES:

1. Ableto understand the basic grammar of Spanishlanguage and differentiation of gendersand objects.
2. Exposureto varioussyntax&communication methods with others.
3. Abilityto read, write, speak&listen the basics ofSpanishlanguage.
4. Ableto understand theSpanishhistory.

MODULE CONTENTS

UNIT I:- BASICCOMMUNICATION– This modulewilldevelopsoral and written skills ofunderstanding,expressingandexchanginginformation / interactingon thetopicsgivenbelow:-

- Establish contact with someone
- Introduce self and others
- Greet,congratulate,andexpresscondolences
- Spell

• Count • Exchange simple information on self, preferences,feelings,plans, dreams • Ask for information • Tell the time • Advice, order, suggest • Buy, sell • Make a reservation • Orderfoodoranyarticle • Invite,accept or refuse invitation • Fixanappointment • Locate aplace • Give directions • Give chronological order ofevents • Preparean itinerary • Ask for / Give explanations • Describe aperson, an object, an event, a place • Describethe weather • Compare
UNITII:BASIC PHONETICS– This module willdevelop theabilityin thestudents:- • To pronounce words, saysentences, questions andgiveorders usingthe rightaccentandintonation. • To expresssurprise, doubt, fear, displeasureandall positiveor negative feelings usingtheright intonation • To use 'liaison'and'enchainment' • To distinguishvoiced and unvoicedconsonants • To distinguishbetweenvowel sounds
UNIT III:BASIC GRAMMAR&FORMATION OF SENTENCES– This modulewilldevelopsthe abilityin thestudents to constructsentences and frame questions using:- • Nouns– genderand number • Articles – definiteand indefinite, articles • Pronouns – personal, relative • Verbs – conjugation ofregularandirregular verbs (affirmativeandnegative) in the followingtenses(indicative mood)– present,present continuous, simple future,immediatefuture,recentpast, simple past, past continuous • Verbs – the imperativemood • Adjectives – numeric, qualitative, possessive,demonstrative,interrogative– genderandnumber • Adverbs – simple adverbs of time,place, quantity • Prepositions – simple prepositions(place, time) • Interrogation – interrogative words,interrogative phrases, inversion

RECOMMENDEDBOOKS:

TEXT BOOKS	11. AulaInternacional 1 and2, Novellas andshort stories 12. AulaInternacional3,EspañaandLatinoamérica:HistoriayCultura,Novellas
REFERENCEBOOKS	5. Español sin fronteras,I,SGEL, 1997 6. NuevoVenI,Edelsa 2004

MAPPINGOFCOURSE LEARNINGOUTCOMES

ProgramOutcomes	a	b	c	d	e	F	G	H	i	J	K
Course LearningOutco										1,2	3,4

METHODS OFTEACHINGANDSTUDENTLEARNING

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ASSESSMENTMETHODOLOGIES:

This subject will be evaluatedfora total of 75marks fortheory.

Theory:

Assessment #	TypeOfAssessment	Per Semester	Maximum Mark
1.	Class Test	1	10
2.	Sessional Test	2	15
3.	End Semester Written Exam	1	50

MAPPINGOFASSESSMENTMETHODSAGAINST THE LEARNINGOUTCOMES

Theory:

Assessments	1	2	3	4
Class Test	X	x	x	
Quiz	X	x	x	
Assignment			x	x

EVALUATION

Attheendofsemester,coursefacultywillsubmitanevaluation/reviewreport.Thepurposeofthisreportistoidentifyaspect sthatwillbehighlightedbystudentsandfaculty'sfeedbackforthecoursewithrespecttoitsstrengthsaswellas thoseareaswhichcould be improved. Thereviewreportcontains the following areas:

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- Suggestedremedies / corrective measures;
- Approvedrefinement decisions due for implementation;
- Actionstakenbased on previouscoursereview; and
- Reportdiscussedandanalysed;actionstakenasaresultofthisprocessandarecommunicatedtothemainstakeh olders.

PDM UNIVERSITY
DEPARTMENT OF CIVILENGINEERING

SEMESTER-I

ElectricalTechnologyLab

L	T	P
0	0	2

MODULE CODE	ECEN1102
CREDITPOINTS	1
FORMATIVEASSESMENT MARKS	25
SUMMATIVEASSESMENT MARKS	25
ENDSEMESTER EXAMDURATION	3 hrs
LASTREVISION DATE	

OBJECTIVES:

1. To getfamiliarwith various measuringinstruments.
2. To understand practicalaspects of Network theorems.
3. To getfamiliarwith major parts of electrical machines.
4. To aware students aboutprecautionarymeasuresof usingElectrical supply.
5. To analyze different components of anyelectricalnetwork.
6. To getfamiliarwith the constructionalpart of transformer.

LEARNINGOUTCOMES:

1. Createsimplementationskills.
2. Abletomeasurevariouselectricalparameters.
3. Ableto understandvariouselectricalapplicationsindaytodaylife.
4. Getfamiliarwithworkingenvironmentofthreephase electricalsupply.
5. Abilityto analyzetheelectricalconnections.

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LIST OFEXPERIMENTS:

1.	To verifyohm's law.
2.	To verifyKCLandKVL.
3.	To verifyThevenin's theorem.
4.	To verifyNorton theorem.
5.	To verifysuperpositiontheorem.
6.	To verifyMaximum powertransfertheorem.
7.	To measurepowerand power factorby3 voltmeter method.
8.	To measurepowerand power factorby3 ammeter method.
9.	To studythe construction of Transformer.
10.	To studyabout function of multimeter.
Experimentsbased on advancedtopics:	
11.	To perform O.C.and S.C. tests of atransformer.
12.	To studyfrequencyresponse of aseries R-L-C circuitanddetermineresonant frequencyandQ-factorfor various values of R,L,and C.

METHODSOFTEACHINGANDSTUDENTLEARNING

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ASSESSMENTMETHODOLOGIES:

This subject will be evaluatedfora total of 50 marks for practical.

Practical:

Assessment #	TypeOfAssessment	Per Semester	Maximum Mark
1	Internal Assessment	2	25
2	External Assessment	1	25

MAPPINGOFCOURSE LEARNINGOUTCOMES

Program Outcomes	a	b	c	d	e	F	g	h	i	j	k
Course LearningOutco	3	2,4		1	5	1,4		1,2		3	

EVALUATION

Attheendofsemester,coursefacultywillsubmitanevaluation/reviewreport.Thepurposeofthisreportistoidentifyaspect sthatwillbehighlightedbystudentsandfaculty'sfeedbackforthecoursewithrespecttoitsstrengthsaswellas thoseareaswhichcould be improved. Thereviewreport contains the following areas:

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- Suggestedremedies / corrective measures;
- Approvedrefinement decisions due for implementation;
- Actionstakenbased on previous coursereview; and
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SEMESTER-II

MODULE CODE	CATEGORY	SUB-CATEGORY	MODULE	L	T	P	C	InternalMarks	External Marks	Total
CIVL1101	G		BUILDINGCONSTRUCTIONAND MATERIALS	3	0	0	3	25	75	100
PHYS0103	G		APPLIEDPHYSICS-II	3	1	0	3.5	50	100	150
PHYS0104	G		APPLIEDPHYSICS-IILAB	0	0	2	1	25	25	50
ECEN0104	G		BASICSOFELECTRONICS	2	0	0	2	25	50	75
ECEN0105	G		BASICSOFELECTRONICSLAB	0	0	2	1	25	25	50
MECH0102	G		BASICSOFMECHANICALENGINEERING	2	0	0	2	25	50	75
MECH0103	G		BASICSOFMECHANICALENGINEERINGLAB	0	0	2	1	25	25	50
MECH1102	G		WORKSHOPTECHNOLOGY LAB	0	0	2	1	25	25	50
MATH0116	G		APPLIEDMATHEMATICS-II	4	1	0	4.5	50	100	150
MATH0117	G		NUMERICALMETHODS	3	0	0	3	25	75	100
VALU0109	G		VALUEEDUCATION	2	0	0	2	25	50	75
CSEN1103	G		PCLAB	0	0	2	1	25	25	50
	G		FOREIGNLANGUAGEPART-II[#]	2	0	0	2	25	50	75
TOTAL				**21**	**2**	**10**	**27**	375	675	1050

L=Lecture

T=Tutorial

P= Practical

C=CreditPoint

[#]FOREIGNLANGUAGE
Oneforeignlanguageoutofthefollowing

MODULE CODE	MODULENAME
LANF0104	French
LANG0105	German
LANS0106	Spanish

PDM UNIVERSITY
DEPARTMENT OF CIVILENGINEERING

BuildingConstruction and Materials

L	T	P
3	0	0

MODULE CODE	CIVL1101
CREDITPOINTS	3
FORMATIVEASSESMENT MARKS	25
SUMMATIVEASSESMENT MARKS	75
ENDSEMESTER EXAMDURATION	3 hrs
LASTREVISION DATE	

INSTRUCTIONS: TheQuestionpaperwillconsistofsevenquestionsdistributedoverthreesectionsA,Band C. SectionAcomprisesofveryshortanswertypequestionsandiscompulsory.SectionB&Ccompriseofshort answertypeand longanswertype questions. These sections will have internal choice.

OBJECTIVES:

Theaimofthissubjectistodevelopunderstandingondifferentaspectsrelatedtodifferentmaterialsusedinbuildingconstruction.

1. To achieveknowledgeand understandingof buildingmaterialsand theirvariousproperties.
2. To getfamiliarwithdifferenttypesofdoors, windows, floors andstairs.
3. To understand the bricksand stone masonry.
4. To learnbasicconcepts of timber,paints and varnishes.
5. To acquireknowledgeof acoustics, sound insulation and fireprotection.

LEARNINGOUTCOMES:

1. Ableto comparethe properties ofmostcommonandadvanced buildingmaterials.
2. Abilityto understand the typicaland potential applications of buildingmaterials
3. Ableto understand the relationshipbetweenmaterial propertiesandstructural form.
4. Ableto understand the importance ofexperimental verificationof material properties

MODULE CONTENT:

UNIT-I **:***Stones, bricks, limeand cement* Stones:Classification,requirementsofgoodmaterials,queryingofstones,commonbuildingstones. Bricks:Classification ofbricks, manufacturingofbricks, testingof bricks. Lime:Classification,manufacturesoflime,artificial hydrauliclime,field-testingof lime. Cements:Composition,manufacturesofPortlandcement,field-testingofcement,specialtypesofcements. Cementconcrete:Cement,Sand, aggregatesand water,Batchingplantandequipment,typesofmixers,transportation,pumping,placingand compactingof concrete.Admixtures,Pre-castconcrete
UNIT-II: Steel, timber, paints and varnishes Steel:Typesofsteel,marketableforms,stress-strainbehavior. Timber:Classification oftimber,structureoftimber,seasoningoftimber,defectsin timber. Basicconstituentsofpaints,typesofpaints,paintingofwood,constituentsofvarnishes,characteristics and types of varnishes.
UNIT-III: Brickand stonemasonry Varioustermsused,toolsused,dressingofstones,applicationsforliftingstones,typesofbondsinbrickandstone work. Partitionandcavitywalls:Typesofpartition- brickpartitions,clayblockpartitions,timberpartitions andglasspartitions,constructionofmasonrycavitywalls.
UNIT-IV: Foundation, doors, windows and stairs Functions,typesof shallow foundations,sub-surfaceinvestigations,Introductionto deepfoundations. Locations, sizes of doors andwindows, various types of doors andwindows.Stairs: stairs,staircases, lifts andescalators.
UNIT-V: Floors and damp proofing Floors:Componentsoffloor,brickfloors,cementconcretefloors,terrazzoflooring,mosaicflooringsandtiledfl ooring. Sourcesofdampness,effectsofdampness,preventionofdampness,materialsusedindampproofingcourse.
UNIT-VI: Acoustics, Sound Insulations and Fire Protection Transmissionofsound,soundabsorber,classificationofabsorbers,wallconstructionandacousticald esignofauditorium,fire-resistingpropertiesofmaterials,fireresistantconstructionand requirements forbuildings.

RECOMMENDEDBOOKS:

TEXT BOOKS	1. BuildingMaterial, byRangawala 2. Propertiesof concrete, byA.M.Neville 3. EngineeringMaterials, bySurinderSingh 4. CivilEngineeringMaterials, byKulkarni
REFERENCEBOOKS	1. BuildingConstruction,B.C.Punmia 2. BuildingConstruction, Sushil Kumar,Standard Pub. 3. BuildingConstruction, GurcharanSingh,Standard Pub. 4. BuildingDrawing,Shah Kale andPatki

METHODS OFTEACHINGANDSTUDENTLEARNING

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ASSESSMENTMETHODOLOGIES:

This subject will be evaluatedfora total of 100 marks fortheory.

Theory:

Assessment #	TypeOfAssessment	Per Semester	Maximum Mark
1.	Class Test	4	5
2.	SessionalTest	2	15
3.	GroupDiscussion	4	5
4.	End Semester Exam	1	75

MAPPINGOFASSESSMENTMETHODSAGAINST THE LEARNINGOUTCOMES

Theory:

Assessments	1	2	3	4
Class Test	x			x
Quiz	x	x		x
Assignment		x	x	

MAPPINGOFCOURSE LEARNINGOUTCOMES

ProgramOutcomes	a	b	c	d	e	f	g	h	i	j	k
Course LearningOutco		1,2 ,3	2,4	1,3							

EVALUATION

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- Suggestedremedies / corrective measures;
- Approvedrefinement decisions due for implementation;
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PDM UNIVERSITY
DEPARTMENT OF CIVILENGINEERING

AppliedPhysicsII

L	**T**	**P**
3	1	0

MODULE CODE	PHYS0103
CREDITPOINTS	3.5
FORMATIVEASSESMENT MARKS	50
SUMMATIVEASSESMENT MARKS	100
ENDSEMESTER EXAMDURATION	3 hrs
LASTREVISION DATE	

INSTRUCTIONS: TheQuestionpaperwillconsistofsevenquestionsdistributedoverthreesectionsA,Band C. SectionAcomprisesofveryshortanswertypequestionsandiscompulsory.SectionB&Ccompriseofshort answertypeand longanswertype questions. These sections will have internal choice.

OBJECTIVES:

Theaimofthissubjectistodevelopunderstandingondifferentaspectsrelatedtosolidstatephysics,crystalgeometries,quantumphysics,nano-science,energybandsandelectromagnetictheorytoenhanceskillsinthefield of electricityandmagnetism and its applicationsasmentionedbelow:

1. Toachieveknowledgeandunderstandingonsoli-statephysics,variouspropertiesofcrystalstomodelandsolvewiderange problems in science andengineering.
2. Togetfamiliarwithconceptsofmicroandnanoscalesofmaterialsanddevelopabilitytosolvesimpleproblems.
3. Tounderstandtheconceptsofelectricityandmagnetism,distributionofsolidsaccordingtobandtheory,freeelectrons,andapplications ofmaxwell'sequation inengineeringproblems.
4. To learnbasicconcepts ofdifferenttypes of magnetic properties of solidsin scientific problems.
5. To acquireknowledgeofcrystalstructureand assess theireffectiveness in scienceandTechnology.

LEARNINGOUTCOMES:

1 Ableto applyknowledgein developing advancedmaterials and devices.
2 Ableto applyfundamentallaws ofelectricityandmagnetism in engineering.
3 Ableto identifyand solve crystalstructure and semiconductor physics problems.
4 Ableto solve applicationsbased on Maxwell'sequation
5 Ableto applyknowledgeto understand the concepts of quantumphysics.
6 Ableto identifyand solve conceptsrelated to nano particles.
7 Abilitytocreatenew problems and solvewith the help of applications used.

COURSECONTENT:

UNIT I:Crystal Structure Spacelattice,unitcellandtranslationvector,Millerindices,simplecrystalstructure.Laue'streatmenttoBragg'slaw,powdermethod,pointdefectsinsolids-SchottkyandFrenkeldefects,Bondingin solidsionicandcovalent bonds.
UNIT II: Quantum Physics DifficultieswithclassicalphysicsIntroductiontoquantummechanicssimpleconcepts,BlackbodyradiationsDiscoveryofPlanck'sconstant,phasevelocityandgroupvelocity.Schrodingerwaveequations-timedependentandtimeindependent,Expectationvalue,EhrnfestTheorem,particleinaone-dimensionalbox.QuantumStatistics,Bose-EinsteinandFermi-Dirac Statisticsz, Elementaryideasofquark,gluonsand hadrons.
UNIT III:Nano-Science Featuresofnano-systems,conceptofquantumsizeeffect,quantumdotsandtheirapplications. FreeElectronTheory:ElementsofclassicalfreeelectrontheoryanditslimitationsDrude'stheoryofconduction,quantumtheoryoffreeelectrons,Fermilevel,densityofstates,Fermi-Dirac distribution function, Thermionic emission,Richardson'sequation.
UNIT IV:BandTheory of Solids Originofenergybonds,Kronig-Pennymodel(qualitative)E-Kdiagrams,BrillouinZones,Conceptofeffectivemassandholes.Classificationofsolidsintometals,semiconductorsandinsulators.Fermi energyand its variation with temperature.HallEffect andits
UNIT V: Green Energy IntroductiontoGreenenergy,typesofgreenenergy,energyconversionmechanismsforsolarenergy, windenergy, ocean energyandgeothermalenergy.
UNIT VI:Electro Magnetic Theory Gradient,Divergence,Curl,Gauss'law,Ampere'sLaw,Continuityequation,Maxwell,sequation(differentialandintegralforms),SignificanceofMaxwell'sequations,PoyntingTheorem, Electromagnetic wave propagation inn dielectrics andconductors.

RECOMMENDED BOOKS:

TEXT BOOKS	1. ConceptsofModernPhysics,ArthurBeiser(TMGH) 2. Solid StatePhysics,S.O.Pillai(NewAgeInt. Ltd. Pub.) 3. ModernPhysicsforEngineers, S.P.Taneja(R.Chand) 4. ModernEngineeringPhysics,A.S.Vasudeva (S. Chand)
REFERENCEBOOKS	1. IntroductiontoSolidStatePhysics,Kittel(JohnWiley) 2. QuantumMechanics, A. Ghatak 3. A Textbook of Engineering Physics,Avadhanulu andKshisagar(S. Chand)

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MAPPINGOFCOURSE LEARNING OUTCOMES

ProgramOutcomes	a	b	c	d	e	f	g	h	i	j	K
Course LearningOutco	1,3	1,7	1	1,7	1,2,6	1,4	1,2	1,5	2,3	1,2	1,3

METHODS OFTEACHINGANDSTUDENTLEARNING

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ASSESSMENTMETHODOLOGIES:

This subjectwill be evaluatedfora totalof150 marks fortheory.

Theory:

Assessment #	TypeOfAssessment	Per Semester	Maximum Mark
1.	Class Test	4	10
2.	Sessional Test	2	30
3.	GroupDiscussion	4	10
4.	End Semester Exam	1	100

MAPPINGOFASSESSMENTMETHODSAGAINST THE LEARNINGOUTCOMES

Theory:

Assessments	1	2	3	4	5	6
Class Test	x		x		x	
Quiz			x		x	x
Assignment	x	x		x		

EVALUATION

Attheendofsemester,coursefacultywillsubmitanevaluation/reviewreport.Thepurposeofthisreportistoidentifyaspectsthatwillbehighlightedbystudentsandfaculty'sfeedbackforthecoursewithrespecttoitsstrengthsaswellas thoseareaswhichcould be improved. Thereviewreportcontains the following areas:

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PDM UNIVERSITY
DEPARTMENT OF CIVILENGINEERING

AppliedPhysics- IILAB

L	T	P
0	0	2

MODULE CODE	PHYS0104
CREDITPOINTS	1
FORMATIVEASSESMENT MARKS	25
SUMMATIVEASSESMENT MARKS	25
ENDSEMESTER EXAMDURATION	3 hrs
LASTREVISION DATE	

OBJECTIVES

1. Toachievethepracticalknowledgeoflowandhighresistanceandresistanceofgalvanometerbydifferentmethods.
2. Tobeabletofindcharacteristicofasolarcell,V-I ofap-ndiodeandtofindthefillfactorande/mforelectronsbyhelicalmethod.
3. TogetfamiliarwithionizationpotentialofArgon/Mercuryusingathyratrontubeandfindtheradiusof coilbyStewart andGee'sapparatus.
4. To have knowledgeof hysteresis loss bytracingaB-Hcurve.
5. ToobtainthePlanck'sconstant,co-efficientofself-inductancebyusingaRayleighbridge,HallCo-efficient of semi-conductor.
6. To obtain bandgap of intrinsic semi-conductor usingfour probe method.

LEARNINGOUTCOMES:

1. Ableto applyknowledgefor findingthe characteristics of solarcells andtheir applications.
2. Ableto applyfundamentallaws ofsuperconductivityin engineering andtechnology.
3. Ableto identifynew problems and solve throughdifferent techniques.
4. Ableto applyknowledgeto understand the concepts of p-n junction diode.
5. Ableto develop newexperiment using advancestechnology.

PDM UNIVERSITY
DEPARTMENT OF CIVILENGINEERING

COURSE CONTENT

1	To find thelow resistance bycarey-Foster's bridge.
2	Tofindtheresistanceofagalvanometerby Thomson'sconstantdeflectionmethodusingapost office box.
3	To find the value ofhighresistance bySubstitution method.
4	To find the value ofhighresistance byLeakage method.
5	To studythe characteristics of asolarcelland to find the fillfactor.
6	To find the value of e/mforelectronsbyHelicalmethod.
7	To find the ionisation potential of Argon/Mercuryusingathyratron tube.
8	Tostudythevariationofmagneticfieldwithdistanceandtofindtheradiusofcoilby Stew
9	To studythe characteristics of (Cu-Fe, Cu-Constantan)thermocouple.
10	Tofind the value ofPlanck'sconstantbyusingaphoto electriccell.
11	Tofind the value of co-efficient of self-inductancebyusinga Rayleighbeidge.
12	Tofind the value ofHall Co-efficient of semi-conductor.
13	TostudytheV-Icharacteristics of ap-n diode.
14	To find theband gapof intrinsicsemi-conductorusing fourprobemethod.
15	To calculate thehysteresisloss bytracing a B-H curve.
Note: At least 12 experiments out of thelist mustbedonein the semester.	

RECOMMENDEDBOOKS

TEXT BOOKS	3. AdvancedPracticalPhysics, B.L.Workshop and H.T.Flint(KPH)
REFRENCEBOOKS	4. PracticalPhysics,S.L.Gupta&V.Kumar (PragatiPrakshan). 5. AdvancedPracticalPhysicsVol.I&II– Chauhan&Singh(PragatiPrakshan).

MAPPINGOFCOURSE LEARNING OUTCOMES

ProgramOutcomes	a	b	c	d	e	f	g	h	i	j	K
Course LearningOutco	1,5	2,4	2,3,5	1,2,4	1,5	3,4	2,3, 5	1,2,4	4,5	1	3,5

METHODS OFTEACHINGANDSTUDENTLEARNING

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ASSESSMENTMETHODOLOGIES:

This subjectwill be evaluatedfora total of 50 marks.

Practical

Assessment #	TypeOfAssessment	Per Semester	Maximum Mark
1	Internal Assessment	2	25
2	External Assessment	1	25

EVALUATION

Attheendofsemester,coursefacultywillsubmitanevaluation/reviewreport.Thepurposeofthisreportistoidentifyaspectsthatwillbehighlightedbystudentsandfaculty'sfeedbackforthecoursewithrespecttoitsstrengthsaswellas thoseareaswhichcould be improved. Thereviewreportcontains the following areas:

- Problemsencountered inthe contentdelivery;
- Suggestedremedies / corrective measures;
- Approvedrefinement decisions due for implementation;
- Actionstakenbased on previous coursereview; and
- Reportdiscussedandanalysed;actionstakenasaresultofthisprocessandarecommunicatedtothemainstakeholders.

PDM UNIVERSITY
DEPARTMENT OF CIVILENGINEERING

Basicsof Electronics

L	T	P
2	0	0

MODULE CODE	ECEN0104
CREDITPOINTS	2
FORMATIVEASSESMENT MARKS	25
SUMMATIVEASSESMENT MARKS	50
ENDSEMESTER EXAMDURATION	1 hr 30 mins
LASTREVISION DATE	

INSTRUCTIONS: TheQuestionpaperwillconsistofsevenquestionsdistributedoverthreesectionsA,Band C. SectionAcomprisesofveryshortanswertypequestionsandiscompulsory.SectionB&Ccompriseofshort answer typeand longanswertype questions. These sections will have internal choice.

OBJECTIVES:

Theaimofteachingthissubjectistoimpartknowledgeprimarilyrelatedtoelectroniccircuitrysothatlearnermayfound it's applications in reallife. Some of the objectives of thecourseare:

1 Toacquireknowledgeaboutsemiconductorphysicsforintrinsic andextrinsicmaterials.
2 To getfamiliarwithdifferenttypeofelectronicdisplays.
3 Toacquiretheknowledgeofbasicdigitalcircuitry.
4 Toanalyze theperformance ofnegative as wellaspositivefeedbackcircuits.
5 Todescribethescientificprinciplesthatapplytothebasicflowofelectricityandexplainthefunctionofvariousmaterialsused asconducting,semiconducting,andinsulatingdevicesintheconstructionofstandardelectroniccircuits.

LEARNINGOUTCOMES:

1. Abletoappreciatethesignificanceofelectronicsin differentapplications.
2. Abletoapplymethod and appropriatetechnologyto thestudyof physicalscience.
3. Abletocompilethedifferentbuildingblocksindigitalelectronicsusinglogicgatesandimplementsimplelogicfunctionusin gbasicuniversalgates.
4. Acquiringproblemsolvingskills.
5. Getfamiliarwithworkingof variouscomponentsof acircuit.
6. Getfamiliarwithmeasurementdevices forexampleCRO,multimeter.

MODULECONTENTS:

Unit I:SemiconductorPhysics Basicconcepts,Intrinsicandextrinsicsemiconductors,diffusionanddriftcurrents,p-njunctionunderopen-circuit,reversebiasandforward-biasconditions,p-njunctioninthebreakdownregion,Idealdiode.
Unit II: Amplifiers Introductionofdifferenttypesofamplifiersandtheircharacteristics,Principleofamplification,conceptoffeedbackinamplifiers,frequencyresponseofRCcoupledamplifiers.
Unit III: Oscillators Criteriafor oscillations,studyofdifferenttypes ofoscillators.
Unit IV: Digital Electronics Binary,OctalandHexadecimalnumbersystemandconversions,BooleanAlgebra,Truthtables of logicgates (AND, OR,NOT) NAND, NOR asuniversalgates.
Unit V: Electronics Instruments Role, importanceandapplicationsof generalpurposetest instruments viz MultimeterDigital and Analog,Cathode RayOscilloscope(CRO),andFunction/SignalGenerator.
Unit VI: Display Sevensegmentdisplay,Fourteensegmentdisplay,and Dot matrixdisplay. LEDDisplay:Introduction,Construction,andAdvantageofLEDs in electronics display.LCDDisplay:Introduction,TypesofLCDdisplay-Dynamicscatteringandfieldeffecttype;Typesofliquidcrystalcells:Transmittingtypeandreflectivetype,advantageanddisadvantage ofLCDdisplay.

RECOMMENDED BOOKS:

TEXT BOOKS	13. ElectronicDevices& Circuits-Boylstad&Nashelsky. 14. J.S Katre"Basic Electronics"Tech MaxPublications 15. J.BGupta,"BasicElectronics"S K katariaand sons
REFERENCEBOOKS	7. ElectricalandElectronicTechnology(8thEdition):Hughes,Pearson. 8. CooperandHelfrick,"ModernElectronicInstrumentationandMeasuringTechniques",4thprintPrentice Hall ofIndia, New Delhi(1996). 9. CooperandHelfrick,"ModernElectronicInstrumentationandMeasuringTechniques",4thprintPrentice Hall ofIndia, New Delhi(1996).

METHODS OFTEACHINGANDSTUDENTLEARNING

Thesubjectisdeliveredthroughlectures,on-linesupport,textbook/coursematerialreadingandpracticalexercises.Somevideoswillbeshowntodemonstratecertainconceptsandresearchareaswillbediscussed.Resource material is provided with the help of PDM Educational DirectoryServices (PEDS).

ASSESSMENTMETHODOLOGIES:

This subjectwill be evaluatedfora total of 75 marks.

Theory:

Assessment #	TypeOfAssessment	Per Semester	Maximum Mark
1.	Class Test	4	05
2.	Sessional Test	2	15
3.	GroupDiscussion	4	05
4.	End Semester Exam	1	50

MAPPINGOFASSESSMENTMETHODSAGAINST THE LEARNINGOUTCOMES

Theory:

Assessments	1	2	3	4	5	6
Class Test	x			x		
Quiz	x		x			x
Assignment		x			x	x

MAPPINGOFCOURSE LEARNING OUTCOMES

ProgramOutcomes	a	b	c	d	e	f	g	h	i	j	k
Course LearningOutco	2	1	3	1,2	4		5,6	5			

EVALUATION

Attheendofsemester,coursefacultywillsubmitanevaluation/reviewreport.Thepurposeofthisreportistoidentifyaspectsthatwillbehighlightedbystudentsandfaculty'sfeedbackforthecoursewithrespecttoitsstrengthsaswellas thoseareaswhichcould be improved. Thereviewreportcontains the following areas:

- Problemsencountered inthe contentdelivery;
- Suggested remedies / corrective measures;
- Approvedrefinement decisions due for implementation;
- Actionstakenbased on previous coursereview; and
- Reportdiscussedandanalysed;actionstakenasaresultofthisprocessandarecommunicatedtothemainstakeholders.

PDM UNIVERSITY
DEPARTMENT OF CIVILENGINEERING

Basics of ElectronicsLab

L	T	P
0	0	2

MODULE CODE	ECEN0105
CREDITPOINTS	1
FORMATIVEASSESMENT MARKS	25
SUMMATIVEASSESMENT MARKS	25
ENDSEMESTER EXAMDURATION	3 hrs
LASTREVISION DATE	

OBJECTIVES:

1. To understand the practicalaspects of basic electronicstheory.
2. ToDesignandconstructsimple electronic circuits to accomplish a specificfunction
3. To understand the workingof CRO and other measuringinstruments.
4. To understand input andoutput characteristics ofBi-polarjunction transistor.
5. To getfamiliarwithidealandpracticalcharacteristics ofIC 741.
6. To provide experimentalvalidationof the elementaryanalogue circuitryusinganalogue anddigitaltesters.
7. Tolearnoperationofelectronicdisplays.
8. To understand theircapabilitiesandlimitations andmakedecisions regardingtheirbest utilization in aspecific situation.

LEARNINGOUTCOMES:

1 Identifythebasictoolsandtestequipmentusedtoconstruct,troubleshoot,andmaintainstandardelectronic circuitsandsystems.
2 Ableto verifythe workingof diodes, transistors and their applications.
3 Abletodesignvariousbasiccircuitsofdigitalelectronicsusingsimplegatesandcapabletoworkon IC 741**.**
4 Getfamiliarwith the operationandapplications ofcathoderayoscilloscope.
5 To generatesignals usingfunction generator**.**
6 Build a commonemitter/base/collectoramplifierand measureits voltagegain.
7 Explorethe operation and advantagesofoperationalamplifiers.
8 Exploringthe circuitrywhich convertsananalogsignal to digitalsignal.

PDM UNIVERSITY
DEPARTMENT OF CIVILENGINEERING

LIST OFEXPERIMENTS:

1.	To getfamiliarwith theworkingknowledgeof the followinginstruments : a)Cathoderayoscilloscope (CRO)b) Multi meter(AnalogandDigital) c)Functiongenerator.
2.	a) Plot the forwardandreverse V-I characteristics of P-N junction diode. b) StudyofZener diodeinbreakdownregion.
3.	To plot and studythe input and output characteristics ofBJT in common-emitterconfiguration
4.	Verification oftruth tables oflogicgates (OR, AND, NOT,NAND, NOR).
5.	To getfamiliarwith theworkingand useof seven-segment display.
6.	Verification oftruth tables of flip-flops(S-R,. J-K).
7.	To measurephase difference between two waveformsusingCRO.
8.	To find frequencyresponseof a givenamplifierand calculate its bandwidth.
9.	To getfamiliarwithpin-configuration of typical op-amp (741)and its use as : a)Invertingamplifierb)Non-invertingamplifierc) Summingamplifier d) Difference amplifier
10.	Useof op-amp as a) Integrator b) Differentiator
Experimentsbased on advancedtopics:	
11.	To assembleand test 5V/9 V DCregulated powersupplyand find its line-regulationandload-regulation
12.	To assembleWeinBridge oscillatorcircuitandcalculation of oscillationfrequencyand itsverification from the observed output.

METHODS OFTEACHINGANDSTUDENTLEARNING

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ASSESSMENTMETHODOLOGIES:

This subjectwill be evaluatedfora total of 50 marks for practical.

Practical:

Assessment #	TypeOfAssessment	Per Semester	Maximum Mark
1	Internal Assessment	2	25
2	External Assessment	1	25

MAPPINGOFCOURSE LEARNING OUTCOMES

ProgramOutcomes	a	B	c	d	e	f	g	h	i	j	k
Course LearningOutco	4	1	2,3	1	3	3,5	6,8,7	4,5			

EVALUATION

Attheendofsemester,coursefacultywillsubmitanevaluation/reviewreport.Thepurposeofthisreportistoidentifyaspectsthatwillbehighlightedbystudentsandfaculty'sfeedbackforthecoursewithrespecttoitsstrengthsaswellas thoseareaswhichcould be improved. Thereviewreportcontains the following areas:

- Problemsencountered inthe contentdelivery;
- Suggestedremedies / corrective measures;
- Approved refinement decisions due for implementation;
- Actionstakenbased on previous coursereview; and
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PDM UNIVERSITY
DEPARTMENT OF CIVILENGINEERING

SEMESTER-II

BASIC OF MECHANICALENGINEERING

L	T	P
2	0	0

MODULE CODE	MECH0102
CREDITPOINTS	2
FORMATIVEASSESMENT MARKS	25
SUMMATIVEASSESMENT MARKS	50
ENDSEMESTER EXAMDURATION	1 hr 30 min
LASTREVISION DATE	

INSTRUCTIONS: TheQuestionpaperwillconsistofsevenquestionsdistributedoverthreesectionsA,Band C. SectionAcomprisesofveryshortanswertypequestionsandiscompulsory.SectionB&Ccompriseofshort answertypeand longanswertype questions. These sections will have internal choice.
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OBJECTIVES:

1. To have an understandingoffundamentalconcepts of thermodynamics system and its properties.
2. To develop an abilityto identify,formulate,and solve engineering problems.
3. To achieveanability to use the techniques,skill, andmodernengineeringtools necessary forengineeringpractice.
4. An abilityto work professionallyin both thermal and mechanicalsystems areas.
5. Apply their mechanicalengineeringeducationto address the full rangeof technicalandsocietalproblems with creativity,imagination,confidenceandresponsibility.
6. To understand multiple integrals and theirapplications in engineeringproblems.

LEARNINGOUTCOMES:

1. Ableto applyknowledgeof mathematics,science,andengineering.
2. An abilityto designandconductexperiments, aswellas to analyze andinterpret data.
3. Enhance the knowledgeabout howto identify,formulate, and solve engineeringproblems.
4. An abilityto usethe techniques, skills, and modern engineeringtools necessaryforengineeringpractice.
5. Ableto designand conduct experiments;analyzeresults.
6. Recognize and understand contemporaryissuesand the role ofprofessionals in globalsociety.

PDM UNIVERSITY
DEPARTMENT OF CIVILENGINEERING

COURSECONTENT:

Unit I: Introduction toMachine tools IntroductiontoMachineTooltoCommonlyusedMachineToolsinaWorkshop:- Lathe,Shaper,Planer,Milling,Drilling, Slotter. Introductionto MetalCutting.
Unit II: Basic concept ofthermodynamics Basicconceptofthermodynamics,Introduction,States,Work,Heat,Temperature,Zeroth,1st, 2ndand3rdlawofthermodynamics,Conceptofinternalenergy,enthalpyandentropy.ProblemsPropertiesofSteam&SteamGeneratorFormationofsteamatconstantpressure,ThermodynamicpropertiesofSteam,Use ofsteamtables,Measurementofdrynessfraction bythrottlingcalorimeter.
Unit III :Refrigeration&Air-conditioning Introductiontorefrigerationandair- conditioning,Ratingofrefrigerationmachines,Coefficientofperformance,Simplerefrigeration vapourcompression cycle,Psychrometricchartsand its use,Humancomforts.
Unit IV:Hydraulic Turbines&Pumps Introduction,Classification,ConstructiondetailsandworkingofPelton,FrancisandKaplanturbines,Specific speedandselection of turbines,Classificationof waterpumps and theirworking
Unit V:Power Transmission Methods and Devices IntroductiontoPowertransmission,Belt,Rope,ChainandGeardrive.TypesandfunctioningofclutchesIntroductiontoManufacturingSystems,FundamentalsofNumericalControl(NC),Advantage ofNC systems,ClassificationsofNC,ComparisonofNC and CNC.
Unit VI :Stresses and Strains Introduction,Concept&typesofStressesand strains,Poison'sratio,stressesandstrains insimple andcompound barsunderaxial,flexure& torsionalloading, Stress-straindiagrams,Hooks law, Elasticconstants& theirrelationships.

RECOMMENDED BOOKS:

TEXT BOOK	1. ElementsofMechanicalEngineering – R.K.Rajput LakmiPub., Delhi 2. ElementsofMechanicalEngineering – D.S.Kumar,S.K.Katariaand Sons 3. EngineeringThermodynamics-P.K.NagTMH,NewDelhi 4. Refrigeration&Airconditioning – Arora&Domkundwar,Dhanpatrai& co.pvtltd
REFERENCES	1. HydraulicMachines– JagdishLal, Pub.-Metropolitan,Allahbad. 2. StrengthofMaterials-G.H.Ryder, Pub.-ELBS. 3. Hydraulicand FluidMechanics– ModiandSeth,Pub. – StandardBookHouse,New Delhi 4. Engineering Thermodynamics–C.P.Arora,Pub.-TMH,NewDelhi.

METHODS OFTEACHINGANDSTUDENTLEARNING

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ASSESSMENTMETHODOLOGIES:

This subjectwill be evaluatedfora total of 75 marks for theory.

Theory:

Assessment #	TypeOfAssessment	Per Semester	Maximum Mark
1.	Class Test	4	05
2.	Sessional Test	2	15
3.	GroupDiscussion	4	05
4.	End Semester Exam	1	50

MAPPINGOFASSESSMENTMETHODSAGAINST THE LEARNINGOUTCOMES

Theory:

Assessments	1	2	3	4	5	6
Class Test	x		x		x	
Quiz			x		x	x
Assignment	x	x		x		

MAPPINGOFCOURSE LEARNING OUTCOMES

ProgramOutcomes	a	b	C	d	e	f	g	h	i	j	k
Course LearningOutco	2	5		2,4	4	3	6	2		3	4

EVALUATION

Attheendofsemester,coursefacultywillsubmitanevaluation/reviewreport.Thepurposeofthisreportistoidentifyaspectsthatwillbehighlightedbystudentsandfaculty'sfeedbackforthecoursewithrespecttoitsstrengthsaswellas thoseareaswhichcould be improved. Thereviewreportcontains the following areas:

- Problemsencountered inthe contentdelivery;
- Suggestedremedies / corrective measures;
- Approvedrefinement decisions due for implementation;
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- Reportdiscussedandanalysed;actionstakenasaresultofthisprocessandarecommunicatedtothemainstakeholders.

PDM UNIVERSITY
DEPARTMENT OF CIVILENGINEERING

BASICS OF MECHANICALENGINEERINGLAB

L	T	P
0	0	2

MODULE CODE	MECH0103
CREDITPOINTS	1
FORMATIVEASSESSMENTMARKS	25
SUMMATIVE ASSESSMENTMARKS	25
ENDSEMESTER EXAMDURATION	3 hrs.
LASTREVISION DATE	

OBJECTIVES:

1. To learn effective engineering communication.
2. Abilityto work in teamson multidisciplinaryprojects in industryandresearchorganizations.
3. Developawarenessoftheethical,professionalandenvironmentalimplicationsofworkinaglobalandsocietal context.
4. Tolearnmodernengineeringtools,techniques,skillsandcontemporaryengineeringpractice,necessaryforengineeringwork.
5. Haveanunderstandingtosolvemechanicalengineeringproblemsbasedondatainterpretation,design,experiment and analysis of results.

LEARNINGOUTCOMES:

1. Abletoapplyknowledgeofmathematics(includingdifferentialequationsandstatistics),physicalandlifesciences,andengineeringtocarryoutanalysisanddesigntosolveproblemsattheinterfaceofengineeringandbiology.
2. Exposuretodesignandconductexperiments,aswellastomeasure,analyzeandinterpretdatafromlivingsystems.
3. Abilitytodesignasystem,component,orprocesstomeetdesiredneeds,including systemsthatinvolvethe interactionbetween livingand non-livingmaterials.
4. Abilityto identify,formulate,and adapt engineeringsolutions to unmet biological needs.
5. Abilityto create thetechniques, skills, and modern engineeringtools necessaryforengineeringpractice,includingthe abilityto model and analyze biologicalsystems as engineeringsystems.

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DEPARTMENT OF CIVILENGINEERING

LIST OFEXPERIMENTS

1.	To studythe Cochran and Babcock&Wilcoxboilers.
2.	To studythe workingand function of mountingsandaccessories in boilers.
3.	To studyTwo-Stroke &Four-StrokeDiesel Engines.
4.	To StudyTwo-Stroke&Four-StrokePetrol Engines.
5.	To studythe vapour compressionRefrigeration System anddeterminationof its C.O.P.
6.	To studythe functioning ofWindow Room Air Conditioner.
7.	To studythe constructionalfeaturesandworkingof PeltonWheelTurbine,FrancisTurbineand Kaplan Turbine.
9.	TocalculatetheMechanicalAdvantage,VelocityRatioandEfficiencyofSingleStart,Double
10.	Start and Triple Start Worm Wheel.
11.	TocalculateMechanicalAdvantage,VelocityRatioandEfficiencyofSinglePurchaseand Double purchase winch craband plot graphs.

RECOMMENDEDBOOKS:

TEXT BOOK	1 Elements of MechanicalEngineering – R.K.RajputLakmi Pub., Delhi. 2 Elements of MechanicalEngineering – D.S.Kumar, S.K.Katariaand Sons.
REFERENCES	1 Strength ofMaterials-G.H.Ryder,Pub.-ELBS. 2 HydraulicandFluidMechanics–ModiandSeth,Pub.–Standard Book House,NewDelhi.

METHODS OFTEACHINGANDSTUDENTLEARNING

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ASSESSMENTMETHODOLOGIES:

This subject will be evaluatedforatotal of 50 marks for practical.

Practical:

Assessment #	TypeOfAssessment	Per Semester	Maximum Mark
1	Internal Assessment	2	25
2	External Assessment	1	25

MAPPINGOFCOURSE LEARNINGOUTCOMES

ProgramOutcomes	a	b	c	d	e	f	g	h	i	j	k
Course LearningOutco	3,4	2	3,5	1	1,2		4		3		1

EVALUATION

Attheendofsemester,Subjectteacherwillsubmitanevaluationreport.Thepurposeofthisreportistoidentifyaspectsthatwillbehighlightedbystudentsandfaculty'sfeedbackforthesubjectwithrespecttoitsstrengthsaswellas those areas whichcould be improved. The review report contains the following:

- Approvedrefinement decisions due for implementation,
- Actionstakenbased on previous subjectreview,
- Problemsencountered inthe subjectdelivery,
- Suggestedremedies / corrective measures,and
- Reportdiscussedandanalysed,actionstakenasaresultofthisprocessandarecommunicatedtothemainstakeholders.

PDM UNIVERSITY
DEPARTMENT OF CIVILENGINEERING

WORKSHOPTECHNOLOGYLAB

L	T	P
0	0	2

MODULE CODE	MECH1102
CREDITPOINTS	1
FORMATIVEASSESMENT MARKS	25
SUMMATIVEASSESMENT MARKS	25
ENDSEMESTER EXAMDURATION	3 hrs.
LASTREVISION DATE	

OBJECTIVES:

1. To practice workshop safetyrules effectively.
2. To acquireknowledgeand usesimple hand tools.
3. To acquireknowledgeand usesimple measuringand gauginginstruments.
4. To operate simple drillingmachines for producingsmall holes.
5. To understandabout various machine tools for producingsimple metal components and articles.

LEARNINGOUTCOMES:

1. Ableto understandapplications of hand tools andpower tools.
2. Ableto get familiarwithoperations of machinetools.
3. Abilitytoselect theappropriate tools requiredfor specificoperation.
4. Exposureto safetymeasures required to be takenwhile usingthe tools.
5. Abilitytoacquireknowledge and practiceon foundry,forgingand welding.

COURSECONTENT:

1	Preparecarpentryand fittingshop layout.
2	Prepareonesimple andanother male-femaletypefittingjobsas pergivendrawings-2 jobs.
3	Demonstrate useof differentfittingtools–like workholding,marking,measuring,cutting,finishingandmiscellaneous.Studentwillalsopreparethereportwithsketch,specificationsandapplicationsoffittingtoolsdemonstrated.
4	Demonstrate useof differenttinsmithytools.Studentwillalsopreparethereportwithsketch,specificationsandapplications of
5	Prepareonetinsmithyjobas perdrawinghavingshearing,bending,joiningandriveting.
6	Demonstrate useof differentcarpentrytools. Studentwillalsoprepare thereportwithsketch,specificationsandapplicationsofcarpentrytoolsdemonstrated.
7	Preparetwowoodenjoints as pergivendrawings
8	Demonstrate useof differentpipefittingtools.Studentwillalsopreparethereportwithsketch,specificationsandapplications of
9	Preparepipefittingjobs asperdrawings-twojobs.
10	Preparejobsusingarc welding,gascutting,spotwelding,brazingandsolderingprocess-threejobs.

RECOMMENDED BOOKS:

TEXT BOOK	1. WorkshopTechnologyVol.1 and2BYRAGHUVANSHI,Title: B.S.Dhanpat Rai&Sons. 2. Workshoppractices,Author HSBAWA,TITLE:TataMcGraw-Hill.
REFERENCE	1. Workshoppracticesandmaterials,authorBJBLACK,Title:CRCpress. 2. Mechanicalpracticeworkshop,authorKCjohn,Title:PHIlearning.

METHODS OFTEACHINGANDSTUDENTLEARNING

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ASSESSMENTMETHODOLOGIES:

This subjectwill be evaluatedfora total of 50 marks for practical.

Practical:

Assessment #	TypeOfAssessment	Per Semester	Maximum Mark
1	Internal Assessment	2	25
2	External Assessment	1	25

MAPPINGOFCOURSE LEARNING OUTCOMES

ProgramOutcomes	A	b	C	d	E	f	g	h	i	j	k
Course LearningOutco	2	3		2,5	4	3		2		1,3	4

EVALUATION

Attheendofsemester,coursefacultywillsubmitanevaluation/reviewreport.Thepurposeofthisreportistoidentifyaspectsthatwillbehighlightedbystudentsandfaculty'sfeedbackforthecoursewithrespecttoitsstrengthsaswellas thoseareaswhichcould be improved. Thereviewreportcontains the following areas:

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PDM UNIVERSITY
DEPARTMENT OF CIVILENGINEERING

AppliedMathematics-II

L	T	P
4	1	0

MODULE CODE	MATH0116
CREDITPOINTS	4.5
FORMATIVEASSESMENT MARKS	50
SUMMATIVEASSESMENT MARKS	100
ENDSEMESTER EXAMDURATION	3 hrs
LASTREVISION DATE	

INSTRUCTIONS: TheQuestionpaperwillconsistofsevenquestionsdistributedoverthreesectionsA,Band C. SectionAcomprisesofveryshortanswertypequestionsandiscompulsory.SectionB&Ccompriseofshort answertypeand longanswertype questions. These sections will have internal choice.

OBJECTIVES:

1. Toachieveknowledgeandunderstandingofdifferentialequations,theirvariouspropertiesandcapabilitiestomodelandsolve widerange ofproblems in scienceand engineering.
2. To getfamiliarwithconceptsofLaplacetransforms and developabilityto solvesimple andcomplex problems.
3. To understandFourierseries andtheirapplicationsin engineeringproblems.
4. TolearnbasicconceptsofFourierTransforms and itsapplication inscientificproblems.
5. Toacquireknowledge ofcomplexfunctionsandassesstheireffectivenessinscienceand Technology.

LEARNINGOUTCOMES:

1. Ableto understand differentialequations and theircapabilityto solveproblems.
2. Exposureto Laplacetransformsand their compatibilities.
3. Enhance the knowledgeregardingFourierseriesandtheirapplications
4. Ableto understand FourierTransforms anditsapplication.
5. Abilityto acquireknowledge ofcomplexfunctionsandassesstheireffectivenessin scienceandTechnology.

MODULECONTENT:

UNIT-I: Ordinary Differential Equations&its Applications Exactdifferentialequations.Equationsreducibletoexactdifferentialequations.ApplicationsofDifferentialequationsof firstorder&firstdegreetosimpleelectriccircuits,Newton'slawofcooling,heatflowandorthogonaltrajectories.
UNIT-II: Linear Differential Equations. Lineardifferentialequationsofsecondandhigherorder.Completesolution,complementaryfunctionandparticularintegral,methodofvariationofparameterstofindparticularIntegral,Cauchy'sandLegendre'slinearequations,simultaneouslinearequationswithconstantcoefficient.Applicationsof lineardifferentialequations tosimplependulum,oscillatoryelectriccircuits.
UNIT-III: Partial Differential Equations and Its Applications Formationofpartialdifferentialequations,Lagrange'slinearpartialdifferentialequation,Firstordersnon-linearpartialdifferentialequation,Charpit'smethod.Methodofseparationofvariablesanditsapplicationstowaveequationandonedimensionalheatequation,twodimensionalheatflow,steadystatesolutionsonly.
UNIT-IV: LaplaceTransforms and its Applications Laplacetransformsof elementary functions,propertiesofLaplacetransforms,existenceconditions,transformsof derivatives,transformsofintegrals,multiplicationbyt^n,divisionbyt.EvaluationofintegralsbyLaplacetransforms.LaplacetransformofUnitstepfunction,unitimpulsefunctionandperiodicfunction.Inversetransforms,convolutiontheorem,applicationto lineardifferentialequations
Unit –V:Fourier Seriesand Fourier Transforms Euler'sformulae,conditionsforaFourierexpansion,changeofinterval,Fourierexpansionofoddandevenfunctions,Fourierexpansionofsquarewave,rectangularwave,saw-toothedwave,halfandfullrectifiedwave,halfrangesine andcosineseries. Fourierintegrals,Fouriertransforms,Shiftingtheorem(bothontimeandfrequencyaxes),Fouriertransforms ofderivatives,Fouriertransforms ofintegrals,Convolutiontheorem.
UNIT-VI: Functions of Complex Variable Definition,Exponentialfunction,TrigonometricandHyperbolicfunctions,Logarithmicfunctions.Limitand Continuityofafunction,DifferentiabilityandAnalyticity,Cauchy-Riemannequations,necessaryandsufficientconditionsforafunctiontobeanalytic,polarformoftheCauchy-Riemannequations.Harmonicfunctions,applicationtoflowproblems.Integrationofcomplexfunctions.Cauchy-Integraltheoremandformula.

RECOMMENDED BOOKS

TEXT BOOKS	1. HigherEngineeringMathematics:B.S.Grewal,KhannaPublishers, New Delhi. 2. AdvancedEngineeringMathematics,ErwinKreyszig,JohnWiley&Sons, Inc., NewYork. 3. Advanced Engineering Mathematics, Peter V. O'Neil,ThomsonLearning,Inc.,Singapore.

REFERENCES	1.AdvancedEngineeringMathematics,R.K.JainandS.R.K.Iyengar,AlphascienceInternationalLtd.PangBourne,England. 2.AdvancedEngg.Mathematics,MichaelD.Greenberg,Prentice-Hall,EnglewoodCliffs,NJ.

MAPPINGOFCOURSE LEARNING OUTCOMES

ProgramOutcomes	a	b	c	d	e	f	g	h	i	j	k
Course LearningOutco	1,2,5	2, 5	3,4	1,2,3,4	2,3	3,4	2,3,5	1,3	4,5	1,2	1,3

METHODS OFTEACHINGANDSTUDENTLEARNING

Thesubjectisdeliveredthroughlectures,on-linesupport,textbook/coursematerialreadingandpracticalexercises.Somevideoswillbeshowntodemonstratecertainconceptsandresearchareaswillbediscussed.Resource material is provided with the help of PDM Educational DirectoryServices (PEDS).

ASSESSMENTMETHODOLOGIES:

This subjectwill be evaluatedfora totalof150 marks fortheory.

Theory:

Assessment #	TypeOfAssessment	Per Semester	Maximum Mark
1.	Class Test	4	10
2.	Sessional Test	2	30
3.	GroupDiscussion	4	10
4.	End Semester Exam	1	100

MAPPINGOFASSESSMENTMETHODSAGAINST THE LEARNINGOUTCOMES

Theory:

Assessments	1	2	3	4	5	6
Class Test	x		x		x	
Quiz			x		x	X
Assignment	x	x		x		

EVALUATION

Attheendofsemester,coursefacultywillsubmitanevaluation/reviewreport.Thepurposeofthisreportistoidentifyaspect sthatwillbehighlightedbystudentsandfaculty'sfeedbackforthecoursewithrespecttoitsstrengthsaswellas thoseareaswhichcould be improved. Thereviewreportcontains the following areas:

- Problemsencountered inthe contentdelivery;
- Suggestedremedies /corrective measures;
- Approvedrefinement decisions due for implementation;
- Actionstakenbased on previous coursereview; and
- Reportdiscussedandanalysed;actionstakenasaresultofthisprocessandarecommunicatedtothemainstakeh olders.

PDM UNIVERSITY
DEPARTMENT OF CIVILENGINEERING

NumericalMethods

L	T	P
3	0	0

MODULE CODE	MATH0117
CREDITPOINTS	3
FORMATIVEASSESMENT MARKS	25
SUMMATIVEASSESMENT MARKS	75
ENDSEMESTER EXAMDURATION	3 hrs
LASTREVISION DATE	

INSTRUCTIONS: TheQuestionpaperwillconsistofsevenquestionsdistributedoverthreesectionsA,Band C. SectionAcomprisesofveryshortanswertypequestionsandiscompulsory.SectionB&Ccompriseofshort answertypeand longanswertype questions. These sections will have internal choice.

OBJECTIVES:

Theaimofthis subjectis todevelopunderstanding ofdifferentmethodsrelatedtoerror,areanumerically,usingdifferent techniques to enhance skills of numericalmethods asmentionedbelow:

1. Toachieveknowledgeandunderstandingofdifferenttypesoferror,interpolation,extrapolationandcapabilitiestosolve bydifferentmethodswithwiderangeofproblems in scienceandengineering.
2. To getfamiliarwithconceptsofnonlinearequationsanddevelopabilityto solvesimpleComplexproblems.
3. To understanddirectand indirectmethodssolvesimultaneouslinearequationsand theirapplicationsinengineeringproblems.
4. Tolearnbasicconceptsofareasolve byintegrationanditsapplicationinrealisticdecisionmaking.
5. Toacquireknowledgeofordinaryandpartialdifferentialequationssolvebydifferentmethodsandassesstheireffectiveness inproblemsolving.

LEARNINGOUTCOMES:

1. Abletounderstandtheevolution oftechniquesand basicterminology.
2. Exposuretovariousmethods andtechniquesandtheircompatibilities.
3. Enhancetheknowledgeregardingdifferenttypesoferror,linear,non-linearandordinaryandpartialdifferentialequations.
4. Abletounderstandthebasictechniquesand starttoimplementinreallife.
5. AbilitytofindthelargestEigenvaluesandcorrespondingEigenvector.

MODULECONTENT:

Unit I:Errors in Numerical Calculation Introduction,Numbersandtheiraccuracy,Absolute,relativeandPercentageerrorsandtheiranalysis, General errorformula. InterpolationandCurveFitting:Newton'sforwardandbackward;Gaussforwardandbackward;centraldifferenceinterpolationformulae;Lagrange'sandNewtondivideddifferenceinterpolationformula,Interpolatingwithacubicspline,BeziercurvesandB-spline curves, CurvefittingbyLeastsquaresapproximations.
Unit II: Nonlinearequations Bisection method, Regula Falsemethod, Secantmethod,Iteration Method, Newton's Raphsonmethod, Giraffe's methods,Muller'smethod.
Unit III:Simultaneous linear equations GaussElimination method, Gauss-Jordanmethod, LU-decomposition Method, Jacobi'smethod, Gauss- Seidal method, Relaxationmethod.
Unit IV:Numericaldifferentiation andIntegration Derivativesfromdifferencestables,higherorderderivatives,Newton-cotesintegrationformula,Trapezoidalrule,Simpson'srules,Boole'sruleandWeddle'srule,Romberg'sIntegration.
Unit V: Numerical solution of ordinary differential equations Taylorseriesmethods,EulerandmodifiedEulermethod,Runge-Kuttamethods,Milne'smethod, Adams-Moulton method.
Unit VI:Numerical solution of partial differentialequations Finitedifferenceapproximationofpartialderivatives,solutionofLaplaceequation(standard5-pointformulaonly),onedimensionalheatequation(Schmidtmethod,Crank-Nicolsonmethod,DufortandFrankelmethod). EigenValueProblems:Powermethod,Jacobi,Given'sandHouseholder'smethodsforsymmetricmatrices.

RECOMMENDED BOOKS:

TEXT BOOKS	1 AppliedNumericalanalysis:CurtisFGeraldandPatrick,GWheatley-PearsonEducation. 2 NumericalMethods:Fairs&Burden,Brooks Cole, 2001. 3 NumericalMethodsinEngineeringandScience,BSGrewal,KhannaPublishers.
REFERENCEBOOKS	1 NumericalMethodsforScientificandEngineeringcomputations,M.K.Jain,S.R.K.IyengerandR.K.Jain-WileyEasternLtd. 2 NumericalMethodsforengineers,StevenC.Chapra,Raymond P. Can ale,McGrawHill.

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DEPARTMENT OF CIVILENGINEERING

MAPPINGOFCOURSE LEARNING OUTCOMES

ProgramOutcomes	a	b	c	d	e	f	g	h	i	j	k
Course LearningOutco	1,2	1,3	1,5	1,3,5	2,3	2,3,4	1,2, 4	1,4	1,3	2,5	1,4

METHODS OFTEACHINGANDSTUDENTLEARNING

Thesubjectisdeliveredthroughlectures,on-linesupport,textbook/coursematerialreadingandpracticalexercises.Somevideoswillbeshowntodemonstratecertainconceptsandresearchareaswillbediscussed.Resource material is provided with thehelp of PDM Educational DirectoryServices (PEDS).

ASSESSMENTMETHODOLOGIES:

This subjectwill be evaluatedforatotal of100 marks fortheory

Theory:

Assessment #	TypeOfAssessment	Per Semester	Maximum Mark
1.	Class Test	4	5
2.	Sessional Test	2	15
3.	GroupDiscussion	4	5
4.	End Semester Exam	1	75

MAPPINGOFASSESSMENTMETHODSAGAINST THE LEARNINGOUTCOMES

Theory:

Assessments	1	2	3	4	5	6
Class Test	x		x		x	
Quiz			x		x	X
Assignment	x	x		x		

EVALUATION

Attheendofsemester,coursefacultywillsubmitanevaluation/reviewreport.Thepurposeofthisreportistoidentifyaspectsthatwillbehighlightedbystudentsandfaculty'sfeedbackforthecoursewithrespecttoitsstrengthsaswellas thoseareaswhichcould be improved. Thereviewreportcontains the following areas:

- Problemsencountered inthe contentdelivery;
- Suggestedremedies / corrective measures;
- Approvedrefinement decisions due for implementation;
- Actionstakenbased on previous coursereview; and
- Reportdiscussedandanalysed;actionstakenasaresultofthisprocessandarecommunicatedtothemainstakeholders.

PDM UNIVERSITY
DEPARTMENT OF CIVILENGINEERING

VALUEEDUCATION

L	T	P
2	0	0

MODULE CODE	VALU0109
CREDITPOINTS	2
FORMATIVEASSESMENT MARKS	25
SUMMATIVEASSESMENT MARKS	50
ENDSEMESTER EXAMDURATION	2 hrs
LASTREVISION DATE	

INSTRUCTIONS: Allquestionsarecompulsory.Eachquestionmayhavemultipleoptionsandwillcoverallunits.

OBJECTIVES:

ThePurpose ofValueEducation isspecifyingthe presentdeterioration in thevaluesystem in thefastchangingworldtrends andto develop understandingof moral values in differentaspects of lifefor inculcatingthe skills asmentioned below:

1. To preparestudentsto developbasicunderstandingofValueEducation.
2. Toacquireknowledge onValueEducation.
3. To understandthe ethics,characterbuilding,leadership&goalsetting.
4. To understandthesuccess&personalgrowth.
5. Tosupportthe womenempowerment&environmentalawareness.

LEARNINGOUTCOMES:

1. Ableto understand theImportance ofValues in Life– what isa Valuesystem?
2. Exposureto variousprinciples,concepts,types,advantagesand disadvantages of value education.
3. Abilityto understand thelifestylemanagement&selfesteem.
4. To behave morallyin society.

MODULECONTENTS:

UNIT 1: VALUE EDUCATION • Definition,Concept andClassification of values • Theneedforvalueeducation • PedagogyofValues • ChallengesofValueAdoption • Life StyleManagement
UNIT 2: VALUE&PERSONAL DEVELOPMENT • Theprinciplesofintegrity • CharacterDevelopment • Valuesineverydaylife • Values,Virtues,Powers&Qualities • SuccessfulPersonality
UNIT 3:VALUES INSOCIETY • CharacterBuilding • Positive thinking&Emotional Maturity • Women Empowerment • OvercomingAddiction • EnvironmentalAwareness
UNIT 4: PERSONALPROGRESS&FIELD STUDY • Personalprogressmanual • FieldProject

RECOMMENDEDBOOKS:

TEXT BOOKS	1. SevenHabitsofHighlyEffectivePeople,CoveyStephen,FreePress, UnitedStates,1989 2. YouCanWin,KheraShiv,MacmillanIndiaLimited,NewDelhi,1998
REFERENCEBOOKS	Mani Jacob, ed.,(2002).Resource for Value Education,NewDelhi:Institute of ValueEducation.

MAPPINGOFCOURSE LEARNINGOUTCOMES

ProgramOutcomes	a	b	c	d	e	f	g	h	i	j	k
Course LearningOutco										1,2	3,4

METHODS OFTEACHINGANDSTUDENTLEARNING

Thesubjectisdeliveredthroughlectures,on-linesupport,textbook/coursematerialreadingandpracticalexercises.Somevideoswillbeshowntodemonstratecertainconceptsandresearchareaswillbediscussed.Resource material is provided with the help of PDM Educational DirectoryServices (PEDS).

ASSESSMENTMETHODOLOGIES:

This subject will be evaluatedfora total of75marks fortheory.

Theory:

Assessment #	TypeOfAssessment	Per Semester	Maximum Mark
1.	Class Test	1	10
2.	Sessional Test	2	15
3.	End Semester Written Exam	1	50
4.	End SemesterOral Exam	1	25

MAPPING OFASSESSMENTMETHODSAGAINST THE LEARNINGOUTCOMES

Theory:

Assessments	1	2	3	4
Class Test	x	x	x	
Quiz	x	x	x	
Assignment			x	X

EVALUATION

Attheendofsemester,coursefacultywillsubmitanevaluation/reviewreport.Thepurposeofthisreportistoidentifyaspectsthatwillbehighlightedbystudentsandfaculty'sfeedbackforthecoursewithrespecttoitsstrengthsaswellas thoseareaswhichcould be improved. Thereviewreportcontains the following areas:

- Problemsencountered inthe contentdelivery;
- Suggestedremedies / corrective measures;
- Approvedrefinement decisions due for implementation;
- Actionstakenbased on previous coursereview; and
- Reportdiscussedandanalysed;actionstakenasaresultofthisprocessandarecommunicatedtothemainstakeholders.

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DEPARTMENT OF CIVILENGINEERING

PC Lab

L	**T**	**P**
0	0	2

MODULE CODE	CSEN1103
CREDITPOINTS	1
FORMATIVEASSESSMENTMARKS	25
SUMMATIVEASSESSMENT MARKS	25
ENDSEMESTER EXAMDURATION	3 hrs
LASTREVISION DATE	

OBJECTIVES:

Themainobjectiveofthelabistoprovidethestudentstheknowledgeofcomputerhardware,theprocessors,memories,motherboards,differentadd-oncards,andotherperipheralslikeprinters,plottersandthescanners.Thestudentsaretrainedfortheassemblyanddisassemblyof PCs.Anotherimportantobjectiveistoimpartknowledgeaboutthetroubleshootingandfaultfindingthecomputersandtheperipherals.

LEARNINGOUTCOMES:

Followingthis course,students will be able to:

1. Learnaboutdifferenthardwarecomponents of a computer and their troubleshooting.
2. Understand different peripherals,theirperformance andcostcharacteristics
3. Understand installation of variousoperatingsystems, theircapabilities
4. LearncommonlyusedPCsoftwarelikeMS Word,Excel and PowerPoint.

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LIST OFEXPERIMENTS

PCSoftware: Application ofbasics ofMSWord 2013, MS Excel 2013, MSPowerPoint 2013, MS Access 2013.

1.	To preparethe YourBioDatausingMS Word.
2.	To preparethelist ofmarks obtained bystudents indifferentsubjects and show with thehelp ofchart/graphtheaverage,min andmaxmarksin eachsubject.
3.	Preparea presentationexplainingthe facilities/infrastructureavailablein yourdepartment.
4.	Create adatabase ofbooksin thelibraryon a miniscalew.r.t.Computers andmanipulatethe databaseusingdifferentforms and reports.

PC Hardware:

1.	To checkand measurevarious supplyvoltages ofPC.
2.	To makethecomparative studyof various motherboards.
3.	To makethecomparative studyof various processors.
4.	To studyvarious cables used incomputercommunication.
5.	To studyvarious connections and ports usedin computercommunication.
6.	To studyvarious cards used in a ComputerSystem.
7.	To remove,studyand replace CD-Rom,Harddisk.
8.	To observevarious cablesand connectors used in networking.
9.	To assemblea PC.
10.	Troubleshootingexercises relatedto various components ofcomputerlikemonitor,drives,memoryand printers etc.

METHODS OFTEACHINGANDSTUDENTLEARNING

Thesubjectisdeliveredthroughlectures,on-linesupport,textbook/coursematerialreadingandpracticalexercises.Somevideoswillbeshowntodemonstratecertainconceptsandresearchareaswillbediscussed.Resource material is provided with the help of PDM Educational DirectoryServices (PEDS).

ASSESSMENTMETHODOLOGIES:

This subject will be evaluatedforatotal of 50 marks forpractical.

Practical:

Assessment #	TypeOfAssessment	Per Semester	Maximum Mark
1	Internal Assessment	2	25
2	External Assessment	1	25

MAPPINGOFCOURSE LEARNINGOUTCOMES

ProgramOutcomes	a	b	c	d	e	f	g	h	I	j	k
CourseLearning Outcomes	3	2	4	1	1,2						

EVALUATION

Attheendofsemester,Subjectteacherwillsubmitanevaluationreport.Thepurposeofthisreportistoidentifyaspectsthatwillbehighlightedbystudentsandfaculty'sfeedbackforthesubjectwithrespecttoitsstrengthsaswellas those areas whichcould be improved. The review report contains the following:

- Approvedrefinement decisions due for implementation,
- Actionstakenbased on previous subjectreview,
- Problemsencountered inthe subjectdelivery,
- Suggestedremedies / corrective measures,and
- Reportdiscussedandanalysed,actionstakenasaresultofthisprocessandarecommunicatedtothemainstakeholders.

PDM UNIVERSITY
DEPARTMENT OF CIVILENGINEERING

FrenchLanguage –Part 2

L	T	P
2	0	0

Pre-requisite-FrenchLanguage– Part1

MODULE CODE	LANF0104
CREDITPOINTS	2
FORMATIVEASSESMENT MARKS	25
SUMMATIVEASSESMENT MARKS	50
ENDSEMESTER EXAMDURATION	2 hrs
LASTREVISION DATE	

INSTRUCTIONS: Allquestionsarecompulsory.Eachquestionmayhavemultipleoptionsandwillcoverallunits.

OBJECTIVES:

Theaimofthissubjectistodevelopunderstandingondifferentaspectsrelatedtooralandwrittenskillsofexpressingandexchanginginformation/interactinginFrenchlanguageandtoenhanceskillsasmentionedbelow:

1. To preparestudentsto developadvanceunderstandingon Frenchlanguage.
2. Toacquirethecommandoverthe Frenchgrammar.
3. Toread and writeshort,simpletexts.
4. Toenablelearner tobuildlogic in Frenchlanguage.
5. To makestudentsaware ofthe Frenchculture,customs& traditions.

LEARNINGOUTCOMES:

1. Ableto understand theadvancegrammar of Frenchlanguageand differentiation of gendersandobjects.
2. Exposureto varioussyntax&communication methods with others.
3. Abilityto read, write, speak&listen the advanceofFrenchlanguage.
4. Ableto understand theFrenchhistory.

MODULECONTENTS

UNIT I:MODERATECOMMUNICATION– This modulewillsharpen the communicativeskills alreadyacquired inthe**PART 1 -BASIC COMMUNICATION**andfurtherbuilds onthem.It develops oral and written skills of understanding,expressingandexchanginginformation / interacting on the topics given below: -

- Describein detail people, relationships,events,places, cultures of countries
- Compare people, relationships, events,places,cultures andthe changes that theyhaveundergone
- Applyfor ajob
- Exchange personal andprofessionalinformation
- Express opinion on people,places, events encountered in one'spersonal lifeand on pressarticles,televisionprogrammes,multimedia,films,and books
- Argue, justifyand substantiate apoint of view
- Describehypotheticalor imaginarysituations
- Expressplans,dreams,aspirations of thefuture
- Paragraphwriting
- Professional communication

UNIT II:MODERATE PHONETICS– Thismodulewillre- enforcesall the notions introduced in the**PART 1-BASIC PHONETICS**.

UNIT III: MODERATEGRAMMAR– This module willsharpen the concepts introduced inthe**PART 1 -BASIC GRAMMAR&FORMATION OFSENTENCES**andfurtherdevelopsthe followinglinguistic skills:-

- Pronouns – relative (don't), possessive,indefinite,demonstrative and theuse ofdoublepronouns
- Verbs – conjugation ofregularandirregular verbs (affirmativeandnegative) in the followingtenses(indicative mood)– pastperfect, futureperfect
- Verbs – the subjunctivemood (past and present)
- Verbs – conditional (past and present)andgerundforms,
- Adverbs oftime, place,quantityand indefinite adverbs
- Direct/indirectspeech
- Comparative andsuperlative structures
- Active/passivestructures
- Multiple clausesentences– independent clausesjoinedbyco- ordinatingconjunctions,dependant clause (subordinate clause)
- Phrases to expresscause,consequence,and objective

RECOMMENDED BOOKS:

TEXT BOOKS	1 NouveauSansFrontières1byPhilippeDominique&JackyGirardet 2 "CONNEXIONS-1"byRegineMerieux &YvesLoiseauPublished by Didier.
REFERENCEBOOKS	1. Fivein one MultilingualGlossary,publishedbySaraswatiHousePvt.Ltd.

MAPPINGOFCOURSE LEARNING OUTCOMES

ProgramOutcomes	a	b	c	d	e	f	G	h	i	j	k
Course LearningOutco										1,2	3,4

METHODS OFTEACHINGANDSTUDENTLEARNING

Thesubjectisdeliveredthroughlectures,on-linesupport,textbook/coursematerialreadingandpracticalexercises.Somevideoswillbeshowntodemonstratecertainconceptsandresearchareaswillbediscussed.Resource material is provided with the help of PDM Educational DirectoryServices (PEDS).

ASSESSMENTMETHODOLOGIES:

This subjectwill be evaluatedfora total of 100 marks fortheory.

Theory:

Assessment #	TypeOfAssessment	Per Semester	Maximum Mark
1.	Class Test	1	10
2.	Sessional Test	2	15
3.	End Semester Written Exam	1	50

PDM UNIVERSITY
DEPARTMENT OF CIVILENGINEERING

MAPPINGOFASSESSMENTMETHODSAGAINST THE LEARNINGOUTCOMES

Theory:

Assessments	1	2	3	4
Class Test	x	x	x	
Quiz	x	x	x	
Assignment			x	x

EVALUATION

Attheendofsemester,coursefacultywillsubmitanevaluation/reviewreport.Thepurposeofthisreportistoidentifyaspectsthatwillbehighlightedbystudentsandfaculty'sfeedbackforthecoursewithrespecttoitsstrengthsaswellas thoseareaswhichcould be improved. Thereviewreportcontains the following areas:

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- Suggestedremedies / corrective measures;
- Approvedrefinement decisions due for implementation;
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PDM UNIVERSITY
DEPARTMENT OF CIVILENGINEERING

GermanLanguage – Part2

L	T	P
2	0	0

Pre-requisite-GermanLanguage – Part1

MODULE CODE	LANG0105
CREDITPOINTS	2
FORMATIVEASSESMENT MARKS	25
SUMMATIVEASSESMENT MARKS	50
ENDSEMESTER EXAMDURATION	2 hrs
LASTREVISION DATE	

INSTRUCTIONS: Allquestionsarecompulsory.Eachquestionmayhavemultipleoptionsandwillcoverallunits.

OBJECTIVES:

Theaimofthissubjectistodevelopunderstandingondifferentaspectsrelatedtooralandwrittenskillsofexpressingandexchanginginformation/interactinginGermanlanguageandtoenhanceskillsasmentionedbelow:

1. Topreparestudentsto developadvanceunderstandingonGermanlanguage.
2. Toacquirethe commandover the Germangrammar.
3. To readandwrite short, simple texts.
4. Toenablelearner tobuild logic in Germanlanguage.
5. To makestudentsaware ofthe Germanculture,customs& traditions.

LEARNINGOUTCOMES:

1. Ableto understand theadvancegrammar ofGermanlanguageanddifferentiation of gendersand objects.
2. Exposureto varioussyntax&communication methods with others.
3. Abilityto read, write, speak&listen the advanceof Germanlanguage.
4. Ableto understand theGermanhistory.

MODULECONTENTS

UNIT I:MODERATECOMMUNICATION– This modulewillsharpen the communicativeskills alreadyacquired inthe**PART 1 -BASIC COMMUNICATION**andfurtherbuilds onthem.It develops oral and written skills of understanding,expressingandexchanginginformation / interacting on the topics given below:-

- Describein detail people, relationships,events,places, cultures of countries
- Compare people, relationships, events,places,cultures andthe changes that theyhaveundergone
- Applyfor ajob
- Exchange personal andprofessionalinformation
- Express opinion on people,places, events encountered in one'spersonal lifeand on pressarticles,televisionprogrammes,multimedia,films,and books
- Argue, justifyand substantiate apoint of view
- Describehypotheticalor imaginarysituations
- Expressplans,dreams,aspirations of thefuture
- Paragraphwriting
- Professional communication

UNIT II:MODERATE PHONETICS– Thismodulewillre- enforcesall the notions introduced in the**PART 1-BASICPHONETICS**.

UNIT III: MODERATEGRAMMAR– This module willsharpen the concepts introduced inthe**PART 1 -BASIC GRAMMAR&FORMATION OFSENTENCES**andfurtherdevelopsthe followinglinguistic skills:-

- Pronouns – relative (don't), possessive,indefinite,demonstrative and theuse ofdoublepronouns
- Verbs – conjugation ofregularandirregular verbs (affirmativeandnegative) in the followingtenses(indicative mood)– pastperfect, futureperfect
- Verbs – the subjunctivemood (past and present)
- Verbs – conditional (past and present)andgerundforms,
- Adverbs oftime, place,quantityand indefinite adverbs
- Direct/indirectspeech
- Comparative andsuperlative structures
- Active/passivestructures
- Multiple clause sentences– independent clausesjoinedbyco- ordinatingconjunctions,dependant clause (subordinate clause)
- Phrases to expresscause,consequence,and objective

RECOMMENDED BOOKS:

TEXT BOOKS	1. Tangram,KursbuchundArbeitsbuch,1A, 1B&2A,MaxHueberVerlag 2. Tangram,KursbuchundArbeitsbuch,2B,3A&3B,MaxHueberVerlag
REFERENCEBOOKS	1. emAbschlusskurs,Kursbuchund Arbeitsbuch,MaxHueberVerlag

MAPPINGOFCOURSE LEARNING OUTCOMES

ProgramOutcomes	a	b	c	d	e	f	G	h	i	j	K
CourseLearning Outcomes										1,2	3,4

METHODS OFTEACHINGANDSTUDENTLEARNING

Thesubjectisdeliveredthroughlectures,on-linesupport,textbook/coursematerialreadingandpracticalexercises.Somevideoswillbeshowntodemonstratecertainconceptsandresearchareaswillbediscussed.Resource material is provided with the help of PDM Educational DirectoryServices (PEDS).

ASSESSMENTMETHODOLOGIES:

This subjectwill be evaluatedfora totalof75marks fortheory.

Theory:

Assessment #	TypeOfAssessment	Per Semester	Maximum Mark
1.	Class Test	1	10
2.	Sessional Test	2	15
3.	End Semester Written Exam	1	50

MAPPINGOFASSESSMENTMETHODSAGAINST THELEARNINGOUTCOMES

Theory:

Assessments	1	2	3	4
Class Test	x	x	x	
Quiz	x	x	x	
Assignment			x	x

EVALUATION

Attheendofsemester,coursefacultywillsubmitanevaluation/reviewreport.Thepurposeofthisreportistoidentifyaspect sthatwillbehighlightedbystudentsandfaculty'sfeedbackforthecoursewithrespecttoitsstrengthsaswellas thoseareaswhichcould be improved. Thereviewreportcontains the following areas:

- Problemsencountered inthe contentdelivery;
- Suggestedremedies / corrective measures;
- Approvedrefinement decisions due for implementation;
- Actionstakenbased on previous coursereview; and
- Reportdiscussedandanalysed;actionstakenasaresultofthisprocessandarecommunicatedtothemainstakeh olders.

PDM UNIVERSITY
DEPARTMENT OF CIVILENGINEERING

SpanishLanguage–Part 2

L	T	P
2	0	0

Pre-requisite-SpanishLanguage – Part1

MODULE CODE	LANS0106
CREDITPOINTS	2
FORMATIVEASSESMENT MARKS	25
SUMMATIVEASSESMENT MARKS	50
ENDSEMESTER EXAMDURATION	2 hrs
LASTREVISION DATE	

INSTRUCTIONS: Allquestionsarecompulsory.Eachquestionmayhavemultipleoptionsandwillcoverallunits.

OBJECTIVES:

Theaimofthissubjectistodevelopunderstandingondifferentaspectsrelatedtooralandwrittenskillsofexpressingandexchanginginformation/interactinginSpanishlanguageandtoenhanceskillsasmentionedbelow:

1. To preparestudentsto developadvanceunderstandingonSpanishlanguage.
2. ToacquirethecommandovertheSpanishgrammar.
3. Toread and writeshort,simpletexts.
4. Toenablelearner tobuild logic in Spanishlanguage.
5. To makestudentsaware ofthe Spanishculture,customs& traditions.

LEARNINGOUTCOMES:

1. Ableto understand theadvancegrammar ofSpanishlanguage and differentiation of gendersand objects.
2. Exposureto varioussyntax&communication methods with others.
3. Abilityto read, write, speak&listen the advanceof Spanishlanguage.
4. Ableto understand theSpanishhistory.

MODULECONTENTS

UNIT I:MODERATECOMMUNICATION– This modulewillsharpen the communicativeskills alreadyacquired inthe**PART 1 -BASIC COMMUNICATION**andfurtherbuilds onthem.It develops oral and written skills of understanding,expressingandexchanginginformation / interacting on the topics given below:-

- Describein detail people, relationships,events,places, cultures of countries
- Compare people, relationships, events,places,cultures andthe changes that theyhaveundergone
- Applyfor ajob
- Exchange personal andprofessionalinformation
- Express opinion on people,places, events encountered in one'spersonal lifeand on pressarticles,televisionprogrammes,multimedia,films,and books
- Argue, justifyand substantiate apoint of view
- Describehypotheticalor imaginarysituations
- Expressplans,dreams,aspirations of thefuture
- Paragraphwriting
- Professional communication

UNIT II:MODERATE PHONETICS– Thismodulewillre- enforcesall the notions introduced in the**PART 1-BASIC PHONETICS**.

UNIT III: MODERATEGRAMMAR– This module willsharpen the concepts introduced inthe**PART 1 -BASIC GRAMMAR&FORMATION OFSENTENCES**andfurtherdevelopsthe followinglinguistic skills:-

- Pronouns – relative (don't), possessive,indefinite,demonstrative and theuse ofdoublepronouns
- Verbs – conjugation ofregularandirregular verbs (affirmativeand negative)in the followingtenses(indicative mood)– pastperfect, futureperfect
- Verbs – the subjunctivemood (past and present)
- Verbs – conditional (past and present)andgerundforms,
- Adverbs oftime, place,quantityand indefinite adverbs
- Direct/indirectspeech
- Comparative andsuperlative structures
- Active/passivestructures
- Multiple clausesentences– independent clausesjoinedbyco- ordinatingconjunctions,dependant clause (subordinate clause)
- Phrases to expresscause,consequence,and objective

RECOMMENDED BOOKS:

TEXT BOOKS	1. AulaInternacional1and2,Novellas andshortstories 2. AulaInternacional3, EspañaandLatinoamérica:HistoriayCultura,Novellas
REFERENCEBOOKS	1. Españolsinfronteras,I,SGEL,1997 2. NuevoVenI,Edelsa2004

MAPPINGOFCOURSE LEARNING OUTCOMES

ProgramOutcomes	a	b	c	d	e	f	G	h	i	j	K
Course LearningOutco										1,2	3,4

METHODS OFTEACHINGANDSTUDENTLEARNING

Thesubjectisdeliveredthroughlectures,on-linesupport,textbook/coursematerialreadingandpracticalexercises.Somevideoswillbeshowntodemonstratecertainconceptsandresearchareaswillbediscussed.Resource material is provided with the help of PDM Educational DirectoryServices (PEDS).

ASSESSMENTMETHODOLOGIES:

This subjectwill be evaluatedfora total of 75marks fortheory.

Theory:

Assessment #	TypeOfAssessment	Per Semester	Maximum Mark
1.	Class Test	1	10
2.	Sessional Test	2	15
3.	End Semester Written Exam	1	50

MAPPINGOFASSESSMENTMETHODSAGAINST THE LEARNINGOUTCOMES

Theory:

Assessments	1	2	3	4
Class Test	x	x	x	
Quiz	x	x	x	
Assignment			x	x

EVALUATION

Attheendofsemester,coursefacultywillsubmitanevaluation/reviewreport.Thepurposeofthisreportistoidentifyaspect sthatwillbehighlightedbystudentsandfaculty'sfeedbackforthecoursewithrespecttoitsstrengthsaswellas thoseareaswhichcould be improved. Thereviewreportcontains the following areas:

- Problemsencountered inthe contentdelivery;
- Suggestedremedies / corrective measures;
- Approvedrefinement decisions due for implementation;
- Actionstakenbased on previous coursereview; and
- Reportdiscussedandanalysed;actionstakenasaresultofthisprocessandarecommunicatedtothemainstakeh olders.

PDM UNIVERSITY
DEPARTMENT OF CIVIL ENGINEERING

SEMESTER - III

MODULE CODE	CATEGORY	SUB-CATEGORY	MODULE	L	T	P	C	Internal Marks	External Marks	Total
CIVL2101	E	PC	STRUCTURAL ANALYSIS-I	3	0	0	3	25	75	100
CIVL2102	E	PC	STRUCTURAL ANALYSIS LAB	0	0	2	1	25	25	50
CIVL2103	E	PC	ENGINEERING GEOLOGY	3	0	0	3	25	75	100
CIVL2104	E	PC	ENGINEERING HYDROLOGY	3	0	0	3	25	75	100
CIVL2105	E	PC	CONSTRUCTION AND CONCRETE TECHNOLOGY	3	0	0	3	25	75	100
CIVL2106	E	PC	CONCRETE TECHNOLOGY LAB	0	0	2	1	25	25	50
CIVL2107	E	PC	ENGINEERING GRAPHICS/ AUTOCAD	0	0	4	2	50	50	100
MGMT0101	M		MANAGEMENT & PROFESSIONAL LEADERSHIP	3	0	0	3	25	75	100
VALU0119	P	AE	APTITUDE I	2	0	0	2	25	50	75
VALU0123	P	SE	PROFESSIONAL COMMUNICATION - I	2	0	0	2	25	50	75
ENGL0109	P	AE	ACADEMIC WRITING	0	0	2	1	25	25	50
	P	AE	YOGA/NCC/NSS*	0	0	2	1	25	25	50
	E	PE	ELECTIVE-I**	3	0	0	3	25	75	100
	TOTAL			**22**	**0**	**12**	**28**	**350**	**700**	**1050**

L = Lecture
T = Tutorial

P = Practical

C =Credit point

ELECTIVES

MODULE CODE	ELECTIVE-I**
CIVL2208	EARTHQUAKEENGINEERING
CIVL2209	GREEN BUILDINGS
CIVL2210	ENVIRONMENT POLLUTION AND DISASTER CONTROL

MODULE CODE	MODULE*
VALU0118	YOGA
VALU0121	NCC

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Structural Analysis – I

L	T	P
3	0	0

MODULE CODE	CIVL2101
CREDIT POINTS	3
FORMATIVE ASSESMENT MARKS	25
SUMMATIVE ASSESMENT MARKS	75
END SEMESTER EXAM DURATION	3 hrs
LAST REVISION DATE	

INSTRUCTIONS

The Question paper will consist of seven questions distributed over three sections A, B and C. Section A comprises of very short answer type questions and is compulsory. Section B & C comprise of short answers type and long answers type questions. These sections will have internal choice.

OBJECTIVES

1. To achieve knowledge and understanding on fundamentals of stress, strain and state of stress and solve wide range of problems in civil engineering.
2. To get familiar with concepts of principal stress and principal strain to solve simple problems.
3. To learn the bending moment, shear force and the corresponding stress distribution for different types of beams.
4. To understand the theory of torsion and stresses in springs
5. To acquire knowledge of different methods for determining deflection of beam.

LEARNING OUTCOMES

On completion of the course, the students will be able to:

1. Determine the strength parameters of the materials.
2. Solve principal stress and principal plane problems.
3. Determine shear force, bending moment, bending and shear stress distribution.
4. Analyze members subjected to torsion.
5. Determine deflection of a beam for various loading conditions.

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DEPARTMENT OF CIVIL ENGINEERING

MODULE CONTENT

UNIT-I: SimpleStressesandStrains

Introduction,stress-straincurvesforelasticmaterials,different typesof stressesandstrains,elasticlimit,Hooks'Law,Young'smodulusofelasticity,Bulk modulus,modulus ofrigidity, Lateralstrain,Elongationdueto self- weightbars oftapering sections,barsofvaryingsections,Equivalentareaofcompositesections, Temperaturestresses, relationbetweenelastic constants, Volumetricstrain.
*ComplexStress:*Introductionrectangularblocksubjectedtonormalstressesalongandacross twoplanes,combinationofnormalandtangentialstresses,pureshear,Mohr`sCircle,ComputationofPri ncipalstressesfromPrincipal strains.

UNIT-II: Bendingmoment&shearforcediagrams

Introduction,Typesofbeams,supportsandloading, sign conventionsforbendingmomentsandshearforces,ShearforceandBendingmoment diagramsforsimplysupported,cantileverandoverhangingbeamsfordifferenttypesofloading. RelationshipbetweenBendingmoment,ShearForceandloading, Graphicalmethodofplotting BendingMoment &ShearForceDiagrams.

UNIT-III:Bending andShear Stresses

Introduction, Assumptionmade intheoryofsimple bending, derivationofbasicequation,determinationofstressesinsimplesections,builtupsectionsand compositesections (FlitchedBeams).

UNIT-IV: Torsion and spring

Introduction,torsionofshaftsandsprings,derivationofbasictorsionequation,Power transmitted,sectionssubjectedtocombinedbendingandtorsion,Principalstresses,equivalent BendingMoment & Torque, Helical spring, analysisof closed Coil helical spring.

UNIT-V:DeflectionofBeams

Derivationofbasicequationofelasticcurve,deflectioninbeamswithdifferent end conditions and different loadings by double integration method, Macaulay's method.
*StrainEnergy:*Introduction,StrainEnergyduetoaxial Loads, Bendingshearand Torsional stress, Impactload, strainenergy duetoPrincipalstress &strains, theoriesof failure.

UNIT-VI: Columns and Struts

Introduction, Euler's buckling loads for columns with different end conditions, limitations of Euler's formula, column carrying eccentric loads, laterally loaded columns, empirical formula.

RECOMMENDED BOOKS

TEXT BOOK	1. Strength of Materials : Sadhu Singh 2. Strength of Materials : R.K Rajput
REFERENCE	1. Strength of Materials: S.M.A. Kazimi 2. Strength of Material : R.K. Bansal 3. Mechanics of Materials : Popo v Nagarjan & Lu, Prentice Hall of India, N. Delhi 4. Mechanics of Solids : Prasad, V.S Galgotia Pub., New Delhi

METHODS OF TEACHING AND STUDENT LEARNING

The subject is delivered through lectures, on-line support, text book / course material reading and practical exercises. Some videos will be shown to demonstrate certain concepts and research areas will be discussed. Resource material is provided with the help of PDM Educational Directory Services (PEDS).

ASSESSMENT METHODOLOGIES

This subject will be evaluated for a total of 100 marks for theory and 50 marks for practical.
Theory:-

Assessment #	Type Of Assessment	Per Semester	Maximum Mark
1.	Class Test	4	5
2.	Sessional Test	2	15
3.	Group Discussion	4	5
4.	End Semester Exam	1	75

PDM UNIVERSITY
DEPARTMENT OF CIVIL ENGINEERING

MAPPING OF ASSESSMENT METHODS AGAINST LEARNING OUTCOMES

Theory:-

Assessments	1	2	3	4	5
Class Test	x		x		X
Quiz			x		X
Assignment	x			x	

MAPPING OF COURSE LEARNING OUTCOMES

Program Outcomes	a	b	c	d	e	f	g	H	i	j
Course Learning Outcomes	1	1,2	2,3,4	2,3,5	1,2,3	4,5	1,2	3,4		

EVALUATION

At the end of semester, Subject teacher will submit an evaluation report. The purpose of this report is to identify aspects that will be highlighted by students and faculty's feedback for the subject with respect to its strengths as well as those areas which could be improved. The review report contains the following:

- Approved refinement decisions due for implementation,
- Actions taken based on previous subject review,
- Problems encountered in the subject delivery,
- Suggested remedies / corrective measures, and
- Report discussed and analysed, actions taken as a result of this process and are communicated to the main stakeholders.

PDM UNIVERSITY
DEPARTMENT OF CIVIL ENGINEERING

Structural Analysis Lab

L	T	P
0	0	2

MODULE CODE	CIVL2102
CREDIT POINTS	1
FORMATIVE ASSESMENT MARKS	25
SUMMATIVE ASSESMENT MARKS	25
END SEMESTER EXAM DURATION	3 hrs
LAST REVISION DATE	

OBJECTIVES

1. To understand the indeterminate structures and methods of analysis.
2. Analysis of indeterminate beams and frames by slope deflection method
3. To calculate the deflection of trusses, beams, arches and frames experimentally.

LEARNING OUTCOMES

1. Ability to understand fundamental concepts and theorems for analysis of structures.
2. Ability to perform analysis of determinate structures.
3. Ability to perform analysis of indeterminate beams and frames using various conventional methods.
4. Able to analyze typical structures such as three hinged and two hinged arches.

LIST OF EXPERIMENTS

1. Verification of reciprocal theorem of deflection using a simply supported beam.
2. Verification of moment area theorem for slopes and deflections of the beam.
3. Deflections of a truss- horizontal deflections & vertical deflections of various joints of a pin- jointed truss
4. Elastic displacements (vertical & horizontal) of curved members.
5. Experimental and analytical study of 3 hinged arch and influence line for horizontal thrust.
6. Experimental and analytical study of behavior of struts with various end conditions
7. Experiment on a two- hinged arch for horizontal thrust & influence line for

Horizontal thrust
8. Experimental and analytical study of deflections for unsymmetrical bending of a Cantilever beam.
9. Experimental and analytical study of an elastically coupled beam.
10. To study the cable geometry and statics for different loading conditions.

METHODS OF TEACHING AND STUDENT LEARNING

The subject is delivered through lectures, on-line support, text book / course material reading and practical exercises. Some videos will be shown to demonstrate certain concepts and research areas will be discussed. Resource material is provided with the help of PDM Educational Directory Services (PEDS).

ASSESSMENT METHODOLOGIES

This subject will be evaluated for a total of 50 marks for practical.

Practical :-

Assessment #	Type Of Assessment	Per Semester	Maximum Mark
1	Internal Assessment	2	25
2	External Assessment	1	25

MAPPING OF COURSE LEARNING OUTCOMES

Program Outcomes	a	b	c	d	E	f	g	h	i	J	k
Course Learning Outcomes	2	3		2							

EVALUATION

At the end of semester, course faculty will submit an evaluation / review report. The purpose of this report is to identify aspects that will be highlighted by students and faculty's feedback for the course with respect to its strengths as well as those areas which could be improved. The review report contains the following areas:

- Problems encountered in the content delivery;
- Suggested remedies / corrective measures;
- Approved refinement decisions due for implementation;
- Actions taken based on previous course review; and
- Report discussed and analysed; actions taken as a result of this process and are communicated to the main stakeholders.

PDM UNIVERSITY
DEPARTMENT OF CIVIL ENGINEERING

Engineering Geology

L	T	P
3	0	0

MODULE CODE	CIVL2103
CREDIT POINTS	3
FORMATIVE ASSESMENT MARKS	25
SUMMATIVE ASSESMENT MARKS	75
END SEMESTER EXAM DURATION	3 hrs
LAST REVISION DATE	

INSTRUCTIONS

The Question paper will consist of seven questions distributed over three sections A, B and C. Section A comprises of very short answer type questions and is compulsory. Section B & C comprise of short answers type and long answers type questions. These sections will have internal choice.

OBJECTIVE

1. To give an introduction to basics of geology and geology of India.
2. To identify and classify rock using basic geologic classification systems.
3. To study the geological structure of earth and geological investigations.
4. To inspire the students to think clearly and critically the solution of the civil engineering problems in the context of geological knowledge

LEARNING OUTCOMES

1. Get exposure to various geological formations and processes involved such as weathering, erosion etc.
2. Understand the concepts of structural geology and photo geology
3. Get the knowledge of causes, effects and measurement of earthquakes and seismic zoning map of India.
4. Identify the appropriate sites for civil engineering projects such as Dams, Bridges, and Tunnels etc., based on geological factors.
5. Ability to interpret the geological investigations.

MODULE CONTENT

UNIT-I: General Geology

Branches and scope of geology, Earth, its position in the solar systems, surface features and internal structure, work of natural agencies like lakes, oceans, atmosphere, wind, streams, sea, glacier, Earth movements. Types of weathering, Importance of geology in Civil Engineering projects.

UNIT-II: Mineralogy and Petrology

Definition of crystal and a mineral, Classification of important rock forming minerals, simple description based on physical properties of minerals. Rocks of earth surface, classification of rocks. Mineral composition, Textures, structure and origin of Igneous, Sedimentary and Metamorphic rocks. Aims and principles of stratigraphy. Standard geological/ strati graphical time scale with its sub division and a short description based on engineering uses of formation of India.

UNIT-III: Structural geology

Strike and dip, out crops, volcanoes, overlaps, inliers and outliers, type's classification of folds, faults, joints, unconformities.

UNIT-IV: Earthquakes and landslides

Classification, causes and effects of earthquakes and landslides, seismic curve, seismographs, seismograms, accelograms, seismic problems of India, seismic zones of India, remedial measures to prevent damage for engineering structures.

UNIT-V: Geological investigation

Interpretation of geological maps, use of aerial maps in geological surveying, geophysical methods as applied to civil engineering for subsurface analysis (Electrical and Seismic methods), Ground water investigation, zones of ground water, water table and perched water table, water bearing properties of rocks, selection of a site for well sinking and ground water investigations

UNIT-VI: Geology of dams and reservoirs

Types of dams, requirements of dam site, preliminary and detailed geological investigations for a dam site, important international and Indian examples of failures of dams and their causes, factors affecting the seepage and leakage of the reservoirs and the remedial measures, silting of reservoirs.

RECOMMENDED BOOKS

TEXT BOOK	1. Engineering Geology : Parbin Singh 2. Engineering Geology : P.K. Mukherjee
REFERENCE	1. Structural Geology : H.P. Billings

METHODS OF TEACHING AND STUDENT LEARNING

The subject is delivered through lectures, on-line support, text book / course material reading and practical exercises. Some videos will be shown to demonstrate certain concepts and research areas will be discussed. Resource material is provided with the help of PDM Educational Directory Services (PEDS).

ASSESSMENT METHODOLOGIES

This subject will be evaluated for a total of 100 marks for theory.

Theory:-

Assessment #	Type Of Assessment	Per Semester	Maximum Mark
1.	Class Test	4	5
2.	Sessional Test	2	15
3.	Group Discussion	4	5
4.	End Semester Exam	1	75

MAPPING OF ASSESSMENT METHODS AGAINST LEARNING OUTCOMES

Theory:-

Assessments	1	2	3	4	5
Class Test	x		x		X
Quiz			x		X
Assignment	x			x	

MAPPING OF COURSE LEARNING OUTCOMES

Program Outcomes	a	b	c	d	e	f	g	h	i	J
Course Learning Outcomes	1	1,2	2,3,4	2,3,5	1,2,3	4,5	1,2	3,4		

EVALUATION

At the end of semester, Subject teacher will submit an evaluation report. The purpose of this report is to identify aspects that will be highlighted by students and faculty's feedback for the subject with respect to its strengths as well as those areas which could be improved. The review report contains the following:

- Approved refinement decisions due for implementation,
- Actions taken based on previous subject review,
- Problems encountered in the subject delivery,
- Suggested remedies / corrective measures, and
- Report discussed and analysed, actions taken as a result of this process and are communicated to the main stakeholders.

PDM UNIVERSITY
DEPARTMENT OF CIVIL ENGINEERING

Engineering Hydrology

L	T	P
3	0	0

MODULE CODE	CIVL2104
CREDIT POINTS	3
FORMATIVE ASSESMENT MARKS	25
SUMMATIVE ASSESMENT MARKS	75
END SEMESTER EXAM DURATION	3 hrs
LAST REVISION DATE	

INSTRUCTIONS

The Question paper will consist of seven questions distributed over three sections A, B and C. Section A comprises of very short answer type questions and is compulsory. Section B & C comprise of short answers type and long answers type questions. These sections will have internal choice.

OBJECTIVE

1. To make students familiar about hydrological cycle.
2. To measure evaporation, evapo- transpiration, stream flow and runoff.
3. To determine discharge with respect to time.
4. To understand the occurrence of ground water.

LEARNING OUTCOMES

1. Able to understand the hydrological cycle and its necessary condition.
2. Able to determine the quantity of rainfall and its type
3. Able to develop hydrograph and its uses in field.
4. Able to understand the occurrence and determination of ground water.

MODULE CONTENT

UNIT-I: Introduction

Importance of Hydrology in relation to water resources development, Hydrology cycle, climatic and meteorological aspects, Water budget equation, Applications of hydrology in engineering.

UNIT-II: Precipitation and its Abstractions

Types, measurements, rain gauges, errors in measurements, check for consistency, missing data, Areal mean, mass curves, intensity duration frequency curves, depth area duration curves, and rainfall distribution in India.
Evaporation, measurements, empirical equation and analytical methods for evaporation estimation, Reservoir evaporation and methods for its reduction, Transpiration, Evapo-transpiration, Interception, Depression storage, Infiltration process and measurements, Infiltration capacities, Horton's equation, Infiltration indices.

UNIT-III: Stream flow measurement

Measurement of stage and velocity, Area velocity method, chemical and Tracer method, Electromagnetic and ultrasound method, indirect methods, Stage discharge relationships.

UNIT-IV: Runoff

Runoff characteristic of streams, Rainfall-runoff correlation, Empirical equations, flow duration curve, flow mass curve, calculation of storage / maintainable demand, Sequent peak algorithm, Droughts, causes and management.

UNIT-V: Hydrographs

Hydrograph and its components, Factors affecting flood hydrograph, components of hydrograph, basic flow separation techniques, effective rainfall, Unit hydrographs, concept of time invariance and linear response, Applications and derivation of unit hydrographs, complex storm, Unit hydrograph of different durations, methods of superposition and S-curve, Synthetic unit hydrograph, dimensionless unit hydrograph, Instantaneous unit hydrograph, Uses and limitations of unit hydrographs. Computations of peak floods by empirical formulae, by rational method and by unit hydrograph method, CWC recommendations for design flood values, flood estimation by Gumbel's Method, flood routing principles, reservoir routing, Floods in major Indian rivers, Flood damage, causes and remedial measures

UNIT-VI: Ground Water Hydraulics

Sources of ground water, flow through porous media, Energy and momentum concepts applied to groundwater flow, groundwater storage and derivation of the mass balance equation, potential and stream functions, Characteristics of wells and their yield, recharging ground water.

RECOMMENDED BOOKS

TEXT BOOK	1. K. Subramanya , "Engineering hydrology" , Tata Mc Graw Hill.
REFERENCE	1. Elementary Engineering Hydrology, Deodhar, Pearson Education 2. 2. S.K. Garg, "Hydrology Engineering", Khanna Publishers.and Water Resources

METHODS OF TEACHING AND STUDENT LEARNING

The subject is delivered through lectures, on-line support, text book / course material reading and practical exercises. Some videos will be shown to demonstrate certain concepts and research areas will be discussed. Resource material is provided with the help of PDM Educational Directory Services (PEDS).

ASSESSMENT METHODOLOGIES

This subject will be evaluated for a total of 100 marks for theory

Theory:-

Assessment #	Type Of Assessment	Per Semester	Maximum Mark
1.	Class Test	4	5
2.	Sessional Test	2	15
3.	Group Discussion	4	5
4.	End Semester Exam	1	75

PDM UNIVERSITY
DEPARTMENT OF CIVIL ENGINEERING

MAPPING OF ASSESSMENT METHODS AGAINST LEARNING OUTCOMES

Theory:-

Assessments	1	2	3	4	5
Class Test	x		x		X
Quiz			x		X
Assignment	x			x	

MAPPING OF COURSE LEARNING OUTCOMES

Program Outcomes	a	b	c	d	e	f	g	h	i	j
Course Learning Outcomes	1	1,2	2,3,4	2,3,5	1,2,3	4,5	1,2	3,4		

EVALUATION

At the end of semester, Subject teacher will submit an evaluation report. The purpose of this report is to identify aspects that will be highlighted by students and faculty's feedback for the subject with respect to its strengths as well as those areas which could be improved. The review report contains the following:

- Approved refinement decisions due for implementation,
- Actions taken based on previous subject review,
- Problems encountered in the subject delivery,
- Suggested remedies / corrective measures, and
- Report discussed and analysed, actions taken as a result of this process and are communicated to the main stakeholders.

PDM UNIVERSITY
DEPARTMENT OF CIVIL ENGINEERING

Construction and Concrete Technology

L	T	P
3	0	0

MODULE CODE	CIVL2105
CREDIT POINTS	3
FORMATIVE ASSESMENT MARKS	25
SUMMATIVE ASSESMENT MARKS	75
END SEMESTER EXAM DURATION	3 hrs
LAST REVISION DATE	

INSTRUCTION

The Question paper will consist of seven questions distributed over three sections A, B and C. Section A comprises of very short answer type questions and is compulsory. Section B & C comprise of short answers type and long answers type questions. These sections will have internal choice.

OBJECTIVE

1. To understand the properties of ingredients of concrete.
2. To study the behaviour of concrete at its fresh and hardened state.
3. To study about the concrete design mix.
4. To know about the procedures in concreting.
5. To understand special concrete and their use.

LEARNING OUTCOMES

On completion of the course, the students will be able to:

1. Test all the concrete materials as per IS code
2. Design the concrete mix using ACI and IS code methods
3. Determine the properties of fresh and hardened concrete
4. Design special concretes and their specific applications
5. Ensure quality control while testing/ sampling and acceptance criteria

MODULE CONTENT

UNIT-I: Concrete Technology Concrete making materials: cements, aggregates, water, admixtures, properties of fresh and hardened concrete, variability of concrete strength, extreme weather concreting, Testing of concrete mixes.
UNIT-II: *Mix Design* Principles of concrete mix design, basic considerations, Factors in the choice of mix design, outline of mix design procedure, ACI mix design practice, USBR method, British mix design method IS guidelines.
UNIT-III: Heavy Construction Construction of large structures, dams, bridges, multi-storeyed buildings etc.
UNIT-IV: Construction Equipment Introduction to heavy construction equipment, crushers, hot mix, plants, dozers etc.
UNIT-V: *Presstressing* Introduction to Presstressing various method, principle and use in engineering structure, Non-destructive testing methods- Ultrasonic pulse velocity, rebound hammer; Repair and Rehabilitation of concrete; fibre reinforced concrete, polymer modified concrete.
UNIT-VI: CPM Project Management, Bar Chart and Milestone Charts, Elements of network, Development of network, Network analysis

RECOMMENDED BOOKS

TEXT BOOK	1. Concrete Technology by M.S. Shetty 2. Properties of concrete by A.M. Neville
REFERENCE	1. Handbook of mix design - BIS 2. PERT & CPM by B.C. Punmia

METHODS OF TEACHING AND STUDENT LEARNING

The subject is delivered through lectures, on-line support, text book / course material reading and practical exercises. Some videos will be shown to demonstrate certain concepts and research areas will be discussed. Resource material is provided with the help of PDM Educational Directory Services (PEDS).

ASSESSMENT METHODOLOGIES

This subject will be evaluated for a total of 100 marks for theory and 50 marks for practical.

Theory:-

Assessment #	Type Of Assessment	Per Semester	Maximum Mark
1.	Class Test	4	5
2.	Sessional Test	2	15
3.	Group Discussion	4	5
4.	End Semester Exam	1	75

MAPPING OF ASSESSMENT METHODS AGAINST LEARNING OUTCOMES

Theory:-

Assessments	1	2	3	4	5
Class Test	x		x		x
Quiz			x		x

Assignment	x			x	

MAPPING OF COURSE LEARNING OUTCOMES

Program Outcomes	a	b	c	d	e	f	g	h	i	j
Course Learning Outcomes	1	1,2	2,3,4	2,3,5	1,2,3	4,5	1,2	3,4		

EVALUATION

At the end of semester, Subject teacher will submit an evaluation report. The purpose of this report is to identify aspects that will be highlighted by students and faculty's feedback for the subject with respect to its strengths as well as those areas which could be improved. The review report contains the following:

- Approved refinement decisions due for implementation,
- Actions taken based on previous subject review,
- Problems encountered in the subject delivery,
- Suggested remedies / corrective measures, and
- Report discussed and analysed, actions taken as a result of this process and are communicated to the main stakeholders.

PDM UNIVERSITY
DEPARTMENT OF CIVIL ENGINEERING

Concrete Technology Lab

L	T	P
0	0	2

MODULE CODE	CIVL2106
CREDIT POINTS	1
FORMATIVE ASSESSMENT MARKS	25
SUMMATIVE ASSESSMENT MARKS	25
END SEMESTER EXAM DURATION	3 hrs
LAST REVISION DATE	

OBJECTIVES

The aim of this subject is to develop understanding on different aspects related to perform various tests to be used at construction site as mentioned below:

1. To know the concept and procedure of different type of test conducted on cement.
2. To know the concept and procedure of different type of test conducted on aggregate.
3. To know the concept and procedure of different type of test conducted on finished concrete.
4. To understand the procedure of designing the concrete mix of given specification of its ingredients along with appropriate water cement ratio and admixtures.
5. To know how to handle and take of the different instrument used in concrete lab.

LEARNING OUTCOMES

1. Able to perform different tests conducted on cement.
2. Able to perform different tests conducted on aggregate.
3. Able to perform different tests conducted on concrete at site.
4. Able to perform non-destructive test on concrete.
5. Design the concrete mix as per the site conditions and specification of materials available there.

LIST OF EXPERIMENTS

1.	Determine compressive Strength of Cement Cube (70.6 mm cubes)
2.	Determine standard consistency of cement.
3.	Determine Initial and Final setting time of cement
4.	Determine soundness of cement.
5.	Determination of Constituents of Hardened Mortar.
6.	Determination specific gravity and absorption of coarse aggregate.
7.	Determine fineness modulus of aggregate.
8.	To find workability of concrete by Slump Cone Test.
9.	Determine workability by Compaction Factor Test.
10.	Compressive strength of Concrete cube (15 cm cubes)
11.	Compressive strength of Concrete cylinder.
12.	Determine flexural strength of beam.
13.	Non destructive testing (Rebound Hammer)
14.	Mix Design by IS Code Method.

METHODS OF TEACHING AND STUDENT LEARNING

The subject is delivered through lectures, on-line support, text book / course material reading and practical exercises. Some videos will be shown to demonstrate certain concepts and research areas will be discussed. Resource material is provided with the help of PDM Educational Directory Services (PEDS).

ASSESSMENT METHODOLOGIES

This subject will be evaluated for a total of 50marks for practical.

Practical

Assessment #	Type Of Assessment	Per Semester	Maximum Mark
1	Internal Assessment	2	25
2	External Assessment	1	25

MAPPING OF COURSE LEARNING OUTCOMES

Program Outcomes	a	b	c	d	e	f	g	h	i	j	K
Course Learning Outcomes	1,2,3	1,2, 2	1,2,3, 4	4	4,5						

EVALUATION

At the end of semester, Subject teacher will submit an evaluation report. The purpose of this report is to identify aspects that will be highlighted by students and faculty's feedback for the subject with respect to its strengths as well as those areas which could be improved. The review report contains the following:

- Approved refinement decisions due for implementation,
- Actions taken based on previous subject review,
- Problems encountered in the subject delivery,
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- Report discussed and analysed, actions taken as a result of this process and are communicated to the main stakeholders.

PDM UNIVERSITY
DEPARTMENT OF CIVIL ENGINEERING

Engineering Graphics / Autocad

L	T	P
0	0	4

MODULE CODE	CIVL2107
CREDIT POINTS	2
FORMATIVE ASSESSMENT MARKS	50
SUMMATIVE ASSESSMENT MARKS	50
END SEMESTER EXAM DURATION	3 hrs
LAST REVISION DATE	

AutoCAD Total Duration : 40 **hrs**	

Session 1	• About CADD centre
	• Introduction to Engineering Drawings
	  ○ Projections (First &Third angle)
	  ○ Views (Orthographic,Isometric & Perspective)
	• Introduction to AutoCAD
	  ○ History
	  ○ Exploring GUI
	  ○ Workspaces
	• Co-ordinate systems

Session 2 & 3	• Orthographic Views
	  ○ Drawing settings - Units,Limits
	  ○ Drawing Tools: Line, Circle, Arc, Ellipse, Donut, Polygon, Rectangle
	  ○ Modify Tools: Erase, Oops,Undo, Redo, Explode, Move, Copy, Rotate, Mirror, Array, Align, Scale,Stretch, Lengthen, Trim, Extend, Break, Join,Chamfer, Fillet
	• File Management - New, Qnew, Open, Save, Save as, Close, Exit, Quit
	• **Mini Project 1 – OrthographicViews**

Session 4	• Drawing Tools: Multiline, Pline, Spline, Xline, Ray, Wipeout, Revison cloud • Modify Tools: Mlstyle,Mledit, Pedit, Splinedit • Grip Editing
Session 5	• Display Control: Zoom, Pan, Redraw, Regen, Clean Screen, Steering wheels • Object Properties: Color,Linetype, Ltscale, Lineweight, Properties, Matchprop

***AutoCAD Total Duration : 40* hrs**	

Session 6	• Layer Management
	  ○ Adding / Removing Layers
	  ○ Layer Status
	  ○ New Property Filter
	  ○ New Group Filter
	  ○ Layer Status Manager
	  ○ Plot Control

Session 7	• Object Selection Methods ○ Select, Qselect, Filter • Symbol & BOM CreationBlock, Base, Wblock, Insert
Session 8	• Annotation Tools: Test, Style, Mtext, Scaletext, Spell, Table, Tablestyle, Tabledit
Session 9	1. Hatching utilities - Hatch, Hatchedit,Gradient 2. Inquiry commands - Id, Dist,List, Radius, Angle, Area, Volume 3. Fill, Fillmode
Session 10	• Dimension - Linear, Aligned, Radius, Diameter, Center Mark, Angle, Arc length, Continuous, Baseline, Tolerance, Dimension Space, Dimension Break, Inspection, Jogged radius, Ordinate dimensions. • Leader, Qleader

METHODS OF TEACHING AND STUDENT LEARNING

The subject is delivered through lectures, on-line support, text book / course material reading and practical exercises. Some videos will be shown to demonstrate certain concepts and research areas will be discussed. Resource material is provided with the help of PDM Educational Directory Services (PEDS).

ASSESSMENT METHODOLOGIES

This subject will be evaluated for a total of 100 marks for practical.

Practical

Assessment #	Type Of Assessment	Per Semester	Maximum Mark
1	Internal Assessment	2	50
2	External Assessment	1	50

MAPPING OF COURSE LEARNING OUTCOMES

Program Outcomes	a	b	c	d	E	f	g	H	i	j	K
Course Learning Outcomes	2	3		2,5	4						

EVALUATION

At the end of semester, course faculty will submit an evaluation / review report. The purpose of this report is to identify aspects that will be highlighted by students and faculty's feedback for the course with respect to its strengths as well as those areas which could be improved. The review report contains the following areas:

- Problems encountered in the content delivery;
- Suggested remedies / corrective measures;
- Approved refinement decisions due for implementation;
- Actions taken based on previous course review; and
- Report discussed and analysed; actions taken as a result of this process and are communicated to the main stakeholders.

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Management and Professional leadership

L	T	P
3	0	0

MODULE CODE	MGMT0101
CREDIT POINTS	3
FORMATIVE ASSESMENT MARKS	25
SUMMATIVE ASSESMENT MARKS	75
END SEMESTER EXAM DURATION	3 hrs
LAST REVISION DATE	

INSTRUCTIONS

The Question paper will consist of seven questions distributed over three sections A, B and C. Section A comprises of very short answer type questions and is compulsory. Section B & C comprise of short answers type and long answers type questions. These sections will have internal choice.

OBJECTIVES

The aim of this subject is to teach students how to design, write, and analyse the financial data of a firm or a company. It will also enable students to learn the complete accounting process.

1. To provide knowledge and understanding of the basics of management.
2. To develop an understanding of leadership and its styles.
3. To make them understand the role of planning, organizing and decision making to lead the organization.
4. To identity value of group involvement and team building.
5. To make them understand the role of communication to lead the organization.
6. To provide an understanding of role of motivation to lead in the organization.

LEARNING OUTCOMES

Following this course student will be able to:

1. Develop an understanding of the process of management in the organizations and to apply that process for effective utilization of resources.
2. Develop an understanding of role of leadership in the organizations.
3. Acquaint them to apply leadership styles and theories as it relates to management practices.
4. Identify value of motivation, emotional intelligence and stability in resolving organizational problems.
5. Develop an understanding of communication and its role to the organization.

MODULE CONTENT

Unit 1: Management–introduction Nature and functions of management, principles of management, levels of management, management as an art, management as science and profession, management process, managerial skills and roles; Evolution of Management Thoughts; Managerial competencies.
Unit II:: Basic concepts of Leadership Leadership: Functions of leaders, styles of leadership , leadership theories- Trait theory, Behavioral Theory
Unit III: Planning, Organizing and Decision making Planning- process of planning, elements of planning; steps in Organizing , authority and responsibility , delegation, centralization vs. decentralization; decision making, rationality in decision making
Unit IV:: Team Development Work team , nature of work teams, types of team, stages of team development, role of leadership in team development
UNIT-V: Communication Communication: Communication process, importance of communication, communication channels, Roles and barriers to communication;
Unit VI: Motivation Motivation: Process and motivation models/approaches; relevance of motivation theories in Business.

RECOMMENDED BOOKS

TEXT BOOK	1. Fundamentals of Management: Robbins, S.P. and Decenzo, D.A Pearson Education Asia, New Delhi 2. Organizational Behaviour: F Luthan'sTata McGraw Hill, New Delhi
REFERE NCE	1. Organizational behaviour: S P Robbins Prentice Hall of India, New Delhi 2. Essentials of management: Chhabra T.N. , Sun India publications

METHODS OF TEACHING AND STUDENT LEARNING

The subject is delivered through lectures, on-line support, text book / course material reading and practical exercises. Some videos will be shown to demonstrate certain concepts and research areas will be discussed. Resource material is provided with the help of PDM Educational Directory Services (PEDS).

ASSESSMENT METHODOLOGIES

This subject will be evaluated for a total of 100 marks for Theory.

Assessment #	Type Of Assessment	Per Semester	Maximum Mark
1.	Class Test	4	05
2.	Sessional Test	2	20
3.	Group Discussion	4	05
4.	End Semester Exam	1	70

MAPPING OF ASSESSMENT METHODS AGAINST THE LEARNING OUTCOMES

Theory:-

Assessments	1	2	3	4	5	6
Class Test	x			x		
Quiz			x			x
Assignment	x	x		x		x

MAPPING OF COURSE LEARNING OUTCOMES

Program Outcomes	a	b	c	d	e	f	g	h	i	j	k

Course Learning Outcomes	1	4	2	3		1,3					

EVALUATION

At the end of semester, Subject teacher will submit an evaluation report. The purpose of this report is to identify aspects that will be highlighted by students and faculty's feedback for the subject with respect to its strengths as well as those areas which could be improved. The review report contains the following:

- Approved refinement decisions due for implementation,
- Actions taken based on previous subject review,
- Problems encountered in the subject delivery,
- Suggested remedies / corrective measures, and
- Report discussed and analysed, actions taken as a result of this process and are communicated to the main stakeholders.

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Aptitude – Part 1

L	T	P
2	0	0

MODULE CODE	VALU0119
CREDIT POINTS	2
FORMATIVE ASSESMENT MARKS	25
SUMMATIVE ASSESMENT MARKS	50
END SEMESTER EXAM DURATION	2 hrs
LAST REVISION DATE	

INSTRUCTIONS

All questions are compulsory. Each question may have multiple options and will cover all units.

OBJECTIVES

The aim of this subject is to develop understanding on different aspects related to analytical and business skills in Aptitude and to enhance skills as mentioned below:

1. To prepare students to develop basic understanding in Aptitude.
2. To acquire knowledge on various analytical tools.
3. To understand syntax and semantics of aptitude in business.

LEARNING OUTCOMES

1. Able to understand the basic fundamentals & concepts of Aptitude.
2. Exposure to various analytical tools used in business.
3. Ability to use different mathematical techniques.
4. Able to understand the importance of aptitude.

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MODULE CONTENTS

Unit I:- Fundamentals & Uses Of Arithmetic

Percentage, Ratio & Proportion**:** Percentage Meaning and Computations of Percentages, DefinitionofRatio, Continued Ratio, Inverse Ratio, DefinitionofProportion, Continued Proportion, Direct Proportion.

Profit And Loss **:** Terms and Formulae, Trade discount, Cash discount, Problems involving cost price, Selling Price, Trade discount and Cash Discount, Problems involving cost price, selling price, trade discount and cash discount.

Interest: Simple Interest, Compound Interest, Equated Monthly Instalments (EMI), Word Problems

Sequence and Series: AP, GP (simple word problems only).

Average: Definition, meaning and simple problems on average.

Unit II: Data Analysis

To understand different types of data format.

To acquire skills for analyzing different data format.

To understand scope and limitations of data uses in business.

Bar graph: Reading and interpretation of bar graph in vertical forms, reading scales, creating bar graph from given data, solving problems using information presented in bar graph.

Table: Creating table from given data, Reading and interpreting table, solving problems using information presented in table.

Unit III: Line graph

Line graph: Reading and interpreting line graph, solving problems using information presented in line graph.

Shares and Dividends: Concept of shares, stock exchange, Face value, Market value, Dividend, Equity shares, Preferential shares, Bonus share with examples.

Matrices and Determinants : Definition of Matrix ,Types of Matrix, Algebra of Matrix (Addition and Multiplication), Determinant, Adjoint of Matrix, Inverse of Matrix via Adjoint matrix, Solving simultaneous equations(Order3).

Unit IV: Assignment

1, Assignment 2, Project

RECOMMENDED BOOKS

TEXT BOOKS	1. R S Agarwal quantitative aptitude book 2. Abhijit Guha quantitative aptitude book
REFERENCE BOOKS	1. Aptitude books by Arihant publication

METHODS OF TEACHING AND STUDENT LEARNING

The subject is delivered through lectures, on-line support, text book / course material reading and practical exercises. Some videos will be shown to demonstrate certain concepts and research areas will be discussed. Resource material is provided with the help of PDM Educational Directory Services (PEDS).

ASSESSMENT METHODOLOGIES

This subject will be evaluated for a total of 75 marks for theory.
Theory:-

Assessment #	Type Of Assessment	Per Semester	Maximum Mark
1.	Class Test	1	10
2.	Sessional Test	2	15
3.	End Semester Written Exam	1	50

MAPPING OF ASSESSMENT METHODS AGAINST LEARNING OUTCOMES

Theory:-

Assessments	1	2	3	4	5
Class Test	x		x		X
Quiz			x		X
Assignment	x			x	

MAPPING OF COURSE LEARNING OUTCOMES

Program Outcomes	a	b	c	d	e	f	g	h	i	j
Course Learning Outcomes	1	1,2	2,3,4	2,3,5	1,2,3	4,5	1,2	3,4		

EVALUATION

At the end of semester, course faculty will submit an evaluation / review report. The purpose of this report is to identify aspects that will be highlighted by students and faculty's feedback for the course with respect to its strengths as well as those areas which could be improved. The review report contains the following areas:

- Problems encountered in the content delivery;
- Suggested remedies / corrective measures;
- Approved refinement decisions due for implementation;
- Actions taken based on previous course review; and
- Report discussed and analysed; actions taken as a result of this process and are communicated to the main stakeholders.

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Professional Communication – I

L	T	P
0	0	2

SUBJECT CODE	VALU0123
CREDIT POINTS	2
FORMATIVE ASSESMENT MARKS	25
SUMMATIVE ASSESMENT MARKS	50
END SEMESTER EXAM DURATION	3 hrs
LAST REVISION DATE	

INSTRUCTIONS : The question paper will consist of ten questions distributed over three sections A, B and C Section A comprise of one question carrying very short answer type questions and is compulsory, Section B comprise of two short answer type questions and Section C comprises of five long answer type questions These sections will also have internal choices of questions

OBJECTIVE

1. To learn the fundamentals of different structures of English grammar
2. To calculate the structures and patterns of English Language and to use them correctly in speaking
3. To learn about the creative literature writings
4. To improve speaking and writing
5. To inculcate professional skills of presenting and working
6. To understand different types of literatures and background with critical insights
7. To make students aware of the detailed exposition of English Language

LEARNING OUTCOMES

Following this course students will be able to :-

1. Identify the different structures and patterns of English Language
2. To make students a good Public Speaker
3. To make students aware about different literature of the World
4. To make students speak well in Professional English Speaking and writing highly professional in particular
5. Know the process of Communication and its ethics
6. To make students write in professional manner

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MODULE CONTENT

UNIT : I GENERAL COMMUNICATION SKILLS

- Introduction to Communication
- Nature of Communication
- One-way versus two way Communication
- Characteristics of Communication and its objects
- Various stages of communication process
    - Downward/upward and Horizontal Communication
- Presentation Skills
- Introduction to the Novel
- Reading Comprehension and Group Discussion
- Tense-Formation
- Short Stories
    - Joothan by Prem Chand
    - Raja Rao (Kanthapura)
    - DH Lawrance (Sons and Lovers)

UNIT : II PATTERN AND STRUCTURE OF ENGLISH GRAMMAR AND EFFECTIVE SPEAKING

- Articles
- Quantifiers
- Usage of different comma's in writing
- Bio-data and resume writing
- Speech (Formation and public speaking)
- The Gift of Magi
- The lament, by Anton Chekov
- The Barber's trade union by Mulak Raj Anand
- Bertolt Brecht (The Good Woman of Setzuan)

UNIT : III LINGUISTICS AND PARALINGUISTIC FEATURES OF DELIVERY OF SPEECH

- What is Linguistics
- Passive Voice
- Adverbs
- Phrasal Verbs
- Modals
- Conjunctions
- Notice
- Reading Comprehension
- AS Byatt (Virgin in the Garden)

- Caustave Flaubert Madame Bovery
- Alice Walker (Color Purple)

UNIT : IV LINGUISTIC PATTERNS OF LANGUAGE AND COMMUNICATIONS

- Article Writing
- The formation of words
- Formation of abstract Nouns from Concrete Nouns
- Components of communication and their implementation
- Formation of verbs from Noun

LITERARY WORKS

a. Joe Orton :- What the Butler Saw
b. Leo Tolstoy :-Anakerenine
c. Ivan Turgenev :- Fathers and Son

UNIT : V PROFESSIONAL SPEAKING SKILLS-I

- Professional Speaking (PUBLIC SPEAKING ART)
- Complaint and Job/Sales Letters
- Noun and the number countable/uncountable/collective/abstract and material
- Syntax (Infinitive/General and different structures of Grammar
- Past/Present and Future (Tense formation)
- Literary works
  - Tess of the d'urbervillers by Thomas hardy
  - The old man and the sea by Ernest Hemingway
  - Deliverane by Prem Chand
  - Jane Austen (Emma)

UNIT : VI PROFESSIONAL SPEAKING SKILLS -II

- Derrida's views upon language
- Description of Tools of Communication
- One word Substitute
- Sentence Structure
- Verb Patterns and their usage

LITERARY WORKS

a. GB Shaw :- Arms and the man
b. JM Synge :- Playboy of the western world
c. Jeanette winterson :- Oranges are not the only fruit
d. SomerestMaugham :- Razor's edge

Recommends Books

TEXT BOOK	Essential of Communication by BR Sharma
Reference	Derrida (Semiotics and Sign Structure)

MAPPING OF COURSE OBJECTIVES AGAINST STUDENTS LEARNING OUTCOMES

Program Outcomes	a	b	c	d	e
Mapping of Course Objectives with Students Learning Outcomes	1, 2, 5	1, 2	2, 3, 5	2, 3, 4, 5	6, 7

METHODS OF TEACHING AND STUDENT LEARNING

The subjects is delivered through lectures, on-line support, text book/course material reading and practical exercises Some videos will be shown to demonstrate certain concepts and research areas will be discussed Resources material is provided with the help of PDM Educational Directory Services (PEDS)

ASSESSMENT METHODOLOGIES

This subject will be evaluated for a total of 75 marks for theory

Assessment #	Type of Assessment	Per Semester	Maximum Mark
1	Class Text	4	05
2	Sessional Text	2	15
3	Group Discussion	4	05
4	End Semester Exam	1	50

EVALUATION

At the end of Semester Subject teacher will submit an evaluation report The purpose of this report is to identify aspects that will be highlighted by students and faculty's feedback for the subject with respect to its strengths as well as those areas which could be improved The review report contains the following

- Approved refinement decisions due for implementation
- Actions taken based on previous subject review
- Problems encountered in the subject delivery
- Report discussed and analyzed action taken as a result of this process and are communicated to the main stakeholders

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Academic Writing

L	T	P
0	0	2

MODULE CODE	ENGL0109
CREDIT POINTS	1
FORMATIVE ASSESSMENT MARKS	25
SUMMATIVE ASSESSMENT MARKS	25
END SEMESTER EXAM DURATION	
LAST REVISION DATE	

MODULE CONTENTS

UNIT I:- **Writing Skills**

(A) Modes/Styles of Writing: Descriptive Writing, Narrative Writing, Expository Writing and Argumentative Writing.

(B) Professional Writing: CV, Resume; Their Primary Focus, Special Features and Applications

UNIT II: PRESENTATION STRATEGIES & LISTENING SKILLS –

Reading and Understanding

- Close Reading
- Comprehension
- Summary Paraphrasing
- Analysis and Interpretation
- Translation (from Indian language to English and vice-versa) Literary/ Knowledge Texts

UNIT III: **Introducing Verb Forms**

Ordinary and Auxillary

- Be, have and do
- Action and State verbs
- Linking Verbs: be, appear, seem etc.
- Modals (functional and defective)

Non-Finite Verbs

- Verb+ Bare infinitive
- Verb + to-infinitive
- Gerund
- Verb+ to-infinitive or –ing

• Participles
UNIT IV: **Communication** • Tips for Spoken English • Conducting and Participating in Meetings • Interviewing People: Guidelines for the Interviewer, Guidelines for the Interviewee

METHODS OF TEACHING AND STUDENT LEARNING

The subject is delivered through lectures, on-line support, text book / course material reading and practical exercises. Some videos will be shown to demonstrate certain concepts and research areas will be discussed. Resource material is provided with the help of PDM Educational Directory Services (PEDS).

ASSESSMENT METHODOLOGIES:

This subject will be evaluated for a total of 50 marks for practical.

Practical:

Assessment #	Type Of Assessment	Per Semester	Maximum Mark
1	Internal Assessment	2	25
2	External Assessment	1	25

MAPPING OF COURSE LEARNING OUTCOMES

Program Outcomes	a	b	c	d	e	f	g	h	i	j	k
Course Learning Outcomes											

EVALUATION

At the end of semester, Subject teacher will submit an evaluation report. The purpose of this report is to identify aspects that will be highlighted by students and faculty's feedback for the subject with respect to its strengths as well as those areas which could be improved. The review report contains the following:

- Approved refinement decisions due for implementation,
- Actions taken based on previous subject review,
- Problems encountered in the subject delivery,
- Suggested remedies / corrective measures, and
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SEMESTER - III

YOGA

L	T	P
2	0	0

MODULE CODE	VALU0118
CREDIT POINTS	1
FORMATIVE ASSESMENT MARKS	25
SUMMATIVE ASSESMENT MARKS	25
END SEMESTER EXAM DURATION	1.5 hrs
LAST REVISION DATE	

INSTRUCTIONS: All questions are compulsory and each of the questions may have multiple options covering all units.

OBJECTIVES:

To develop understanding of moral values in different aspects of life for inculcating the skills as mentioned below:

1. To prepare students to develop basic understanding of Yoga.
2. To acquire knowledge on Yoga.
3. To understand the ethics, character building, leadership & goal setting.
4. To understand the success & personal growth.
5. To support the youth empowerment & health awareness.

LEARNING OUTCOMES:

1. Able to understand the Importance of Yoga in Life.
2. Able to understand principles, concepts, types, advantages and disadvantages of Yoga.
3. Ability to understand the life style management & self esteem.
4. Would behave morally in the society.

MODULE CONTENTS:

UNIT 1: INTRODUCTION OF YOGA

- Definition, Concept of Yoga
- Path of Yoga
- Jnana Yoga
- Bhakti Yoga
- Karma Yoga
- Raja Yoga

UNIT 2: PRINCIPLE OF YOGA

- Sthula Sharira
- Sukshma Sharira
- Karana Sharira

PANCH MAHABHUTA

- Akasha
- Vayu
- Agni
- Jal
- Prithvi

TANMATRAS (Five Elements)

- Sound (Shabda)
- Smell (Gandha)
- Taste (Rasa)
- Form (Rupa)
- Touch (Sparsha)

PANCHAKOSHA

- Annamya Kosha
- Pranamaya Kosha
- Manomaya Kosha
- Vignanamaya Kosha
- Anandamya Kosha

Panch Prana

- Prana
- Apana
- Samana
- Udana
- Vyana

SHAD CHAKRAS

- Mooldhara Chakra
- Svadisthan Chakra

- Manipur Chakra
- Anahat Chakra
- Vishudhi Chakra
- Ajna Chakra
- Sahastra Chakra

UNIT 3: YOGA SUTRA OF MAHARSHI PATANJALI

Yoga sutra deals with the general nature of yoga and its technique. It is meant really to answer the question 'What is Yoga?' since Samadhi (self realization) is the essential technique of yoga.

UNIT 4: PRACTISE OF YOGA

- Shat Kriya
- Pranayama
- Asana (15 to 20 different asanas with their benefits and limitation)

RECOMMENDED BOOKS:

TEXT BOOKS	3. PATANJALI YOGA SUTRA BY SRI SRI RAVI SHANKER JI 4. BHAGWAT GITA 5. HATHA YOGA PRADIPIKA

MAPPING OF COURSE LEARNING OUTCOMES

Program Outcomes	a	b	c	d	e	f	G	h	i	j	k
Course Learning Outcomes										1,2	3,4

METHODS OF TEACHING AND STUDENT LEARNING

The subject is delivered through lectures, on-line support, text book / course material reading and practical exercises. Some videos will be shown to demonstrate certain concepts, and research areas will be discussed. Resource material is provided with the help of PDM Educational Directory Services (PEDS).

ASSESSMENT METHODOLOGIES:

This subject will be evaluated for a total of 50 marks for theory.

Assessment #	Type Of Assessment	Per Semester	Maximum Mark
1.	Sessional Test / Quiz	2	10
2.	Attendance	1	5
3.	End Semester Written Exam	1	25
4.	End Semester Oral Exam	1	10

MAPPING OF ASSESSMENT METHODS AGAINST THE LEARNING OUTCOMES

Assessments	1	2	3	4
Quiz & Assignment	x	x	x	
End Semester Written Exam			x	x
End Semester Oral Exam	x	x		x

EVALUATION

At the end of semester, the module incharge will submit an evaluation / review report. The purpose of this report is to identify aspects that will be highlighted by students and faculty's feedback on the course with respect to its strengths as well as those areas which could be improved. The review report contains the following areas:

- Problems encountered in the content delivery;
- Suggested remedies / corrective measures;
- Approved refinement decisions due for implementation;
- Actions taken based on previous course review; and
- Report discussed and analysed; actions taken as a result of this process and are communicated to the main stakeholders.

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SEMESTER-III(Elective –I)

Earthquake Engineering

L	T	P
3	0	0

MODULE CODE	CIVL2208
CREDIT POINTS	3
FORMATIVE ASSESMENT MARKS	25
SUMMATIVE ASSESMENT MARKS	75
END SEMESTER EXAM DURATION	3 hrs
LAST REVISION DATE	

INSTRUCTIONS: The Question paper will consist of seven questions distributed over three sections A, B and C. Section A comprises of very short answer type questions and is compulsory. Section B & C comprise of short answer type and long answer type questions. These sections will have internal choice.

OBJECTIVE

1. To introduce the basic concepts of structural dynamic analyses with emphasis on earthquake engineering applications.
2. To make students understand and compute earthquake hazard and design response spectra.
3. To make students understand and apply building code earthquake requirements in design of structural systems.

LEARNING OUTCOMES

1. Able to evaluate seismic forces for various structures as per relevant Indian standards
2. Ability to design ductile detailing of structures for seismic resistance as per Indian Standards codes
3. Apply concepts of repair and rehabilitation of earthquake affected structures.

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MODULE CONTENT

UNIT-I:Introduction Introduction, Causes and Classification of Earthquakes, Surface Wave Magnitude, Body Wave Magnitude, Moment Magnitude, Characteristics of ground motion, local site effects, Impact of earthquake on buildings and infrastructure, Iso-seismal map, Development of seismic zoning map of India.
UNIT-II: Elements of Engineering Seismology General features of tectonic of seismic regions. Causes of earthquakes, Seismic waves, earthquake size (magnitude and intensity), Epicentre, Seismograph, Classification of earthquakes, Seismic zoning map of India, Static and Dynamic Loading, Fundamental period.
UNIT-III: Seismic Behaviour of Traditionally-Built Constructions of India Performance of building during earthquakes and Mode of failure (Out-of-plane failure, in-plane failure, Diaphragm failure, Connection failure, Non-structural components failure)
UNIT-IV: Construction Technique Special construction method, tips and precautions to be observed while planning, designing and construction of earthquake resistant building.
UNIT-V: *Introduction to IS codes* Introduction to IS: 4326, IS: 13828, IS: 1893(Part 1), 154326 and IS: 13920 (latest edition)
UNIT-VI: Strengthening and Retrofitting Measures Seismic Provision of Strengthening and Retrofitting Measures for Traditionally-Built Constructions, Brick and RCC Structures. Provision of reinforcement detailing in masonry and RC constructions

RECOMMENDED BOOKS

TEXT BOOK	1. Elements of Earthquake Engineering by Jai Krishana and AR Chandersekaran;Sarita Parkashan, Meerut. 2. Manual Published by Earthquake Engineering department, IIT Roorkee / IIT Kanpur 3. IS 13920, IS: 13827, IS: 13828, IS 1893, IS 4326 (latest edition) 4. Singh, Harbhajan " Earthquake Resistant Building Construction" Abhishek Publishers, Chandigarh

REFERENCE	1. Dynamics of Structures: Theory and Applications to Earthquake Engineering, AK Chopra, Prentice Hall 2. Dynamics of Structures, R.W. Clough and Joseph Penzien McGraw-Hill Education 3. Structural Dynamics by Mario & Paz, Springer. 4. Earthquake Resistant Design by David J. Dowrick, Wiley India Pvt Ltd 5. Elements of Earthquake Engg by Jai Krishna, A.R. Chandrasekaran, BrijeshChandra,South Asian Publishers.

METHODS OF TEACHING AND STUDENT LEARNING

The subject is delivered through lectures, on-line support, text book / course material reading and practical exercises. Some videos will be shown to demonstrate certain concepts and research areas will be discussed. Resource material is provided with the help of PDM Educational Directory Services (PEDS).

ASSESSMENT METHODOLOGIES:

This subject will be evaluated for a total of 100 marks for theory.

Theory:

Assessment #	Type Of Assessment	Per Semester	Maximum Mark
1.	Class Test	4	5
2.	Sessional Test	2	15
3.	Group Discussion	4	5
4.	End Semester Exam	1	75

EVALUATION

At the end of semester, Subject teacher will submit an evaluation report. The purpose of this report is to identify aspects that will be highlighted by students and faculty's feedback for the subject with respect to its strengths as well as those areas which could be improved. The review report contains the following:

- Approved refinement decisions due for implementation,
- Actions taken based on previous subject review,
- Problems encountered in the subject delivery,
- Suggested remedies / corrective measures, and
- Report discussed and analysed, actions taken as a result of this process and are communicated to the main stakeholders.

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Green Buildings

L	T	P
3	0	0

MODULE CODE	CIVL2209
CREDIT POINTS	3
FORMATIVE ASSESMENT MARKS	25
SUMMATIVE ASSESMENT MARKS	75
END SEMESTER EXAM DURATION	3 hrs
LAST REVISION DATE	

INSTRUCTIONS

The Question paper will consist of seven questions distributed over three sections A, B and C. Section A comprises of very short answer type questions and is compulsory. Section B & C comprise of short answer type and long answer type questions. These sections will have internal choice.

OBJECTIVE

1. To introduce the key concept, requirements and important issues of Designs Construction and Commissioning of green buildings.
2. To develop practical skills for planning and designing sustainable building projects.

MODULE CONTENT

UNIT – I : Green building concept History, Increased public focus on Sustainability and Energy Efficiency, Supportive Framework and general condition, Green Home Certifications, CO_2 Emission Trade, High Performance Building Characteristic, the LEED rating system, Rating system for Sustainable Building. An integrated view of green building- Lifecycle engineering, Barriers to green building growth.
UNIT – II : Green Building Requirements Principles of Energy, Heat Flow, Fuel Types, Air Flow, Moisture Flow, Condensation and Dew Point, Relative Humidity, Concept of Earth air Tunnel System for moderating air temperature. Design, construction, commissioning and monitoring for green building- Urban development and infrastructure, building shape and orientation, building envelope, building materials and furnishing, natural resources.
UNIT – III : Planning of Green From Start Traditional Design, Integrated Design, Site Selection , Site Development, House Design, Construction and Planning, Construction Waste, Remodeling Structural System- Types of Foundation, Foundation Selection, Materials required, Soil Gas, Tree Protection, Pest Control, Floors and Exterior walls, Roofs, Landscaping.
UNIT –IV : Sustainable building Procedure requirement, Blower door test, Thermography, Indoor Comfort, Air Quality, Noise Protection, Day light Performance and Non-Glaring, Emulation, Monitoring and Energy Management, Conscious handling of resources- Energy benchmark as target values for design, regenerative energy resources, primary energy demand for indoor climate conditioning, Energy demand for Lifecycle of a building, Water requirement, Case study.

RECOMMENDED BOOKS

TEXT BOOK	1. *The Green Building Revolution,* Yudelson J, Island Press, New York. 2. *Sustainable Construction - Green Building Design* Kibert C.J., DeliveryJohn Wiley and Sons, New York

REFERENCE	1. *Guide to Sustainability: A Design Primer*, Edward B., RIBA Publishing, U.K. 2. *Strategies for Sustainable Architecture*, Sassi P., Taylor and Francis, New York.

METHODS OF TEACHING AND STUDENT LEARNING

The subject is delivered through lectures, on-line support, text book / course material reading and practical exercises. Some videos will be shown to demonstrate certain concepts and research areas will be discussed. Resource material is provided with the help of PDM Educational Directory Services (PEDS)

ASSESSMENT METHODOLOGIES

This subject will be evaluated for a total of 100 marks for theory

Theory:-

Assessment #	Type Of Assessment	Per Semester	Maximum Mark
1.	Class Test	4	5
2.	Sessional Test	2	15
3.	Group Discussion	4	5
4.	End Semester Exam	1	75

MAPPING OF ASSESSMENT METHODS AGAINST LEARNING OUTCOMES

Theory:-

Assessments	**1**	**2**	**3**	**4**	**5**
Class Test	x		x		X
Quiz			x		X
Assignment	x			x	

MAPPING OF COURSE LEARNING OUTCOMES

Program Outcomes	a	b	c	d	e	f	g	h	i	j
Course	1	1,2	2,3,4	2,3,5	1,2,3	4,5	1,2	3,4		

Learning Outcomes										

EVALUATION

At the end of semester, Subject teacher will submit an evaluation report. The purpose of this report is to identify aspects that will be highlighted by students and faculty's feedback for the subject with respect to its strengths as well as those areas which could be improved. The review report contains the following:

- Approved refinement decisions due for implementation,
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- Problems encountered in the subject delivery
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PDM UNIVERSITY
DEPARTMENT OF CIVIL ENGINEERING

Environment Pollution And Disaster Control

L	T	P
3	0	0

MODULE CODE	CIVL2210
CREDIT POINTS	3
FORMATIVE ASSESMENT MARKS	25
SUMMATIVE ASSESMENT MARKS	75
END SEMESTER EXAM DURATION	3 hrs
LAST REVISION DATE	

INSTRUCTIONS

The Question paper will consist of seven questions distributed over three sections A, B and C. Section A comprises of very short answer type questions and is compulsory. Section B & C comprise of short answers type and long answers type questions. These sections will have internal choice.

OBJECTIVE

1. To introduce primary and secondary air pollutants, monitoring and standards of various pollutants in ambient air.
2. To describe indoor air pollution and noise measurement and occupational noise.
3. To explain handling and management of municipal hazardous and bio-medical waste.

LEARNING OUTCOMES

1. Students will understand key current environmental problems and will be able to identify and value the effect of the pollutants on the environment: atmosphere, water and soil.
2. Able to identify sampling and analysis techniques for air quality assessment
3. Ability to describe the plume behaviour for atmospheric stability conditions and Apply plume dispersion modelling and assess the concentrations
4. Be able to select the most appropriate technique to purify and/or control the emission of pollutants.
5. Ability to identify the composition of wastes and analyse the functional elements for solid waste management.
6. Able to understand the techniques and methods used in transformation, conservation, and recovery of materials from solid wastes and to identify and design waste containment systems.

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MODULE CONTENT

UNIT-I: Introduction Principles involved in the protection of public health sanitation of dwelling houses, principles of villages and town planning: land pollution and its control.
UNIT-II : Air pollution Air borne diseases and their control ,sources of pollution ,Water borne diseases, river pollution and control of water pollution, Greenhouse gases, Greenhouse effect, Global warming.
UNIT-III : Solid waste Solid Waste Collection and Transportation: Types of collection systems (Hauled- container system and Stationary container system), Collection routes and their Layout, Solid waste Transfer Stations. Landfills: Classification, Types and methods, site selection, site preparation. Composition, Characteristics.
UNIT-IV : Noise Pollution Standards of noise, Legislation in India Types of noise: Neighbourhood noise, Traffic noise, Occupational noise, Community noise, Health effects of noise. Noise measuring equipment's such as Sound Level Meter. Control of Noise pollution in industrial, residential and silent zone.
UNIT-V:Sample collection and Disaster control Sampling devices, Environmental management system standards, Introduction to disaster Control role of engineer, various disaster by hydrological, atmospheric, wind and mining, their mitigation.
UNIT-VI : Theoretical concepts &structural behaviour Seismic response of foundation &soil behaviour, failure – deformation due to disaster. Hazard resistant construction –symmetry eccentric loading, framed structure, soft floors, simple configurations, Building codes & other recommended practices.

RECOMMENDED BOOKS

TEXT BOOK	1. Bhatia H.S. Environmental pollution & Control-Galgotia 2. Environment Management in India by R.K. Sapru.
REFERENCE	1. Environmental Quality Management by Bindu N. Lohani. 2. Studies in Environment and Development by R.B. Singh

METHODS OF TEACHING AND STUDENT LEARNING

The subject is delivered through lectures, on-line support, text book / course material reading and practical exercises. Some videos will be shown to demonstrate certain concepts and research areas will be discussed. Resource material is provided with the help of PDM Educational Directory Services (PEDS).

ASSESSMENT METHODOLOGIES

This subject will be evaluated for a total of 100 marks for theory

Theory:-

Assessment #	Type Of Assessment	Per Semester	Maximum Mark
1.	Class Test	4	5
2.	Sessional Test	2	15
3.	Group Discussion	4	5
4.	End Semester Exam	1	75

MAPPING OF ASSESSMENT METHODS AGAINST LEARNING OUTCOMES

Theory:-

Assessments	1	2	3	4	5
Class Test	x		x		X
Quiz			x		X
Assignment	x			x	

MAPPING OF COURSE LEARNING OUTCOMES

Program Outcomes	A	b	c	d	e	f	g	H	i	j
Course Learning Outcomes	1	1,2	2,3,4	2,3,5	1,2,3	4,5	1,2	3,4		

EVALUATION

At the end of semester, Subject teacher will submit an evaluation report. The purpose of this report is to identify aspects that will be highlighted by students and faculty's feedback for the subject with respect to its strengths as well as those areas which could be improved. The review report contains the following:

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DEPARTMENT OF CIVIL ENGINEERING

SEMESTER IV

MODULE CODE	CATEGORY	SUB - CATEGORY	MODULE	L	T	P	C	Internal Marks	External Marks	Total
CIVL2111	E	PC	STRUCTURE ANALYSIS- II	3	1	0	3.5	**50**	**100**	**150**
CIVL2112	E	PC	SURVEYING	3	1	0	3.5	**50**	**100**	**150**
CIVL2113	E	PC	SURVEYING– LAB	0	0	2	1	**25**	**25**	**50**
CIVL2114	E	PC	DESIGN OF STEEL STRUCTURES	3	1	0	3.5	**50**	**100**	**150**
CIVL2115	E	PC	REVIT ARCHITECTURE	0	0	4	2	**50**	**50**	**100**
CIVL2116	E	PC	SOIL MECHANICS	3	1	0	3.5	**50**	**100**	**150**
CIVL2117	E	PC	SOIL MECHANICS LAB	0	0	2	1	**25**	**25**	**50**
CIVL2118	E	PC	FLUID MECHANICS- I	3	0	0	3	**25**	**75**	**100**
CIVL2119	E	PC	FLUID MECHANICS LAB	0	0	2	1	**25**	**25**	**50**
	E	PE	ELECTIVE– II*	3	0	0	3	**25**	**75**	**100**
	E	PE	ELECTIVE– III**	3	0	0	3	**25**	**75**	**100**
TOTAL				21	4	10	28	**400**	**750**	**1150**

L = Lecture
T = Tutorial
P = Practical
C = Credit Point

ELECTIVES	
MODULE CODE	ELECTIVE - II*
CIVL2220	BUILDING AND TOWN PLANNING
CIVL2221	ENVIRONMENTAL ENGINEERING
MODULE CODE	ELECTIVE - III**
CIVL2222	BRIDGE ENGINEERING
CIVL2223	NOISE POLLUTION AND ITS CONTROL

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DEPARTMENT OF CIVIL ENGINEERING

Structural Analysis - II

L	T	P
3	1	0

MODULE CODE	CIVL2111
CREDIT POINTS	3.5
FORMATIVE ASSESMENT MARKS	50
SUMMATIVE ASSESMENT MARKS	100
END SEMESTER EXAM DURATION	3 hrs
LAST REVISION DATE	

INSTRUCTIONS

The Question paper will consist of seven questions distributed over three sections A, B and C. Section A comprises of very short answer type questions and is compulsory. Section B & C comprise of short answers type and long answers type questions. These sections will have internal choice.

OBJECTIVES

1. To achieve knowledge and understanding of stress developed and influence lines for indeterminate structures and solve wide range of problems in science and engineering.
2. To get familiar with concepts of deflection of beams and develop ability to solve simple problems.
3. To understand behaviour of arches and their method of analysis.
4. To learn basic concepts of analysis of cable stayed bridges and its application in realistic decision making.
5. To acquire knowledge of stresses developed in thin cylinders, spheres and determinate trusses for problem solving.

LEARNING OUTCOMES

After learning the course the students should be able to:-

1. Apply equilibrium and compatibility equations to determine response of statically determinate and indeterminate structures.
2. Determine displacements and internal forces of statically indeterminate structures by classical, iterative and matrix methods.
3. Determine internal forces and reactions in determinate and indeterminate structures subjected to moving loads.

MODULE CONTENT

UNIT-I Indeterminate Structures Indeterminacy, Static and Kinematic Indeterminacies, Castigliano's Theorems, Introduction to rolling loads and influence lines,Determinationof shear force, bending moment at section and absolute shear force and bending moment due to single point load, uniformly distributed load, several point load. Influence Lines: Construction of Influence lines for reaction, shear forces and bending moment for simply supported, over hauling and compound beams, influence lines for girders with floor beams, Influence linesfor forces in membersof frames.
UNIT-II: Arches Introduction, Analysis ofthree hinged: horizontal thrust, shear force, bendingmoment, radial shear, and normal thrust. Influence lines for horizontal thrust, shear force and bending moment for three hinged.
UNIT-III: Cables and suspension Bridges Introduction, shape of a loaded cable, cable carrying point load sand UDL, cables with ends at different level, cable subjected to temperature stresses, suspension bridge with two hinged and three hinged stiffening girders, influence lines
UNIT-IV: Deflection of Beams Moment area theorem, conjugate beam method, unit load method and strain energy method. Maxwell's reciprocal theorem. Analysis of continuous beams & portal frames, Portal frames with inclined members
UNIT-V: Thin Cylinders and Spheres Introduction, stresses and strains in thin cylinders and spherical shell, volumetric change, wire wound thin cylinders, thin vessels subjected to internal pressure
UNIT-VI: Analysis of determinate Trusses Introduction, determination of forces in memberof trusses by method of joints, method of sections *Unsymmetrical Bending:* Introduction to the unsymmetrical bending beams of uniform strength, variation of shear stress across depth of various beam sections

RECOMMENDED BOOKS

TEXT BOOK	1. "Basic Structural Analysis": C S Reddy, Tata McGraw Hill. 2. "Theory & Analysis of Structures": O P Jain and B.K Jain, Vol.I & II Nem Chand.
REFERENCE	1. Analysis of Structures " : Vazirani & Ratwani et al Khanna Publishers 2. Intermediate Structural Analysis : C.K.Wang 3. Advanced Structural Analysis, A.K. Jain, Nem Chand & Bros., Roorkee. 4. Indeterminate Structures, R.L. Jindal, S. Chand & Co., New Delhi. 5. Theory of Structures by Ramamurtham.

METHODS OF TEACHING AND STUDENT LEARNING

The subject is delivered through lectures, on-line support, text book / course material reading and practical exercises. Some videos will be shown to demonstrate certain concepts and research areas will be discussed. Resource material is provided with the help of PDM Educational Directory Services (PEDS).

ASSESSMENT METHODOLOGIES

This subject will be evaluated for a total of 150 marks for theory.

Theory:-

Assessment #	Type Of Assessment	Per Semester	Maximum Mark
1.	Class Test	4	10
2.	Sessional Test	2	30
3.	Group Discussion	4	10
4.	End Semester Exam	1	100

MAPPING OF ASSESSMENT METHODS AGAINST LEARNING OUTCOMES

Theory:-

Assessments	1	2	3
Class Test	x		
Quiz		x	X
Assignment	x		

MAPPING OF COURSE LEARNING OUTCOMES

Program Outcomes	a	b	c	d	e	f	g	h	i	j
Course Learning Outcomes	1	1,2	2,3,4	2,3,5	1,2,3	4,5	1,2	3,4		

EVALUATION

At the end of semester, Subject teacher will submit an evaluation report. The purpose of this report is to identify aspects that will be highlighted by students and faculty's feedback for the subject with respect to its strengths as well as those areas which could be improved. The review report contains the following:

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PDM UNIVERSITY
DEPARTMENT OF CIVIL ENGINEERING

Surveying

L	T	P
3	1	0

MODULE CODE	**CIVL2112**
CREDIT POINTS	3.5
FORMATIVE ASSESMENT MARKS	50
SUMMATIVE ASSESMENT MARKS	100
END SEMESTER EXAM DURATION	3 hrs
LAST REVISION DATE	

INSTRUCTIONS

The Question paper will consist of seven questions distributed over three sections A, B and C. Section A comprises of very short answer type questions and is compulsory. Section B & C comprise of short answers type and long answers type questions. These sections will have internal choice.

OBJECTIVES

1. To achieve knowledge and understanding on fundamentals of surveying.
2. To get familiar with concepts of linear measurement and angular measurement and develop ability to solve simple problems.
3. To understand levelling and its applications in engineering problems
4. To learn basic concepts of plane table surveying and tachometric surveying.
5. To acquire knowledge of different types of errors encountered in surveying and assess their effectiveness in problem solving.

LEARNING OUTCOMES

1. Solve mathematical problems using algebraic and trigonometric functions.
2. Design projects using visualization and current industry methods.
3. Demonstrate fundamental knowledge of the systems and processes used to construct the built environment.
4. Perform basic land surveying instruments and perform related calculations.
5. Perform the basic concepts of highway design and subdivision design.
6. Practice professional and ethical responsibilities of the profession.

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MODULE CONTENT

UNIT-I: Linear Measurement

Introduction, Principles of surveying, use and adjustment of various instruments employed in chain survey, chaining on sloping grounds, Offsets and error in offsets, Obstructions in chaining, chaining angles, Errors and sources of error, Tape correction, Introduction to advance linear measuring instruments.

UNIT-II: Compass Survey

Use and adjustment of prismatic and surveyor's compass, Methods of surveying with a compass, Magnetic declination, local attraction, Errors in prismatic survey, plotting of compass survey, distribution of closing error.

UNIT-III: Levelling

Definition and working principles of a levelling instrument and its various, Use and adjustment of dumpy and tilting levels, Establishment of Bench Marks by levelling, Longitudinal levelling, Cross section levelling, fly levelling and reciprocal levelling, Methods of booking and reduction of levels. Errors in levelling, Curvature and refraction correction.

UNIT-IV: Theodolite Survey

Study of theodolite, Temporary and permanent adjustments, Measurement of horizontal angles, methods of repetition and reiteration, Measurement of vertical angles, advanced electronic and laser theodolites.

UNIT-V: Plane Table Survey

Instruments employed in plane table survey, Advantages and disadvantages of plane tabling, Use and adjustment of these instruments including simple alidade. Working operations like fixing, levelling, centering and orientation, Methods of orientation, various methods of plane table survey. Three point and two point problems. Errors in plane table survey.

UNIT-VI: Contour and curves

Definition of contours, contour interval, characteristics of contours, Direct and indirect methods of contouring, uses of contours, Estimation of volumes of the earthwork by means of contour lines and section.

Types of curves, Elements of a curve, Simple curves, different methods of setting out, Introduction to compound, reverse, transition and vertical curves.

RECOMMENDED BOOKS

TEXT BOOK	1. Plane Surveying, A.M. Chandra., New Age International Publications 2. Surveying, Punmia B.C., Jain A.K. and Jain A.K., Volume I and II, Laxmi Publications (P) Ltd.
REFERENCE	1. Surveying Vol. I and II K.R. Arora, Standard Book House, New Delhi 2. Surveying Volume I, Duggal, McGraw Hill education Pvt. Ltd.

METHODS OF TEACHING AND STUDENT LEARNING

The subject is delivered through lectures, on-line support, text book / course material reading and practical exercises. Some videos will be shown to demonstrate certain concepts and research areas will be discussed. Resource material is provided with the help of PDM Educational Directory Services (PEDS).

ASSESSMENT METHODOLOGIES

This subject will be evaluated for a total of 150 marks for theory. And 50 Marks for practical

Theory:-

Assessment #	Type Of Assessment	Per Semester	Maximum Mark
1.	Class Test	4	10
2.	Sessional Test	2	30
3.	Group Discussion	4	10
4.	End Semester Exam	1	100

MAPPING OF ASSESSMENT METHODS AGAINST LEARNING OUTCOMES

Theory:-

Assessments	1	2	3	4	5
Class Test	x				X
Quiz		x	x		X
Assignment	x			x	

MAPPING OF COURSE LEARNING OUTCOMES

Program Outcomes	a	b	c	d	e	f	g	H	i	j
Course Learning Outcomes	1	1,2	2,3,4	2,3,5	1,2,3	4,5	1,2	3,4		

EVALUATION

At the end of semester, Subject teacher will submit an evaluation report. The purpose of this report is to identify aspects that will be highlighted by students and faculty's feedback for the subject with respect to its strengths as well as those areas which could be improved. The review report contains the following:

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PDM UNIVERSITY
DEPARTMENT OF CIVIL ENGINEERING

Surveying Lab

L	T	P
0	0	2

MODULE CODE	CIVL2113
CREDIT POINTS	1
FORMATIVE ASSESMENT MARKS	25
SUMMATIVE ASSESMENT MARKS	25
END SEMESTER EXAM DURATION	3 hrs
LAST REVISION DATE	

OBJECTIVES

To get familiar with linear measurement, angular measurement, levelling and plane table survey of the topography.

LIST OF EXPERIMENTS

1. Linear measurement using tape, chain.
2. Chain survey – Determination of area by perpendicular offset.
3. Compass survey – Plotting and adjustment of closed traverse.
4. Theodolite- Measurement of horizontal and vertical angles by Vernier Theodolite.
5. Levelling using Auto level (a)Rise and fall method (b) Height of instrument method
6. Plane table survey – Radiation and Intersection method.
7. Solution to three point problem using Plane table.
8. Laying out of a simple curve.

METHODS OF TEACHING AND STUDENT LEARNING

The subject is delivered through lectures, on-line support, text book / course material reading and practical exercises. Some videos will be shown to demonstrate certain concepts and research areas will be discussed. Resource material is provided with the help of PDM Educational Directory Services (PEDS).

ASSESSMENT METHODOLOGIES

This subject will be evaluated for a total of 50.
Practical:-

Assessment #	Type Of Assessment	Per Semester	Maximum Mark
1	Internal Assessment	2	25
2	External Assessment	1	25

MAPPING OF COURSE LEARNING OUTCOMES

Program Outcomes	a	b	c	d	e	f	g	H	i	j
Course Learning Outcomes	1	1,2	2,3,4	2,3,5	1,2,3	4,5	1,2	3,4		

EVALUATION

At the end of semester, Subject teacher will submit an evaluation report. The purpose of this report is to identify aspects that will be highlighted by students and faculty's feedback for the subject with respect to its strengths as well as those areas which could be improved. The review report contains the following:

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PDM UNIVERSITY
DEPARTMENT OF CIVIL ENGINEERING

Design of Steel Structures

L	T	P
3	1	0

MODULE CODE	CIVL2114
CREDIT POINTS	3.5
FORMATIVE ASSESMENT MARKS	50
SUMMATIVE ASSESMENT MARKS	100
END SEMESTER EXAM DURATION	3 hrs
LAST REVISION DATE	

INSTRUCTIONS

The Question paper will consist of seven questions distributed over three sections A, B and C. Section A comprises of very short answer type questions and is compulsory. Sections B & C comprise of short answers type and long answer type questions. These sections will have internal choice.

OBJECTIVE

1. To achieve knowledge and basic understanding of use of steel in civil engineering
2. To develop technical competence in the design of steel members in compression and Tension.
3. To recognize the design philosophy of steel structures and have concept on limit state Design.
4. To analyze and design of tension members, columns bolted and welded connection.

LEARNING OUTCOMES

1. Understanding of the ASD and LRFD design philosophies and behavior of structural steel.
2. Ability to analyze and design of tension members. Ability to analyze and design of columns. Ability to analyze and design of beams.
3. Ability to analyze and design of beam-columns. Ability to analyze and design of simple bolted and welded connections. Ability to design steel framing system and connections of a building in a team setting.
4. Familiarity with structural steel fabrication process and construction through field trip and/or speaker presentation.
5. Familiarity with professional and ethical issues and the importance of lifelong learning in structural engineering.

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MODULE CONTENT

UNIT-I: Introduction and Design approach Properties of structural steel, I.S. rolled sections, I.S. specifications, Advantages of steel as a structural material, Introduction to working stress and limit state theories. Simple and moment resistant riveted, bolted and welded connections.
UNIT-II: Plastic analysis Introduction, Scope of plastic analysis, ultimate load carrying capacity of tension members and compression members, flexural members, shape factor, mechanisms, plastic collapse, analysis, plastic analysis applied to steel beams and simple portal frames and design.
UNIT-III: Design of tension members Selection of section, I.S. specifications, design of axially loaded tension members, design of members for axial tension and bending, end connections, design of lug angles and tension splices.
UNIT-IV: Design of compression members and footings Theory of buckling, design of column, cross section (single and built up sections), design of angle struts, eccentrically loaded columns, column splices, lacings and battens. Slab base, gusseted base, and column bases subjected to moment. Independent column footing, combined column Footing.
UNIT-V: Design of Beams Introduction, Laterally stability, design of single and built up beams, plated beams and curtailment of flange plates. Web buckling, web crippling and diagonal buckling. Various loads, specifications and design of gantry girder.
UNIT-VI: Plate Girder Introduction, elements of plate girder, design steps of a plate girder, necessity of stiffeners in plate girder, various types of stiffeners, web and flange splices, Curtailment of flange plates, design beam to column connections: Introduction, design of framed and seat connection.

RECOMMENDED BOOKS

TEXT BOOK	5. Design of Steel Structures : A.S.Arya and J.L. Ajmani 1. Design of Steel Structures : Ram Chandra
REFERENCE	6. Design of Steel Structures : P. Dayaratnam 7. Design of steel Structures : S.K.Duggal, TMH Pub, New Delhi. 3. Design Codes

METHODS OF TEACHING AND STUDENT LEARNING

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ASSESSMENT METHODOLOGIES

This subject will be evaluated for a total of 150 marks.

Theory:-

Assessment #	Type Of Assessment	Per Semester	Maximum Mark
1.	Class Test	4	10
2.	Sessional Test	2	30
3.	Group Discussion	4	10
4.	End Semester Exam	1	100

MAPPING OF ASSESSMENT METHODS AGAINST LEARNING OUTCOMES

Theory:-

Assessments	1	2	3	4	5
Class Test	x				X
Quiz		x	x		X
Assignment	x			x	

MAPPING OF COURSE LEARNING OUTCOMES

Program Outcomes	a	b	c	d	e	f	g	H	i	j
Course Learning Outcomes	1	1,2	2,3,4	2,3,5	1,2,3	4,5	1,2	3,4		

EVALUATION

At the end of semester, Subject teacher will submit an evaluation report. The purpose of this report is to identify aspects that will be highlighted by students and faculty's feedback for the subject with respect to its strengths as well as those areas which could be improved. The review report contains the following:

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PDM UNIVERSITY
DEPARTMENT OF CIVIL ENGINEERING

Revit Architecture

L	T	P
0	0	4

MODULE CODE	CIVL2115
CREDIT POINTS	2
FORMATIVE ASSESMENT MARKS	50
SUMMATIVE ASSESMENT MARKS	50
END SEMESTER EXAM DURATION	3 hrs
LAST REVISION DATE	

OBJECTIVES

To get familiar with Autodesk Revit Architecture, Introduction , Walls, Modify Tools - 3D Modelling, Documentation and Managing Views, Stair, Schedules and Modify schedules, Lights, Materials and Site Design.

MODULE CONTENT

UNIT-I: Introduction About BIM, Introduction to Autodesk Revit Architecture, Revit File Types, Exploring User Interface, Building Elements, Project Units, Levels, Adding Levels, Modifying Levels, Constrain Levels.
UNIT-II: Walls Create New Wall type, Location Line, Compound Wall, More in Depth –Wall, Modify walls, Stacked wall, Wall shapes and Openings, Wall sweeps and Reveals, Doors, Windows.
UNIT-III: Modify Tools - 3D Modelling Move, Copy, Create Similar, Rotate, Mirror, Array, Scale, Split Element, Trim, Align, Offset, Pin, Unpin. 3D Modelling - Floor. Adding Floor, Modifying Floor, Ceiling, Create Ceiling, Roof, Creating Roof, Modifying Roof, Shape editing for Roofs and Floors, Openings, Opening on face and Vertical Opening, Wall opening, Shaft opening.
UNIT-IV: Documentation and Managing Views Dimensions, Temporary Dimensions, Permanent Dimensions, Managing Views, View range, Plan region, Elevation, Section, Visibility or Graphics, Background, Practice: Hands on, Curtain Wall, Adding Curtain Grids, Mullions, Reshaping Curtain Wall Panels, Adding Curtain Door to panel, Embedded Walls.
Unit – V : Stair, Schedules and Modify schedules Stair by component, Creating stair by sketching, Customizing stair documentation, Modify stair railings, Railings, Add railings, Add railings by sketching and Modify railing. Schedules - Creating Schedules/quantities, Schedule properties and Custom parameters. Modify schedules – Rooms, Creating rooms, Room boundaries, Room volume, Situations that can effect Room volume computations, Room tag, Colour Scheme and Legend.
Unit – VI : Lights, Materials and Site Design Lights - Lighting fixtures, Controlling the brightness of light source Materials - Creating material library, About the material properties and assets, Editing material properties, Editing assets, Creating material, Applying material to elements, Changing the graphic properties of a material, Changing the appearance properties of a material , Rendering, Walkthrough. Site Design - Site Settings, Toposurface, Creating toposurface, Splitting a toposurface, Merging toposurface, Building pads, Property lines, Contour line labels, Parking components, Site components.

RECOMMENDED BOOKS

TEXT BOOK	1. Mastering Revit (Architecture, Structure, MEP) Wiley. 2. Paul Aubin Books.

METHODS OF TEACHING AND STUDENT LEARNING

The subject is delivered through lectures, on-line support, text book / course material reading and practical exercises. Some videos will be shown to demonstrate certain concepts and research areas will be discussed. Resource material is provided with the help of PDM Educational Directory Services (PEDS).

ASSESSMENT METHODOLOGIES

This subject will be evaluated for a total of 100.

Practical:-

Assessment #	Type Of Assessment	Per Semester	Maximum Mark
1	Internal Assessment	2	50
2	External Assessment	1	50

MAPPING OF COURSE LEARNING OUTCOMES

Program Outcomes	a	b	c	d	E	f	g	h	i	j	K
Course Learning Outcomes	2	3		2							

EVALUATION

At the end of semester, Subject teacher will submit an evaluation report. The purpose of this report is to identify aspects that will be highlighted by students and faculty's feedback for the subject with respect to its strengths as well as those areas which could be improved. The review report contains the following:

- Approved refinement decisions due for implementation,
- Actions taken based on previous subject review,
- Problems encountered in the subject delivery,
- Suggested remedies / corrective measures, and
- Report discussed and analysed, actions taken as a result of this process and are communicated to the main stakeholders.

PDM UNIVERSITY
DEPARTMENT OF CIVIL ENGINEERING

Soil Mechanics

L	T	P
3	1	0

MODULE CODE	CIVL2116
CREDIT POINTS	3.5
FORMATIVE ASSESMENT MARKS	50
SUMMATIVE ASSESMENT MARKS	100
END SEMESTER EXAM DURATION	3 hrs
LAST REVISION DATE	

INSTRUCTIONS

The Question paper will consist of seven questions distributed over three sections A, B and C. Section A comprises of very short answer type questions and is compulsory. Section B & C comprise of short answers type and long answers type questions. These sections will have internal choice.

OBJECTIVE

1. To get familiar with properties of soil through lab tests.
2. To understand soil compactions, consolidation and flow of water through soil.
3. To understand shear strength parameter of soil.
4. To calculate stress distribution in soil mass due to vertical loading using equation available

LEARNING OUTCOMES

1. Able to identity and classify soil based on engineering properties of soil.
2. Able to calculate and plot soil strength parameter.
3. Able to apply fundamentals of soil mechanics in the site specific field investigations.
4. Able to understand how stresses are transferred through soils and be able to compute them.

MODULE CONTENT

UNIT-I:Soil formation and its properties

Origin of soils, soil formation, geographical distribution of major soils in India, composition of soil, particle size and shapes, inter particle forces, soil minerals / structure and their effect on basic soil properties. Three phase diagram and relationships among void ratio, specific gravity, dry density, porosity, water content, unit weights and degree of saturation.

UNIT-II: Laboratory and field identification and classification of soil

Determination of water content, specific gravity and grain size distribution for coarse grained and fine grained soils, Atterberg limits and indices, visual identification by simple field test, field density by core cutter and sand, replacement methods. Classification of soils- Necessity, principles, Indian and unified classification, plasticity charts.

UNIT-III:Permeability and Seepage

Concept of pore water pressure, Total, effective and neutral stresses. Darcy's law, laboratory and field permeability tests, factors affecting permeability, shrinkage and swelling of soil, seepage forces, Laplace equation and its significance, Flow potential, Flow nets and their properties, seepage through earth dams, exit gradient and uplift pressure, mechanics of piping, methods of dewatering, design of filters.

UNIT-IV:Compaction and consolidation of soils

Definition, objectives, compactive effort, Laboratory compaction, Standard Proctor test, Modified Proctor test, IS compaction tests [light / heavy], Field compaction and equipment, Concept of optimum moisture content and zero air voids line, Factors influencing compaction, Effect of compaction on soil properties.
Consolidation and settlement: Consolidation test and compressibility characteristics, Terzaghi's theory of one dimensional consolidation, types of clay deposits, Normal/over/consolidated clays, determination of pre-consolidation pressure and its significance, time factor and coefficient of consolidation, fitting methods, settlement analysis, secondary compression, consolidation settlement and its rates, acceleration of consolidation by sand drains.

UNIT-V: Stress distribution in soil

Stress at a point, Mohr's circle, stresses due to force of gravity, Point, line and uniformly distributed loads, Influence charts, contact pressure distribution, Boussineque's and Westerguard's equation for vertical pressure due to point loads and uniformly distributed loads.

UNIT-VI:Shear strength of soil

Strain curve, Mohr-coulomb failure criteria, Peak and residual shear strengths, Laboratory and field measurement of shear strength of soil, Direct, Triaxial and Unconfined compression tests, vane shear tests. Determination of shear strength parameters for different drainage and stress conditions, measurement of pore pressure, choice of test conditions, Shear strength of soils, Pore pressure coefficients, Sensitivity of cohesive soils, use of various types of shear parameters in design.

RECOMMENDED BOOKS

TEXT BOOK	1. Basic and applied Soil Mechanics: Gopal Ranjan & A.S.R. Rao New Age International Publisher. 2. Soil mechanics & Foundation Engineering: k.R Arora
REFERENCE	1. Soil Mechanics in Engineering Practice: R.B. Peck & Terzaghi John Wiley.

METHODS OF TEACHING AND STUDENT LEARNING

The subject is delivered through lectures, on-line support, text book / course material reading and practical exercises. Some videos will be shown to demonstrate certain concepts and research areas will be discussed. Resource material is provided with the help of PDM Educational Directory Services (PEDS).

ASSESSMENT METHODOLOGIES

This subject will be evaluated for a total of 150 marks for theory and 50 marks for practical.

Theory:-

Assessment #	Type Of Assessment	Per Semester	Maximum Mark
1.	Class Test	4	10
2.	Sessional Test	2	30
3.	Group Discussion	4	10
4.	End Semester Exam	1	100

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MAPPING OF ASSESSMENT METHODS AGAINST LEARNING OUTCOMES

Theory:-

Assessments	1	2	3	4
Class Test	x		x	
Quiz			x	
Assignment	x			x

MAPPING OF COURSE LEARNING OUTCOMES

Program Outcomes	a	b	c	d	e	f	g	h	i	J
Course Learning Outcomes	1	1,2	2,3,4	2,3,5	1,2,3	4,5	1,2	3,4		

EVALUATION

At the end of semester, Subject teacher will submit an evaluation report. The purpose of this report is to identify aspects that will be highlighted by students and faculty's feedback for the subject with respect to its strengths as well as those areas which could be improved. The review report contains the following:

- Approved refinement decisions due for implementation,
- Actions taken based on previous subject review,
- Problems encountered in the subject delivery,
- Suggested remedies / corrective measures, and
- Report discussed and analysed, actions taken as a result of this process and are communicated to the main stakeholders.

PDM UNIVERSITY
DEPARTMENT OF CIVIL ENGINEERING

Soil Mechanics Lab

L	T	P
0	0	2

MODULE CODE	CIVL2117
CREDIT POINTS	1
FORMATIVE ASSESMENT MARKS	25
SUMMATIVE ASSESMENT MARKS	25
END SEMESTER EXAM DURATION	3 hrs
LAST REVISION DATE	

OBJECTIVES

The objective of Soil mechanics lab is to

1. Determine the physical and engineering properties of soil.
2. To develop an understanding of the relationships between physical characteristics and mechanical properties of soils.
3. Direct shear and consolidation tests to investigate the influence of time, strain rate on the behaviour of soil

LEARNING OUTCOMES

1. Ability to Identify and classify soils with reference to their characteristics
2. Able to calculate soil properties from test results.
3. Ability to perform laboratory compaction and in-place density tests for fill quality control.
4. Able to describe the behavior and effect of water in soils.

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LIST OF EXPERIMENTS

1. Moisture content determination by oven drying method.
2. Specific Gravity of soil particles by Pycnometer method and Density Bottle method
3. Field identification of soil and Grain size analysis- by Sieve analysis.
4. Atterberg's limits (liquid Limit, Plastic Limit and Shrinkage Limit) tests
5. Field density tests of soils by Core cutter method and sand replacement method
6. Permeability tests of soils by Variable head method and Constant head method
7. To determine the optimum moisture content to give maximum dry density by the standard proctorTest.
8To determine the shear strength parameter of a soil by direct shear Test.
9. Unconfined compressive strength test
10. To determine the coefficient of consolidation using the consolidometer.

METHODS OF TEACHING AND STUDENT LEARNING

The subject is delivered through lectures, on-line support, text book / course material reading and practical exercises. Some videos will be shown to demonstrate certain concepts and research areas will be discussed. Resource material is provided with the help of PDM Educational Directory Services (PEDS).

ASSESSMENT METHODOLOGIES

This subject will be evaluated for a total of 50 marks for practical.

Practical:-

Assessment #	Type Of Assessment	Per Semester	Maximum Mark
1	Internal Assessment	2	25
2	External Assessment	1	25

MAPPING OF COURSE LEARNING OUTCOMES

Program Outcomes	a	b	c	d	e	f	g	h	i	J
Course Learning Outcomes	1	1,2	2,3,4	2,3,5	1,2,3	4,5	1,2	3,4		

EVALUATION

At the end of semester, course faculty will submit an evaluation / review report. The purpose of this report is to identify aspects that will be highlighted by students and faculty's feedback for the course with respect to its strengths as well as those areas which could be improved. The review report contains the following areas:

- Problems encountered in the content delivery;
- Suggested remedies / corrective measures;
- Approved refinement decisions due for implementation;
- Actions taken based on previous course review; and
- Report discussed and analysed; actions taken as a result of this process and are communicated to the main stakeholders.

PDM UNIVERSITY
DEPARTMENT OF CIVIL ENGINEERING

Fluid mechanics – I

L	T	P
3	0	0

MODULE CODE	CIVL2118
CREDIT POINTS	3
FORMATIVE ASSESMENT MARKS	25
SUMMATIVE ASSESMENT MARKS	75
END SEMESTER EXAM DURATION	3 hrs
LAST REVISION DATE	

INSTRUCTIONS

The Question paper will consist of seven questions distributed over three sections A, B andC. Section A comprises of very short answer type questions and is compulsory. Section B & C comprise of short answers type and long answers type questions. These sections will have internal choice

OBJECTIVES

1. To achieve knowledge and understanding on fundamentals of fluids, pressure measurement their various properties and capabilities to model and solve wide range of problems in science and engineering.
2. To get familiar with concepts of laminar and turbulent flow and develop ability to solve simple problems.
3. To understand kinematic problems and their applications in engineering problems
4. To learn basic concepts of continuity equation, Bernoulli's equation and its application in realistic decision making.
5. To acquire knowledge of dimensional analyses and assess their effectiveness in problem solving.

LEARNING OUTCOMES

1. Know, understand and apply the basic concepts of Fluid Mechanics to carry out professional engineering activities in the field of fluids.
2. Apply scientific method strategies to fluid mechanics: analyse qualitatively and quantitatively the problem situation, propose hypotheses and solutions.

3. Work efficiently in a group, integrating skills and knowledge to make decisions in the performance of fluid mechanics tasks, adopting a responsible and organised attitude to work and a willingness to learn.
4. Plan and carry out designs and processes in the field of fluid mechanics in accordance with the relevant specific technology, applying the quality principles and methods and analysing and assessing the social.
5. Environmental impact of the technical solutions adopted.

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DEPARTMENT OF CIVIL ENGINEERING

MODULE CONTENT

UNIT-I: Fluidandtheirproperties Conceptoffluid,differencebetweensolids,liquidsandgases; ideal and real fluids; Continuum concept of fluid: density, specific weight and relative density; viscosity and its dependence on temperature; surface tension and capillarity, vapourpressure andcavitations: compressibilityandbulkmodulus;Newtonianandnon- Newtonianfluids. Conceptofpressure,Pascal'slawanditsengineeringhydrostaticparadox. Buoyancyandfloatation, stabilityoffloatingandsubmergedbodies,Metacentreheightanditsdetermination, rotationof liquidin acylindrical container.
UNIT-II: FluidKinematics Classificationoffluidflows,velocityandaccelerationoffluidparticle, localandconvectiveacceleration,normal&tangentialaccelerationstreamline,pathlineand streak line, flow rate and discharge mean velocity continuity equation in Cartesian co- ordinates. Rotationalflows-Rotationalvelocityandcirculation,stream&velocitypotential functions.
UNIT-III: FluidDynamics Euler's equation,Bernoulli's equationandsteady flowenergyequation; representationofenergychangesinfluidsystem,impulsemomentumequation,kinetic energyandmomentumcorrectionfactors,flowalongacurvedstreamline,freeandforced vortexmotions.
UNIT-IV: FlowMeasurement Manometers,Pitottubes,venturimeterandorificemeters,orifices, mouth pieces, notchesandweirs.
UNIT-V: DimensionalAnalysisandSimilitude Fundamentalandderivedunitsanddimensions, dimensionalhomogeneity,Rayleigh'sandBuckingham'sPimethodfordimensionalanalysis, dimensionlessnumberandtheirsignificance,geometric,kinematicanddynamicsimilarity, model studies.
UNIT-VI:LaminarandturbulentFlows FlowregimesandReynoldsnumber,criticalvelocityand critical Reynoldsnumber,laminarflowincircularcrosssectionpipes. Turbulentflowsand flowlossesinpipes,Darcyequationminorheadlossesinpipefittings,hydraulicandenergygradientlines.

RECOMMENDED BOOKS

TEXT BOOK	1. Fluid Mechanics &Hydraulic Machines: Dr. R.K. Bansal 2. Fluid Mechanics by Dr. R.J. Garde
REFERENCE	1. Fluid Mechanics : Streetes VL&Wylie EB; McGraw Hill 2. Hydraulic and Fluid Mechanic: P.N.Modi & S.M.Seth 3. Introduction to Fluid Mechanics: Robert W.Fox & Alan T.McDonald

METHODS OF TEACHING AND STUDENT LEARNING

The subject is delivered through lectures, on-line support, text book / course material reading and practical exercises. Some videos will be shown to demonstrate certain concepts and research areas will be discussed. Resource material is provided with the help of PDM Educational Directory Services (PEDS).

ASSESSMENT METHODOLOGIES

This subject will be evaluated for a total of 100 marks for theory

Theory:-

Assessment #	Type Of Assessment	Per Semester	Maximum Mark
1.	Class Test	4	05
2.	Sessional Test	2	15
3.	Group Discussion	4	05
4.	End Semester Exam	1	75

MAPPING OF ASSESSMENT METHODS AGAINST LEARNING OUTCOMES

Theory:-

Assessments	1	2	3	4	5
Class Test	x		x		x
Quiz			x		x
Assignment	x			x	

MAPPING OF COURSE LEARNING OUTCOMES

Program Outcomes	a	b	c	d	e	f	g	h	i	j
Course Learning Outcomes	1	1,2	2,3,4	2,3,5	1,2,3	4,5	1,2	3,4		

EVALUATION

At the end of semester, Subject teacher will submit an evaluation report. The purpose of this report is to identify aspects that will be highlighted by students and faculty's feedback for the subject with respect to its strengths as well as those areas which could be improved. The review report contains the following:

- Approved refinement decisions due for implementation,
- Actions taken based on previous subject review,
- Problems encountered in the subject delivery,
- Suggested remedies / corrective measures, and
- Report discussed and analysed, actions taken as a result of this process and are communicated to the main stakeholders.

PDM UNIVERSITY
DEPARTMENT OF CIVIL ENGINEERING

Fluid Mechanics Lab

L	T	P
0	0	2

MODULE CODE	CIVL2119
CREDIT POINTS	1
FORMATIVE ASSESMENT MARKS	25
SUMMATIVE ASSESMENT MARKS	25
END SEMESTER EXAM DURATION	2 hrs
LAST REVISION DATE	

OBJECTIVES

To get familiar with fluid properties, their flow, viscosity, buoyancy, coefficients, surface tension.

LIST OF EXPERIMENTS

1. Determination of surface tension of liquid.
2. Determination of meta-centric height
3. Verification of Bernoulli's theorem.
4. Calibration of Venturimeter.
5. Calibration of orifice plate.
6. Determination of coefficients Cd, Cv & Cc
7. Calibration of V – notch.
8. Calibration of rectangular notch.
9. Calibration of trapezoidal notch.
10. Study of the properties of vortex flow.

METHODS OF TEACHING AND STUDENT LEARNING

The subject is delivered through lectures, on-line support, text book / course material reading and practical exercises. Some videos will be shown to demonstrate certain concepts and research areas will be discussed. Resource material is provided with the help of PDM Educational Directory Services (PEDS).

ASSESSMENT METHODOLOGIES

This subject will be evaluated for a total of 50.

Practical:-

Assessment #	Type Of Assessment	Per Semester	Maximum Mark
1	Internal Assessment	2	25
2	External Assessment	1	25

MAPPING OF COURSE LEARNING OUTCOMES

Program Outcomes	a	b	c	d	e	f	g	H	i	J
Course Learning Outcomes	1	1,2	2,3,4	2,3,5	1,2,3	4,5	1,2	3,4		

EVALUATION

At the end of semester, Subject teacher will submit an evaluation report. The purpose of this report is to identify aspects that will be highlighted by students and faculty's feedback for the subject with respect to its strengths as well as those areas which could be improved. The review report contains the following:

- Approved refinement decisions due for implementation,
- Actions taken based on previous subject review,
- Problems encountered in the subject delivery,
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PDM UNIVERSITY
DEPARTMENT OF CIVIL ENGINEERING

Building & Town Planning

L	T	P
3	0	0

SUBJECT CODE	CIVL2220
CREDIT POINTS	3
SEMESTER	IV
FORMATIVE ASSESMENT MARKS	25
SUMMATIVE ASSESMENT MARKS	75
LAST REVISION DATE	

OBJECTIVES

1. To get familiar with concepts of building & town planning of city and develop ability to solve simple problems.
2. To learn basic concepts of Building and Town plan In the World and In India and its application in zolaistic decision making.
3. The Course emphasizes on basic concepts of foundations of the civil engineering. To achieve knowledge and understanding to buildings composition. Building by–laws as per National Building Code (local and national), Modern Buildings, Planning of Earthquake, Town Planning in the World and In India, Town Planning Schemes, and Introduction to Hamlet and Smart City.
4. Masonry constructions, cavity walls and retaining walls, basic brick work, doors and windows along with roofs and sheds. It also concentrates on various kinds of bonds in masonry construction, timber and tiles, acoustics and proofing along with painting and varnishing.
5. The pedagogy will be lectures, presentations, tutorials, assignments of class work and practical work in the field.
6. After the completion of course, all students will have detailed knowledge of basic building and town planning fundamentals. They will understand the implications of IS -code used in building construction and various amendments to them.

LEARNING OUTCOMES

1. Able to find out the building based problem on civil engineering field.
2. Able to calculate and plot plan building.
3. Able to apply fundamentals of civil engineering in the site specific field investigations.
4. Able to understand how stresses are transferred through site problem and be able to compute them.

MODULE CONTENT

UNIT-I : Building Planning Introduction to buildings, Type of buildings, Principles of building planning, Principles of architecture composition. Building by–laws as per National Building Code, Standards for residential buildings, Building by–laws of local authority, and standards for industrial, public, commercial and institutional buildings.
UNIT-II :Planning of Earthquake Planning of earthquake resistant building, Preparing working drawing of residential building, software application in planning, detached. implications of IS -code used in building construction
UNIT-III : Modern Buildings Elements of perspective views, Types of views such as one point, two point perspective etc. Building services like water supply, drainage, electrification etc. for modern buildings
UNIT-IV :Town Planning In The World And In India Historical aspects and origin of Town Planning in the World and in India. Necessity of Civic surveys for Planning purpose, types, data and its presentation and analysis, Fundamental principles of Town Planning
UNIT-V :Town Planning Schemes Land use Planning and percentage of different Land uses as per category of town. Components of town such as Zones, Road Network, CBD, Neighbourhood planning, Development controls for new town planning schemes for growth negotiation.
UNIT-VI : Introduction To Hamlet And Smart City Formation of Slums, Reasons of Slum formation, remedial measures for avoiding slum foundation. Introduction to smart city, its Characteristics as per present scenario.

RECOMMENDED BOOKS

TEXT BOOK	1. Gurcharan Singh, Building Planning, Designing and Scheduling. 2. Rangwala, S.C., Town Planning, Charotar Publishing House, 3. G.K., Town Planning, Dhanpatrai & Sons, New Delhi. 4. Sikka, V.B., Civil Engineering Drawing, S.K. Kataria & Sons. 5. Shah, M.G., Kale, C.M. and Patki, S.Y., Building Drawing, Tata Mcgraw Hill, New Delhi.
REFERENCE	1. General Development Control Regulations published by AUDA and GICEA. 2. National Building Code of India, Indian Standard Institution (ISI), 2005, New Delhi. 3. BIS and IS Code

METHODS OF TEACHING AND STUDENT LEARNING

The subject is delivered through lectures, on-line support, text book / course material reading and practical exercises. Some videos will be shown to demonstrate certain concepts and research areas will be discussed. Resource material is provided with the help of PDM Educational Directory Services (PEDS).

ASSESSMENT METHODOLOGIES

This subject will be evaluated for a total of 100 marks for theory.

Theory:-

Assessment #	Type Of Assessment	Per Semester	Maximum Mark
1.	Class Test	4	5
2.	Sessional Test	2	15
3.	Group Discussion	4	5
4.	End Semester Exam	1	75

MAPPING OF ASSESSMENT METHODS AGAINST LEARNING OUTCOMES

Theory:-

Assessments	1	2	3	4	5
Class Test	x				x

Quiz		x	x		x
Assignment	x			X	

MAPPING OF COURSE LEARNING OUTCOMES

Program Outcomes	a	b	c	d	e	f	g	h	I	j
Course Learning Outcomes	1	1,2	2,3,4	2,3,5	1,2,3	4,5	1,2	3,4		

EVALUATION

At the end of semester, Subject teacher will submit an evaluation report. The purpose of this report is to identify aspects that will be highlighted by students and faculty's feedback for the subject with respect to its strengths as well as those areas which could be improved. The review report contains the following:

- Approved refinement decisions due for implementation,
- Actions taken based on previous subject review,
- Problems encountered in the subject delivery,
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- Report discussed and analysed, actions taken as a result of this process and are communicated to the main stakeholders.

PDM UNIVERSITY
DEPARTMENT OF CIVIL ENGINEERING

Environmental Engineering

L	T	P
3	0	0

SUBJECT CODE	CIVL2221
CREDIT POINTS	3
SEMESTER	IV
FORMATIVE ASSESMENT MARKS	25
SUMMATIVE ASSESMENT MARKS	75
LAST REVISION DATE	

OBJECTIVES

1. To get familiar with concepts of environmental engineering and develop ability to solve simple problems.
2. To learn basic concepts of environmental engineering plan In the World and In India and its application in zolaistic decision making.
3. The Course emphasizes on basic concepts of foundations environment of the civil engineering. To achieve knowledge and understanding to environment composition.
4. Preservation of Biodiversity and Land Pollution, Water Pollution due to sewage, industrial effluents and leachate, Groundwater contamination and control measures. Pollution due to Nuclear Power Plants, Radioactive Waste, Thermal pollution, causes and control.
5. The pedagogy will be lectures, presentations, tutorials, assignments of class work and practical work in the field.
6. After the completion of course, all students will have detailed knowledge of basic environment planning fundamentals. They will understand the implications of ISO Series used in building construction and various amendments to them.

LEARNING OUTCOMES

1. Able to find out the building based problem on environmental engineering field.
2. Able to understand the implications of ISO Series used in building construction.
3. Able to apply fundamentals of environmental engineering in the site specific field investigations.
4. Able to understand how stresses are transferred through issue of environmental site problem and be able to compute them.

MODULE CONTENT

UNIT-I :Ecological aspects Salient features of major Eco Systems, Energy Transfer, Population Dynamics, Ecological imbalance, Preservation of Biodiversity. Land Pollution, Water Pollution due to sewage, industrial effluents and leachate, Groundwater contamination and control measures. Pollution due to Nuclear Power Plants, Radioactive Waste, Thermal pollution, causes and control.
UNIT-II :Environmental Impact Assessment (EIA) Definitions and Concept, Scope, Objectives, Types of impacts, Elements of EIA, Baseline studies, Methodologies of EIA, Prediction of impacts and its methodology, Uncertainties in EIA, Status of EIAs in India. Environmental Management Plan: Definition, Importance, Development, Structuring, Monitoring, Cost aspects. Strategy for siting of Industries.
UNIT-III : Environmental Auditing Definitions and concepts, Scope and Objectives, Types of audit, Accounts audit, Environmental audit statement, Qualities of environment auditor. Environmental Impact Statement (EIS), Sustainable development.
UNIT-IV :Environmental Ethics Ethics in society, Environmental consequences, Responsibility for environmental degradation, Ethical theories and codes of Ethics, Changing attitudes 4 hr Unit 5 ISO and ISO 14000 Series Introduction, Areas covered in the series of standards, Necessity of ISO certification.
UNIT-V :Environmental management system Evolution, Need, Elements, Benefits, ISO 14001 requirements, Steps in ISO 14001 certification, ISO 14001 and sustainable development, Integration with other systems (ISO 9000, TQM, Six Sigma), Benefits of integration
UNIT-VI : Environmental Legislation Water (prevention and control of pollution) act 1974, The environmental act 1986, The Noise Pollution (Regulation and Control) Rules, 2000. Environmental economics, Environmental Labelling, Life-Cycle Assessment

RECOMMENDED BOOKS

TEXT BOOK	1. "Environmental Impact Assessment", Canter (U.S.A) Mc Graw Hill publications, 1996. 2. "Environmental Auditing", Published by CPCB. New Dehli. 3. "Environmental Audit", A.K. Mhaskar, .Media Enviro Publications, 2002.
REFERENCE	1. "ISO Standards". 2. "Environment Management Centre Website". 3. "Ecology", E.P. Odum. (Second edition)Oxford and IBH publishing Co.Pvt.Ltd, 1975.

METHODS OF TEACHING AND STUDENT LEARNING

The subject is delivered through lectures, on-line support, text book / course material reading and practical exercises. Some videos will be shown to demonstrate certain concepts and research areas will be discussed. Resource material is provided with the help of PDM Educational Directory Services (PEDS).

ASSESSMENT METHODOLOGIES

This subject will be evaluated for a total of 100 marks for theory.

Theory:-

Assessment #	Type Of Assessment	Per Semester	Maximum Mark
1.	Class Test	4	5
2.	Sessional Test	2	15
3.	Group Discussion	4	5
4.	End Semester Exam	1	75

MAPPING OF ASSESSMENT METHODS AGAINST LEARNING OUTCOMES

Theory:-

Assessments	1	2	3	4	5
Class Test	x		x		x

Quiz			x		x
Assignment	x			x	

MAPPING OF COURSE LEARNING OUTCOMES

Program Outcomes	a	b	c	d	e	f	g	h	i	J
Course Learning Outcomes	1	1,2	2,3,4	2,3,5	1,2,3	4,5	1,2	3,4		

EVALUATION

At the end of semester, Subject teacher will submit an evaluation report. The purpose of this report is to identify aspects that will be highlighted by students and faculty's feedback for the subject with respect to its strengths as well as those areas which could be improved. The review report contains the following:

- Approved refinement decisions due for implementation,
- Actions taken based on previous subject review,
- Problems encountered in the subject delivery,
- Suggested remedies / corrective measures, and
- Report discussed and analysed, actions taken as a result of this process and are communicated to the main stakeholders.

PDM UNIVERSITY
DEPARTMENT OF CIVIL ENGINEERING

Bridge Engineering

L	T	P
3	0	0

MODULE CODE	CIVL2222
CREDIT POINTS	3
FORMATIVE ASSESMENT MARKS	25
SUMMATIVE ASSESMENT MARKS	75
END SEMESTER EXAM DURATION	3hrs
LAST REVISION DATE	

INSTRUCTIONS

The Question paper will consist of seven questions distributed over three sections A, B and C. Section A comprises of very short answer type questions and is compulsory. Section B & C comprise of short answers type and long answers type questions. These sections will have internal choice.

OBJECTIVES

1. To achieve knowledge and understanding of components of bridge, bridge loading and sub- surface investigations, their various properties and capabilities to model and solve wide range of problems in science and engineering.
2. To get familiar with concepts of design of bridges sub-structures, bearings and joints and develop ability to solve simple problems.
3. To understand standard specification for bridge design using IS codes and their applications in engineering problems
4. To learn basic concepts of various slab type reinforced concrete bridges and its application in realistic decision making.
5. To acquire knowledge of quality control and maintenance aspects of bridges and assess their effectiveness in problem solving.

LEARNING OUTCOMES

1. Able to know about basics of bridge engineering.
2. Able to understand the load-carrying capacity of various types of bridges, upon learning the structural responses to different kinds of loads.
3. Able to design short and medium span bridges, with confidence using existing codes of practice, taking into account of the structural strength, service life and durability.
4. Able know the limitations of the design methods used.

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DEPARTMENT OF CIVIL ENGINEERING

MODULE CONTENT

UNIT-I : Introduction Components of bridges, classification of bridges, related structures, classical examples of various types of bridges.
UNIT-II : General Bridge System Selection of bridge site, preliminary data to be collected, economical span, location of piers and abutments, vertical clearance, width of carriageway, scour, depth of foundation, freeboard considerations.
UNIT-III : Standard loadings Standard Specifications of Bridges, IRC Bridge codes, clearances, Dead load, live loads, application of LL on deck slabs, impact effect of wind load, longitudinal forces, centrifugal forces, Force due to water currents, buoyancy effect, temperature effects, secondary stresses, erection seismic forces.
UNIT-IV : Bearings and joints Importance of bearings, and joints, bearings for slab bridges, bearing for girder bridges, expansion bearings, modern trend in bearing designs, joints, expansion joints.
UNIT-V : Superstructure of bridges Selection of main bridge parameters, design methodologies, choice of superstructure type, RCC and PSC superstructures.
UNIT-VI : Substructure of bridges Pier, abutment, wing walls, Importance of soil interaction, open foundation, pile foundation, well foundation.

RECOMMENDED BOOKS

TEXT BOOK	1. Essentials of Bridge Engineering: Johnson, Victor Oxford University Press. 2. A Text book of Bridge Construction: C.H Khadilkar, Allied Publishers.
REFERENCE	1. Bridge Engineering: S.C Rangwala, Charotar Publishing House Pvt. Ltd.

METHODS OF TEACHING AND STUDENT LEARNING

The subject is delivered through lectures, on-line support, text book / course material reading and practical exercises. Some videos will be shown to demonstrate certain concepts and research areas will be discussed. Resource material is provided with the help of PDM Educational Directory Services (PEDS).

ASSESSMENT METHODOLOGIES

This subject will be evaluated for a total of 100 marks for theory.

Theory:-

Assessment #	Type Of Assessment	Per Semester	Maximum Mark
1.	Class Test	4	05
2.	Sessional Test	2	15
3.	Group Discussion	4	05
4.	End Semester Exam	1	75

MAPPING OF ASSESSMENT METHODS AGAINST LEARNING OUTCOMES

Theory:-

Assessments	1	2	3	4	5
Class Test	x				
Quiz		x	x		
Assignment	x			x	

MAPPING OF COURSE LEARNING OUTCOMES

Program Outcomes	a	b	c	d	e	f	g	h	i	j
Course Learning Outcomes	1	1,2	2,3,4	2,3,5	1,2,3	4,5	1,2	3,4		

EVALUATION

At the end of semester, Subject teacher will submit an evaluation report. The purpose of this report is to identify aspects that will be highlighted by students and faculty's feedback for the subject with respect to its strengths as well as those areas which could be improved. The review report contains the following:

- Approved refinement decisions due for implementation,
- Actions taken based on previous subject review,
- Problems encountered in the subject delivery,
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PDM UNIVERSITY
DEPARTMENT OF CIVIL ENGINEERING

Noise Pollution and Its Control

L	T	P
3	0	0

MODULE CODE	CIVL2223
CREDIT POINTS	3
FORMATIVE ASSESMENT MARKS	25
SUMMATIVE ASSESMENT MARKS	75
LAST REVISION DATE	

INSTRUCTIONS

The Question paper will consist of seven questions distributed over three sections A, B and C. Section A comprises of very short answer type questions and is compulsory. Section B & C comprise of short answers type and long answers type questions. These sections will have internal choice.

OBJECTIVES

1. To achieve knowledge and understanding on fundamentals of noise pollution in science and engineering.
2. To get familiar with concepts of noise pollution regulations
3. To understand various effects of noise pollution.
4. To learn basic and importance of noise pollution measurement.
5. To acquire knowledge control of noise their effectiveness.

LEARNING OUTCOMES

1. Able to find out the problem based on noise pollution in the civil engineering.
2. To understand the process of measuring the noise pollution.
3. Able to know the effects of noise pollution with their various sources of development.
4. To become able to control the noise pollution during various civil engineering works.
5. Able to get knowledge about various Laws and Acts fixed by the government in noise pollution regulations.

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MODULE CONTENT

UNIT-I: Noise Pollution And Its Measurement Sources of noise – Units and Measurements of Noise – Noise Power level, Intensity level, pressure level – Relationship, Noise level meter – Weighted networks – Decibel addition – Octave Band – Noise spectrum – Equivalent Noise – Day and night time –Standards, equations and Application.
UNIT-II: Characterization Of Noise Pollution And Its Effects Characterization of Noise from Construction, Mining, Transportation and Industrial Activities, Airport Noise – General Control Measures – Effects of noise pollution – auditory effects, non-auditory effects.
UNIT-III: Control Of Noise Noise Menace – Noise and the Fetus – Prevention and Control of Noise Pollution – Control of noise at source, control of transmission, protection of exposed person - Control of other types of Noise Sound Absorbent – Noise Pollution Analyzer – Auditorium Designing – Anti Noise Device.
UNIT-IV:Physical Control Of Noise Designing out Noise – Industrial Noise Control – effects of noise on workers efficiency - Acoustic quieting - mechanical isolation technique, acoustical absorption, constrained layer damping – OSHA Noise standards – public education – other non-legislative measures.
UNIT-V: Noise Pollution Regulations Legislation Noise and the Administrative Function – Planning against Noise –Noise and the Law – The Rajasthan noise control Act 1963, Railway Act 1890 (Related to noise only), The Aircraft Act 1934 (Related to noise only), Factories Act 1948 (Related to noise only), The environmental Protection Act 1986 – Noise pollution remedies.

RECOMMENDED BOOKS

TEXT BOOK	1. "*Noise Pollution & Control Strategy*", Singal .S.P Alpha Science International Publications, Oxford Press, 2005. 2. "*Noise Pollution & Control",* Narosa Publishing House, NewDelhi2010. 3. "Text book of Noise Pollution and Its Control", by S.C.Bhatia, Atlantic Publisher & Distributor Ltd.
REFERENCE	1. "*Noise Pollution".* Agarwal .S.K, APH Publications, NewDelhi, 2009. 2. "*Noise Pollution"*, Tata McGraw Hill, NewDelhi 2006.

METHODS OF TEACHING AND STUDENT LEARNING

The subject is delivered through lectures, on-line support, text book / course material reading and practical exercises. Some videos will be shown to demonstrate certain concepts and research areas will be discussed. Resource material is provided with the help of PDM Educational Directory Services (PEDS).

ASSESSMENT METHODOLOGIES

This subject will be evaluated for a total of 100 marks for theory.
Theory:-

Assessment #	Type Of Assessment	Per Semester	Maximum Mark
1.	Class Test	4	5
2.	Sessional Test	2	15
3.	Group Discussion	4	5
4.	End Semester Exam	1	75

MAPPING OF ASSESSMENT METHODS AGAINST LEARNING OUTCOMES

Theory:-

Assessments	1	2	3	4	5
Class Test	x		x		X
Quiz			x		X
Assignment	x			X	

MAPPING OF COURSE LEARNING OUTCOMES

Program Outcomes	a	b	c	d	e	f	g	h	I	J
Course Learning Outcomes	1	1,2	2,3,4	2,3,5	1,2,3	4,5	1,2	3,4		

EVALUATION

At the end of semester, Subject teacher will submit an evaluation report. The purpose of this report is to identify aspects that will be highlighted by students and faculty's feedback for the subject with respect to its strengths as well as those areas which could be improved. The review report contains the following:

- Approved refinement decisions due for implementation,
- Actions taken based on previous subject review,
- Problems encountered in the subject delivery,
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DEPARTMENT OF CIVIL ENGINEERING

SEMESTER V

MODULE CODE	CATEGORY	SUB-CATEGORY	MODULE	L	T	P	C	Internal Marks	External Marks	Total
CIVL3101	E	PC	FLUID MECHANICS-II	3	0	0	3	25	75	100
CIVL3102	E	PC	WATER SUPPLY ENGINEERING	3	0	0	3	25	75	100
CIVL3103	E	PC	WATER QUALITY LAB	0	0	2	1	25	25	50
CIVL3104	E	PC	DESIGN OF CONCRETE STRUCTURES	3	1	0	3.5	50	100	150
CIVL3105	E	PC	TRANSPORTATION ENGINEERING	3	1	0	3.5	50	100	150
CIVL3106	E	PC	TRANSPORTATION ENGINEERING LAB	0	0	2	1	25	25	50
CIVL3107	E	PD	SURVEY CAMP(TO BE UNDERGONE AFTER IV SEMESTER)	0	0	0	1	50	0	50
CIVL3108	E	PD	SPECIALIZED MINOR PROJECT (GROUP) STAAD PRO	0	0	4	2	50	50	100
VALU0136	P	AE	APTITUDE II	2	0	0	2	25	50	75
VALU0140	P	SE	PROFESSIONAL COMMUNICATION - II	2	0	0	2	25	50	75
	E	PE	ELECTIVE-IV*	3	0	0	3	25	75	100
	E	PE	ELECTIVE-V**	3	0	0	3	25	75	100
TOTAL				**22**	**2**	**8**	**28**	**400**	**700**	**1100**

L = Lecture
T = Tutorial
P = Practical
C = Credit Point

ELECTIVES

	ELECTIVES - IV*
CIVL3209	GEOMATICS ENGINEERING
CIVL3210	CONSTRUCTION PLANNING & MANAGEMENT
	ELECTIVE - V**
CIVL3211	DESIGN OF INDUSTRIAL STRUCTURES
CIVL3212	TALL BUILDINGS

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SEMESTER-V

Fluid Mechanics-II

L	T	P
3	0	0

MODULE CODE	CIVL3101
CREDIT POINTS	3
FORMATIVE ASSESMENT MARKS	25
SUMMATIVE ASSESMENT MARKS	75
END SEMESTER EXAM DURATION	3 hrs
LAST REVISION DATE	

INSTRUCTIONS

The Question paper will consist of seven questions distributed over three sections A, B and C. Section A comprises of very short answer type questions and is compulsory. Sections B & C comprise of short answers type and long answer type questions. These sections will have internal choice.

OBJECTIVES

1. To achieve knowledge and understanding on characteristics of different flow types, their various properties and capabilities to model and solve wide range of problems in science and engineering.
2. To get familiar with concepts of flow through pipes and develop ability to solve simple problems.
3. To understand open channel flow and their applications in engineering problems
4. To learn basic concepts of various losses in pipe and its application in realistic decision making.
5. To acquire knowledge of theories dealing with laminar, turbulent and gradually varied flow and assess their effectiveness in problem solving.

LEARNING OUTCOMES

After learning the course the students should be able to:-

1. Learn flow between parallel plates and transition from laminar to turbulent flow.
2. Learn the concept of boundary layer theory.
3. Learn velocity distribution equation in smooth and rough pipes.
4. Learn basic resistance equation for open channel flow.
5. Learn Energy and momentum principles and critical flow.

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MODULE CONTENT

UNIT-I: LaminarFlow Navier-stokesequationsinCartesiancoordinates,meaning ofterms,flowbetweenparallelplates,stokeslaw.Flowthroughporousmedia.Transition fromlaminar to turbulent flow.
UNIT-II: BoundaryLayerAnalysis Assumptionandconceptofboundarylayertheory.Boundary- layer thickness, displacement, momentum &energy thickness, laminar and Turbulent boundarylayersonaflatplate,Laminarsub-layer,smoothandroughboundaries.Localand averagefrictioncoefficients, SeparationandControl.
UNIT-III: TurbulentFlow Definitionofturbulence,scaleandintensity,Effectsofturbulentflowin pipes. Equationforvelocitydistributionin smooth androughpipes. FlowPastimmersedbodies:DragandliftdeformationDragandpressuredrag.Dragona sphere,cylinderandAirfoil:lift-Magnus Effectandcirculation liftonacircularcylinder.
UNIT-IV: UniformflowinopenChannels Flowclassifications,basicresistanceEquationforopen channel flow. Chezy, Manning, Bazin and Kutter formulae. Variation of roughness coefficient, conveyance andnormal depth. Velocity Distribution. Most efficientflow sections,rectangular,trapezoidal andcircular.
UNIT-V: EnergyandMomentum principlesandcriticalflow EnergyandspecificEnergyin anopen channel; critical depth for rectangular and trapezoidal channels. Alternate depths, applicationsof specificenergytotransitionsandBroadscrestedweirs.Momentumand specificforcein open channel flow, sequent depths.
UNIT-VI: GraduallyvariedFlow DifferentEquationofwatersurfaceprofile;limitation,properties andclassificationofwaterandsurfaceprofileswithexamples,computationofwatersurface profilebygraphical, numerical andanalytical approaches.

RECOMMENDED BOOKS

TEXT BOOK	1. *Fluid Mechanics &Hydraulic Machines*: Dr. R.K. Bansal
REFERENCE	1. *Fluid Mechanics* : Streetes VL & Wylie EB; Mcgraw Hill 2. *Hydraulic and Fluid Mechanic* : P.N.Modi&S.M.Seth

METHODS OF TEACHING AND STUDENT LEARNING

The subject is delivered through lectures, on-line support, text book / course material reading and practical exercises. Some videos will be shown to demonstrate certain concepts and research areas will be discussed. Resource material is provided with the help of PDM Educational Directory Services (PEDS).

ASSESSMENT METHODOLOGIES:

This subject will be evaluated for a total of 75 marks for theory and 25 marks for practical.

Theory:

Assessment #	Type Of Assessment	Per Semester	Maximum Mark
1.	Class Test	4	05
2.	Sessional Test	2	15
3.	Group Discussion	4	05
4.	End Semester Exam	1	75

MAPPING OF ASSESSMENT METHODS AGAINST LEARNING OUTCOMES

Theory:-

Assessments	1	2	3	4	5
Class Test	x				x
Quiz		x	x		x
Assignment	x			X	

MAPPING OF COURSE LEARNING OUTCOMES

Program Outcomes	a	B	c	d	e	f	g	H	i	j
Mapping of Course Objectives with Students Learning Outcomes	1,2,	1,2,4	2,3, 4	2,3,5	2,3,5	2,4,5	1,3,4	1,4,5		

EVALUATION

At the end of semester, Subject teacher will submit an evaluation report. The purpose of this report is to identify aspects that will be highlighted by students and faculty's feedback for the subject with respect to its strengths as well as those areas which could be improved. The review report contains the following:

- Approved refinement decisions due for implementation,
- Actions taken based on previous subject review,
- Problems encountered in the subject delivery,
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PDM UNIVERSITY
DEPARTMENT OF CIVIL ENGINEERING

SEMESTER-V

Water Supply Engineering

L	T	P
3	0	0

MODULE CODE	CIVL3102
CREDIT POINTS	3
FORMATIVE ASSESMENT MARKS	25
SUMMATIVE ASSESMENT MARKS	75
END SEMESTER EXAM DURATION	3 hrs
LAST REVISION DATE	

INSTRUCTIONS

The Question paper will consist of seven questions distributed over three sections A, B and C. Section A comprises of very short answer type questions and is compulsory. Sections B & C comprise of short answers type and long answer type questions. These sections will have internal choice.

OBJECTIVE

1. To familiarize the students with the basics of water quality and its demand.
2. To find the importance of planning, analysis and design of modern water supply schemes.
3. To provide adequate knowledge about water treatment processes & its design.
4. To expose the students to operation & maintenance of water supply.
5. To learn the basic characteristics of water and the purification of water
6. To acquire knowledge basic of design of water treatment plants and evaluates the basic water quality data.

LEARNING OUTCOMES

1. To achieve knowledge and understanding on fundamentals of water supply in Civil engineering.
2. To get familiar with concepts of design of water distribution system
3. To learn basics of water treatment plant.
4. To acquire knowledge of sources of water.

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DEPARTMENT OF CIVIL ENGINEERING

COURSE CONTENT

UNIT-I:Water Demand Importance and necessity of water supply scheme,Types of water demand and its variations, Factors affecting water demand, Estimate of total quantity of water required, Population forecasting.
UNIT-II: Sources of water Estimating the quantity of water from various sources, surface and underground sources, such as perennial stream, shallow wells artesian wells, deep wells, infiltration galleries, intake works from different sources.
UNIT-III: Water quality Suspended solids, turbidity, colour, taste odour, temperature, Total dissolved solids, pH, acidity, alkalinity, hardness, nitrates, chlorides, fluorides, metals, organics, nutrients, and Pathogens; water borne disease , water quality standards
UNIT-IV: Water Treatment Objectives of water treatment, treatment processes and their sequence in conventional treatment plant, sedimentation – plain and aided with coagulation. Types, features and design aspects. Mixing basins and Flocculation units. Filtration – mechanism involved, types of filters, slow and rapid sand filtration units (features and design aspects), Disinfection principles and aeration; Other water treatment processes: water softening, removal of taste and odour, advanced methods of water treatment, deflouridation
UNIT-V: Water Conveyance System Conveyance of water, Intake structures, Rising and Gravity system, Dual systems, Pumping Systems and pumping stations, valves and appurtenances, pipe materials and pipe fitting, O&M and trouble shooting for conveyance system.
UNIT-VI: Water Distribution System Layout of Distribution system – Dead End system, Grid Iron system,Ring system, Radial system, their merits and demerits, Distribution Reservoir- functions and determination of storage capacity, Water Distribution Network, analysis of distribution network, layout,capacity and pressure requirements, leak detection, Maintenance, Water supply in buildings and plumbing.

RECOMMENDED BOOKS

TEXT BOOK	1. *"Water Supply Engineering",* S.K. Garg, Khanna Publishers.
REFERENCE	1. *"Introduction to Environmental Engineering",* Davis and Cornwell, McGraw Hill. **2.** *"Environmental Engineering",* Peavy, Rowe and Tchobanoglous, McGraw Hill.

MAPPING OF ASSESSMENT METHODS AGAINST LEARNING OUTCOMES

Theory:-

Assessments	1	2	3	4
Class Test	X		x	x
Quiz				
Assignment		x		x

MAPPING OF COURSE LEARNING OUTCOMES

Program Outcomes	a	B	c	d	e	f	g	h	i	J
Mapping of Course Objectives with Students Learning Outcomes	1	2,3	4	3	1,2	3,4	2,4			

METHODS OF TEACHING AND STUDENT LEARNING

The subject is delivered through lectures, on-line support, text book / course material reading and practical exercises. Some videos will be shown to demonstrate certain concepts and research areas will be discussed. Resource material is provided with the help of PDM Educational Directory Services (PEDS).

ASSESSMENT METHODOLOGIES:

This subject will be evaluated for a total of 75 marks for theory and 25 marks for practical.

Theory:

Assessment #	Type Of Assessment	Per Semester	Maximum Mark
1.	Class Test	4	05
2.	Sessional Test	2	15
3.	Group Discussion	4	05
4.	End Semester Exam	1	75

EVALUATION

At the end of semester, Subject teacher will submit an evaluation report. The purpose of this report is to identify aspects that will be highlighted by students and faculty's feedback for the subject with respect to its strengths as well as those areas which could be improved. The review report contains the following:

- Approved refinement decisions due for implementation,
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DEPARTMENT OF CIVIL ENGINEERING

SEMESTER-V

Water Quality Lab

L	**T**	**P**
0	0	2

MODULE CODE	CIVL3103
CREDIT POINTS	1
FORMATIVE ASSESSMENT MARKS	25
SUMMATIVE ASSESSMENT MARKS	25
END SEMESTER EXAM DURATION	3 hrs
LAST REVISION DATE	

OBJECTIVES:

The aim of this subject is to introduce students to how the common environmental experiments relating to water quality are performed as mentioned below:

1. To teach students which tests are appropriate for given environmental problems, statistically interpret laboratorial results and write technical reports, and
2. To teach how to apply the laboratorial results to problem identification, quantification.
3. To make basic water quality design and technical solutions.
4. To determine different properties of given water sample.
5. To get familiar with different aspects of water quality.

LEARNING OUTCOMES:

1. Able Perform common environmental experiments relating to water quality.
2. Able tostatistically analyze and interpret laboratorial results.
3. Able to apply the laboratorial results to problem identification, quantification, and basic water quality.

Design and technical solutions.

4. Able to understand and use the water sampling procedures and sample preservations.
5. Able to determine different characteristics of water quality.

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LIST OF EXPERIMENTS

1.	To determine pH, turbidity, electrical conductivity of the given sample.
2.	To determine the total hardness, calcium and magnesium in the given sample
3.	To find the amount of Fluoride, Sulphate, iron and manganese in the given sample.
4.	To determine chlorine demand and residual chlorine.
5.	To determine the solids [total, suspended and dissolved] of the given sample
6.	To determine the amount of dissolved oxygen present in the given water sample.
7.	To determine the amount of biochemical oxygen demand [BOD] in the given water sample.
8.	To find out chemical oxygen demand [COD] of the given water sample.

METHODS OF TEACHING AND STUDENT LEARNING

The subject is delivered through lectures, on-line support, text book / course material reading and practical exercises. Some videos will be shown to demonstrate certain concepts and research areas will be discussed. Resource material is provided with the help of PDM Educational Directory Services (PEDS).

ASSESSMENT METHODOLOGIES:

This subject will be evaluated for a total of 50 marks for practical.

Practical:

Assessment #	Type Of Assessment	Per Semester	Maximum Mark
1	Internal Assessment	2	25
2	External Assessment	1	25

MAPPING OF COURSE LEARNING OUTCOMES

Program Outcomes	a	b	c	d	e	f	G	h	i	j	K
Course Learning Outcomes	2,3,5	1,2	2,3	3	4						

EVALUATION

At the end of semester, Subject teacher will submit an evaluation report. The purpose of this report is to identify aspects that will be highlighted by students and faculty's feedback for the subject with respect to its strengths as well as those areas which could be improved. The review report contains the following:

- Approved refinement decisions due for implementation,
- Actions taken based on previous subject review,
- Problems encountered in the subject delivery,
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SEMESTER-V

Design of Concrete Structures

L	T	P
3	1	0

SUBJECT CODE	CIVL3104
CREDIT POINTS	3.5
SEMESTER	V
FORMATIVE ASSESSMENT MARKS	50
SUMMATIVE ASSESSMENT MARKS	100
LAST REVISION DATE	

INSTRUCTIONS

The Question paper will consist of seven questions distributed over three sections A, B and C. Section A comprises of very short answer type questions and is compulsory. Section B & C comprise of short answers type and long answers type questions. These sections will have internal choice.

OBJECTIVES

1. To achieve knowledge and basic understanding of concrete making materials and their properties.
2. To get familiar with concepts of working stress and limit state methods.
3. To understand designing of basic elements of structures such as beam, slab and foundation.
4. To learn basic concepts of limit state design for flexure, shear, torsion, bond and anchorage
5. To acquire knowledge of columns and their effectiveness in civil engineering problem.

LEARNING OUTCOMES

1. Ableto achieve knowledgeand understandingonconcrete mix design and its properties.
2. Ableto get familiarwiththe design philosophies used to design concrete structures.
3. Enhancethecreativityofthe studentsto relate codes provision with the actual design problems.
4. Abilitytoacquireknowledge for thedesign of concrete structures using IS specifications.

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MODULE CONTENT

UNIT-I: Properties of hardened concrete Compressive strength, tensile strength, characteristic strength, grades of concrete, design stress-strain curve of concrete, bond strength, modulus of elasticity, shrinkage, creep, reinforcing steel, types and grades, design stress-strain curve of steel.
UNIT-II: Reinforced concrete design philosophies Working stress method of design and limit state method of design, partial safety factors, factored loads, codal recommendations. Characteristic and design values, Factored loads, design stress strain curves.
UNIT-III: Analysis and design of Beams Design of singly and doubly reinforced simply supported and cantilever rectangular/flanged beams, design of lintels, design for shear, bond and anchorage of reinforcement, limit states of deflection and cracking.
UNIT-IV: Design of Slabs Design of simply supported, cantilever slabs, one way and two way slabs.
UNIT-V: Design of Columns& footings Design of short and slender columns under axial load, under uniaxial and biaxial bending and shear force. Design of isolated footing for vertical load and Moment, Design of combined footings.
UNIT-VI:Retaining Walls Classification, Forces on retaining walls, design criteria, stability requirements, Proportioning of cantilever retaining walls, counterfort retaining walls, criteria for design of counterforts, design examples.

RECOMMENDED BOOKS

TEXT BOOK	1. Fundamentals of Reinforced Concrete Design. M.L.Gambir. PHI Learning (P) Ltd., New Delhi 2. Reinforced Cement Concrete Design. Neelam Sharma, S.K.Kataria& Sons
REFERENCE	1. Reinforced Concrete Design. S. UnikrishnaPillai Tata McGraw Hill Publishing Company Ltd., New Delh 2. Reinforced Concrete-Limit Stage Design, A.K.Jain, Nem Chand & Bros.,Roorkee. 3. Design Codes and Design Aids.

METHODS OF TEACHING AND STUDENT LEARNING

The subject is delivered through lectures, on-line support, text book / course material reading and practical exercises. Some videos will be shown to demonstrate certain concepts and research areas will be discussed. Resource material is provided with the help of PDM Educational Directory Services (PEDS).

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ASSESSMENT METHODOLOGIES

This subject will be evaluated for a total of 150 marks.

Theory:-

Assessment #	Type Of Assessment	Per Semester	Maximum Mark
1.	Class Test	4	10
2.	Sessional Test	2	30
3.	Group Discussion	4	10
4.	End Semester Exam	1	100

MAPPING OF ASSESSMENT METHODS AGAINST LEARNING OUTCOMES

Theory:-

Assessments	1	2	3	4
Class Test	x			
Quiz		x	X	
Assignment	x			x

MAPPING OF COURSE LEARNING OUTCOMES

Program Outcomes	a	b	c	d	e	f	g	h	i	j
Course Learning Outcomes	1	1,2	2,3,4	2,3,5	1,2,3	4,5	1,2	3,4		

EVALUATION

At the end of semester, Subject teacher will submit an evaluation report. The purpose of this report is to identify aspects that will be highlighted by students and faculty's feedback for the subject with respect to its strengths as well as those areas which could be improved. The review report contains the following:

- Approved refinement decisions due for implementation,
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- Problems encountered in the subject delivery
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SEMESTER-V

Transportation Engineering

L	T	P
3	0	0

MODULE CODE	CIVL3105
CREDIT POINTS	3.5
FORMATIVE ASSESMENT MARKS	50
SUMMATIVE ASSESMENT MARKS	100
END SEMESTER EXAM DURATION	3hrs
LAST REVISION DATE	

INSTRUCTIONS

The Question paper will consist of seven questions distributed over three sections A, B and C. Section A comprises of very short answer type questions and is compulsory. Section B & C comprise of short answers type and long answers type questions. These sections will have internal choice.

OBJECTIVES

1. To achieve knowledge and understanding on fundamentals of alignment, geometric and pavement design of highway
2. To get familiar with concepts of traffic engineering, highway construction materials
3. To understand basic components importance and characteristics of transport system.
4. To learn basic concepts of traffic surveys to collect traffic data.
5. To acquire knowledge of transport system components, particular geometric design of roads and intersection

LEARNING OUTCOMES

1. Able to find out the Transportation based problems on civil engineering field.
2. Able to calculate and planning of highway construction.
3. Able to apply fundamentals of Transportation engineering in the site specific field investigations.
4. To provide a basic understanding of use of highway and tunnelling in civil engineering.

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COURSE CONTENT

UNIT-I: Highway Development and Alignment Scope of highway engineering, road development and planning in India, role of NHAI, classification of roads, types of road pattern, Planning and Engineering surveys, Highway alignment, Highway project financing and economics of urban roads, expressways, national and state highways, PMGSY.
UNIT-II: Highway geometric design Various traffic study, Cross section, elements, width, camber, gradient, sight distance, over taking sight distance requirements and design principles of horizontal and vertical alignment, Alignment and Geometrics of hill roads. Highway safety and safety audit, pollution due to traffic.
UNIT-III: Highway materials Properties of sub-grade and pavement component materials, Tests on sub grade soil, aggregates and bituminous materials, Bituminous paving mixes, Marshall Mix design criteria. Use of fly-ash, concrete and polymers in highway construction
UNIT-IV: Pavement design Types of pavement (WBM, RCC, Prestressed CC etc), Factors influencing the design of flexible and rigid pavements, Methods of flexible and rigid pavement design, joints in rigid pavement, I.R.C codes and recommendations. Road side development: Arboriculture, planning plantation of trees, species selection and care of trees
UNIT-V: Tunnelling Considerations in tunneling, Tunnel alignment and grade, size and shape of a tunnel, methods of tunnelling in hard rocks, Methods of tunnelling in soft soils, compressed air and shield tunnelling, shafts in tunnels, Safety measures, ventilation, lighting and drainage in tunnels.
UNIT-VI: Highway construction, technique and quality control Techniques of construction of rural, urban roads and expressways, Causes and types of Pavement failures, strengthening of existing pavements, Surface and subsurface drainage, drainage of slopes and erosion control, drainage, maintenance problems on hill roads, road construction in water logged areas. Highway Maintenance: Various type of failures, evaluation and remedial measures.

RECOMMENDED BOOKS

TEXT BOOK	*1. Highway Engg.*by S.K. Khanna & C.E.G. Justo, Nem Chand Bros., Roorkee.
REFERENCE	1. *Principles and Practice of Highway Engg*. by L.R. Kadiyali, Khanna Publishers, Delhi. 3. *Principles of Pavement Design* by Yoder, E.J. &Witezak, M.W., John Wiley and Sons, USA. 4. *Tunnel Engineering* by S.C. Saxena, DhanpatRai Publications, New Delhi. 5. *A text book of Tunnel, Bridges and Railway Engg*. by S.P. Bindra, DhanpatRai Delhi.

MAPPING OF ASSESSMENT METHODS AGAINST LEARNING OUTCOMES

Theory:-

Assessments	**1**	**2**	**3**	**4**
Class Test	X			
Quiz		x	x	
Assignment	X			X

MAPPING OF COURSE LEARNING OUTCOMES

Program Outcomes	a	b	c	d	e	f	G	H	i	j
Mapping of Course Objectives with Students Learning Outcomes	1	2,3	4	3	1,2	3,4	2,4			

METHODS OF TEACHING AND STUDENT LEARNING

The subject is delivered through lectures, on-line support, text book / course material reading and practical exercises. Some videos will be shown to demonstrate certain concepts and research areas will be discussed. Resource material is provided with the help of PDM Educational Directory Services (PEDS).

ASSESSMENT METHODOLOGIES:

This subject will be evaluated for a total of 100 marks for theory and 50 marks for practical.

Theory:

Assessment #	Type Of Assessment	Per Semester	Maximum Mark
1.	Class Test	4	10
2.	Sessional Test	2	30
3.	Group Discussion	4	10
4.	End Semester Exam	1	100

Practical:

Assessment #	Type Of Assessment	Per Semester	Maximum Mark
1	Internal Assessment	2	25
2	External Assessment	1	25

EVALUATION

At the end of semester, Subject teacher will submit an evaluation report. The purpose of this report is to identify aspects that will be highlighted by students and faculty's feedback for the subject with respect to its strengths as well as those areas which could be improved. The review report contains the following:

- Approved refinement decisions due for implementation,
- Actions taken based on previous subject review,
- Problems encountered in the subject delivery,
- Suggested remedies / corrective measures, and
- Report discussed and analysed, actions taken as a result of this process and are communicated to the main stakeholders.

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SEMESTER-V

Transportation Engineering(P)

L	T	P
0	0	2

MODULE CODE	CIVL3106
CREDIT POINTS	1
FORMATIVE ASSESSMENT MARKS	25
SUMMATIVE ASSESSMENT MARKS	25
END SEMESTER EXAM DURATION	3 hrs
LAST REVISION DATE	

OBJECTIVES:

The aim of this subject is to develop understanding on different aspects related to components of pavement, material used and IS standard of material used for pavement.

1. To make the student learnsoil bearing capacity.
2. To learn problem solving techniques.
3. To understand aggregate bonding property.
4. To teach the student to design mix for flexible pavement.

LEARNING OUTCOMES:

1. To study the various property of aggregate.
2. To determine various strength parameter.
3. To introduce bitumen and its engineering behaviour.

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LIST OF EXPERIMENTS

1.	C B R Value test
2.	Determination of specific gravity and water absorption of coarse aggregate.
3.	Determination of aggregate crushing value.
4.	Determination of aggregate impact value.
5.	Determination of Los Angeles and Dorry abrasion value of aggregates.
6.	Determination of penetration value of bitumen.
7.	Determination of ductility value of bitumen.
8.	Viscosity test.
9.	Determination of softening point value of bitumen.
10.	Determination of flash and fire point of bitumen.
11.	Determination of marshal stability value
12.	Determination of specific gravity of bitumen.

METHODS OF TEACHING AND STUDENT LEARNING

The subject is delivered through lectures, on-line support, text book / course material reading and practical exercises. Some videos will be shown to demonstrate certain concepts and research areas will be discussed. Resource material is provided with the help of PDM Educational Directory Services (PEDS).

ASSESSMENT METHODOLOGIES:

This subject will be evaluated for a total of 50 marks for practical.

Practical:

Assessment #	Type Of Assessment	Per Semester	Maximum Mark
1	Internal Assessment	2	25
2	External Assessment	1	25

MAPPING OF COURSE LEARNING OUTCOMES

Program Outcomes	a	b	c	d	e	f	G	H	i	j	K
Course Learning Outcomes		1		2,3							

EVALUATION

At the end of semester, Subject teacher will submit an evaluation report. The purpose of this report is to identify aspects that will be highlighted by students and faculty's feedback for the subject with respect to its strengths as well as those areas which could be improved. The review report contains the following:

- Approved refinement decisions due for implementation,
- Actions taken based on previous subject review,
- Problems encountered in the subject delivery,
- Suggested remedies / corrective measures, and
- Report discussed and analysed, actions taken as a result of this process and are communicated to the main stakeholders.

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SEMESTER-V

SURVEY CAMP:

L	T	P
0	0	0

SUBJECT CODE	CIVL3107
CREDIT POINTS	1
SEMESTER	V
SUMMATIVE ASSESMENT MARKS	50
LAST REVISION DATE	

NOTE:-Each student has to undergo survey camp after 4th semester for 10 to 15 days during summer vacations and its evaluation shall be carried out in 5th semester.

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SEMESTER-V

STAAD Pro

L	T	P
0	**0**	4

MODULE CODE	CIVL3108
CREDIT POINTS	2
FORMATIVE ASSESMENT MARKS	50
SUMMATIVE ASSESMENT MARKS	50
END SEMESTER EXAM DURATION	2 hrs
LAST REVISION DATE	

OBJECTIVES

- To get familiar with STAAD.Pro, Introduction , Structural Analysis and Design, Documentation and Managing Views, Stair, Schedules and Modify schedules, Lights, Materials and Calculatingload types Design safe structure.
- For all the above topics, facilitator should explain design methodology, manual calculation and then explain the various inputs in the software.
- Motivate the students to do the verification problems in manual then by software.

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MODULE CONTENT

UNIT-I: Overview of Structural Overview of Structural Analysis and Design, Calculating Shear Force and Bending Moment values for various supports and load types, Introduction - STAAD.Pro V8i, STAAD Editor. Co-ordinate Systems, Global Vs Local, Creating a New Project in STAAD.Pro, Units - Model Generation, Creating Nodes & Members, Select Menu.
UNIT-II:Model Editing Tools Model Editing Tools - Translational Repeat, Circular Repeat, Move, Mirror, Rotate, Insert Node, For a Single Member, For Multiple Members. Add Beam - Point to Point, Between Midpoints, Perpendicular Intersection, Curved Member. Model Editing Tools - Connect Beams Along, Stretch Selected Members, Intersect Selected Members, Merge Selected Members, Renumber, Split Beam, Break Beams at Selected Nodes, and Creating Models by using Structure Wizard, Mini Project 1.
UNIT-III:Specification Support Specification, Member Property Specification, Member Offset, Material Specification, Group Specification, Loading - Creating a Primary Load, Adding Self weight. Loading , Nodal Load, Member Load , Uniform Force and Moment, Concentrated Force and Moment, Linear Varying Load, Trapezoidal Load, Hydrostatic Load, Area Load, Floor Load, Wind Load, Creating Load , Combination, Automatic Load Combination, Edit Auto Load Rules, Mini Project 2.
UNIT-IV: Introduction to Analysis Introduction to Analysis - Perform Analysis, Overview of Output Page, Pre-analysis Print, Post-analysis Print, Inactive or Delete Specification, General Guidelines for Design, Concrete Design in STAAD Pro - Column Design, Beam Design. RC Designer - Beam Design, Column Design, Project 1, Cylindrical and Cylindrical Reverse Co-ordinate Systems, Introduction to FEM, FEM Modeling in STAAD Pro, Snap Plate, Add Plate, Create Infill Plates, Generate Surface Meshing, Generate Plate Mesh.
Unit – V :Member Truss Member Truss, Creating FEM models by using Structure Wizard, Adding Plate Thickness, Plate Load - Pressure on Full Plate, Concentrated Load, Partial Plate Pressure Load, Trapezoidal Load, Hydrostatic Load, Element Joint Load. Slab Design - One-way Slab, Two-way Slab, Mini Project 5.
Unit – VI : DesignCAD Models Staircase Design, Shear wall Modeling and Design, Mini Project 6. Foundation Design - Isolated Footing, Combined / Strip Footing. Importing CAD Models, Report Setup, Plotting from STAAD Pro, Final Project.

RECOMMENDED BOOKS

TEXT BOOK	3. Staad pro V8i. 4. Structural modeling analysis & design using Staad pro software.

METHODS OF TEACHING AND STUDENT LEARNING

The subject is delivered through lectures, on-line support, text book / course material reading and practical exercises. Some videos will be shown to demonstrate certain concepts and research areas will be discussed. Resource material is provided with the help of PDM Educational Directory Services (PEDS).

ASSESSMENT METHODOLOGIES

This subject will be evaluated for a total of 100.

Theory:-

Assessment #	Type Of Assessment	Per Semester	Maximum Mark
1	Internal Assessment	2	50
2	External Assessment	1	50

MAPPING OF COURSE LEARNING OUTCOMES

Program Outcomes	a	b	c	d	E	f	G	h	i	j	K
Course Learning Outcomes	2	3		2							

EVALUATION

At the end of semester, Subject teacher will submit an evaluation report. The purpose of this report is to identify aspects that will be highlighted by students and faculty's feedback for the subject with respect to its strengths as well as those areas which could be improved. The review report contains the following:

- Approved refinement decisions due for implementation,
- Actions taken based on previous subject review,
- Problems encountered in the subject delivery,
- Suggested remedies / corrective measures, and
- Report discussed and analyzed, actions taken as a result of this process and are communicated to the main stakeholders.

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Professional Communication II

L	T	P
2	0	0

SUBJECT CODE	VALU0140
CREDIT POINTS	2
FORMATIVE ASSESMENT MARKS	25
SUMMATIVE ASSESMENT MARKS	50
END SEMESTER EXAM DURATION	
LAST REVISION DATE	

INSTRUCTIONS : The question paper will consist of ten questions distributed over three sections A, B and C Section A comprise of one question carrying very short answer type questions and is compulsory, Section B comprise of two short answer type questions and Section C comprises of five long answer type questions These sections will also have internal choices of questions

OBJECTIVE

8. To learn the fundamentals of different structures of English grammar
9. To calculate the structures and patterns of English Language and to use them correctly in speaking
10. To learn about the creative literature writings
11. To improve speaking and writing
12. To inculcate professional skills of presenting and working
13. To understand different types of literatures and background with critical insights
14. To make students aware of the detailed exposition of English Language

LEARNING OUTCOMES

Following this course students will be able to :-

7. Identify the different structures and patterns of English Language
8. To make students a good Public Speaker
9. To make students aware about different literature of the World
10. To make students speak well in Professional English Speaking and writing highly professional in particular
11. Know the process of Communication and its ethics
12. To make students write in professional manner

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MODULE CONTENT

UNIT : I COMMUNICATION AND THEORIES

- Nature of Communication Pitfalls/One-way versus Two ways communication/efficient and effective communication
- Tenses-formation/efficient and effective communication
- Paragraph writing and usages of Comma's
- Presentation Skills
    - Literary Works
- The Bluest Eyes by (Toni Morission)
- Untouchable by Mulk Raj Anand
- BuchiEmecheta (In the Ditch)

UNIT : II INTRODUCTION TO THE NOVELS AND SHORTS STORIES (GRAMMAR ETHICS)

- Adverbs and Formal Words
- Using Different Commas
- Noun and the Numbers
- Nouns and (Count and Uncountable Collective and Abstract)
    - Interview Skills
- Short Stories
    - Deliverance by Prem Chand
    - Joothan by Prem Chand
    - Great Expectation by Charles Dickens
    - DH Lawrence (Sons and Lovers)

UNIT : III BUSINESS COMMUNICATION

- Letter Writing – Formal and Informal
- Letters of inquiry & Complaint
- Job Application and Resume
- Bio-Data
- Report Writing (Preparation/Planning/Structure/Matter Cover/Frontispiece/Title Page/Copyright-Notice/Forwarding Letter/Preface/Acknowledgements/Table of Contents/List of Contents/List of illustration/Abstract and Summary
- Adjective and their usage in a Language
- Gustave Flaubert (Madame Bovery)
- ShashiDespande (That long silence)

UNIT : IV DIFFERENT STRUCTURES OF ENGLISH LANGUAGE AND THEIR PATTERN

- Introduction to Semantics (Synonyms/Antonyms/Homophones Form and function of words
- Linguistic (various scientific theories of language)
- Passive voice and random topic writing and effective writing skills
- Syntax/Infinitive/Gerund
- Degrees (positive) (Comparative) (Superlative)
- Literary Works
    - Virginia Wolf (To the light house)
    - AS Byatt (Virgin in the Garden)
    - Zora Neale (Their eyes were watching God)
    - Lawrence Hill (The Book of Negros)

UNIT : V DIFFERENT ASPECT OF ENGLISH LANGUAGE AND ITS USE IN PROFESSIONAL COMMUNICATION

- Formation of adjectives from Noun
- Formation of adjectives from Verbs
- Some foreign words and their usage
- American and British Language
- Meanings of has/have
- Public Communication
- Communication, Papers reading and errors commissions

LITERARY WORKS

a. Ian Mc Ewan :- Cement Garden
b. Martin Amiss :- London Fields
c. Murial Spark :- Prime of Mrs Jean Brodie
d. Angela Carter :- Magic Toyshop

UNIT : VI LINGUISTIC AND ENGLISH COMMUNICATION

- Paronyms
- Linguistic and various stylistic theories in writing
- Synthesis
- Phonetics
- Reading Comprehensive and interpretation
- Note – Taking/Making
- Summarizing

LITERACY WORKS

a. Noel Coward :- Private Lives
b. Arnold Wesker :- Chicken Soup with Barley

Recommended Books

TEXT BOOK	Essential of Communication by BR Sharma
Reference	Derrida (Semiotics and Sign Structure)

MAPPING OF COURSE OBJECTIVES AGAINST STUDENTS LEARNING OUTCOMES

Program Outcomes	a	b	c	d	e
Mapping of Course Objectives with Students Learning Outcomes	1, 2, 5	1, 2	2, 3, 5	2, 3, 4, 5	6, 7

METHODS OF TEACHING AND STUDENT LEARNING

The subjects is delivered through lectures, on-line support, text book/course material reading and practical exercises Some videos will be shown to demonstrate certain concepts and research areas will be discussed Resources material is provided with the help of PDM Educational Directory Services (PEDS)

ASSESSMENT METHODOLOGIES

This subject will be evaluated for a total of 75 marks for theory

Assessment #	Type of Assessment	Per Semester	Maximum Mark
1	Class Text	4	05
2	Sessional Text	2	15
3	Group Discussion	4	05
4	End Semester Exam	1	75

EVALUATION

At the end of Semester Subject teacher will submit an evaluation report The purpose of this report is to identify aspects that will be highlighted by students and faculty's feedback for the subject with respect to its strengths as well as those areas which could be improved The review report contains the following

- Approved refinement decisions due for implementation
- Actions taken based on previous subject review
- Problems encountered in the subject delivery
- Report discussed and analysed action taken as a result of this process and are communicated to the main stakeholders

PDM UNIVERSITY
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GEOMATICS ENGINEERING

L	T	P
3	0	0

MODULE CODE	CIVL3209
CREDIT POINTS	3
FORMATIVE ASSESMENT MARKS	25
SUMMATIVE ASSESMENT MARKS	75
END SEMESTER EXAM DURATION	3 hrs
LAST REVISION DATE	

INSTRUCTIONS

The Question paper will consist of seven questions distributed over three sections A, B and C. Section A comprises of very short answer type questions and is compulsory. Sections B & C comprise of short answers type and long answer type questions. These sections will have internal choice.

OBJECTIVE

1. To introduce students about various advance surveying methods.
2. To prepare the student to plan and conduct field work and application of scientific methodology in handling field samples.
3. To equip the candidate with the art, science and technology of GPS and applications of GIS in Mapping Resources.

LEARNING OUTCOMES

1. Understand the GPS components.
2. Choose a specific GPS receiver and GPS survey method.
3. Identify location of features and map the geospatial features.
4. Preparation of geospatial features in computing environment.
5. Create GIS and cartographic outputs for presentation.

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COURSE CONTENT

UNIT-I:Remote Sensing Introduction of Geomatics Engineering, Introduction of remote sensing and its systems, Analysis and measurements by remote sensing and interrelation of data, Applications to various projects, Introduction to EDM.
UNIT-II: Digital Image Processing Image Preprocessing, atmospheric, Radiometric an geometric corrections, Image enhancement and restoration, Contrast stretching-linear and non-linear. Noise removal, low, medium and high pass filters, other filters, multi-spectral enhancement.
UNIT-III: Geographical Information System Introduction of geographic information system (GIS), Basic Components, data input, storage & output. Geographical concepts and terminology, difference between image processing system and GIS. Utility of GIS, various GIS packages and their salient features, essential components of a GIS.
UNIT-IV:Geological Positioning System Components of GPS, GPS receivers, reference coordinates systems – datums, geoid, ellipsoid, WGS 84 system, time, signal propagation through atmosphere-their modelling and estimation, satellite orbit. Navigational data. Collection methods – static positioning, kinematic positioning – pseudo-kinematic and stop & go, observation planning and strategy. Engineering Applications of GPS.
UNIT-V: Electronics Theodolite Survey Introduction, definitions, Temporary and Permanent adjustment of theodolite, Measurement of horizontal and vertical angles, Methods of traversing, Closing error, Computation of latitudes and departure, check in closed and open traverse, Balancing of traverse, Gale's table, Traverse area, Omitted measurements.
UNIT VI: Tachometric Surveying Introduction, purpose, principle, instruments, stadia constants, methods of tachometry, anallatic lens, subtense bar, field work in tachometry, reduction of readings, errors and precisions.

RECOMMENDED BOOKS

TEXT BOOK	1. Satheesh, G., "Global Positioning System and its Applications", McGraw Hill. 2. Leick, A., "GPS Satellite Surveying", John Wiley. 3. Chandra, A.M. and Ghosh, S.K., "Remote Sensing and Geographical Information Systems", Alpha Science.
REFERENCE	1. Gonzalez, R.C. and Wintz, P., "Digital Image Processing", Addison Wesley. 2. DeMers, M.N., "Fundamentals of Geographic Information System", 3rd Ed., John Wiley.

MAPPING OF ASSESSMENT METHODS AGAINST LEARNING OUTCOMES

Theory:-

Assessments	**1**	**2**	**3**	**4**	**5**
Class Test	x		x		x
Quiz			x	x	
Assignment		x			x

MAPPING OF COURSE LEARNING OUTCOMES

Program Outcomes	a	b	c	d	e	f	G	h	i	j
Course Learning Outcomes	1	1,2	2,3	3,4	3,5	1,2,3		4,5		

METHODS OF TEACHING AND STUDENT LEARNING

The subject is delivered through lectures, on-line support, text book / course material reading and practical exercises. Some videos will be shown to demonstrate certain concepts and research areas will be discussed. Resource material is provided with the help of PDM Educational Directory Services (PEDS).

ASSESSMENT METHODOLOGIES:

This subject will be evaluated for a total of 100 marks for theory.

Theory:

Assessment #	Type Of Assessment	Per Semester	Maximum Mark
1.	Class Test	4	05
2.	Sessional Test	2	15
3.	Group Discussion	4	05
4.	End Semester Exam	1	75

EVALUATION

At the end of semester, Subject teacher will submit an evaluation report. The purpose of this report is to identify aspects that will be highlighted by students and faculty's feedback for the subject with respect to its strengths as well as those areas which could be improved. The review report contains the following:

- Approved refinement decisions due for implementation,
- Actions taken based on previous subject review,
- Problems encountered in the subject delivery,
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PDM UNIVERSITY
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SEMESTER-V

Construction Planning & Management

L	T	P
3	0	0

SUBJECT CODE	CIVL3210
CREDIT POINTS	3
SEMESTER	V
FORMATIVE ASSESMENT MARKS	25
SUMMATIVE ASSESMENT MARKS	75
LAST REVISION DATE	

INSTRUCTIONS:
The Question paper will comprise of seven questions distributed over three sections A, B and C. Section A comprises of very short answer type questions and is compulsory. Section B and Section C Comprise of short answer type and Long answer type questions and will have internal choices.

OBJECTIVES

1. The Syllabus will be useful to students of degree programmes in civil engineering.
2. To get familiar with concepts of construction planning and management ability to solve simple problems.
3. To understand behaviour of planning and their method of analysis.
4. To learn basic concepts of management and its application in realistic decision making.
5. To acquire knowledge of construction planning management increase the student's ability to make a decision of social and physical problem solving.(the student even in his professional life as engineering and supervisor engaged in planning and management of construction.)

LEARNING OUTCOMES

1. Able to find out the management based problem on civil engineering field.
2. Able to calculate and planning of construction.
3. Able to apply fundamentals of civil engineering in the site specific field investigations.
4. Able to understand how management stresses are transferred through site problem and be able to compute them.

MODULE CONTENT

UNIT-I Introduction to Construction Planning & Management Importance of construction management, objective & function of construction management, types of construction, resources for construction industry, stages in construction, construction team, engineering drawings.
UNIT-II Construction Planning Introduction to planning, work breakdown structure, stages of planning, scheduling, preparation of material, equipment, laboure and finance schedules, limitation of bar charts.
UNIT-III: Network Techniques in Construction Management Introduction, program me evaluation and review technique (PERT), critical path method (CPM).
UNIT-IV: Methods of Network Techniques Work breakdown, classification of activities, rules for developing networks, network development, network analysis, critical activities and critical path, resource allocation / levelling.
UNIT-V: Organising Construction Principle of organisation, communication, leader ship and human relations, types of organisation, organisation for a construction firm, site organisation: - roles of the executive engineer, important duties, temporary services, job layout.
UNIT-VI: Inspection and Quality Control Need for inspection and quality control, principle of inspection, enforcement of specification, stages of inspection and quality control, technical services and inspection team, testing of structures.

RECOMMENDED BOOKS

TEXT BOOK	6. Construction Planning and Management, U K Srivastava is an engineering course book. 7. Engineering Construction Planning And Management P .S.,Gahlot B. M., Dhir New Age International (P) Limited , Publishers London. New Delhi. Nairobi . 8. Project Planning and Control with PERT and CPM , B.C. Punmia (Author), K.K. Khandelwal (I.A.S.) 9. Construction Management and Planning by B. Sengupta (Author), H. Guha (Author)
REFERENCE	4. https://books.google.co.in/books/.../Construction_Planning_And_Management.html?i... 5. .https://www.quora.com/What-are-some-good-books-on-project-planning-and-management-in-civil-engineering

METHODS OF TEACHING AND STUDENT LEARNING

The subject is delivered through lectures, on-line support, text book / course material reading and practical exercises. Some videos will be shown to demonstrate certain concepts and research areas will be discussed. Resource material is provided with the help of PDM Educational Directory Services (PEDS).

ASSESSMENT METHODOLOGIES

This subject will be evaluated for a total of 100 marks for theory.
Theory:-

Assessment #	Type Of Assessment	Per Semester	Maximum Mark
1.	Class Test	4	5
2.	Sessional Test	2	15
3.	Group Discussion	4	5
4.	End Semester Exam	1	75

MAPPING OF ASSESSMENT METHODS AGAINST LEARNING OUTCOMES

Theory:-

Assessments	1	2	3	4	5

Class Test	x				x
Quiz		x	x		x
Assignment	x			x	

MAPPING OF COURSE LEARNING OUTCOMES

Program Outcomes	a	b	c	d	e	f	g	h	I	j
Course Learning Outcomes	1	1,2	2,3,4	2,3,5	1,2,3	4,5	1,2	3,4		

EVALUATION

At the end of semester, Subject teacher will submit an evaluation report. The purpose of this report is to identify aspects that will be highlighted by students and faculty's feedback for the subject with respect to its strengths as well as those areas which could be improved. The review report contains the following:

- Approved refinement decisions due for implementation,
- Actions taken based on previous subject review,
- Problems encountered in the subject delivery,
- Suggested remedies / corrective measures, and
- Report discussed and analysed, actions taken as a result of this process and are communicated to the main stakeholders.

PDM UNIVERSITY
DEPARTMENT OF CIVIL ENGINEERING

SEMESTER-V

Design of Industrial Structures

L	T	P
3	0	0

MODULE CODE	CIVL3211
CREDIT POINTS	3
FORMATIVE ASSESMENT MARKS	25
SUMMATIVE ASSESMENT MARKS	75
END SEMESTER EXAM DURATION	3 hrs
LAST REVISION DATE	

INSTRUCTIONS

The Question paper will consist of seven questions distributed over three sections A, B and C. Section A comprises of very short answer type questions and is compulsory. Sections B & C comprise of short answers type and long answer type questions. These sections will have internal choice.

OBJECTIVE

1. To provide a basic understanding of use of steels in civil engineering
2. To introduce analysis and design of steel transmission line towers and tower foundations.
3. To develop technical competence in the design of industrial building frames, water tanks.
4. To deal with plastic analysis of structures.
5. To analyse and design the cold forms sections.

LEARNING OUTCOMES

1. Recognize the design philosophy of steel structures and have concept on limitstate design.
2. Apply the principles, procedures and current code requirements to the analysisand design of steel transmission line towers, industrial building frames and water tanks.
3. Gain the ability to undertake design problems on the basis of plastic design theory.
4. Ability to analyse and design cold formed sections.

COURSE CONTENT

UNIT-I: Elementary Plastic Analysis and Design Introduction, Scope of plastic analysis, ultimate load carrying capacity of tension members and compression members, flexural members, shape factor, mechanisms, plastic collapse, analysis, plastic analysis applied to steel beams and simple portal frames and design.
UNIT-II: Industrial Buildings Loads, general arrangement and stability, design considerations, design of purlins, design of roof trusses, industrial building frames, bracings and stepped columns.
UNIT-III: Design of Water Tanks Introduction, permissible stresses, design of circular, rectangular and pressed steel tanks including staging.
UNIT-IV: Design of Steel Stacks Introduction, various loads to be considered for the design of steel stacks, design of steel stacks including foundation.
UNIT-V: Towers Transmission line towers, microwave towers, design loads, classification, design procedure and specification.
UNIT-VI: Cold Formed Sections Introduction and brief description of various type of cold-formed sections, local buckling, concepts of effective width and effective sections, elements with stiffeners, design of compression and bending elements.

RECOMMENDED BOOKS

TEXT BOOK	1. Design of Steel Structures : A.S.Arya and J.L. Ajmani 2. Design of Steel Structures : Ram Chandra 3. Design of Steel Structures : P. Dayaratnam
REFERENCE	1. Design of Steel Structures, S.K. Duggal, TMH Pub, New Delhi. 2. Design Codes

METHODS OF TEACHING AND STUDENT LEARNING

The subject is delivered through lectures, on-line support, text book / course material reading and practical exercises. Some videos will be shown to demonstrate certain concepts and research areas will be discussed. Resource material is provided with the help of PDM Educational Directory Services (PEDS).

ASSESSMENT METHODOLOGIES:

This subject will be evaluated for a total of 100 marks for theory.

Theory:

Assessment #	Type Of Assessment	Per Semester	Maximum Mark
1.	Class Test	4	05
2.	Sessional Test	2	15
3.	Group Discussion	4	05
4.	End Semester Exam	1	75

MAPPING OF ASSESSMENT METHODS AGAINST LEARNING OUTCOMES

Theory:-

Assessments	1	2	3	4
Class Test	x			
Quiz		x	x	
Assignment	x			X

MAPPING OF COURSE LEARNING OUTCOMES

Program Outcomes	a	b	c	d	e	F	g	h	i	j
Course Learning Outcomes	1	1,2	2,3,4	2,3	1,2,3	4	1,2	3,4		

EVALUATION

At the end of semester, Subject teacher will submit an evaluation report. The purpose of this report is to identify aspects that will be highlighted by students and faculty's feedback for the subject with respect to its strengths as well as those areas which could be improved. The review report contains the following:

- Approved refinement decisions due for implementation,
- Actions taken based on previous subject review,
- Problems encountered in the subject delivery,
- Suggested remedies / corrective measures, and
- Report discussed and analysed, actions taken as a result of this process and are communicated to the main stakeholders.

PDM UNIVERSITY
DEPARTMENT OF CIVIL ENGINEERING

SEMESTER-V

Tall Buildings

L	T	P
3	0	0

MODULE CODE	CIVL3212
CREDIT POINTS	3
FORMATIVE ASSESMENT MARKS	25
SUMMATIVE ASSESMENT MARKS	75
END SEMESTER EXAM DURATION	3hrs
LAST REVISION DATE	

INSTRUCTIONS

The Question paper will consist of seven questions distributed over three sections A, B and C. Section A comprises of very short answer type questions and is compulsory. Section B & C comprise of short answers type and long answers type questions. These sections will have internal choice.

OBJECTIVES

The aim of this subject is to impart knowledge to familiarize the students with the methods of analysis of tall steel and concrete buildings under various loading conditions.

1. To learn principles of stability of high rise buildings.

2. To design the high rise buildings for earthquake and wind resistance.

3. To evaluate the performance of high rise structures for strength and stability.

LEARNING OUTCOMES

1. Achieve Knowledge of design and development of problem solving skills.
2. Understand the principles of strength and stability.
3. Design and develop analytical skills.
4. Summarize the behavior of various structural systems.
5. Understand the concepts of P-Delta analysis.

PDM UNIVERSITY
DEPARTMENT OF CIVIL ENGINEERING

MODULE CONTENT

UNIT-I:Design Criteria Design philosophy, loading, sequential loading, and materials – high performance concrete, fiber reinforced concrete, lightweight concrete, design mixes. Loading and Movement: Gravity loading: Dead and live load, methods of live load reduction, Impact, Gravity loading, Construction loads.
UNIT-II: Wind and Earthquake loading Static and dynamic approach,Analytical and wind tunnel experimentation method.Equivalent lateral force, modal analysis, combinations of loading, working stress design, Limit state design, Plastic design.
UNIT-III: Behavior of Various Structural Systems Factors affecting growth, Height and structural form; High rise behavior, Rigid frames, braced frames, in-filled frames, shear walls, coupled shear walls, wall-frames, tubular, cores, Futigger – braced and hybrid mega system.
UNIT-IV : Introduction to flooring systems The floor structure or horizontal building plane floor framing system, horizontal bracing, composite floor system, load bearing wall panel systems, panel, frame systems, multi storey box systems.
UNIT-V:Stability of Tall Buildings Overall buckling analysis of frames, wall frames, approximate methods, second order effects of gravity of loading, P-Delta analysis, simultaneous first order and P-Delta analysis, Transnational, Torsional instability, out of plum effects, stiffness of member in stability, effect of foundation rotation.
UNIT-VI:Structural elements Sectional shapes, properties and resisting capacities, design, deflection, cracking, pre-stressing, shear flow. Design for differential movement, creep and shrinkage effects, temperature effects and fire.

RECOMMENDED BOOKS

TEXT BOOKS	1*Structural Analysis and Design of Tall Buildings*, B.S Taranath, McGraw Hill. *2. High rise building structures,*John Wiley, Wilf gang Schuller
REFERENCES	1. *Advances in Tall Buildings,* Lynn S. Beedle, CBS Publishers. 2.*Tall building structures Analysis and Design*, Bryan Stafford Smith & Alexcoull ,John Wiley

METHODS OF TEACHING AND STUDENT LEARNING

The subject is delivered through lectures, on-line support, text book / course material reading and practical exercises. Some videos will be shown to demonstrate certain concepts and research areas will be discussed. Resource material is provided with the help of PDM Educational Directory Services (PEDS).

ASSESSMENT METHODOLOGIES

This subject will be evaluated for a total of 100 marks for theory.

Theory:-

Assessment #	Type Of Assessment	Per Semester	Maximum Mark
1.	Class Test	4	05
2.	Sessional Test	2	15
3.	Group Discussion	4	05
4.	End Semester Exam	1	75

MAPPING OF ASSESSMENT METHODS AGAINST LEARNING OUTCOMES

Theory:-

Assessments	1	2	3	4	5
Class Test	x				
Quiz		x	x		

Assignment	x			x	

MAPPING OF COURSE LEARNING OUTCOMES

Program Outcomes	a	b	c	d	e	f	g	h	i	j
Course Learning Outcomes	1	1,2	2,3,4	2,3,5	1,2,3	4,5	1,2	3,4		

EVALUATION

At the end of semester, Subject teacher will submit an evaluation report. The purpose of this report is to identify aspects that will be highlighted by students and faculty's feedback for the subject with respect to its strengths as well as those areas which could be improved. The review report contains the following:

- Approved refinement decisions due for implementation,
- Actions taken based on previous subject review,
- Problems encountered in the subject delivery,
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PDM UNIVERSITY
DEPARTMENT OF CIVIL ENGINEERING

SEMESTER – VI

MODULE CODE	CATEGORY	SUB-CATEGORY	MODULE	L	T	P	C	Internal Marks	External Marks	Total
CIVL3113	E	PC	IRRIGATION ENGINEERING	3	1	0	3.5	50	100	150
CIVL3114	E	PC	RAILWAY & AIRPORT ENGINEERING	4	0	0	4	50	100	150
CIVL3115	E	PC	QUANTITY SURVEYING AND COST ESTIMATION	3	0	0	3	25	75	100
CIVL3116	E	PC	GEOTECHNICAL ENGINEERING	3	1	0	3.5	50	100	150
CIVL3117	E	PC	RCC LAB	0	0	2	1	25	25	50
CIVL3118	E	PD	SPECIALIZED MINOR PROJECT (INDIVIDUAL) BUILDING ESTIMATION COSTING-AUTODESK + 3D PRINTING	0	0	8	4	100	100	200
CIVL3119	P	CI	CREATIVITY AND INNOVATION	0	0	2	1	50	0	50
	E	PE	ELECTIVE-VI*	4	0	0	4	50	100	150
	E	GE	ELECTIVE-Aφ	4	0	0	4	50	100	150
TOTAL CREDIT				**21**	**2**	**12**	**28**	450	700	1150

L = Lecture
T = Tutorial
P = Practical
C = Credit Point

ELECTIVES

MODULE CODE	**ELECTIVE-VI***
CIVL3220	DESIGN OF REINFORCED CONCRETE STRUCTURES
CIVL3221	GROUND IMPROVEMENT TECHNIQUES
MODULE CODE	**GENERIC ELECTIVES-Aφ**
SAPM0321	SAP (MM)ψ
SAPS0322	SAP (SD)ψ
SAPF0323	SAP (FI)ψ

PDM UNIVERSITY
DEPARTMENT OF CIVIL ENGINEERING

Irrigation Engineering

L	T	P
3	1	0

SUBJECT CODE	CIVL3113
FORMULATIVE ASSESSMENT MARKS	50
SUMMATIVE ASSESSMENT MARKS	100
CREDIT POINTS	3.5
SEMESTER	VI
LAST REVISION DATE	

INSTRUCTIONS: The question paper will consist of ten questions distributed over three sections A, B and C. Section A comprise of one question carrying very short answer type questions and is compulsory, Section B comprises of two short answer type questions and Section C comprises of five long answer type questions. These sections will also have internal choices of questions.

OBJECTIVE

1. To achieve knowledge and understanding on fundamentals of irrigation system in Civil engineering.
2. To get familiar with concepts of design irrigation canals and canal network problems.
3. To understand irrigation canal structures and their applications in engineering problems
4. To learn basic concepts of cross drainage and diversion head works.
5. To acquire knowledge of spillway, earth dams, and energy dissipation works and their effectiveness in civil engineering
6. To study storage and head works
7. To study Canal fall and regulation works.

LEARNING OUTCOMES

Following this course students will be able to:

1. Identify Need for Irrigation in India.
2. To design various Irrigation methods to increase crop yield.
3. To work on fundamentals of hydraulic design aspects of aqueducts.
4. To Know types of Canal falls ,necessity and location, development of falls
5. Understand the need of storage Head works.

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DEPARTMENT OF CIVIL ENGINEERING

MODULE CONTENT

UNIT-I: Water Requirement of crops Need for Irrigation in India-Scope, types of irrigation, crop period, crop seasons, Irrigation efficiencies, Duty-Delta-base period-relation between them; Surface & subsurface irrigation method, Irrigation water Quality.
UNIT-II: Canal Irrigation and seepage theories Alluvial and Non-alluvial canal, Sediment Transport- Importance & Mechanics of transport, bed load & suspended load- Estimation, Design of channels in India Regime channels- Kennedy and Lacey's theory, Water logging- causes- effects- control measures, canal lining, Land Reclamation. Bligh's creep theory, Khosla's method of independent variables, use of Khosla's curves, various corrections.
UNIT-III: Cross drainage works and Diversion head works Classification and their selection, Fundamentals of hydraulic design aspects of aqueducts, syphon aqueducts, super passage, canal syphon and level crossing, design of transitions and river training works. Varies components and their functions, layout plan, selection of site for diversion head works.
UNIT-IV: Canal fall and Regulation works Types of Canal falls, necessity and location, development of falls, Principal of design of Sarda type fall, roughening devices, Off-take alignment, cross-regulator and distributor, head regulators, devices to control silt entry into the off-taking channel and silt ejector, canal escapes, types of escapes.
UNIT-V: Storage Head works Types of dams, selection of a site, Earth dam, design principles, forces acting on dam seepage through earth dams, seepage line, control of seepage, design of filters ;gravity dam- forces acting, stability criterion, elementary profile of a dam, cut-offs and drainage galleries, arch dams-constant angle and constant radius arch dam.
UNIT- VI: Spillways and Energy Dissipations Essential requirements of spillway and spillway's capacity, types of spillways and their suitability, Ogee spillways, chute, side channel, shaft and syphon spillways, energy dissipation below spillways, stilling basins, USBR and I..S. Stilling Basins.

RECOMMENDED BOOKS

TEXT BOOK	1. *Irrigation Engineering and Hydraulic Structures*, S.K.GargKhanna Publishers, Delhi
REFERENCE	1. *Irrigation and Water Resources Engineering*, New Age Internal Publishers, New Delhi. 2. *Applied Hydrology* - Ven T Chow, David R Maidment, Larry W Mays, McGraw-Hill, New Delhi 3. *Fundamentals of Irrigation Engineering*, Nem Chand and Brothers, roorkee

METHODS OF TEACHING AND STUDENT LEARNING

The subject is delivered through lectures, on-line support, text book / course material reading and practical exercises. Some videos will be shown to demonstrate certain concepts and research areas will be discussed. Resource material is provided with the help of PDM Educational Directory Services (PEDS).

ASSESSMENT METHODOLOGIES:

This subject will be evaluated for a total of 150 marks for theory.

Assessment #	Type Of Assessment	Per Semester	Maximum Mark
1.	Class Test	4	10
2.	Sessional Test	2	30
3.	Group Discussion	4	10
4.	End Semester Exam	1	100

MAPPING OF ASSESSMENT METHODS AGAINST LEARNING OUTCOMES

Theory:-

Assessments	1	2	3	4	5	6	7
Class Test	x					x	X
Quiz		x	x				
Assignment	x			x	X		x

MAPPING OF COURSE OBJECTIVES AGAINST STUDENTS LEARNINGOUTCOMES

Program Outcomes	a	b	c	D	E
Mapping of Course Objectives with Students Learning Outcomes	1, 2, 5	1, 2	2, 3, 5	2, 3, 4, 5	6, 7

EVALUATION

At the end of semester, Subject teacher will submit an evaluation report. The purpose of this report is to identify aspects that will be highlighted by students and faculty's feedback for the subject with respect to its strengths as well as those areas which could be improved. The review report contains the following:

- Approved refinement decisions due for implementation,
- Actions taken based on previous subject review,
- Problems encountered in the subject delivery,
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PDM UNIVERSITY
DEPARTMENT OF CIVIL ENGINEERING

Railway & Airport Engineering

L	T	P
4	0	0

SUBJECT CODE	CIVL3114
FORMULATIVE ASSESSMENT MARKS	50
SUMMATIVE ASSESSMENT MARKS	100
CREDIT POINTS	4
SEMESTER	VI
LAST REVISION DATE	

INSTRUCTIONS: The question paper will consist of ten questions distributed over three sections A, B and C. Section A comprise of one question carrying very short answer type questions and is compulsory, Section B comprises of two short answer type questions and Section C comprises of five long answer type questions. These sections will also have internal choices of questions.

OBJECTIVE

1. To learn the fundamentals, planning and design concepts of railways,
2. To Design airways and its services.
3. To study the various method of tunnelling,
4. To study the various condition in design of docks and harbours.
5. To study Docks and Harbours.
6. To study Airport Planning and Design.
7. To study various Specific requirements for design of airport pavements.

LEARNING OUTCOMES

Following this course students will be able to:

1. Describe the basic components of Railways, their role, and importance.
2. Explain Interlocking and modern signal system
3. Analyse, evaluate and recommend strategies for airport design and operations
4. Apply engineering principles to identify and investigate tunneling problems and evaluate sustainable solutions.
5. Understand the specific requirements for design of airport pavements.

PDM UNIVERSITY
DEPARTMENT OF CIVIL ENGINEERING

COURSE CONTENT

UNIT-I: Components and Geometric design of Railways Requirement and capacity of railway tracks, Various gauges, typical cross sections, Coning of wheels and tilting of rails, Functions and requirements of component parts of a railway track, Wear and tear and creep of rails, Requirement and types of sleepers, rail fixtures, ballast, sub-grade and embankments, Geometric design of railway track, Horizontal curves, radius, super elevation, transition curves, safe speed on curves, different types of gradients, Grade compensation.
UNIT-II: Railway operation and control Points and crossings and their design, Track junctions and simple track layouts, details of different types of stations and yards, signalling and interlocking, Various systems for control of train movements
UNIT-III: Railway construction and maintenance Construction of railway track, earthwork, plate laying and packing, maintenance of track alignment, renewal of component parts and track drainage, modern methods of track maintenance, Classification and causes of accidents and their prevention.
UNIT-IV: Tunnelling Considerations in tunnelling, Tunnel alignment and grade, size and shape of a tunnel, methods of tunnelling in hard rocks, Methods of tunnelling in soft soils, compressed air and shield tunnelling, shafts in tunnels, Safety measures, ventilation, lighting and drainage in tunnels.
UNIT-V: Docks and Harbours Historical development of ports, harbours and docks, Tides, winds and waves, Causes and impact of Tsunami waves, Types of harbours, Types of docks, Break waters classification and types, Jetties, Landing stages and wharves.
UNIT-VI: Airport planning and design Traffic characteristics and operations, fleet requirements, component parts of airport and site selection, Runway design, Orientation, basic runway length, geometric design, design of taxiways and aprons, terminal area planning, facilities in terminal area and their planning concepts, Environmental requirements for Airport projects, Design of Airport drainage system, Lightening of airport, Specific requirements for design of airport pavements.

RECOMMENDED BOOKS

TEXT BOOK	1. Highway Engg. by S.K. Khanna & C.E.G. Justo, Nem Chand Bros., Roorkee.
REFERENCE	1. Principles and Practice of Highway Engg. by L.R. Kadiyali, Khanna Publishers, Delhi. 2. Principles of Pavement Design by Yoder, E.J. &Witezak, M.W., John Wiley and Sons, USA. 3. Tunnel Engineering by S.C. Saxena, DhanpatRai Publications, New Delhi. 4. A text book of Tunnel, Bridges and Railway Engg. by S.P. Bindra, DhanpatRai Delhi

METHODS OF TEACHING AND STUDENT LEARNING

The subject is delivered through lectures, on-line support, text book / course material reading and practical exercises. Some videos will be shown to demonstrate certain concepts and research areas will be discussed. Resource material is provided with the help of PDM Educational Directory Services (PEDS).

ASSESSMENT METHODOLOGIES:

This subject will be evaluated for a total of 150 marks for theory and 50 marks for practical.

Theory:

Assessment #	Type Of Assessment	Per Semester	Maximum Mark
1.	Class Test	4	10
2.	Sessional Test	2	30
3.	Group Discussion	4	10
4.	End Semester Exam	1	100

Practical:

Assessment #	Type Of Assessment	Per Semester	Maximum Mark
1	Internal Assessment	2	25
2	External Assessment	1	25

MAPPING OF ASSESSMENT METHODS AGAINST LEARNING OUTCOMES

Theory:-

Assessments	1	2	3	4	5	6	7
Class Test	x					x	X
Quiz		x	x				
Assignment	x			x	X		x

MAPPING OF COURSE OBJECTIVES AGAINST STUDENTS

LEARNINGOUTCOMES

Program Outcomes	a	b	c	D	E
Mapping of Course Objectives with Students Learning Outcomes	1, 2, 5	1, 2	2, 3, 5	2, 3, 4, 5	6, 7

EVALUATION

At the end of semester, Subject teacher will submit an evaluation report. The purpose of this report is to identify aspects that will be highlighted by students and faculty's feedback for the subject with respect to its strengths as well as those areas which could be improved. The review report contains the following:

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PDM UNIVERSITY
DEPARTMENT OF CIVIL ENGINEERING

QUANTITY SURVEYING AND COST ESTIMATION

L	T	P
3	0	0

SUBJECT CODE	CIVL3115
FORMULATIVE ASSESSMENT MARKS	25
SUMMATIVE ASSESSMENT MARKS	75
CREDIT POINTS	3
SEMESTER	VI
LAST REVISION DATE	

INSTRUCTIONS: The question paper will consist of ten questions distributed over three sections A, B and C. Section A comprise of one question carrying very short answer type questions and is compulsory, Section B comprises of two short answer type questions and Section C comprises of five long answer type questions. These sections will also have internal choices of questions.

OBJECTIVE

1. To learn the fundamentals of estimation of different types of civil engineering structures.
2. To calculate the quantities of materials to be used.
3. To learn the specifications for various construction works.
4. To learn about the tender publication and acceptance processes.
5. To analyse the rates of materials as per their quantities.
6. To determine depreciation in the value of structure.
7. To find the value of the structures for re-sale and renting.

LEARNING OUTCOMES

Following this course students will be able to:

1. Identify quantities (takeoff) of the various materials involved in the project.
2. Create summaries and detailed quantity surveying reports quickly and easily.
3. Read detailed specifications and drawings and their role in quantity estimation.
4. Know the various processes of tendering and analysis of rates.
5. Understand the need and different method of depreciation and valuation.

MODULE CONTENT

UNIT-I: Basics of Estimation Principle of estimation, Estimate, Types of estimate, Main items of work, Methods of estimation i.e. Long wall and Short wall method, Centre line method, Deduction for openings, R.C.C., D.P.C. and R.B. work, Estimation for Flooring, Roofing, Plastering, Pointing, Doors, Windows, Wood Work, Iron Work and Lump sum items.
UNIT-II: Quantity Analysis Calculations for: Earthwork (excavation and filling), Brick masonry work, Cement Mortar, White washing and Painting, P.C.C, R.C.C, D.P.C, Wood work, Iron works etc. Deduction for openings; with their respective examples for practice.
UNIT-III: Specification Necessity of specification types of specification, general specification, specification of bricks, cement, sand, water, lime, reinforcement, detailed specification for earthwork, cement, concrete, brickwork, flooring, D.P.C, R.C.C, cement plastering, white and colour washing, distempering, painting.
UNIT-IV: Cost Estimation and Tendering Purpose and principal factors affecting the rate of an item of work, overhead costs, procedure of rate analysis for items: Earth work, concrete works, R.C.C works, reinforced brick work, plastering, painting, finishing (white washing ,distempering) preparing analysis of rates. Tender and kinds of tender, processes of tendering, measurement book and types, cashbook preparation, examination and payment of bills, maintenance of muster roll.
UNIT-V: Depreciation Different methods of calculating depreciation- Straight line method, Declining balance method, Sinking fund method, Quantity survey method, Depreciated cost, Case studies.
UNIT-VI: Valuation Cost of engineering services, rent fixation, valuation of properties, methods of valuation, book value, market value, profit and loss, scrap value, salvage value, evaluation of projects, annual cost method, rate of return method, benefit cost ratio method, case studies.

RECOMMENDED BOOKS

TEXT BOOK	1. B.N. DATTA- Estimating & Costing 2. SANJAY MAHAJAN- Quantity Surveying and Valuation
REFERENCE	1. Chakraborty- Estimate costing & specification in civil engg. 2. Kohli & Kohli - A text book on estimating & costing (Civil) with drawings Ambala Ramesh Publications. 3. Rangwala SC- Estimating & Costing-AnandCharotar Book Stall. 4. Pasrija & Arora Estimating Costing, Valuation, New Asian Publishers.

METHODS OF TEACHING AND STUDENT LEARNING

The subject is delivered through lectures, on-line support, text book / course material reading and practical exercises. Some videos will be shown to demonstrate certain concepts and research areas will be discussed. Resource material is provided with the help of PDM Educational Directory Services (PEDS).

ASSESSMENT METHODOLOGIES:

This subject will be evaluated for a total of 100 marks for theory.

Assessment #	Type Of Assessment	Per Semester	Maximum Mark
1.	Class Test	4	05
2.	Sessional Test	2	15
3.	Group Discussion	4	05
4.	End Semester Exam	1	75

MAPPING OF ASSESSMENT METHODS AGAINST LEARNING OUTCOMES

Theory:-

Assessments	1	2	3	4	5	6	7
Class Test	x					x	X
Quiz		x	x				
Assignment	x			x	X		x

MAPPING OF COURSE OBJECTIVES AGAINST STUDENTS LEARNING OUTCOMES

Program Outcomes	a	b	c	D	E
Mapping of Course Objectives with Students Learning Outcomes	1, 2, 5	1, 2	2, 3, 5	2, 3, 4, 5	6, 7

EVALUATION

At the end of semester, Subject teacher will submit an evaluation report. The purpose of this report is to identify aspects that will be highlighted by students and faculty's feedback for the subject with respect to its strengths as well as those areas which could be improved. The review report contains the following:

- Approved refinement decisions due for implementation,
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PDM UNIVERSITY
DEPARTMENT OF CIVIL ENGINEERING

GEOTECHNICALENGINEERING

L	T	P
3	1	0

SUBJECT CODE	CIVL3116
FORMULATIVE ASSESSMENT MARKS	50
SUMMATIVE ASSESSMENT MARKS	100
CREDIT POINTS	3.5
SEMESTER	VI
LAST REVISION DATE	

INSTRUCTIONS: The question paper will consist of ten questions distributed over three sections A, B and C. Section A comprise of one question carrying very short answer type questions and is compulsory, Section B comprises of two short answer type questions and Section C comprises of five long answer type questions. These sections will also have internal choices of questions.

OBJECTIVES

1. To achieve knowledge and understanding on fundamentals of soil bearing capacity in science and engineering.
2. To get familiar with concepts of failure and stabilization of slope.
3. To understand the concept of lateral earth pressure acting on retaining structures.
4. To learn basic concepts in designing of shallow and deep foundation.
5. To acquire knowledge of soil stabilization their effectiveness in problem solving.

LEARNING OUTCOMES

Following this course students will be able to

1. Understand the various soil properties and their necessitiesin engineering.
2. Know the bearing capacity of soil and their estimation.
3. Learn various kind of foundations, properties and their selection concept.
4. Learn earth pressure and its relationship with retaining structures.
5. Understand the earth retaining structures and concept of braced excavation.
6. Know the slope failures, their causes and controls.
7. Learn the soil improvement techniques and their outcomes.

MODULE CONTENT

UNIT-I:Bearing capacity of soils Bearing capacity criteria and factors affecting it, Modes of shear failure, Theories of Bearing capacity, Foundation Pressures, Permissible settlements, Allowable bearing pressure, Field tests to estimate bearing capacity.
UNIT-II: Shallow foundations Shallow foundation- its types and selection of foundation, location and depth of foundation, causes of settlement, settlement analysis, Design of shallow foundations, design of combined footings, Mat foundations.
UNIT-III:Deep foundation Classification of Piles, Pile driving equipment, calculation of bearing capacity of a single pile, Under-reamed piles, Pile groups, Uplift and Lateral resistance of piles, Inclined loading of piles, pile cap. *Drilled Piers*: Types and uses, bearing capacity, settlement, construction procedures *Caissons*: Types, uses and construction procedures.
UNIT-IV:Lateral Earth Pressure Limit analysis and Limit Equilibrium methods, Earth pressure at rest, Rankine's states of Plastic equilibrium, Earth pressure theories, Graphical methods to determine magnitude and location of resultant earth pressure; Concept of Arching of soils and braced cuts.
UNIT-V: Earth retaining structures Gravity type retaining walls: Proportioning retaining walls, stability requirements, backfill materials and drainage; Joints in retaining walls; Cantilever and Anchored sheet pile walls, Braced excavations- Depth of unsupported vertical cut, sheeting and bracing for deep excavation, movements associated with sheeting, and bracing, modes of failure of braced cuts, pressure distribution behind sheeting.
UNIT-VI:Stability of slopes Short and long term failures, causes of failure, Types of landslides and slope movements, factor of safety, Concept of slope stability analysis, Infinite and finite slopes and their analysis, Selection of shear strength parameters, slope protection measures. *Soil improvement techniques*: Compaction, Drainage and vibration methods, Pre compression and consolidation, grouting and injection; Chemical stabilization, Geo membranes and geotextiles.

RECOMMENDED BOOKS

TEXT BOOK	1. J.E.Bowles, *"Foundation Analysis and Design",* Mc-Graw Hill 2. *Basic and applied Soil Mechanics*: Gopal Ranjan& A.S.R. Rao New Age International Publisher
REFERENCE	1. Shashi K. Gulati and ManojDatta, "*Geotechnical Engineering*", Tata Mc Graw Hill 2. Donald P. Coduto, "*Geotechnical Engineering", Prentice*-Hall India. 3. P.C. Verghese, "*Foundation Engineering*" PHI Learning Pvt. Ltd.

METHODS OF TEACHING AND STUDENT LEARNING

The subject is delivered through lectures, on-line support, text book / course material reading and practical exercises. Some videos will be shown to demonstrate certain concepts and research areas will be discussed. Resource material is provided with the help of PDM Educational Directory Services (PEDS).

ASSESSMENT METHODOLOGIES:

This subject will be evaluated for a total of 150 marks for theory.

Assessment #	Type Of Assessment	Per Semester	Maximum Mark
1.	Class Test	4	10
2.	Sessional Test	2	30
3.	Group Discussion	4	10
4.	End Semester Exam	1	100

MAPPING OF ASSESSMENT METHODS AGAINST LEARNING OUTCOMES

Theory:-

Assessments	1	2	3	4	5	6	7
Class Test	x					x	X
Quiz		x	x				
Assignment	x			x	X		x

MAPPING OF COURSE LEARNING OUTCOMES

Program Outcomes	a	b	c	d	e	f	g	H	i	j
Course Learning Outcomes		1,2	2,3,4	2,3,5	1,2,3	4,5	1,2	3,4	6,7	

EVALUATION

At the end of semester, Subject teacher will submit an evaluation report. The purpose of this report is to identify aspects that will be highlighted by students and faculty's feedback for the subject with respect to its strengths as well as those areas which could be improved. The review report contains the following:

- Approved refinement decisions due for implementation,
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PDM UNIVERSITY
DEPARTMENT OF CIVIL ENGINEERING

RCC LAB (RCC DETAILING)

L	T	P
0	0	2

SUBJECT CODE	CIVL3117
CREDIT POINTS	1
FORMATIVE ASSESMENT MARKS	25
SUMMATIVE ASSESMENT MARKS	25
END SEMESTER EXAM DURATION	3 HRS.
LAST REVISION DATE	

INSTRUCTIONS: The question paper will consist of ten questions distributed over three sections A, B and C. Section A comprise of one question carrying very short answer type questions and is compulsory, Section B comprises of two short answer type questions and Section C comprises of five long answer type questions. These sections will also have internal choices of questions.

OBJECTIVE

1. To learn the fundamentals of estimation of different types of civil engineering structures.
2. To calculate the quantities of materials to be used.
3. To learn the specifications for various construction works.
4. To learn about the tender publication and acceptance processes.
5. To analyse the rates of materials as per their quantities.
6. To determine depreciation in the value of structure.
7. To find the value of the structures for re-sale and renting.

LEARNING OUTCOMES

Following this course students will be able to:

1. Identify quantities (takeoff) of the various materials involved in the project.
2. Create summaries and detailed quantity surveying reports quickly and easily.
3. Read detailed specifications and drawings and their role in quantity estimation.
4. Know the various processes of tendering and analysis of rates.
5. Understand the need and different method of depreciation and valuation

MODULE CONTENT

*UNIT-I:*Introduction. Structural Detail Drawings. AutoCAD Structural Detailing software. Stages of work on Structure Project Drawings. Size of Drawing. Scale of Drawing. Information to be shown, AutoCAD Structural Detailing Configuration. Job Preference, Units, Codes and Materials, Drawing Templates for various codes, Options, Display bars, Options bars, Preference.
*UNIT-II:*Model Tab.Positions Tab, ASD Centre Tab. Printout Tab. Overview of the tools available. Beam & Column Detailing. General Detailing Requirement. Development of Stress in Reinforcement.Anchoring Reinforcing Bars.
*UNIT-III:*Beam Detailing.Beam Detailing. Arrangement of Bars, Longitudinal Reinforcement, Tension Reinforcement. Bar Division. Beam of varying depth. Ground Beam. ParapetColumn Detailing: Longitudinal Reinforcement. Dowels. Ties. Splicing of Column Reinforcement. Column Beam Junction. Reinforcement Cross Section. Floor Slab. Simply Supported Slab. Slab spanning in one directions. Slab spanning in two directions. Openings in Slabs. Flat Slabs. Slab Reinforcement. Radial Reinforcement Bars.
*UNIT-IV:*Staircase.Flight Supported on Side Beams**.** Flight Supported on Central Beam Flights and Landings Supported at Ends. Foundation. Spread Footing. Sleeve Footing. Continuous Foundation. Pile Foundation. Pile Cap.
*UNIT-V:*Retaining Walls.Linear element, Creating linear element**.** Inserting linear element**.** Steel profile**.** Create**,** Section**.** Delete cut**.** Description. Distribution of prefabricated slab. Wire fabrics. Surface distribution wire fabric. Wire fabric distribution. Wire fabric cross section. Wire fabric symbol. Modifying tools.

RECOMMENDED BOOKS

TEXT BOOK	1. Pippard A J S, and Baker, J. F. (1957), "The Analysis of Engineering Structures", Edward Arnold Publishers Ltd, London. 2. Krishna Raju N. (1989), "Advanced Reinforced Concrete Design", CBS Publishers and distributers, New Delhi.
REFERENCE	1. P C Varghese, "Limit State Design of reinforced concrete structures". 2. Rajagopalan, "Design of Storage structures". 3. Reynold & Steedman (1551) "Designers handbook" Relevant IS Codes.

MAPPING OF COURSE OBJECTIVES AGAINST STUDENTS LEARNING OUTCOMES

Program Outcomes	a	b	c	D	E
Mapping of Course Objectives with Students Learning Outcomes	1, 2, 5	1, 2	2, 3, 5	2, 3, 4, 5	6, 7

METHODS OF TEACHING AND STUDENT LEARNING

The subject is delivered through lectures, on-line support, text book / course material reading and practical exercises. Some videos will be shown to demonstrate certain concepts and research areas will be discussed. Resource material is provided with the help of PDM Educational Directory Services (PEDS).

ASSESSMENT METHODOLOGIES:

This subject will be evaluated for a total of 50 marks for practical.

Assessment #	Type Of Assessment	Per Semester	Maximum Mark
1.	Internal Assessment	2	25
2.	External Assessment	1	25

EVALUATION

At the end of semester, Subject teacher will submit an evaluation report. The purpose of this report is to identify aspects that will be highlighted by students and faculty's feedback for the subject with respect to its strengths as well as those areas which could be improved. The review report contains the following:

- Approved refinement decisions due for implementation,
- Actions taken based on previous subject review,
- Problems encountered in the subject delivery,
- Suggested remedies / corrective measures, and
- Report discussed and analysed, actions taken as a result of this process and are communicated to the main stakeholders.

PDM UNIVERSITY
DEPARTMENT OF CIVIL ENGINEERING

BUILDING ESTIMATING COSTING-AUTODESK AN 3D PRINTERSPECIALIZED MINOR

L	T	P
0	0	8

SUBJECT CODE	CIVL3118
CREDIT POINTS	4
FORMATIVE ASSESMENT MARKS	100
SUMMATIVE ASSESMENT MARKS	100
END SEMESTER EXAM DURATION	3 HRS.
LAST REVISION DATE	

INSTRUCTIONS: The question paper will consist of ten questions distributed over three sections A, B and C. Section A comprise of one question carrying very short answer type questions and is compulsory, Section B comprises of two short answer type questions and Section C comprises of five long answer type questions. These sections will also have internal choices of questions.

OBJECTIVE

1. To learn the fundamentals of estimation of different types of civil engineering structures.
2. To calculate the quantities of materials to be used.
3. To learn the specifications for various construction works.
4. To learn about the tender publication and acceptance processes.
5. To analyse the rates of materials as per their quantities.
6. To determine depreciation in the value of structure.
7. To find the value of the structures for re-sale and renting.

LEARNING OUTCOMES

Following this course students will be able to:

1. Identify quantities (takeoff) of the various materials involved in the project.
2. Create summaries and detailed quantity surveying reports quickly and easily.
3. Read detailed specifications and drawings and their role in quantity estimation.
4. Know the various processes of tendering and analysis of rates.
5. Understand the need and different method of depreciation and valuation.

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DEPARTMENT OF CIVIL ENGINEERING

MODULE CONTENT

*UNIT-I:*Introduction**.**Principle of estimation. Types of estimate, Main items of work, Methods of estimation i.e. long wall and Short wall method, Centre line method, Deduction for openings, R.C.C., D.P.C. and R.B. work. Estimation for Flooring. Roofing, Plastering Pointing, Doors, Windows, Wood Work, Iron Work and Lump sum items. Calculations for: Earthwork (excavation and filling).
UNIT-II: Brick masonry work. Cement Mortar. White washing and Painting. P.C.C, R.C.C, D.P.C, Wood work, Iron works etc. Deduction for openings; with their respective examples for practice. Necessity of specification types of specification. General specification, specification of bricks, cement, sand, water, lime, reinforcement, Detailed specification for earthwork, cement, concrete, brickwork, flooring.
*UNIT-III:*D.P.C, R.C.C, cement plastering, white and color washing, distempering, painting. Purpose and principal factors affecting the rate of an item of work, Overhead costs, procedure of rate analysis for items: Earth work, concrete works, R.C.C works, reinforced brick work, plastering, painting, finishing (white washing, distempering) preparing analysis
UNIT-IV: Different methods of calculating depreciation- Straight line method, Declining balance method, Sinking fund method, Quantity survey method, Depreciated cost, Case studies. Cost of engineering services, rent fixation, valuation of properties, methods of valuation, book value, market value, profit and loss, scrap value, salvage value, Evaluation of projects, Annual cost method, Rate of return method, Benefit cost ratio method, Case studies.
*UNIT-V:*Introduction of 3D Printing, Visual, Printing, Scanning/Reverse engineering, Evolution of 3D Printing, What is Additive Manufacturing? General procedure of 3D Printing, 3D CAD File formats, Stereo lithography files, Various Printing technologies (SLA, SLS, FDM, Poly jet printing, Colour jet Printing, SHS, SLM, LOM, Multi jet Printing, DLP), Preparation of print ready file using 3D PRINTER.
*UNIT-VI:*Preparation of print ready file using SHARP 200. FDM in detail, Introduction, Architecture Functions of various parts, Functions of various parts, Materials used, Accuracy, Advantages, Limitations. Operating 3D Printer - Live demonstration, Problem Definition, Procedure, Output, Review and Suggestions.
*UNIT-VII:*STL principles, how to identify bad spots of STL? how to fix bad spots of STL? Object Placement, Slicer Settings. Print Settings, Layers and Perimeters, Infill, Speed, Skirt and brim, Creation of Supports, Filament settings, Printer settings, Material Properties, Manual Controls, Live demonstration of advanced settings and support. Hands on Projects
UNIT-VIII: Choose Project, Design the CAD file, Convert to STL, 3D Print, Analyze defects, make design changes, Reprint.

RECOMMENDED BOOKS

TEXT BOOK	1. Rapid prototyping: Principles and applications, second edition, Chua C.K., Leong K.F., and Lim C.S., World Scientific Publishers, 2003 2. [T2] Rapid Tooling: Technologies and Industrial Applications, Peter D. Hilton, Hilton/Jacobs, Paul F.Jacobs, CRC press, 2000. 3. Rapid Prototype using 3D Printer, CADD Centre book
REFERENCE	1. [R1] Rapid prototyping, Andreas Gebhardt, Hanser Gardener Publications, 2003 2. [R2] Rapid Prototyping and Engineering applications: A tool box for prototype development, Liou W.Liou, Frank W.Liou, CRC Press, 2007. 3. [R3] Rapid Prototyping: Theory and practice, Ali K. Kamrani, Emad Abouel Nasr, Springer

METHODS OF TEACHING AND STUDENT LEARNING

The subject is delivered through lectures, on-line support, text book / course material reading and practical exercises. Some videos will be shown to demonstrate certain concepts and research areas will be discussed. Resource material is provided with the help of PDM Educational Directory Services (PEDS).

ASSESSMENT METHODOLOGIES:

This subject will be evaluated for a total of 200 marks for practical.

Assessment #	Type Of Assessment	Per Semester	Maximum Mark
1.	Internal Assessment	2	100
2.	External Assessment	1	100

MAPPING OF COURSE OBJECTIVES AGAINST STUDENTS LEARNING OUTCOMES

Program Outcomes	a	b	C	D	e
Mapping of Course Objectives with Students Learning Outcomes	1, 2, 5	1, 2	2, 3, 5	2, 3, 4, 5	6, 7

EVALUATION

At the end of semester, Subject teacher will submit an evaluation report. The purpose of this report is to identify aspects that will be highlighted by students and faculty's feedback for the subject with respect to its strengths as well as those areas which could be improved. The review report contains the following:

- Approved refinement decisions due for implementation,
- Actions taken based on previous subject review,
- Problems encountered in the subject delivery,
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PDM UNIVERSITY
DEPARTMENT OF CIVIL ENGINEERING

Design of Reinforced concrete Structures

L	T	P
4	0	0

SUBJECT CODE	CIVL3220
CREDIT POINTS	4
SEMESTER	VI
FORMATIVE ASSESSMENT MARKS	50
SUMMATIVE ASSESSMENT MARKS	100
LAST REVISION DATE	

OBJECTIVE

1. To study the design of concrete structures such as flats slabs, stair cases & Continuous beam using IS codes.
2. To undertake design problems on design of building frames and reinforce concrete design using STAAD PRO with Indian codes.
3. To understand the terminology related to pre-stressing & pre-stressing system and design of pre-stressed structures.
4. To understand the design of underground & elevated liquid retaining structures.

LEARNING OUTCOMES

1. Able to identify and interpret the appropriate industry design codes relevant to the design of reinforced concrete members such as beams & slabs.
2. Able to analyse and design the pre-tensioned & post- tensioned concrete members at the construction site.
3. Ability to apply the concepts of liquid retaining structures & demonstrate the detailing of reinforcement.
4. Ability to design the various types of foundations.

COURSE CONTENT

UNIT-I: Continuous Beams Basic assumptions, Moment of inertia, settlements, modification of moments, maximum moments and shear, beams curved in plan-analysis for torsion, redistribution of moments for single and multi-span beams.
UNIT-II: Flat slabs and staircases Advantages of flat slabs, general design considerations, approximate direct design method, design of flat slabs, openings in flat slab, design of various types of staircases.
UNIT-III: Foundations Design of isolated footing for vertical load and Moment, Design of combined footings, raft foundation, design of pile cap and piles.
UNIT-IV: Building Frames Introduction, member stiffness's, loads, static and dynamic analysis and component design, provisions of ductile detailing. *Design of multi – Storey Buildings* Introduction, examples frame, detailed structural layouts, estimation of loads, analysis of structure, load combinations, reinforce concrete design using STAAD PRO for Indian codes : - Design parameters as per IS 456, IS 13920.
UNIT-V: Water Tank Estimation of wind and earthquake forces, design of overhead water tanks, general design consideration for circular & intze tanks.
UNIT-VI: Prestressed Concrete Basic principles, classification of pre-stressed members, various prestressing systems, losses in pre-stress, initial and final stress conditions, analysis and design of sections for flexure and shear, load balancing concept, IS Specifications. End blocks-Analysis of stresses, Magnel's method, Guyon's method, Bursting and spalling stresses, design examples.

RECOMMENDED BOOKS

TEXT BOOK	1. Plain and Reinforced Concrete, Vol.2, Jai Krishna & O.P.Jain, Nem Chand & Bros.,Roorkee
REFERENCE	4. Pre-Stressed Concrete, N.Krishna Raju, TMH Pub.,N,.Delhi. 5. Design of Prestressed Concrete Structure, T.Y.Lin, John Wiley & Sons., N.Delhi. 6. Reinforced Concrete-Limit Stage Design, A.K.Jain, Nem Chand & Bros.,Roorkee. 7. Design Codes and Design Aids.

METHODS OF TEACHING AND STUDENT LEARNING

The subject is delivered through lectures, on-line support, text book / course material reading and practical exercises. Some videos will be shown to demonstrate certain concepts and research areas will be discussed. Resource material is provided with the help of PDM Educational Directory Services (PEDS).

ASSESSMENT METHODOLOGIES:

This subject will be evaluated for a total of 150 marks for theory and 50 marks for practical.

Theory:

Assessment #	Type Of Assessment	Per Semester	Maximum Mark
1.	Class Test	4	10
2.	Sessional Test	2	30
3.	Group Discussion	4	10
4.	End Semester Exam	1	100

MAPPING OF ASSESSMENT METHODS AGAINST THE LEARNING OUTCOMES

Theory:

Assessments	a	b	c	d	e	f	G	H
Class Test		x	x	x		x	X	
Quiz	x	x	x	x	X	x		
Assignment	x		x					X

MAPPING OF COURSE LEARNING OUTCOMES

Program Outcomes	a	b	c	d	e	f	g	h	I	J
Course Learning Outcomes	1,2,3	1,2,5	1,3,5	1,2	2,4	1,2,3	1,4	1, 5		

EVALUATION

At the end of semester, Subject teacher will submit an evaluation report. The purpose of this report is to identify aspects that will be highlighted by students and faculty's feedback for the subject with respect to its strengths as well as those areas which could be improved. The review report contains the following:

- Approved refinement decisions due for implementation,
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- Problems encountered in the subject delivery,
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PDM UNIVERSITY
DEPARTMENT OF CIVIL ENGINEERING

Ground Improvement Techniques

L	T	P
4	0	0

MODULE CODE	CIVL3221
CREDIT POINTS	4
FORMATIVE ASSESMENT MARKS	50
SUMMATIVE ASSESMENT MARKS	100
END SEMESTER EXAM DURATION	3hrs
LAST REVISION DATE	

INSTRUCTIONS

The Question paper will consist of seven questions distributed over three sections A, B and C. Section A comprises of very short answer type questions and is compulsory. Section B & C comprise of short answers type and long answers type questions. These sections will have internal choice.

OBJECTIVES

The aim of this subject is to impart knowledge to familiarize the students with the engineering properties of soil, weak and compressible deposits, principles of treatment for granular and cohesive soils and various stabilization techniques

1. To learn basic principles of drainage and grouting techniques.
2. To bring out concepts of reinforced earth.
3. To introduce with the applications of geotextiles in various civil engineering projects.

LEARNING OUTCOMES

1. Able to gain competence in properly devising alternative solutions to difficult and earth construction problems and in evaluating their effectiveness before, during and after construction.
2. Able to understand the principles of dewatering and geotextiles techniques.
3. Able to summarize the methods of soil stabilization.
4. Able to understand the concept of insitu ground improvements techniques.

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MODULE CONTENT

UNIT-I: Introduction

Role of ground improvement in foundation engineering, methods of ground improvement, Geotechnical problems in alluvial, laterite and black cotton soils , Selection of suitable ground improvement techniques based on soil condition.

UNIT-II: Drainage and Dewatering

Drainage techniques, Well points, Vacuum and electroosmotic methods, Seepage analysis for two dimensional flow-fully and partially penetrating slots in homogenous deposits (Simple cases only).

UNIT-III: Insitu treatment of cohesion less and cohesive soils

Insitu densification of cohesion less and consolidation of cohesive soils , Dynamic compaction and consolidation, Vibrofloation, Sand pile compaction, Preloading with sand drains and fabric drains ,Stone columns ,Lime piles, Installation techniques ,merits of various methods and their limitations.

UNIT-IV :Earth Reinforcement

Concept of reinforcement, Types of reinforcement material, Applications of reinforced earth, use of Geotextiles for filtration, drainage and separation in road and other works.

UNIT-V: Grouting techniques

Types of grouts, Grouting equipment and machinery, Injection methods, Grout monitoring.

UNIT-VI:Stabization of soils:

Mechanical Stabilization ,Soil aggregate mixtures, properties and proportioning techniques, soft aggregate stabilization, compaction, field compaction control; Cement Stabilization-Mechanism, factors affecting and properties, use of additives, design of soil cement mixtures, construction techniques; Lime and Bituminous Stabilization, Type of admixtures, mechanism, factors affecting, design of mixtures, construction methods.

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RECOMMENDED BOOKS

TEXT BOOKS	1. "Ground improvement Techniques", P.Purushothama Raju, USP, 1999. 2."Construction and Geotechnical Methods in Foundation Engineering", Koerner R.M., McGraw-Hill, 1994.
REFERENCES	1 "Ground Improvement Blockie Academic and Professional", Moseley M.P., Chapman and Hall, Glassgow, 1993. 2. "Earth Reinforcement and Soil Structure", Jones J.E.P., Butterworths, 1995.

METHODS OF TEACHING AND STUDENT LEARNING

The subject is delivered through lectures, on-line support, text book / course material reading and practical exercises. Some videos will be shown to demonstrate certain concepts and research areas will be discussed. Resource material is provided with the help of PDM Educational Directory Services (PEDS).

ASSESSMENT METHODOLOGIES

This subject will be evaluated for a total of 100 marks for theory.

Theory:-

Assessment #	Type Of Assessment	Per Semester	Maximum Mark
1.	Class Test	4	10
2.	Sessional Test	2	30
3.	Group Discussion	4	10
4.	End Semester Exam	1	100

MAPPING OF ASSESSMENT METHODS AGAINST LEARNING OUTCOMES

Theory:-

Assessments	1	2	3	4
Class Test	x			
Quiz		X	x	
Assignment	x			X

MAPPING OF COURSE LEARNING OUTCOMES

Program Outcomes	a	b	c	d	e	f	G	H	i	j
Course Learning Outcomes	1	1,2	2,3,4	2,3	1,2,3	4	1,2	3,4		

EVALUATION

At the end of semester, Subject teacher will submit an evaluation report. The purpose of this report is to identify aspects that will be highlighted by students and faculty's feedback for the subject with respect to its strengths as well as those areas which could be improved. The review report contains the following:

- Approved refinement decisions due for implementation,
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- Problems encountered in the subject delivery,
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