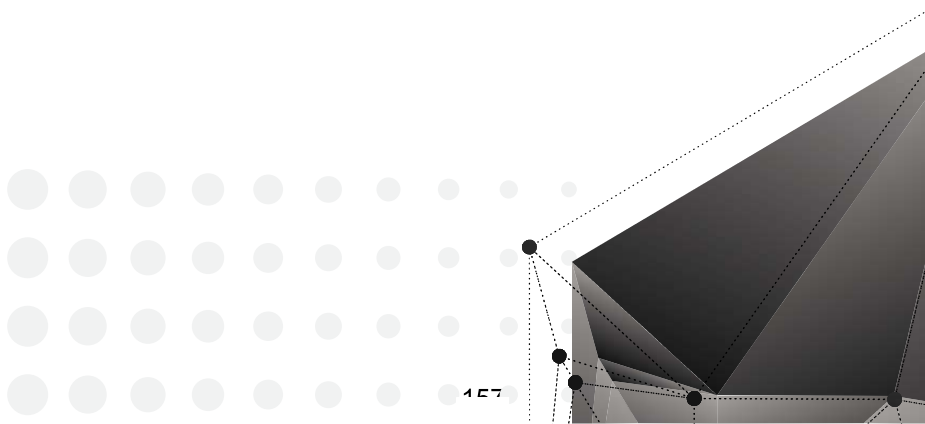


SIXTH SEMESTER

**'CIVIL
&**

ENVIRONMENTAL ENGINEERING'



ESTIMATING COSTING & VALUATION

Course Code:	446001
Course Title	Estimating Costing & Valuation
No. of Credits	12 (TH:8,T:4,P:0)

COURSE OUTCOMES: At the end of the course, the student will be able to:

1. Develop a comprehensive understanding of estimating and costing in construction projects, recognizing its significance and the types of estimates involved, including preliminary and detailed estimates.
2. Master the techniques of measurement and quantity calculation for various construction items, adhering to BIS standards.
3. Acquire proficiency in preparing detailed and abstract estimates for diverse construction projects, ranging from residential buildings and roads to culverts and septic tanks.
4. Gain the ability to calculate material quantities for different construction tasks, such as cement mortars, concrete, masonry, plastering, painting, and RCC work.
5. Learn the analysis of rates for finished construction items, including components like labor, material, profit, and overheads, and perform rate calculations for various tasks.
6. Develop knowledge and skills related to contractorship, contract essentials, types, and tender preparation, while also being able to write detailed specifications and prepare tender documents based on Common Schedule Rates (CSR/SOR).

DETAILED CONTENTS

1. Introduction

Introduction to Estimating Costing, its Importance.

2. Types of estimates

2.1 Preliminary estimates

2.1.1 Plinth area estimate

2.1.2 Cubic rate estimate

2.1.3 Estimate per unit base

2.2 Detailed estimates

2.2.1 Definition

2.2.2 Stages of preparation – details of measurement and calculation of quantities and abstract

3. Measurement

3.1 Units of measurement for various items of work as per BIS:1200

3.2 Rules for measurements

3.3 Different methods of taking out quantities – centre line method and long wall and short wall method

4. Preparation of Detailed & Abstract Estimates from Drawings for:

4.1 A small residential building with a flat roof and pitched roof comprising of one/two rooms with W.C., bath, kitchen, and verandah

4.2 Earthwork for unlined channel

4.3 WBM road and pre-mix carpeting

4.4 Single span RCC slab culvert

4.5 Earthwork for plain and hill roads

4.6 RCC work in beams, slab, column & lintel, foundations

4.7 Users septic tank - 25 users

5. Calculation of quantities of materials for

- 5.1 Cement mortars of different proportions
- 5.2 Cement concrete of different proportions
- 5.3 Brick/stone masonry in cement mortar
- 5.4 Plastering and pointing
- 5.5 White washing, painting
- 5.6 R.C.C. work in slab, beams

6. Analysis of Rates

- 6.1 Steps involved in the analysis of rates. Requirement of material, labour, sundries, contractor's profit, and overheads
- 6.2 Analysis of rates for finished items when data regarding labour, rates of material, and labour is given:
 - (i) Earthwork in excavation in hard/ordinary soil and filling with a concept of lead and lift
 - (ii) RCC in roof slab/beam/lintels/columns
 - (iii) Brick masonry in cement mortar
 - (iv) Cement Plaster
 - (v) White washing, painting
 - (vi) Stone masonry in cement mortar

7. Contractorship

- 7.1 Meaning of contract
- 7.2 Qualities of a good contractor and their qualifications
- 7.3 Essentials of a contract
- 7.4 Types of contracts, their advantages, disadvantages, and suitability, payment mechanism
- 7.5 Basic idea of single and two cover-bids; tender, tender forms and documents, tender notice, submission of tender, and deposit of earnest money, security deposit, retention money, maintenance period.

8. Preparation of Tender Document based on Common Schedule Rates (CSR/SOR)

- 8.1 Introduction to CSR and calculation of cost based on premium on CSR/SOR
- 8.2 Exercises on writing detailed specifications of different types of building works from excavation to foundations, superstructure, and finishing operation
- 8.3 Exercises on preparing tender documents for the following:
 - (i) Earthwork
 - (ii) Construction of a small house as per given drawing
 - (iv) RCC works
 - (v) Pointing, plastering and flooring
 - (vi) White-washing, distempering, and painting
 - (vii) Woodwork including polishing
 - (viii) Sanitary and water supply installations
 - (ix) False ceiling, aluminum (glazed) partitioning
 - (x) Tile flooring including base course
 - (xi) Construction of W.B.M/Concrete road
- 8.4 Exercises on preparation of comparative statements for item rate contract

9. Valuation

- 9.1 Purpose of valuation, principles of valuation
- 9.2 Definition of various terms related to valuation like depreciation, sinking fund, salvage and scrap value, market value, fair rent, year's purchase etc.
- 9.3 Methods of valuation (Overview only):
 - (i) Replacement cost method
 - (ii) Rental return method

Recommended Books:

1. Pasrija, HD, Arora, CL and S. Inderjit Singh, “Estimating, Costing and Valuation (Civil)”,
New Asian Publishers, Delhi,
2. Rangwala, S.C, Estimating and Costing”, Anand,
Charotar Book Stall
3. Chakraborti, M, “Estimating, Costing and Specification
in Civil Engineering”, Calcutta
4. Dutta, BN, “Estimating and Costing
5. Mahajan Sanjay, “Estimating and Costing” Satya
Parkashan, Delhi

'Open Elective 1-1'
REPAIR & MAINTENANCE OF STRUCTURES

Course Code:	446002
Course Title	Repair & Maintenance of Structures
No. of Credits	6 (TH:6,T:0,P:0)

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

1. Understand the importance and significance of maintenance in building structures and its impact on the longevity and performance of buildings.
2. Identify the different factors causing deterioration in buildings and analyze their effects on various building materials.
3. Develop a systematic approach to investigate and diagnose defects in building structures using non-destructive and other testing methods.
4. Classify and recognize defects in various building elements and understand their root causes, enabling effective problem-solving.
5. Evaluate the compatibility aspects of repair materials and demonstrate the appropriate application of various materials for repair, maintenance, and protection of building structures.
6. Implement remedial measures for building defects, including crack repair, corrosion repair in RCC elements, waterproofing, repair of joints, and surface defect repair using suitable techniques and materials.

DETAILED CONTENTS

1. Introduction to Building Structure Maintenance

- 1.1 Meaning of Maintenance
- 1.2 Objectives of Maintenance
- 1.3 Importance & significance of repair and maintenance of buildings
- 1.4 Factors influencing repair and maintenance.

2. Factors Causing Deterioration (Sources, Causes, Effects)

- 2.1 Definition of deterioration/decay
- 2.2 Factors causing deterioration, their classification
 - 2.2.1 Human factors causing deterioration
 - 2.2.2 Chemical factors causing deterioration
 - 2.2.3 Environmental conditions causing deterioration
 - 2.2.4 Miscellaneous factors
- 2.3 Effects of various factors of deterioration on various building materials:
 - 2.3.1 Bricks
 - 2.3.2 Timber
 - 2.3.3 Concrete
 - 2.3.4 Paints
 - 2.3.5 Metals
 - 2.3.6 Plastics
 - 2.3.7 Stones

3. Investigation & Diagnosis of Defects

- 3.1 Systematic approach/procedure of investigation
- 3.2 Sequence of detailed steps for diagnosis of building defects/problems
- 3.3 List of non-destructive and other tests on structural elements and materials (Overview of most commonly used tests)

4. Defects and their Root Causes

- 4.1 Define defects in building structures
- 4.2 Classification of defects
 - 4.2.1 Foundations, basements, and DPC
 - 4.2.2 Walls
 - 4.2.3 Columns and Beams
 - 4.2.4 Roof and Terraces
 - 4.2.5 Joinery
 - 4.2.6 Decorative and protective finishes
 - 4.2.7 Services
 - 4.2.8 Defects caused by dampness

5. Materials for Repair, Maintenance and Protection

- 5.1 Compatibility aspects of repair materials
- 5.2 application of the following materials in repairs:
 - 5.2.1 Anti-corrosion coatings
 - 5.2.2 Adhesives/bonding aids
 - 5.2.3 Repair mortars
 - 5.2.4 Curing compounds
 - 5.2.5 Joint sealants
 - 5.2.6 Waterproofing systems for roofs
 - 5.2.7 Protective coatings

6. Remedial Measures for Building Defects

- 6.1 Preventive maintenance considerations
- 6.2 Surface preparation techniques for repair
- 6.3 Crack repair methods
- 6.4 Repair of surface defects of concrete
- 6.5 Repair of corrosion in RCC elements
- 6.7 Repair of DPC against Rising Dampness

6.8 Repair of walls

6.9 Waterproofing of wet areas and roofs

6.10 Repair of joints in buildings

Recommended Books:

1. Gahlot P.S. and Sanjay Sharma, "Building Defects and Maintenance Management", CBS Publishers, New Delhi
2. Nayak, BS, "Maintenance Engineering for Civil Engineers", Khanna Publishers, Delhi
3. Ransom, WH "Building Failures - Diagnosis and Avoidance", Publishing E and F.N. Span
4. Hutchinson, BD; et al, "Maintenance and Repair of Buildings", Published by Newness – Butterworth

'Open Elective 1-2'
TENDERING AND ACCOUNTS

Course Code:	446003
Course Title	Tendering and Accounts
No. of Credits	6 (TH:6,T:0,P:0)

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

1. Understand the tendering and contracting processes in the construction industry and effective contract management techniques.
2. Apply the principles of estimating to accurately determine project costs, including the preparation of bill of quantities and rate analysis, contributing to efficient budgeting and cost control in construction projects.
3. Demonstrate a sound knowledge of accounting principles and financial management practices enabling effective financial analysis and decision-making.
4. Develop the skills necessary to prepare tender documents, evaluate tenders, and engage in contract negotiation for construction automation works.
5. Gain an understanding of e-Tendering & e-Procurement processes, recognizing their benefits and limitations, and complying with the legal and regulatory framework for electronic procurement in the construction industry.
6. Comprehend the different types of contracts and the application of contract law in construction projects, and be familiar with arbitration and alternative dispute resolution methods commonly used in the construction sector.

DETAILED CONTENTS

1. Introduction to Tendering and Contracts

- Types of tenders & Tendering process
- Contract documents
- Contract clauses and conditions
- Contract management

2. Principles of Estimating

- Elements of an estimate & Types of estimates
- Methods of measurement
- Preparation of bill of quantities (BOQ)
- Rate analysis

3. Accounts and Finance Management

- Accounting principles and concepts
- Financial statements
- Cash flow analysis
- Cost control techniques

4. Tendering for Civil and Environment Works

- Preparation of tender documents, evaluation criteria
- Contract negotiation
- Variation orders and claims
- Dispute resolution

5. e-Tendering and e-Procurement

- Overview of e-Tendering & e-Procurement, Benefits & limitations
- e-Tendering platforms and their features
- Legal and regulatory framework

6. Contracts and Legal Aspects

- Types of contracts, Contract law and its application
- Arbitration and alternate dispute resolution

Reference Books:

1. "Tendering and Estimating in Building" by Martin Brook and Jimmie Hinze
2. "Construction Contracts: Law and Management" by John Murdoch and Will Hughes
3. "Quantity Surveying Practice and Administration" by P. B. W. Nunn and D. J. Tozer
4. "Construction Cost Management: Learning from Case Studies" by Keith Potts and Nii Ankrah
5. "Construction Claims and Responses: Effective Writing and Presentation" by Andy Hewitt
6. "Construction Project Management" by K. K. Chitkara
7. "Cost and Management Accounting" by M. N. Arora and S. K. Sharma
8. "Financial Accounting" by S. N. Maheshwari and S. K. Maheshwari
9. "Management Accounting" by Khan and Jain
10. "Advanced Accounting" by R. L. Gupta and Radhaswamy

'Open Elective 2-1'
DISASTER MANAGEMENT

Course Code:	026006
Course Title	Disaster Management
No. of Credits	6 (TH:6,T:0,P:0)

Course outcomes: at the end of the course, the student will be able to:

1. Understand the spectrum of natural and man-made disasters their causes, effects, and illustrating with practical examples.
2. Analyze risk and vulnerability in disaster scenarios, delineating concepts, conducting risk reduction measures, and developing strategic approaches to address vulnerabilities.
3. Develop comprehensive disaster preparedness plans, encompassing prediction, early warnings, safety measures, and information dissemination, recognizing the roles of various stakeholders like government, NGOs, and engineers.
4. Formulate effective disaster response strategies, outlining response plans, communication methods, emergency activation, and coordinating search, rescue, evacuation, and logistics, considering psychological aspects.
5. Evaluate rehabilitation and reconstruction processes as tools for sustainable development while addressing sanitation, hygiene, education, and victims' psychological well-being.
6. Recognize the importance of disaster-resistant construction and assess the role of educational institutions in disaster management and awareness.

DETAILED CONTENTS

1. Introduction to Disasters

- (a) Natural disasters: Floods, cyclones, earthquakes, landslides, etc.
- (b) Man-made disasters: Fires, industrial pollution, nuclear disasters, biological disasters, accidents (air, sea, rail & road), structural failures (buildings and bridges), war & terrorism etc.
- (c) Causes, effects & practical examples of various disasters.

2. Risk And Vulnerability Analysis

- (a) Risk : Concept and analysis
- (b) Risk reduction
- (c) Vulnerability : Concept and analysis
- (d) Strategic development for vulnerability

3. Disaster Preparedness and Response

Preparedness:

- (a) Disaster preparedness: concept and nature
- (b) Disaster preparedness plan
- (c) Prediction, early warnings, and safety measures for disasters
- (d) Role of information, education, communication and training
- (e) Role of government, international organizations, and NGOs
- (f) Role of it in disaster preparedness
- (g) Role of engineers in disaster management

Response:

- (a) Introduction to disaster response
- (b) Disaster response plan
- (c) Communication, participation & activation of emergency preparedness plan
- (d) Search, rescue, evacuation & logistic management
- (e) Role of government, international organizations & ngos
- (f) Psychological response and management (trauma, stress, rumor & panic)
- (g) Relief and recovery
- (h) Medical health response to different disasters

4. Rehabilitation, reconstruction and recovery

- (a) Reconstruction & rehabilitation as a means of development
- (b) Damage assessment
- (c) Post-disaster effects and remedial measures
- (d) Creation of long-term job opportunities & livelihood options

5. Disaster-resistant house construction

- (a) Designing and constructing disaster-resistant houses
- (b) Sanitation and hygiene
- (c) Education & awareness
- (d) Dealing with victims' psychology
- (e) Long-term counter disaster planning
- (f) Role of educational institutes

Recommended books:

- 1 Rr. Mrinalini Pandey, Disaster Management, Wiley india Pvt. Ltd.
- 2 Tushar Bhattacharya, Disaster Science and Management Mc Graw Hill Education (India) Pvt. Ltd.
- 3 Jagbir Singh, Disaster Management : Future Challenges and Opportunities, K. W. Publishers Pvt. Ltd.
- 4 J. P. Singhal, Disaster Management, Laxmi Publications.
- 5 Shailesh Shukla, Shamna Hussain, Biodiversity, Environment and Disaster Management, Unique Publications
- 6 C. K. Rajan, Navale Pandharinath, Earth and Atmospheric Disaster Management : Nature and Manmade, B.s. Publication

'Open Elective 2-2'
ENVIRONMENTAL IMPACT ASSESSMENT

Course Code:	446004
Course Title	Environmental Impact Assessment
No. of Credits	6 (TH:6,T:0,P:0)

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

1. Understand the concept & significance of Environmental Impact Assessment (EIA) and its application in various projects, recognizing its role in ensuring sustainable development and environmental protection.
2. Gain proficiency in utilizing different EIA methodologies to effectively assess the potential environmental impacts of projects.
3. Demonstrate the ability to predict and assess the impact of projects on key environmental components and identify potential risks and challenges.
4. Develop comprehensive Environmental Management Plans (EMP) that address the mitigation of adverse impacts on the environment, providing sustainable solutions for managing water, air, and land resources in the context of project development.
5. Acquire the skills to address social and community concerns related to project development, ensuring the involvement and well-being of project affected people in the EIA process.
6. Master the art of conducting environmental audits, evaluating data, and preparing detailed reports, enabling effective monitoring, and compliance with environmental regulations and standards.

DETAILED CONTENTS

1. Introduction and overview of EIA

- 1.1 Concept of EIA
- 1.2 Utility of EIA
- 1.3 Scope of EIA

2. EIA methodologies

- 2.1 Preliminary assessment
- 2.2 Quantification
- 2.3 Comparison of alternatives and comprehensive EIA's using checklist, matrices and network methods

3. Prediction and assessment of impact on:

- 3.1 Air
- 3.2 Water
- 3.3 Noise
- 3.4 Land

4. Environmental management plan

- 4.1 Plan for mitigation of adverse impact on environment
- 4.2 Options for mitigation of impact on water, air, land
- 4.3 Addressing the issues related to project affected people

5. EIA Reporting

- 5.1 Objectives of environmental audit
- 5.2 Evaluation of audit data
- 5.3 Preparation of audit report

Suggested Learning Resources

1. Canter L.W. ,EIA, 2nded., Mc Graw Hill,1997
2. Kulkarni, V. and Ramchandra,T.V.,“Environmental Management”, TERI Press2009
3. United Nations Environment Programme (UNEP) EIA Manual

'Program Elective 1-1'
PRECAST & PRESTRESSED CONCRETE

Course Code:	446005
Course Title	Precast & Prestressed Concrete
No. of Credits	6 (TH:6,T:0,P:0)

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

1. Understand the concept and historical background of precast and prestressed concrete, and recognize their advantages and disadvantages.
2. Demonstrate knowledge of the materials used in precast and prestressed concrete and their impact on the properties of the final concrete elements.
3. Gain proficiency in the manufacturing and installation processes of precast concrete elements and be able to consider design aspects specific to precast elements.
4. Comprehend the basic principles of pre-stressing and differentiate between pre-tensioning and post-tensioning methods.
5. Acquire skills in casting, curing, transportation, and erection of precast and prestressed concrete elements and quality assurance practices in their construction.
6. Recognize the diverse applications of precast and prestressed concrete in various building structures.
7. Develop the ability to conduct inspections and monitoring of precast and prestressed concrete elements, to ensure the longevity and structural integrity of these elements over time.

DETAILED CONTENTS

1. Introduction to precast and prestressed concrete

- Definition and historical background
- Advantages and disadvantages
- Types of precast and prestressed concrete elements

2. Materials and properties

- Cement, aggregates, and admixtures
- Reinforcing steel
- Properties of precast and prestressed concrete

3. Precast concrete elements

- Manufacture and installation of precast concrete elements
- Types of precast concrete elements (such as slabs, walls, beams, columns, and stairs)
- Design considerations for precast concrete elements

4. Prestressed concrete elements

- Basic concepts of prestressing
- Types of prestressing (such as pre-tensioning and post-tensioning)
- Design considerations for prestressed concrete elements

5. Construction techniques and methods

- Casting and curing of precast and prestressed concrete elements
- Transportation and erection of precast and prestressed concrete elements
- Quality control and quality assurance

6. Applications of precast and prestressed concrete

- Building structures (such as offices, schools, hospitals, and apartments)
- Transportation structures (such as bridges, tunnels, and flyovers)
- Industrial structures (such as factories and warehouses)

7. Maintenance and rehabilitation

- Inspection and monitoring of precast and prestressed concrete elements
- Repair and rehabilitation techniques

Reference Books:

1. "Precast Concrete Structures" by Kim S. Elliott
2. "Prestressed Concrete: A Fundamental Approach" by Edward G. Nawy
3. "PCI Design Handbook: Precast and Prestressed Concrete" by Precast/Prestressed Concrete Institute
4. "Handbook of Precast Concrete Construction" by T. W. Love
5. "Reinforced and Prestressed Concrete: Analysis and Design with Emphasis on Application of AS3600-2009" by Yew-Chaye Loo

'Program Elective 1-2'
ECONOMIC POLICIES IN INDIA

Course Code:	446006
Course Title	Economic Policies in India
No. of Credits	6 (TH:6,T:0,P:0)

COURSE OUTCOMES: At the end of the course, the student will be able to:

1. Understand the basic concepts of economics and their relevance to the construction industry.
2. Comprehend the objectives and instruments of monetary policy and analyze its impact on the construction industry.
3. Analyze the objectives and instruments of fiscal policy and evaluate its implications for the construction sector.
4. Evaluate the objectives and instruments of industrial policy and assess its effects on the construction industry.
5. Assess the objectives and instruments of infrastructure policy and understand its significance for the construction sector.
6. Examine the objectives and instruments of environmental policy and its role in shaping the construction industry's practices.
7. Analyze the interplay of economic policies and their combined impact on the construction sector's growth and development.
8. Recognize the role of the government in implementing economic policies and their implications for construction - related businesses.

DETAILED CONTENTS

1. Introduction to Economic Policies

- Basic concepts of economics
- Overview of economic policies in India
- Economic policies & their impact on the construction industry

2. Monetary Policy

- Introduction to monetary policy
- Salient features of monetary policy
- Role of the Reserve Bank of India (RBI) in implementing monetary policy
- Impact of monetary policy on the construction industry

3. Fiscal Policy

- Introduction to fiscal policy
- Salient features of fiscal policy
- Role of the government in implementing fiscal policy
- Impact of fiscal policy on the construction industry

4. Industrial Policy

- Introduction to industrial policy
- Salient features of industrial policy
- Role of the government in implementing industrial policy
- Impact of industrial policy on the construction industry

5. Infrastructure Policy

- Introduction to infrastructure policy
- Salient features of infrastructure policy
- Role of the government in implementing infrastructure policy
- Impact of infrastructure policy on the construction industry

6. Environmental Policy

- Introduction to environmental policy
- Salient features of environmental policy
- Role of the government in implementing environmental policy
- Impact of environmental policy on the construction industry

Reference Books:

1. Indian Economy by Ramesh Singh
2. Economic Survey of India by Ministry of Finance, Government of India
3. Indian Economy: Performance and Policies by Uma Kapila
4. Economic Development and Policy in India by K.P. Kannan
5. Indian Economy: Issues and Policies by S. Nagarajan
6. Indian Economy: Environment and Policy by Nitin R. Gokhale and Sameer Kochhar
7. Economic Policy in India: History, Principles and Prospects by Raja J. Chelliah
8. Economic Growth and Policy in India: The Emerging Scenario edited by D.C. Wadhwa and Niti Bhasin
9. Economic Reforms and Growth in India: Essays from Economic and Political Weekly edited by Ratan Khasnabis and Seeta Prabhu
10. Public Policy and Economic Development in India edited by S.S. Acharya and P.R. Gopalakrishnan.

**‘AUDIT COURSE’
INDIAN CONSTITUTION**

Course Code:	AS601
Course Title	Indian Constitution (Audit Course)
No. of Credits	0 (TH:2,T:0,P:0)

COURSE OUTCOMES: After completion of the course the students are able to:

1. Understand the historical background and significance of the Indian Constitution, including the process of its making and the principles enshrined in it.
2. Analyze and interpret key elements of the Constitution.
3. Describe the structure and functioning of the Union Government.
4. Explain the roles and powers of the State Government.
5. Examine the structure and responsibilities of local administration, such as District Administration, Municipal Corporations, and Zila Panchayats.
6. Understand the role and functioning of the Election Commission.

COURSE CONTENTS

1. The Constitution :

- 1.1 Introduction
- 1.2 The History of the Making of the Indian Constitution
- 1.3 Preamble & the Basic Structure.
- 1.4 Fundamental Rights & Duties.
- 1.5 Directive Principles of State Policy (DPSP).

2. Union Government :

- 2.1 Structure of the Indian Union
- 2.2 President– Role and Power
- 2.3 Prime Minister and Council of Ministers
- 2.4 Lok Sabha and Rajya Sabha

3. State Government :

- 3.1 Governor– Role and Power
- 3.2 Chief Minister and Council of Ministers

4. Local Administration :

- 4.1 District Administration
- 4.2 Municipal Corporation
- 4.3 Zila Panchayat

5. Election Commission :

- 5.1 Composition, Role and Functioning of:
 - 5.1.1 Chief Election Commission
 - 5.1.2 State Election Commission

Suggested Learning Resources :

1. Ethics and Politics of the Indian Constitution, Rajeev Bhargava, Oxford University Press, New Delhi,
2. The Constitution of India, B.L. Fadia, Sahitya Bhawan; New edition (2017)
3. Introduction to the Constitution of India, D.D. Basu, Lexis Nexis; Twenty-Third 2018 edition

Suggested Software / Learning Websites :

1. <https://www.constitution.org/cons/india/const.html>
2. <http://www.legislative.gov.in/constitution-of-india>
3. <https://www.sci.gov.in/constitution>
4. <https://www.toppr.com/guides/civics/the-indian-constitution/the-constitution-of-india/>

ENTREPRENEURSHIP AND START-UPS **(Common in all branches of Engineering)**

Course Code:	AS602
Course Title	Entrepreneurship and Start-ups
No. of Credits	4 (TH:4,T:0,P:0)

COURSE OUTCOMES: At the end of the course, the student will be able to:

1. Develop an understanding of the concept of entrepreneurship and its relevance in the engineering field, including the importance of creativity, innovation, and problem-solving.
2. Generate and evaluate entrepreneurial ideas, identifying market opportunities and target customers, and assessing the feasibility of a start-up venture.
3. Create a comprehensive business plan and formulate effective strategies for a start-up venture, encompassing marketing, operations, finance, and growth.
4. Comprehend the legal and regulatory considerations involved in establishing and operating a business, ensuring compliance and mitigating legal risks.
5. Design and implement marketing and sales strategies to effectively position and promote the start-up, considering market segmentation, branding, and customer acquisition.
6. Apply financial management principles to plan and manage the financial aspects of a start-up, including budgeting, financial forecasting, and resource allocation.

COURSE CONTENTS

1. Introduction to Entrepreneurship

- Concept of entrepreneurship
- Importance of entrepreneurship in the engineering field
- Traits and characteristics of successful entrepreneurs

2. Ideation and Opportunity Identification

- Generating entrepreneurial ideas
- Evaluating market opportunities
- Conducting market research and feasibility analysis
- Identifying target customers and their needs

3. Business Planning and Strategy

- Business objectives and goals
- Need of Business plan
- Formulating business strategies
- Assessing risk and managing uncertainty

4. Legal and Regulatory Considerations

- Legal forms of business entities
- Compliance with regulations and licenses
- Contracts and agreements in entrepreneurship

5. Marketing and Sales Strategies

- Need of marketing plan
- Methods for marketing
- Pricing strategies
- Sales and distribution

6. Financial Management for Start-ups

- Financial planning and budgeting
- Funding sources and raising capital

7. Operations and Supply Chain Management

- Designing efficient operations processes
- Supply chain management for start-ups
- Quality management and control
- Logistics and inventory management

8. Human Resource Management

- Leadership and organizational culture
- Performance management and motivation

9. Entrepreneurial Mindset and Growth

- Nurturing creativity and innovation
- Overcoming challenges and failures

Reference Books:

1. "The Lean Startup: How Today's Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses" by Eric Ries
2. "The Startup Owner's Manual: The Step-By-Step Guide for Building a Great Company" by Steve Blank and Bob Dorf
3. "Disciplined Entrepreneurship: 24 Steps to a Successful Startup" by Bill Aulet
4. "Zero to One: Notes on Startups, or How to Build the Future" by Peter Thiel and Blake Masters
5. "The Art of Startup Fundraising: Pitching Investors, Negotiating the Deal, and Everything Else Entrepreneurs Need to Know" by Alejandro Cremades
6. "Business Model Generation: A Handbook for Visionaries, Game Changers, and Challengers" by Alexander Osterwalder and Yves Pigneur
7. "Venture Deals: Be Smarter Than Your Lawyer and Venture Capitalist" by Brad Feld and Jason Mendelson
8. "The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail" by Clayton M. Christensen
9. "Founders at Work: Stories of Startups' Early Days" by Jessica Livingston.
10. "Start with Why: How Great Leaders Inspire Everyone to Take Action" by Simon Sinek.

MAJOR PROJECT-II

Course Code:	AS603
Course Title	Major Project - II
No. of Credits	3 (TH:0,T:0,P:6)

Introduction : Major Project-II represents the pinnacle of the diploma program, where students demonstrate their acquired knowledge and skills through the execution of a practical project. This capstone experience focuses on project implementation, problem-solving, data analysis, and effective communication. It challenges students to tackle real-world issues and apply their learning to find innovative solutions. Major Project-II nurtures responsibility, autonomy, and professionalism, preparing students for a successful transition into their future careers.

1. Project Execution (20%):

- Successful implementation of the project plan, adhering to the approved methodology.
- Demonstrating practical skills, technical knowledge, and attention to detail during project execution.

2. Regular Monitoring (10%):

- Providing periodic progress updates to project advisors and faculty mentors, showcasing responsibility and timely communication.
- Ability to adapt and make necessary adjustments to the project timeline as needed.

3. Data Analysis (15%):

- Applying appropriate techniques and tools to analyze collected data.
- Deriving meaningful insights and drawing well-supported conclusions.

4. Problem-Solving (15%):

- Identifying and addressing challenges and hurdles encountered during project execution.
- Demonstrating innovative thinking and resourcefulness in problem-solving.

5. Report Writing (15%):

- Preparing a comprehensive project report with a well-structured and organized presentation of the project journey.
- Clearly explaining the methodology, findings, and conclusions in a coherent manner.

6. Presentation (15%):

- Delivering a compelling and engaging project presentation to a panel of faculty members & experts.
- Demonstrating effective communication skills and confidence during the project defense.

7. Final Evaluation (10%):

- Punctuality and adherence to project deadlines.
- Demonstrating initiative and taking ownership of the project.
- Overall professionalism and commitment exhibited throughout the project.

Conclusion: Major Project-II serves as a significant milestone in the academic journey of diploma students. By incorporating marks distribution, the evaluation becomes more transparent, allowing students to understand the weighting of each aspect. Through project execution, problem-solving, data analysis, and effective communication, students will not only showcase their academic prowess but also their readiness to embrace real-world challenges. This capstone experience equips students with the skills and confidence needed to thrive in their chosen professions, paving the way for a successful and rewarding future.

SEMINAR

Course Code:	AS604
Course Title	Seminar
No. of Credits	1 (TH:2,T:0,P:0)

Guidelines for Seminar Presentation:

1. Topic Selection:

Choose a topic that is relevant to the field of gaming and animation, and that interests both the speaker & the audience. Consider emerging trends, technological advancements, or specific areas of expertise within the industry.

2. Research and Information Gathering:

Conduct thorough research on your chosen topic to gather relevant information, statistics, case studies, and examples. Utilize reputable sources such as academic journals, industry publications, and credible websites to ensure the accuracy of information gathered.

3. Presentation Structure:

Organize your seminar presentation into clear sections, including an introduction, main content, and conclusion. Use headings, sub-headings, and bullet points to help the audience follow your presentation easily.

4. Audience Engagement:

Incorporate interactive elements into your presentation to keep the audience engaged. This may include questions, quizzes, demonstrations, or multimedia components such as videos, images, or animations related to your topic.

5. Visual Support:

Create visually appealing slides to support your presentation. Use a clear and readable font, include relevant visuals, and avoid overcrowding slides with excessive texts. Visuals should be used to enhance understanding and highlight key points.

6. Explanation of Technical Concepts:

If your topic involves technical concepts or terminology, explain them in simple and concise terms. Use analogies or real-life examples to help the audience grasp complex ideas.

7. Use of Examples and Case Studies:

Include real-world examples or case studies to illustrate the application of concepts or technologies in the relevant. This will help the audience connect theory to practice and understand the practical implications of your topic.

8. Delivery and Rehearsal:

Practice your presentation multiple times to ensure a smooth and confident delivery. Time yourself to ensure that your presentation fits within the allotted time. Rehearsing will help you become familiar with the content and enhance your overall presentation skills.

9. Q & A and Discussion:

Reserve time at the end of your presentation for questions and discussion. Encourage the audience to ask questions or share their thoughts. Be prepared to answer questions and engage in meaningful dialogue with audience related to the selected topic.

10. Professionalism and Enthusiasm:

Dress appropriately for the occasion and maintain a confident and professional demeanor throughout your presentation. Maintain eye contact with the audience, speak clearly and audibly, and exhibit enthusiasm for your topic.

Evaluation Strategy: The performance of Seminar should be evaluated on the basis of following criteria:

S.N.	Evaluation Parameter	Weightage (%)
1.	Relevance of Topic	10
2.	Content Selection	20
3.	Presentation & Communication Skills	15
4.	Audience Engagement	10
5.	Explanation of Technical Concepts	20
6.	Use of Examples and Case Studies	10
7.	Q&A and Discussion	15
	Total	100

Remember, seminars are not just about sharing information but also about connecting with the audience and creating a memorable experience. Tailor your seminar presentation to cater to the interests and knowledge level of the audience, and aim to inspire and educate them about the concerned technology or topic.
