Curriculum Structure for Multi-Disciplinary Minor (MDM) Degree Offered by Different Programs

(In light of NEP 2020)

(NEP-Version II)

For students admitted in 2023-24 onwards

Implemented year-2024-25

Government College of Engineering, Amravati

(An Autonomous Institute of Government of Maharashtra)

Near Kathora Naka, Amravati, Maharashtra

PIN 444604

Curriculum Structure for Multi-Disciplinary Minor (MDM) Degree in Building Technology

(In light of NEP 2020)

(NEP_Version II)

Offered By

DEPARTMENT OF CIVILENGINEERING

For students admitted in 2023-24 onwards

Government College of Engineering, Amravati
(An Autonomous Institute of Government of Maharashtra)
Near Kathora Naka, Amravati, Maharashtra
PIN 444604
www.gcoea.ac.in

Program Specific Outcome (PSO's)

PSO 1: Identify Civil Engineering related issues/ problems in industries and society and to provide the feasible solution.

PSO 2: Apply the knowledge of basic streams of Civil Engineering viz. Basics of Civil Engineering, Building Construction, Building planning and drawing, Construction management to real world problems.

PSO 3: Communicate technical information of Civil Engineering field, clearly and effectively with others in multidisciplinary teams.

Preamble: The Civil Engineering minor is tailored to students who want to understand the fundamentals of Civil Engineering other than courses covered in Engineering Sciences. The students will develop abilities in construction, drawings, estimating and construction management through foundation of Mathematics.

The students can combine the skills and technological expertise of this minor with a major in technology of aligned branch to prepare for a wide variety of opportunities in construction fields and in demand careers.

A. Structure of the MDM course:

Civil Engineering Department offer Multidisciplinary Minor Basket ,Track-1 (Building Technology)

Category	Course Code	Name of the Course	Teaching Scheme				Evaluation Scheme							Credits
							Theory				Practical		Total	
			TH	TU	PR	Total	CT1	CT2	TA	ESE	ICA	ESE		
MM	CE1315	Multidisciplnary Minor-1 **Basics of Civil Engineering**	3			3	15	15	10	60			100	3
MM	CE1415	Multidisciplinary Minor-2 **BuildingConstruction**	3			3	15	15	10	60			100	3
MM	CE1515	Multidisciplinary Minor-3 **Building Planning & Drawing**	3			3	15	15	10	60			100	3
MM	CE1615	Multidisciplinary Minor-4 **Building Estimates & Tendering**	3			3	15	15	10	60			100	3
MM	CE1715	Multidisciplinary Minor-5 **Construction Management**	2			2	15	15	10	60			100	2
Total			**14**	**0**	**0**	**14**	**75**	**75**	**50**	**300**	**0**	**0**	**500**	**14**

B. **Eligibility criteria:** Students enrolled in B. Tech program other than Civil Engineering are eligible. The allotment of minor degree Program will be as per the policy of the Institute.

C. Intake: Minimum 15

D. Detailed Structure:

SEMESTER III

Course Code	CE1315							Course category			MM1
Course Name	Basics Of Civil Engineering										
Teaching Scheme				Examination Scheme							Credits
Th	Tu	Pr	Total	Theory					Practical		Total	
				CT1	CT2	TA	ESE	ESE Duration	ICA	ESE		
03	-	-	03	15	15	10	100	2 hrs 30 min	-	-	-	03

Course Objectives:

To make the students aware and understand:

1. Importance of Civil Engineering and role in Civil Engineer in infrastructure development and various branches / systems of Civil Engineering
2. Various activities in a Civil Engineering Project
3. Various construction materials and their applications in construction
4. Building Planning, drawings and Estimates

Course Contents:

Introduction

Introduction to Civil Engineering, Civil Engineering Projects, Role of Civil Engineer in construction activities, , Importance of Civil engineering in infrastructure development of the country

Investigations

Data collection for planning and design, Topographical investigations – surveying and levelling, Geological Investigations, Geotechnical Investigations, Hydrological Investigations,

Construction materials

Construction materials- Building stones, sand, aggregates, bricks –types and dimensions, Qualities of good bricks, Classification of bricks, cement-types and grades, mortar, P.C.C R.C.C- Grades, Solid and concrete blocks, ACC blocks, Reinforcement-Types and grades,

M.S. Rolled steel sections, Aluminium sections, Roof coverings sheets, Flooring Tiles-types, Glass, Aluminium sections, Bitumen, Industrial timber products-veneer, Ply wood, particle board, fibre board, batten board, block board, pre-laminated boards, laminates

Building Planning, drawings and Estimates

Principles of planning, orientation, Introduction to building rules and bye laws, Building area terms-f plinth area and carpet area, Scales, Plan, Elevation, sections, dimensioning, construction notes, symbols for construction materials, Concept of Line plans, site plan and location plan

Units of measurements, Types of estimate- approximate and detailed

Branches of Civil Engineering

Basics of water resources engineering : Types of irrigation schemes, Types of Dams – Gravity dams and earth dams and their suitability, Bandhara

Basics of environmental engineering: Sources of water, Demand of water, Quality of water, waste water, Need of water treatment and waste water treatment

Basics of transportation engineering : Modes of Transportation - Roads, railways, bridges, tunnels and airports, docks and harbours , Typical cross sections of roads

Text Books:

1. Ramamrutham, Basic Civil Engineering, Dhanapatrai Publications, New Delhi, 2013
2. Bhavikatti S. S., Basic Civil Engineering, New Age Publication, 2010
3. Gopi S., Basic Civil Engineering, Pearson Education India, 2009
4. B. C. Punmia & Ashok Kumar Jain, Basic of Civil Engineering, Firewall Media, 2003

Reference Books and website links:

1. S.C. Rangwala, Engineering Materials, Charotar Publications, 2008
2. S.C. Rangwala, Engineering Materials, Charotar Publications
3. C. P. Kaushik, Basic of Civil and Environmental Engineering, , New Age Publication
4. M.S. Palanichamy, Basic Civil Engineering, McGraw Hill

Course Outcomes:

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

CE1223.1: Describe importance of Civil Engineering and role of Civil Engineer in infrastructure development

CE1223.2: Explain various types of investigations required for Civil Engineering projects

CE1223.3: Describe various building materials and their use/ application in Civil Engineering Constructions

CE1223.4: Explain basics of Civil engineering Planning, drawings and Estimates

CE1223.5: Describe various details related to branches of Civil Engineering

CO – PO – PSO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CE1223.1	0	0	0	0	0	1	0	0	0	2	0	1	2	3	1
CE1223.2	0	0	0	0	0	1	0	0	0	2	0	1	2	3	1
CE1223.3	0	0	0	0	0	1	0	0	0	2	0	1	2	3	1
CE1223.4	0	0	0	0	0	1	0	0	0	2	0	1	2	3	1
CE1223.5	0	0	0	0	0	1	0	0	0	2	0	1	2	3	1

0 - Not correlated 1 - Weakly Correlated 2 - Moderately Correlated 3 - Strongly Correlated

SEMESTER IV

Course Code	CE1415							Course category			MM2
Course Name	Building Construction										
Teaching Scheme				Examination Scheme							Credits
Th	Tu	Pr	Total	Theory					Practical		Total	
				CT1	CT2	TA	ESE	ESE Duration	ICA	ESE		
03	-	-	03	15	15	10	60	2 hrs 30 min	-	-	-	03

Course Objectives:

To make the students aware and understand:

1. Basic concept of building construction
2. Various types of buildings according to National Building Code
3. Various components of building, their types and functions
4. Various construction processes
5. Special aspects of constructions
6. Temporary structures required for construction of various building components

Course Contents:

Introduction: Types of building as per National Building Code, Components of buildings and their functions, Types of structures-load bearing, framed and composite structures, their suitability, relative advantages and disadvantages

Foundation: Definition, purpose, Loads acting on foundation, Safe bearing capacity of soil- definition, Types of shallow foundation for buildings-spread footings for walls and columns, combined footing for columns, Raft foundation, Setting out for foundation.

Floors & **Floor finishes:** Floors- Definition & purpose, Types of R.C.C. floors-R.C.C. slab floor, R.C.C. slab & beam floor, Ribbed floor, Flat Slab, their suitability and construction procedure, Flooring tiles: Types-plain cement tiles, Mosaic tiles, chequered tiles, ceramic tiles, glazed tiles, P.V.C. flooring tiles, Vitrified Tiles

Doors Doors-Purpose, Criteria for location, Sizes, Types of door frames, Methods of fixing door frames, Types of door shutters- fully panelled, flush, louvered, glazed, sliding, revolving, rolling shutter, collapsible door, grilled door, suitability of different types of doors. Types of aluminium doors

Windows: Purpose, Criteria for location, Sizes, Types of wooden windows-casement, louvered, glazed, metal windows, Aluminium windows, Corner & bay windows, Ventilators-purpose and types, Grills for windows

Lintels: Lintels-purpose, types and their suitability, details of R.C.C. lintel

Stairs: Function, Technical terms, Criteria for location, Requirements of good stair, Types of stairs and their suitability, Design of stair, Lifts types and their suitability, Ramps, Escalators

Roofs: Flat & pitched roofs-suitability, Types of steel roof trusses and their suitability, Placing and fixing trusses, Types of roofing sheets, Fixing of roofing sheets to trusses

Masonry construction:

Brick Masonry: Qualities of good bricks, Field and laboratory tests on bricks, Classification of bricks, Mortars: Types of mortars and their suitability, Proportion of mortars used for different works, Technical terms in brick masonry, Principles to be observed during construction, Header bond, Stretcher bond, English Bond, Flemish bond (I & 11/2 brick thick walls), Construction procedure, defects in brick masonry

Reinforced Brick masonry: Applications, Advantages, Materials required, Construction

Concrete block masonry: Types-solid and hollow, common dimensions, Construction procedure

Plastering and pointing: Purpose, Types and their suitability, Procedure of plastering and pointing, Defects in plastering work

Damp proofing: Causes and effects, Methods of damp proofing, materials required, Water proofing compounds- suitability and uses. Details of cavity wall construction

Termite Proofing: Definition, Methods of Termite Proofing

Joints in structure: Construction joints-necessity, provision of construction joint in slab, beam and columns, Expansion joints -necessity, location, materials used, details of expansion joints at foundation and roof level for a load bearing and framed structure.

Formwork & **scaffolding:** Form work-types and suitability, Period for removal of formwork, scaffolding: necessity, Types, Details of erections

Text Books:

1. Sushil Kumar, Building Construction, 19 edition, Standard Publishers Distributors, New Delhi.2008
2. P.C. Verghese, Building Materials, , I edition, Prentice-Hall of India, New Delhi, 2009.
3. Saurabh Kumar Soni, S. K. Kataria and Daryaganj,Building Materials andConstruction, New Delhi -11000

Reference Books:

1. National Building Code of India 2005, B.I.S., 2nd revision, Techniz Books International, New Delhi,2005
2. FPA 5000: Building Construction & Safety Code, FPA, Techniz Books International, New Delhi, 200.
3. Building Materials & Components for Developing Countries, C.B.R.I., Tata Mc- Graw Hill Publishing Co. New Delhi, 1990
4. Gurucharan Singh, Building Construction, 11 th Edition, Standard Book House, New Delhi 2010.

Course Outcomes:

After Completion of course students will be able to:

CE1415.1: explain various types of Buildings and their suitability

CE1415.2: classify and explain basic components of building

CE1415.3: explain the importance and role of each component of building

CE1415.4: explain various construction processes for various construction works/ components

CE1415.5: explain temporary structures required for construction of various building components

CO – PO – PSO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CE1415.1	0	0	0	0	0	0	1	1	2	0	0	1	0	3	1
CE1415.2	0	0	0	0	0	0	1	1	2	0	0	1	0	3	1
CE1415.3	0	0	0	0	0	0	1	1	2	0	0	1	0	3	1
CE1415.4	0	0	0	0	0	0	1	1	2	0	0	1	0	3	1
CE1415.5	0	0	0	0	0	0	1	1	2	0	0		0	3	1

0- Not Correlated 1-Weakly Correlated 2- Moderately Correlated 3- Strongly Correlated

SEMESTER V

Course Code	CE1515	Course category	MM
Course Name	**Building Planning And Drawing**		

Teaching Scheme				Examination Scheme								Credits
Th	Tu	Pr	Total	Theory					Practical		Total	
				CT1	CT2	TA	ESE	ESE Duration	ICA	ESE		
03	-	-	03	15	15	10	60	3 hrs	-	-	100	03

Course Objectives:

The aim of the course is to:

1. Impart knowledge to the students about fundamentals of building planning, drawing, IS code provisions, principals of planning and building rules and byelaws,
2. Make students competent to plan residential buildings and public buildings following principles of planning and building rules and byelaws,
3. Develop students to prepare working and submission drawings of buildings

Course Content:

Introduction

Importance of building drawing in construction & estimation, Selection of scales, dimensioning in architectural drawing, Abbreviations & graphical symbols used in Civil Engineering Drawing as per IS:962, optima layout of sheet for Civil Engineering drawing and selection of scales for drawing, dimensioning standards, Free hand sketching of building components

Building Drawing:

Concept of line plan & working drawings of the building, Developing working drawings of the building from the given line plan – floor plans, elevation, sections, Foundation plan, Details to be incorporated in the working drawings, Necessity and use of working drawing, Site plan, Block plan, Layout plan, Layout plans for load bearing and framed structures, Use of Notes to improve clarity, Fundamentals of Building Information Modeling (BIM), Building Plan Management System (BPMS)

Planning of Residential Buildings:

Introduction, general principles of planning viz. aspect, prospect, roominess, privacy, grouping, circulation, ventilation, furniture requirement, Climate and design consideration, Orientation of buildings, requirement of the owner, Provision of mezzanine floor, balconies and porches in the building, design of stair cases suitable for residential and public buildings, Common sizes of doors, windows and other components, Common utilities such as parking, security, water supply, sanitation, etc. for apartments

Building Rules and Bye-Laws:

Building rules and bye-laws for residential buildings, layout for a housing project, alternatives of building types viz. individual bungalows, semi-detached houses, row houses, apartments, Rules governing Plot area, Built-up area, Floor space Index, Building line, Set back, side margins, height of building, Provisions as per NCB, Requirements of drawing as per plan sanctioning authorities, Conversion of agriculture land to non-agriculture land. Planning of layout, Rules to be adopted while developing any layout

Planning of Public Buildings:

Types of public building and their requirements, planning of public buildings such as School Buildings, College Buildings, Hospitals, Primary Health Center, Multiplex, Shopping Complex

Text Books:

1. Building Drawing, Shah M.G., Kale & Patki, Tata McGraw Hills Publishing Co., New Delhi
2. Civil Engineering Drawing, Subhash C Sharma & Gurucharan Singh, Standard Publishers
3. Building Drawing and Detailing, Balagopal and Prabhu, Spades publishing KDR building, Calicut, (1987)

Reference Books:

1. IS: 962, "Code of practice for architectural and building drawings", BIS, New Delhi
2. Architectural Graphic Standards for Residential Construction: The Architect's and Builder's Guide to Design, Planning, and Construction Details, The American Institute of Architects, John Wiley & Sons
3. Architectural Working Drawings: Residential and Commercial Buildings, Spence William P., 1993
4. Malik R. S. and Meo, G. S., "Civil Engineering Drawing", Computech Publication Ltd., New Asian
5. Sikka, V. B., A Course in Civil Engineering Drawing, S.K. Kataria & Sons

Course Outcomes:

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

CE1515.1: Develop graphical skills for communicating concepts, ideas and designs of engineering products graphically/ visually as well as understand another person's designs;

CE1515.2: Develop working and submission drawings of the building along using principles of planning and building rules and bye-laws;

CE1515.3: Use fundamentals of Building Information Modelling (BIM), Building Plan Management System (BPMS) for building planning and design;

CE1515.4: Examine a design critically and with understanding of CAD to interpret drawings, and to produce designs using a combination of 2D and 3D

CE1515.5: Develop drawings for conventional structures using practical norms

CO – PO – PSO Mapping:

Mapping as per NBA Jan 2016 format-

Course Outcomes	Program Outcomes and PSO														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CE1515.1	0	1	0	0	0	1	0	2	3	0	0	3	3	3	3
CE1515.2	0	0	0	1	0	2	0	2	3	3	0	3	3	3	2
CE1515.3	0	0	0	1	3	2	0	0	3	3	0	3	2	3	2
CE1515.4	0	0	0	0	3	0	0	0	2	1	0	2	2	3	2
CE1515.5	0	0	0	0	0	0	0	0	3	0	2	3	3	3	3

0- Not correlated 1 - Weakly Correlated 2- Moderately Correlated 3- Strongly Correlated

Mapping as per NBA July 2024 format (w.e.f. 01/01/2025)-

Course Outcomes	PO and PSO													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CE1515.1	0	1	0	0	0	1	0	2	3	0	0	3	3	3
CE1515.2	0	0	0	1	0	2	0	2	3	3	0	3	3	2
CE1515.3	0	0	0	1	3	2	0	0	3	3	0	2	3	2
CE1515.4	0	0	0	0	3	0	0	0	2	1	0	2	3	2
CE1515.5	0	0	0	0	0	0	0	0	3	0	2	3	3	3

0-Not correlated 1- Weakly Correlated 2- Moderately Correlated 3-Strongly Correlated

SEMESTER VI

Course Code	CE1615							Course category			MM
Course Name	BUILDING ESTIMATES AND TENDERING										
Teaching Scheme				Examination Scheme							Credits
Th	Tu	Pr	Total	Theory					Practical		Total	
				CT1	CT2	TA	ESE	ESE Duration	ICA	ESE		
03	-	-	03	15	15	10	60	2 hrs 30 min	-	-	100	03

Course Objectives:

The aim of the course is to:

1. Impart the knowledge of measurement of quantities of various components of Civil Engineering structures
2. Impart the knowledge of specification and rate analysis of various items of civil engineering structures
3. Make students capable of preparing estimates of various Civil Engineering structures as per Specifications and by using current schedule of Rates
4. Impart skill to use software e.g. QuePro for preparing estimates
5. Impart the knowledge of tendering procedure, various types of contract and contract Document

Course Contents:

Modes of Measurement:

Modes of Measurement and units of measurement as per IS:1200, Meaning, purpose, and methods adopted for approximate estimation of Civil engineering works. Need of Stage-I estimate

Types of Estimate:

Approximate estimate and detailed estimate, various methods of estimation, Stages of estimates, Purpose and principles, importance of schedule of rates in cost estimates. Introduction to S. S. R. Introduction to components of estimates: face sheet, Recapitulation sheet, abstract sheet (BOQ), lead statement, quarry chart.

Cost and Quantity Estimates:

Detailed Estimate, Forms used, detailed estimate of various civil engineering structures, Working out quantities of various items required for construction, Detailed estimation for Flat roof building,Detailed estimate of Earth work in roads, Detailed estimate of steel reinforcement in RCC works for Slabs, Beams and Columns, Footings, Stair Case etc., bar bending schedule, Detailed estimation for septic
tank, soak pit, sanitary and water supply installations. Introduction to software used in estimation.

Specifications:

Purpose, Necessity and principles of specification writing, Types of specifications, Drafting and writing of detailed specifications of important items of construction

Rate analysis:

Importance and need of rate analysis, Factors affecting rate analysis, Task work, market rate analysis, Fixed, variable, prime and supplementary cost, overhead cost. Performance of rate analysis, Analysis of material and labour requirements, Quantity of materials per unit rate of work, labour estimate, various important terminologies like work charged establishment, contingencies, percentage charges, overheads etc.

Valuation:

Purpose of valuation, value and cost, market value, potential value, Sentimental value, scrap value etc. Net and gross return, Free hold and lease hold property, Sinking fund, Depreciation, capitalized value, annualized value, methods of valuation, rent fixation, valuation of old

building,

Introduction to Contracts tendering:
Contract, Contractor, Types of contracts, Tender notice, Tender documents, tendering procedure, Qualitative and quantitative evaluation of tenders, terms and conditions of contract, Agreement, contract documents, Responsibility of owner, Architect, Contractor and Engineer

Text books:

1. Estimating and Costing in Civil Engineering -Theory and Practice, Datta B.N., 23rd Edition, UBS Publisher, New Delhi, 2003
2. Estimating and Costing, Patil B. S., Oriental Longmans Publication, New Delhi
3. Estimating and Costing, R. C. Rangwala, Charotar Publ. House, Anand
4. Estimating, Costing Specifications & valuation in Civil Engineering, M. Chakraborty,

Reference Book:

1. 1.Civil Estimating & Costing: Including Quality Surveying, Tendering and Valuation, Upadhyay A.K., S K Kataria and Sons
2. Theory and Practice of Valuation, Roshan Namavati, Lakhani Publications
3. Valuation Principles and Procedures, Ashok Nain, Dewpoint Publications
4. National Building Code of India 2005, Group I to V, Bureau of Indian Standards, New Delhi
5. Construction Cost Estimating: Process and Practices, Leonard Holm, John E. Schaufelberger, Dennis Griffin, and Thomas Cole Pearson Education
6. National Building Code of India 2005, Group I to V, Bureau of Indian Standards, New Delhi
7. "State Schedule of Rates" published by Public works Department.
8. Standard Contract Clauses for Domestic Bidding Contracts: Ministry of Statistics and Programme Implementation, Government of India

Course Outcomes:

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

CE1642.1 Prepare quantity estimates for buildings and other Civil Engineering structures as per Specifications;

CE1642.2 Draft detailed specifications and work out rate analysis for all works related to Civil engineering projects;

CE1642.3 Ascertain the quantity of materials required for Civil engineering works as per specifications;

CE1642.4 Prepare cost estimate and valuation of civil engineering works.

CE1642.5 Prepare draft tender papers.

CO – PO – PSO Mapping:

Mapping as per NBA Jan 2016 format-

Course Outcomes	Program Outcomes and PSO														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CE1642.1	3	0	2	1	0	3	0	0	3	3	3	3	3	3	3
CE1642.2	0	0	3	0	0	2	0	0	3	3	3	3	2	2	3
CE1642.3	3	0	2	1	0	0	0	0	3	3	3	3	3	3	3
CE1642.4	3	2	0	2	0	1	0	3	3	3	3	3	3	3	3
CE1642.5	3	0	2	1	0	0	0	0	3	1	3	3	2	3	2

0- Not correlated 1 - Weakly Correlated 2- Moderately Correlated 3- Strongly Correlated

Mapping as per NBA July 2024 format (w. e. f. 01/01/2025)-

Course Outcomes	PO and PSO													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CE1642.1	3	0	2	1	0	3	0	0	3	3	3	3	3	3
CE1642.2	0	0	3	0	0	2	0	0	3	3	3	2	2	3
CE1642.3	3	0	2	1	0	0	0	0	3	3	3	3	3	3
CE1642.4	3	2	0	2	0	1	0	3	3	3	3	3	3	3
CE1642.5	3	0	2	1	0	0	0	0	3	1	3	2	3	2

0-Not correlated 1- Weakly Correlated 2- Moderately Correlated 3-Strongly Correlated

Curriculum Structure for Multi- Disciplinary

Minor (MDM) Degree in Business Economics

(In light of NEP 2020)

(NEP_Version II)

Offered By

DEPARTMENT OF CIVIL ENGINEERING

For students admitted in 2023-24 onwards Government College of Engineering, Amravati

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A. Preamble:

While Engineering curriculum focuses on technical problem-solving, course like Business Economics provides essential context for understanding the real world application and impact of those technical solutions.

Since the most engineering projects operate within budgets, timelines and markets constraints, understanding the concept of GDP, demand and supply analysis, opportunity cost, principles of economics helps the students in making economically sound descision during planning a project.

As engineers moves up in their careers, they take on role that require strategic thinking and business acumen. Thus this minor degree in Business Economics will give fundamental knowledge of finance to the students.

B. Structure of the MDM course:

Civil Engineering Department offer Multidisciplinary Minor Basket , Track-2 (Business Economics)

Category	Course Code	Name of the Course	Teaching Scheme				Evaluation Scheme							Credits
							Theory				Practical		Total	
			TH	TU	PR	Total	CT1	CT2	TA	ESE	ICA	ESE		
MM1	CE1316	Multidisciplinary Minor-1 **Principles of Macroeconomics**	3			3	15	15	10	60			100	3
MM2	CE1416	Multidisciplinary Minor-2 **Principles of Microeconomics**	3			3	15	15	10	60			100	3
MM3	CE1516	Multidisciplinary Minor-3 **Business Statistics**	3			3	15	15	10	60			100	3
MM4	CE1616	Multidisciplinary Minor-4 **Financial Accounting**	3			3	15	15	10	60			100	3
MM5	CE1716	Multidisciplinary Minor-5 **Minor Project**	2			2	15	15	10	60			100	2
Total			**14**	**0**	**0**	**14**	**75**	**75**	**50**	**300**	**0**	**0**	**500**	**14**

C. **Eligibility criteria:** Students enrolled in B. Tech program of all branches are eligible. The allotment of minor degree Programme will be as per the policy of the Institute.

D. Intake: Minimum 15,

E. Detailed syllabus:

SEMESTER – III

Course Code	CE1316								Course category			MM1
Course Name	**Principles of Macroeconomics**											
Teaching Scheme				**Examination Scheme**								**Credits**
Th	Tu	Pr	Total	Theory					Practical		Total	
				CT1	CT2	TA	ESE	ESE Duration	ICA	ESE		
03	-	-	03	15	15	10	60	2 hrs 30 min	-	-	-	03

Course Objectives:

To make the students aware and understand:

1. core economic concepts like scarcity, opportunity cost, and GDP
2. methods for calculating GDP and interpret its components
3. factors affecting economic growth and development.
4. causes and consequences of unemployment and inflation
5. role of fiscal and monetary policy in stabilizing the economy

Course Contents:

Introduction to Macroeconomics: Definition, Meaning, Core Economic Concepts - Scarcity, Opportunity Cost, Economic Systems - Capitalism, Socialism, Mixed Economies)

Measurement of Economic Activity: Gross Domestic Product (GDP) and its Components, Methods of Calculating GDP, Understanding Inflation and Deflation

Economic Growth and Development: Factors Affecting Economic Growth, Challenges to Economic Growth (Income Inequality, Resource Depletion), Introduction to Development Economics

Unemployment and Inflation: Types of Unemployment (Frictional, Structural, Cyclical), Causes and Consequences of Unemployment, Understanding Inflation, and its Measurement, The Phillips Curve

Fiscal Policy and Monetary Policy: Role of Government in the Economy, Fiscal Policy Tools (Taxes, Government Spending), Role of Central Bank, Monetary Policy Tools (Interest Rates, Reserve Requirements)

International Trade and Finance: Benefits and Challenges of Free Trade, Balance of Payments, Exchange Rates and Foreign Exchange Market

Textbooks:

1. David Colander, Macro Economics, McGraw Hill Education Private Limited (Latest Edition)
2. D. N. Dwivedi, Macro Economics: Theory and Policy, McGraw Hill Education Private Limited (Latest Edition)
3. H. L. Ahuja, Macro Economics: Theory and Policy, S. Chand & Company Limited. (Latest Edition)
4. M. L. Jhingan, Macro Economic Theory, Vrinda Publications Private Limited (Latest Edition)

Reference Books:

1. Ben Fine & Ourania Dimakou, Macroeconomics: A Critical Companion, Pluto Press (Latest Edition)
2. Brian Snowdon & Howard Vane (2003), The Development of Modern Macroeconomics: A Rough Guide, in Macroeconomics: A Reader, (Ed.)
3. Brian Snowdon and Howard Vane, Routledge • Wavare Anil Kumar & V.Kumbhar ,(2019) Macro Economics, Ruby Publisher, Kolhapur, MS, India.

Course Outcomes:

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

CE1316.1: Define core economic concepts like scarcity, opportunity cost, and GDP

CE1316.2: Explain the methods for calculating GDP and interpret its components

CE1316.3: Analyse the factors affecting economic growth and development

CE1316.4: Evaluate the causes and consequences of unemployment and inflation

CE1316.5: Discuss the role of fiscal and monetary policy in stabilizing the economy

CO – PO – PSO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CE1316.1	0	0	0	0	0	0	0	0	0	0	3	1	0	0	1
CE1316.2	0	0	0	0	0	0	0	0	0	0	3	1	0	0	1
CE1316.3	0	0	0	0	0	0	0	0	0	0	3	1	0	0	1
CE1316.4	0	0	0	0	0	0	0	0	0	0	3	1	0	0	1
CE1316.5	0	0	0	0	0	0	0	0	0	0	3	1	0	0	1

0 - Not correlated 1 - Weakly Correlated 2 - Moderately Correlated 3 - Strongly Correlated

SEMESTER – IV

Course Code	**CE1416**	Course category	MM2
Course Name	**Principles of Microeconomics**		

Teaching Scheme				Examination Scheme								Credits
Th	Tu	Pr	Total	Theory					Practical		Total	
				CT1	CT2	TA	ESE	ESE Duration	ICA	ESE		
03	-	-	03	15	15	10	60	2 hrs 30 min	-	-	-	03

Course Objectives:

To make the students aware and understand:

1. statistical methods to interpret and analyze business data Highway planning, engineering surveys, and geometric design of roads
2. central tendency and dispersion to describe data sets.
3. probability concepts and common probability distributions to solve business problems
4. hypothesis testing and interpret statistical significance for business decisions
5. linear regression models to analyze relationships between variables

Course Contents:

Introduction to Microeconomics: Definition, Meaning, Basic Economic Concepts (Demand, Supply, Market Equilibrium), Consumer Choice Theory (Utility Maximization)

Demand and Supply Analysis: Factors Affecting Demand and Supply, Market Equilibrium and Price Changes, Elasticity of Demand and Supply

Market Structures: Perfect Competition vs. Imperfect Competition (Monopoly, Monopolistic Competition, Oligopoly), Market Power and Price Determination in Different Market Structures

Production and Costs: Production Functions and Short-Run vs. Long-Run Costs, Economies of Scale and Diseconomies of Scale, Cost-Minimization Strategies for Firms

Market Failure and Government Intervention: Externalities (Positive and Negative), Public Goods and Common Pool Resources, Role of Government in Regulating Markets

Behavioral Economics and Applications: Introduction to Behavioural Economics, Effect of Psychological Factors on Consumer Decisions, Application of Microeconomic Principles to

Textbooks:

1. Ahuja H.L.: Modern Micro Economics, S. Chand & Company Ltd New Delhi
2. Jhingan M.L., Micro Economic Theory, Virinda Publication, Delhi.
3. Mansfield, E., Microeconomics, W.W. Norton and Company, New York.
4. Koutsoyiannis, A., Modern microeconomics, Macmillan, London.

Reference Books:

1. Lipsey & Cristal, Introduction to Positive Economics, Oxford Press.
2. Jack Hirshlifer, Price Theory and Applications, Prentice Hall of India Pvt. Ltd. Delhi
3. K.K. Dewett, Modern Economics Theory, S. Chand Publications, New Delhi.
4. KPM Sundaram and E. N. Sundaram, Micro Economics, S. Chand Publication, New Delhi.
5. Seth M. L. : Micro Economics, Lakshmi Narain Agrawal Publisher Real-World Issues

Course Outcomes:

After Completion of course students will be able to:

CE1416.1: differentiate between microeconomics and macroeconomics and explain basic economic concepts (demand, supply, market equilibrium)

CE1416.2: analyze the factors affecting demand and supply and predict their impact on market equilibrium

CE1416.3: compare and contrast different market structures (perfect competition, monopoly, etc.) and explain price determination under each structure

CE1416.4: evaluate the production process, cost structures, and strategies for cost minimization.

CE1416.5: identify market failures and explain how government intervention can improve market efficiency

CO – PO – PSO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CE1416.1	0	0	0	0	0	0	0	0	0	0	3	1	0	0	1
CE1416.2	0	0	0	0	0	0	0	0	0	0	3	1	0	0	1
CE1416.3	0	0	0	0	0	0	0	0	0	0	3	1	0	0	1
CE1416.4	0	0	0	0	0	0	0	0	0	0	3	1	0	0	1
CE1416.5	0	0	0	0	0	0	0	0	0	0	3	1	0	0	1

0 - Not correlated 1 - Weakly Correlated 2 - Moderately Correlated 3 - Strongly Correlated

SEMESTER- V

Course Code	CE1516	Course category	MM
Course Name	BUSINESS STATISTICS		

Teaching Scheme				Examination Scheme								Credits
Th	Tu	Pr	Total	Theory					Practical		Total	
				CT1	CT2	TA	ESE	ESE Duration	ICA	ESE		
03	-	-	03	15	15	10	60	2hrs 30min	-	-	100	03

Course Objectives:

The aim of the course is to:

1. Apply statistical methods to interpret and analyze business data.
2. Calculate measures of central tendency and dispersion to describe data sets
3. Use probability concepts and common probability distributions to solve business problems.
4. Conduct hypothesis testing and interpret statistical significance for business decisions.
5. Develop and interpret linear regression models to analyze relationships between variables.

Course Contents:

Introduction to Business Statistics -Importance of Statistics in Business Decision-Making, Types of Data (Quantitative, Qualitative), Descriptive Statistics (Measures of Central Tendency, Measures of Dispersion)

Probability and Probability Distributions - Basic Concepts of Probability, Common Probability Distributions (Binomial Distribution, Normal Distribution), Applications of Probability in Business

Sampling and Estimation -Sampling Techniques (Random Sampling, Stratified Sampling), Point Estimation and Confidence Intervals, Hypothesis Testing and Statistical Significance

Regression Analysis -Introduction to Linear Regression, Least Squares Method for Estimating Regression Line, Interpreting Regression Coefficients and R-squared

Forecasting Techniques -Time Series Analysis and Forecasting Methods (Moving Averages, Exponential Smoothing), Forecasting Applications in Business

Data Visualization -Importance of Data Visualization for Communication, Creating Effective Charts and Graphs (Bar Charts, Line Charts, Pie Charts)

Text Books:

1. P.H. Karmel and M. Polasek (1978), Applied Statistics for Economists, 4th edition, Pitman.
2. M.R. Spiegel (2003), Theory and Problems of Probability and Statistics (Schaum Series).
3. Cochran, William, G. (2008), Sampling Techniques, Third Edition, Wiley-India, ISBN 978 - 81-265-1524-0. Reprint: 2008.
4. Bethlehem, J. (2009), Applied Survey Methods: A Statistical Perspective, Wiley.
5. Khandare V.B. and S. Yadav (2015), Statistical Methods, Chinmay Publication, Aurangabad.

References Books:

1. Uwe Flick (2012), Introducing Research Methodology: A Beginner's Guide to Doing a Research Project, Sage Publications.
2. S.P. Gupta (2012), Statistical Methods, 42nd edition, Sultan chand and sons.
3. Ranjit Kumar (2014), Research Methodology: A Step-by-Step Guide for Beginners, 4th Edition, Sage Publications.

Course Outcomes (COs):

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

CE1516.1: Organize, manage and present data.

CE1516.2: Analyse data through formation of Frequency Distribution and Cumulative Frequency Distribution.

CE1516.3: Analyze Statistical data using Statistical tools like Measures of Central.

CE1516.4: Apply forecasting techniques in business.

CE1516.5: Organize graphical Representation of data.

CO – PO –Mapping:

Mapping as per NBA Jan 2016 format-

Course Outcomes	Program Outcomes and PSO														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CE1516.1	1	1	2	0	0	0	0	1	0	0	0	1	Not applicable		
CE1516.2	2	3	3	0	0	0	0	0	0	0	0	1			
CE1516.3	1	1	1	0	1	0	0	1	0	0	0	1			
CE1516.4	2	3	3	0	0	0	0	0	0	0	0	1			
CE1516.5	3	1	1	0	0	0	0	0	0	0	0	1			

0- Not correlated 1- Weakly Correlated 2- Moderately Correlated 3- Strongly Correlated

Mapping as per NBA July 2024 format (w.e.f. 01/01/2025)-

Course Outcomes	PO and PSO													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CE1516.1	1	1	2	0	0	0	0	1	0	0	0	Not applicable		
CE1516.2	2	3	3	0	0	0	0	0	0	0	0			
CE1516.3	1	1	1	0	1	0	0	1	0	0	0			
CE1516.4	2	3	3	0	0	0	0	0	0	0	0			
CE1516.5	3	1	1	0	0	0	0	0	0	0	0			

0- Not correlated 1- Weakly Correlated 2- Moderately Correlated 3-Strongly Correlated

SEMESTER – VI

Course Code	CE1616							Course category			MM
Course Name	Financial Accounting										
Teaching Scheme				Examination Scheme							Credits
Th	Tu	Pr	Total	Theory					Practical		Total	
				CT1	CT2	TA	ESE	ESE Duration	ICA	ESE		
03	-	-	03	15	15	10	60	2 hrs 30min	-	-	100	03

Course Objectives:

The aim of the course is to:

1. To apply the accounting equation to analyze financial transactions.
2. To prepare and interpret the balance sheet, income statement, and cash flow statement.
3. To calculate and analyze financial ratios to assess a company's financial health and profitability.
4. To explain the limitations of financial statements for decision-making.
5. To differentiate between financial accounting and management accounting.

Course Contents:

Introduction to Financial Accounting: Basics Accounting Equation, The Accounting Cycle (Transactions, Journalizing, Posting, Trial Balance)

The Balance Sheet: Understanding the Components of a Balance Sheet (Current Assets, Non-Current Assets, Current Liabilities, Non-Current Liabilities, Shareholders' Equity), Analyzing Financial Position using Balance Sheet Ratios (Liquidity Ratio, Solvency Ratio)

The Income Statement :Revenue Recognition and Recording Expenses, Understanding the Components of an Income Statement (Revenue, Cost of Goods Sold, Operating Expenses, Interest Expense, Net Income), Profitability Analysis using Income Statement Ratios (Profit Margin, Return on Equity)

The Statement of Cash Flows :Importance of Cash Flow Management, Understanding the Three Categories of Cash Flows (Operating Activities, Investing Activities, Financing Activities), Analyzing Cash Flow for Short-Term Liquidity

Introduction to Financial Analysis -Common-Sized Statements and Trend Analysis, Ratio Analysis for Evaluating a Company's Performance, Limitations of Financial Statements

Introduction to Managerial Accounting: Cost Accounting Systems (Cost Behavior: Variable vs. Fixed Costs), Budgeting and Cost Control Techniques, Understanding the Role of Management Accounting in Decision-Making

Text Books:

1. Anthony, RN. and Reece. J.S.: Accounting Principles: Richard Irwin Inc.
2. J.R.Botliboi : Advanced Accountancy
3. R.R.Gupta : Advanced Accountancy
4. Gupta. R.L.and Radhaswamy. M: Financial Accounting; Sultan Chand and Sons, New Delhi.

References Books:

1. Monga J.R., Ahuja Girish, and Sehgal Ashok: Financial Accounting; Mayur Paper Back.
2. A.N.Agrawal : Higher Science of Accounting
3. Shukla. M.C., Grewal T.S., and Gupta, S.C.: Advanced Accounts: S. Chand & Co. New Delhi.

Course Outcomes :

On completion of the course, students will be able to

CE1616.1: Analyze financial and contextual information to make decisions, estimate costs and determine tax implications, audit risk and engagement procedures.

CE1616.2: Prepare and analyze the balance sheet

CE1616.3: Prepare and analyze the Income statement

CE1616.4: Evaluate and mitigate the risk of non-congruent behavior by implementing appropriate internal controls, incentives, and performance measures.

CE1616.5: Make managerial decision

CO – PO –Mapping:

Mapping as per NBA Jan 2016 format-

Course Outcomes	Program Outcomes and PSO														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CE1616.1	2	2	2	1	0	0	1	0	0	0	0	1	Not applicable		
CE1616.2	2	3	1	0	1	0	0	0	0	0	0	1			
CE1616.3	3	1	1	0	0	1	0	0	1	0	0	1			
CE1616.4	2	2	3	0	0	0	1	0	0	0	0	1			
CE1616.5	3	1	1	0	0	0	0	0	0	0	0	1			

0-Not correlated 1 - Weakly Correlated 2- Moderately Correlated 3- Strongly Correlated

Mapping as per NBA July 2024 format (w. e. f. 01/01/2025)-

Course Outcomes	PO and PSO													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CE1616.1	2	2	2	1	0	0	1	0	0	0	0	Not applicable		
CE1616.2	2	3	1	0	1	0	0	0	0	0	0			
CE1616.3	3	1	1	0	0	1	0	0	1	0	0			
CE1616.4	2	2	3	0	0	0	1	0	0	0	0			
CE1616.5	3	1	1	0	0	0	0	0	0	0	0			

0-Not correlated 1- Weakly Correlated 2- Moderately Correlated 3-Strongly Correlated