Dr. D. Y. Patil Educational Federation's
Dr. D. Y. Patil College of Engineering and Innovation
APPROVED BY AICTE, RECOGANIZED BY GOVT. OF MAHARASHTRA,
AUTONOMOUS INSTITUTE AFFILIATED TO SAVITRIBAI PHULE PUNE UNIVERSITY
Accredited by NAAC with "A" Grade

ACADEMIC COURSE STRUCTURED

AND

DETAILED SYLLABUS

Open Elective – Common to all

BTech 4 YEAR UG COURSE

(Applicable for the batches admitted from AY 2025-2026 at FY)

Dr. D. Y. Patil College of Engineering & Innovation

Survey No. 27/A/1/2C, Varale Campus,
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Open Elective – Common to all (Semester –III)

Open Elective -I (ILOEC201W&O)	
ILOEC201W-1 & ILOEC201O-1	Engineering Economics
ILOEC201W-2 & ILOEC201O-2	AI in Finance Management
ILOEC201W-3 & ILOEC201O-3	Digital Finance

Open Elective -II (ILOEC202W)	
ILOEC202W-1	MOOC - I
ILOEC202W-2	Foreign Language - I
ILOEC202W-3	Universal Human Values

Open Elective – Common to all (Semester –IV)

Open Elective -III (ILOEC203W&O)	
ILOEC203W-1 & ILOEC203O-1	Digital Marketing
ILOEC203W-2 & ILOEC203O-2	Critical Thinking and Problem Solving
ILOEC203W-3 & ILOEC203O-3	Ethics in Artificial Intelligence

Open Elective - Second Year (Semester –III)

Syllabus

Second Year (2025 Course) Open Elective - I Engineering Economics			
Course Code	ILOEC201W-1 & ILOEC201O-1	**Credit**	02
Contact Hours	02 Hrs/weeks (L)	**Type of Course**	Practical
Examination Scheme	TW: 25 Marks OR: 25 Marks	**Total Marks**	50

Pre-requisites: Basic Knowledge of Economics**,** General Awareness of Engineering Systems (recommended)

Course assessment methods/tools:

Sr. No.	Course assessment methods/tools	External/ Internal	Marks
1.	Term Work Evaluation (TW)	Internal	25*
2.	Oral Evaluation (OR)	External	25#

Course Objectives	
1	Introduce basic economic concepts relevant to engineering.
2	Develop understanding of cost, pricing, and economic decision-making.
3	Apply economic principles in engineering and industrial scenarios.
4	Understand management processes and production systems.

Course Outcomes	
CO1	To Understand fundamental economic concepts and demand analysis.
CO2	To Apply cost concepts and break-even analysis in decision-making.
CO3	To Analyze and learn management principles and organizational structures.
CO4	To Evaluate planning techniques for plant location and layout.

Syllabus Contents
UNIT I – BASIC CONCEPTS (6 Hours)
Basic economic concepts, Importance of economics in engineering, Economic and technical decision-making, Demand and supply analysis, Factors influencing demand, Elasticity of demand, Demand forecasting, Market structures and competition
UNIT II – COST AND PRICING (6 Hours)
Types of cost: Actual cost and opportunity cost, Marginal cost and incremental cost Sunk cost, Fixed and variable costs, Short-run and long-run cost analysis, Cost-output relationship, Pricing methods and price fixation, Break-even analysis
UNIT III – PROCESS OF MANAGEMENT (6 Hrs)
Nature and functions of management, Contributions of Taylor and Fayol, Principles of management, Types of organizations, Organization charts and manuals, Industrial ownership: types, formation, merits and demerits, Management by Objectives (MBO) Management by Exception (MBE), Introduction to Management Information System (MIS)
UNIT IV – PLANNING PRODUCTION TECHNIQUES AND ITS APPLICATION (4 Hrs)
Plant location: factors and decision-making**,** Plant layout: types, procedures, and techniques**,** Material handling: principles, equipment, and selection**,** Plant maintenance: objectives, types, and techniques, Production and productivity concepts, Economic growth and standard of living, Factors affecting productivity, Role of work study, Human factors in production, Method study: objectives and procedure, Charting techniques (including SIMO charts), Principles of motion economy

Text Books

1. Varshney and Maheshwari, *Managerial Economics*
2. Dewett, *Modern Economic Theory*

Reference Books

1. L.M. Prasad, *Principles and Practice of Management*, Sultan Chand and Sons
2. V.P.S. Rao and P.S. Narayana, *Principles of Management*

CO-PO Mapping:

	Engg. Knowledge	Problem Analysis	Design / Dev.	Investigation	Tool Usage	Engr. & World	Ethics	Team Work	Communication	Proj. Mgmt.	Lifelong Learning
CO	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**
CO1: To understand	3	2	-	-	-	-	-	-	-	1	-
CO2: To apply	3	3	2	2	-	-	-	-	-	1	2
CO3: To analyze and learn	3	3	2	-	-	-	-	2	2	2	2
CO4: To Evaluate	3	3	3	3	2	-	-	-	-	2	3

Second Year (2025 Course) Open Elective - I AI in Finance Management			
Course Code	ILOEC201W-2 & ILOEC201O-2	**Credit**	02
Contact Hours	02 Hrs/weeks (L)	**Type of Course**	PRACTICLE
Examination Scheme	TW: 25 Marks OR: 25 Marks	**Total Marks**	50

Pre-requisites: Basic Knowledge of Economics

Course assessment methods/tools:

Sr. No.	Course assessment methods/tools	External/ Internal	Marks
1.	Term Work Evaluation (TW)	Internal	25*
2.	Oral Evaluation (OR)	External	25#

Course Objectives	
1	Introduce the integration of Artificial Intelligence in financial management.
2	Develop understanding of AI-driven financial decision-making models.
3	Apply machine learning techniques to financial data analysis.
4	Analyze financial risks, forecasting, and investment strategies using AI tools.

Course Outcomes	
CO1	To Understand fundamentals of AI and its applications in financial management.
CO2	To Apply AI techniques for financial forecasting and decision-making.
CO3	To Analyze and learn financial data using machine learning models.
CO4	To Evaluate investment, risk, and credit decisions using AI tools.

Course Contents

Unit I – Introduction to AI in Financial Management (06 Hours) Overview of Artificial Intelligence in Finance, Role of AI in financial decision-making, Introduction to Machine Learning (ML), Deep Learning (DL), Applications: Banking, Insurance, Investment, FinTech, Data-driven financial systems **Case Study:** AI in stock market prediction AI applications in digital banking
Unit II – AI for Financial Forecasting & Time Value Concepts (06 Hours) Financial forecasting using AI models, Regression, Time Series Analysis (ARIMA, ML-based models), AI in Time Value of Money (TVM), Predictive analytics for investment decisions, AI-based capital budgeting (NPV, IRR with ML insights) **Case Study:** Stock price prediction using ML Forecasting cash flows using AI tools
Unit III – Financial Data Analysis & Risk Management (06 Hours) Financial data preprocessing and visualization, AI in financial statement analysis, Fraud detection using AI, Credit scoring models (AI-based), Risk analysis using ML algorithms **Case Study:** AI-based fraud detection in banking Credit risk evaluation using machine learning
Unit IV – AI Applications in Working Capital & FinTech (06 Hours) AI in working capital management, Smart inventory and receivable management, AI in portfolio management, Robo-advisors and algorithmic trading, Blockchain and AI in finance, AI-based cost of capital estimation (WACC using predictive models) **Case Study:** AI in fintech startups Portfolio optimization using AI

Text Books

- I.M. Pandey, *Financial Management*
- Prasanna Chandra, *Financial Management*

- Financial Management by I.M. Pandey, Vikas Publishing House
- Financial Management by Rustagi R.P., Taxmann Publications

Reference Books

- Khan & Jain, *Financial Management*
- Van Horne, *Financial Management and Policy*
- Ross, Westerfield & Jordan, *Corporate Finance*
- Stuart Russell & Peter Norvig, *Artificial Intelligence: A Modern Approach*
- Yves Hilpisch, *Artificial Intelligence in Finance*
- Marcos López de Prado, *Advances in Financial Machine Learning*
- Kevin J. Murphy, *Machine Learning: A Probabilistic Perspective*

E-Books / Online Resources

- Financial Management eBook by IIMBx (edX)
- AI in Finance courses on Coursera / edX

MOOC / SWAYAM / NPTEL

- Financial Management for Managers – NPTEL
- Basics of Financial Management – NPTEL
- Introduction to AI – NPTEL
- Machine Learning – NPTEL (IIT Madras / IIT Kharagpur)

CO-PO Mapping:

	Engg. Knowledge	Problem Analysis	Design / Dev.	Investigation	Tool Usage	Engr. & World	Ethics	Team Work	Communication	Proj. Mgmt.	Lifelong Learning
CO	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**
CO1: To understand	3	2	-	-	2	-	-	-	-	1	-
CO2: To apply	3	3	2	2	3	-	-	-	-	1	2
CO3: To analyze and learn	3	3	3	3	3	-	-	-	-	2	2
CO4: To Evaluate	3	3	3	3	3	1	-	-	-	2	3

Second Year (2025 Course) Open Elective- I Digital Finance			
Course Code	ILOEC201W-3 & ILOEC201O-3	**Credit**	02
Contact Hours	**TH:** 02 Hrs./Weeks (L)	**Type of Course**	Lecture
Examination Scheme	**TW:** 25 Marks **OR:** 25 Marks	**Total Marks**	50

TOP

Pre-requisites: Basic Finance and Economics, and Cyber Security & Digital Payments

Course assessment methods/tools:

Sr. No.	Course assessment methods/ tools	External/ Internal	Marks
1.	Oral Examination (OR)	Internal	25*
2.	Term Work Evaluation (TW)	Internal	25#

Course Objectives	
1	The evolution of digital finance and the influence of big data on financial systems.
2	Digital payment ecosystems and ongoing transformations in digital banking.
3	Core concepts of blockchain, cryptocurrencies, and decentralized finance.
4	Applications of AI, machine learning, and analytics in financial services.

Course Outcomes	
CO1	To Understand basics of digital finance, big data, and regulatory frameworks
CO2	To Analyze digital payments, FinTech trends, and neo-banking models.
CO3	To Illustrate blockchain, cryptocurrencies, and DeFi systems.
CO4	To Discuss and learn the role of AI/ML for financial analytics.

Topics covered:	
Unit I: Digital Finance Fundamentals & Big Data	**(7 Hrs.)**

Evolution & Fundamentals of Digital Finance: Evolution of digital finance and the shift from traditional to digital systems. Introduction to FinTech and technological transformations in financial services. Overview of regulatory frameworks and compliance in the digital era. **The Rise of Big Data in Finance:** Role of big data in shaping financial decision-making and risk management. Leveraging data science for personalization and modern financial services. **Case Study:** DBS Bank's Digital Transformation.
Unit II: Digital Payment Systems & Digital Banking Transformation (7Hrs)
Digital Payment Ecosystems: Historical evolution and digitalization of payment systems (ECS, RTGS, NEFT, IMPS, UPI, mobile wallets, contactless payments), Attributes of a well-functioning payment system and the role of banks. **Fintech Innovations & Disruption:** FinTech startups, challenger banks, and peer-to-peer lending models, FinTech applications across banking, NBFCs, insurance, lending, audit, and compliance, Regulatory guidelines (e.g., RBI guidelines) and risks associated with new payment models. The Future of Digital Banking: How traditional banks are adapting and the rise of neo-banks, Digital banking trends and evolving customer expectations. **Case Study:** Unified Payments Interface (UPI) in India.
Unit III: Blockchain, Cryptocurrencies & Decentralized Finance (7 Hrs.)
Blockchain Technology: Fundamentals of blockchain and underlying cryptographic techniques, Smart contracts and decentralized finance (DeFi) applications. **Cryptocurrencies & Digital Assets:** Overview and evolution of cryptocurrencies (Bitcoin, Ethereum, etc.), Central Bank Digital Currencies (CBDCs) and other emerging digital assets. Advanced Applications & **Case Studies:** Impact of blockchain on payments, lending, and financial settlements, Real-world case studies and disruptive potential in global finance. **Case study:** The Sand Dollar (Bahamas' CBDC)
Unit IV: Artificial Intelligence, Machine Learning & Financial Analytics (7 Hrs)
AI & Machine Learning in Finance: Predictive analytics in stock markets,

trading, and algorithmic/high frequency trading, Credit risk analysis and automated decision-making using AI. **Data Analytics & Financial Applications:** Data sourcing, cleaning, processing, and visualization for financial data, Sentiment analysis and AI-driven portfolio management.

Practical Projects & Case Studies: Hands-on projects: building stock price prediction models, fraud detection systems, and credit score prediction models, Real-world applications in digital lending and wealth management

Case study: Thread programming Using Pthreads, POSIX

Text Books	
1	C. Skinner, Digital Finance: Big Data, Startups, and the Future of Financial Services, 1st ed. Hoboken, NJ, USA: Wiley, 2016.
2	J. H. M. T. Jeffry, Introduction to FinTech, 1st ed. Noida, India: Pearson Publications, 2018
3	D. Tapscott and A. Tapscott, The Blockchain Revolution: How the Technology Behind Bitcoin and Other Cryptocurrencies is Changing the World, 1st ed. New York, NY, USA: Penguin Ran dom House, 2016.
4	M. López de Prado, Machine Learning for Asset Managers, 1st ed. Cambridge, UK: Cambridge University Press, 2020.
Reference Books:	
1	R. Ghose, Future Money: Fintech, AI and Web3. London, UK: Kogan Page, 2024.
2	Y. Hilpisch, Artificial Intelligence in Finance: A Python-Based Guide, 1st ed. Sebastopol, CA, USA: O'Reilly Media, 2020.
3	M. López de Prado, Advances in Financial Machine Learning, 1st ed. Hoboken, NJ, USA: Wiley, 2018.
4	S. Chishti and J. Barberis, The FINTECH Book: The Financial Technology Handbook for In vestors, Entrepreneurs, and Visionaries, 1st ed. Hoboken, NJ, USA: Wiley, 2016.
5	D. Drescher, Blockchain Basics: A Non-Technical Introduction in 25 Steps, 1st ed. Berkeley, CA, USA: Apress, 2017.

E-Books	
1	P. H. Beaumont, Digital Finance: Big Data, Start-ups, and the Future of Financial Services, 1st ed. London, U.K.: Routledge, 2019. Link: https://download.e-bookshelf.de/download/0015/1963/23/L G-0015196323-0047264745.pdf
2	N. Urbach and M. Röglinger, Big Data and Artificial Intelligence in Digital Finance, 1st ed. Cham, Switzerland: Springer, 2022 Link: https://library.oapen.org/bitstream/id/fefe46c7-449549ba-bcab-9cf1851e81e6/978-3-030-94590-9.pdf

CO-PO Mapping Table:

	Engg. Knowledge	Problem Analysis	Design / Dev.	Investigation	Tool Usage	Engr. & World	Ethics	Team Work	Communication	Proj. Mgmt.	Lifelong Learning
CO	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**
CO1: To understand	3	2	-	-	2	-	-	1	-	1	-
CO2: To apply	3	3	2	2	3	-	-	-	1	2	2
CO3: To Illustrates	3	3	3	3	3	-	-	-	1	2	2
CO4: To Discuss and learn	3	3	3	3	3	1	-	-	2	2	3

Second Year (2025 Course) Open Elective- II MOOC-I			
Course Code	ILOEC202W-1	**Credit**	02
Contact Hours	**TH:** 02 Hrs./Weeks (L)	**Type of Course**	Theory
Examination Scheme	**TW:** 25 Marks	**Total Marks**	25

Pre-requisites:

Course assessment methods/tools:

Sr. No.	Course assessment methods/ tools	External/ Internal	Marks
1.	Term Work Evaluation (TW)	Internal	25*

Course Objectives	
1	To promote interactive user forums to support community interactions among students, professors, and experts
2	To promote learn additional skills anytime and anywhere.
3	To enhance teaching and learning on campus and online

Course Outcomes	
CO1	To acquire additional knowledge and skill.
CO2	Explore new areas of interest in a relevant field

Topics covered:

MOOCs (Massive Open Online Courses) provide affordable and flexible ways to learn new skills, pursue lifelong interests and deliver quality educational experiences at scale. Whether you're interested in learning for yourself, advancing your career or leveraging online courses to educate your workforce, SWAYAM, NPTEL, edx or similar ones can help. World's largest SWAYAM MOOCs, a new paradigm of education for anyone, anywhere, anytime, as per your convenience, aimed to provide digital education free of cost and to facilitate hosting of all the interactive courses prepared by the best more than 1000 specially chosen faculty and teachers
in the country. SWAYAM MOOCs enhance active learning for improving lifelong

learning skills by providing easy access to global resources. SWAYAM is a programme initiated by the Government of India and designed to achieve the three cardinal principles of Education Policy viz., access, equity and quality. The objective of this effort is to take the best teaching learning resources to all, including the most disadvantaged. SWAYAM seeks to bridge the digital divide for students who have hitherto remained untouched by the digital revolution and have not been able to join the mainstream of the knowledge economy. This is done through an indigenous developed IT platform that facilitates hosting of all the courses, taught in classrooms from 9th class till post-graduation to be accessed by anyone, anywhere at any time. All the courses are interactive, prepared by the best teachers in the country and are available, free of cost to the residents in India. More than 1,000 specially chosen faculty and

teachers from across the Country have participated in preparing these courses. The courses hosted on SWAYAM are generally in 4 quadrants – (1) video lecture, (2) specially prepared reading material that can be downloaded/printed (3) self-assessment tests through tests and quizzes and (4) an online discussion forum for clearing the doubts. Steps have been taken to enrich the learning experience by using audio-video and multimedia and state of the art pedagogy / technology. In order to ensure best quality content is produced and delivered, seven National Coordinators have been appointed: They are NPTEL for engineering and UGC for post graduation education. Guidelines: Instructors are requested to promote students to opt for courses (not opted earlier) with proper mentoring. The departments will take care of providing necessary infrastructural and facilities for the learners. Learning can also be more interesting by knowledge sharing through different blogs, learning communities and social media platforms.

References:	
1	https://swayam.gov.in/
2	https://onlinecourses.nptel.ac.in/

Guidelines for Conduction and Assessment (Any one or more of following but not limited to):

1	Lectures/ Guest Lectures
2	Visits (Social/Field) and reports
3	Demonstrations
4	Surveys
5	Mini-Project
6	Hands on experience on focused topic

CO-PO Mapping Table:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	-	-	-	-	-	-	-	-	2	3	-
CO2	-	-	-	-	-	-	-	-	-	3	-

Second Year (2025 Course) Open Elective- II Foreign Language - I			
Course Code	ILOEC202W-2	**Credit**	02
Contact Hours	**TH:** 02 Hrs./Weeks(L)	**Type of Course**	Theory
Examination Scheme	**TW:** 25 Marks	**Total Marks**	25

Pre-requisites:

Course assessment methods/tools:

Sr. No.	Course assessment methods/ tools	External/ Internal	Marks
1.	Term Work Evaluation (TW)	Internal	25*

Course Objectives	
1	To meet the needs of ever-growing industry with respect to language support.
2	To get introduced to Japanese society and culture through language.

Course Outcomes	
CO1	To **ability** of basic communication.
CO2	To **knowledge** of Japanese script.
CO3	To **introduced** to reading, writing and listening skills
CO4	To **develop** interest to pursue professional Japanese Language course.

Topics covered:	
Foreign Language (Japanese) Module 1	**(8 Hrs.)**
1. Introduction to Japanese Language. Hiragana basic Script, colors, Days of the week 2. Hiragana: modified Kana, double consonant, Letters combined with ya, yu, yoLong vowels, Greetings and expressions. 3. Self-Introduction, Introducing other person, Numbers, Months, Dates, Telephone numbers, Stating on'sage.	

Foreign Language (Japanese) Module 2	**(8 Hrs.)**
1.Katakana basic Script, Denoting things (nominal and pre nominal demonstratives), Purchasing at the Market / in a shop / mall (asking and stating price) 2. Katakana: Modified kana, double consonant, letters with ya, yu, yo, long vowels, describing time, describing starting and finishing time (kara ~ made), Point in time. 3. Means of transport (Vehicles), Places, Countries, Stating Birth date, Indicating movement to a certain place by a vehicle.	

Text Books	
1	Minna No Nihongo,"Japanese for Everyone", Elementary Main Text book1-1 (Indian Edition), Goyal Publishers and Distributors Pvt.Ltd.
2	http://www.tcs.com (http://www.tcs.com/news_events/press_releases/Pages/TCS-Inaugurates-Japan-centric-Delivery-Center-Pune.aspx.

CO-PO Mapping Table:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	-	-	-	-	-	-	-	-	2	3	-
CO2	-	-	-	-	-	-	-	-	-	3	-
CO3	-	-	-	-	-	-	-	-	1	3	-
CO4	-	-	-	-	-	-	-	-	-	2	-

Second Year Computer Engineering (202 Course) Open Elective – II Universal Human Values			
Course Code	ILOEC202W-3	**Credit**	02
Contact Hours	02 Hrs/weeks((L)	**Type of Course**	Practical
Examination Scheme	Term Work: 25 marks	**Total Marks**	25

Pre-requisites:

- Basic knowledge of the selected domain
- Digital literacy and internet access
- Self-learning and time management skills

Course assessment methods/tools:

Sr. No.	Course assessment methods/ tools	External/ Internal	Marks
1.	Term Work Evaluation (TW)	Internal	25*

Course Objectives	
1	To help students understand the importance of human values in personal and professional life
2	To enable self-exploration and development of a value-based lifestyle
3	To promote harmony at individual, family, society, and nature levels
4	To build ethical competence in engineering practice
5	To develop professional ethics

Course Outcomes	
CO1	**Understand** the importance of human values and self-exploration
CO2	**Analyze** harmony at individual and interpersonal levels
CO3	**Apply** values in family and societal relationships
CO4	**Evaluate** environmental and societal responsibilities
CO5	**Demonstrate** ethical practices in professional life

Topics covered:		
UNIT-I:	**Introduction to Human Values**	**(5 Hrs.)**

Need, basic guidelines, and content of value education, Self-exploration: what is it? Continuous happiness and prosperity – basic human aspirations Right, understanding vs. preconditioning and sensations, Process of self-exploration. Case Study: The Smartphone Upgrade Decision.
UNIT-II: Understanding Harmony in the Human Being (5 Hrs.)
Human being as coexistence of self (I) and body, Needs of self (happiness) and body (physical facilities), Correct appraisal of physical needs, Understanding harmony in the self, Role of education in developing right understanding. Case Study: Health vs Career Pressure.
UNIT-III: Understanding Harmony in the Family and Society (5 Hrs.)
Harmony in family: trust, respect, affection, care, guidance, Justice (nine universal values in relationships), Harmony in society: from family to world family, Undivided society (Akhand Samaj), Universal human order (Sarvabhaum Vyavastha). Case Study: Family Conflict Over Career Choice.
UNIT-IV: Understanding Harmony in Nature and Existence (5 Hrs.)
Interconnectedness of all systems in nature, Four orders in nature: Material order, Plant (bio) order, Animal order, Human order, Mutual fulfillment and coexistence, Environmental sustainability. Case Study: Plastic Use and Environmental Impact.
UNIT-V: Implications of Human Values in Professional Ethics (5 Hrs.)
Ethical human conduct, Value-based living in personal and professional life, Holistic technologies and production systems, Social responsibility of engineers, Case studies on ethical dilemmas in engineering. Case Study: Data Privacy vs Company Profit.

Text Books	
1	A Foundation Course in Human Values and Professional Ethics, R.R. Gaur, R. Asthana, G.P. Bagaria, Excel Books Pvt. Ltd., New Delhi, ISBN: 978-9391958411
2	Universal Human Values, Dr. C.S.G. Krishnamacharyulu, Dr. Lalitha Ramakrishnan, Himalaya Publishing House, ISBN: 978-93-5596-076-4
Reference Books	

1	Universal Human Values And Professional Ethics, Paperback Dr. Archana Chaudhary, ISBN: 978-9355156785
2	A Foundation Course in Human Values and Professional Ethics, Paperback, by R.R. Gaur (Author), R. Sangal (Author), G.P. Bagaria (Author),

CO-PO Mapping Table:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	–	1	–	–	–	1	2	–	–	–	2
CO2	–	2	–	–	–	2	2	1	–	–	2
CO3	–	1	1	–	–	2	3	2	1	–	1
CO4	–	2	1	–	–	3	2	–	–	–	1
CO5	–	1	1	–	–	2	3	2	2	1	2

Open Elective - Second Year (Semester –IV)

Syllabus

Second Year (2025 Course) Open Elective III Digital Marketing			
Course Code	ILOEC203W-1 & ILOEC203O-1	**Credit**	02
Contact Hours	**TH:** 02 Hrs./Weeks(L)	**Type of Course**	Theory
Examination Scheme	**TW:** 25 Marks **OR:** 25 Marks	**Total Marks**	50

Pre-requisites:

Course assessment methods/tools:

Sr. No.	Course assessment methods/ tools	External/ Internal	Marks
1.	Term Work Evaluation (TW)	Internal	25*
2.	Oral Evaluation (OR)	External	25#

Course Objectives	
1	To understand the basic Concepts of Digital marketing and the road map for successful Digital marketing strategies.
2	To know the importance of Social Media Platforms importance in Digital Marketing
3	To understand the technological importance of Search Engine Optimization (SEO)

Course Outcomes	
CO1	**Learn and understand** the basic Concepts of Digital marketing and **Apply** digital marketing tools for suitable applications.
CO2	**Examine** the various social media and design Advertising campaigns
CO3	**Learn** search engine optimization (SEO) techniques and apply it for suitable application to increase page views.
CO4	**Understand** the concepts of Robotics and Morality with professional responsibilities

Topics covered:		
UNIT-I:	**Introduction to Digital Marketing**	**(6 Hrs.)**

Fundamentals of Digital marketing & Its Significance, Traditional marketing Vs Digital Marketing, Evolution of Digital Marketing, Digital Marketing Landscape, Key Drivers, The Digital users in India, Digital marketing Strategy- Consumer Decision journey Digital advertising Market in India, Skills in Digital Marketing, Digital marketing Plan.
UNIT-II: Digital Marketing Terminology (6 Hrs.)
Terminology used in Digital Marketing, PPC and online marketing through social media, Social Media Marketing, Google web-master and analytics overview, Email Marketing, Mobile Marketing Display adverting, Buying Models, different type of ad tools, Display advertising terminology, types of display ads, different ad formats.
UNIT-III: Social Media Marketing (6 Hrs.)
Fundamentals of Social Media Marketing& its significance, Necessity of Social Media Marketing Facebook Marketing: Facebook for Business, Facebook Insight, Different types of Ad formats, set ting up Facebook Advertising Account, Facebook audience & types, Designing Facebook Advertising campaigns, Facebook Avatar, Apps, Live, Hashtags.
UNIT-IV: Search Engine Optimization (6 Hrs.)
Introduction to SEO, How Search engine works, SEO Phases, History of SEO, How SEO Works, Googlebot (Google Crawler), Types of SEO technique, Keyword Planner tools Social media Reach- Video Creation & Submission, Maintenance-SEO tactics, Google search Engine.

Text Books	
1	V. Ahuja, Digital Marketing, Oxford University Press
2	D. Ryan, C. Jones, "Understanding Digital Marketing Strategies for Engaging the Digital Generation",Koganpage Publication, (2nd Edition)
3	Chinmay Kamat, Nitin Kamat, "Digital Marketing", Himalaya Publishing House, (2nd Edition).
Reference Books	
1	H. Annmarie , A. Joanna, "Quick win Digital Marketing", Paperback edition, Oak Tree Press.

2	Marks Coeekelbergh, "AI Ethics", The MIT Press Essential Knowledge Series, April 2020, WEB LINKS

CO-PO Mapping Table:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	-	2	-	2	-	-	-	-	2	-
CO2	-	2	3	-	2	-	-	-	2	2	-
CO3	-	3	2	-	2	-	-	-	-	2	-
CO4	-	-	-	-	2	-	-	-	-	-	-
CO5	-	-	-	-	2	2	2	2	-	-	2

Second Year (2025 Course) Open Elective III Critical Thinking and Problem Solving			
Course Code	ILOEC203W-2 & ILOEC203O-2	**Credit**	02
Contact Hours	**TH:** 02 Hrs./Weeks(L)	**Type of Course**	Theory
Examination Scheme	**OR:** 25 Marks **TW:** 25 Marks	**Total Marks**	50

TOP

Pre-requisites:

Course assessment methods/tools:

Sr. No.	Course assessment methods/ tools	External/ Internal	Marks
1.	Term Work Evaluation (TW)	Internal	25#
2.	Oral Evaluation (OR)	External	25$

Course Objectives	
1	Develop students' ability to analyze and evaluate information critically for informed decision-making
2	Enhance logical reasoning and structured problem-solving skills for real-world applications.
3	Introduce creative thinking techniques and frameworks to approach problems innovatively.
4	Strengthen decision-making abilities by applying structured problem-solving methodologies.
5	Equip students with competitive problem-solving techniques to prepare for industry challenges and technical assessments.

Course Outcomes	
CO1	**Apply** and evaluate arguments, assumptions, and biases to make informed decisions.
CO2	**Apply and analyze** logical reasoning techniques to define, structure, solve problems systematically.
CO3	Model lateral thinking and creative techniques to generate innovative solutions.

CO4	**Utilize** effective decision-making models and strategies in complex scenarios.
CO5	**Analyze** algorithmic and real-world challenges using structured problem-solving approaches in competitive environments.

Topics covered:
UNIT-I: Foundations of Critical Thinking and Problem-Solving (6 Hrs.)
Understanding Critical Thinking: Importance & Applications, Characteristics of Strong vs. Weak Thinkers, The Problem-Solving Mindset: Curiosity, Skepticism, and Open-Mindedness, Cognitive Biases and Logical Fallacies, Thinking Structures: Inductive, Deductive & Abductive Reasoning
UNIT-II: Problem-Solving Strategies & Decision-Making Skills (4 Hrs.)
The 5-Step Problem-Solving Process, Root Cause Analysis (5 Whys, Fishbone Diagram), Decision-Making Models (Rational Model, Intuitive Model, Vroom-Yetton), Problem-Solving in Group Settings: Brainstorming & Consensus-Building, The Role of Emotional Intelligence in Problem-Solving.
UNIT-III: Creativity and Innovation in Problem-Solving (4 Hrs.)
Divergent vs. Convergent Thinking, Lateral Thinking Techniques (Six Thinking Hats, Random Stimuli Method), Overcoming Mental Blocks & Assumptions, The Psychology of Innovation & Risk-Taking, Developing a Growth Mindset for Continuous Improvement.
UNIT-IV: Critical Thinking in Communication and Negotiation (4 Hrs.)
Evaluating Information Objectively: Spotting Misinformation & Fake News, Persuasive Argumentation: Structuring Sound Arguments, Conflict Resolution and Negotiation Skills, Assertive vs. Aggressive vs. Passive Communication, Ethical Decision-Making in Professional Settings
UNIT-V: Competitive Problem-Solving and Decision-Making under Pressure (4 Hrs.)
Time-Sensitive Decision-Making, Stress and Problem-Solving: How to Stay Calm Under Pressure, Gamification of Problem-Solving (Escape Rooms, Puzzles, Logical Deductions), Real-World Problem-Solving Challenges (Case-Based Approach), Preparing for Situational Judgement Tests & Competitive Interviews

Text Books	
1	Gregory Bassham, William Irwin, Henry Nardone, James M. Wallace, Critical Thinking: A Student's Introduction, McGraw-Hill Education, 5th Edition (2012), oISBN: 978-0078038310
2	Charles L. Phillips, The Fundamentals of Critical Thinking and Problem Solving, Cognella Academic Publishing,1st Edition (2018), ISBN: 978-1516515306
3	Jeff Butterfield, Problem-Solving and Decision-Making: Illustrated Course Guides, Cengage Learning, 1st Edition (2013), ISBN: 978-1285082260
Reference Books	
1	Daniel Kahneman Thinking, Fast and Slow, Farrar, Straus, and Giroux, 1st Edition (2011), ISBN:978-0374533557
2	Edward de Bono, Lateral Thinking: Creativity Step by Step, Harper Business, 1st Edition (2015), ISBN: 978-0066620531
3	George Pólya, How to Solve It: A New Aspect of Mathematical Method, Princeton University Press, 2nd Edition (2004), ISBN: 978-0691119663
MOOCs:	
1	Critical Thinking & Problem-Solving, Platform: edX, Institution: Rochester Institute of Technology (RIT)
2	Solving Problems with Creative and Critical Thinking, Platform: Coursera, Institution: IBM

CO-PO Mapping Table:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	2	1	2	-	-	-	1	2	3	1
CO2	3	3	2	3	1	-	-	-	2	2	1
CO3	2	3	3	3	2	1	-	-	2	2	2
CO4	2	2	3	3	2	1	-	-	3	3	2
CO5	3	3	3	3	3	1	-	-	3	3	3

Second Year (2025 Course) Open Elective Courses III Ethics in Artificial Intelligence			
Course Code	ILOEC203W-3 & ILOEC203O-3	**Credit**	02
Contact Hours	**TH:** 02 Hrs./Weeks(L)	**Type of Course**	Theory
Examination Scheme	**OR:** 25 Marks **TW:** 25 Marks	**Total Marks**	50

Pre-requisites:

Course assessment methods/tools:

Sr. No.	Course assessment methods/ tools	External/ Internal	Marks
1.	Term Work Evaluation (TW)	Internal	25$
2.	Oral Evaluation (OR)	External	25$

Course Objectives	
1	To study the morality and ethics in AI
2	To learn about the Ethical Initiatives in the field of AI
3	To study about AI Standards and Regulations
4	To study about social and ethical issues of Robot Ethics
5	To study about AI and Ethics- Challenges and Opportunity

Course Outcomes	
CO1	**Learn** about morality and ethics in AI
CO2	Acquire the **knowledge** of the real time applications ethics, issues and its challenges
CO3	**Understand** the ethical harms and ethical initiatives in AI
CO4	**Learn** about AI standards and Regulations like AI Agent, Safe Design of Autonomous and Semi-Autonomous Systems
CO5	**Understand** the concepts of Robotics and Morality with professional responsibilities

Topics covered:		
UNIT-I:	**Introduction**	**(6 Hrs.)**

Definition of Morality and ethics in AI, Impact on Society, Impact on human Psychology, Impact on the System, Impact on the environment and Planet, Impact on trust.
UNIT-II: Ethical Initiatives in AI (6 Hrs.)
International Ethical Initiatives, Ethical Harms and concerns, Case Study: healthcare robots, Autonomous Vehicles, Warfare and Weaponization
UNIT-III: AI Standards and Regulations (6 Hrs.)
Model process for Addressing Ethical concerns during System Design – Transparency Of Autonomous Systems, Data Privacy Process, Algorithmic Bias Considerations, Ontological Standard for Ethically Driven Robotics and Autonomous Systems.
UNIT-IV: Roboethics: Social and Ethical Implication of Robotics (6Hrs)
Robot Roboethics, Ethics and Morality, Moral Theories, Ethics in Science and Technology, Ethical Issues in an ICT Society, Harmonization of Principles, Ethics and Professional Responsibility Roboethics Taxonomy.
UNIT-V: AI and Ethics - Challenges and Opportunities (6 Hrs.)
Challenges, Opportunities, Ethical Issues in AI, Societal Issues Concerning the Application of AI in Medicine, Decision Making role in industries, National and International Strategies on AI.

Text Books	
1	Y. Eleanor Bird, Jasmin Fox-Skelly, Nicola Jenner, Ruth Larbey, Emma Weitkamp and Alan Winfield, "The ethics of artificial intelligence: issues and initiatives", EPRS, European Parliamentary Research Service Scientific Foresight Unit (STOA) PE 634.452- March 2020.
2	Patrick Lin Keith Abney, George A Bekey, "Robot Ethics: The Ethical and Social Implications of Robotics", The MIT Press- January 2014
Reference Books	
1	Towards a Code of ethics for AI (AI: Foundations, Theory, and Algorithms) by Paula Boddington, November 2017
2	Marks Coeekelbergh, "AI Ethics", The MIT Press Essential Knowledge Series, April 2020, WEB LINKS

3	https://www.scu.edu/ethics/all-about-ethics/artificial-intelligence-and-ethics-sixteenchallenes-and-oppportunities/

CO-PO Mapping Table:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	2	3	3	1	-	-	-	1	2	1
CO2	2	1	1	2	1	-	-	-	1	2	1
CO3	2	3	1	1	3	-	-	-	2	1	1
CO4	3	1	3	3	2	-	-	-	2	2	3
CO5	3	1	1	3	3	-	-	-	2	3	3