Shri Rawatpura Sarkar University, Raipur

Examination Scheme & Syllabus

for

Diploma In Civil Engineering

Semester-V

Outcome Based Education (OBE) and Choice Based Credit System (CBCS)

(Effective from the Session: 2022-23

Shri Rawatpura Sarkar University, Raipur, Chhattisgarh

Faculty of Engineering

Three Years Diploma Programme

Scheme of Teaching and Examination

Diploma Fourth Semester Civil Engineering

Outcome Based Education (OBE) and Choice Based Credit System (CBCS)

(Effective from the Academic Year 2022-2023)

S.No.	Course Code	Course Title	Hours / Week			Credits	Maximum Marks			Sem End Exam Duration (Hrs)
			L	T	P		Continuous Evaluation	Sem End Exam	Total	
1	DENCE501T	Estimating and Costing	3	1	-	4	30	70	100	3
2	DENCE501P	Estimating and Costing	-	-	2	1	15	35	50	-
3	DENCE502T	Structural Design and Drafting-I	3	1	-	4	30	70	100	3
4	DENCE502P	Structural Design and Drafting-I	-	-	2	1	15	35	50	-
5	DENCE503T	Railway and Bridge Engineering	3	1	-	4	30	70	100	3
6	DENCE504T	Irrigation Engineering	3	1	-	4	30	70	100	3
7	DENCE505T	Soil Mechanics	3	1	-	4	30	70	100	3
8	DENCE505T	Soil Mechanics	-	-	2	1	15	35	50	-
9	DENCE506P	Industrial Training	-	-	4	2	15	35	50	-
	Total Contact Hr Per Week: 30			**Total Credit: 25**			**Grand Total Marks :**		700	

L: Lecture   T: Tutorial   P: Practical

Course Title	**Estimating and Costing**			
Course Code	**DENCE501T**			
Course Credits	**L**	**T**	**P**	**TC**
	3	**1**	**-**	**4**
Prerequisites	**Building Material & Construction**			
Course Objectives	**This course will enable students to:** • Differentiate the types of Estimation, adopt specification and Unit Rates. • Analyse rates for different items of works. • Interpret the drawings and estimate the Quantities of various items in civil engineering structures. • Understand departmental procedures and Take measurement of completed work on successful completion of this course. • Understand different techniques of preliminary & detailed estimation of buildings & roads.			
Course Contents	**UNIT-I** **Introduction** Introduction: Importance and purpose of the subject, Units of measurement as per I.S.1200. Items of work and Description of items of work,, Administrative approvals, technical sanction, preliminary estimates. objectives, and its methods Study of Earthwork estimates in road, hill roads and canals, methods of consumptions of earthwork. **Detailed estimates**, objects, importance, and accuracy. Methods of detailed estimates, Detailed estimates of load bearing and framed structures. **UNIT-II** **Calculation of steel , Tender and contracts** Calculation of reinforcing steel with Bar bending Schedule. **Tenders and Contracts:** Method of carrying out works, tender notice, acceptance of tender, essentials of contract, type of contracts, contract documents, land acquisition act, Legal aspects of various contract provisions, Arbitration. Public work department procedure of work: Organisation of Engineering department, Methods of carrying out works, stores, stucks, Tools and plants, Mode of payment, Public work account, Power of sanctions **UNIT-III**			

	Specifications Specifications: IS 1200 Introduction, Purpose and principles of specifications writing, Types of specifications, writing and developing Detailed specifications of Important items of building and road work. Classification of cost, direct and indirect charges, distribution of overheads, M.A.S Account, issue rates and stores account. **UNIT-IV** **Rate Analysis** Introduction, Purpose and principles of CSR, Factors affecting analysis of rates, labour guidelines from National Building Organization, Task work. Market rates of materials and labour, Rate analysis of major items of work. **UNIT-V** **Valuation** Purpose of valuation, Factors affecting property price and cost, Types of Value. Real Estate, Tenure of land, Free hold and lease hold, sinking fund, Depreciation, and its methods, Capitalised value, Methods of valuation, Net & Gross income, Rent fixation.
Course Outcomes	**After the completion of course:** • Prepare the preliminary estimate for administrative approval & technical sanction for a civil engineering project. • Write the specification of the works to be undertaken, prepare the tender documents, fill the contracts and make use of knowledge of different contract submission & opening in awarding the work to the contractor. • Use the concept of SD, EMD, MAS, Running Bill, and Final Bill during the entire project. • Use the technique of Rate analysis in estimating the exact cost of material & manpower and hence the entire project. • Estimate the bill of quantities using different techniques of preliminary & detailed estimation of buildings & roads & arrive the exact value of the asset (movable & immovable) using different Valuation techniques.
Text Books	1. Estimating and Costing:- B.N. Dutta, S.D. Dutta & Co., Tagore Path, Motilal Bose Road, Lucknow 2. Estimating, Costing & Valuation:-Rangwala,, Chander Publications, Station Road, Anand.
Reference Books	1. Estimating & Costing :-Birdle, J.C. Kapoor for Dhanpet & Sons, Delhi 2. Valuation by Roshan Namavati 3. Philosophy of Valuation S. S. Rathore. 4. Handbook for quick cost estimates. By Ball, J R. 5. IS 14835 (2000): Guidelines for Estimating Unit Rate of Items.

Course Title	Estimating and Costing
Course Code	DENCE501P

Course Credits	L	T	P	TC	
	-	-	2	1	

Prerequisites	Estimating & Costing

Course Objectives	**This course will enable students to:** • Differentiate the types of Estimation, adopt specification and Unit Rates. • Analyse rates for different items of works. • Interpret the drawings and estimate the Quantities of various items in civil engineering structures.

Course Contents	**Minimum 8 practical assignments based on.** 1. Preliminary estimate using Plinth area method. 2. Detailed estimate of Load bearing structure. 3. Detailed estimate of Frame structure. 4. Calculation of steel with Bar bending Schedule. 5. Detailed estimate of earthwork of road for Approximate 1km length. 6. Draft Detailed specification for 8 major items. 7. Collection of four different types of Tender. 8. Calculation of annual and total Depreciation and book value of the end of each year. 9. Fixation of standard rent of property. 10. Analysis the unit rate of 8 major items of work contained. 11. Market survey for material and labour rates for various items. 12. Detailed planning and estimate of plumbing work. Note: Collection of different bank rates of nearby location, Comparative study of different units eg- Brass, foot, meter, cm, cum etc is compulsory.

Course outcome	**After the completion of course:** • Write the specification of the works to be undertaken, prepare the tender documents, fill the contracts and make use of knowledge of different contract submission & opening in awarding the work to the contractor.

Text Books	1. Estimating & Costing :-Birdle, J.C. Kapoor for Dhanpet & Sons, Delhi 2. Estimating & Costing Vol. I & II:- J.C. Malhotra, Khanna Publishers, 28, Nath Market, Nai Sarak, New Delhi Current Schedule of rates from PWD/PHE/Irrigation

Reference Books	1. Estimating & Costing :-Birdle, J.C. Kapoor for Dhanpet & Sons, Delhi 2. Estimating & Costing Vol. I & II:- J.C. Malhotra, Khanna Publishers, 28, Nath Market, Nai Sarak, New Delhi.

Course Title	**Structural Design and Drafting – I**			
Course Code	**DENCE502T**			
Course Credits	**L**	**T**	**P**	**TC**
	3	**1**	**-**	**4**
Prerequisites	**Civil Engineering Drawing, Strength of Material**			

Course Objectives	**This course will enable students to:** • Understand the behavior of combined footings. • Understand the behavior of retaining walls. • Understand the behavior of different beams. • Understand the behavior of different types of column. • Understand the behavior of pre-stressed concrete.

Course Contents	**UNIT-I** **Introduction to Working Stress Method** S.I. Units, Meaning of R.C.C., Purpose of reinforcement, Materials of reinforcement, Steel as a reinforcing material, Type of steel used for reinforcement mild steel, Tor steel, Different mixes of concrete to be used for R.C.C. work, Use of I.S: 456-2000 and I.S: 875-1984 for designing R.C.C. structures. Permissible stresses in steel and concrete, Assumption for design in flexure, Under, Over and balanced section, Design constants for balanced sections Nominal shear stresses, Design shear strength of concrete with and without-reinforcement, Min shear reinforcement, Design of shear reinforcement. **UNIT-II** **Limit State Method – Rectangular Beam** **Introduction To Limit State Method -**Limit state of collapse, Limit state of serviceability, Characteristic strength of materials, Characteristic load, Partial safety factors, Design values, stress-strain curve for concrete and steel. **Limit State of Collapse "Flexure"** -Assumptions in limit state of collapse for flexure, Stress block parameters, Neutral axis, neutral axis depth, Max. Depth of N A, balanced, under reinforced section, Ultimate moment of resistance Mu, Limiting moment of resistance- Mu limit factored Moment, Max percentage of tensile steel for singly reinforced section, Design of sections for flexure – singly reinforced rectangular beam, Doubly reinforced rectangular beam, Flanged beam. **Develop Length & Anchorage Length-**Concept and necessity of development length, Value of design bond stress, Overlap length, Necessity of Hook and bend. **Limit State of Serviceability:** Deflection, Control of deflection, Span by depth ratio, Cracks, limiting width of crack, Control of cracking.

UNIT-III

Limit State Method – T- Beam And Slab
Design of Beams: Singly reinforced – Design & Drafting, Doubly reinforced – Design & drafting, Design of lintel, Flanged beam- Design & Drafting, Continuous- Design & Drafting of three span continuous beams.
Design of Slabs: Design of one way slab, roof slab, Sunshade, Balconies, Design and drafting of one way simply supported slab, One way continuous slab – design and drafting of three span continuous slab, Two way slab – design and drafting simply supported slab and Corners held down

UNIT-IV

Limit State Method – Column And Column Footings
Columns: Types of column- short and long column, Axially loaded column, columns subjected to bending, IS provisions for design of column, Ultimate load for axially loaded columns Pu, Columns with helical reinforcement, Design of axially loaded columns.
Column Footing: IS a Code provision for design of footing, Design drafting of Isolated footing, Square and rectangular sloped footing.
I.S. Provisions For Design Consideration: Effective span, Control of defection, Modification factor for Tensile and compressive steel, Cover to reinforcement, Vertical and horizontal Spacing of reinforcement, Max and min reinforcement, Development length, Shear reinforcement, Curtailment and bending of bars, Min. positive and negative reinforcement at support, Min length of reinforcement inside support, Live load and dead load.

UNIT-V

Design of Stair Case
IS provisions for design of staircase, Effective span and loading for stairs, Design and drafting straight flight and cantilever stair, Doglegged stair case

Course Outcomes	**After the completion of course:** 1. Capable of designing combined footings. 2. Capable of designing retaining walls. 3. Capable of designing beams. 4. Capable of designing of column 5. Capable of analyzing prestressed concrete beams.
Text Books	1. Reinforced Concrete Structures – B.C. Punmia (Laxmi Publications) 2. Limit state theory & design of R.C.C. - Dr. S.R. Karve& Dr. Shah 3. Design of R.C.C. - N.C. Sinha
Reference Books	1. RCC Structures – Dr. A. K. JAIN 2. Hand Book for Limit State Method of Design - V.K. Ghanekar& J.P. Javi 3. IS codes

Course Title	**Structural Design and Drafting-I**
Course Code	**DENCE502P**
Course Credits	**L** | **T** | **P** | **TC** **-** | **-** | **2** | **1**
Prerequisites	**Structural Design & Drafting-I**
Course Objective	**This course will enable students to:** • Educate the student about the concept of reinforced cement concrete and different method of design of reinforced concrete. • Educate the student about concept of working stress method to analysis and design of beams. • Educate the student about analysis and design of footings and staircases by limit state method.
Course Content	**List of Experiments:** • Preparation of structural plan for framing of a building showing position of columns and beams. • Longitudinal section, cross section of singly reinforced beam with bar bending schedule. • Longitudinal section, cross section of doubly reinforced beam. • Drafting of R.C.C chajja with lintel. • Longitudinal section and sectional plan of one way R.C.C slab with schedule of reinforcement. • Longitudinal section and sectional plan of two way R.C.C slab with schedule of reinforcement • Longitudinal section, cross section of T-beam and L-beam • Preparation of sectional elevation and plan of column and column's footing. • Preparation of sectional elevation and plan of Dog-legged and open well. • Stair case.
Course Outcome	**After the completion of course:** • Understand the importance of reinforced concrete structure. • Understand the different method of analysis and design of reinforced concrete structures. • Understand the procedure of analysis and design of beams by working stress and limit state method. • Understand the procedure of analysis and design of other elements such as slabs, columns, footings and staircases.
Text Books	1. Reinforced Concrete Structures – B.C. Punmia (Laxmi Publications) 2. Limit state theory & design of R.C.C. - Dr. S.R. Karve & Dr. Shah 3. Design of R.C.C. - N.C. Sinha
Reference Books	1. RCC Structures – Dr. A. K. JAIN 2. Hand Book for Limit State Method of Design - V.K. Ghanekar& J.P. Javi 3. IS codes

Course Title	Railway And Bridge Engineering			
Course Code	DENCE503T			
Course Credits	L	T	P	TC
	3	1	-	4
Prerequisites	Highway Engineering			
Course Objectives	**This course will enable students to:** • Educate the students on the various means of transportation i.e., Railway Engineering, Bridge Engineering, Tunnel • Expose the students to the concepts of Geometric design of Railway Engineering. • Expose the students to the concepts of Bridge Engineering. • Educate the students to the concepts of Tunnel and Harbour Engineering.			
Course Contents	**UNIT-I** **Introduction of Railway Engineering** Types and Selection of Gauges, Selection of Alignment, Ideal Permanent Ways and Cross- sections in different conditions, Drainage, Salient Features and types of Components viz. Rails, Sleepers, Ballast, Rail Fastenings. **UNIT-II** **Railway Track Geometrics** Gradient & its types, grade compensation on curves(problems) Super elevation – governing formula, limits of Super elevation on curves, cant deficiency, cant excess and negative cant (along their permissible value), realignment of curves by string line method. **Points And Crossings** Necessity of points and crossings, Functions, Components of turnouts- Left hand turnout , right hand turnout, Working of turnout, Points or switches, Type of switches, Crossings-types of crossings and crossing number, crossing used in Indian railways, Combinations of points and crossings. **UNIT-III** **Station And Yards** Site selection for railway stations, Requirements of railway station, Types of stations (way side, crossing, junction & terminal), Station yards, types of station yard, Passenger yards, Goods yard, Locomotive yard – its requirements, water column, Marshalling yard – its types; level crossing. **Signalling And Interlocking**			

Objects, Engineering principles, Classification of signals, Requirements of signalling, Types of signal, Electronic system of signalling, Control system, Interlocking principles of interlocking.

UNIT-IV

Site selection and investigation, Factors affecting selection of site of a bridge. Bridge alignment, Collection of design data, Classification of bridges according to function, material, span, size, alignment, position of HFL.
Component parts of bridge. Plan & sectional elevation of bridge showing component parts of substructure & super structure. Different terminology such as effective span, clear span, economical span, waterway, afflux, scour, HFL, freeboard, etc.

UNIT-V

Construction And Maintenance of Bridges
Erection of steel girder and truss bridges, Erecting of RCC bridges and suspension bridges, Maintenance method.

Course Outcome	**After the completion of course:** • Explain Components of Railway Track, different Railway Gauges. • Students will be able to make safe design for railway track with high speed. • Students will be able to know about station yard interlocking & signalling. • Students will be able to know, what are the selection of site and collection of data for Bridge Design. • Students will be able to understand methods of construction of Tunnel and Harbour.
Text Books	1. Text book of railway engineering -- R.B. Deshpandey United Book corp. pons 2. Railway engineering -- N.K.Vaswani Roorkee publishing house 3. Text book of railways -- R.C.Rangwale Charter publishing house, Anand. W.R. 4. Text book of railway engineering -- S.C.Saxena & SP Arora Dhanpal Rai & Sons
Reference Books	1. Indian railway track design, construction, maintenance and modernization -- M.M.Agrawal Manglik prakeshan 159, Bomani Road, Saharanpur. 2. Railway Bridge and Tunnel Engg. – Shivanand Kamde Deepak Prakashan, Gwalior 3. Bridge Engineering --By Algia

Course Title	Irrigation Engineering			
Course Code	DENCE504T			
Course Credits	L	T	P	TC
	3	1	-	4
Prerequisites	Hydraulics			
Course Objectives	**This course will enable students to:** • Understand basic concepts of irrigation and water requirements of crops. • Understand the concepts of design of canal. • Learn about water logging • Be familiar with the concepts of river training. • Understand the concepts of reservoir planning.			
Course Contents	**UNIT-I** **Introduction** Necessity of irrigation, Importance of irrigation, Benefits of irrigation, Ill effects of irrigation, Methods of irrigation **Hydrology**-Definitions, Hydrological cycles, Rainfall, Runoff, Flood discharge **UNIT-II** **Water Requirements of Crops** Function of water, Various crops of area, Crop season, Delta, Duty, Crop rotation. **Survey For Irrigation Projects**-Importance of survey, Various type of survey, Reasonability and feasibility of projects **UNIT-III** **Storage Works** Components of storage works, Various zone of storages, Various types of dams and their suitability, Construction materials and procedures, Foundation treatment. **Diversion Works-**Components of diversion work, Types of diversion work, Functions and suitability of diversion work, Types of Weirs **UNIT-IV** **Canal Works** Components of canal work, Types of canal, Alignment, Design of canal, Different structures in canal network, Canal lining **Lift Irrigation Schemes-**Importance of lift irrigation, Suitability, Advantages and limitations **UNIT-V** **Machinery & Equipment**			

	Various machine, their functions & suitability, List of equipments and their uses.
	Visit To Various Work Sites
	To a construction site where foundation work / Dam construction is under progress. To existing completed dam site where it's all operation are in full running. To a canal site, where all the components of a canal work are in running condition. To observe the various earth moving equipments at the machine and study their working. To a pre-project survey site (if possible) where preliminary survey work is in the progress.
Course Outcomes	**After the completion of course:** • Students are able to understand the different types of irrigation. • Students should be able to design the canal. • Students can explain the effects of water logging. • Students should be able to understand the behavior of river. • Students can plan the reservoir for different demands.
Text Books	1. Irrigation and water power Engineering -- B.C. Punmia 2. Introductory Irrigation Engg.--B.C. Punmia 3. Fundamental principle of Irrigation Engg. -- V.B. Priyani 4. Fundamental principle of Irrigation Engg.--Bharat Singh
Reference Books	1. Irrigation Engineering & Hydraulics structures -- S.K. Garg 2. Principles of Irrigation Engg. -- S.K. Verma.

Course Title	Soil Mechanics			
Course Code	**DENCE505T**			
Course Credits	**L**	**T**	**P**	**TC**
	3	**1**	**-**	**4**
Prerequisites	**Learning The Properties of Soil**			
Course Objectives	**This course will enable students to:** • Impart knowledge about various types of soils, index properties of soils and soil classification system. • Impart knowledge about permeability, seepage in soils. • Impart knowledge about stress distribution within the soils, compaction characteristics and consolidation principles. • Impart knowledge about shear strength of soils and their determination based upon various drainage conditions.			
Course Contents	**UNIT-I** **Introduction, Phases of Soil** Formation of soil, Residual and Transported soils, generally used in practice such as Sand Gravel,, Silt, Clay and Black cotton soils, Three and Two Phase system of soils, Various soil weights and Volume relationships. **Index Properties and their Determination** Water content, Specific Gravity, consistency limits, sieve analysis and in situ density, Density Index, Differential and Free Swell determination. **Classification of Soils** Types of Classification and explanation, Field Identification of Expansive soils. **UNIT-II** **Permeability** Darcy law and its Validity, Discharge and seepage velocity, Factors affecting permeability of soils, Lab Tests explanation, Permeability of stratified soil deposits **Seepage** Seepage pressure and Quick condition, Laplace equation and flow nets, Total, Effective and neutral Pressures. **UNIT-III** **Stress Distribution** Stress Distribution in soil mass, Boussinesq analysis, Point load, uniformly distributed loaded circular area, strip load, line load and rectangular area, Point load approximation and New marks influence chart.			

UNIT-IV

Compaction

Compaction definition, standard and modified proctor tests, Factors affecting compaction, Field compaction

Consolidation

Compression of laterally confined soil Spring analogy and types of consolidated soils, Virgin curve, pre consolidation pressure determination and settlements, Terzaghi one dimensional consolidation theory.

UNIT-V

Shear Strength

Shear Strength definition, Mohr's and Coulomb Theory, Drainage conditions, Direct shear test and Tri axial test, Modified strength envelop, unconfined compression test , Vane shear test and sensitivity of soils**.**

Course Outcomes	**After the completion of course:** • Have knowledge about phase's system of soils, soil weights and volume relationships, index properties and their determination, classifications of soils. • Have Knowledge regarding permeability and seepage in the soil. • Gain knowledge regarding stress distribution in the soil for various types of loading conditions and also its determination. • Know the concept of compaction, consolidation and its field applications. • Know the concept of shear strength in soils and determination of shear strength of soils by using various methods and also by various drainage conditions.
Text Books	1. Soil Mechanics and Foundations – B.C. Punmia, A. K. Jain, A. K. Jain (Laxmi Publication) 2. Soil Engineering in Theory and Practice (Vol-II) – Alam Singh (Asia Publishing House)
Reference Books	1. Soil Mechanics and Foundation Engineering – S.N. Murthy (Dhanpat Rai Publications) 2. Basic and Applied Soil Mechanics – Gopal Ranjan and Rao A.S.R. (New Age International) 3. Design Aids in Soil Mechanics and Foundation Engineering – S.R. Kaniraj (Tata McGraw Hill) 4. Geotechnical Engineering Principles and Practice – D. P. Coduto (Prentice Hall of India 5. Soil Mechanics and Foundation Engineering – Garg S.K. (Khanna Publishers) 6. Soil Mechanics and Foundation Engineering – Purushothama Raj (Pearson Education) 4. Text Book of Geotechnical Engineering – I. H. Khan (PHI Learning)

Course Title	Soil Mechanics
Course Code	DENCE505P
Course Credits	L T P TC - - 2 1
Prerequisites	Soil Mechanics
Course Objectives	**This course will enable students to:** • Know about the types of soil according their classification, classification system, field identification, study of effective stress, capillary seepage force, etc. • How to measure the compaction and permeability of soil by lab experiments theoretically uses of Darcy law. Two dimensions flow and develop flow net and characteristics. • Know about stresses due to applied load a soil mass, consolidation and their factor one dimensional consolidation as per Terzaghi's theory • Find shear strength in soil with the help of Mohr circle. How shear strength can be determine in laboratory, soil exploration.
Course Contents	**List of Experiments: (At least Ten experiments are to be performed by each student)** • To determine the mass density of soil by core cutter method. • To determine the specific gravity of soil sample by pycnometer method. • To determine the water content of soil (%) by oven dry method. • To determine in situ dry density of soil by sand replacement method. • To determine the particle size distribution of a soil by dry mechanical analysis (sieve analysis). • To determine the liquid limit of a soil sample. • To determine the plastic limit of a soil sample. • To determine the shrinkage limit of soil sample. • Study of permeability by falling head and constant head methods. • To determine the grain size distribution by wet mechanical analysis (Hydrometer apparatus). • To determine the liquid limit of soil sample by static cone penetrometer method. • Study of cyclic plate load test. • Study of various field control test method.

	• Study of Skempton's pore pressure parameters.
	• Determination of density for contaminated soil.
Course Outcome	**After the completion of course:** • Know about soil and development of soil mechanics and soil formation and characteristic of soil. • Field identification, soil classification system. • Study the lab experiments and simulations of experiment result with the theoretical characteristic of soil. • Study of different theory Newmart Charts, Westergaard and Boussinesq equation. • Able to find at experiment, shear strength of soil and different method of soil exploration.
Text Books	1. Soil Mechanics and Foundation Engineering – B.C. Punmia (Laxmi Publication)
Reference Books	1. Soil Engineering in Theory and Practice (Vol-II) – Alam Singh (Asia Publishing House, New Delhi)

Course Title	Industrial Training
Course Code	DENCE506P

Course Credits	L	T	P	TC	
	-	-	4	2	

Prerequisites	Communication skill must be perfect. & field visit

Course Objectives	**This course will enable students to:** • Trained the students in field work so as to have a firsthand knowledge of practical problems in carrying out engineering tasks. • Develop skills in facing and solving the field problems.

Course Contents	The purpose of industrial training is to offer wide range of practical exposures to latest practices, equipments and techniques used in the field. This training programme will help the student in acquiring hands on experiences of various practices and events required to perform in different job situations. Through the industrial training the students are given an opportunity to develop psychomotor skills and problem solving ability. The students will have to go for industrial training in the following areas:
	
	      Building work
	      Irrigation work
	      Water supply and sanitary work
	      Housing and construction work
	      Road construction
	
	The duration of industrial training will be of four weeks and organised after the end of IV semester examination. The industrial Training has basically the following three components: -
	1. Orientation Programme
	
	2. Industrial Training in the Industry
	
	3. Report Writing and Evaluation

Course Outcome	**After the completion of course:** • The intricacies of implementation textbook knowledge into practice • The concepts of developments and implementation of new techniques