MAULANA ABUL KALAM AZAD UNIVERSITY OF TECHNOLOGY, WEST BENGAL
(FORMERLY KNOWN AS WEST BENGAL UNIVERSITY OF TECHNOLOGY)
Main Campus : Haringhata, Nadia, Pin-741249
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Ref.No. COE/Notice/CBCS Syllabus/62/2020-21 Updated on: 25th November,2020

****Student should select GE-2 from the any basket other than the basket GE-1 was selected****

Updated GE Baskets for CBCS structure programs (2020-21)
(Updated on 1st September 2021)

Basket No	GE Basket	Course Code	Course Name
Basket 1	HUMANITIES & HUMAN SKILLS	GE1B-01	Mind and Measurement
		GE1B-02	Introduction to Hospitality Industry and major Departments
		GE1B-03	Health Education & Communication
		GE1B-04	Sustainability & Fashion
		GE1B-05	The Yoga Professional
		GE1B-06	Indian History & Culture
		GE1B-07	Values & Ethics
		GE1B-08	Emotions Management & Critical Thinking at the work place
		GE1B-09	Enhancing Linguistic Competence & Developing Literacy Skills
		GE1B-10	Evolving Policies and Strategies for Healthcare
		GE1B-11	Heritage Protection, Tour Guide & Developing Personality
		GE1B-12	Medical Ethics, Law and Etiquette
		GE1B-13	Professional Content Writing and Managing
		GE1B-14	Understanding Tourist Behaviour and Segmentation of Market
		GE1B-15	Career Strategy
		GE1B-16	The Science of Well
		GE1B-17	Creative Writing
		GE1B-18	Leadership
		GE1B-19	Professional Communication
		GE1B-20	E-Learning
		GE1B-21	Model Thinking
		GE1B-22	Digital Transformation & Industry 4.0
		GE1B-23	Law and Ethics
		GE1B-24	Laws and Ethics in Media in Current Perspective
		GE1B-25T	Overview of theatre and folk media
		GE1B-25P	Overview of theatre and folk media-practical
Basket 2	CREATIVE & PERFORMING ARTS	GE2B-01	Cinema and Other Arts
		GE2B-02	Surface & Soft Furnishings Design Development Techniques
		GE2B-03	Digital Photography Basics and Beyond

		GE2B-04	Study of Performing Arts
		GE2B-05	The Language of Graphic design: Basics and Beyond
		GE2B-06	A Hand on Study on Film
		GE2B-07	Design and Human Evolution
		GE2B-08	Understanding Visual Design Aesthetics
		GE2B-09	Understanding Regional Indian Film
		GE2B-10	AR/VR Applications in Tourism
		GE2B-11	Media Production and Editing
		GE2B-12T	Story telling for audio and video production
		GE2B-12P	Story telling for audio and video production-practical
Basket 3	GENERAL SCIENCE & **MATHEMATICS**	GE3B-01	Study of Textiles
		GE3B-02	IT Literacy
		GE3B-03	Basic Mathematics & Statistics
		GE3B-04	Mathematics for Computer Science Part- 1
		GE3B-05	Business Research Methods: Tool & Techniques
		GE3B-06	Business Mathematics
		GE3B-07	Business Statistics
		GE3B-08	Mathematics for Machine Learning
		GE3B-09	Mathematics for Computing
		GE3B-10	Probability & Statistics
		GE3B-11	Bayesian Statistics
		GE3B-12	Operations Research
		GE3B-13	Data Analytics
		GE3B-14	Applied Cryptography
		GE3B-15	Inferential Statistics
		GE3B-16	Bio Statistics
		GE3B-17	Design and Analysis of Algorithms
		GE3B-18	Mathematics For Computer Science Part 2
		GE3B-19	Statistical Quality Control in Textile and Apparel
Basket 4	EMERGING TECH, INNOVATION & ENTREPRENEURSHIP	GE4B-01	Operating Systems with Linux
		GE4B-02	Entrepreneurship Theory & Practice
		GE4B-03	Basics of Computing
		GE4B-04	Data Analysis with R
		GE4B-05	Fundamentals of Cyber Security
		GE4B-06	Guidance of Excel for office Assistance
		GE4B-07	Learn Programming Fundamental with C
		GE4B-08	Presentation Skills and Excel Basics for Data Analysis
		GE4B-09	Programming with Python
		GE4B-10	Career Planning Techniques
		GE4B-11	Code in with Java
		GE4B-12	Entrepreneurship Principles
		GE4B-13	E-Commerce & M-Commerce
		GE4B-14	Distributed Operating Systems
		GE4B-15	ERP

		GE4B-16	Computer Graphics
		GE4B-17T	Computer Basics and Multimedia Software
		GE4B-17P	Introduction to MS tools, presentations, online tools
Basket 5	OTHER COURSES	GE5B-01	Principles of Management
		GE5B-02	Economics
		GE5B-03	Accounting
		GE5B-04	Principles of Management & Organizational Behaviour
		GE5B-05	Basics of Accounting & Finance in Healthcare Management
		GE5B-06	Health Economics
		GE5B-07	Medical Microbiology
		GE5B-08	Biochemistry & Nutrition
		GE5B-09	Micro Economics in Business
		GE5B-10	Marco Economics in Business
		GE5B-11	Business Regulatory Framework
		GE5B-12	Decision Support System
		GE5B-13	Engrain Quality in Customer
		GE5B-14	Entrepreneurship: Launching an Innovative Business
		GE5B-15	Finance Made Easy
		GE5B-16	Green Marketing
		GE5B-17	Handling Human Resources In Workplace
		GE5B-18	Introduction to Managerial Economics & Business Analysis
		GE5B-19	Leadership Skill Development
		GE5B-20	Social Media management, Advertising & Marketing
		GE5B-21	Corporate Entrepreneurship
		GE5B-22	Advanced Diagnostic Techniques
		GE5B-23	Bio-Medical Waste Management
		GE5B-24	Principles of Laboratory Management & Medical Ethics
		GE5B-25	Building Your Leadership Skills
		GE5B-26	Tourism Geography
		GE5B-29	Indian Constituency

(S Datta)
Controller of Examinations

Detail Syllabus of GE Courses available in Offline/Blended mode:

Course Name: Mind and Measurement
Course Code: GE1B-01

Mode- Offline/ Blended **Credits: 6**

Course Objectives: The course has been designed to explore the emotional and motivational states of mind along with knowledge and application of higher cognitive functions. The learner will be able to apply the knowledge of cognition, conation and effect on the human psyche in the context of personal and professional domains and make a relation between brain and body through the understanding of Human Physiology, various psychological processes and changes throughout the lifespan of humans.

Sl	Course Outcome	Mapped modules
CO1	Explaining the concept and the physiological correlates of emotion.	(M1) BL2
CO2	Understanding the different theoretical aspects of emotion.	(M2) BL2
CO3	Explaining the concept and the physiological correlates of motivation.	(M3) BL2
CO4	Understanding the different theoretical aspects of motivation.	(M4) BL2
CO5	Labelling different span of attention.	(M5) BL2
CO6	Assessment of memorization capacity	(M6) BL1, BL2

Module	Content	Total Hours	%ageof questions	Blooms Level (if applicable)	Remarks (If any)
Module 1	Define Emotion and Physiological correlates of emotion: Electrical, Circulatory changes, Respiration and Peripheral measures. The role of Cortex in Emotions. Concept of Homeostasis.	5	15	2	
Module 2	Theories of Emotion : James-Lange; Cannon-Bard, Lindsay, Schachter-Singer, and Lazarus	8	20	2	
Module 3	Understanding the concept of Motivation in connection to its role in education and physiological basis of hunger, thirst.	8	20	2	
Module 4	Theories of Motivation – Maslow, McClelland, Murray. Application, Nature of thinking; Inductive and Deductive reasoning; Problem solving approaches	10	15	2	
Module 5	Assessment of the different span of attention- sustained attention (digit vigilance test) test of divided attention (triad) test of focused attention (trail making)	12	15	2	
Module 6	Interpretation and practical application of memory, learning and forgetting using - whole vs	15	15	1,2	

	part learning, spaced vs un-spaced learning, retroactive inhibition, pro-active inhibition. Learning curve,				
		58	100		

Detailed Syllabus

Module 1- Define Emotion, Nature, Impact & Expression. Physiological correlates of emotion: Electrical, Circulatory changes, Respiration and Peripheral measures. The role of Cortex, Hypothalamus & Limbic System in Emotions. Concept of Homeostasis. Kluver-Bucy Syndrome. **Total Hours: 5**
Module 2- Theories of Emotion: James-Lange Theory of Emotion; Cannon-Bard Thalamic Theory of Emotion, Activation Theory of Emotion by Lindsley, Two Factor Theory by Schachter-Singer, and Cognitive Appraisal Theory of Lazarus: Concept, Research Evidence, Implication, Critical Appraisal for each theory Total Hours: 8
Module 3- Understanding the concept of Motivation, Drive, Need, Impulse in connection to its role in education, physiological basis of hunger, thirst: mechanisms within the system with neurobiological underpinning & special emphasis on research evidence. **Total Hours: 8**
Module 4- Theories of Motivation – Need Hierarchical Theory by Maslow, Achievement Motivation Theory by McClelland, Theory of Psychogenic Needs by Murray: Concept, Research Evidence, Implication, Critical Appraisal for each theory, Application, Nature of thinking; Inductive and Deductive reasoning; Problem solving approaches **Total Hours: 10**
Module 5- Practicum Assessment of the different span of attention- sustained attention (digit vigilance test) Test of divided attention (triad) Test of focused attention (trail making) **Total Hours: 12**
Module 6-Practicum Interpretation and practical application of memory, learning and forgetting using - whole vs part learning, spaced vs un-spaced learning, retroactive inhibition, pro-active inhibition. Learning curve **Total Hours: 15**

Suggested Readings

- Morgan, C. T., King, R. A., Weisz, J. R., &Schopler, J. (2006). Introduction to Psychology, 7th eds.
- Fredrickson, B., Loftus, G. R., Lutz, C., & Nolen-Hoeksema, S. (2014). *Atkinson and Hilgard's introduction to psychology*. Cengage Learning EMEA.
- Schultz, D. P., & Schultz, S. E. (2020). *Psychology and work today*. Routledge.
- Woodsworth, R. S., & Schlosberg, H. (1954). Experimental psychology (Rev. ed.). *New York: Holt*

Course Name: Introduction to Hospitality Industry and Major Departments
Course Code: GE1B-02

Mode- Blended

Course Objective: The course is designed to provide overall concept of a hotel operation, the major operating departments, hierarchy, job profiling, functions and relation amongst the departments

Sl	Course Outcome	Mapped modules
1	Understand hospitality industry and relationship with tourism.	M1, M2
2	Understand basic front office operation.	M2, M1
3	Understand basic Housekeeping operation	M2, M3
4	Understand the importance of safety and hygiene.	M2.M3.M4
5	Understand the basic F &B service operation.	M1 ,M5
6	Understand & demonstrate menu and types of service	M5 ,M6

Module Number	Content	Total Hours	%age of questions	Blooms Level (if applicable)	Remarks (If any)
M 1	Introduction to hospitality	6	10	1,2	
M 2	Basic Front office operation	12	15	2,3	
M 3	Basic Housekeeping operation	12	15	2,3	
M 4	Safety and hygiene	06	20	2,3	
M 5	Basic F&B service operations	12	20	3,4	
M 6	Menu and types of service	12	20	3,4	
		60	100		

Detailed Syllabus:

Module 1 – Introduction to Hospitality Industry: Characteristics of Hospitality Industry and relation with Tourism, Types and Classification of Hotels, Departments in Hotels like Front Office, House Keeping, F&B Service and non-revenue earning departments and their co-ordination. (06 hours)

Module 2 – Basic Front Office Operations: Organizational chart of Front Office department with duties and responsibilities of staff, Types of guest room, basis of charging tariff, meal plans, type of guests, responsibility of Front Office department, Procedures in Front Office, Pre-registration, registration procedures, Bell-desk, Concierge, Cahier, Night Audit. Registration procedure, Role-play for check-in checkout procedures. Sanitization procedures. (12 Hours)

Module 3 –Basic Housekeeping Operations: Organizational chart of House Keeping department with duties and responsibilities of staff, responsibility of House Keeping department, Layout of Guest room, Guest supplies and amenities, Floor and Pantry, Room cleaning procedures, key control, lost and found procedures, forms formats and registers in Housekeeping, functions of House Keeping control desk. Role-play for complain handling and various services. (12 Hours)

Module 4 – Safety and Hygiene: Importance of Safety and Hygiene, Sanitization techniques for guest, hotel personnel, offices, Guest rooms and Public areas, Liaison with Public health department, Accidents, Fire, and security. Concept of First aid and artificial respiration (06 Hours)

Module 5 – Basic F&B Service Operations: Organizational chart of F&B Service department with duties and responsibilities of staff, responsibility of F&B Service department, Attributes of

personnel, Equipment and Service ware uses care and maintenance, Types and Layout of F&B Service areas, basic menu knowledge and types of service. (12 Hours)

Module 6 –Menu and types of Service: Basic concept of Menu, restaurant and Coffee Shop Layout, the concept of stations, numbering the tables and covers at a table, reservation systems in restaurants, records & registers maintained by a Restaurant, rules to be observed while laying and waiting at the table, Dos & don'ts of waiting staff in F&B service operations, organizing the staff for service. (12 Hours)

Suggested Readings:

- Hotel Housekeeping, Sudhir Andrews, Tata McGraw Hill
- The Professional Housekeeper, Tucker Schneider, VNR
- Professional Management of Housekeeping Operations, Martin Jones, Wiley
- House Keeping Management for Hotels, Rosemary Hurst, Heinemann
- Front office operations by Colin Dix &Chirs Baird
- Hotel Front office management by James Bardi
- Managing front office operations by Kasavana& Brooks
- Food & Beverage Service -Lillicrap& Cousins
- Modern Restaurant Service -John Fuller
- Food & Beverage Service Management-Brian Varghese
- Introduction F& B Service-Brown, Heppner & Deegan
- Professional Food & Beverage Service Management -Brian Varghese

Course: Health Education and Communication

Course Code: GE1B-03

Mode- Offline/ Blended

Course Objective The course is designed to provide basic knowledge about the health and health communication. The students will be able to use information, communication and education across media for the public towards ensuring equitable access to health for both prevention and cure.

Sl	Course Outcome	Mapped modules
1	Explain the concept of health and the knowledge of health education in society.	M1
2	Apply the modern technology in health care sectors.	M2
3	Describe the different model of communication.	M3
4	Develop the communications to the different field of society.	M4
5	Able to use the computer as a tool in health care.	M5
6	Understand how to aware the people about the health.	M6

Module Number	Content	Total Hours	%age of questions	Blooms Level(if applicable)	Remarks (If any)
M 1	Concept Of Health And Health Education	16	20	L1, L2	
M 2	Health Education & Artificial Intelligence	8	10	L1, L2	
M 3	Heath Communication	10	10	L1, L2	
M 4	Mass communication and role of media	8	10	L1, L2	
M 5	Tools used for communication	8	30	L1, L2	LAB
M 6	Presentation on concept of health and health education	10	20	L1, L2	LAB
		60	100		

Detailed Syllabus:

Module 1- Concept of Health and Health Education: 16h

Definition of physical health, mental health, social health, spiritual health determinants of health, indicatory of health, concept of disease, natural history of diseases, the disease agents, concept of prevention of diseases.

Health Education: Principles & Objectives, Levels of Health Education, Educational Methods, Evaluation & practice of Health Education in India.

Family planning: Demography and family planning: Demography cycle, fertility, family planning, contraceptive methods, behavioral methods, natural family planning methods, chemical methods, mechanical methods, hormonal contraceptives, population problem of India.

Module 2-Health Education & Artificial Intelligence: 8h

Changes in the workforce, Robots, assisting the human experts or completely robotic diagnosis, Medical training: to train paramedical students, AI can play a big role, Virtual health assistants, advanced health research, Clinical and administrative task handling.

Module 3-Heath Communication: 10h

Basic Concept & Principles of Communication, Definition, Purpose, Types of Communication, Communication Process, Directions of Communication: Upward, Downward, Lateral, Factors influencing Communication, Barriers of Effective communication, How to overcome the Barriers Models of communication: Aristotle Model, Shannon and Weaver model, Schramm Model, Laegans Model, Fano Model, Literer's Model, Westly Maclean's Model.

Module 4- Mass Communication and Role of Media: 8h

Mass communication & Role of Media in health education, Information Communication Technologies (ICT) in health care and awareness. (Telemedicine & e-health, community radio) Future trends in information and communications systems:

Module 5: Tools Used for Communication 8h

Introduction to PC Operating System and MS office package - Windows 10/Ubuntu, MS Office 2016 / Office360 (MS Word, MS Excel, MS PowerPoint, MS Outlook, Internet and Email)

Module 6: Presentation on Concept of Health and Health Education 10h

Reference Books:

1.Health Education – A new approach – L. Ramachandran & T. Dharmalingan

2.Health Communication in the 21st Century, By Kevin B. Wright, Lisa Sparks, H. Dan O'Hair, Blackwell publishing limited, 2013,

3.Health Communication: From Theory to Practice, By Renata Schiavo, Published by Jossey Bash.

4.Health Communication, R.D. Karma Published by Mohit Publications 2008.

5.Counseling Skills for Health Care Professionals, 1st Edition, Rajinikanth AM, Jaypee Brothers, 20

Course Name-Sustainability & Fashion

Course Code-GE1B-04

Mode- Offline/ Blended

Course Objectives:

The course is designed to provide working knowledge of Environmental, Sustainable, and Ethical issues prevailing in the world. Students will be able to understand the relation between sustainable development goals and fashion industry.

Course Outcomes (CO):

Sl	Course Outcome	Mapped modules
1	Remember & Understand Environmental, Sustainable & Ethical issues being faced today and their causes	M1
2	Remember & Understand the Role of sustainable, ethical and environmental organizations	M2
3	Remember & Understand the innovation in sustainable thinking for the future	M3
4	Remember & Understand the roles and impact designers have on the natural resources and the environment	M4
5	Remember & Understand the renewable & non-renewable energy	M5
6	Remember & Understand the possibilities in sustainable and ethical fashion	M6

Module Number	Content	Total Hours	%age of questions	Blooms Level (if applicable)	Remarks (If any)
M1	Environmental & Sustainability Issues	10	20	1,2	
M2	Sustainable & Ethical focused Organizations	8	14	1,2	
M3	Innovations in sustainable thinking for the future	8	14	1,2	
M4	Resource consumption and depletion	8	16	1,2	
M5	Renewable Energy Vs. Non-Renewable Energy	10	16	1,2	
M6	Fashion Design & Sustainability	10	20	1,2	
		60	**100**		

Detailed Syllabus:

ModuleI (10 Hours)

Environmental & Sustainability Issues: Climate Change & Global Warming, Pollution, Resource depletion, Consumerism and the throw-away society,

ModuleII (8 Hours)

Sustainable & Ethical focused Organizations, bodies and Agencies: Greenpeace, Earth day Network, Ethical Fashion Forum, United Nations, Fair Trade, World Wildlife Fund (WWF)

ModuleIII (8 Hours)

Innovations in sustainable thinking for the future: UN Sustainable Development Goals, The Paris Climate Agreement, Ocean Clean-Up

Module IV (8 Hours)
Resource consumption and depletion: Deforestation, Fossil Fuels, Sand, Minerals, Precious Stones & Metals

ModuleV (10 Hours)
Renewable Energy Vs. Non-Renewable Energy: Impact of non-renewable i.e. traditional fossil fuel based energies, Renewable energy systems and technology innovations, Sustainable energy schemes and initiatives in India

ModuleVI (10 Hours)
Fashion Design & Sustainability: Sustainable Fashion design concepts, Sustainable materials for fashion and an understanding of the impacts of our materials choices, Future trends within sustainable fashion, an overview of the key issues the fashion and textiles industry faces, Discussion on the impact of new emerging technologies

Suggested readings:
1. Introduction to Sustainability Paperback – 2016 by Robert Brinkmann
2. Sustainability in Interior Design Book by Sian Moxon
3. References:
1. Centre for Sustainable Fashion- www.sustainable-2. MISTRA Future Fashion- www.mistrafuturefashiofans.choiomn .com
3. Sustainable Clothing Action Plan: Clothing Knowledge Hub- www.wrap.org.uk/node/19930
4. Textiles Environment Design- www.tedresearch.net
5. Textile Futures Research Centre -www.tfrc.org.uk
6. Sandy Black | The Sustainable Fashion Handbook 2012
Tamsin Blanchard | Green is the New Black: How to Change The World with Style 2008
7. Michael Braungart and William McDonough | Cradle to Cradle: Remaking the Way We Make Things 2009
8. Sass Brown | ReFashioned: Cutting Edge clothing from Recycled Materials 2013
9. Elisabeth Cline | Overdressed: The Shockingly High Cost of Cheap Fashion 2012
10. Kate Fletcher and Lynda Grose | Fashion and Sustainability: Design for Change 2012

COURSE: THE YOGA PROFESSIONAL

COURSE CODE:GE1B-05

MODE: OFFLINE/ BLENDED

COURSE OBJECTIVE:

The course is designed to provide understanding about the textual and grammatical aspects of sanskrit language to enable the students to better imbibe the essence of the yogic concepts. The students will be able to interpret the new dimensions of yoga and education and be able to apply principles of yoga for personality development through objectivity.

Sl	Course Outcome	Mapped modules
1	Read and understand the colloquial words of Sanskrit.	M1, M2
2	Write in Sanskrit and have some idea about grammar.	M1, M2
3	Communicate and comprehend Sanskrit to the best of their ability.	M1, M2, M3
4	Understand the Interface between Culture & Psychology.	M4
5	Apply the principles of Culture & Basic Psychological Processes	M5
6	Assess the importance of Culture & Gender interrelation	M6

Module Number	Content	Total Hours	%age of questions	Covered CO	Blooms Level	Remarks (If any)
Module 1	Introduction to reading, writing & speaking of Sanskrit language	10	15	1,2,3	2,3	
Module 2	Grammatical aspects of Sanskrit language	10	15	1,2,3	2,3	
Module 3	Transliteration according to authentic dictionary method	10	10	3	2,3	
Module 4	Interface between Culture & Psychology	10	10	4	2,3	
Module 5	Culture & Basic Psychological Processes	10	30	5	2,3,4,5	
Module 6	Culture & Gender	10	20	6	2,3,5	
		60	100			

Detailed Syllabus:

MODULE 01 **8L + 2T**

Vowels and Consonants, pronunciation, articulation of each letter and the technical names of the letters according to their articulation, similar and dissimilar letters and how to write them.
Consonants combined with vowels, pronunciation and writing, special letters which do not follow the general method.

MODULE 02 **8L + 2T**

Conjunct letters, rules to combine consonants, special consonants, how Sanskrit articulation can be applied to languages like English, special attention to Anusvara, when it can be written in the form of a nasal, two consonant combinations and three consonant combinations, their writing practice, special conjunct letters and their writing.

MODULE 03 **8L + 2T**

Transliteration according to authentic dictionary method.

MODULE 04 **8L + 2T**

Interface between Culture & Psychology Methods of Understanding Culture, Scope of Cultural Psychology, Mechanisms of Cultural Transmission

MODULE 05 **8L + 2T**

Culture & Basic Psychological Processes Interrelation between Culture, Perception, Cognition Emotional expressions and Culture

MODULE 06 **8L + 2T**

Culture & Gender, Culture and Gender stereotype

REFERENCE BOOKS:

1. Dr. Sarasvati Mohan, Sanskrit Level-1 Sharadh Enterprises, Bangalore, 2007.
2. Dr. Sarasvati Mohan, DVD and CD.(Publication of Akshram and Hindu SevaPrathisthana)

Paper Code: GE1B-06

Paper Name- Indian History & Culture

Total Credit: 6
Total hours of lectures: 60 hours

Sl.	Topic/Module	Hour
1.	**Unit-I** The pre-historic period, Indus Valley Civilization - Source of Information, Characteristics of Indian culture & society in the pre-historic ages and Indus valley civilization. Vedic Period – Early and Later Vedic period. . Jainism, Teaching & Principles of Jainism, Contribution of Jainism to Indian Culture. Buddhism- Rise and Growth, Doctrines of Buddhism.	10
2.	**Unit-II** Mauryan Period – origin, growth and contribution, Sunga Dynasty, Kusana Dynasty, Gupta Period – political, religious, socio-cultural and economic development during Maurya to Gupta period. Art & Architecture during Mauryan and Gupta period Political condition of North India, South India and Eastern India after Guptas.	10
3.	**Unit-III** History of Medieval India 1206 - 1526 A.D. Rise of Turks, causes of Success of Arab invasion and its impact, Slave Dynasty, Khaliji Dynasty, Tughlaq Dynasty, Sayyid Dynasty, Lodhi Dynasty. Moghul dynasty. Indo Islamic & Mughal Architecture.	10
4.	**Unit- IV** Political Condition of India after Moghul- Decline of Mughal emperor and its impact. Shivaji & the rise of the Marathas. Advent of Europeans in India – Establishment of East India company and other European companies. Establishment of British Rule in India.	10
5.	**Unit-V** Social and religious reforms movement in India, Brahma Samaj, Arya Samaj, Rama Krishna Mission, Social Traditions, Economic, political, religious and social development post-Independence.	10
6.	**Unit-VI** Concept of Cultural Tourism. Performing Arts- Classical Music, Classical Dance- various formation, Theatre, Visual Arts- Paintings, Sculpture, Different fairs & festivals in India. Various handicrafts items in India, folk culture in India,	10

Suggested reading

1) Themes of Indian History – Part 1, 2, 3 – NCERT (2013)
2) Mitter. Partha (2001), Indian Art, Oxford Publications, London
3) R. S. Sharma – India's ancient Past, Oxford University Press
4) 2. Romila Thapar- Penguin History of India
5) R.C.Mazumdar, H.C.Roychowdhury & K. K. Dutta Advance History of India
6) Singhania. Nitin (2015), Indian Art and Culture, Tata McGraw Hill Education,

Paper Code: GE1B-07

Paper Name- Values & Ethics

Total Credit: 6
Total hours of lectures: 60 hours

Sl.	Topic/Module	Hour
1.	**Module 1: Indian Society**--Society and its types, Features of Tribal Society, Agrarian Society, Industrial Society, Post-Industrial Society. Population and Society - Interface between population size and social development Concepts and measurement of population: Birth rate, Death rate, Migration. Population pyramid of India, Social implications of age sex in India. Population Explosion & its consequences. Population policy of Govt. of India A Critical appraisal, problems of implementing growth control measures, causes for success and failures.	15
2.	**Module 2** : **Social Stratification**-Concepts, Types, Social Mobility Socio-Economic Problems : Poverty, Illiteracy, Unemployment, Child Labour, Occupational Diseases, Crime, Project Affected People, Aged Population, Juvenile Delinquency, Strategies to solve/ minimize the problem.	10
3.	**Module 3**: **Industry and Society** - Factory as a Social System, Formal and Informal Organization, Impact of Industry on Society (Family and Industry),Social and Cultural Impediments to Industrialization	10
4.	**Module 4** : **Value:** Definition, Importance and application of Value in life. Formation of Value: Process of Socialization, self and integrated personality. Types of values: Social, Psychological, Aesthetic, Spiritual, Organizational. Value crisis in contemporary society: individual, societal cultural and management level(strategy and case studies)	10
5.	**Module 5** : **Introduction to Business Ethics** :Definition and Important Ethics in the Workplace: code of conduct, code of ethics;	5
6.	**Module 6** : **Corporate Responsibility:** Definition and Case Study Corporate Compliance: Definition, Responsibility &Laws and Regulations Consumer Rights: Expectations and Reality, connection between Business and Society	10

Suggested Readings:

1. Andre Beteille: Society and Politics in India, OUP.
2. C. N. Shankar Rao: Sociology, S.Chand
3. Ram Ahuja : Social Problems in India, Rawat Publication.
4. A.C Fernando (Late): Business Ethics: An Indian Perspective, 2/e, Pearson.
5. Manna and Chakraborty: Value and Ethics in Business and Profession PHI.
6. Shailendra Kumar and Alok Kumar Rai: Business Ethics, Cengage Learning India Pvt. Ltd.

COURSE NAME: **EMOTIONS MANAGEMENT & CRITICAL THINKING AT THE WORK PLACE**

Course Code: GE1B-08

Mode – Offline /Blended **Credits: 6**

Course Objectives:

This course will provide participants with the knowledge, skills, and strategies to understand and manage their emotions at the work place. .This specialization improves your ability to identify, analyze, and evaluate arguments by other people and offers tools to improve your critical thinking skills. You will also learn how to apply deductive and inductive standards for assessing arguments.

Course Outcomes (CO)

SI	*Course outcome*	***Mapped Modules***
1.	*To understand the meaning of emotion & its effectiveness in decision making.*	***M1***
2.	*To understand different types of emotions and its measurement with the help of mood meter.*	***M1 &M2***
3.	*Apply action strategies for emotional and social well being.*	***M3***
4.	*To understand other's emotion and practical reflections, accordingly apply the guiding tools.*	***M4 & M5***
5.	*To understand the meaning of critical thinking, its application in the work place as well as the relation with emotion.*	***M6,M7,M8***

Module	***Content***	***Total Hours***	***% of Questions***	***Blooms Level***	***Remarks (if any)***
1	Introduction & meaning of Emotions	***6***	***8***	***1,2***	
2	Identifying emotions	***6***	***8***	***1,2***	
3	Managing emotions	***10***	***12***	***1,2***	
4	Managing emotions by shifting how employees think	***10***	***20***		
5	Identifying others emotions &its management techniques	***6***	***10***	***3,4,5***	
6	Critical Thinking	***10***	***20***	***1, 2,3***	
7	Argument Reconstruction Process	***8***	***10***	***3,4***	
8	Relationship between emotions & critical thinking.	***4***	***12***	***5,6***	
		60	***100***		

Detailed Syllabus:

MODULE 1:

Introduction & meaning of Emotions: Why emotions matters – Decision making, Relationship, Physical and mental health. Analyzing Strong emotions and negative emotions.

MODULE 2:

Identifying emotions – Social & Emotional Learning. Mood Meter analysis. Differences in emotions and your feelings

MODULE 3:

Managing emotions with action strategies – Reflection, Making sense, Effect of Stressed. Helpful & Unhelpful action strategies. Use of thought strategies

MODULE 4:

Managing emotions by shifting how employees think – Reading feelings as an emotion scientist. Observe their Mood Meter, Repeated patterns and Themes. Learn their stories.

MODULE 5:

Identifying others emotions &its management techniques- co regulation, reflections, Moments of activation, five step guide, Brainstorm and strategize, closing down conversation

MODULE 6 :

Critical Thinking – meaning, Importance in the work place, Arguments – Meaning, why it matters, Marker, Standard form, Evaluation & close analysis

MODULE 7:

Argument Reconstruction Process –Deductive arguments - Validity& Soundness, Fill in gaps, conclusion.

MODULE 8:

Relationship between emotions & critical thinking. Do Critical thinking emotionless? Conclusion.

Suggested Reading:

1. EMOTIONS IN THE WORK PLACE, ROBERT G. LORD, RIVHARD J. KLIMOSKI, RUTH KANFER, A publication of the society for industrial & Organizational Psychology.
2. CRITICAL THINKING, TOM CHATFIELD, SAGE.

Course Name: **Enhancing Linguistic Competence & Developing Literary Skills**

Course Code: GE1B-09

Mode: Offline/Blended Credits: 6

Course Objective: The course is designed to provide a deep insight into the various vistas of English Language and develop the literary aptitude to face the world with confidante.Apart from the conventional grammar lessons; the selected pieces from the domain of literature will enhance the depth of the students in the subject. The prose and novel sections will enable them to think beyond the books. However, the poems will make the individuals take a flight of fantasy. The classic blend of language and literature is certainly a boon for the aspiring candidates. This is really a unique approach towards the new world of humanities and will hopefully be accepted and embraced by all and sundry.

S.No.	Course Outcome	Mapped Modules
1	Understand the structure and function of Grammar.	M_1& M_2
2	Understand the approach towards dealing the topics of variety and beyond.	M_2& M_4
3	Understand and develop a strong passion for the literary pieces.	M_3& M_4
4	Understand the technical device of Literary Skills Comprising Rhetoric &Prosody.	M_4& M_2
5	Understand and apply the basic linguistic skills pertaining to the domains of grooming viz (speaking, listening, reading)	M_1& M_5

Module No.	Content	Total Hours	% of Questions	Blooms (if applicable)	Remarks
M_1	Introduction to Grammar and application.	10	15	1	
M_2	Writing skills of variety.	10	20	1,2	
M_3	Selected pieces from prose, poetry & novel.	15	30	2,3	
M_4	Literary devices (Rhetoric Prosody)	15	20	3,4	
M_5	Oral linguistic competence & the subsequent development for interview.	10	15	1,5	
--	--	60	100		

Detailed Syllabus

Module 1: Introduction to Grammar and application: The phrases& clauses, Noun case, Noun Gender, Verbs of incomplete predication, Mood, Tense, Analysis of sentences (Compound only), Synthesis of Sentences, Idioms, Punctuations.

Module 2: Writing skills of variety: Essay (Descriptive, Reflective, and Analytical), Story, Short Poems, Letters (Professional approach), Autobiographies, Précis, and Dialogue.

Module 3: Selected pieces from Prose, Poetry & Novel.
Novel: Far From the Madding Crowd – Thomas Hardy.
Prose: Category- Short Stories.

(a) Fly - Katherine Mansfield
(b) The Kite - Somerset Maugham.
(c) The Hungry Stone - Rabindranath Tagore.

Poetry:

(a) To Daffodils - Robert Herrick.
(b) A Musical Instrument - Elizabeth Barrett Browning.
(c) My Last Duchess - Robert Browning.

Module 4: Practicing Rhetoric (Figures of Speech: Simile, Metaphor, Pun, Onomatopoeia, Alliteration, Assonance, Imaginary, Litotes, Synecdoche, Personification, Epigram, Transferred Epithet, Climax, Anticlimax) and Prosody (Scansion of selected passages from poetry).

Module 5: Developing the concepts of listening, speaking, and reading. Tactics to face the interview challenges, composing the latest trend of CV and application. Motivational and mock sessions).

Suggested Readings:

1. High School Grammar & Composition; Wren & Martin. S Chand & Company LTD
2. Principles Of English(Rhetoric &Prosody), M.Chakroborti- The World Press Private LTD
3. College Essays (D N Ghosh)- Calcutta Book Publishers
4. Personality Development & Soft Skills; Barun & Mitra – Oxford Higher Education.

COURSE NAME- **EVOLVING POLICIES AND STRATEGIES FOR HEALTHCARE**

Course Code: GE1B-10

MODE – **OFFLINE/BLENDED**
CREDITS: 6

COURSE OBJECTIVE:-

The Course Is Designed To Provide Basic Knowledge About Public Health And Its Uses. The Students Will Be Able To Use This Information To Provide Effective Healthcare To The Community. Through These Information Students Can Aware Community People About Various Method Of Prolonging Life.

SL	COURSE OUTCOME	MAPPED MODULES
1	understand public health	M1,M4
2	Understand Epidemiology	M2,M5
3	Understand health need assessment	M3,M1
4	Identify behaviour and behaviour change	M4,M1
5	Understanding the concept of disease	M5,M2
6	Identify uses of vaccines	M5,M6

MODULE NUMBER	CONTENT	TOTAL HRS	% OF QUESTIONS	BLOOMS LEVEL	REMARKS
M1	An introduction to public health	10	20	1,2,3	
M2	Epidemiology	10	10	1,2,3	
M3	Define health need assessment	10	20	1,2	
M4	An introduction to behaviour and behaviour change	10	20	1,2	
M5	Introduction to disease	10	20	1,2,3	
M6	An introduction to vaccines	10	20	1,2	
		60	100		

Detailed syllabus:

Module 1:- An introduction to public health- definition, importance, history of public health-origins and genesis, uses of public health in modern era, challenges of public health, determinants of health, indicators of health. Right to health

Module 2: Epidemiology- definition, importance. Screening- definition, epidemiological perspective of screening, surveillance- definition , importance, uses of surveillance in public health, types of surveillance, power and politics:-Sources of power and types of authority in public health practice.

Module3 Define health need assessment, importance of health need assessment, uses of health need assessment, define community participation, the public health intelligence cycle, what is health care evaluation, types of evaluation, steps involved in evaluation. Public health analysis- basic concept

Module 4:- An introduction to behaviour and behaviour change, importance of behaviour in public health, social norms and the influence of culture and relation with public health,Social Cognitive Theory, Theory of Planned Behaviour

Module 5:- Introduction to disease- definition, types, epidemiology of disease,Vectors, pathogens and microbiology, communicable and non-communicabledisease- definition, concept, pandemic, epidemic and endemic- concept, The terminology of infection,Dynamics and control of infectious diseases, Pathogens and disease,Notification of infectious disease.

Module 6:-An introduction to vaccines, Vaccine preventable disease,outbreak scenario: Introduction, Defining and detecting outbreaks, impact of vaccine on public health, national health programmes (NACP, Family planning programme, RCH II), policies and strategies to healthcare(NHP-2017,national population policy)

SUGGESTED READING:

1. Park's Textbook of Preventive and Social Medicineby K. ParkPublisher: BanarsidasBhanot Publishers
2. Principles and Practice of Community Medicine BY Asma Rahim, Jaypee Brothers Medical Pub (P) Ltd (Publisher)

Course Name: Heritage Protection, Tour Guide & Developing Personality

Course Code: GE1B-11

Mode- Offline/Blended **Credits: 6**

Course Objective: The course is designedto train students in various guiding skills and is useful for those who may like to join tour operation or interested to perform independent guiding work And protecting the world heritage sites for future reference & study

Sl	Course Outcome	Mapped modules
1	Concept of indian culture,values their importance & evolution,definition of heritage,different heritage sites & zones by UNESCO,	M1,
2	Objectives, strategies & conservation laws of protection for heritage sites in India,heritage organizations engaged for protection(UNESCO,ASI,ICOMOS,NGO'S)Market heritage sites and case study of any destination	M2,
3	Meaning, Concepts and Types of Guides: Conceptual meaning of Tourist Guide, duties and responsibilities, How guides are appointed in Heritage tours	M3
4	Personality Definition,Personality Factors- external, internal. Effective or winning personality, developing a Selling a tour personality.Communication skills for guiding tour	M4
5	Personality grooming, physical fitness, dressing sense, formal and informal clothing, behaviour with male and female clients, behaviour in office.	M5
6	Case study of heritage hotels in India and abroad	M6

Module number	Content	Total hours	%of questions	Blooms level(if applicable)	Remarks (if any)
M1	Introduction to Indian culture	6	10	1,2	
M2	Heritage sites preservation	12	20	2,3	
M3	Concept of heritage guide & tours	12	15	2,3	
M4	Introduction to personality	6	15	1,2	

M5	Grooming and personal hygiene	12	20	2,3	
M6	Case study of Heritage hotel	12	20	3,4	
		60	100		

Module 1
Concept of Indian culture, cultural importance and evolution of Indian culture, historical evidence, definition of heritage, various heritage property and zones by UNESCO their history

Module 2
Objective & strategies of Indian Heritage sites, their conservation laws, heritage organizations engaged in protection Suchas-UNESCO, ASI, ICOMOS, NGO's, how to market heritage tourism case study of any of the heritage site

Module 3
Concepts of tour guide, meaning, types, their duties and responsibilities, guiding techniques for heritage tour and how guides are appointed in heritage sites

Module4
Define personality, factors affecting personality-internal & external factors, effective or winning personality, selling a tour personality development, communication skills to enhance personality

Module5
How to groom personality of a tour guide, physical fitness, dressing sense, formal & informal clothing, how to deal male & female clients, behavior in office

Module6
Case study of different heritage hotels and properties in India and abroad.

Suggested Books:

1. Goddy B. & ParkinI., Urban Interpretation: Vol. I, Issues and settings; Vol. II Techniques and Opportunities, Working Papers, School of Planning, Oxford Polytechnic, 1991.
2. Pond K. L., The professional Guide: Dynamic of Tour Guiding, Van Nostrand Reinhold, New York, 1993.
3. Trade wings manual for Personality Development
4. UNESCO-IUCN (1992) Eds. Master works of Man and Nature, Pantoga, Australia.

COURSE NAME: **MEDICAL ETHICS, LAW AND ETIQUETTE**

Course Code: GE1B-12

Mode: Offline/Blended
Credit: 6

COURSE OBJECTIVES: This course is designed to provide students the key concepts in healthcare ethics and its core principles. The use and application of this information can help students learn about various medical law and ethical issues in this emerging field. The students will learn the fundamentals of ethical relationships that govern healthcare system.

Sl No:	**Course Outcome**	**Mapped modules**
1	Understanding the concept Of Medical Profession	M1
2	Understanding Essential elements of Contract	M2
3	Understanding Legal Aspects of the Various Act	M3
4	Understanding the theory of Euthanasia and its legality in India	M4

Module Number	Content	Total Hours	% of questions	Blooms Level
M1	Concepts of medical profession, its ethical Values and principles	9	20	1,2
M2	General law of Contract, patient protection , Contact tracing for Covid 19 Patients	17	20	1,2
M3	Legal aspects of Organ Transplantation, MTP,1971, Drugs And Cosmetics Act, PNDT, 1994	18	40	I,2,3
M4	Euthanasia: ethical issues involved, Informed consent and Debate for and against Euthanasia	16	20	1,2
		60	100	

Detailed Syllabus

M1: Concept of medical profession
Definition of hospital, ethics, law and ethics difference, Hippocratic Oath, Geneva Declaration, managing violence at the workplace, ethical principles of Autonomy, Justice, Beneficence, Non Maleficence, Fidelity and Confidentiality.

M2: Essential elements of contract- offer, acceptance, legality, free consent, enforceability, competency, not void contract. HIPAA Law application in hospitals, patient security and violation, doctor-patient relationship and medical malpractice.

M3: Learning about legal aspects of Organ Transplant, 1994, Medical Termination Act,1971, Pre natal and Diagnostic Technique Act, 1994 ,Drugs and cosmetics act, 1940 and Indian Medical Degree Act,1956

M4: Euthanasia- definition, types, legality in India, comparative study with assisted suicide, Types of medical consent, basic aspects of consent.

Suggestive Reading:

1. Medical Ethics and Law- A Curriculum for 21st Century. 13th Edition
Author-Wilkinson, Jonathan and Julian
2. Textbook of Medical Ethics by Enrich H. Loewy
3. Medical Law and Ethics In India. Author- Sandeepa Bhat

Websites: www.Ncbi.nlm.nih.gov
www.slideshare.net
www.wikipedia.org

Course Name: **Professional Content Writing and Managing**

Course Code: GE1B-13

Mode: Blended/Offline **Credits: 6**

Course Objective: Writing for the web is the need of this era. Content is the king and managing content is the utmost important job today. This course is designed to be the perfect balance in understanding the targeted audience as well as generating content in accordance with the projected customer.

Sl	Course Outcome	Mapped modules
1.	Understanding Audience	M1
2.	How to manage the content	M2
3.	Understand Content reach	M2,M3
4.	Understand Content impact	M3,M4
5.	Understand how to create a project	M5
6.	Understand to write for fiction/ non fiction(product)	M5,M6
7.	Understand to write for film	M7
8.	Understanding the story	M7,M8
9.	Understanding the dialogue	M9

Module number	Content	Total Hour	% of question	Blooms level	Remark in any
1.	Understanding Audience	8	10	1,2	
2.	Managing the content	8	10	2,3	
3.	Content strategy : Reach expansion	8	10	3	
4.	Content impact	8	10	3	
5.	Final exercise: Creating a demo	4	10	4	
6.	Writing for fiction/non fiction(product)	6	5	4	
7.	Writing for film	4	10	4	
8.	How to create a story	4	10	3	
9.	The art of dialogue writing	4	10	3	
10.	Final project	6	15	4	
		60	100		

Detailed Syllabus:

Module 1: Understanding Audience: Introduction of audience, nature of audience, Audience and brand, Types of audience, experience with brand, how to launch a brand in different demography, Voice your experience.

Module 2: Managing the content: What is the platform to choose, concept of design, choosing of media vehicle, Social media as a platform, Mobile media, managing content and IP

Module 3: Content strategy: Reach expansion: Understanding trend , emerging trend and its impact, what is strategy and how to apply in content, identifying the resource of your organization and using the resource utmost, trend in social media,

Module 4: Content impact: The impact of visualisation, role of visual in story, Text and typography, understanding photography, Community: concept and culture, social strategy, Definition of measurement, types of measurement, Measuring the content, Content metrics

Module 5: Project

Module6: Writing for fiction/non- fiction (product): What to write and how. What is the story to pick, Understanding the need of audience, concept of product, imagining of scene

Module 7: Writing for film: plotting a theme, creating a fiction, Imagining of scene, How to tell a story, judging a story

Module 8: How to create a story: How to tell a story, judging a story

Module 9: The art of dialogue writing: How to write dialogue; Impact, reach and limitation of dialogue

Module 10: create a story

Suggestive reading:

1. Understanding Audiences: Theory and Method:Andy Ruddock
2. Media Audience Research: A Guide for Professionals: Graham Mytton, Peter Diem, Piet Hein van Dam
3. Content Strategy for the Web:Kristina Halvorson
4. The Content Strategy Toolkit: Methods, Guidelines, and Template for Getting the Content Right:Meghan Casey
5. Letting Go of the Words: Writing Web Content that Works: Janice Redish
6. Writing Short Films: Structure and Content for Screenwriters:Linda J. Cowgill

Course Name: Understanding Tourist Behavior and Segmentation of Market

Course Code: GE1B-14

Mode- Blended/Offline **Credit: 6**

Course Objective: The course is designed to train students in various psychology and behavior of tourists useful for those who may like to join tourism industry or interested to perform independently for future reference & study.

Sl	Course Outcome	Mapped modules
1	Introduction to human psychology, relationship between psychology and tourism	M1,
2	Need and wants of different types of tourist, behavioral approaches of tourist and selection of destination	M2,
3	Market research and segmentation,understands pricing and tourist behavior	M3
4	Importance of tourist segmentation & tourist psychology, different segment in the tourism industry	M4
5	Selection process of different package tours and supply management	M5
6	Impacts of tourist behavior in tourism industry and future market,effects of digitalisation for segmenting market	M6

Module number	Content	Total hours	%of questions	Blooms levels(if applicable)	Remarks (if any)
M1	Introduction to psychology	6	20	1,2	
M2	Behavioural approach to select destination	12	15	1,2	
M3	Market research, pricing introduction	12	15	2,3	
M4	Introduction to tourist psychology	6	20	2,3	
M5	Supply management in tourism	12	10	3,4	
M6	Digitalisation in future market	12	20	3,4	
		60	100		

Module 1 Introduction of human psychology, concept, relationship between psychology and tourism
Module 2 Need of tourist, their approaches towards selection of destination, behaviour to select destination
Module 3 Marketing approaches, pricing techniques, understanding pricing & selection process
Module 4 Importance of tourist segmentation & tourist psychology, different segment in the tourism industry,Concept Of segment
Module 5 Supply chain management in tourism,concept,importance Of package selection in tourism
Module 6 Impacts of tourist behavior, digital effect in tourism, future business with digitalisation

Suggested books:

Kotler,Philip: Marketing Management & Hospitality and Tourism Marketing

Sinha, P.C: Tourismmarketing

Vearne, MorrissonAlison: Hospitalitymarketing

Kotler, PhilipandArmstrongPhilip, PrincipleofMarketing, 1999, Prentice-HallIndia, 1999

AssaelH. Consumer Behavior and Marketing Action (2nd edn.1985) kent, Boston.

Crough, MarketingResearchforManagers.

SinghRaghubir, MarketingandConsumerBehaviour.

Patel, S.G., ModernMarketResearch,Himalaya Publishing.

Course Name: Career Strategy

Course Code: GE1B-15

Mode-Offline/Blended **Credits: 6**

Course Objectives: This course will help to build, develop and hone the essential skills needed to improve employability and advancement in today's dynamic workforce. Each topic will help to understand the essential elements of Project Management and Team Leadership, knowledge and personal and professional awareness, organization and commitment, finance and accounting concepts to drive organization's growth, handle more tasks, meet more deadlines, take on more responsibilities, and adapt to more changes. Help to learn to articulate thoughts in a clear and concise manner that will allow ideas to be better understood how empowerment, power, and authority affect the negotiation process and outcome. This course will help to understand the basic concepts and theories of management, exploring the manager's operational role in all types of organizations. Help to gain insight of manager's responsibility in planning, organizing, leading, staffing and controlling within the workplace. Assessing problems accurately, evaluating alternative solutions, and anticipating likely risks. Learn how to use analysis, synthesis, and positive inquiry to address individual and organizational problems. Help to understand of key entrepreneurial characteristics and competencies solutions, applying the methods and techniques.

Sl	Course Outcome	Mapped modules
CO1	Understanding the essential elements of Project Management and Team Leadership, knowledge and personal and professional awareness, organization and commitment,	M1
CO2	Understanding of finance and accounting concepts to drive your organization's growth, handle more tasks, meet more deadlines, take on more responsibilities, and adapt to more changes.	M2
CO3	Learn to articulate thoughts in a clear and concise manner that will allow ideas to be better understood how empowerment, power, and authority affect the negotiation process and outcome.	M3
CO4	Understanding of the basic concepts and theories of management, exploring the manager's operational role in all types of organizations. Gain insight into the manager's responsibility in planning, organizing, leading, staffing and controlling within the workplace.	M4
CO5	Assessing problems accurately, evaluating alternative solutions, and anticipating likely risks. Learn how to use analysis, synthesis, and positive inquiry to address individual and organizational problems	M5
CO6	Understanding of key entrepreneurial characteristics and competencies solutions, applying the methods and techniques.	M6

Module	Content	Total Hours	%ageof questions	Blooms Level (if applicable)	Remarks (Ifany)
Module 1	Introduction to project management and organizational leadership.	12	10	1,2	
Module2	Basic concepts of finance and accounting for organizational growth.	12	15	2,3	
Module 3	Basics of organizational negotiation process.	12	15	2,3	
Module 4	Managerial responsibility for planning, organizing, leading, staffing and controlling.	6	20	2,3	
Module 5	Identification of organizational problems.	12	20	3,4	
Module 6	Basics of entrepreneurial activities.	6	20	3,4	
		60	100		

Detailed Syllabus

Module 1 Introduction to essential elements of Project Management. Characteristics and functions of Team Leadership, organizational knowledge and personal and professional awareness, organization and commitment,
Module 2 Working knowledge of finance and accounting concepts to drive your organization's growth, how to handle more tasks, meet more deadlines, take on more responsibilities?Adapting to more changes.
Module 3 How to articulate thoughts in a clear and concise manner that will allow ideas to be better understood how empowerment, power, and authority affect the negotiation process and outcome.
Module 4 Basic concepts and theories of management, exploring the manager's operational role in all types of organizations. Gain insight into the manager's responsibility in planning, organizing, leading, staffing and controlling within the workplace.
Module 5 Estimation of problems, evaluating alternative solutions, and anticipating likely risks. Learn how to use analysis, synthesis, and positive inquiry to address individual and organizational problems
Module 6 Knowledge of key entrepreneurial characteristics and competencies solutions, applying the methods and techniques

Suggested Readings

1. Essentials of Organizational Behavior, Stephen P. Robbins, Timothy A. Judge, Pearson
2. *Everyday Project Management*, Barnes & Noble, Indiebound
3. The Business Owner's Guide to Financial Freedom, Mark J. Kohler, Amazon
4. Finance for Non-Finance People, SandeepGoel, Routledge India
5. The entrepreneur's book, Neil Francis , LID Publishing

Course Name: **The Science Of well**

Course Code: GE1B-16

Mode: Offline/ Blended **Credit: 6**

Course Objective: Through this course you will engage in a series of challenges & it will help your Thought process as well as your happiness &build more productivity your personality.

SL. NO.	COURSE OUTCOME	MAPPED MODULE
1	Understanding about human beings, their challenges and how they overcome the challenges	M1
2	Understanding about the thought process of the person and how they implement in their daily life	M2
3	Understanding about the person's personality behavior an their implementation	M1, M3
4	Understanding about human memorization capacity and their intelligence power to solve the daily life problems	M4

Module	Content	Total hours	% of questions	Blooms Level
1	Introduction of Well Being; Classification; Application; Challenges and over come.	10	30	2
2	Define Thought: types; process Implementation in daily life basis	20	15	2
3	Personality: Define; Types; Theories; Test; Implementation and Application	10	15	2,3
4	Memory and Intelligence: definition ; type; Theories and importance	20	40	3
		60	100	

Detailed Syllabus:

Module 1: Definition and classification of well being classification and it's overcome

Module 2: Thinking: definition; different types; different process; implementation and application

Module 3: Personality: definition nature scope; types; trait and type theory; different tests; importance and application

Module 4: Memory: Definition Types; memorization process; Test Intelligence: Definition; types; two factor theory; I.Q test; Emotional intelligence.

Suggested Reading book:

1. Influence; Science and practice Robert B.
2. Man's Search for Meaning: Viktor Frankl
3. Thinking Fast and Slow Daniel Kahneman
4. Introduction to Psychology: Morgan & King
5. Educational Psychology: S.S Chauhan.

Name of the Course: B.Sc. in Information Technology (Data Science) **Subject:** Creative Writing	
Course Code: GE1B-17	**Semester: II**
Duration: 60 Hrs	**Maximum Marks: 100**
Teaching Scheme	**Examination Scheme**
Theory: 5	**End Semester Exam: 70**
Tutorial:1	**Attendance: 5**
Practical:0	**Continuous Assessment: 25**
Credit:6	**Practical Sessional internal continuous evaluation: NA**
	Practical Sessional external examination: NA

Aim:

Sl. No.	
1.	Revealing insightful ways in which complex socio-historical (or other, such as aesthetic) contexts and assumptions inform the production, distribution, and/or reception of object of study.
2.	Locating and selecting verified, reputable sources to create insightful analysis or synthesis.
3.	Utilizing a language that skillfully communicates with clarity and fluency.
4.	

Objective: The course opens up creative space for students of diverse academic backgrounds: Literary Studies, Science, Technology, Design, Social Studies, Architecture and so on.

Sl. No.	
1.	To apply critical and theoretical approaches to the reading and analysis of literary texts in multiple genres.
2.	Become capable of producing poems or literary non-fictional pieces that are original and engaging.
3.	To articulate an awareness of the relationship between the individual works and conventional literary work.
4.	To identify, analyze, interpret and describe critical ideas, themes, values that consist of literary texts and perceive the ways to evaluate how ideas, themes and values create an impact on societies, both in the past and present.

Pre-Requisite:

Sl. No.	
1.	Introductory Reading and Writing/Composition Courses

Contents		**6 Hrs./week**	
Chapter	**Name of the Topic**	**Hours**	**Marks**
01	**Creative Writing** • Imaginative writing vs. technical / academic / other forms of writing • Sensory experience • Language -(Imagery , Figures of speech , Diction) • Sample works of well-known local and foreign writers	**12**	**15**
02	**Reading and Writing Poetry** • Elements of the genre • Essential elements -Theme, Tone • Elements for specific forms -Conventional forms - exemplar: short Tagalog poems like tanaga and diona; haiku; sonnet -rhyme and meter -metaphor • Free verse -the line and line break -enjambments -metaphor • Other experimental texts -typography -genre-crossing texts (e.g. prose poem, performance poetry, etc.)	**14**	**15**
03	**Reading and Writing Fiction** • Elements of the genre -Character -Point of View -1st-person POV (major, minor, or bystander - 2nd-person POV - 3rd-person POV (objective, limited omniscient, omniscient) • Plot (linear, modular/episodic, traditional parts: exposition,rising action, climax, falling action,	**12**	**15**

	resolution/denouement) • Irony -verbal -situational - dramatic -moral/lesson -dramatic premise -insight • Techniques and literary devices -Mood/tone -Foreshadowing - Symbolism and motif - Modelling from well-known local and foreign short story writers in arange of modes		
04	**Reading and Writing Drama (one-act)** • Elements of the genre -Character -Setting -Plot -Dialogue • Techniques and literary devices - Intertextuality - Conceptualization of modality - Modelling from well-known local and foreign playwrights	**12**	**15**
05	The creative work in literary and /or socio political context	**6**	**10**
	Sub Total:	**56**	**70**
	Internal Assessment Examination & Preparation of Semester Examination	**4**	**30**
	Total:	**60**	**100**

Assignments:

Based on the curriculum as covered by subject teacher.

List of Books

Text Books:

Name of Author	Title of the Book	Edition/ISSN/ISBN	Name of the Publisher
Dorothea Brande and Dorothea Thompson Brande	**Becoming a Writer**		Tarcher Perigee
John C Gardner			W. W. Norton & Co.
Stephen King		978-1444723250	

Reference Books:			
Betsy Lerner		978-1594484834	Riverhead Books

Angie Thomas			Paperback

End Semester Examination Scheme. Maximum Marks-70. Time allotted-3hrs.

Group	**Unit**	**Objective Questions** (MCQ only with the correct answer)		**Subjective Questions**			
		No of question to be set	Total Marks	No of question to be set	To answer	Marks per question	Total Marks
A	**1 to 11**	**10**	**10**				
B	**1 to 11**			**5**	**3**	**5**	**60**
C	**1 to 11**			**5**	**3**	**15**	

- Only multiple choice type question (MCQ) with one correct answer are to be set in the objective part.
- Specific instruction to the students to maintain the order in answering objective questions should be given on top of the question paper.

Examination Scheme for end semester examination:

Group	**Chapter**	**Marks of each question**	**Question to be set**	**Question to be answered**
A	**All**	**1**	**10**	**10**
B	**All**	**5**	**5**	**3**
C	**All**	**15**	**5**	**3**

Name of the Course: B.Sc. in Information Technology (Data Science) **Subject: Leadership**	
Course Code: GE1B-18	**Semester: 2**
Duration: 60 Hrs	**Maximum Marks: 100**
Teaching Scheme	**Examination Scheme**
Theory: 5	**End Semester Exam: 70**
Tutorial:1	**Attendance: 5**
Practical:0	**Continuous Assessment: 25**
Credit:6	**Practical Sessional internal continuous evaluation: NA**
	Practical Sessional external examination: NA

Aim:

Sl. No.	
1.	To Raise one's own self-awareness
2.	To Gain self-confidence for a better leadership
3.	To Develop relational skills, self-knowledge and self-awareness

Objective:Throughout the course, students will be expected to discover a new approach to leadership based on trust and sense.

Sl. No.	
1.	To discover a new approach to leadership based on trust and sense.
2.	To develop greater self-awareness by developing a leadership self-portrait and going through fun activities to increase your empathy and communication.

Pre-Requisite:

Sl. No.	Basic Knowledge of English Communication

Contents		**6 Hrs./week**	
Chapter	Name of the Topic	**Hours**	**Marks**
01	Understanding Leadership Defining Leadership; Global Leadership Attributes; Practicing Leadership.	**8**	**10**
02	Recognizing Your Traits **Historical Leaders; What Traits Do These Leaders Display?** **Leadership Studies: What Traits Do Effective Leaders Exhibit?**	**6**	**10**

03	**Engaging People's Strength** **Explore how strengths can make one a better leader. Understand the concept of strength; Describe the historical background of strengths-based leadership. Examine how to identify strengths; Review measures used to assess strengths; Examine strengths-based leadership in practice.**	**10**	**10**
04	Attending to Tasks and Relationships Task and Relationship Styles Explained; Task and Relationship Styles in Practice	**6**	**6**
05	**Developing Leadership Skills** Understanding administrative skills and their use in practice. Understanding interpersonal skills and their use in practice. Understanding conceptual skills and their use in practice	**6**	**10**
06	**Creating a Vision** **Understand the characteristics of a vision. Examine the process of vision articulation; Discuss vision implementation; Focus on how to develop a workable vision for different contexts**	**6**	**6**
07	**Addressing Ethics in Leadership** **Ethical Leadership is about the following: the Character of the Leader, Action of the Leader, Goals of Leader, Honesty of the Leader, Power of the Leader, Value of Leader**	**4**	**9**
08	**Overcoming Obstacles** **Discuss the concept of obstacles in the workplace. Discuss obstacles in practice. Highlight seven major obstacles derived from path-goal theory of motivation. Describe each obstacle and the various ways leaders can respond to these obstacles**	**10**	**9**
	Sub Total:	**56**	**70**
	Internal Assessment Examination & Preparation of Semester Examination	**4**	**30**
	Total:	**60**	**100**

Assignments:

Based on the curriculum as covered by subject teacher.

List of Books

Text Books:

Name of Author	Title of the Book	Edition/ISSN/ISBN	Name of the Publisher
James Kouzes& Barry Posner	**The Leadership Challenge: How to Make Extraordinary Things Happen in Organizations**		
Northouse, P. G	**Introduction to Leadership: Concepts and Practice (3rd ed.)**		

Reference Books:

John Wooden & Steve Jamison	Wooden on Leadership		

End Semester Examination Scheme. Maximum Marks-70. Time allotted-3hrs.

Group	Unit	Objective Questions (MCQ only with the correct answer)		Subjective Questions			
		No of question to be set	Total Marks	No of question to be set	To answer	Marks per question	Total Marks
A	**1 to 11**	**10**	**10**				
B	**1 to 11**			**5**	**3**	**5**	**60**
C	**1 to 11**			**5**	**3**	**15**	

- Only multiple choice type question (MCQ) with one correct answer are to be set in the objective part.
- Specific instruction to the students to maintain the order in answering objective questions should be given on top of the question paper.

Examination Scheme for end semester examination:

Group	Chapter	Marks of each question	Question to be set	Question to be answered
A	**All**	**1**	**10**	**10**
B	**All**	**5**	**5**	**3**
C	**All**	**15**	**5**	**3**

Name of the Course: B.Sc. in Information Technology (Data Science) **Subject:** Professional Communication	
Course Code: GE1B-19	**Semester: II**
Duration: 60 Hrs	**Maximum Marks: 100**
Teaching Scheme	**Examination Scheme**
Theory: 5	End Semester Exam: 70
Tutorial:1	Attendance: 5
Practical:0	Continuous Assessment: 25
Credit:6	Practical Sessional internal continuous evaluation: NA
	Practical Sessional external examination: NA

Aim:	
Sl. No.	
1.	The aim of this course is to communicate more effectively at work
2.	The objective of this course is to to improve your communication skills, and the most successful strategies for using them to your advantage.

Objective: Throughout the course, students will be able to understand what others want, respond strategically to their wants and needs, craft convincing and clear messages, and develop the critical communication skills you need to get ahead in business and in life.	
Sl. No.	
1.	This course helps to how to develop trust, the best method of communication for negotiation, and how to apologize
2.	This course will help to write and speak in English in both social and professional interactions, and learn terminology.

Pre-Requisite:	
Sl. No.	
1.	Basic Knowledge of English Communication

Contents		**6 Hrs./week**	
Chapter	**Name of the Topic**	**Hours**	**Marks**
01	Introduction to Soft Skills– Hard skills & soft skills – employability and career Skills—Grooming as a professional with values—Time Management—General awareness of Current Affairs	**13**	**14**
02	Self-Introduction-organizing the material – Introducing oneself to the audience – introducing the topic – answering questions – individual presentation practice–– presenting the visuals effectively – 5 minute presentation	**13**	**14**
03	Introduction to Group Discussion— Participating in group discussions – understanding group dynamics – brainstorming the topic –– questioning and clarifying –GD strategies- activities to improve GD skills	**13**	**14**
04.	**Interview etiquette – dress code – body language – attending job interviews– telephone/skype interview -one to one interview &panel interview – FAQs related to job interviews**	**13**	**14**
05.	**Recognizing differences between groups and teams- managing time-managing stress- networking professionally- respecting social protocols-understanding career management-developing a long-term career plan-making career changes**	**4**	**14**
	Sub Total:	**56**	**70**
	Internal Assessment Examination & Preparation of Semester	**4**	**30**

	Examination		
	Total:	**60**	**100**

Assignments:
Based on the curriculum as covered by subject teacher.

List of Books
Text Books:

Name of Author	**Title of the Book**	**Edition/ISSN/ISBN**	**Name of the Publisher**
A. K. Jain and A. M. Sheikh	Professional Communication Skills	Eighth Revised Edition	Schand
Meenakshi Raman and Sangeetha Sharma	Technical Communication: Principles and Practice	2nd Edition, Oxford University Press,	
Reference Books:			
Raman Sharma	Technical Communications		Oxford Publication

End Semester Examination Scheme. Maximum Marks-70. Time allotted-3hrs.

Group	**Unit**	**Objective Questions** (MCQ only with the correct answer)		**Subjective Questions**			
		No of question to be set	Total Marks	No of question to be set	To answer	Marks per question	Total Marks
A	**1 to 3**	**10**	**10**				
B	**1 to 3**			**5**	**3**	**5**	**70**
C	**1 to 3**			**5**	**3**	**15**	

- Only multiple choice type question (MCQ) with one correct answer are to be set in the objective part.
- Specific instruction to the students to maintain the order in answering objective questions should be given on top of the question paper.

Examination Scheme for end semester examination:

Group	**Chapter**	**Marks of each question**	**Question to be set**	**Question to be answered**
A	**All**	**1**	**10**	**10**
B	**All**	**5**	**5**	**3**
C	**All**	**15**	**5**	**3**

Name of the Course: B.Sc. in Information Technology (Data Science) **Subject:** E-Learning			
Course Code: GE1B-20		**Semester: II**	
Duration: 60 Hours		**Maximum Marks: 100**	
Teaching Scheme		**Examination Scheme**	
Theory: 5		End Semester Exam: 70	
Tutorial: 1		Attendance : 5	
Practical: 0		Continuous Assessment: 25	
Credit: 6		Practical Sessional internal continuous evaluation: NA	
		Practical Sessional external examination: NA	
Aim:			
Sl. No.			
1	To understand all elements of E-Learning		
2	To make students aware of current situation in various E-Learning platform.		
Objective:			
Sl. No.			
1	To offer students learn through E-Learning.		
2	Understand the drivers and enablers of Industry 4.0		
3	Understand the opportunities, challenges brought about by digital media.		
4	To understand concepts of digital transformation and its application in education.		
Pre-Requisite:			
Sl. No.			
1	Basic knowledge of computer and internet.		
2	Should be aware of current situation in various industry vertices.		
Contents			
Chapter	**Name of the Topic**	**Hours**	**Marks**
01	**Module 1:** What Is E-Learning?Types of E-Learning, Advantages and Disadvantages of Asynchronous E-Learning, Elements of an E-Learning Course	**9**	**10**
02	**Module 2:** Developing an E-Learning Strategy, The Strategic Plan, Cost-Benefit Analysis, Generating Support	**8**	**10**
03	**Module 3:** Managing an E-Learning Project, The Project Management Model and the ADDIE Model, Define the Project, Plan the Project,Implement, Monitor, and Adjust the Project, Evaluate the Project, Budgeting, Resources, Timelines and Development Ratios, Working With Vendors	**8**	**10**
04	**Module 4:** Tools of the Trade, Authoring Tools, Element Tools, Assessments, Audio and Video	**8**	**10**
05	**Module 5:** The Analysis Phase, Business Analysis, Audience Analysis, Technology Analysis	**6**	**10**
06	**Module 6:** The Design Phase: Broad Strategies, E-Learning and Instructional Design, Developing Objectives, Structuring the Content, Instructional Strategies, Selecting the Best Format, Special E-Learning Considerations: Standards and Compliance, Testing and Assessments Media, Interface and Navigation , The Design Document	**8**	**10**

07	**Module 7:** The Development Phase: Writing the Course, Working With Storyboards, Elements of Storyboards, Storyboard Templates, Organizing Your Content, Converting Existing Content, The Development Phase: Putting the Course Together, Rapid Prototyping, Rapid Development, Paper Review Cycles, Assembling the Course, On-Screen Review Cycles	**5**	**5**
08	**Module 8:** The Implementation Phase, Preparing the Audience,Ongoing Management, The Evaluation Phase Level 1 Evaluation: Learner Reaction, Level 2 Evaluation: Learning, Levels 3–5 Evaluation: Impact, Moving Forward, Find Your PathKeep Learning	**4**	**5**
	Sub Total:	**56**	**70**
	Internal Assessment Examination & Preparation of Semester Examination	**4**	**30**
	Total:	**60**	**100**

Name of Author	**Title of the Book**	**Edition/ISSN/ISBN**	**Name of the Publisher**
Diane Elkins&DesiréePinder	E-Learning Fundamentals	ISBN: 9781562869472	ATD Press 2015-06-30
Reference Books:			
Michael W. Allen	Designing Successful e-Learning	**ISBN 10:** 1118038312 **ISBN 13:** 9781118038314 **Print ISBN:** 9780787982997	Wiley Professional Development (P&T) 5/11/07

End Semester Examination Scheme. Maximum Marks-70. Time allotted-3hrs.

Group	**Unit**	**Objective Questions** (MCQ only with the correct answer)		**Subjective Questions**			
		No of question to be set	Total Marks	No of question to be set	To answer	Marks per question	Total Marks
A	1 to 8	10	10				
B	1 to 8			5	3	5	70
C	1 to 8			5	3	15	

- Only multiple choice type question (MCQ) with one correct answer are to be set in the objective part.
- Specific instruction to the students to maintain the order in answering objective questions should be given on top of the question paper.

Examination Scheme for end semester examination:

Group	**Chapter**	**Marks of each question**	**Question to be set**	**Question to be answered**
A	**All**	**1**	**10**	**10**
B	**All**	**5**	**5**	**3**
C	**All**	**15**	**5**	**3**

Name of the Course: B.Sc. in Information Technology (Data Science) **Subject: Model Thinking**			
Course Code: GE1B-21		**Semester: II**	
Duration: 60 Hours		**Maximum Marks: 100**	
Teaching Scheme		**Examination Scheme**	
Theory: 5		End Semester Exam: 70	
Tutorial: 1		Attendance : 5	
Practical: 0		Continuous Assessment: 25	
Credit: 6		Practical Sessional internal continuous evaluation: NA	
		Practical Sessional external examination: NA	
Aim:			
Sl. No.			
1	To understand different kind of models		
2	To make students aware of critical thinking		
Objective:			
Sl. No.			
1	To be a clearer thinker		
2	To understand and use of data		
3	To better decide, strategize, and design		
4	To be an intelligent citizen of the world		
Pre-Requisite:			
Sl. No.			
1	Basic knowledge of computer and internet and data.		

Contents			
Chapter	**Name of the Topic**	**Hours**	**Marks**
01	**Introduction to Model & Segregation** Introduction to Different kind of models, data, thinking ability	**9**	**10**
02	**Aggregation & Decision Models**	**8**	**10**
03	**Thinking Electrons: Modelling People & Categorical and Linear Models** Social scientists model. Three different models. The rational actor approach, behavioural models, and rule based models	**8**	**10**
04	**Tipping Points & Economic Growth**	**6**	**10**
05	**Diversity and Innovation & Markov Processes** Rugged landscapes and local optima	**8**	**10**
06	Path Dependence & Networks, Randomness and Random Walks & Colonel Blotto, Prisoners' Dilemma and Collective Action & Mechanism Design	**9**	**10**
07	**Learning Models:** Replicator Dynamics & Prediction and the Many Model Thinker	**8**	**10**
	Sub Total:	**56**	**70**
	Internal Assessment Examination & Preparation of Semester Examination	**4**	**30**
	Total:	**60**	**100**

Name of Author	**Title of the Book**	**Edition/ISSN/ISBN**	**Name of the Publisher**
Scott E. Page	The Model Thinker:What You Need to Know to Make Data Work for You	ISBN10: 0465094627	Basic Books
Reference Books:			

End Semester Examination Scheme. Maximum Marks-70. Time allotted-3hrs.

Group	**Unit**	**Objective Questions** (MCQ only with the correct answer)		**Subjective Questions**			
		No of question to be set	Total Marks	No of question to be set	To answer	Marks per question	Total Marks
A	1 to 7	10	10				
B	1 to 7			5	3	5	70
C	1 to 7			5	3	15	

- Only multiple choice type question (MCQ) with one correct answer are to be set in the objective part.
- Specific instruction to the students to maintain the order in answering objective questions should be given on top of the question paper.

Examination Scheme for end semester examination:

Group	**Chapter**	**Marks of each question**	**Question to be set**	**Question to be answered**
A	**All**	**1**	**10**	**10**
B	**All**	**5**	**5**	**3**
C	**All**	**15**	**5**	**3**

Name of the Course: B.Sc. in Information Technology (Data Science) **Subject:** Digital Transformation and Industry 4.0			
Course Code: GE1B-22		**Semester: II**	
Duration: 60 Hours		**Maximum Marks: 100**	
Teaching Scheme		**Examination Scheme**	
Theory: 5		End Semester Exam: 70	
Tutorial: 1		Attendance : 5	
Practical: 0		Continuous Assessment: 25	
Credit: 6		Practical Sessional internal continuous evaluation: NA	
		Practical Sessional external examination: NA	
Aim:			
Sl. No.			
1	To understand all elements of transformation efforts		
2	To make students aware of current situation in various industry vertices.		
Objective:			
Sl. No.			
1	To offer students an introduction to Industry 4.0 (or the Industrial Internet), its applications in the business world.		
2	Understand the drivers and enablers of Industry 4.0		
3	Understand the opportunities, challenges brought about by Industry 4.0 and how organisations and individuals should prepare to reap the benefits		
4	To understand concepts of digital transformation and its application.		
Pre-Requisite:			
Sl. No.			
1	Basic knowledge of computer and internet.		
2	Should be aware of current situation in various industry vertices.		
Contents			
Chapter	**Name of the Topic**	**Hours**	**Marks**
01	**Introduction to Industry 4.0** The Various Industrial Revolutions , Digitalisation and the Networked Economy , Drivers, Enablers, Compelling Forces and Challenges for Industry 4.0 , The Journey so far: Developments in USA, Europe, China and other countries , Comparison of Industry 4.0 Factory and Today's Factory , Trends of Industrial Big Data and Predictive Analytics for Smart Business Transformation	**9**	**10**
02	**Road to Industry 4.0**: Internet of Things (IoT) & Industrial Internet of Things (IIoT) & Internet of Services , Smart Manufacturing , Smart Devices and Products , Smart Logistics, Smart Cities , Predictive Analytics	**8**	**10**
03	**Related Disciplines, System, Technologies for enabling Industry 4.0:** Cyberphysical Systems , Robotic Automation and Collaborative Robots , Support System for Industry 4.0 , Mobile Computing , Related Disciplines , Cyber Security	**8**	**10**
04	**Role of data, information, knowledge and collaboration in future organizations :** Resource-based view of a firm , Data as a new resource for organizations , Harnessing and sharing knowledge in organizations , Cloud Computing Basics , Cloud Computing and Industry 4.0	**8**	**10**
05	**Business issues in Industry 4.0 :**	**6**	**10**

	Opportunities and Challenges , Future of Works and Skills for Workers in the Industry 4.0 Era , Strategies for competing in an Industry 4.0 world		
06	**Digital Transformation :** Introduction to Digital Transformation, Digital business transformation, Causes of disruption and transformation, Digital transformation myths and realities, Digital Transformation and customer experience, 4 pillars in customer experience transformation, Digital transformation in marketing	**8**	**10**
07	**Digital transformation across various industries :** Retail industry, Government and the public sector, Insurance industry, Healthcare, Banking: Royal Bank of Scotland case study, Fintech: Travelex case study, Public Sector: The MET office case study	**9**	**10**
	Sub Total:	**56**	**70**
	Internal Assessment Examination & Preparation of Semester Examination	**4**	**30**
	Total:	**60**	**100**

Name of Author	**Title of the Book**	**Edition/ISSN/ISBN**	**Name of the Publisher**
Alp Ustundag and EmreCevikcan	Industry 4.0: Managing The Digital Transformation		Springer
Reference Books:			
Dominik T. Matt, Vladimir Modrak, Helmut Zsifkovits	Industry 4.0 for SMEs: Challenges, Opportunities and Requirements		Springer

End Semester Examination Scheme. Maximum Marks-70. Time allotted-3hrs.

Group	**Unit**	**Objective Questions** (MCQ only with the correct answer)		**Subjective Questions**			
		No of question to be set	Total Marks	No of question to be set	To answer	Marks per question	Total Marks
A	1 to 7	10	10				
B	1 to 7			5	3	5	70
C	1 to 7			5	3	15	

- Only multiple choice type question (MCQ) with one correct answer are to be set in the objective part.
- Specific instruction to the students to maintain the order in answering objective questions should be given on top of the question paper.

Examination Scheme for end semester examination:

Group	**Chapter**	**Marks of each question**	**Question to be set**	**Question to be answered**
A	**All**	**1**	**10**	**10**
B	**All**	**5**	**5**	**3**
C	**All**	**15**	**5**	**3**

Paper: Law and Ethics
Code : GE 1B-23
Contacts Hours / Week : 5L+1T
Credits : 6

Module	Topic
I	General Law of Contract : Essentials of a Contract - Offer and acceptance - Capacityof Parties - Free Consent - Consideration and legality of object - Void agreement and Contingent Contract
II	Consumer Protection Act ,1986 W.B Clinical Establishment Act 2000 Legal aspects relating to organ transplantation,MTP Act, 1971.
III	Drugs and Cosmetic Acts,PNDT Act, Definition of ethics. Ethical Principles & rules: core concepts. Law & ethics-a comparison. Geneva Declaration
IV	Law in relation to medical profession-Indian Medical degree Act 1916,IMC act Consent-Implied and Expressed Consent, Medical Negligence Helsinki declaration on medical research, ICMR guidelines of medical research Euthanasia-ethical framework on decision making

Suggested Readings:

1. Kapoor,N.D;2004:MercantileLaw-SultanChand&Sons:NewDelhi(Chapter1-5)
2. Kuchhel,M.c,2003,MarcentileLaw;VikasPublishingPrivateLtd.NewDelhi(chapter1-5)
3. Pathak, Legal Aspect of Business, TMH
4. P.L Mallick-Industrial Law-Eastern Book Company-Lucknow.
5. Bio-MedicalWasteManagementHandlingRule1998.
6. Law &Ethics in Nursing &Health Care, Nelson Thrones

Paper: Laws and Ethics in Media in Current Perspective
Code : GE 1B-24
Contacts Hours / Week : 5L+1T
Credits : 6

Objective: In this paper, students will study laws that govern the media industry and also make them aware about the ethical practices of a media professional.

Course Content

Module	Content	Teaching Hours
1	• Introduction to Law and Ethics – Definition of Law and Ethics, Differences between law and ethics • Concepts in Media Ethics – Truth, Accuracy, Objectivity, Fairness; • Code of Ethics: AINEC Code of Ethics, PCI code of Ethics, Code of Ethics in Advertisement • Ethical issues in Reality TV and Sting Operations	10
2	• Freedom of the Press • Freedom of Speech and Expression Article 19 (1) (a); Constitutional Restrictions • Challenges to freedom of Press	5
3	• Defamation – Libel and Slander • Sedition, Blasphemy • Contempt of Court • Official Secrets Act 1971 • Press Council Act • IPR and Copyright Act • Indecent Representation of Women Act • Young Person's Harmful Publications Act • Drugs and Magic Remedies Act • Parliamentary Proceedings (Protection of Publications) Act	10
4	• Press and Registration of Books Act • Delivery of Books and Newspaper Act • Indian Telegraph Act, Working Journalist Act	10
5	• Right to Information Act, Right to Privacy, Cable TV Regulation Act, Prasar Bharti Act, Information Technology Act, Different Types of Cyber Crime	10
6	• Intermediary Guidelines and Digital Media Ethics Code, 2021	5

SUGGESTED READING:

Media Law and Ethics by M Neelamalar
Media Ethics: Truth Fairness and Objectivity by ParanjoyGuhathakurata
Justice and Journalist: Debanjan Banerjee

Paper: Overview of Theatre and Folk Media
Paper Code: GE1B-25T
Contact Hours/Week: 4L
Credit: 4
Objective: To understand and study the aspects, characteristics, forms, and perspectives of theatre and folk media.

Course Content

Module	Content	Teaching Hours
1	• History and Development of Indian Theatre • Stage Vs Screen: Script, story, cast, and crew. • Natyashastra • Theatre forms: First Theatre, Proscenium Theatre, Third Theatre, Street Theatre, Intimate Theatre, Black Box Theatre.	10
2	• Poetics by Aristotle • Aesthetics: Concept, Role of aesthetics in theatre • Rasas and Bhavas • Types of Acting Method • Project: Review of a play in terms of aesthetics and poetics elements.	12
3	• Drama- Definition, and types. • Renowned Theatre Personalities: UtpalDutt, Girish Karnad, Sombhu Mitra, Badal Sarkar, Habib Tanveer, Manav Kaul, Ratan Thiyam, Rudraprasad Sengupta. • Socio-political-economical aspects of theatre	8
4	• Folk Media: Jatra, Pala, Leela, Yakshagana, Tamasha, Nautanki, Puppetry, Chhou. • Role of folk media in society.	10

SUGGESTED READINGS:

Technical Theatre for Nontechnical People, Drew Campbell

Stage Management: The Essential Handbook, Gail Pallin

Traditional Folk Media In India : Practice & Relevance, Dr.aghavendra Mishra

Paper: Overview of Theatre and Folk Media
Paper Code: GE1B-25P
Contact Hours/Week: 2P
Credit: 2
Objective: To understand and study the aspects, characteristics, forms, and perspectives of theatre and folk media.

Course Content

Module	Content	Teaching Hours
1	• Stage Management and Design: Role and responsibilities of the stage manager, documenting, recording, and calling a production. • Stage Production Planning: Role of director, set, light, sound, costume, and make-up.	10
2	• Folk media in the digital age: survival, implementation, and monetisation • Project: Production of a Folk Theatre	10

SUGGESTED READINGS:

Technical Theatre for Nontechnical People, Drew Campbell
Stage Management: The Essential Handbook, Gail Pallin
Traditional Folk Media In India : Practice & Relevance, Dr.aghavendra Mishra

Course Name: Cinema and Other Arts

Course Code: GE2B-01

Mode: Offline/ Blended

Course Objective: The course is designed to provide a general understanding and appreciation of the history of world cinema, acclaimed international films, artists, and movements. The students will be able to gain a multiple cultural perspective based on the underlying theories and principles of cinema and media.

Sl	Course Outcome	Mapped modules
1	Understand the fundamental components of a Cinema and other arts	M1, M2, M3, M4, M5, M6
2	Remember the readings and understand the perspective	M1, M2
3	Understand the nuances of modern painting	M2, M3
4	Understand the nuances of Indian painting	M2, M3, M4
5	Understand and examine the Indian and Western music	M1, M2, M5
6	Analyze the music of parallel and commercial Indian cinema	M1, M2, M5, M6

Module Number	Content	Total Hours	%age of questions	Blooms Level (if applicable)	Remarks (If any)
Module 1	Pre-Renaissance	10	15	L1, L2	
Module 2	Renaissance and Perspective	10	15	LI, L2	
Module 3	Modern Painting	08	15	L1, L2	Workshop
Module 4	Indian Painting	08	15	L1, L2	Workshop
Module 5	Fundamentals of music	12	15	L2, L3	Workshop
Module 6	Music and cinema	12	25	L2, L3	Workshop
		60	100		

Detailed Syllabus:

M1	**Pre-Renaissance**: Visual representations in cave paintings, in folk cultures and early civilizations like Egypt Visual representations in Greece: A breakaway from earlier practices Visual representations in ancient and medieval India: Ajanta cave paintings,Mughal miniature, Kangra, Ragmalaetc
M2	**Renaissance and Perspective** The Renaissance at a Glancefrom The Enquiring Eye – European Renaissance Art, Development of the idea of perspective; Use of camera obscura and camera lucida Selected Readings from John Berger's Ways of Seeing, Dutch painting; Baroque, Rococo and Mannerism.
M3	**Modern Painting:** Impressionism, Expressionism, Surrealism, Cubism

M4	**Indian Painting** Raja Ravi Verma, Bengal School Contemporary Masters
M5	**Fundamentals of music:** Tone, note, key, octave, musical scales – diatonic and tempered scales, chords, melody, harmony, swar and shruti Folk music, forms and structures of Indian classical music, forms and structures of western classical music; Evolution of musical forms; Music industry and popular music; Urban folk music, Blues, Jazz, Rock
M6	**Music and cinema;** Music for Cinema Comparison of the two art forms – music and cinema; Ray and Ghatak's ideas on structural similarities of music and cinema Analysis of structures of films to compare with musical forms Musical accompaniment of films – from live musical accompaniment of silent era to present day. Diagetic and extra-diagetic music Analysis of music tracks of selected films Electronic Vs acoustic musical accompaniment (Has to be done as a workshop by a music composer) Item numbers of Bollywood films

Suggested Readings:

1. Andrei Tarkovsky, Sculpting in Time
2. Satyajit Ray, Our Films Their Films
3. RitwikGhatak, Rows and Rows of Fences
4. Penguin Dictionary of Music
5. S.C Deva, Music of India
6. E.H Gombirch, The Story of Art, Phaidon Publications
7. Hendrik Willen Van Loon, The Arts of Mankind
8. Hugh Honour and John F. Fleming, The Visual Arts: A History. Prentice Hall, 2005. Sylvan Barnet, A Short Guide to Writing About Art. Prentice Hall, 2007.
9. The Enquiring Eye – European Renaissance Art (National Gallery of Art, Washington)
10. Herbert Read The Meaning of Art 11. Walter Pater The Renaissance
12. John Berger, Ways of Seeing
13. Art Through the Ages by Helen Gardner
14. Nothing If Not Critical: Selected Essays on Art and Artists
15. The Story of Painting by Wendy Beckett
16. Minor: Art Historys History _p2 by Vernon Hyde Minor
17. Isms: Understanding Art by Stephen Little
18. The Visual Arts: A History by Hugh Honour
19. What Are You Looking At: 150 Years of Modern Art in a Nutshell by Will Gompertz
20. Art and Illusion: A Study in the Psychology of Pictorial Representation by E.H. Gombrich

Course Name: Surface & Soft Furnishings Design Development Techniques

Course Code-GE2B-02

Mode-Offline/ Blended

Course Objective:**The course is designed to provide a conceptual understanding of interior design of spaces with surface and soft furnishings. The students will be able to visually express with colour, texture, pattern and material effects for surface design appropriate to project specifications.**

Sl	Course Outcome	Mapped modules
1	Understand the fundamental interior design aspects of surface and soft furnishings	M1, M2, M6
2	Understand the fundamentals of textiles and types	M1, M2
3	Understand and demonstrate printing techniques	M2, M3
4	Understand the apply embroideries	M2, M3, M4
5	Understand and examine materials, techniques, and technology	M1, M2, M5
6	Apply the surface designs	M5, M6

Module Number	Content	Total Hours	%age of questions	Blooms Level (if applicable)	Remarks (If any)
Module 1	Textiles and Its Types	08	15	L1, L2	
Module 2	Research soft furnishings and textiles/fabrics used in the design	08	15	L1, L2	
Module 3	Printing and its techniques	10	15	L1, L2	
Module 4	Embroideries and its types	10	15	L1, L2	
Module 5	Exploration of materials, techniques and technologies for the development of surface design	12	15	L2, L3	
Module 6	Final surface designs and presentation	12	25	L3	
		60	100		

Detailed Syllabus:

Module -1: Textiles and Its Types

- Introduction to textiles – Indian (kalamkari, matanipachedi, ikkat) and international textiles.
- Special embellishment techniques: Batik, Tie and dye - lehariya, bandhini ,shibori, sunray and marbling.

Module – 2: Research soft furnishings and textiles/fabrics used in the design

- Table Linens
- Rugs & Carpets
- Window dressings (Curtains & Blinds)
- Towels
- Bedding & Bedspreads
- Cushions & Throws

- Lampshades
- Wallpaper
- Tiles
- Flooring

Module -3: Printing and its techniques

- Print application through block printing, Lino printing, Wood cut printing, Lithograph printing
- Print application through screen & block printing (vegetable block and wooden blocks, Appliqué, quilting, Smocking, honey comb, Fabric painting, Stencil- dabbing and spraying).
- Natural dyeing techniques and explorations.

Module -4: Embroideries and its types

•Basic Hand Embroidery, their technique, variations and applications. Basic running stitch, backstitch, stem stitch, chain stitch, lazy daisy stitch, buttonhole stitch, featherstitch, herringbone stitch, knot stitch, satin stitch and cross-stitch.

•Traditional Embroidery- Origin, application &colours. Kantha, Chikan, Kasuti, Zardosi, Kutch and Mirror work.

Module -5: Exploration of materials, techniques and technologies for the development of surface design

- Print – Screen, Block, Mono etc.
- Stenciling
- Fabric Dye (Natural and Azo free)
- Fabric paints
- Fabric and textiles Embellishment

Module -6: Final surface designs and presentation

- Develop surface designs for a range of applications.

Reference Books:

• The Complete Technology Book on Dyes & Dye Intermediates Paperback – 1 Jan 2003 by NIIR Board of Consultants & Engineers (Author)

• Biodegradation of Azo Dyes by HaticeAtacagErkurt (Editor) – Publisher: Springer (9 August 2010), ISBN-10: 3642118917

• Second Skin: Choosing and Caring for Textiles and Clothing by India Flint Murdoch Books, 2011 ISBN 978-1-74196-720

• Indigo:The Color that Changed the World by Catherine Legrand Thames & Hudson, 2013 ISBN 978-0500516607

• Warp and Weft:
Woven Textiles in Fashion, Art and Interiors by Jessica HemmingsBloomsbury, 2012 – ISBN 978-1-4081-3444-3

• Quilt National 2013:The Best of Contemporary Quilts by The Dairy Barn Cultural Arts Center

• DragonThreads Extraordinary Textile Arts Books, 2013 - ISBN 978-0-9818860-4-6

• Surface Design for Fabric: Studio Access Card Printed Access Code – February 15, 2015 by Kimberly Irwin Publisher: Fairchild Books (February 15, 2015) ISBN-10: 1501395033

Websites

- https://www.houseology.com/masterclass/design-school/chapter-eight-soft-furnishings
https://www.twosistersecotextiles.com/pages/azo-dyes

Course Name: **Digital Photography Basics and Beyond**

Course Code-GE2B-03

Mode of study: Offline/ Blended

Credits: 6

Course Objectives:

If you love cameras and producing beautiful images, and have an eye for good angles and light, consider a flexible and creative career in Photography. This course is an ever-blooming field with numerous job opportunities as well as business opportunities. Various media agencies and news agencies hire photographers to post on their news channels, newspapers, magazines and websites. Apart from that, there is a constant demand for aesthetic photographers who can click pictures of landscapes, wildlife and other such themes.

Module	Course Outcome	Mapped modules
Module-1	Understanding Introduction to Photography (Analogue to Digital)	M1
Module-2	Understanding Photographic Composition	M1,M2
Module-3	Understanding Digital Basics & Digital Platform	M3
Module-4	Understanding Digital Capture	M3,M4
Module-5	Understand Scanning and Image Editing	M4,M5
Module-6	Understanding Digital Retouching & Image Enhancement	M6
Module-7	Understanding Digital Output	M6,M7

Module	Content	Total Hours	%age of questions	Blooms Level (if applicable)	Remarks (If any)
Module-1	Introduction to Photography (Analogue to Digital)	3	10	1,2	
Module-2	Photographic Composition	15	25	2,3	
Module-3	Digital Basics & Digital Platform	5	10	2	
Module-4	Digital Capture	10	10	2,3	
Module-5	Scanning and Image Editing	7	10	2	
Module-6	Digital Retouching & Image Enhancement	15	25	1,2,3	
Module-7	Digital Output	5	10	2,3	
		60	100		

Detailed Syllabus

Module 1	**1.0 Introduction to Photography (Analogue to Digital)**
	1.1History of photography 1.2 Learning about the digital revolution 1.3 Exposure traingle 1.3 Advantages and disadvantages of digital photography over film photography 1.4 Introduction to camera (Analogue to Digital) 1.5 Elements of photography.
Module 2	**2 Photographic Composition**
	2.1 Principles of Composition 2.2 Rules of Photographic Composition 2.3 Visual perspectives 2.4 Basics of color
Module 3	**3.0 Digital Basics & Digital Platform**
	3.1 Hardware and System Software - Windows Operating System 3.2 Representation of digital image: Resolution – Pixel Depth – PixelAspect Ratio – Dynamic Colour Range – File Size – Colour Models – Image Compression – File Formats – Calculating image resolution for outputs. 3.3 Digital image method of storing and processing digital image:Raster and Vector method 3.4 Image transportation through floppy, CD, zip and Internet.
Module 4	**4.0 Digital Capture**
	4.1 Digital Image formation – Image Sensors – Different Capturing Method: Digital camera – Scanner – Frame Grabber 4.2 DIGITAL CAMERA: Understanding how digital cameras work – Digital camera types: Floppy Disc type, Flash Card type, Hard Disc type – Overview of current digital cameras.
Module 5	**5.0 Scanning and Image Editing**
	5.1 SCANNING: Scanners as input devices- Workingof a Scanner– Scanning procedure – Scanning resolution. 5.2 IMAGE EDITING: Image editing through image editing softwares like Adobe Photoshop – Adjustment of Brightness, Contrast, Tonal and Colour Values – Experimenting with Level and Curve.

Module 6	**6.0 Digital Retouching & Image Enhancement**
	6.1 Image size – Resolution – Selection tools and techniques – History – Retouching tools – Layers – Photo mounting techniques – Incorporation of text into picture. 6.2 Digital Manipulation: Applying selective effects to images and filters with masks and different digital darkroom effects.
Module 7	**7.0 Digital Output**
	7.1 Placing photos in other documents – Using photos on the web. 7.2 Printers as output devices – Different types of Print, Proofing, Photo quality printing. 7.3 How can a digital image be printed?

Suggested Readings

1. https://photographylife.com/photography-basics
2. Complete Digital Photography by TOM ANG
3. Photography Master class by Phil Ebiner
4. The Ultimate Photography Beginners Guide by Maverick Williams

Course name: **Study of Performing Arts**

Course Code-GE2B-04

Mode: Offline/Blended

Credits: 6

Practical study of performing arts

This paper is basically a miniature version of one of the most popular subjects of our nation 'Arts and Aesthetics'. People who are interested in dance, music or acting they love to go through such an experience of hand on training about these performing arts. It is a relief from their regular theory classes and gives a scope of building creative instincts that can boost up their usual learning process of any subject. This paper will give the students-

- An idea about the different forms of Indian and western dance and acting.
- Different genres of music of our nation and worldwide.

Outcome of this course-

- ✓ The students will have a hand on experience in learning the art forms they are passionate about.
- ✓ The paper is a study of different art forms that make a human being extremely creative and it makes a person wise and open minded that will be reflected in handling different situations in the personal and professional life of the person who is studying this.

Sl no	Course outcome	Mapped module
1	Building up of a complete idea about various forms of performing arts	M1
2	Generating idea about the history of the practice of the three forms of art in our nation and worldwide.	M2
3	Knowledge about vocal and instrumental music practice and forms in India and worldwide.	M3
4	Gathering knowledge about different forms of dance in India and worldwide.	M4
5	Idea about theatre practice in the nation and in other countries worldwide.	M5
6	Hand on training of all types of performing arts.	M6

Detailed syllabus:

Module number	Context	Total hours	%age of questions	Blooms level (if applicable)	Remarks (if any)
1	Introduction to performing arts.	10	10	1, 2	
2	Idea about the origins of the practice of different medium of performing arts.	10	10	1,2	
3	Intense study of Music	10	20	2,3,4	
4	Intense study of Dance	10	20	2,3,4	
5	Intense study of Theatre	10	20	2,3,4	
6	Practical performance	10	20	5	
		60	100		

Module 1

What is the meaning of performing arts?

Module 2

Idea about the origins of the practice of different medium of performing arts

i. Dance
ii. Music
iii. Theatre

Module 3

Intense study of Music

i. Indian and Western music
ii. Different genre of Indian music
iii. Different genre of Western music

Icons of music: Beethoven, Bach, Mozart, Ravi Shankar, Elvis Presley, The Beatles, John Denver, Michael Jackson, Pink Floyd

Indian: PanditYashraj, Amzad Ali Khan, A.R.Rahman, R.D barman, Sachindev Barman, Begum Akhtar

Module 4

Intense study of Dance

i. Indian and Western forms of dance
ii. Icons in the field of dancing

International :Anna Pavlova, Michael Jackson,FredAstair,MarthaGraham,PatrickSwayze,CarmenAmaya,Willi Ninja,

Indian: Uday Shankar, Rukmini Devi Arundale, PanditBirjuMaharaj, KelucharanMahapatra,GuruVipinSign,Shovna Narayan,SonalMansingh, Balasaraswati,Mrinalini Sarabhai

Module 5

Intense study of Theatre

i. Different types of theatre
ii. Iconic figures in Indian theatre- BadalSarkar, RudraprasadSengupta, UtpalDutta, RatanThiyam, GirishKarnad, Nasiruddin Shah, ShabanaAzmi, KaushikSen, BratyaBasu
iii. Iconic figures in theatre worldwide- Lee Strasberg, Constatine Stanislavski, Laurence Olivier, Bertolt Brecht, Shakespeare, Ibsen.

Module 6

Practical performance

I. One project on Music
II. one project on dance
III. One project of theatre

All of these projects will be based on practical performance of different small groups.

List of Experiments:

1. Intense practice of different genres of music
2. Intense practice of different genres of dance
3. Acting Workshops

Suggestive readings:

1. Indian performing arts-Utpal k Banerjee
2. Universal dance and drama-P. MediniHombal, Luminous books, Varnasi
3. Sangeetnatak academy journal- sangeetnatak academy, New Delhi.
4. Dance theare of India-crossing new aesthetics and culture-Neyogi Books
5. *The Viewpoints Book: A Practical Guide to Viewpoints and Composition* **by Anne Bogart and Tina Landau**
6. *The Empty Space* **by Peter Brook**
7. *History of the Theatre, 10th Edition* **by Oscar G. Brocket and Franklin J. Hildy**
8. *An Actor Prepares* **by Konstantin Stanislavski**
9. *Changed for Good: A Feminist History of the Broadway Musical* **by Stacy Wolf**
10. *The Cambridge Companion to African-American Theatre* **by Harvey Young, ed.**

Course Name: **The Language of Graphic design: Basics and Beyond**

Course Code-GE2B-05

Mode of study: Offline/ Blended

Credits: 6

Course Objectives:

The scope of Graphic Design has expanded in recent years and advances in communication technology have offered a host of new possibilities to the designer. The course aims to develop analytical skills and critical judgment enabling the student for technological and/or aesthetic innovations in the subject of Communication Design.

Graphic Design begins with the study of design history, theory and traditional design skills, then progresses to current graphic design practices and technology. Graduates are prepared for a wide range of careers in the industry. The program seeks to develop designers with strong aesthetic and analytic skills capable of solving real-world communication design problems, integrating a command of visual language with imagination, theory and technology.

Module	Course Outcome	Mapped modules
Module-1	Understanding Introduction to Multimedia	M1
Module-2	Understanding Study of Multimedia Computer	M1,M2
Module-3	Understanding Study of Operating System	M2,M3
Module-4	Understanding Basics of Internet	M4
Module-5	Understand Text Component in Multimedia	M5
Module-6	Understanding Image & Graphics component in Multimedia	M6
Module-7	Understanding Animation	M6,M7

Module	Content	Total Hours	%age of questions	Blooms Level (if applicable)	Remarks (If any)
Module-1	Introduction to Multimedia	3	10	1,2	
Module-2	Study of Multimedia Computer	10	25	1,2,3	
Module-3	Study of Operating System	5	10	2	
Module-4	Basics of Internet	10	10	2,3	
Module-5	Text Component in Multimedia	7	10	2,3	
Module-6	Image & Graphics component in	10	15	1,2	

	Multimedia				
Module-7	Animation	15	20	1,2,3	
		60	100		

Module	Topics
Module 1	**1.0 Introduction to Multimedia**
	1.1 What is Multimedia 1.2 Components of Multimedia 1.3 Multimedia product ideas 1.4 Product formats 1.5 Multimedia content 1.6 Multimedia Applications 1.7 Advantages of Multimedia.
Module 2	**2.0 Study of Multimedia Computer**
	2.1 Multimedia Platform & Accessories 2.2 Hardware and system software 2.3 Different configurations of Multimedia Personal Computer.
Module 3	**3.0 Study of Operating System**
	3.1 Introduction to Windows OS: Its different features 3.2 Functions and use 3.3 Management of files and folders.
Module 4	**4.0 Basics of Internet**
	4.1 Internet and its different features 4.2 Hardware and software used for Internet and their purpose 4.3 Concept of E-mail 4.4 Surfing the Website.
Module 5	**5.0 Text Component in Multimedia**
	5.1 Importance of text in Multimedia 5.2 Free Text – Field Text – Considerations for designing Text 5.3 Text Formats – Test Font and Point Sizes 5.4 Character Formats – Scrolling Text 5.5 Special Effects for Text 5.6 Text File Formats 5.7 Hypertext 5.8 Importing & exporting of documents.
Module 6	**6.0 Image & Graphics component in Multimedia**

	6.1 Introduction to Image & Graphics – Understanding kinds of Graphics – Making still images in multimedia application 6.2 DIGITAL IMAGE: Methods of storing & processing (Raster method, Vector method) – Factors influencing quality (Resolution, Pixel depth, Pixel aspect ratio) – Colour models. 6.3 METHODS OF CAPTURING: Scanner – Digital Camera – Frame Grabber. 6.4 IMAGE COMPRESSION: Lossy & Non-lossy – Image file formats. 6.5 CONCEPT OF DIGITAL DARKROOM: Working with image editing software like Adobe Photoshop – Acquiring, Importing & Exporting of images – Reduction & Enlargement of Images.
Module 7	**7.0 Animation**
	7.1 Animation & special effects 7.2 Animation Techniques: Traditional and Computer based animation 7.3 Image manipulation techniques: Tweening, Warping, Morphing 7.4 Two Dimensional Animation and concept of 2D animation softwares like Macromedia Flash etc. 7.5 Three Dimension Animation and concept of 3D Animation softwares like 3D Studio Max etc.

List of Experiments:

1. Windows: Functions & Use.
2. File Handling.
3. Understanding different features of Internet.
4. Experimentation of different typographic features.
5. Experiment with Visual balance, Colors.
6. Experiment within various Animation Techniques.
7. Understanding 2D and 3D Animation.
8. Understanding user interface of different Multimedia Software.

Suggested Readings

1. Graphic Design: The New Basics: Second Edition by Ellen Lupton
2. Universal Principles of Design, Revised and Updated: 125 Ways to Enhance Usability, Influence Perception, Increase Appeal, Make Better Design Decisions, and Teach through Design by William Lidwell.
3. The Animator's Survival Kit by Richard E. Williams

COURSE NAME: **A HAND ON STUDY OF FILM**

Course Code-GE2B-06

Mode: Offline/Blended

Credit: 6

Course Objective: The course is designed for those students who are passionate about Cinema and acting. A lot of young people of our nation are deeply I love with cinema and entertainment, but they often experience a dilemma between choosing their passion and career. This is a course that will fulfil the wish of a student to know the subject 'cinema'. This paper will give the student-

- An idea about how films are made.
- What are tricks of making a review?
- What is the proper way of acting?
- How camera works.

Outcome of this course-

- ✓ The students will be able to write their own blog related to films.
- ✓ They can think about film as a career option.
- ✓ Different corporate house prepare corporate films for their own propaganda. The student who is learning this paper they can lend their hand in making those corporate films.
- ✓ This paper has an extremely creative content in it. So it will be a big help for a student who is teaching a theory based subject this paper will provide a psychological relief and some practical exposure to a learning process.

Sl no.	Course outcome	Mapped module
1	This is made for building an idea about understanding every aspect of the work of Film making	M1,M5,M6
2	Student will gain some knowledge about proper planning and work management that occurs in the process of film making	M2
3	Anyone can make a story , but which story is fit for making a film or how one make his story fit for the screen. There is a detailed learning process for making a good screenplay.	M3
4	For feature films acting is one of the most vital factors. A detailed study about acting is the required for anyone who is interested about feature films.	M4
5	Camera shots and movement are the basic grammar of film making. This paper is containing all aspects of camera movements and shots.	M5, M6
6	Watching films is an inseparable part of the study of Film making.	M6

Detailed syllabus:

Module Number	Context	Total hours	% age of questions	Blooms level (if applicable)	Remarks (if any)
1.	How to read a film	10	10	1,2	
2.	Pre production, production and post production	10	20	1,2,3	
3.	How to make a screenplay	10	20	3,4	
4.	Acting	10	10	2,3,4	
5.	Understanding Basic Shots and camera movement	10	20	1,2,3	
6.	Watching iconic films from around the globe and maintaining a film diary	10	20	1,2,3,4	
		60	100		

Module 1:
How to read a film

i. Module 1: Fiction and non-fiction: Learning meaning by watching a few famous documentary and feature films.
ii. How to make criticism.

Module 2:
Pre production, production and post production: A detailed study of three stages of a film production.
Module 3:
How to make a screenplay

i. Formation of concept.
ii. Writing a film script from a story.
iii. Dialogue writing.

Module 4:
Acting

i. Role playing.
ii. Understanding stage/set.
iii. Exercise through different workshops

Module 5:
Understanding Basic Shots and camera movement.

Module 6:
Watching iconic films from around the globe and maintaining a film diary.

List of Experiments:

1. Watching different genres of film from around the world.
2. Practicing different ways of acting.
3. Understanding the stage of a theatre production.
4. Understanding the set of a film.
5. Study of camera movements and different shots.

Suggestive reading:

1. James Monaco: How to read a film
2. *Directing: Film Techniques and Aesthetics* by Michael Rabiger's and Mick Hubris-Cherrier
3. Michael Rabiger's *Directing the Documentary*,
4. *Directing Actors* –Judith Weston
5. Our films their films- Satyajit Ray

DESIGN & HUMAN EVOLUTION

Course Code-GE2B-07

Credits: 6

Course Objectives:

To provide an overview of human evolution from prehistoric times through the lens of visual perception and design development. This course is aimed to enable the students to identify and analyse humankind's creative evolution through the ages by focusing on the visual forms and arts, culture and society, storytelling and communication and its direct impact on the world of design.

Course Outcomes (CO):

Sl	Course Outcome	Mapped modules
1	Remember & Understand the beginning of human evolution through pre-history	M1
2	Remember, Understand & Analyze the role of civilizations in the creative evolution of humankind	M2
3	Remember & Understand the importance of culture and society in the development of the visual arts	M3
4	Understand & Analyze the advancement of technology and its impact on design	M4
5	Remember, Understand & Analyze art movements and their impact on design development	M5
6	Understand & Analyze the impact of the digital age on the design industry	M6

Theory:

CO	Blooms Level (if applicable)	Modules	%age of questions
CO1	1,2	Module 1	15
CO2	1,2,4	Module 2	20
CO3	1,2	Module 3	15
CO4	2,4	Module 4	15
CO5	1,2,4	Module 5	20
CO6	2,4	Module 6	15
			100

Detailed Course Curriculum:

Module I (8 Hours)

Prehistory:

The Stone Age – brief understanding of the human evolution through Parietal Art and major innovations in primitive human society

Module II (14 Hours)

Protohistory – the impact of the Metal Age in the birth and advancement of civilizations

Civilizations – identify and study the civilizations through a comparative analysis using:

Language & Script

Mythology

Visual Forms & Artifacts
Culture & Society

Module III (8 Hours)

Middle Ages – the impact of religion and politics through symbolism and merging of cultures on lifestyle and visual forms

The Renaissance – the rediscovery of classical philosophy, literature and visual arts

Module IV (8 Hours)

Industrial Revolution – the impact of technology and consumerism on the different areas of design application

The World Wars I and II – analysis of the before and after changes on the different industries

Module V (14 Hours)

Art Movements – the various schools of thought and design from the 19th century to the 21st century

Module VI (8 Hours)

The Information Age (Digital Age/New Media Age) – analysis of the rapid change in contemporary lifestyle, visual perception and communication

The Future – What comes next?

Suggested Readings:

1. David Raizman; History Of Modern Design, Prentice Hall, 2004
2. Cross, N; Design Thinking: Understanding How Designers Think and Work, Berg, Oxford, 2011.
3. Graphic Design History: A Critical Guide by Johanna Drucker and Emily McVarish
4. Historic Costume-From Ancient Times to Renaissance-Dover Publications.
5. A Pictorial History of Costume-Pepin Press.
6. Journal of Design History, Oxford Journals
7. Carter Ron, Day Ben Meg Phillip, Typographic Design: Form and Communication, John Wiley & Sons, 1999
8. Neill, William (Photographer); Murphy, Pat; By Nature's Design --an Exploratorium Book, Publisher: Chronicle Books, 1993
9. Antonelli, Paola; Objects Of Design, Publisher: Museum Of Modern Art, 2003
10. Clive Cazeaux; The Continental Aesthetics Reader, Routledge, 2011
11. Ann Marie Barry; Visual Intelligence: Perception, Image, And Manipulation In Visual Communication, State University Of New York Press, 1999

Understanding Visual Design Aesthetics
Course Code-GE2B-08

Credits- 5L+ 1T
Course Objective- To familiarize the student with basic principles and fundamentals in visual art and design. To develop basic skills using tools and theory used in design process. To understand the creative process, develop techniques and methods of creative problem solving.

Sl	Course Outcome (CO)
1	To be able to relate and explain the History of graphic design and understanding of a role of graphic designer
2	To demonstrate graphic design help to think to how to crate movie poster
3	Understand of colour as per the tone of film and choosing appropriate colour
4	Evaluate concepts and apply typography to do film titling and create poster

CO	Blooms Level (if applicable)	Modules	%age of questions
CO1	1,2	M1, M2, M3	30
CO2	1,2	M1, M2	20
CO3	2,3	M2,M3, M4	30
CO4	2,3	M3,M4	20
			100

Syllabus:

Module 1 (M1) (14L)	Role of a graphic designer, Qualities of graphic designer, Creativity. A great graphic designer must be imaginative and they must be able to apply that imagination into their work • Consistency. ... • Problem solving. ... • Always learning. ... • Able to take criticism. ... • Patience
Module 2 (M2) (15L)	The distinction between art and design Introduction of fundamental elements and principles of visual design and it's application. Geometrical and organic shapes, Texture ,value, tone, negative space etc. • The principles of good design are the tools used by an artist or designer to create an effective composition or design. The principles are: balance, movement, repetition, emphasis, simplicity, contrast, proportion, space, and unity. • The Elements of Design are the language of the visual arts and The 7 elements of design consider space, line, form, light, color, texture and pattern. • Understanding the application and practice of elements of design and principal of design in graphic design.

Module 3 (M3) (15L)	Role of colour in design. Colour theory. Colour psychology. Colour strategy. • Understanding the color cycle and their uses. • What is color circle in art? • What do you mean by Colour circle? • There are three different types of colors: primary, secondary, and tertiary colors • How color creates mood for film
Module 4 (M4) (16L)	**Typography and Logo** The role of typography in design. Type face anatomy classification of typography - serif, san serif, script, decorative. • Definition and practice of San serif and serif font • Difference of San serif and serif font • How to chose font
Tutorial	**16**
Total	**76**

Suggested Readings:

1. Thinking with Type by Ellen Lupton
2. Logo Modernism by Jens Muller and R. Roger Remington
3. Graphic Design School: A Foundation Course for Graphic ...by David Dabner and Sandra Stewart

Understanding Regional Indian Film
Course Code-GE2B-09
Credits- 5L +1T

Course Objective- To familiarize the student with other regional eminent film maker contribution to Indian film history other than Bollywood film industry.

Sl	Course Outcome (CO)
1	Understand History of south Indian film
2	To outline contribution of Kannada and Malayalam film maker in Indian film
3	Understand the efforts of north east film maker to Indian film
4	Evaluate the film maker contribution post Satyajit Ray

CO	Blooms Level (if applicable)	Modules	%age of questions
CO1	1,2	M1, M2, M3	30
CO2	1,2	M1, M2	20
CO3	2,3	M2,M3, M4	30
CO4	2,3	M3,M4	20
			100

Syllabus:

Module 1 (M1) (14L)	**South Indian Film** Cinema history of south india and history of AVM Studio and eminent riser Adoor Gopalakrishnan (Malayalam) Pattavi Rama Reddy: (Kannada), Mani Ratnam(Tamil) • How south Indian film indian started • Pioneer of south indian industry • History of AVM Studio • Individual Contribution of Adoor Gopalakrishan in malayam film, Pattavi Rama Redddy in Kanada Film, Mani Ratnam in Tamil Film
Module 2 (M2) (15L)	**Northeast Film** Glorify north east film Janu Barua: Aparoopa (Assamese) Aribam Syam Sharma: Imagi Ningthem (Manipur) • Brief introduction of north east film • Contribution of Jannu Barua ti assamese film • Struggle of Manipuri film and contribution of Imaagi Ningthem
Module 3 (M3) (15L)	**Gujarati Film** Ketan Mehta's contribution to Gujrat film and Hindi film • Brief introduction about Gurati film indudusrty

	• Keatn Mehta,s contribution to in gujrati film industry
Module 4 (M4) (16L)	**Post satyajit Ray Bengali film maker** Contribution of two film makers after stayajit Ray in Bengali film Buddhadeb Dasgupta: Grihayuddha (Bengali) Ritu porno Ghosh: Unishe April • Post satyajit ray contribution of film maker Bdhadeb Das gupta, and Rituporso Gosh • Analysis of Two film Grihadaha and Unishe April
Tutorial	**16**
Total	**76**

Suggested Readings:

1. Indian Film by Erik Barnouw and S Krishnaswamy
2. National Identity in Indian Popular Film, 1947-1987 by Sumita S Chakravarty
3. Encyclopaedia of Indian Cinema (Revised Second Edition) by Ashish Rajadhyaksha and Paul Willemen

AR/VR Applications in Tourism
Course Code-GE2B-10
Total Credit: 4
Total hours of lectures: 40 hours

1) CO1. Provide an in-depth view of the VR / AR / MR / XR Technology& its applications.
2) CO2. Develop knowledge about the VR Film making on travel and tourism properties & associate relevant process.
3) CO3. Develop knowledge on the advance 360 photography & videography.
4) CO4. Describe the main elements VR Walkthrough
5) CO5. Identify& develop knowledge on theVR content production, costing, distribution & copy right issue as well.
6) CO 6: To learn about proper utilization of VR in Tourism, hotel & aviation as well as identify VR tourism statistics &future as well as trends of VR tourism.

Module Number	Content	Total Hours
M 1	VR / AR / MR / XR Technology: Introduction, Applications in different industries, VR Film making : VR camera, VR Light, VR Audio, VR storytelling how is VR storytelling different from 2D/3D Film storytelling, Recce of the site thoroughly before 3D / 360 photography / Scanning Understanding the Psychology of VR Film making, Possibility effects, Over capture, Transmedia.	10
M 2	360 camera, 360 photography and Videography, Drone photography, what is image stitching, how to stitch 360 photos, and 360 photos Editing. 3D modelling, 3d model making with captured image, Texturing.	10
M 3	VR Walkthrough: introduction of Walkthrough, Requirement of Walkthrough, Understanding full walkthrough production process. Walk through automation and animation, Walkthrough in HMD devices, Google street view, and introduction of floor plan, Embedding image, 3D model, floor plan, video, etc.	10
M 4	VR in tourism marketing, VR for travel agency, virtual tours of hotels, VR flight experiences, VR tourism statistics. Future & trends of VR tourism	10
		40

Suggested Readings:

1.Virtual and Augmented Reality in Education, Art, and Museums: GiulianaGuazzaroni and Anitha S. Pillai (editors)
2. Crafting Stories for Virtual Reality: Melissa Bosworth and Lakshimi Sarah
3. Virtual Technologies: Concepts, Methodologies, Tools and Applications: CalinGurau.
4. Augmented Reality in Tourism, Museums and Heritage: A New Technology to Inform and Entertain (Springer Series on Cultural Computing): Vladimir Geroimenko
5. Virtual Reality Tools in the Tourism Industry and their Influence on Booking Behaviour: CarolaEpple
6. Augmented Reality and Virtual Reality: Empowering Human, Place and Business (Progress in IS): by Timothy Jung, M. Claudia tom Dieck, et al.

AR/VR Applications in Tourism (P)
Total Credit: 2
Total hours of lectures: 40 hours

Module Number	Content	Total Hours
M 1	Regular Photography, 360 Camera operating, 360 image capturing process, 360 Photography and Videography, Content Dump and Store. 360 image and video stitching, 360 image editing. Drone operating and 360 photography 3D modelling, Texturing,	20
M 2	Walkthrough Software introduction; VR walkthrough making; Walkthrough Programming and HMD setup; Content Distribution and sharing	20
		40

Reference Books:

1. Crafting Stories for Virtual Reality (English, Paperback, Bosworth Melissa)
2. Storytelling for Virtual Reality (English, Paperback, Bucher John)
3. Complete Virtual Reality and Augmented Reality Development with Unity (English, Paperback, Glover Jesse)
4. The Complete Guide to VR & 360 Photography: Make, Enjoy, and Share & Play Virtual Reality Paperback – 14 September 2018
5. Virtual Reality Filmmaking: Techniques & Best Practices for VR Filmmakers Paperback – 20 December 2017
6. Virtual Tour Photography for Real Estate: How to create professional 360 tours (Real Estate Photography Book 7)

Course Code-GE2B-11
Media Production and Editing
Total Credit: 4T+2P

Course Outcome:

1. Analyze the media production workflow and management|
2. Create production business model and revenue generation model
3. Demonstrate the role of organizational structure of a media house
4. Analyze the role of an editor & a sub editor in print media
5. Edit reports for publication
6. Demonstrate the role and process of editing used in digital media

Sl.	Topic/Module	Hour
1.	**Module 1: Production Management:** The production Manager's job, The process of Production Management, The Business of Film Pre production, production & post production, Preparing for production, Special Low Budget Indie productions, Locations & unions Management, Cast & Crew – Selection, contracts, agreements, work permits, etc	**4**
2.	**Module 2**: **Business Creation:** Business Plans and Ideation: Entrepreneurship Routes, Case Studies (Relevant and time specific), Introduction to Company Creation, Processes of Registration and Incorporation, Company Law, Introduction to Company Law, Registration Procedures and Exceptions, Company Procedure and Ethics	**5**
3	**Module 3**: **Structure:** Organizational structure of the industry (Print/electronic/Ad agency/PR Agency/digital marketing agency), Function & Role. Selection of Agency, Dimensions of agency business , The Creative Services, Account services, Marketing services, Administrative services, Advertising Copy & Layout, Advertising Media—Print, radio, Television, Web, Film, Outdoor, Selecting an agency Structure of Agencies, Types of Agencies , Agency Structure and Function ,Media related decisions	**5**
4	**Module 4**: **Revenue Generation & Conflict Solution:** Mode of revenue generation, Negotiations and Bargaining, Role Play Exercise	**4**
5	**Module 5**: **Editing for Print Media**: Understanding the nature and importance of editing; principles of editing; the editorial desk and its functions; preparing edited copy before it goes to press; following editing policy, i.e. the stylebook; editing and proof-reading symbols and understanding their significance. Qualifications and functions of sub-editors, chief sub-editors and departmental editors; copy selection and copy-testing; principles, types and techniques in headlining. Structure and functions of newsrooms for daily and weekend newspapers, as well as weekly, monthly periodicals; understanding different sections in newspapers and magazines and their functions.	**5**
6	**Module 6**: **Editing for Digital Media**: Overview of Video Editing, Definition & Stages of Post production, History of film editing-Lev Kuleshov's experiment, Sergei Eisenstein & Montage, Dziga Vertov, Kino fist & Kino Eye, Process of editing, Storage and folder management, Logging, First assembly, Rough cut, Final cut, Colour grading, Inserting audio, Graphics, Titling etc and exporting, Dubbing & its Application, Sound Effects- Definition, Types, Uses, Compositing – Definition**,** Types, Uses	**5**

7	**Module 7**: Planning a production for a Tvc of any imaginary brand	**5**
8	**Module 8**: Comparative analysis of the Editorial pages of two newspapers.	**2**
9	**Module 9**: Basic movement, applying transitions, inserting music, audio effects, music, dialogues, Montage Editing, Dubbing Sound for a short film or news production	**5**

Suggested Readings:

1. Film Production Management by Deborah S Patz
2. Surviving Production: The Art of Production Management for Film and Television by Deborah S Patz
3. Ken Dancyger, The Technique of Film and Video Editing: History, Theory, and Practice, 2007
4.Surviving Production: The Art of Production Management for Film and Television by Deborah S Patz
5.Film Production Management by Deborah S Patz
6.Ken Dancyger, The Technique of Film and Video Editing: History, Theory, and Practice, 2007.

Practical:

CO1: Apply the fundamentals of media production into live project
CO2: Elaborate the media production pipeline with practical applications
CO3: Analyze the role of editor in print media
CO4: Apply the basic editing techniques in live projects
CO5: Gain expertise in basic media softwares for post production such as editing & compositing in digital media

Sl.	Topic/Module	Hour
1.	Planning a production for a TVC of any imaginary brand	**20**
2.	Comparative analysis of the Editorial pages of two newspapers.	**10**
3.	Basic movement, applying transitions, inserting music, audio effects, music, dialogues, Montage Editing, Dubbing Sound for a short film or news production	**10**

SUGGESTED READINGS:

- Surviving Production: The Art of Production Management for Film and Television by Deborah S Patz
- Film Production Management by Deborah S Patz
- Jaime fowler, Editing Digital Film: Integrating Final Cut Pro, Avid, and Media 100, 2012
- Ken Dancyger, The Technique of Film and Video Editing: History, Theory, and Practice, 2007
- Karel Reisz, Gavin Miller, The Technique of Film Editing, 2017

Paper: Story Telling for Audio and Visual Production
Paper Code: GE2B-12T
Contact Hours/Week: 4L
Credit: 4
Objective: To explain the basic elements of storytelling; To explain the fundamental role of storytelling across media.

Course content

Module	Topics	Teaching Hours
1: Introduction to Narratology:	• What is a narrative • Linear narrative and interactive narrative • Immersive narrative and immersive spaces- AR, VR • Narratology • Structure of a narrative- plot, action, story • define time and space	6
The Art of Telling a Good Story	• History of storytelling • Contemporary forms of storytelling	4
Interactive Storytelling	• What Is Interactivity? • Interactivity as a Conversation • What Happens to the Audience? • The User, the Author, and Interactivity • Immersiveness • Types of Interactivity • How Interactivity Impacts Content	6
Storytelling and Marketing	Data Storytelling	2
Tools for Storytelling	• Importance of characters • Dialogue • Emotion	4
Social Media and Storytelling	• Inserting the Social into the Media • The Power of Social Media • Characters on Social Media • Works of Fiction Using Social Media • Austen Lives On • Other Works of Social Media Fiction • A Darker Social Media Story • Other Approaches to Social Media Storytelling • Works of Non-Fiction Using Social Media • Social Media Games • Does Humor Have Any Role to Play in Social Media?	6

	• Narratives in the Media Convergence Era: The Industrial Dimensions of Medium Specificity • Economic Specificity in Narrative Design: The Business of Television Drama Storytelling • Audience Specificity in Narrative Design: Comic-Book • Storytelling in the Inclusivity Era • Technological Specificity in Narrative Design: Story-Driven Videogame Series in an Upgrade Culture • Transmedia storytelling	12

SUGGESTED READINGS:

Handbook of Research on Contemporary Storytelling Methods Across New Media and Disciplines by Lorena Clara Mihăeş et al

An Introuction to Narratolgy by Monika Fludernik

Digital Storytelling: A creator's Guide to Interactive entertainment Fourth Edition by Carolyn Handler Miller

Storytelling Industries: Narrative Production in the 21st century by Anthony N. Smith

The Power of Data Storytelling by Sejal Vora

Handbook of interactive Storytelling by JouniSmed et al

Paper: Story Telling for Audio and Visual Production Practical
Paper Code: GE2B-12P
Contact Hours/Week: 2 P
Credit: 2

Module	**Topics**	**Teaching Hours**
I	Story ideation and writing, character establishing, group discussion for i. Short story ii. Copy writing iii. Campaign • Both in audio and video format	20 Practical

Course Name- Study of Textiles
Course Code- GE3B-01

Mode-Offline/ Blended

Course Objectives:

The course is designed to provide working knowledge of textile, the best utilization of available fabric resources, the awareness of its property, suitability for a particular use. The students will be able to understand and apply the acquired knowledge in their designs., and enhance aesthetic and functional value of textile material for fashion industry.

Course Outcomes (CO):

Sl	Course Outcome	Mapped modules
1	Remember & Understand different types of Textile materials available in the market and their uses.	M1, M2
2	Understand various kinds of fabrics, their structure, properties and the utility.	M2,
3	Understand Textile dyeing, printing and finishing techniques and	M3, M4.
4	Apply dyeing & Printing techniques on fabric samples to add aesthetic value to it	M4, M6
5	Remember & Understand various traditional hand embroidery techniques of India, and Apply this techniques for surface ornamentation of fabric samples	M5
6	Apply different embellishment techniques on different samples for value addition to it	M6

Module	Content	Total Hours	%age of questions	Covered CO	Blooms Level	Remarks (If any)
Module 1	Fiber Classification	4	12	1	1,2	
Module 2	Yarn & Fabric Formation	10	20	1	1,2	
Module 3	Fabric Finishing	6	20	2,3	1,2	
Module 4	Dyeing & Printing	8	20	3,4	2,3	
Module 5	Embroidery (Practical)	16	16	5	2,3	
Module 6	Surface Embellishment (Practical)	16	12	4, 6	2,3	
		60	100			

Detailed Syllabus:

ModuleI (4 Hours)

Introduction to Textiles and classification off ibres

According to source– Natural and Manmade.

Identification and proper ties of Textile fibres- Cotton, Silk, Wool ,Linen, Rayon(regenerated),Acetate ,Polyester, Nylonand Acrylic.

ModuleII (10 Hours)

Process of yarn for mation– handspinning, mechanical–ring spinning and modern-open end spinning.

Yarn classification–simple and novel tyyarns, characteristics, properties and uses of different yarn.

Method of fabric construction: Weaving-. Basic weaves-plain, satin, twill and their variations. Fancy weaves-pile, dobby, jacquard, extrawarp and weftfigure, leno, crepe and double cloth.

Other method of fabric construction- knitting, braiding, lace and felt. Non-woven fabrics and their applications.

ModuleIII (6Hours)

Finishes given to fabrics- definition, importance to the consumer, classification according to durability and function. singeing, scouring, bleaching, mercerization calendaring, sizing, de-sizing, brushing, carbonizing, crabbing, fulling, heat setting, shearing, weighting, stentering, napping.

Special Finishes and Treatments- water repellent and waterproof finishes, antistatic finish, anti-slip finish, flame retardant finishes, crease resistant finishes, durable press and shrink resistant finishes.

Module IV (8 Hours)

Dyeing-Stages of dyeing- fibrestage, yarn dyeing, fabric, cross, union dyeing and product stage. Method of dyeing- batch dyeing, reeldyeing, jig dyeing and package dyeing.

Printing- Direct roller printing, block printing, duplex printing, discharge printing, screenprinting-flat androtary, resist, batikandtie-dye.

ModuleV (Practical) (16 Hours)

Embroidery

Embroidery tools and techniques, embroidery threads and their classification, selection of threads, needle and cloth, tracing techniques, ironing and finishing of embroidered articles.

Basic Hand Embroidery. Basic and two variations of running stitch, backstitch, stemstitch, chainstitch, lazy daisy stitch, button hole stitch, feather stitch, herring bone stitch, knot stitch, satin stitch and cross stitch.

Traditional Embroidery- Origin, application & colours. Kantha, Chikan, Kasuti, Zardosi(Fourvariations), Kutchand Mirrorwork (Twovariations).

ModuleVI (Practical) (16Hours)

Surface Embellishment

Printing & Painting techniques:–originand applications –Block printing, Kalamkari and Patachitra.

Dyeingand weaving techniques:- Ikats, Patola, Bhandini, Laharia, Shibori, Brocade weave and Carpet weaving.

Special embellishment techniques: Batik-splash, t-janting, crackled, Tie and dye-lehariya, bandini, shibori, sunray and marbling, Block printing- vegetable block and wooden blocks, Applique(2methods), quilting(2 methods), Smocking-Chinese smocking(2 methods), honey comb, gathered with embroidery, Fabric painting(4methods), hand, Stencil- dabbing and spraying.

Suggested readings:

1. Fibertofabric.,B.T.Corbman,Mc.GrawHill
2.Fromfiberto fabrics,E.gale,Allman&SonsLtd.
3.FiberScienceandtheirselection.,Wingate,Prenticehall
4.Encyclopediaoftextiles.,EditorsofAmericanfabricmagazine.
5.Textiles.,Hollen.N.,Macmillanpublishingcompany.
6.Murphy.W.S.,TextileFinishing,AbhishekPublications,Chandigarh.
7.IndianTie-DyedFabrics,VolumeIVofHistoricTextilesofIndia.Merchant: CelunionShop
8.Traditional IndianTextiles., JohnGillow/NocholasBarnard, Thames& Hudson.
9.Surfacedesignforfabric,RichardMProctor/JenniferFLew,Universityof Washington Press.
10.Artof Embroidery: Historyofstyleandtechnique, LantoSynge,Woodridge
11.TheTimelessEmbroidery,HelenM,David&Charles.
12.Readers Digest, CompleteguidetoSewing,1993, Pleasantville-Nu GailL,SearchPressLtd.
13.Barbara. S,CreativeArt ofEmbroidery,Lundon,NumblyPub.groupLtd.
14.ShailajaN,TraditionalEmbroideriesof India.,MumbaiAPHPublishing.

Course Name: IT Literacy

Course Code: GE3B-02

Mode-Blended

Course Objective: This course is designed impart a foundational level appreciation for the implementation of IT in business and management. Students will be utilizing digital tools for communication, researching and interpreting digital information, developing advanced spreadsheets, understanding operating systems and word processing functions, supporting the evaluation, selection and application of office productivity software appropriate to a sports management context.

Sl	Course Outcome	Mapped modules
1	Identify the principal components of a relevant computer system and describe computer technology for communication in management.	M1, M3
2	Interpret fundamental hardware components that make up a computer's hardware and the role of each of these components relevant to Management.	M1,M2
3	Relate the usage of Digital innovations in Sports Threats and Opportunities of Digital Application in Sports, SWOT analysis.	M2, M4
4	Explain the role of information technology in presentation supporting the functions of large sport events and their stakeholders, as well as the needs of sports federations.	M1, M2, M3
5	To understand the emerging technological trends, as well as solutions and applications that will impact broadcasting and media industries and spectators' experience.	M1, M4, M5, M6
6	Demonstrate developing technology solutions and understanding the limits of data capture (what, how, and why) in sport.	M4, M6

Module	Content	Total Hours	%age of questions	Blooms Level	Remarks (If any)
M 1	Data and Information Storage	12	20	1,2	
M2	Digital Transformation and innovation in Sports Management	10	15	1, 2	
M3	Presentation Software	08	15	1, 2	
M4	Management Information System	06	15	1, 2	
M5	DOS System commands and editors	10	15	2,3	
M6	Programs involving the use of arrays with subscripts and pointers	12	20	2, 3	
		58	100		

Detailed Syllabus:

Module 1 – Data and Information Storage – Data and Information, definition and meaning, Data Storage device: Primary storage – RAM, ROM, EEROM, PROM, EPROM; Secondary storage – direct access devices, serial access devices: hard disks, CD-ROM, DVD Central Processing Unit – Control Unit. Computer languages, machine language, assembly language and high level language, role of assembler and compiler. Storage devices, floppy disc, hard disc, CD ROM and DVD. Importance of Computer as data storage for Businessand Management. **Fundamental Hardware Applications in Sports Management** – RFID Chips, Sensors, Timing System, andtheir applications in Sports Management. **Operating System and Application Software**– Meaning of software; broad classification of software; system. Software and application software; utilities. Systems software – Operating systems: Brief introduction to different types of operating systems like DOS, Windows, Unix, Linux etc.,Importance and application of Cloud, Mobile, Artificial Intelligence in Sports Management. Use.

[Total Hours – 12]
Module 2 - Digital Transformations and Innovations– Digital Transformation and future changes, challenges in Management, factors of success, Impact of Digital media on business, new digitized innovations in modern Management. Impact of Digital media, SWOT analysis.**Role of Data Bases -** Roles, Types, Functions, Current Practice and Future Potentials, Importance of digital technology in Management. **[Total Hours – 10]**
Module 3 - Presentation Software - Power Point – Creating new presentations – Auto content wizard – Using template – Blank presentation – Opening existing presentations – Adding, editing, deleting, copying , hiding slides – Presentations – Applying new design – Adding graphics – Using headers and footers – Animations text – Special effects to create transition slides – Controlling the transition speed – Adding sounds to slides – Using action buttons. **Word processing software:** WORD – Creating a new document with templates & Wizard – Creating own document – Opening/modifying a saved document – converting files to and from other document formats – Using keyboard short-cuts & mouse – Adding symbols & pictures to documents – header and footers – Finding and replacing text – spell check and Grammar check – Formatting text - paragraph formats - adjusting margins, line space – character space – Changing font type, size – Bullets and numbering – Tables – Adding, editing, deleting tables – Working within tables – Adding, deleting, modifying rows and columns – merging & splitting cells. **Spreadsheet software -** EXCEL – Working with worksheets – cells – Entering, editing, moving, copying, cutting, pasting, transforming data – Inserting and deleting of cells, rows & columns – Working with multiple worksheets – switching between worksheets – moving, copying, inserting & deleting worksheets – Using formulas for quick Calculations – Working & entering a Formula – Formatting a worksheet – Creating and editing charts – elements of an Excel Chart – Selecting data to a chart – Types of chart – chart wizard – Formatting chart elements – Editing a chart – Printing charts. **[Total Hours - 08]**
Module 4 - Management Information Management (MIS) - database management, data communications, transaction processing information systems, decision support systems, information reporting systems, office automation, networks, expert systems, and systems analyses and design. **ERP**: Introduction – Need for ERP – Advantages – Major ERP Packages – Applications. **[Total Hours - 06]**
Module 5 - DOS System commands and Editors (Preliminaries) used in Sports Management. **UNIX system** commands and vi (Preliminaries) – Applications in Management. **Programs to demonstrate control structure:** text processing, use of break and continue, etc. **Programs involving functions and recursion,** Use and application in Business and Management. **[Total Hours - 10]**
Module 6 - Programs involving the use of arrays with subscripts and pointers, Programs using structures and files. Applications of C Language. **Microsoft office -** Word, Excel, PowerPoint, Mail merge, Internet – Use and Applications. **[Total Hours – 12]**

Suggested Readings:

1.Mano – Computer System Architecture; Pearson Education

2.Tanenbaum – Structured Computer Organization,Pearson Education

3.Martin & Powell – Information Systems: A Management Perspective; mcgraw-Hill

4.Laudon & Laudon – Management Information Systems: Pearson Education

5.Comer: Computer Networks and the Internet: Pearson Education Graham Curtis – Business Information Systems: Addison Wesley

6Introduction to Computers with MS-Office, Leon, TMH

7.An Introduction to Database Systems - C.J. Date, Pearson Education

8Windows 98 6 in one by Jane Calabria and Dorothy Burke – PHI
9.Using Microsoft Office 2000 by Ed, Bott – PHI
10.Enterprise Resource planning (ERP): Text and case studies by Murthy, C S V, HPH
11.Teach yourself SAP in 24 hours by George Anderson; Danielle Larocca - Pearson Education
12.Teach yourself SAP in 24 hours by George Anderson; Danielle Larocca - Pearson Education
13.Running MS – DOS by Van Wolverton, 20th Anniversary Edition
14.C Programming Language (Prentece Hall Software) by Brian W. Kernighan
15.Let Us C by Yashavant Kanetkar.
16.Data Structure Through C by Yashavant Kanetkar
17.C in depth by Deepali Srivastava and S.K.Srivastava

Paper Code: GE3B-03

Basic Mathematics and Statistics
Total Credit: 6
Total hours of lectures: 60 hours

Course Objective: The course is designed to provide a basic applied knowledge of mathematics. The students will be to apply the number system & basic algebra, set theory, determinants and matrices, limits, continuity, differentiation & Integration, data frequency & distribution and measures of central tendency and measures of dispersion for solving business problems.

statistical problems

Sl	Course Outcome	Mapped modules
1	Remembering	M1,M2,M3,M4,M5,M6
2	Understanding the course	M1,M2,M3,M4,M5,M6
3	Applying the general problem	M1,M2,M3,M4,M5,M6
4	Analyse the problems	
5	Evaluate the problems after analysing	
6	Create using the evaluation process	

Module Number	Content	Total Hours	%age of questions	Blooms Level (if applicable)	Remarks (If any)
M 1	The Number System and Basic Algebra	8	10	1,2	
M 2	Set Theory and Permutation and Combination	10	15	1,2	
M 3	Determinants and Matrices	10	15	1,2	
M 4	Limits, Continuity, Differentiation and Integration	16	35	1,2,3	
M 5	Data, Frequency Distribution	6	10	1,2,3	
M 6	Measures of Central Tendency and Measures of Dispersion	10	15	1,2,3	
		60	**100**		

Sl.	Topic/Module	Hour
1.	**Module 1 : *The Number System*** – Positive and Negative Integers, Fractions, Rational and Irrational Numbers, Real Numbers, Problems Involving the Concept of Real Numbers. ***Basic Algebra*** – Algebraic Identities, Simple Factorizations; Equations: Linear and Quadratic (in Single Variable and Simultaneous Equations). Surds and Indices; Logarithms and Their Properties (Including Change of Base); Problems Based on Logarithms.	8
2.	**Module 2** : ***Set Theory***-Introduction; Representation of sets; Subsets and supersets; Universal and Null sets; Basic operations on sets; Laws of set algebra; Cardinal number of a set; Venn Diagrams; Application of set theory to the solution of problems ***Permutations and Combinations*** – Fundamental principle of counting; Factorial notation. Permutation: Permutation of n different things; of things not all different; restricted permutations; circular permutations. Combination: different formulas on combination;	7

	complementary combination; restricted combination; Division into groups. Mixed problems on permutation and combination	
3.	**Module 3**: ***Determinants***- Determinants of order 2 and 3; minors and cofactors; expansion of determinants; properties of determinants; Cramer's rule for solving simultaneous equations in two or three variables ***Matrices-*** Different types of matrices; Matrix Algebra – addition, subtraction and multiplication of matrices; Singular and non-singular matrices; adjoint and inverse of a matrix; elementary row / column operations; Solution of a system of linear equations using matrix algebra. Concept of Eigen Value, Eigenvector.	7
4	**Module 4:** Differentiation: Meaning & geometrical interpretation of differentiation; standard derivatives (excluding trigonometric functions); rules for calculating derivatives; logarithmic differentiation. Integration: Meaning, Standard formulas, Substitution, Integration by parts (Excluding Trigonometric functions)	4
5.	**Module 5**: ***Data***-Collection, Editing and Presentation of Data: Primary data and secondary data; Methods of collection; Scrutiny of data. Presentation of data: textual and tabular presentations; Construction of a table and the different components of a table. Diagrammatic representation of data: Line diagrams, Bar diagrams, Pie charts and divided-bar diagrams.	7
5.	**Module 5** : ***Frequency Distributions-*** Attribute and variable; Frequency distribution of an attribute; Discrete and continuous variables; Frequency distributions of discrete and continuous variables; Bivariate and Multivariate Frequency Distributions. Diagrammatic representation of a frequency distribution: case of an attribute; case of a discrete variable: column diagram, frequency polygon and step diagram; case of a continuous variable: histogram and ogive.	7
6.	**Module 6** : ***Measures of Central Tendency-*** Definition and utility; Characteristics of a good average; Different measures of average; Arithmetic Mean; Median; Other positional measures – quartiles, deciles, percentiles; Mode; Relation between Mean, Median and Mode; Geometric and Harmonic Mean. Choice of a suitable measure of central tendency.	10
7	**Module 7: *Measures of Dispersion-*** Meaning and objective of dispersion; Characteristics of a good measure of dispersion; Different measures of dispersion – Range, Quartile deviation, Mean deviation, Mean Absolute deviation, Standard deviation; Comparison of the different measures of dispersion. Measures of relative dispersion – Coefficient of Variation. Combined mean and standard deviation, Combined mean and standard deviation. Introduction to Skewness, Kurtosis, Moments.	10

Suggested Readings

1. H. S. Hall & S. R. Knight – Higher Algebra; Radha Publishing House.
2. Reena Garg, Engineering Mathematics, Khanna Publishing House.
3. Sancheti& Kapoor – Business Mathematics; Sultan Chand & Company.
4. R. S. Soni – Business Mathematics – Pitambar Publishing House.
5. N G Das, Statistical Methods (Combined edition volume 1 & 2), McGraw Hill Education.
6. J K Sharma: Business Statistics, fifth edition, Vikas Publishing house.

Paper Name: MATHEMATICS FOR COMPUTER SCIENCE PART 1
Code : GE3B-04
Contact: 5L+1T
Credits: 6
Allotted Hrs: 60

Course Objectives:

CO1. To understand different kind of sets, relation, various algebraic structure and their properties.
CO2. To understand the base and dimension of vector space, characteristics of vector space in different dimension, linear transformation, eigenvalue and eigen vectors..
CO3. To learn the imaginary number and imaginary roots of a equation, number in terms of i, operations of complex number i.e. addition, subtraction, conjugate, multiplication, division.
CO4. . To understand basic property of matrices and determinant, relation between matrices and vector space.
CO5. To understand the formation of series from sequence, different type of series, concept of convergence and divergence.
CO6. To understand different type of data and their distribution , presentation, operation for calculating dispersion of central tendency and dispersion.

Course Outcomes:

Sl. No.	Course Outcome	Mapped Module
1	Ability to understand the properties of various algebraic structure and relationship between them. Ability to define binary operation, group, subgroup, ring, field and their properties.	Module 1
2	Ability to understand dimension of vector space, calculation of rank and nullity, linear transformation and mapping.	Module 2
3	Ability to solve quadratic equations with complex roots, properties of i, Operation of complex number.	Module 3
4	Ability to understand several kind of matrices, properties of determinant, calculation of rank of a matix, interpretation of existance and uniqueness of solution geometrically.	Module 4
5	Ability to check convergent and divergent of different series, type of infinite series.	Module 5
6	Ability to calculate measure of central for different type of series and dispersion.	Module 6

Module I Modern Algebra :

Group, Ring, Field 8

Module II Vector Spaces:

Vector Space, linear dependence of vectors, Basis, Dimension; Linear transformations (maps), Range and Kernel of a linear map, Rank and Nullity, Inverse of a linear transformation, Rank-Nullity theorem, composition of linear maps, Matrix associated with a linear map. 8

Module III Complex Numbers:

Complex Numbers; Conjugate of a complex number; modulus of a complex Number; geometrical representation of complex number; De Moivere's theorem; n-th roots of a complex number.6

Module IV Matrices and Determinants :

Determinants and its properties; Cramer's Rule, Definition of a matrix; Operations on matrices, inverse of a matrix; solution of equations using matrices, rank of a matrix, Basics of Vector analysis 8

Module V Infinite Series:

Convergence and divergence; series of positive terms; binomial series; exponential series; logarithmic series, Taylor's series.6

Module VI Basics Statistics:

Measures of central Tendency – Mean, Median, Mode for frequency and non-frequency distributions, Measures of dispersion – Range, Mean deviation about Mean and Median, Quartile deviation, individual and combined standard deviation; variance, coefficient of variation.4

Module No.	**Content**	**Total Hours**	**%age of questions**	**Covered CO**	**Covered PO**	**Blooms Level (If applicable)**	**Remarks (If any)**
Module 1	Modern Algebra	10	20	1	11		
Module 2	Vector Space	12	25	2	11		
Module 3	Complex numbers	8	10	3	11		
Module 4	Matrices and Determinants	10	20	4	11		
Module 5	Infinite Series	8	10	5	11		
Module 6	Basics Statistics	12	15	6	11		

(GE3B-05) : BUSINESS RESEARCH METHODS: TOOLS & TECHNIQUES

Credit Points– 6
Total Contact Hours - 60

Course Objectives

1. To understand the **basic concept, meaning and types of research** and its applications in various domains of business.
2. To formulate **research problems and hypotheses**, know about different types of hypotheses and write a research proposal. Should be able to identify the overall process of designing a research study from its inception to its report.
3. To understand **research design** as the blue print of the research process, in depth understanding of different types of research design with their implications.
4. To understand the concept and types of data used in research, and also to know about different types of data collection processes.
5. To familiarize students with different types of **scaling techniques**. Students should be able to distinguish between categorical and continuous measures.
6. To understand **questionnaire designing** and its type. Should be able to understand types of questions to be included in a questionnaire. Learn various advantages and disadvantages of the instrument.
7. To gain the concept of **population, sampling, sampling frame, sampling design** etc. Determination of sample size, understanding of sampling and non sampling error.
8. To formulate **research hypotheses**, to understand different ways to conduct a statistical test of a hypothesis, criteria to select an appropriate statistical test to answer a research question or hypothesis.
9. Able to understand the way of writing a **research report**, its type, structures and the guidelines for visual representation.
10. To gain knowledge with **ethical issues** in research, including those issues that arise in using quantitative and qualitative research

Course Outcomes (CO)

SN.	Outcome	Mapped Modules
1.	Apply Research & Development to solve managerial problems.	Module I/Unit 1

2.	Identify research problems and formulate hypotheses for effective outcome. Write an appropriate research proposal to conduct the research.	Module I/Unit 2
3.	Formulate research design by understanding different types of design and its implementation in different problem situation.	Module I/Unit 3
4.	Select appropriate type of data and design relevant data collection process.	Module I/Unit 4
5.	Use suitable scaling techniques for attitude measurement. Classify numerical and categorical variables for data analysis.	Module I/Unit 5
6.	Design fitting questionnaire for data collection purpose.	Module II/ Unit 6
7.	Select appropriate sample units, sample size and types of sampling method. Design proper sampling design.	Module II/ Unit 7
8.	Formulate and test hypotheses using appropriate statistical technique.	Module II / Unit 8
9.	Write a research report maintaining all its structure to present the research output.	Module II / Unit 9
10.	Conduct research ethically maintaining all the integrity for an unbiased outcome.	Module II / Unit 10

MODULE I

Unit 1 - Introduction to Research: Meaning of research; Types of research- Exploratory research, Conclusive research; The process of research; Research applications in social and business sciences; Features of a Good research study. **(4L)**

Unit 2 - Research Problem and Formulation of Research Hypotheses: Defining the Research problem; Management Decision Problem vs Management Research Problem; Problem identification process; Components of the research problem; Formulating the research hypothesis- Types of Research hypothesis; Writing a research proposal- Contents of a research proposal and types of research proposals. **(6L)**

Unit 3 - Research Design: Meaning of Research Designs; Nature and Classification of Research Designs; Exploratory Research Designs: Secondary Resource analysis, Case study Method, Expert opinion survey, Focus group discussions; Descriptive Research Designs: Cross-sectional studies and Longitudinal studies; Experimental Designs, Errors affecting Research Design. **(8L)**

Unit 4 - Primary and Secondary Data: Classification of Data; Secondary Data: Uses, Advantages, Disadvantages, Types and sources; Primary Data Collection: Observation method, Focus Group Discussion, Personal Interview method. **(6L)**

Unit 5 - Attitude Measurement and Scaling: Types of Measurement Scales; Attitude; Classification of Scales: Single item vs Multiple Item scale, Comparative vs Non- Comparative scales, Measurement Error, Criteria for Good Measurement. **(6L)**

MODULE II

Unit 6 - Questionnaire Design: Questionnaire method; Types of Questionnaires; Process of Questionnaire Designing; Advantages and Disadvantages of Questionnaire Method. **(6L)**

Unit 7 - Sampling: Sampling concepts- Sample vs Census, Sampling vs Non Sampling error; Sampling Design- Probability and Non Probability Sampling design; Determination of Sample size- Sample size for estimating population mean, Determination of sample size for estimating the population proportion. **(8L)**

Unit 8 - Testing of Hypotheses: Concepts in Testing of Hypothesis – Steps in testing of hypothesis, Test Statistic for testing hypothesis about population mean; Tests concerning Means- the case of single population; Tests for Difference between two population means; Tests concerning population proportion- the case of single population; Tests for difference between two population proportions. **(6L)**

Unit 9 - Research Report Writing: Types of research reports – Brief reports and Detailed reports; Report writing: Structure of the research report- Preliminary section, Main report, Interpretations of Results and Suggested Recommendations; Report writing: Formulation rules for writing the report: Guidelines for presenting tabular data, Guidelines for visual Representations. **(6L)**

Unit 10- Ethics in Research: Meaning of Research Ethics; Clients Ethical code; Researchers Ethical code; Ethical Codes related to respondents; Responsibility of ethics in research **(4L)**

Suggested Readings:

1. Business Research Methods – Donald Cooper & Pamela Schindler, TMGH.
2. Business Research Methods – Alan Bryman & Emma Bell, Oxford University Press.
3. Research Methodology – C.R.Kothari, New age International Publishing House
4. Research Methodology—Ranjit Kumar, Sage Publication

Module Number	Contents	Total Hours	%age of questions	Covered CO	Covered PO	Blooms Level (if applicable)	Remarks (if any)
Module I/Unit 1	Introduction to Research	4	6.67	1	10		
Module I/Unit 2	Research Problem and Formulation of Research Hypotheses	6	10	2	10		
Module I/Unit 3	Research Design	8	13.33	3	10		
Module I/Unit 4	Primary and Secondary Data: Classification of Data; Secondary Data	6	10	4	10		
Module I/Unit 5	Attitude Measurement and Scaling	6	10	5	10		
Module II/Unit 6	Questionnaire Design	6	10	6	10		
Module II/Unit 7	Sampling	8	13.33	7	10		
Module II/Unit 8	Testing of Hypotheses	6	10	8	10		
Module II/Unit 9	Research Report Writing	6	10	9	10		
Module II/Unit 10	Ethics in Research	4	6.67	10	10		

(GE3B-06) : BUSINESS MATHAMETICS

Credit Points– 6
Total Contact Hours - 60
Course Objectives

1. Independent solving of Business Problems.
2. To understand the basics of Counting Principles using **Permutation & Combination** with larger data sets as the foundation stone of Mathematics.
3. To understand **Set Theory** and the rules of logic for effective business planning and operations.
4. To understand **Determinant Matrix** with Cramer's rule
5. To solve complicated and long calculations of financial institutions using **Logarithm**
6. To estimate costs in engineering projects etc. using **Binomial Theorem**
7. To understand the concept of **Derivation**
8. Use **Simple and Compound interest** to do business calculations such as value of money, maturity value, promissory notes, present value, and future value and be able to differentiate which mathematical method should be used for different problems.

Course outcomes (CO)

Sl. No.	Outcome	Module / Unit
1.	Apply basic concepts of **Mathematical Techniques** in solving practical problems in the field of business.	Module I/Unit 1
2.	Apply the techniques of **Permutation** in solving probability problems for effective business decision making process under risk.	Module I/Unit 2
3.	Apply the techniques of **Combination** in solving probability problems for effective business decision making process under risk.	Module I/Unit 3
4.	Apply the concept of **Set Theory** for solving complex calculations and optimize business operations of financial institutions.	Module I/Unit 4
5	Apply the concept of **Determinants Matrix** and properties	Module I/Unit 5
6.	Apply the concept of **Logarithm** for solving complex calculations and optimize business operations of financial institutions.	Module II/Unit 6
7.	Identify binomial coefficients given the formula for a combination and expand a binomial using the **Binomial Theorem**.	Module II/ Unit 7
8	Apply the concept of **Differentiation** with its rule and applicability	Module II/ Unit 8

9.	Define the concept of interest and show how it relates to the time value of money, distinguish between simple and compound interest and also between the nominal interest rate and the effective annual yield. Outline the process of calculating a repayment schedule for a loan to be repaid in equal installments, with each payment a blend of interest and principal.	Module II/ Unit 9

MODULE I

Unit 1: Introduction
Definition of Statistics; Importance and scope of Mathematics and Statistics in business decisions; Limitations. **(4L)**

Unit 2: Permutations
Definition, Factorial notation; Theorems on permutation, permutations with repetitions; Restricted permutations. **(8L)**

Unit 3: Combinations
Definition; Theorems on combination; Basic identities;restricted combinations. **(4L)**

Unit 4: Set Theory
Definition of Set ; Presentation of Sets; Different types of Sets- Null Set, Finite and Infinite Sets, Universal Set , Subset , Power Set etc.; Set operations ;Laws of algebra of Sets . **(6L)**

Unit 5: Determinant Matrix
Determinants upto third order, Elementary properties of determinants, Minors and co-factors, Solution of a system of linear equations by Cramer's Rule (up to three variables). **(6L)**

MODULE II

Unit 6: Logarithm
Definition, Base & index of logarithm, general properties of logarithm, Common problems.
(6L)

Unit 7: Binomial Theorem
Statement of the theorem for positive integral index, General term, Middle term, Equidistant terms, Simple properties of binomial coefficient. **(8L)**

Unit 8: Differentiation
Derivative and its meaning; Rules of differentiation; Geometrical interpretation; Significance of derivative as rate measure; Second order derivatives **(8L)**

Unit 9: Compound Interest and Annuities
Different types of interest rates; Concept of Present value and amount of sum; Types of annuities; Present value and amount of an annuity; including the case of continuous

compounding; Valuation of simple loans and debentures; Problems relating to sinking funds.
(10L)

Suggested Readings

1. Business Mathematics and Statistics- N G Das & J K Das, Tata McGraw Hill
2. M. Raghavachari, Mathematics for Management, Tata McGraw-Hill
3. S. Baruah, Basic Mathematics and its Application in Economics, Macmillan
4. R. S. Bhardwaj, Mathematics for Economics and Business, Excel Books
5. P. K. Giri and J. Bannerjee, Introduction to Business Mathematics, Academic Publishers

Module Number	Contents	Total Hours	%age of questions	Covered CO	Covered PO	Blooms Level (if applicable)	Remarks (if any)
Module I/Unit 1	**Introduction**	4	6.67	1	10		
Module I/Unit 2	**Permutations**	8	13.33	2	10		
Module I/Unit 3	**Combinations**	4	6.67	3	10		
Module I/Unit 4	**Set Theory**	6	10	4	10		
Module I/Unit 5	**Determinant Matrix**	6	10	5	10		
Module II/Unit 6	**Logarithm**	6	10	6	10		
Module II/Unit 7	**Binomial Theorem**	8	13.33	7	10		
Module II/Unit 8	**Differentiation**	8	13.33	8	10		
Module II/Unit 9	**Compound Interest and Annuities**	10	16.67	9	10		

(GE3B-07) : BUSINESS STATISTICS

Credit Points– 6
Total Contact Hours - 60

Course Objectives:

1. To have a proper understanding of Descriptive and Inferential Statistics.
2. To understand collection, classification, analysis and interpretation of data.
3. Use basic statistics for central measurements, frequency distributions, graphs, and measure of dispersion and be able to select which statistical method should be usedfor different problems.
4. To define and calculate mean, median, mode, and range. Construct data tables that facilitate the calculation of mean, median, mode, and range. Determine which measure of **central tendency** is best to use in a given circumstance.
5. To explain the purpose of measures of dispersion, compute and explain the range, the interquartile range, the standard deviation, and the variance, select an appropriate measure of dispersion and correctly calculate and interpret the statistic.
6. To identify the direction and strength of a **correlation** between two factors, compute and interpret the Pearson **correlation coefficient** and test for significance.
7. To understand the purpose of a two regression lines, understand how to draw a linear regression equation into a scatterplot.
8. To equip students with various forecasting techniques and knowledge on modern statistical methods for analyzing time series data.

Course Outcomes (CO):

SL NO.	Course Outcome	Mapped Modules
1	Ability to demonstrate knowledge of the importance of the Descriptive and Inferential statistics.	Module I – Unit 1
2	Able to interpret the meaning of the collection and data presentation in a business environment.	Module I – Unit 2
3	Able to produce appropriate graphical and numerical descriptive statistics for different types of data.	Module I – Unit 3
4	Able to independently calculate basic statistical parameters (mean, median, mode, quartiles).	Module I – Unit 4
5	Able to apply measures of dispersion to describe and summarize the data set.	Module I – Unit 5
6	Able to interpret Pearson correlation coefficient and the coefficient of determination, and test for significance.	Module II – Unit 6

7	Able to use regression models to analyze the underlying relationships between the variables.	Module II – Unit 7
8	Able to understand the important features that describe a time series, and perform simple analyses and computations on series.	Module II – Unit 8

Module-I:

Unit 1: Introduction to Statistics: Statistics as a Subject, Functions, Importance and Limitations of Statistics, Census and Sample Investigation, Descriptive and Inferential Statistics. **[4L]**

Unit 2: Collection, Editing and Presentation of Data: Primary Data and Secondary Data, Methods of Collection, Scrutiny of Data. Presentation of Data: Textual and Tabular Presentations, Construction of a Table and the Different Components of a Table, Diagrammatic Representation of Data: Line Diagrams, Bar Diagrams, Pie Charts and Divided-Bar Diagrams. **[6L]**

Unit 3: Frequency Distributions: Variables and Attributes, Frequency Distribution of An Attribute; Discrete and Continuous Variables, Frequency Distributions of Discrete and Continuous Variables, Diagrammatic Representation of a Frequency Distribution: Case of An Attribute, Case of a Discrete Variable: Column Diagram, Frequency Polygon and Step Diagram, Case of a Continuous Variable: Histogram and Ogive, Frequency Polygon. **[8L]**

Unit 4: Measures of Central Tendency: Definition and Utility, Characteristics of Average, Different Measures of Average: Arithmetic Mean, Median, Mode, Partitional Values: Quartile, Percentile and Deciles. Geometric and Harmonic Mean. Choice of a Suitable Measure of Central Tendency. **[8L]**

Unit 5 : Measures of Dispersion: Meaning and Objective of Dispersion, Characteristics of a Good Measure of dispersion, Different measures of dispersion – Range, Quartile deviation, Mean deviation, Mean Absolute Deviation, Standard Deviation; Comparison of the Different Measures of Dispersion. Measures of Relative Dispersion: Coefficient of Variation. Measures of Skewness, Kurtosis and its Measures. **[10L]**

Module-II

Unit 6: Correlation Analysis: Analysis of Bivariate data. Correlation Analysis – Meaning of Correlation: Scatter Diagram, Karl Pearson's Coefficient of Linear Correlation, Calculation of the Correlation Coefficient from Grouped Data, Properties of the Correlation Coefficient Advantages and Limitations of the Correlation Coefficient, Idea of Rank Correlation; Spearman's Rank Correlation Coefficient (without tie) **[10L]**

Unit 7: Regression Analysis: Two Lines of Regression: Some Important Results Relating to Regression Lines, Calculation of Regression Coefficients, Relation Between Regression Coefficient and Correlation Coefficient, Identification Problem. **[6L]**

Unit 8 : Analysis of Time Series: Objective of time series analysis; Causes of variations in time series data, Components of a time series, Additive Models, Multiplicative Models, Moving averages method and method of least squares; Measurement of secular trend. **[8L]**

Suggested Readings:

1. N.G Das: Statistical Methods (Volume I): Tata McGraw-Hill.
2. A.M Goon, M.K Gupta & B, Dasgupta: Basic Statistics: World Press
3. Levin & Rubin- Statistics for Management, PHI.
4. G. C. Beri : Statistics for Management: Tata McGraw- Hill

Module No.	Content	Total Hours	%age of questions	Covered CO	Covered PO	Blooms Level (if applicable)	Remarks (if any)
Module I Unit 1	**Introduction to Statistics**	4	6	1	10		
Module I Unit 2	**Collection, Editing and Presentation of Data**	6	10	2	10		
Module I Unit 3	**Frequency Distributions**	8	14	3	10		
Module I Unit 4	**Measures of Central Tendency**	8	14	4	10		
Module I Unit 5	**Measures of Dispersion**	10	16	5	10		
Module II Unit 6	**Correlation Analysis**	10	16	6	10		
Module II Unit 7	**Regression Analysis**	6	10	7	10		
Module II Unit 8	**Analysis of Time Series**	8	14	8	10		

Mathematics for Machine Learning
(GE3B-08)

Subject: Mathematics for Machine Learning	
Course Code:(GE3B-08)	**Semester: I**
Duration: 60 Hrs	**Maximum Marks: 100**
Teaching Scheme	**Examination Scheme**
Theory: 5	**End Semester Exam: 70**
Tutorial:1	**Attendance: 5**
Practical:0	**Continuous Assessment: 25**
Credit:6	**Practical Sessional internal continuous evaluation: NA**
	Practical Sessional external examination: NA

Aim:

Sl. No.	
1.	To develop formal reasoning.
2.	Create habit of raising questions
3.	Knowledge regarding the use of Mathematics in Machine Learning
4.	Ability to communicate knowledge, capabilities and skills related to the computer engineer profession

Objective: Throughout the course, students will be expected to demonstrate their understanding of Mathematics by being able to do each of the following

Sl. No.	
1.	To understand and solve mathematical problems
2.	To impart knowledge regarding relevant topics .
3.	To familiarize students with linear Algebra, numerical methods and Machine Learning Techniques.

Pre-Requisite:

Sl. No.	
1.	**Knowledge of basic algebra, geometry.**

Contents		**6 Hrs./week**	
Chapter	**Name of the Topic**	**Hours**	**Marks**

01	**Linear Algebra** Systems of Linear Equations, Matrices, Solving Systems of Linear Equations, Vector Spaces, Linear Independence, Basis and Rank, Linear Mappings, Affine Spaces.	**10**	**14**
02	**Analytic Geometry** Norms, Inner Products, Lengths and Distances, Angles and Orthogonality, Orthonormal Basis, Orthogonal Complement, Inner Product of Functions, Orthogonal Projections, Rotations.	**10**	**12**
03	**Matrix Decompositions** Determinant and Trace, Eigenvalues and Eigenvectors, Cholesky Decomposition, Eigen decomposition and Diagonalization, Singular Value Decomposition, Matrix Approximation, Matrix Phylogeny.	**10**	**14**
04	**Vector Calculus** Differentiation of Univariate Functions, Partial Differentiation and Gradients, Gradients of Vector-Valued Functions, Gradients of Matrices, Useful Identities for Computing Gradients, Back propagation and Automatic Differentiation, Higher-Order Derivatives, Linearization and Multivariate Taylor Series	**10**	**12**
05	**Probability and Distributions** Construction of a Probability Space, Discrete and Continuous Probabilities, Sum Rule, Product Rule, and Bayes' Theorem, Summary Statistics and Independence, Gaussian Distribution, Conjugacy and the Exponential Family, Change of Variables/Inverse Transform	**10**	**12**
06	**Continuous Optimization** Optimization Using Gradient Descent, Constrained Optimization and Lagrange Multipliers, Convex Optimization	**6**	**6**
	Sub Total:	**56**	**70**
	Internal Assessment Examination & Preparation of Semester Examination	**4**	**30**
	Total:	**60**	**100**

Assignments:

Based on the curriculum as covered by subject teacher.

List of Books

Text Books:

Name of Author	Title of the Book	Edition/ISSN/ISBN	Name of the Publisher

Marc Peter Deisenroth, Aldo Faisal, et al.	Mathematics For machine Learning		Cambridge University Press
David Barber	Bayesian Reasoning and Machine Learning		Cambridge University Press

End Semester Examination Scheme. Maximum Marks-70. Time allotted-3hrs.

Group	**Unit**	**Objective Questions** (MCQ only with the correct answer)		**Subjective Questions**			
		No of question to be set	Total Marks	No of question to be set	To answer	Marks per question	Total Marks
A	**1 to 11**	**10**	**10**				
B	**1 to 11**			**5**	**3**	**5**	**70**
C	**1 to 11**			**5**	**3**	**15**	

- Only multiple choice type questions (MCQ) with one correct answer are to be set in the objective part.
- Specific instruction to the students to maintain the order in answering objective questions should be given on top of the question paper.

Examination Scheme for end semester examination:

Group	**Chapter**	**Marks of each question**	**Question to be set**	**Question to be answered**
A	**All**	**1**	**10**	**10**
B	**All**	**5**	**5**	**3**
C	**All**	**15**	**5**	**3**

Mathematics for Computing
(GE3B-09)

Subject: Mathematics for Computing	
Course Code: (GE3B-09)	**Semester: I**
Duration: 60 Hrs	**Maximum Marks: 100**
Teaching Scheme	**Examination Scheme**
Theory: 5	**End Semester Exam: 70**
Tutorial:1	**Attendance: 5**
Practical:0	**Continuous Assessment: 25**
Credit:6	**Practical Sessional internal continuous evaluation: NA**
	Practical Sessional external examination: NA

Aim:

Sl. No.	
5.	To develop formal reasoning.
6.	Create habit of raising questions
7.	Knowledge regarding the use of Mathematics in Computer Science
8.	Ability to communicate knowledge, capabilities and skills related to the computer engineer profession

Objective:Throughout the course, students will be expected to demonstrate their understanding of Mathematics by being able to do each of the following

Sl. No.	
5.	To understand and solve mathematical problems
6.	To impart knowledge regarding relevant topics .
7.	To familiarize students with linear Algebra, differential and integral calculus, numerical methods and statistics.

Pre-Requisite:

Sl. No.	
2.	**Knowledge of basic algebra, trigonometry and calculus .**

Contents		**6 Hrs./week**	
Chapter	**Name of the Topic**	**Hours**	**Marks**

01	**Modern algebra** Set, Relation, Mapping, Binary Operation, Addition Modulo n, Multiplication modulo n, semi group, properties of groups, subgroup.	**3**	**7**
02	**Trigonometry** Radian or circular Measure, Trigonometric Functions, Trigonometric ratios of angle θ when θ is acute, trigonometric ratios of certain standard angles, allied angles, compound angles, multiple and sub- multiple angles.	**6**	**5**
03	**Limits and Continuity** The real number system, The concept of limit, concept of continuity.	**6**	**5**
04	**Differentiation** Differentiation of powers of x, Differentiation of ex and log x, differentiation of trigonometric functions, Rules for finding derivatives, Different types of differentiation, logarithmic differentiation, differentiation by substitution, differentiation of implicit functions, differentiation from parametric equation. Differentiation from first principles.	**6**	**7**
05	**Integrations** Integration of standard Functions, rules of Integration, More formulas in integration, Definite integrals.	**6**	**7**
06	**Differential equations** First order differential equations, practical approach to Differential equations, first order and first degree differential equations, homogeneous equations. Linear equations, Bernoulli's equation, Exact Differential Equations.	**6**	**6**
07	**Complex Numbers** Complex Numbers, Conjugate of a complex number, modulus of a complex Number, geometrical representation of complex number, De Moivre's theorem, n^{th} roots of a complex number.	**5**	**5**
08	**Matrices and Determinants** Definition of a matrix, Operations on matrices, Square Matrix and its inverse, determinants, properties of determinants, the inverse of a matrix, solution of equations using matrices and determinants, solving equations using determinants.	**5**	**8**
09	**Infinite Series** Convergence and divergence, series of positive terms, binomial series, exponential series,logarithmic series.	**5**	**7**
10	**Probability**	**5**	**5**

	Concept of probability, sample space and events, three approaches of probability, kolmogorov's axiomatic approach to probability, conditional probability and independence of events, bay's theorem.		
11	**Introduction to Statistics** Measures of central Tendency, Standard Deviation, Discrete series. Methods, Deviation taken from assumed mean, continuous series, combined standard deviation, coefficient of variation, variance.	**3**	**8**
	Sub Total:	**48**	**70**
	Internal Assessment Examination & Preparation of Semester Examination	**4**	**30**
	Total:	**52**	**100**

Assignments:

Based on the curriculum as covered by subject teacher.

List of Books

Text Books:

Name of Author	**Title of the Book**	**Edition/ISSN/ISBN**	**Name of the Publisher**
S. K. Mapa	Higher Algebra		Levant Books
O'Regan, Gerard	Mathematics in Computing		
Chakravorty and Ghosh	Advanced Higher Algebra		U N Dhar Pvt. Ltd

Reference Books:

Das and Mukherjee	Integral Calculus		U N Dhar Pvt. Ltd
Das and Mukherjee	Differential Calculus		U N Dhar Pvt. Ltd

End Semester Examination Scheme. Maximum Marks-70. Time allotted-3hrs.

Group	**Unit**	**Objective Questions** (MCQ only with the correct answer)		**Subjective Questions**			
		No of question to be set	Total Marks	No of question to be set	To answer	Marks per question	Total Marks
A	**1 to 11**	**10**	**10**				

B **C**	**1 to 11** **1 to 11**			**5** **5**	**3** **3**	**5** **15**	**60**

- Only multiple choice type question (MCQ) with one correct answer are to be set in the objective part.
- Specific instruction to the students to maintain the order in answering objective questions should be given on top of the question paper.

Examination Scheme for end semester examination:

Group	**Chapter**	**Marks of each question**	**Question to be set**	**Question to be answered**
A	**All**	**1**	**10**	**10**
B	**All**	**5**	**5**	**3**
C	**All**	**15**	**5**	**3**

Probability & Statistics
(GE3B-10)

Subject: Probability & Statistics	
Course Code: (GE3B-10)	**Semester: I**
Duration: 60 Hrs	**Maximum Marks: 100**
Teaching Scheme	**Examination Scheme**
Theory: 5	End Semester Exam: 70
Tutorial:1	Attendance: 5
Practical:0	Continuous Assessment: 25
Credit:6	Practical Sessional internal continuous evaluation: NA
	Practical Sessional external examination: NA

Aim:

Sl. No.	
1.	The aim of this course is to equip the students with standard concepts and tools at an intermediate to advanced level that will serve them well towards tackling various problems in the discipline.
2.	The objective of this course is to familiarize the students with statistical techniques.

Objective: Throughout the course, students will be expected to demonstrate their understanding of probability & statistics by being able to learn each of the following

Sl. No.	
1.	The ideas of probability and random variables and various discrete and continuous probability distributions and their properties.
2.	The basic ideas of statistics including measures of central tendency, correlation and regression.
3.	The statistical methods of studying data samples.

Pre-Requisite:

Sl. No.	
1.	Knowledge of basic algebra, calculus.
2.	Ability to learn and solve mathematical model.

Contents		**6 Hrs./week**	
Chapter	**Name of the Topic**	**Hours**	**Marks**
01	Definition of Partial Differential Equations, First order partial differential equations, solutions of first order linear PDEs; Solution to homogenous and nonhomogeneous linear partial differential equations of second order by complimentary function and particular integral method. Second-order linear equations and their classification, Initial and boundary conditions, D'Alembert's solution of the wave equation; Duhamel's principle for one dimensional wave equation. Heat diffusion and vibration problems, Separation of variables method to simple problems in Cartesian coordinates. The Laplacian in plane, cylindrical and spherical polar coordinates, solutions with Bessel functions and Legendre functions. One dimensional diffusion equation and its solution by separation of variables.	**18**	**20**
02	Probability spaces, conditional probability, independence; Discrete random variables, Independent random variables, the multinomial distribution, Poisson approximation to the binomial distribution, infinite sequences of Bernoulli trials, sums of independent random variables; Expectation of Discrete Random Variables, Moments, Variance of a sum,	**18**	**25**

	Correlation coefficient, Chebyshev's Inequality. Continuous random variables and their properties, distribution functions and densities, normal, exponential and gamma densities.Bivariate distributions and their properties, distribution of sums and quotients, conditional densities, Bayes' rule.		
03	Basic Statistics, Measures of Central tendency: Moments, skewness and Kurtosis - Probability distributions: Binomial, Poisson and Normal - evaluation of statistical parameters for these three distributions, Correlation and regression – Rank correlation. Curve fitting by the method of least squares- fitting of straight lines, second degree parabolas and more general curves. Test of significance: Large sample test for single proportion, difference of proportions, Tests for single mean, difference of means, and difference of standard deviations. Test for ratio of variances - Chi-square test for goodness of fit and independence of attributes.	**20**	**25**
	Sub Total:	**56**	**70**
	Internal Assessment Examination & Preparation of Semester Examination	**4**	**30**
	Total:	**60**	**100**

Assignments:

Based on the curriculum as covered by subject teacher.

List of Books

Text Books:

Name of Author	**Title of the Book**	**Edition/ISSN/ISBN**	**Name of the Publisher**
Erwin Kreyszig	Advanced Engineering Mathematics	9 th Edition	John Wiley & Sons
N. G. Das	Statistical Methods	0070083274, 9780070083271	Tata Mc.Graw Hill

Reference Books:

P. G. Hoel, S. C. Port and C. J. Stone	Introduction to Probability Theory		Universal Book Stall
W. Feller	An Introduction to Probability Theory and its Applications	3rd Ed.	Wiley

End Semester Examination Scheme. Maximum Marks-70. Time allotted-3hrs.

Group	**Unit**	**Objective Questions** (MCQ only with the correct answer)		**Subjective Questions**			
		No of question to be set	Total Marks	No of question to be set	To answer	Marks per question	Total Marks
A	**1 to 3**	**10**	**10**				
B	**1 to 3**			**5**	**3**	**5**	**70**
C	**1 to 3**			**5**	**3**	**15**	

- Only multiple choice type question (MCQ) with one correct answer are to be set in the objective part.
- Specific instruction to the students to maintain the order in answering objective questions should be given on top of the question paper.

Examination Scheme for end semester examination:

Group	**Chapter**	**Marks of each question**	**Question to be set**	**Question to be answered**
A	**All**	**1**	**10**	**10**
B	**All**	**5**	**5**	**3**
C	**All**	**15**	**5**	**3**

Bayesian Statistics
(GE3B-11)

Subject: Bayesian Statistics	
Course Code: (GE3B-11)	**Semester: I**
Duration: 60 Hrs.	**Maximum Marks: 100**
Teaching Scheme	**Examination Scheme**
Theory: 5	**End Semester Exam: 70**
Tutorial: 1	**Attendance : 5**
Practical: 0	**Continuous Assessment: 25**
Credit: 6	**Practical Sessional internal continuous evaluation: NA**
	Practical Sessional external examination: NA

Aim:

Sl. No.	
1.	The aim of this course is to equip students with the skills to perform and interpret Bayesian statistical analyses.

Objective:

Sl. No.	
1.	To describing the fundamentals of Bayesian inference by examining some simple Bayesian models.
2.	To explore more complicated models, including linear regression and hierarchical models in a Bayesian framework

Pre-Requisite:

Sl. No.	
1.	Knowledge in mathematics

Contents		**6 Hrs./week**	
Chapter	**Name of the Topic**	**Hours**	**Marks**
01	Introduction to Statistical Science Scientific Data Gathering Logic, Probability, and Uncertainty Discrete Random Variables	**14**	**15**
02	Bayesian Inference for Discrete Random Variables Continuous Random Variables Bayesian Inference for Binomial Proportion Comparing Bayesian and Frequentist Inferences for Proportion Bayesian Inference for Poisson	**14**	**20**
03	Bayesian Inference for Normal Mean Comparing Bayesian and Frequentist Inferences for Mean Bayesian Inference for Difference Between Means	**14**	**20**
04	Bayesian Inference for Simple Linear Regression Bayesian Inference for Standard Deviation Robust Bayesian Methods	**14**	**15**
	Sub Total:	**56**	**70**
	Internal Assessment Examination & Preparation of Semester Examination	**4**	**30**
	Total:	**60**	**100**

List of Books
Text Books:

Name of Author	Title of the Book	Edition/ISSN/ISBN	Name of the Publisher
William M. Bolstad	Introduction to Bayesian statistics	2nd ed. ISBN 978-0-470-141 15-1	
Andrew Gelman, John Carlin, Hal Stern, David Dunson, Aki Vehtari,	Bayesian Data Analysis	Third edition	

and Donald Rubin.			
Reference Books:			

End Semester Examination Scheme. Maximum Marks-70. Time allotted-3hrs.

Group	**Unit**	**Objective Questions** (MCQ only with the correct answer)		**Subjective Questions**			
		No of question to be set	Total Marks	No of question to be set	To answer	Marks per question	Total Marks
A	1,2,3,4	10	10				
B	3, 4,			5	3	5	70
C	1,2,3,4			5	3	15	

- Only multiple choice type question (MCQ) with one correct answer are to be set in the objective part.
- Specific instruction to the students to maintain the order in answering objective questions should be given on top of the question paper.

Examination Scheme for end semester examination:

Group	**Chapter**	**Marks of each question**	**Question to be set**	**Question to be answered**
A	All	1	10	10
B	All	5	5	3
C	All	15	5	3

Examination Scheme for Practical Sessional examination:

Practical Internal Sessional Continuous Evaluation

Internal Examination:

Continuous evaluation			**40**

Operations Research
(GE3B-12)

Subject: Operations Research	
Course Code: (GE3B-12)	**Semester: I**
Duration: 60Hrs	**Maximum Marks: 100**
Teaching Scheme	**Examination Scheme**
Theory: 5	**End Semester Exam: 70**
Tutorial: 1	**Attendance : 5**
Practical:0	**Continuous Assessment:25**
Credit: 6	**Practical Sessional internal continuous evaluation: NA**
	Practical Sessional external examination: NA

Aim:

Sl. No.	
1.	To learn how to solve problem in optimized way.
2.	Use various technique like game theory, LPP in real life problem.

Objective:

Sl. No.	
1.	Understand the optimization method
2.	To evaluate the reliability and validity of a measuring
3.	Apply the method to other Real life Problem

Pre-Requisite:

Sl. No.	
1.	Mathematics
2.	Linear Algebra

Contents	6 Hrs./week

Chapter	Name of the Topic	Hours	Marks
01	Linear Programming Problems (LPP): Basic LPP and Applications; Various Components of LP Problem Formulation.	8	10
02	Solution of Linear Programming Problems: Solution of LPP: Using Simultaneous Equations and Graphical Method; Definitions: Feasible Solution, Basic and non-basic Variables, Basic Feasible Solution, Degenerate and Non-degenerate Solution, Convex set and explanation with examples. Solution of LPP by Simplex Method; Charnes' Big-M Method; Duality Theory. Transportation Problems and Assignment Problems.	12	20
03	Network Analysis: Shortest Path: Floyd Algorithm; Maximal Flow Problem (Ford-Fulkerson); PERT-CPM (Cost Analysis, Crashing, Resource Allocation excluded).	8	5
04	Inventory Control: Introduction to EOQ Models of Deterministic and Probabilistic ; Safety Stock; Buffer Stock.	8	10
05	Game Theory: Introduction; 2-Person Zero-sum Game; Saddle Point; Mini-Max and Maxi-Min Theorems (statement only) and problems; Games without Saddle Point; Graphical Method; Principle of Dominance.	10	15
06	Queuing Theory: Introduction; Basic Definitions and Notations; Axiomatic Derivation of the Arrival & Departure (Poisson Queue). Poisson Queue Models: (M/M/1): (∞ / FIFO) and (M/M/1: N / FIFO) and problems.	10	10
	Sub Total:	**56**	**70**
	Internal Assessment Examination & Preparation of Semester Examination	**4**	**30**
	Total:	**60**	**100**

List of Books

Text Books:

Name of Author	Title of the Book	Edition/ISSN/ISBN	Name of the Publisher
H. A. Taha	Operations Research		Pearson

Reference Books:

P. M. Karak	Linear Programming and Theory of Games		ABS Publishing House

Ghosh and Chakraborty	Linear Programming and Theory of Games		Central Book Agency

End Semester Examination Scheme. Maximum Marks-70. Time allotted-3hrs.

Group	Unit	Objective Questions (MCQ only with the correct answer)		Subjective Questions			
		No of question to be set	Total Marks	No of question to be set	To answer	Marks per question	Total Marks
A	**1 to 5**	**10**	**10**				**70**
B	**1 to 5**			**5**	**3**	**5**	
C	**1 to 5**			**5**	**3**	**15**	

- Only multiple choice type question (MCQ) with one correct answer are to be set in the objective part.
- Specific instruction to the students to maintain the order in answering objective questions should be given on top of the question paper.

Examination Scheme for end semester examination:

Group	Chapter	Marks of each question	Question to be set	Question to be answered
A	**All**	**1**	**10**	**10**
B	**All**	**5**	**5**	**3**
C	**All**	**15**	**3**	**3**

Data Analytics
(GE3B-13)

Subject: Data Analytics	
Course Code:(GE3B-13)	**Semester: I**
Duration: 60 Hrs.	**Maximum Marks: 100**
Teaching Scheme	**Examination Scheme**
Theory: 5	**End Semester Exam: 70**
Tutorial: 1	**Attendance : 5**
Practical: 0	**Continuous Assessment: 25**
Credit: 6	**Practical Sessional internal continuous evaluation: NA**
	Practical Sessional external examination: NA

Aim:

Sl. No.	
1.	Find a meaningful pattern in data
2.	Graphically interpret data
3.	Implement the analytic algorithms
4.	Handle large scale analytics projects from various domains

Objective:

Sl. No.	
1.	The process of data analysis uses analytical and logical reasoning to gain information from the data.
2.	To find meaning in data so that the derived knowledge can be used to make informed decisions.
3.	Develop intelligent decision support systems

Pre-Requisite:

Sl. No.	
1.	A strong mathematical background in Probability and Statistics
2.	Critical thinking and problem solving skills

Contents		**6 Hrs./week**	
Chapter	**Name of the Topic**	**Hours**	**Marks**
01	**Data Definitions and Analysis Techniques** Elements, Variables, and Data categorization Levels of Measurement Data management and indexing	**10**	**14**
02	**Descriptive Statistics** Measures of central tendency Measures of location of dispersions	**10**	**14**
03	**Basic Analysis Techniques** Basic analysis techniques Statistical hypothesis generation and testing Chi-Square test t-Test Analysis of variance Correlation analysis	**12**	**14**

	Maximum likelihood test		
04	**Data analysis techniques** Regression analysis Classification techniques Clustering Association rules analysis	**12**	**14**
05	**Case studies** Understanding business scenarios Feature engineering and visualization	**12**	**14**
	Sub Total:	**56**	**70**
	Internal Assessment Examination & Preparation of Semester Examination	**4**	**30**
	Total:	**60**	**100**

List of Books
Text Books:

Name of Author	Title of the Book	Edition/ISSN/ISBN	Name of the Publisher
Hastie, Trevor, et al.	The elements of statistical learning		Vol. 2. No. 1. New York: springer, 2009.
Montgomery, Douglas C., and George C. Runger	Applied statistics and probability for engineers		John Wiley & Sons, 2010

Reference Books:

End Semester Examination Scheme. Maximum Marks-70. Time allotted-3hrs.

Group	Unit	Objective Questions (MCQ only with the correct answer)		Subjective Questions			
		No of question to be set	Total Marks	No of question to be set	To answer	Marks per question	Total Marks
A	1,2,3,4,5	10	10				
B	3, 4, 5			5	3	5	70
C	1,2,3,4,5			5	3	15	

- Only multiple choice type question (MCQ) with one correct answer are to be set in the objective part.
- Specific instruction to the students to maintain the order in answering objective questions should be given on top of the question paper.

Examination Scheme for end semester examination:

Group	Chapter	Marks of each question	Question to be set	Question to be answered
A	All	1	10	10
B	All	5	5	3
C	All	15	5	3

Examination Scheme for Practical Sessional examination:

Practical Internal Sessional Continuous Evaluation

Internal Examination:			
Continuous evaluation			**40**
External Examination: Examiner-			
Signed Lab Assignments		**10**	
On Spot Experiment		**40**	
Viva voce		**10**	**60**

Applied Cryptography
(GE3B-14)

Subject:Applied Cryptography	
Course Code: (GE3B-14)	**Semester: I**
Duration: 60 Hrs	**Maximum Marks: 100**
Teaching Scheme	**Examination Scheme**
Theory: 5	**End Semester Exam: 70**
Tutorial: 1	**Attendance : 5**
Practical: 0	**Continuous Assessment:25**
Credit: 6	**Practical & Sessional internal continuous evaluation: NA**
	Practical & Sessional external examination: NA

Aim:

Sl. No.	
1	To learn fundamentals of theoretical and practical areas of cryptography.
2	To learn fundamentals of digital signature and secure data transmission.

Objective:

Sl. No.	
1.	Understand various types of attacks and their characteristics.
2.	Understand the basic concept of encryption and decryption for secure data transmission.
3.	Analyze and compare various cryptography techniques.
4.	Understand the concept of digital signature and its applications.

Contents		**6 Hrs./week**	
Module	**Name of the Topics**	**Hours**	**Marks**
1	Introduction: Need for Security, Security approaches, Principles of Security, Types of Attacks, Plain Text & Cipher	**14**	**18**

	Text, Transposition Techniques, Substitution Techniques, Encryption & Decryption, Symmetric Key & Asymmetric Key Cryptography, Key Range & Key Size.		
2	Introduction to Number Theory, Modular Arithmetic, Prime Numbers, Residue Classes, Euler's Totient Function, Fermat's Theorem and Euler's Generalization, Euclidean Algorithm, Extended Euclidean Algorithm for Multiplicative Inverse, Primitive Roots & Discrete Logarithm, Chinese Remainder Theorem, Gauss Theorem.	**14**	**15**
3	Symmetric Key Cryptography: Overview, Block Cipher, DES Algorithm, Strength of DES, AES Algorithm, Evaluation Criteria for AES, Modes of Operations.	**8**	**10**
4	Asymmetric Key Cryptography: Principles of Public Key Cryptography, RSA Algorithm, Key Management, Man in the Middle Attack, Diffie-Hellman Key Exchange Algorithm.	**10**	**15**
5	Authentication: Authentication Requirement, Functions, Message Digest, Hash Function, Security of Hash Function, Kerberos, Digital Signature Standard, Digital Signature Algorithms – DSA, ElGamal Signature, Authentication Protocols.	**10**	**12**
Sub Total:		**56**	**70**
Internal Assessment Examination & Preparation of Semester Examination		**4**	**30**
Total:		**60**	**100**

List of Books
Text Books:

Name of Author	Title of the Book	Edition/ISSN/ISBN	Name of the Publisher
William Stallings	Cryptography and Network Security: Principles and Practice	7th edition	PEARSON
Reference Books:			
AtulKahate	Cryptography and Network Security	3rd edition	McGraw Hill Education (India) Private Limited
B. Schneier	Applied Cryptography	2nd Edition	J. Wiley and Sons

End Semester Examination Scheme.		**Maximum Marks-70.**				**Time allotted-3hrs.**	
Group	**Module**	**Objective Questions** (MCQ only with the correct answer)		**Subjective Questions**			
		No of question to be set	Total Marks	No of question to be set	To answer	Marks per question	Total Marks
A	**All**	**12**	**10**				
B	**All**			**5**	**3**	**5**	**70**
C	**All**			**5**	**3**	**15**	

- Only multiple choice type question (MCQ) with one correct answer are to be set in the objective part.
- Specific instruction to the students to maintain the order in answering objective questions should be given on top of the question paper.

Examination Scheme for end semester examination:

Group	**Chapter**	**Marks of each question**	**Question to be set**	**Question to be answered**
A	**All**	**1**	**12**	**10**
B	**All**	**5**	**5**	**3**
C	**All**	**15**	**3**	**3**

Inferential Statistics
(GE3B-15)

Subject: Inferential Statistics	
Course Code: (GE3B-15)	**Semester: I**
Duration: 60 Hrs	**Maximum Marks: 100**
Teaching Scheme	**Examination Scheme**
Theory: 5	**End Semester Exam: 70**
Tutorial: 1	**Attendance : 5**
Practical:0	**Continuous Assessment:25**
Credit: 6	**Practical Sessional internal continuous evaluation:NA**
	Practical Sessional external examination:NA

Aim:

Sl. No.	
1	To learn how to set up and perform hypothesis tests
2	Use regression analysis to analyze and interpret data collected from ANOVA and ANCOVA designs.

Objective:

Sl. No.	
1.	To enable students to analyze and interpret data
2.	Understand the types of questions that the statistical method addresses
3.	To evaluate the reliability and validity of a measuring
4.	Apply the method to other examples and situations
5.	Use data to make evidence based decisions that are technically sound

Pre-Requisite:

Sl. No.	

1.	Mathematics
2.	Probability Statistics

Contents		**6 Hrs./week**	
Chapter	**Name of the Topic**	**Hours**	**Marks**
01	Estimation: Concepts of estimation, unbiasedness, sufficiency, consistency and efficiency. Factorization theorem. Complete statistic, Minimum variance unbiased estimator (MVUE) and Rao-Blackwell theorem with applications. Cramer-Rao inequality and MVB estimators (statement and applications).	**12**	**10**
02	Methods of Estimation: Method of moments, method of maximum likelihood estimation.	**8**	**5**
03	Principles of test of significance: Null and alternative hypotheses (simple and composite), Type-I and Type-II errors, critical region, level of significance, size and power, best critical region, most powerful test, uniformly most powerful test,	**12**	**20**
04	Neyman Pearson Lemma (statement and applications to construct most powerful test). Likelihood ratio test and relevant problems, properties of likelihood ratio tests (without proof).	**12**	**15**
05	Interval estimation - Confidence interval for the parameters of various distributions, Confidence interval for Binomial proportion, Confidence interval for population correlation coefficient for Bivariate Normal distribution, Pivotal quantity method of constructing confidence interval, Large sample confidence intervals.	**12**	**20**
	Sub Total:	**56**	**70**
	Internal Assessment Examination & Preparation of Semester Examination	**4**	**30**
	Total:	**60**	**100**

List of Books

Text Books:

Name of Author	**Title of the Book**	**Edition/ISSN/ISBN**	**Name of the Publisher**
Goon A.M.,	Fundamentals of		World Press

Gupta M.K.: Das Gupta.B.	Statistics		

Reference Books:

Rohatgi V. K. and Saleh, A.K. Md. E.	An Introduction to Probability and Statistics	2ndEdn	John Wiley & Sons.
Dudewicz, E. J., and Mishra, S. N.	Modern Mathematical Statistics		John Wiley & Sons.
Bhattacharjee , D. & Das, K. K.	A Treatise on Statistical Inference and Distributions		Asian Books
Hogg, R.V., Tanis, E.A. and Rao J.M	Probability and Statistical Inference	Seventh Ed	Pearson Education

End Semester Examination Scheme. Maximum Marks-70. Time allotted-3hrs.

Group	**Unit**	**Objective Questions** (MCQ only with the correct answer)		**Subjective Questions**			
		No of question to be set	Total Marks	No of question to be set	To answer	Marks per question	Total Marks
A	**1 to 5**	**10**	**10**				**70**
B	**1 to 5**			**5**	**3**	**5**	
C	**1 to 5**			**5**	**3**	**15**	

- Only multiple choice type question (MCQ) with one correct answer are to be set in the objective part.
- Specific instruction to the students to maintain the order in answering objective questions should be given on top of the question paper.

Examination Scheme for end semester examination:

Group	**Chapter**	**Marks of each question**	**Question to be set**	**Question to be answered**
A	**All**	**1**	**10**	**10**

B	**All**	**5**	**5**	**3**
C	**All**	**15**	**3**	**3**

Bio Statistics
Paper Code: GE3B-16
Total Credit: 6
Total hours of lectures: 60 hours

Sl.	Topic/Module	Hour
1.	**Module 1:** Statistics&Samples. Handling&PresentingNumericalInformation.Pie-Diagram,BarDiagram,Histogram,FrequencyPolygon.ScatterDiagram.	10
2	**Module 2:** Measures of Central tendency- mean, median & mode Measures of Dispersion variability-range standard deviation	10
3	Module 3 The Normal Distribution-characteristics Best Fitting Normal Distribution. Student' s't 'distribution. Data Collection for Vital Statistics:- Birth Deaths Featal Deaths	10
4	Module 4 Health Information: Data & Information HealthInformationSystem-components,uses,sourceBasicDescriptivemethods, Distribution table	10
5	**Module 5** Frequency distribution, Presentation of statistical data, Measure of central tendency and location Measures of dispersion	10
6	**Module6** Probability: Introduction, Measurement of Probability, Frequency Probability, Laws of probability for independent events, Conditional events Bayes' Theorem and its application in community screening programme Decision analysis Sampling variation and Bias Method of sampling, Sampling & non sampling errors. Test of significance, Standard errors, Chi-square test, Correlation &Regression	10

Suggested Reading:

1. AShortTextBookofMedicalStatistics-HillA.B,10th Ed,ELBS
2. ElementaryStatisticsforMedicalWorkers,IndervirSingh,JaypeeBrothers
3. Element of Health Statistics-Rao NSN
4. Statistical Methods in the Biological & Health Science: J. Susan Milton (McGraw- hill)
5. An Introduction to Biostatistics, a manual for students in health sciences: P.S.S. Sunder Rao: J. Richard
6. AnintroductiontoProbability&Statistics,N.G.Das,Vol.1&II

Course Name: Design and Analysis of Algorithms
Paper Code: GE3B-17
Mode-offline/Blended
Credits: 6

Course Objective: The course has been designed to explore to impart the basic concepts of data structures and algorithms, Not only it helps a learner to understand concepts about searching and sorting techniques, difference between different data structure, hashing concepts, recursion, basic concepts about stacks, queues, lists, trees and graphs but also teaches a learner about writing algorithms and step by step approach in solving problems with the help of fundamental data structures.

Sl No	Course Outcome	Mapped Module
1	Identify the Best algorithm, mathematical approach	M1
2	Data storage in 1D and 2D array	M2
3	Different types of algorithm	M3
4	Graph Algorithm	M4
5	Comparison of different data structure	M5
6	Different kinds of sorting	M6,M1
7	Different kinds of hashing	M7
8	Recursive approach	M8

Module	Content	Bloom Level	Total Hours	%age of question
Module1	Space and Time Complexity of an Algorithm Time Complexity Big-Oh Notation Time Complexity Big- Omega Notation Time Complexity Big-Theta Notation	1,2	7	15
Module2	Definition of Data Structure Classification of Data Structure Array concepts(1D and 2D) Matrix representation Sparse Matrix concept Lower Triangular Matrix Sum of two matrix(1D and 2D) Multiplication of 2D Matrix	1,23	7	15
Module3	Divide & Conquer, Fractional Knapsack, Binary Search Greedy Method Dynamic Programming 0-1 Knapsack	1,2,3	8	15
Module4	Spanning Tree Shortest Paths Multistage Graph BFS Algorithm DFS Algorithm	3,4	8	10

Module5	1D array vs 2D array Linear vs non-linear search Array vs linked list Stack vs queue Linear vs Circular Queue Linear Search vs Binary Search Singly Linked List vs Doubly Linked List Tree vs Graph Binary vs Binary Search Tree	2,4	7	15
Module6	Linear Search Binary Search Bubble Sort Quick Sort Selection sort Insertion sort Radix Sort	1,2,4	8	10
Module7	Hashing Definition Hashing functions Load factor and collision Open addressing (linear probing) chaining method to avoid collision	4,5	7	10
Module8	Recursion Basics Recursion types only Tower of Hanoi Fibonacci Series	1,4,5	8	10
			60	100

Module1: Algorithm Concepts Space and Time Complexity of an Algorithm Time Complexity Big-Oh Notation Time Complexity Big-Omega Notation Time Complexity Big-Theta Notation Total 5 hours
Module2: Data Structure concepts Definition of Data Structure Classification of Data Structure Array concepts(1D and 2D) Matrix representation Sparse Matrix concept Lower Triangular Matrix Sum of two matrix(1D and 2D) Multiplication of 2D Matrix Total 5 hours
Module3: Design Strategies Divide & Conquer Fractional Knapsack Binary Search Greedy Method Dynamic Programming 0-1 Knapsack Total 5 hours

Module4: Graph Theory Spanning Tree Shortest Paths Multistage Graph BFS Algorithm DFS Algorithm Total 5 hours
Module5: Differences 1D array vs 2D array Linear vs non-linear search Array vs linked list Stack vs queue Linear vs Circular Queue Linear Search vs Binary Search Singly Linked List vs Doubly Linked List Tree vs Graph Binary vs Binary Search Tree Total 5 hours
Module6: Searching and Sorting Linear Search Binary Search Bubble Sort Quick Sort Selection sort Insertion sort Radix Sort Total 5 hours
Module7: Hashing Definition Hashing functions Load factor and collision Open addressing (linear probing) chaining method to avoid collision Total 5 hours
Module8: Recursion Recursion Basics Resursion types only Tower of Hanoi Fibonacci Series Total 5 hours

Suggested Reading:

1) S.Sridhar, “Design and Analysis of Algorithms”, Oxford University Press, 2015

2) Rajesh K Shukla, “Analysis and Design of Algorithms-A Beginner’s Approach”, Wiley publisher,2015

Paper Name: MATHEMATICS FOR COMPUTER SCIENCE PART 2
Code : GE3B-18
Contact: 5L+1T

Credits: 6
Allotted Hrs: 60

Course Objectives:

CO1. To understand the significance of limit and continuity in calculus, behavior of a function arounda point.
CO2. To understand applications of differentiability in calculus, identify a function, nature of afunction, different type function.
CO3. To learn different type of integration: proper and improper, Properties and uses of proper andimproper integration.
CO4. To understand the degree and order of differential equation, kind of differential equation andseveral approaches to solve.
CO5. To express the concept of probability and its features, principal and Axioms of probability andproperties related to probability

Course Outcomes:

Sl. No.	Course Outcome	Mapped Module
1	Ability to understand the approach of a function for a certain input, relationship between limit and continuity of a particular function on apoint, calculate limit and continuity using different formula.	Module 1
2	Ability to understand and use of differentiability of a function on a point,uses of L'Hospital law, role of implicit function, logarithmic function. Calculation of differntability for various function.	Module 2
3	Ability to understand application of proper and improper integration,beta, gamma function, application of beta-gamma function.	Module 3
4	Ability to understand how to calculate degree and order and type of differential equation and according to the type determine the way tosolve the equation.	Module 4
5	Ability to understand Axioms of Probability, different type of events, different functions of probability distribution, properties related toprobability.	Module 5

Module I Limits and Continuity theory:

The real number system; concept of limit; concept of continuity.

Module II Differentiation (algebraic and Trigonometric functions):

Differentiation of powers of x; Differentiation of exponential and logarithmic functions; differentiation of trigonometric functions; Rules for finding derivatives; Different types of differentiation; logarithmic differentiation; differentiation bysubstitution; differentiation of implicit functions; differentiation from parametric equation. Differentiation using first principle.

Module III Integrations (algebraic and Trigonometric functions):

Indefinite integrals, Integration by parts, Partial fractions, Definite integrals. Evolutes and involutes; Evaluation of definiteand improper integrals; Beta and Gamma functions and their properties;

Module IV Differential equations :

First order differential equations; practical approach to Differential equations; first order and first degree differential equations; homogeneous equations. Linear equations; Bernoulli's equation; Exact Differential Equations.

Module V Probability:

Concept of probability; sample space and events; three approaches of probability; kolmogorov's axiomatic approach to probability; conditional probability and independence of events; Bay's theorem, Probability mass function and density function, case of repeated trials. 8

Module No.	Content	Total Hours	%age of questions	Covered CO	Covered PO	Blooms Level (if applica	Remarks(if any)
Module 1	**Limits and Continuity theory**	12	20	1	11		
Module 2	**Differentiation (algebraic and Trigonometric functions)**	14	25	2	11		
Module 3	**Integrations (algebraic and Trigonometric functions)**	10	20	3	11		
Module 4	**Differential equations**	12	20	4	11		
Module 5	**Probability**	12	15	5	11		

Course Name- Statistical Quality Control in Textile and Apparel
Code-GE3B-19
Credits: 5L+1T
Course Objectives: To provide an overview of the importance of statistics in Quality control of textile and apparel manufacturing. This course will enable the students to understand the statistical concepts and the sources of applying those concepts in a wide variety of problems in apparel industry.

Course Outcomes (CO):

Sl	Course Outcome	Mapped modules
1	Able to relate and explain the importance of statistics in textile & apparel	M1
2	Able to apply Regression and Correlation	M2
3	Able to outline and make use of the Theory of Probability	M3
4	Able to make use of the application of the discrete & continuous probability distribution.	M4
5	Able to demonstrate and apply the Sampling Distribution, Estimation and Testing of Significance, error	M5
6	Able to examine and take part in the validation of prediction model	M6

Modules	Blooms Level	Hours	%age of questions
Module 1	1,2	14	20
Module 2	1,2,3	14	20
Module 3	1,2,3	6	15
Module 4	2, 3	12	20
Module 5	1,2,3	8	15
Module 6	2,3,4	6	10
		60	**100**
Tutorials		**16**	
Total		**76**	

Detailed Course Curriculum:
Module I (14 Hours)
Introduction and Representation and Summarization of Data
Need for statistics in textile and apparel manufacturing sector.
Concept of sample and population; Frequency distribution, Cumulative frequency distribution and their graphical representation; Measures of central tendency, Quartiles and Measures of dispersions. Case study and Application of these tools in different segments of Apparel Production control, i.e. Stoppage analysis, machine wise production analysis in sewing, defect frequency distribution analysis in case of sewing defects, fabric defects.

Module II (14 Hours)

Regression and Correlation - Basic concept of regression analysis; Correlation coefficient, Coefficient of determination, Spearman's rank correlation, Coefficient of concordance;

Test of significance of coefficient related to apparel and textile problems; Case studies and application of regression analysis in Apparel research, developments of simple prediction models for stitching parameters like seam slippage, seam puckering, sewing efficiency, thread consumption, marker efficiency etc.;

Module III (6 Hours)

Theory of Probability, Basic theorems on Probability, Conditional Probability, Bayes Theorem, Concept of Distribution

Application of probability in textile and apparel manufacturing sector

Module IV (12 Hours)

Discrete Probability Distributions – Application of discrete probability distribution (Binomial and Poisson) in textile and apparel manufacturing sector. Application and case study in the field of Apparel Production like probability distribution of thread breakage rate in sewing etc.

Continuous Probability Distributions – Normal distribution, Standard normal distribution, Chi-Square distribution, Student's t-distribution, F-distribution and their application in the field of textile and apparel sector. Applications of these in Apparel research with numerical problem solving in the domains of cutting efficiency, marker efficiency, production planning, calculation of time allowance etc.

Module IV (8 Hours)

Testing of Significance – Type-I and type-II Errors; Testing of hypothesis; Large sample test for population mean, equality of population means, population proportion, equality of proportions; Small sample test for population mean, equality of population means, population variance, equality of population variances; Problem solving with reference to textile and apparel manufacturing sector.

Module V (6 Hours)

Range Chart, Mean Chart, P-Chart, C-Chart

Validation of prediction models. Acceptance sampling schemes for variables and attributes; OC-curve; AQL; Producer's risk and customer's risk; 6-sigma; Shewhart's control charts; Action and warning limits; X

Suggested Readings:

1. Leaf, G. A. V., Practical Statistics for the Textile Industry-Part I & II, The Textile Institute, UK, 1987.
2. Das N G, Statistical Methods, Tata McGraw-Hill Education Pvt. Ltd
3. Nagla, J. R., Statistics for Textile Engineers, CRC Press, USA, 2015.
4. Hayavadana, J., Statistics for Textile and Apparel Management, Woodhead Publishing India Pvt. Ltd., New Delhi, 2012.
5. Pradip. V. Mehta & Satish. K.Bhardwaj, Managing Quality in the Apparel Industry
6. Das Subrata, Quality Characterisation of Apparel.
7. Stephen B. Vardeman, J. Marcus Jobe, Statistical Methods for Quality Assurance-Basics, Measurement, Control, Capability, and Improvement
8. Chuter A. J., Quality Management in the Clothing and Textile Industries

Course Name: Operating Systems with LINUX
Course Code: GE4B-01

Mode-Offline/ Blended

Course Objective: The course is designed to understand the fundamental utilities which are required on daily basis to work on a modern operating system. The course will cover an introduction on the policies for scheduling, deadlocks, memory management, synchronization, system calls, and file systems. On successful completion of this course students will be able to make effective use of Linux utilities to solve problems

Sl	Course Outcome	Mapped modules
1	Remember fundamental components of a computer operating system	M1
2	Remember and Understand policies for scheduling, deadlocks, memory management, synchronization, system calls, and file systems	M2, M3
3	Understand the basic commands of Linux operating system	M4
4	Understand & Apply the knowledge to create file system and directories	M1, M4, M5
5	Apply the knowledge to create processes, perform pattern matching	M1, M4, M6
6	Application of the gathered knowledge to develop simple programs	M1, M4, M5, M6

Module	Content	Total Hours	%age of questions	Blooms Level	Remarks (If any)
M 1	Introduction	4	5	1	
M 2	Process	10	20	1,2	
M 3	Resource Manager	6	15	2	
M 4	Introduction to Unix OS	12	20	2,3	
M 5	Files	12	20	3	
M 6	Shells & Process	12	20	4	
		56	100		

Detailed Syllabus:

Paper: Operating system with LINUX

Module 1: Introduction

Importance of OS, Basic concepts and terminology, Types of OS, Different views, Journey of a command execution, Design and implementation of OS.
(Total hours -4)

Module 2: Process (10L)

Concept and views, OS view of processes, OS services for process management, Scheduling algorithms, Performance evaluation; Inter-process communication and synchronization, Mutual exclusion, Semaphores, Hardware support for mutual exclusion, Queuing implementation of semaphores, Classical problem of concurrent programming, Critical region and conditional critical region, Monitors, Messages, Deadlocks.
(Total hours -10)

Module 3: Resource Manager

Memory management, File management, Processor management, Device management.
(Total hours -6)

Module 4: Introduction to UNIX Operating System

Introduction to UNIX UNIX operating system, UNIX architecture: Kernel and Shell, Files and Processes, System calls, Features of UNIX, POSIX and single user specification, Internal and external commands.

Utilities of UNIX Calendar (cal), Display system date (date), Message display (echo), Calculator (bc), Password changing (password), Knowing who are logged in (who), System information using uname, File name of terminal connected to the standard input (tty)

UNIX file system File system, Types of file, File naming convention, Parent – Child relationship, HOME variable, inode number, Absolute pathname, Relative pathname, Significance of dot (.) and dotdot (..), Displaying pathname of the current directory (pwd), Changing the current directory (cd), Make directory (mkdir), Remove directories (rmdir), Listing contents of directory (ls), Very brief idea about important file systems of UNIX: /bin, /usr/bin, /sbin, /usr/sbin, /etc, /dev, /lib, /usr/lib, /usr/include, /usr/share/man, /temp, /var, /home
(Total hours – 6)

Assignment –
LINUX Utilities - Calendar, Display system date, Message display, Calculator, Password changing, Knowing who are logged in, Knowing System information
Directory creation, removal, listing, navigation –
Displaying pathname of the current directory (pwd), Changing the current directory (cd), Make directory (mkdir), Remove directories (rmdir), Listing contents of directory (ls and its options), Absolute pathname, Relative pathname, Using dot (.) and dotdot (..)
(Total Hours – 6)

Module 5: Files
Ordinary file handling Displaying and creating files (cat), Copying a file (cp), Deleting a file (rm), Renaming/ moving a file (mv), Paging output (more), Printing a file (lp), Knowing file type (file), Line, word and character counting (wc), Comparing files (cmp), Finding common between two files (comm), Displaying file differences (diff), Creating archive file (tar), Compress file (gzip), Uncompress file (gunzip), Archive file (zip), Extract compress file (unzip), Brief idea about effect of cp, rm and mv command on directory.
File attributes File and directory attributes listing and very brief idea about the attributes, File ownership, File permissions, Changing file permissions – relative permission & absolute permission, Changing file ownership, Changing group ownership, File system and inodes, Hard link, Soft link, Significance of file attribute for directory, Default permissions of file and directory and using umask, Listing of modification and access time, Time stamp changing (touch), File locating (find).
(Total Hours – 6)

Assignment –
Ordinary File Handling - Displaying and creating files, Copying a file, Deleting a file, Renaming/ moving a file, Paging output, Knowing file type, Line, word and character counting (wc), Comparing files, Finding common between two files, Displaying file differences
File attributes – File and directory attributes listing, File ownership, File permissions, Changing file permissions – relative permission & absolute permission, Changing file ownership, Changing group ownership, File system and inodes, Hard link, Soft link, Default permissions of file and directory and using umask, Listing of modification and access time, Time stamp changing, File locating **(Total Hours – 6)**

Module 6: Shell and Process
Shell Interpretive cycle of shell, Types of shell, Pattern matching, Escaping, Quoting, Redirection, Standard input, Standard output, Standard error, /dev/null and /dev/tty, Pipe, tee, Command substitution, Shell variables
Process Basic idea about UNIX process, Display process attributes (ps), Display System processes, Process creation cycle, Shell creation steps (init ->getty -> login -> shell), Process state, Zombie state, Background jobs (& operator, nohup command), Reduce priority (nice), Using signals to kill process, Sending job to background (bg) and foreground (fg), Listing jobs (jobs), Suspend job, Kill a job, Execute at specified time (at and batch)
(Total Hours – 6)

Assignment –

Shell - Types of shell, Pattern matching, Escaping, Quoting, Redirection, Pipe, tee, Command substitution, Shell variables

Process - Display process attributes, Display System processes, Background jobs, Reduce priority, Sending job to background and foreground, Listing jobs **(Total Hours – 6)**

Readings

1.Operating Systems, Galvin, John Wiley

2.Operating Systems ,Milankovic, TMH

3.UNIX-Concepts & Applications, Sumitava Das, TMH

4.Learning UNIX Operating System, Peek, SPD/O'REILLY

5.Understanding UNIX, Srirengan, PHI 4. Essentials Systems Administration, Frisch, SPD/O'REILLY

(GE4B-02): ENTREPRENEURSHIP THEORY & PRACTICE

CreditPoint:6Total
Credit Hours: 60 Hrs.

Course Objective

1. To understand the function of the entrepreneur in the successful, commercial application of innovations.
2. To investigate methods and behaviours used by entrepreneurs to identify business opportunities and put them into practice.
3. To discuss how ethical behavior impacts on business decisions for a selected business startup.
4. To get better knowledge about the necessary traits for an Entrepreneurs.
5. To build and check the feasibility of business projects and the development of the projects for the same.
6. To provide the overview of Business Ethics and its importance.
7. To understand the various Management and Business scenarios of Ethics.
8. To get the overall knowledge on corporate culture and its impact on business.

Course Outcomes (CO):

SL NO.	Course Outcome	Mapped Modules
1.	This will help to understand the basics and needs of Entrepreneurship.	Module I - Unit 1
2	This will help Entrepreneurs develop the need and nature so, that they can run their business.	Module I - Unit 2
3	This unit helps to generate startups with various business decisions.	Module I - Unit 3
4	Helps the student to develop certain skills of Entrepreneurship.	Module I - Unit 4
5	This helps to develop business projects which develop to build business projects.	Module II - Unit 5
6	Student will able to describe examples of entrepreneurial business and actual practice, both successful and unsuccessful, and explain the role and significance of entrepreneurship as a career, in the firm, and in society.	Module II - Unit 6
7	Student will able to understand the importance and role of ethical, sustainability, innovation and global	Module II - Unit 7

	issues for strategic decision making.	
8	Student will evaluate different modes of entering into enterpreurship. Student will able to understand the importance and role of ethical, sustainability, innovation and global issues for strategic decision making.	Module II - Unit 8

Module I

Unit1:Introduction to Entrepreneurship [4L] Theories of Entrepreneurship, Role and Importance of Entrepreneur in Economic Growth.

Unit 2: Entrepreneurial Behaviour [10L]

Entrepreneurial Motivation, Need for Achievement Theory, Risk-taking Behavior, Innovation and Entrepreneur

Unit 3: Entrepreneurial Traits [8L]

Definitions, Characteristics of Entrepreneurs, Entrepreneurial Types, Functions of Entrepreneur

Unit 4: Project Feasibility Analysis [12L]

Business Ideas – Sources, processing; Input Requirements, Sources of Financ ing, Technical Assistance, Marketing Assistance, Preparation of Feasibility Reports, Legal Formalities and Documentation.

Module II

Unit 5: Creativity [8L]

Introduction – Meaning - Scope – Types of Creativity – Importance of Creativity – Steps of Creativity

Unit 6: Innovation [8L]

Introduction –Steps in Innovation – Stages of of Innovation – Technology aspects in Innovation.

Unit 7: Understanding the Market [4L]

Types of Business: Manufacturing, Trading and Services – Market Research - Concept, Importance and Process - Market Sensing and Testing

Unit 8: Resource Mobilization [6L]

Types of Resources - Human, Capital and Entrepreneurial tools and resources- Selection and utilization of human resources and professionals like Accountants, Lawyers, Auditors, Board Members, etc. Role and Importance of a Mentor- Estimating Financial Resources required. Methods of meeting the financial requirements – Debt vs. Equity

Suggested Readings:

1. Entrepreneurship, Arya Kumar, Pearson.

2. Introducing Entrepreneurship Development, Chakraborty, Tridib, Modern Book Agency.

3. Entrepreneurial Policies and Strategies, Manimala, M.J., TMH

4. Everyday Entrepreneurs - The harbingers of Prosperity and creators of Jobs , Dr. Aruna Bhargava.

Module No.	Content	Total Hours	%age of questions	Covered CO	Covered PO	Blooms Level (if applicable)	Remarks (if any)
Module I Unit 1	Introduction to Entrepreneurship	6	10	1	8		
Module I Unit 2	Entrepreneurial Behaviour	8	13	2	8		
Module I Unit 3	Entrepreneurial Traits	8	13	3	8		
Module I Unit 4	Project Feasibility Analysis	12	20	4	8		
Module II Unit 5	Creativity	6	10	5	8		
Module II Unit 6	Innovation	8	14	6	8		
Module II Unit 7	Understanding the Market	6	10	7	8		
Module II Unit 8	Resource Mobilization	6	10	8	8		

Course Name: Basics of Computing
Code: GE4B-03
Mode- Offline/ Blended
Credits: 6

OBJECTIVE: The course is a right blend of Basic Computing and Mathematics, which enables students to gather important basic knowledge of Computers and Mathematics. This course will bridge the fundamental concepts of computers and mathematics with the present level of knowledge of the students. After completing the course students will be able to understand the fundamentals of computer, different problem solving techniques, basics of operating systems, different office operation tools, differential and integral calculus**.**

Duration: 60 Hours. (Theory: 40 hours + Practical: 10 hours + Tutorial: 10 hours)

Course Outcomes (CO):

Sl.	Course Outcome	Mapped modules
1.	Bridge the fundamental concepts of computers with the present level of knowledge of the students	Module-I
2.	Familiarize Organization, Peripheral Devices, Hardware and Software	Module-I
3.	Understand problem solving techniques, basics of Unix and Windows O.S. and its operations	Module-II, Module-III
4.	Demonstrate the Office Automation Tools	Module-III, Module-IV
5.	Understand Differential Calculus and Integral Calculus	Module-V, Module-VI

Module	Content	Total Hours	%age of questions	Blooms Level	Remarks (If any)
Module-I	Fundamentals of Computing	10	15	1,2	Theory
Module-II	Approaches to Problem Solving	5	25	3	Theory
Module-III	Operating System and Services in O.S.	5	15	3	Theory
Module-IV	Office Automation Tools	10	10	4	Lab
Module-V	Differential Calculus	18	20	5	Theory
Module-VI	Integral Calculus	12	15	5	Theory

Detailed Syllabus:

Module-I: Introduction to Computers

[10]

Introduction and Characteristics, History and Evolution, **Generations of Computer** (I-V), **Organization of Computers**, Block Diagram of a Computer, Von Neumann Architecture, Applications of Computers in Various Fields, **Input Devices** and functions of the different units, **Output Devices** and functions of the different units, Memory Unit, CPU (ALU+CU) , **Computer Languages** – Machine Language, Assembly Language, High-level Language, Features of Good Language. **Language Translators** - Compiler, Interpreter, Assembler, **Memories** [Memory Hierarchy], Registers [Types of Registers], Cache Memory, **Primary Memory** - RAM, DRAM and SRAM, ROM, ROM BIOS/ Firmware, Types of ROM, **Secondary Memory** - Hard Disk, Structure of a Hard Disk, how data is stored in a hard disk, concept of tracks, sectors, clusters, cylinders, formatting of hard disk (Low Level Formatting and High Level Formatting), Blu-Ray Disc [Data Storage Mechanism], Flash Drives/e-MMC, **Concept of Hardware & Software**, System Software, Operating System, Functions and Types of O/S, Utility Programs, Communication Software, Performance Monitoring Software, Application Software

MODULE-II: Approaches to Problem Solving

[5]

Approaches To Problem Solving, Algorithm : Introduction, Definition, Characteristics, Expressing Algorithm and General Approaches in Algorithm Design, Analysis of Algorithms, Advantages and disadvantages, Examples **Flowchart:** Definition, When to Use Flowcharts, Flowchart Symbols and Guidelines, Types of Flowcharts, Examples, Advantages and Disadvantages, Limitations of using Flowcharts.

MODULE-III: Operating System and Services in O.S.

[5]

Fundamentals of Operating System, Types of O.S. and Functions, Structure of O.S., Components, Concepts of Multitasking, Multiprogramming, Timesharing, Basics of Memory Management.

Introduction to Unix/DOS Operating system – History, Files and Directories, Internal and External Commands, Batch Files

Windows Operating Environment - Features of MS – Windows, Control Panel, Taskbar, Desktop, Windows Application, Icons, Windows Accessories, Notepad, Paintbrush.

MODULE-IV: Office Automation Tools - Skill Enhancement MS Office

[10]

i) **Microsoft Word** - Page Layout, Fonts, Word Art, Paragraph Styling, Indentation, Mail Merge, Navigation Pane, Macro, Themes, Tables, Idea About Saving Files In Different Formats, Font Embedding.

ii) **Microsoft Excel** - Basic functionality of MS-Excel, Functions - Mathematical, Statistical and Data Retrieval (Vlookup, Hlookup), Goal Seek, Pivot Table, Cross Worksheet Operations

iii) **Microsoft PowerPoint** - Types of Layouts, Using The Slide Master View, Animations, Slide Transition, Design and themes.

MODULE V: Differential Calculus

[18]

Function of single variable: Explicit and Implicit Function, Parametric Equations, Single valued and Multiple Valued Function, Monotonic and Bounded function, Representation of functions Graphically, Limit: Definition, Cauchy General Principle for Convergence of Limit, Simple Examples, Continuity: Definition, Example on Simple and Jump Discontinuity

Differentiation: Definition, Derivative of Algebraic, Exponential, Logarithmic, Trigonometric, Inverse functions (Up to Second order), Logarithmic Differentiation, Derivative of Products, Examples.

Mean Value Theorem: Rolle's Theorem, Lagrange and Cauchy MVT (Statement Only) with applications. Taylor's Series.

Indeterminate Forms: L' Hospital Rule. Examples.

MODULE VI: Integral Calculus

[12]

Integrations: Indefinite Integrals, Integration Rules, Integration by Parts, (Algebraic Rational, Exponential, Trigonometric functions), Definite Integrals: Definition, Geometrical Interpretation, Definite Integral as Limit of a Sum, Area of Plain Regions.

Suggested Readings:

- Satish Jain, M. Geetha, Kratika, Microsoft Office 2010, BPB
- Dr. Milind M. Oka, Computer Fundamentals, Everest Publication House
- V. Rajaraman, Computer Basics and C Programming, Eastern Economy Edition
- Dr. A. K. Gupta, Management Information System, S. Chand Publisher
- Kogent Learning Solutions INC, Windows 7 in Simple Steps, dreamtech Press
- B. C. Das, B. N. Mukherjee, Differential Calculus, U. N. Dhar and Sons Pvt. Ltd.
- B. C. Das, B. N. Mukherjee, Integral Calculus, U. N. Dhar and Sons Pvt. Ltd.

Course Name: **Data analysis with R**

Course Code: GE4B-04

Mode- Offline/ Blended **Credits: 6**

Course Objectives: The course has been designed to explore the R programming language, understand the different constructs it uses. The concept of data and data analysis and using R programming to perform basic statistical data analysis .You will learn how to install and configure software necessary for a statistical programming environment and describe generic programming language concepts as they are implemented in a high-level statistical language.

Sl.	Course Outcome	Mapped modules
1	Understanding the background and history of R	M1
2	Understanding the nuts and bolts of R	M2
3.	Understanding concept of basic programming in R	M3,M4
4	Understanding loops in R	M4
5	Understanding functions and Debugging in R	M5,M6
6.	Understanding simulation and profiling in R	M6

Module	Content	Total Hours	%ageof Questions	Blooms Level (if applicable)	Remarks (If any)
M1	Background, Getting Started	5	5	1	
M2	Basics of R programming	12	30	1,2,3	
M3	Subsetting	10	15	1,2,3	
M4	Control structures and Functions	18	30	1,2,3	
M5	scoping rules and Loop functions	10	15	1,2,3	
M6	Debugging tools,simulation and profiler	5	5	1,2	
		60	100		

Detailed Syllabus:

Module 1:

Getting started, Background: Installing R on Windows, Writing Code / Setting Your Working Directory (Windows), Overview and History of R,R Console Input and Evaluation,

Module 2:

Data Types - R Objects and Attributes,Vectors and Lists,Matrices,Factors,Missing Values,Data Frames,Names Attribute,Reading Tabular Data,Reading Large Tables,Textual Data Formats,Interfaces to the Outside World.

Module 3:

Subsetting– Basic,Lists,Matrices,Partial Matching,Partial Matching, Removing Missing Values,VectorizedOperations.Working with swirl.

Module 4:

Control structures: If-else, For loops, While loops,Repeat, Next, Break.
Functions: user defined functions, anonymous functions.

Module 5:

Scoping Rules - Symbol Binding, R Scoping Rules, Optimization Example ,Coding Standards.
Dates and Times

Module 6:

Loop Functions - lapply ,Loop Functions – apply, Loop Functions –mapply, Loop Functions –tapply, Loop Functions - split
Debugging Tools - Diagnosing the Problem, Basic Tools, Using the Tools
The str Function
Simulation - Generating Random Numbers, Simulating a Linear Model, Random Sampling, R Profiler.

List of Experiments:

1. Installing R and R studio
2. Programs using data types
3. Programs using concept of subsetting
4. Programs using control structures
5. Programs using scoping rules
6. Program using loop functions
7. Using debugging tools.

Suggested Readings:

- R for Data Science Hadley Wickham ,Garrett Grolemund, O'REILLY
- R Programming for Beginners Paperback, SandipRakshit, Mcgrawhill
- R Programming for Data Science*Roger D. Penghttps://leanpub.com/rprogramming*

Course Name: **Fundamentals of Cyber Security**

Course Code: GE4B-05

Mode- Offline/ Blended **Credits: 6**

Course Objectives: The course has been designed to have introduction to practical computer security by the process of understanding the fundamentals of how you use security in the business world. This course further makes you understand how to defend computer systems and assets from attackers and other threats. It also explores ways and means to understand how threats and attacks are carried out to help better defend their systems.

Sl	Course Outcome	Mapped modules
1	Understanding basic network communication	M1
2.	Understanding Cybersecurity for Business	M2
3.	Understanding Threats and Attack Vectors	M3
4.	Understanding Detection and Mitigation of Cyber Threats and Attacks	M4
5.	Understanding Proactive Computer Security	M5
6.	Understanding computer security management	M6

Module	Content	Total Hours	%ageof Questions	Blooms Level (if applicable)	Remarks (If any)
M1	Fundamentals of Network Communication	15	20	1,2	
M2	Introduction to Cybersecurity for Business	6	15	1,2	
M3	Cyber Threats and Attack Vectors	12	20	1,2	
M4	Detecting and Mitigating Cyber Threats and Attacks	12	20	1,2	
M5	Proactive Computer Security	10	15	1,2,3	
M6	Proactive computer security management	5	10	1,2	
		60	100		

Detailed Syllabus

Module 1: Fundamentals of Network Communication

A brief history of the internet, layered architecture and OSI model, OSI Unified View of Protocols and Services, TCP/IP: Architecture and Routing Examples, Berkeley Sockets API, Digital Transmission Fundamentals.

Module 2: Introduction to Cybersecurity for Business

Understand the basics of computer security for business, Confidentiality, Integrity and Availabilitywhat risk means and how to assess it. The tools, ports, and protocols used in everyday computing to remain secure.

Module 3: Cyber Threats and Attack Vectors

Users and user based attacks, Phishing, Social Engineering, and Authentication based attacks.

Network and system based attacks: Network based attacks, Denial of Service attacks, Wireless based attacks.

Viruses and Worms,DDoS Attacks, Mobile Based Attacks

Cloud Security:

What is "The Cloud"? , Why do we need to be concerned with "The Cloud"? SaaS Database Security, Real Cloud Based Attacks, Cloud Security Alliance,

Common Vulnerabilities: Misconfiguration, Operating Systems, Software: Buffer Overflows, Software: Web Based Applications,Software: Injection,Shadow Brokers

Module 4: Detecting and Mitigating Cyber Threats and Attacks

Introduction and Firewalls: Firewallbasics, Advancedfirewalls, Types of firewall configurations

Intrusion Detection and Prevention: DetectionMethods,Intrusion Detection Systems,

Intrusion Prevention Systems,Honeypots

Detection and Prevention tools

Anti-virus/anti-malware, Snort1, HIDs and HIPs, Splunk, Splunk and Security, Understanding IPS vs. IDS

Module 5: Proactive Computer Security

Information Sharing and Threat Intelligence

Threat Intelligence, Resources for building your own testing environment

Penetration Testing

Intelligence Gathering, Vulnerability Scanning, Exploitation

Common Pen Testing Tools

Nmap , Nessus, Metasploit

Module 6: Proactive computer security management

Proactive computer security management

Legal issues, Where to turn if you have an incident

Suggested Readings:

- Data communication and Networking by Behrouz A. Forouzan, McGraw Hill Education (India)
- Pvt. Ltd. Certified Ethical Hacker Certification Exam by William Manning Fundamentals of
- Cyber Security By MayankBhushan, BPB Publications

Course Name: **Guidance of Excel for Office Assistance**

Course Code: GE4B-06

Mode- Offline/ Blended **Credits: 6**

Course Objectives: Spreadsheet software is one of the most ubiquitous pieces of software used in workplaces across the world. Learning to confidently operate this software means adding a highly valuable asset to employability portfolio. At a time when digital skills jobs are growing much faster than non-digital jobs, make sure to position a person ahead of the rest by adding Excel skills to employment portfolio.

During this course we are going to get the concept of Excel user interface, perform basic calculations with formulas and functions, professionally format spreadsheets, font formatting, borders, alignment, number formatting, as well as the Excel styles and themes, find data with Filter and Sort, retrieve and change data using Find and Replace, and use Conditional Formatting to highlight specific data perform validation use of what-if analysis by using goal seek and solverand create visualizations of data through charts and graphs creating, formatting and managing tables and then move on to sorting and filtering tables to get the data.

After having the knowledge in detail people will be able to expertly navigate the Excel user interface, perform basic calculations with formulas and functions, professionally format spreadsheets, and create visualizations of data through charts and graphs.

Sl	Course Outcome	Mapped modules
CO1	Understanding Excel Interface, Terminologies, Formulas and Functions	M1
CO2	Understanding to work with data, Different kinds of formatting,	M2
CO3	Understanding creating charts, filter , sort, Find and replace	M3
CO4	Understanding to work with multiple workbook, Text and Date Function	M4
CO5	Understanding to use named range	M5
CO6	Understanding to summarize the data, use of sum, countiffunction, advance chart	M6

Module	Content	Total Hours	%ageof questions	Blooms Level (if applicable)	Remarks (Ifany)
Module 1	foundational features of Excel, user interface	6	10	1	
Module2	Define several formatting tools with filter and sort.	10	10	2	
Module 3	Define steps to print with header and footer. Apply of different chart.	10	20	2.3	
Module 4	Define all about working with multiple worksheets and workbooks.Date and Text functionsto fulfill specific business requirements.	11	10	2	
Module 5	Learn how to create, manage and apply Named Ranges to enhance calculations. Define different advanced formulas	15	25	2.3	
Module 6	Start with creating, formatting and managing tables. Learn how to create and modify them to solve a variety of business problems.	8	25	1,2,3	
		60	100		

Module 1-Define foundational features of Excel, user interface, basic Excel terminology Introduction to formulas and functions - and understand the different cell references.

Module 2-Define several formatting tools like font formatting, borders, alignment, number formatting, as well as the Excel styles and themes.
Learn to manage your spreadsheets – find data with Filter and Sort, retrieve and change data using Find and Replace, and use Conditional Formatting to highlight specific data.

Module 3-Define the steps to print the worksheet. Learn how you can optimize spreadsheet for printing by managing margins, orientation, headers & footers, and more.
Apply chart on numerical data and use of different chart formatting

Module 4-Define all about working with multiple worksheets and workbooks. Learn how to combine data, manage datasets and perform calculations across multiple sources.
Define the use of Date and Text functions. Show the way to extract information and manipulate data to fulfill specific business requirements.

Module 5-Learn how to create, manage and apply Named Ranges to enhance calculations.
Define different advanced formulas in this module. Learn how you use functions like COUNTIFS to extract information from data, as well as generate graphical representations of it.

Module 6-Start with creating, formatting and managing tables use of sorting and filtering.
Use of pivot tables. Learn how to create and modify them to solve a variety of business

problems. Gain skills to create interactive dashboards with pivot charts and slicers.

List of Experiment:

1) Understand the Excel interface apply different formulas and functions on data.
2) Create Excel sheet to apply different kinds of formatting
3) Create Excel sheet for display the use of different kinds of chart.
4) Create Excel sheet to define name range to selected cells and use of name range in different formulas.
5) Create Excel sheet to display the use of advance chart and different categories of function.

Suggested Reading:

1. Excel 2016 Bible, by John Walkenbach
2. Excel 2016 for Dummies, by Greg Harvey

Course Name: **Learn Programming Fundamental with C**

Course Code: GE4B-07

Mode- Offline/ Blended **Credits: 6**

Career Objective: Programming is an increasingly important skill, whether you aspire to a career in software development, or in other fields. This course is the first in the specialization Introduction to Programming in C. Programming is fundamentally about figuring out how to solve a class of problems and writing the algorithm, a clear set of steps to solve any problem in its class. This course will introduce you to a powerful problem-solving process—the Seven Steps—which you can use to solve any programming problem. In this course, you will learn how to develop an algorithm, and then progress to reading code and understanding how programming concepts relate to algorithms.
The C language is particularly well suited as an introduction to coding: It's a tried-and-true language, and it allows understanding computing processes at a deep level.

Sl	Course Outcome	Mapped modules
CO1	Understanding program, programming and its requirements	M1
CO2	Understanding Algorithm	M2
CO3	Understanding Basic Data Type and Type conversion	M3
CO4	Understanding c programming fundamental, compiling Debugging, Running program	M4
CO5	Understanding Data Types flow of control	M5
CO6	Understanding Advance function recursion, array , pointer	M6

Detailed Syllabus:

Module	Content	Total Hours	%ageof questions	Blooms Level (if applicable)	Remarks (Ifany)
Module 1	will learn how to approach a programming problem methodically. This module discuss about to execute a piece of code by hand	11	10	2	
Module2	Discussion about the basic data types, "non-number" types, and complex, custom types	11	10	2	
Module 3	History of CCompiling, debugging, and running a program with different examples	11	20	2,3	

Module 4	Logical operators, expressions, and short-circuit evaluationThe conditional statement if and if-elseThe iterative statement	11	10	2	
Module 5	Enums as an ADTEnums codeThe C preprocessorUse assert for program correctnessAssert code Introduction to struc	8	25	2,3	
Module 6	Intro to the ADT listList of one element codeFull list codeDetails of list processingHonors: Introduction to binary trees	8	25	1,2,3	
		60	100		

Module 1-Discuss about a powerful process for solving any programming problem—the Seven Steps. You will learn how to approach a programming problem methodically, so you can formulate an algorithm that is specific and correct.

This module discuss about to execute a piece of code by hand, and clearly illustrate what each statement does and what the state of the program is.

Module 2- This module discuss about types beyond integers, both their conceptual representations, and their hardware representations in binary. Discussion about the basic data types, "non-number" types, and complex, custom types

Module 3-History of CCompiling, debugging, and running a program, Compiling, debugging, and running a program
Example - Circle codeExample – MarathonSimple input/output –Fahrenheit Simple input/output – milesCharacter sets and tokensCommentsKeywordsIdentifiersOperatorsExpressions and precedence Expression and evaluationDeclarationsFundamental types and size ofThe char type

Module 4-Logical operators, expressions, and short-circuit evaluationThe conditional statement if and if-elseThe iterative statement whilewhile-cnt-char-explained, while-code – exampleThe for statement and its while analogoddball operators-conditional and commaternary-operator code exampleBreak and continue and switch
Function definition, Return statementFunction prototype, Function variables—with call-by-value explained, Function definitions and scope rulesSimple recursion, Recursion- factorial codeRecursion Fibonacci code, Pointers and simple arrays, initialize arraysWhat is a pointerCall-by-reference simulatedarray as a parameterarray-bubble-sort codemerge sort overview

Module 5-Discussion about:-
Enums as an ADTEnums codeThe C preprocessorPreprocessor codeUse assert for program correctnessAssert code
Introduction to struc (More advanced ADTs)How to access struct membersIntroduction to the ADT stackUsing a stack to reverse a string

Module 6-Discussion about:-
Intro to the ADT listList of one element codeFull list codeDetails of list processingHonors: Introduction to binary trees
Honors: Detailed binary tree codeIntroduction to File I/OBasic File/I/O codeDouble Spacing a FileUse of Main (argc, argv)
Honors - List Code with deletion

List of experiments:

1) Understanding program, programming and its requirements
2) Program to display different data types and their type conversion
3) Understand different kinds of algorithm for different programs.
4) Program to Understanding Data Types flow of control
5) Program to Understanding Advance function recursion, array , pointer

Suggested Reading:

1) Let Us C by Yashavant Kanetkar
2) "The C Programming Language" by Brian W Kernighan / Dennis Ritchie

Course Name: Presentation Skills and Excel Basics for Data Analysis

Course Code: GE4B-08

Mode: Online/Blended **Credits: 6**

Course Objectives: The goal of the course on presentation skills is to change that by equipping learners with a set of tools to create simple, clear and aesthetic slides which improve the presentation of the speaker. The course covers universal design principles, templates, colors, typefaces, slides' typography, use of photos and pictograms, composition rules and ways to create clear and meaningful charts and diagrams.
The course on basics of excel is designed to provide you with basic working knowledge for using Excel spreadsheets for Data Analysis. It covers some of the first steps for working with spreadsheets and their usage in the process of analyzing data.

Sl	Course Outcome	Mapped modules
CO1	Key principles of design, Templates and colors meaning	M1
CO2	Typography and photographic illustrations, Diagrams and data visualization	M2
CO3	Introduction to Data Analysis Using Spreadsheets, Getting Started with Using Excel Speadsheets, Cleaning &	M3
CO4	Analyzing Data Using Spreadsheets	M4
CO9	Final Project	M4

Module	Content	Total Hours	% of questions	Bloom Level(I applicable)	Remarks ,if any
THEORY					
M1	**1. Key principles of design** • Learn the key principles of design: focus, contrast, unity • Understand why "too many text" is not a problem • Understand what is a "good design" • Understand the use and misuse of slides **2. Templates and colors meaning** • Learn how to create your own template • Understand how a company's or	**20**	**25**	**1,3**	

	personal identity is conveyed • Understand how to choose a background for a template • Understand how to choose a typeface if needed • Understand how to choose your color				
M2	**1. Typography and photographic illustrations** • How to apply basic principles to text-only slides • How and why to create a visual hierarchy • How to deal with tables • How to compose cheap and fast illustrations out of text • Learn how to use icons with text • Learn how to illustrate slides with emotional photographs • Understand why adding pictures is almost always a good idea • Understand how icons work (as opposed to photographs) • Learn how to select the right icon or photo **2. Diagrams and data visualization** • Learn how to create great explanatory diagrams • When (not) to use diagrams • Learn how to to create data viz charts for presentations • Understand how presentation infographics is different from media infographics	**20**	**25**	**1,3**	
PRACTICAL					
M3	**1. Introduction to Data Analysis Using Spreadsheets** • Describe the fundamentals of a spreadsheet application. • Get access to Excel on the Web • Navigate around an Excel	**10**	**25**	**1,3**	

	worksheet and workbook. **2. Getting Started with Using Excel Speadsheets** • View, enter, and edit data in a worksheet. • Move, copy, and fill data in a worksheet. • Describe the fundamentals of formulas. • List some of the common functions used by a data analyst. • Reference data in formulas. **3. Cleaning & Wrangling Data Using Spreadsheets** • Explain the importance of data quality. • Import file data in to Excel. • Describe the fundamentals of data privacy. • Remove duplicate and inaccurate data, and empty rows. • Handle inconsistencies in data. • Use the Flash Fill and Text to Columns features in Excel.				
M4	**Analyzing Data Using Spreadsheets** • Describe the fundamentals of analyzing data using a spreadsheet • Filter and sort data in a worksheet. • Use some of the most useful functions for a data analyst. • Use the VLOOKUP and HLOOKUP functions. • Create pivot tables in Excel. • Use pivot table features. **2. Final Project** • Demonstrate hands-on skills to clean, prepare, and analyze data for	**10**	**25**	**1,3**	

	a business scenario.				
		60	**100**		

Detailed Syllabus

Module 1

1. Key principles of design

- Learn the key principles of design: focus, contrast, unity
- Understand why "too many text" is not a problem
- Understand what is a "good design"
- Understand the use and misuse of slides

2. Templates and colors meaning

- Learn how to create your own template
- Understand how a company's or personal identity is conveyed
- Understand how to choose a background for a template
- Understand how to choose a typeface if needed
- Understand how to choose your color

Module 2

1. Typography and photographic illustrations

- How to apply basic principles to text-only slides
- How and why to create a visual hierarchy
- How to deal with tables
- How to compose cheap and fast illustrations out of text
- Learn how to use icons with text
- Learn how to illustrate slides with emotional photographs
- Understand why adding pictures is almost always a good idea
- Understand how icons work (as opposed to photographs)
- Learn how to select the right icon or photo

2. Diagrams and data visualization

- Learn how to create great explanatory diagrams
- When (not) to use diagrams
- Learn how to to create data viz charts for presentations
- Understand how presentation infographics is different from media infographics

Module 3(PRACTICAL)

1. Introduction to Data Analysis Using Spreadsheets

- Describe the fundamentals of a spreadsheet application.
- Get access to Excel on the Web
- Navigate around an Excel worksheet and workbook.

2. Getting Started with Using Excel Speadsheets

- View, enter, and edit data in a worksheet.
- Move, copy, and fill data in a worksheet.
- Describe the fundamentals of formulas.
- List some of the common functions used by a data analyst.
- Reference data in formulas.

3. Cleaning & Wrangling Data Using Spreadsheets

- Explain the importance of data quality.
- Import files data in to Excel.
- Describe the fundamentals of data privacy.
- Remove duplicate and inaccurate data, and empty rows.
- Handle inconsistencies in data.
- Use the Flash Fill and Text to Columns features in Excel.

Module 4(PRACTICAL)

1. Analyzing Data Using Spreadsheets

- Describe the fundamentals of analyzing data using a spreadsheet
- Filter and sort data in a worksheet.
- Use some of the most useful functions for a data analyst.
- Use the VLOOKUP and HLOOKUP functions.
- Create pivot tables in Excel.
- Use pivot table features.

2. Final Project

- Demonstrate hands-on skills to clean, prepare, and analyze data for a business scenario.

Suggested Readings:

1. Office 2000 by Michael Busby and Russell A.Stultz
2. PC Software for Windows 98 by R K Taxali

Course Name: **Programming with Python**

Course Code: GE4B-09

Mode- Offline/ Blended **Credits: 6**

Course Objectives: This course is designed to teach everyone the basics of programming computers using Python. We cover the basics of how one constructs a program from a series of simple instructions in Python. The course has no pre- requisites and avoids all but the simplest mathematics. Anyone with moderate computer experience should be able to master the materials in this course. Once a student completes this course, they will be ready to take more advanced programming courses. This course covers Python 3. We will move past the basics of procedural programming and explore how we can use the Python built-in data structures such as lists, dictionaries, and tuples to perform increasingly complex data analysis. We will cover how one can treat the Internet as a source of data. We will scrape, parse, and read web data as well as access data using web APIs. We will work with HTML, XML, and JSON data formats in Python.

Sl	Course Outcome	Mapped modules
CO1	Understanding program, programming and its requirements	M1
CO2	Understanding decision statements and branching	M2
CO3	Understanding string anf file manipulation	M3
CO4	Understanding list and dictionaries with examples	M4
CO5	Understanding Tuples and regular expressions	M5
CO6	Understanding HTTP related to Python, JSON	M6

Module	Content	Total Hours	%age of questions	Blooms Level (if applicable)	Remarks (If any)
Module 1	Introduction to python , installation	5	10	1,2	
Module 2	Decision statement, functions, looping	10	10	1,2	
Module 3	String , files	10	20	1,2	
Module 4	List and dictionaries	10	20	1,2	
Module 5	Tuples and Regular expression	10	20	1,2	
Module 6	Networking, HTTP , web services, JSON	15	20	1,2,3	
		60	100		

Detailed Syllabus

Module 1- Definition of program, computer languages, python as language, installation of python, writing simple python code, data types (Basic) , expressions
Module 2- Conditional statements, using functions, working within functions, loops and iterators, definition of loop, different types of loops, functions, passing values to function
Module 3- String , Manipulating string, writing programing using string, Files and processing Files
Module 4- List , Manipulating list, list and string, dictionaries, counting with dictionaries, dictionaries and files
Module 5- Tuples , comparing tuples, dictionaries and tuples, using tuples as key in dictionaries, sequences , character matching in regular expression
Module 6- HTTP, retrieving images over HTTP, retrieving web pages with urllib, parsing HTML and scraping the web, XML, parsing XML, JSON, parsing JSON, security and API usage

List of Experiments:

1. Program to implement the basic data type and building expression.
2. Program to implement different conditional statements.
3. Program to implement different types of loops.
4. Program to implement function and pass different values to functions
5. Program to implement and manipulate string.
6. Program to implement and manipulate List.
7. Program to implement and manipulate dictionary.
8. Program to create and manipulate tuples.
9. Program to create web pages using python
10. Program to work with JSO

Suggested Readings:

- AUTOMATE THE BORING STUFF WITH PYTHON,AL SWEIGART, NO STARCH PRESS
- Python: The Complete Reference , Martin C Brown, McGraw Hill Education
- https://docs.python.org/3/tutorial/index.html for References.

Course Name: Career Planning Techniques

Course Code: GE4B-10

Mode-Offline/Blended **Credits: 6**

Course Objectives: This course will help to build, develop and hone the essential skills needed to improve employability and advancement in today's dynamic workforce. Each topic will help to understand work more efficiently and levels of both job satisfaction and success. This course will help to learn to make the creative state more reliable and productive, fine-tune personal brand and to present positively and accurately. Help to learn basic skills for working with others, to avoid traps and enable success. This course will lead to understanding optimal performance profile in order to turn any situation to performance advantage. This course will also help to learn the optimal performance model, application of the model to profile, finding ideal vacancy, construction of a resume/CV targeted to vacancy, composing a cover letter, and preparing for a successful job Interview. Course is also helpful to understand tech industry landscape and career planning, understanding of audience, formulation of results-driven professional portfolio.

Sl	Course Outcome	Mapped modules
CO1	Understanding work more efficiently and levels of both job satisfaction and success.	M1
CO2	Learn to make the creative state more reliable and productive, fine-tune personal brand to present positively and accurately. To learn basic skills for working with others, to avoid traps and enable success.	M2
CO3	Understanding optimal performance profile in order to turn any situation to performance advantage. To learn the optimal performance model, application of the model to profile.	M3
CO4	Finding ideal vacancy, construction of a resume/CV targeted to vacancy, composing a cover letter, preparing for a successful job Interview.	M4
CO5	Understanding of the tech industry landscape and career planning, understanding of audience.	M5
CO6	Formulation of results-driven professional portfolio.	M6

Module	Content	Total Hours	%ageof questions	Blooms Level (if applicable)	Remarks (Ifany)
Module 1	• Efficient work process and different levels of job satisfaction and success.	12	10	1,2	
Module2	• skills to make creative state more reliable and productive • Fine-tune personal brand to present positively and accurately • learn basic skills for working with others	12	15	2,3	
Module 3	• Introduction to optimal performance profile • optimal performance model and	12	15	2,3	

	application of the model				
Module 4	• Finding ideal vacancy, • Construction of a resume/CV • Composing a cover letter, preparing for a successful job Interview.	6	20	2,3	
Module 5	• Understanding of the tech industry • Career planning and understanding of audience.	12	20	3,4	
Module 6	• Formulation of results-driven professional portfolio.	6	20	3,4	
		60	100		

Module 1 How to work more efficiently and levels of both job satisfaction and success.
Module 2 Basic skills to make the creative state more reliable and productive fine-tune personal brand to present positively and accurately. To learn basic skills for working with others, to avoid traps and enable success.
Module 3 Introduction to optimal performance profile in order to turn any situation to performance advantage. To learn the optimal performance model, application of the model to profile.
Module 4 Finding ideal vacancy, construction of a resume/CV targeted to vacancy, composing a cover letter, preparing for a successful job Interview.
Module 5 Understanding of the tech industry landscape and career planning, understanding of audience.
Module 6 Formulation of results-driven professional portfolio.

Suggested Readings

1. Career Planning, Savita Marathe, vishwakarma publications.
2. Career Rules: How to Choose Right and Get the Life You Want, Dutta Choudhury Sonya, HarperCollins.
3. Skill with People, Les Giblin, Manjul Publishing.
4. Human Resource Management: Text & Cases, K. Aswathappa, McGraw Hill Education.
5. Creating a Successful CV (Essential Managers), Simon Howard, DK.

Course Name: Code in with Java
Course Code: GE4B-11

Mode- Offline/ Blended **Credits: 6**

Course Objectives: Learn to code in Java and improve your programming and problem-solving skills. You will learn to design algorithms as well as develop and debug programs. Using custom open-source classes, you will write programs that access and transform images, websites, and other types of data. Our goal is that by the end of this course each and every one of you feels empowered to create a Java program that's more advanced than any you have created in the past and that is personally interesting to you. In achieving this goal you will also learn the fundamentals of Object Oriented Programming, how to leverage the power of existing libraries, how to build graphical user interfaces, and how to use some core algorithms for searching and sorting data. This course is project-based, so we'll dive right into the project immediately!

Sl	Course Outcome	Mapped modules
CO1	Understanding programming, Java technology, architecture	M1
CO2	Understanding java class, data types, decision statements, loops	M2
CO3	Understanding string, CSV libraries, basic statistical operations	M3
CO4	Understanding objects, overloading, scope, memory Models	M4
CO5	Understanding GUI Programming , inheritance, polymorphism	M5
CO6	Understanding Event driven programming , Implementing algorithm (searching and sorting).	M6

Module	Content	Total Hours	%age of questions	Bloom s Level (if applicable)	Remarks (If any)
Module 1	Java technology and Architecture	5	10	2	
Module 2	Java class , data types, decision statements, loops	10	10	2	
Module 3	string, CSV libraries, basic statistical operations	10	20	2,3	
Module 4	Objects, overloading, scope, memory Models	5	10	2	
Module 5	GUI Programming , inheritance, polymorphism	15	25	2,3	
Module 6	Event driven programming , implementing algorithm (searching and sorting).	15	25	1,2,3	
		60	100		

Detailed Syllabus

Module 1- Definition of program and different programming languages, discussion on Java Technology, using BlueJ to program in Java, variables, operators, functions, conditions
Module 2- Classes, methods, types, looping, different types of loop, packages, writing basic programs.
Module 3- String, positions in string, java Math, using CSV libraries (Apache common CSV), devise algorithm about CVS data, analyze CVS data across multiple CVS files and applying basic statistics.
Module 4- Class and objects, create objects, overloading methods, private, public, memory models with primitive data, memory models with objects, introduction to scope.
Module 5- GUI in java, using PApplet, resizing image, color, canvas, loading/displaying image, setting up map visualization (image processing), Inheritance, Reference vs object types, visibility modifier, class hierarchy , method overriding, polymorphism, abstract class and interface
Module 6- Event driven programming, events in unfolding Maps, buttons in unfolding Maps, listerner Hierarchy, implementation of searching and sorting algorithms in java

List of Experiments:

1. Program to implement the basic functionality of a class.
2. Program to print a pattern using nested loop.
3. Program to print numerical series.
4. Program to implement linear search in an array.
5. Program to implement use defined package.
6. Program to implement function overloading.
7. Program to implement different types of inheritance.
8. Program to create and manipulate String objects.
9. Program to implement CVS files.
10. Program to implement Exceptions.
11. Program to implement multithreading.
12. Program to implement this, super, final keywords.
13. Program to implement applet cycle methods.
14. 14. Programs to implement applications with AWT.

Suggested Readings

- Java : The complete Reference , Herbert Schildt, McGraw Hill Education
- Image Processing in Java, Douglas A. Lynon, Prentice Hall.
- Data structures, Algorithms and Applications in Java, Sartaj Sahni, Universities Press.

- https://docs.oracle.com/en/java/index.htm (Reference)

Entrepreneurship Principles
Credits – 5L+1T
Course Code: GE4B-12

Course Outcomes: This course has been designed to enable students understand, apply and manage the various aspects of entrepreneurship activities. The readings will provide an understanding of a pathway to successfully setting up entrepreneurship operations in their future endeavour.

Sl. No.	Course Outcome	Mapped Modules
1	The learner can relate and demonstrate the Entrepreneurship – Concept, Functions, Need and Importance	M1
2	Be able to outline the concept of Entrepreneurs, Competencies and characteristics	M2
3	Be able to utilize Self-Assessment of Qualities, Skills, Resources and Dreams	M2, M3
4	Be able to analyse the Business Idea and Concept, Types of Business, Manufacturing, Trading and Services	M2, M4, M5
5	Be able to explain Entrepreneurs as problem solvers. Innovations and Entrepreneurial Ventures	M2, M3, M5

Modules	Contents	Total Hours	% of Questions	Blooms Level
M1	Entrepreneurship – Concept, Functions, Need and Importance	12	25	1
M2	Types of Entrepreneurs, Competencies and characteristics	12	25	1,2
M3	Self-Assessment of Qualities, Skills, Resources and Dreams	12	15	2, 3
M4	Business Idea and Concept, Types of Business, Manufacturing, Trading and Services	14	25	2, 3
M5	Entrepreneurs as problem solvers. Innovations and Entrepreneurial Ventures	10	10	3, 4
		60	100	
	Tutorials	**16**		
	Total	**76**		

Detailed Syllabus:

Module: 1
Entrepreneurship – Concept, Functions, Need and Importance – The Concept of Entrepreneurship, the functions of Entrepreneurship, Need and Importance of Entrepreneurship, Theories of Entrepreneurship, Role and importance of Entrepreneur in economic growth, Process involved in the build-up towards Entrepreneurship, Various kinds of Start-up and its stages, Entrepreneurship concepts in the Indian Scenario

Module :2
Types of Entrepreneurs, Competencies and characteristics: Entrepreneurial Motivation, Need for Achievement Theory, Risk-taking Behaviour, Innovation and Entrepreneur, Types of Entrepreneurs, Competencies, Ethics and characteristics of Entrepreneur, Entrepreneurial Values and Attitudes, Motivation Mind-set of an employee and an entrepreneur, Importance of Entrepreneur in any organisation

Module: 3
Self-Assessment of Qualities, Skills, Resources and Dreams: New Ventures, Industrial Park (Meaning, Features, & Examples) , Special Economic Zone (Meaning, Features & Examples) Financial Assistance by Different Agencies , Small Scale Industries, The Small Industries Development Bank of India(SIDBI) , The State Small Industries Development Corporation (SSIDC), Business Ideas vs. Business Opportunities, Opportunity Assessment factors, Micro and Macro Market Environment Feasibility Study, Business Plan Preparation, Execution of Business Plan, Role of networking in entrepreneurship

Module 4

Business Idea and Concept, Types of Business, Manufacturing, Trading and Services: – Business Idea and Concept, Types of Business: Manufacturing, Trading and Services. Stakeholders: sellers, vendors and consumers and Competitors Market Research, Concept, Importance and
Process, Market Sensing and Testing, Business Model, Proof of Concept, Pricing and Factors affecting pricing, Launch Strategies after pricing and proof of concept

Module: 5

Entrepreneurs as problem solvers. Innovations and Entrepreneurial Ventures: Entrepreneurs - as problem solvers. Innovations and Entrepreneurial Ventures, Global and Indian New Industries of New Age Economy, Role of Technology, E-commerce and Social Media Social Entrepreneurship as Problem Solving, Concept and Importance Risk Taking-Concept; types of business risks.

Suggested Readings:

1. Robert Tuchman, Young Guns: The Fearless Entrepreneur's Guide to Chasing Your Dreams and Breaking out on Your Own, American Management Association, 2009
2. David S. Landes; Joel Mokyr; William J. Baumol, The Invention of Enterprise: Entrepreneurship from Ancient Mesopotamia to Modern Times, Princeton University Press, 2010
3. Philip Auerswald, The Coming Prosperity: How Entrepreneurs Are Transforming the Global Economy, Oxford University Press, 2012
4. David A. Harper, Foundations of Entrepreneurship and Economic Development Routledge, 2003
5. Janet Kiholm Smith; Richard L. Smith; Richard T. Bliss, Entrepreneurial Finance: Strategy, Valuation, and Deal Structure, Stanford Economics and Finance, 2011
6. Edward D. Hess, Growing an Entrepreneurial Business: Concepts and Cases, Stanford Business Books, 2011
7. Edward D. Hess, Grow to Greatness: Smart Growth for Entrepreneurial Businesses, Stanford Business Books, 2012

Course Code: GE4B-13
Course: E-Commerce & M-Commerce
Credit-6

Course Objective:

1. To understand the basic concepts and technologies used in the E-commerce and M-commerce.
2. To develop knowledge about challenges, security issues from business perspective in the E-commerce and M-commerce domain.
3. To familiarize students with HLML and CSS.

Sl	Course Outcome	Mapped modules
1	Remembering	M1, M2, M3, M4, M5, M6, M7
2	Understanding the course	M1, M2, M3, M4, M5, M6, M7
3	Applying the general problem	M3, M4, M6
4	Analyse the problems	M3, M4, M6
5	Evaluate the problems after analysing	
6	Create using the evaluation process	M7

Module Number	Content	Total Hours	%age of questions	Bloom's Level (if applicable)	Remarks (If any)
M1	E-Business Framework	8		L1, L2	
M2	Network Infrastructure for E-Commerce.	6		L1, L2	
M3	E-Business: Requirements and Architecture.	6		L1, L2, L3, L4	
M4	Security in Electronic Business.	6		L1, L2, L3, L4	
M 5	E-marketing	6		L1, L2	
M6	Mobile-Commerce	8		L1, L2, L3, L4	
M7	HTML	10 P		L1, L2	
		60	**100**		

Sl.	Topic/Module	Hour
1.	**Module 1:** E-Business Framework: Definition of E-Business, Origin of E-Business, History of the Internet, E-Business Opportunities for Businesses, Working of E-Business, E-Business Vs the Traditional Business Mechanism, Advantages of E-Business, Disadvantages of E-Business, Main Goals of E-Business.	5
2.	**Module 2**: Network Infrastructure for E-Commerce – I: Local Area Network (LAN), Ethernet: IEEE 802.3: Local Area Network (LAN)	5

	Protocols, Wide Area Network (WAN), The Internet, TCP/IP Reference Model, Domain Names, Hyper Text Markup Language (HTML), Simple Exercises in HTML.	
3.	**Module 3**: E-Business: Requirements and Architecture: Requirements of E-Business, Functions of E-Business, E-Business Framework Architecture, I-way or Information Highway. Business Models: Evolution of Internet Business Models, Business Models in Practice, Business Model: The Six Components.	5
4.	**Module 4**: Security in Electronic Business: Intranet and Extranet Security: Threats and Protection, Protection Methods, Data and Message Security, Firewalls. Encryption: Cryptography, Encryption, Digital Signature, Virtual Private Network.	5
5.	**Module 5**: E-Marketing: Challenges of Traditional Marketing, Retailing in E-Business Space, Internet Marketing, Advertisement and Display on the Internet, E-Business for Service Industry. EDI, E-CRM and E-SCM: Electronic Data Interchange (EDI), E-CRM, E-SCM	5
6.	**Module 6:** Mobile Commerce: Overview of M-Commerce - Wireless Application Protocol (WAP), Generations of Mobile Wireless Technology, Components of Mobile Commerce, Networking Standards for Mobiles.	5
7.	**Module 7:** HTML: Creating web pages using HTML tags, elements, basic and advanced text formatting, multimedia components, designing web pages, document layout, Lists, Tables, Hyperlinks, Working with frames, forms, controls etc.	15
8.	**Module 8:** Introduction to Cascading Style Sheets: Concept of CSS, Creating Style Sheet, CSS Properties, CSS Styling(Background, Text Format, Controlling Fonts), Working with block elements and objects, Working with Lists and Tables, CSS Id and Class, Box Model(Introduction, Border properties, Padding Properties, Margin properties), CSS Advanced(Grouping, Dimension, Display, Positioning, Floating, Align, Pseudo class, Navigation Bar, Image Sprites, Attribute sector), CSS Color , Creating page Layout and Site Designs.	15

Suggested Readings:

1. Joseph, P.T. (2005). E-Commerce an Indian Perspective (2e), New Delhi Prentice-Hall of India
2. Kaspersky, (2008). The Cybercrime Ecosystem Whitepaper, Kaspersky Lab
3. O'Brien, J. (2004). Management Information Systems Managing Information Technology in The Business Enterprise, New Delhi Tata McGraw-Hill.
4. Rayport, J. F. & Jaworski, B. J. (2002). Introduction to E-Commerce, New York McGraw-Hill Irwin.
5. Stair, R. M. & Reynolds, G. W. (2001). Principles of Information Systems, 5e, Singapore Thomson Learning.
6. Ramesh Bangia: Learning HTML, Khanna Book Publishing Company.
7. Powell Thomas: HTML & CSS: The Complete Reference: McGraw Hill Education India.
8. Elisabeth Robson and Eric Freeman: *Head First HTML and CSS:* Packt.

Distributed operating system
Code: GE4B-14

Mode-Offline/ Blended

Contact: 5L+1T
Credits:6
Course Outcomes:

Sl. No.	Course Outcome	Mapped Module
1.	Gain knowledge of distributed operating system architecture (Knowledge)	Module 1, Module 2
2.	Illustrate principles and importance of distributed operating system (Understand)	Module 3, Module 4
3.	Implement distributed client server applications using remote method invocation (Apply)	Module 5
4.	Distinguish between centralized systems and distributed systems(Analyze)	Module 6
5.	Create stateful and state-less applications (Create)	Module 7

Module No.	Content	Total Hour	%age of questions	Blooms level (if applicable)	Remarks (if any)
Module 1	Introduction	6	5		
Module 2	Communication in DOS	10	20		
Module 3	Synchronization	8	10		
Module 4	Transaction and Concurrency Control	10	20		
Module 5	Distributed and shared Memory Management (DSM)	6	5		
Module 6	Resource Management in DOS	10	20		
Module 7	Security in DOS	10	20		
		60	100		

Module	Contents	Hour
Module I	Introduction of Distribution Operating System (DOS) , Functions of DOS, Basic concepts, goals & challenges of distributed systems, architectures of DOS. Revisit the inter process	6
Module 2	Communication in DOS: Study of case studies for distributed environment, Issues in communication, message-oriented communication, remote procedure call, remote method invocation, stream-oriented communication, communication between processes, unstructured Vs structured communication, blocking vs non-blocking communication.	10
Module 3	Synchronization : Introduction of synchronization, Clock, events, Time in distributed system 1.Cristian's algorithm,	8

	2.The Berkeley Algorithm, 3.Network Time Protocol(NTP) 4.Logical time and logical clocks 5.Lamport logical clock 6. Vector clock	
Module 4	Transaction and Concurrency Control: Basic concurrency control mechanism in DOS mutual exclusion in distributed environmental, Transactions and Concurrency control in distributed environment, distributed deadlocks in distributed environment.	10
Module 5	Distributed and shared Memory Management(DSM) : Basic fundamental of shared memory, advantages & challenges of DSM, Memory coherence, consistency with uniprocessor system, consistency with multiprocessing environment	6
Module 6	Resource Management in DOS: Type of resource ,issues sharing ,Task assignment, Type of distributed load balancing algorithms, load estimation policy, process transfer, location policy, state information exchange policy, priority assignment policy, process migration and case studies	10
Module 7	Security in DOS: Importance of security, types of external attacks, Basic elements of information system security and policy, Trust Management, Access control models, cryptography.	10

List of Books

Reference :

1. Andrew S. Tanenbaum & Maarten van Steen, Distributed System: Principles and Paradigms, Prentice Hall (2002)
2. D.L Gali, Distributed Operating System,
3. Principals of Distributed Database Systems, M. Tamar Ozsu, Patrick Valduriez, Prentice Hall International
4. Distributed Operating Systems and Algorithms, Randy Chow, T.Johnson, Addison Wesley
5. Distributed Systems Concepts and Design, G.Coulouris, J.Dllimore, Addison Wesley

ERP

Code: GE4B-15

Mode-Offline/ Blended

Contact: 5L+1T
Credits:6

Course Outcomes:

Sl. No.	Course Outcome	Mapped Modules
1.	Understand the basic concepts and technologies used in the field of E-commerce	Module1, Module 2
2.	Understand the processes of developing and implementing E-commerce	Module 3
3.	Understand legal and moral issues in the digital age	Module 4
	Understand Enterprise Resource Planning, integrated management of business process	Module 5

Module No.	Content	Total Hour	%age of questions	Blooms level (if applicable)	Remarks (if any)
Module 1	Introduction	5	20		
Module 2	Technologies	5	20		
Module 3	Business Models of E – commerce, E – strategy	10	20		
Module 4	E-payment and E-marketing	15	20		
Module 5	Enterprise Resource Planning (ERP)	15	20		
		60	100		

Module	Contents	Hour
Module I	Overview, Definitions, Advantages & Disadvantages of E – Commerce, Threats of E – Commerce, Managerial Prospective, Rules & Regulations For Controlling E – Commerce, Cyber Laws.	10
Module 2	Technologies : Relationship Between E – Commerce & Networking, Different Types of Networking Commerce, Internet, Intranet & Extranet, EDI Systems Wireless Application Protocol : Definition, Hand Held Devices, Mobility & Commerce, Mobile Computing, Wireless Web, Web Security, Infrastructure Requirement For E – Commerce .	10
Module 3	Business Models of e – commerce : Model Based On Transaction Type, Model Based On Transaction Party - B2B, B2C, C2B, C2C, E – Governance. E – strategy : Overview, Strategic Methods for developing E – commerce. Four C's : (Convergence, Collaborative Computing, Content Management & Call Center). Convergence : Technological Advances in	10

	Convergence – Types, Convergence and its implications, Convergence & Electronic Commerce. Collaborative Computing : Collaborative product development, contract as per CAD, Simultaneous Collaboration, Security. Content Management : Definition of content, Authoring Tools & Content Management, Content – partnership, repositories, convergence, providers, Web Traffic & Traffic Management ; Content Marketing. Call Center : Definition, Need, Tasks Handled, Mode of Operation, Equipment , Strength & Weaknesses of Call Center, Customer Premises Equipment (CPE).	
Module 4	Supply Chain Management: E – logistics, Supply Chain Portal, Supply Chain Planning Tools (SCP Tools), Supply Chain Execution (SCE), SCE - Framework, Internet's effect on Supply Chain Power. E – Payment Mechanism: Payment through card system, E – Cheque, E – Cash, E – Payment Threats & Protections. E – Marketing: Home –shopping, E-Marketing, Tele-marketing Electronic Data Interchange (EDI): Meaning, Benefits, Concepts, Application, EDI Model, Protocols (UN EDI FACT / GTDI, ANSI X – 12), Data Encryption (DES / RSA). Risk of E – Commerce: Overview, Security for E – Commerce, Security Standards, Firewall, Cryptography, Key Management, Password Systems, Digital certificates, Digital signatures.	15
Module 5	Enterprise Resource Planning (ERP): Features, capabilities and Overview of Commercial Software, re-engineering work processes for IT applications, Business Process Redesign, Knowledge engineering and data warehouse. Business Modules: Finance, Manufacturing (Production), Human Resources, Plant Maintenance, Materials Management, Quality Management, Sales & Distribution ERP Package, ERP Market: ERP Market Place, SAP AG, PeopleSoft, BAAN, JD Edwards, Oracle Corporation ERP-Present and Future: Enterprise Application Integration (EAI), ERP and E-Commerce, ERP and Internet, Future Directions in ERP	15

List of Books

Reference :

1. E-Commerce, M.M. Oka, EPH
2. Kalakotia, Whinston : Frontiers of Electronic Commerce , Pearson Education.
3. Bhaskar Bharat : Electronic Commerce - Technologies & Applications.TMH
4. Loshin Pete, Murphy P.A. : Electronic Commerce , Jaico Publishing Housing.
5. Murthy : E – Commerce , Himalaya Publishing.
6. E – Commerce : Strategy Technologies & Applications, Tata McGraw Hill.
7. Global E-Commerce, J. Christopher & T.H.K. Clerk, University Press
8. Beginning E-Commerce, Reynolds, SPD 9. Krishnamurthy, E-Commerce Mgmt, Vikas

Course Name: Computer Graphics

Course Code: GE4B-16

Mode - Offline / Blended

Course Objective: The course is designed to make students understand various types of display device, color scheme, picture elements, understand the basic concept of drawings of geometric objects in digital device, understand the basic concept of geometric transformation of objects, clipping and curve, understand the concept of mathematical projection, hidden surface elimination.

Contents		6 Hrs./week	
Module	**Name of the Topics**	**Hours**	**Marks**
1	Application of Computer Graphics, Graphics Devices, Cathode Ray Tube, Liquid Crystal Device, Raster Scanning, Random Scanning, Refresh Rate, Resolution, Aspect Ratio, Frame Buffer, Refresh Buffer.	**6**	**8**
2	Points and Lines, DDA Line Drawing Algorithm, Bresenham's Line Drawing Algorithm, Midpoint Circle Drawing Algorithm, Bresenham's Circle Drawing Algorithm.	**8**	**10**
3	2D Geometric Transformation: Basic Transformation, Translation, Rotation, Scaling, Matrix Representation, Homogeneous Coordinates, Composite Transformations, Pivot Point Rotation, Fixed Point Scaling, Reflection, Shearing, General 3D Rotations, Translation, Scaling.	**16**	**25**
4	Window-to-Viewport Coordinate Transformation, Clipping Operations: Point Clipping, Line Clipping, Cohen-Sutherland Line Clipping Algorithm, Midpoint Subdivision Line Clipping Algorithm, Liang-Barsky Line Clipping Algorithm, Polygon Clipping, Sutherland-Hodgeman Polygon Clipping Algorithm.	**14**	**15**
5	Curve Generation, Interpolation & Approximation methods, Parametric Continuity Condition, Properties of Bezier Curve, Cubic Bezier Curve, Parallel Projection, Perspective Projection, Visible Surface Detection, Z-Buffer Method.	**12**	**12**
Sub Total:		**56**	**70**
Internal Assessment Examination & Preparation of Semester Examination		**4**	**30**
Total:		**60**	**100**

List of Experiments (Using C Programming):

1. Graphics Preliminaries with Different Shapes, Objects, Color Assignments.
2. Implementation of DDA Line Drawing Algorithm.
3. Implementation of Bresenham's Line Drawing Algorithm.
4. Implementation of Midpoint Circle Drawing Algorithm.
5. Implementation of Bresenham's Circle Drawing Algorithm.
6. Implementation of Simple Translation/Rotation/Scaling/Reflection of Geometric Objects.
7. Implementation of Composite Translation/Rotation/Scaling of Geometric Objects.

8. Implementation of Cohen-Sutherland Line Clipping Algorithm.
9. Implementation of Liang-Barsky Line Clipping Algorithm.
10. Implementation of Graphics Application (Moving Boat, Rotating Wheel, Olympic Symbol etc).

List of Books
Text Books:

Name of Author	Title of the Book	Edition/ISSN /ISBN	Name of the Publisher
Doland Hearn, M. Pauline Baker	Computer Graphics C Version	2nd	Pearson
Zhigang Xiang, Roy A. Plastock	Theory and Problems of Computer Graphics	2nd	Tata McGraw-Hill
Yashavant Kanetkar	Graphics Under C	3rd	BPB Publication

Reference Books:

Name of Author	Title of the Book	Edition/ISSN /ISBN	Name of the Publisher
James D. Foley, Andries Van Dam, Steven K. Feiner, F. Hughes John	Computer Graphics – Principles & Practice in C	2nd	Pearson
Anirban Mukhopadhyay, Arup Chattopadhyay	Graphics & Multimedia	2nd	Vikas

Paper: Computer basics and multimedia software: MS Tools, Presentations, Online tools: Theory
Paper Code: GE4B-17T
Contact Hours/Week: 4L
Credit: 4

Objective: To understand the basic online and offline tools of information technology and implementation of them in contemporary industry requirement. Giving students a basic idea about Computer, Operating Systems, Ms Word, Excel, and Google tools alongside the knowledge and skills for making good presentations using MS Office or similar.

Course Content

1	• Data and Information: Analog Vs Digital • Types of computer memory • Operating System: Windows, iOS, Android, Linux	20
2	• Basic Computer Language.	20

SUGGESTED READINGS:
Computer Basics and C Programming, V Rajaram
HTML 5.0 For Beginners, Vinod Kumar Murugesan

Paper: Computer basics and multimedia software: MS Tools, Presentations, Online tools
Paper Code:GE4B-17P
Contact Hours/Week: 2P
Credit: 2

Objective: To understand the basic online and offline tools of information technology and implementation of them in contemporary industry requirement. Giving students a basic idea about Computer, Operating Systems, Ms Word, Excel, and Google tools alongside the knowledge and skills for making good presentations using MS Office or similar.

Course Content

Module	Content	Teaching Hours
1	• MS Package: word, power point, excel, outlook • Networking and email: LAN, MAN, WAN, Baseband, Broadband.	5
2	• Basics of HTML. • Google tools: docs, slides, spreadsheets, forms, drive.	5
3	• Data Base Management System (DBMS).	10

SUGGESTED READINGS:
Computer Basics and C Programming, V Rajaram
HTML 5.0 For Beginners, Vinod Kumar Murugesan

Paper Code: GE5B-01
Principles of Management
Total Credit: 6
Total hours of lectures: 60 hours

Sl.	Topic/Module	Hour
1.	**Module 1 :** Introduction to Management- Nature, meaning and significance of management, Management as a Science or an Art, Difference between management & administration; management as a process, management as a functions, managerial skills, and managerial roles in organisation; quality of a good manager; relevance of management in Hospital and Health Sector	10
2.	**Module 2** : Approaches to Management – Classical, Neo-classical and Modern Contributors to Management Thought ; Taylor and Scientific Theory, Fayol's and Organization Theory, Elton Meyo & Behavioural school & human relations school ; Peter Drucker and Management Thought.; Various Approaches to Management i.e. system approach , contingency approach etc., Indian Management Thought.	10
3.	**Module 3** : Planning And Decision Making- Planning: Nature, importance, forms, types, making planning effective, Significance & Limitations of Planning; Planning Premises – Meaning & Types, Strategic Planning – Meaning & level, BCG model etc., MBO – Meaning, Process , importance ; Decision Making – Meaning, Types, Process, schools of decision making	10
4.	**Module 4** : Organization Design And Structure - Organization – Meaning, Process, Principles, Or Organization Structure – Determinants and Forms: Line, Functional, Line & Staff, Project, Matrix and Committees; Formal and Informal Organization; Departmentation – Meaning and Bases; Span of Control – Meaning and Factors Influencing; Authority, Responsibility and Accountability; Delegation – Meaning, Process; Principles; Centralization and Decentralization – Meaning; Degree of Decentralization; Difference between Delegation and Decentralization. Organization structure common in tourism industry	10
5.	**Module 5** : Directing – motivation & leadership- Motivation – Meaning , Definition, Significance & Limitations; contemporary theories of motivation; Financial and non-financial incentives of Motivation; Leadership - Definition, Significance of Leadership, Leadership styles ; Process and Barriers of Communication.	10
6.	**Module 6** : Controlling & Change- Control – meaning & importance of control, steps of controlling process, designing control systems, financial control ; Organizational change – meaning, drivers of change, process of change, resistance to change, overcoming resistance to change; Management trends in Health Sector - managing quality, innovation, concern for environment &sustainability of the organization & industry	10

Suggested Readings:

1. Management: Stoner James .A. , Freeman Edward, Gilbert Daniel , Pearson
2. Weihrich and Koontz, et al: Essentials of Management; Tata McGraw Hill
3. . V.S.P Rao & Hari Krishna: Management-Text & Cases, Excel Books
4.. Ramaswami T: Principles of Mgmt., Himalaya Publishing
5. Dipak Kumar Bhattacharyya: Principles of Management - Text and Cases, Pearson.
6. Robbins, S. P: Management, Prentice Hall.

Subject: Economics
Course Code: GE5B-02

Name of the Course: Bachelors in Banking and Financial Services **Subject:** Economics (GE-1)			
Course Code: BBABFS102-A / GE5B-02		**Semester:** 1	
Duration:60 Hours		**Maximum Marks:** 100	
Teaching Scheme		**Examination Scheme**	
Theory: 5		**End Semester Exam**: 70	
Tutorial: 1		**Teacher's Assessment**: 10	
Practical:0		**Internal Assessment**: 20	
Credit: 6		**Practical Sessional internal continuous evaluation**:	
		Practical Sessional external examination:	
Aim:			
Sl. No.			
1.	Build a foundational understanding of economics for Capital Markets		
2.	Establish a link between various components of the Capital Markets		
Objective:			
Sl. No.			
1.	To gain an understanding of economic concepts for Capital Markets		
Pre-Requisite:			
Sl. No.			
1.	Basic knowledge of Economics		

Contents		**Hrs./week**	
Chapter	**Name of the Topic**	**Hours**	**Marks**
01 Introduction	• Scope and Importance of Business Economics • Basic tools- Opportunity Cost principle- Incremental and Marginal Concepts • Basic economic relations - functional relations: equations- Total, Average and Marginal relations • Use of Marginal analysis in decision making, The basics of market demand, market supply and equilibrium price- shifts in the demand and supply curves and equilibrium	6	14
02 Demand Analysis	• **Demand Function -** nature of demand curve under different markets Meaning, significance, types and measurement of elasticity of demand (Price, income cross and promotional)- relationship between elasticity of demand and revenue concepts • **Demand estimation and forecasting:** Meaning and significance - methods of demand estimation: survey and statistical methods (numerical illustrations on	6	14

	trend analysis and simple linear regression)		
03 Supply and Production Decisions and Cost of Production	• **Production function:** short run analysis with Law of Variable Proportions- Production function with two variable inputs- isoquants, ridge lines and least cost combination of inputs- Long run production function and Laws of Returns to Scale - expansion path - Economies and diseconomies of Scale. • **Cost concepts:** Accounting cost and economic cost, implicit and explicit cost, fixed and variable cost - total, average and marginal cost - Cost Output Relationship in the Short Run and Long Run (hypothetical numerical problems to be discussed), LAC and Learning curve - Break even analysis (with business applications)	6	14
04 Market structure: Perfect competition and Monopoly and Pricing and Output Decisions under Imperfect Competition	• Short run and long run equilibrium of a competitive firm and of industry - monopoly - short run and long-run equilibrium of a firm under Monopoly • **Monopolistic competition:** Equilibrium of a firm under monopolistic competition, debate over role of advertising (topics to be taught using case studies from real life examples) • **Oligopolistic markets:** key attributes of oligopoly - Collusive and non-collusive oligopoly market - Price rigidity - Cartels and price leadership models (with practical examples)	6	14
05 Pricing Practices	• Cost oriented pricing methods: cost – plus (full cost) pricing, marginal cost pricing, Mark up pricing, discriminating pricing, multiple – product pricing - transfer pricing • Case studies on how pricing methods are used in business world	6	14
	Sub Total:	**30**	**70**
	Internal Assessment Examination & Preparation of Semester Examination		**30**
	Total:		**100**

Practical:

Skills to be developed:

Intellectual skills:

1. Analytical skills. Economists must be able to review data, observe patterns, and draw logical conclusions. ...
2. Communication skills. Economists must be able to explain their work to others. ...
3. Critical-thinking skills. ...
4. Math skills. ...

Motor Skills:

1.Detail oriented.

2.Writing skills

List of Practical: Sl. No. 1& 2 compulsory & at least three from the rest)

1. Analytical skills. Economists must be able to review data, observe patterns, and draw logical conclusions. ...
2. Communication skills. Economists must be able to explain their work to others. ...
3. Critical-thinking skills. ...
4. Detail oriented. ...
5. Math skills. ...
6. Writing skills

Assignments:

List of Books
Text Books:

Name of Author	**Title of the Book**	**Edition/ISSN/ISBN**	**Name of the Publisher**
Roy E. Bailey	The Economics of Financial Markets	2005/978-0521612807	Cambridge University Press
Paul Heyne,Peter Boettke,David Prychitko	The Economic way of Thinking	978/0132991292	Pearson

Reference Books:

Milton Friedman	Money Mischief	1994/ 978-0156619301	Harcourt Publishers Group

List of equipment/apparatus for laboratory experiments:

Sl. No.	
1.	**NA**
2.	
3.	

End Semester Examination Scheme. Maximum Marks-70. Time allotted-3hrs.

Group	**Unit**	**Objective Questions** (MCQ only with the correct answer)		**Subjective Questions**			
		No of question to be set	Total Marks	No of question to be set	To answer	Marks per question	Total Marks
A	**1,2,3, 4**	**10**	**18**	**3**	**2**	**4**	**52**
B	**4,5, 6, 7, 8**	**10**		**4**	**3**		

- Only multiple choice type question (MCQ) with one correct answer are to be set in the objective part.
- Specific instruction to the students to maintain the order in answering objective questions should be given on top of the question paper.

Subject: Accounting
Course Code: GE5B-03

Name of the Course: Bachelors in Banking and Financial Services **Subject:** Accounting (GE-1)	
Course Code: BBABFS102-B / GE5B-03	**Semester:** 1
Duration: 60 Hours	**Maximum Marks:** 100
Teaching Scheme	**Examination Scheme**
Theory: 5	**End Semester Exam**: 70
Tutorial: 1	**Teacher's Assessment**: 10
Practical:0	**Internal Assessment**: 20
Credit: 6	**Practical Sessional internal continuous evaluation**:
	Practical Sessional external examination:

Aim:	
Sl. No.	
1.	Build a foundation to understand the various concepts of Financial Accounting
2.	Gain a better understanding of Accounting Mechanics, Accounting Standards and dealing with Financial Statements of Companies

Objective:	
Sl. No.	
1.	To articulate the financial concepts of accounting in companies
2.	To gain a clear understanding of Financial Accounting with the help of case studies

Pre-Requisite:	
Sl. No.	
1.	NA

Contents		**Hrs./week**	
Chapter	**Name of the Topic**	**Hours**	**Marks**
01 Introduction to Accounting	• Introduction to concepts of Accounting • Concept and necessity of Accounting • An Overview of Income Statement and Balance Sheet.	2	6
02 Introduction and Meaning of GAAP	• Introducing the meaning of GAAP • Concepts of Accounting • Impact of Accounting • Concepts on Income Statement and Balance Sheet.		
03 Accounting Mechanics	• Understanding of Accounting Mechanics • Process leading to preparation of Trial Balance and Financial Statements		
04 Preparation of Financial Statements with	• Understanding the Preparation of Financial Statements with Adjustment Entries.	2	6

Adjustment Entries.			
05 Revenue Recognition and Measurement	• Describing Revenue Recognition and Measurement • Capital and Revenue Items • Treatment of R & D Expenses • Preproduction Cost • Deferred Revenue Expenditure etc.	2	6
06 Fixed Assets and Depreciation Accounting	• Describing Fixed Assets and Depreciation Accounting • Evaluation and Accounting of Inventory	2	6
07 Preparation and Complete Understanding of Corporate Financial Statements	• Preparation and Complete Understanding of Corporate Financial Statements • 'T' Form and Vertical Form of Financial Statements.	2	6
08 Important Accounting Standards	• Corporate Financial Reporting – Analysis of Interpretation thereof with reference to Ratio Analysis. Fund Flow, Cash Flow. • Corporate Accounting. Accounting of Joint Stock Companies: Overview of Share Capital and Debentures, Accounting for Issue and forfeiture of Shares, Issue of Bonus Share, Issue of Debentures.	2	6
09 Financial Statements of Companies	• Financial Statements of Companies: Income Statement and Balance Sheet in Schedule VI. Provisions of the Companies Act: Affecting preparation of Financial Statements, Creative Accounting, Annual Report, Presentation and analysis of Audit reports and Directors report. (Students should be exposed to reading of Annual Reports of Companies both detailed and summarized version).	2	6
10 Inflation Accounting & Ethical Issue in Accounting	• Describing Inflation Accounting & Ethical Issue in Accounting	2	6
11 Case Studies and Presentations	• Case Studies and Presentations	**10**	**10**
	Sub Total:	**30**	**70**
	Internal Assessment Examination & Preparation of Semester Examination		**30**
	Total:		**100**

Practical:

Skills to be developed:

Intellectual skills:

1. Analytical Skills.
2. Critical Thinking. ...

Motor Skills:

1. Attention to Detail
2. Interpersonal Communication. ...
3. Adaptability. ...
4. Time Management. ...

List of Practical: Sl. No. 1& 2 compulsory & at least three from the rest)

1. Analytical Skills.
2. Critical Thinking. ...
3. Attention to Detail

4.Interpersonal Communication. ...

5. Adaptability. ...

Assignments:

List of Books

Text Books:

Name of Author	**Title of the Book**	**Edition/ISSN/ISBN**	**Name of the Publisher**
P C Tulsian ,	Financial Accounting	2002/ 9788177582284	Pearson
Gregory Becker	Accounting Principals:The ultimate Begineers Guide to Accounting	978-1081670290	Pearson
Reference Books:			
M C ShuklaS C GuptaT S Grewal	Advanced Accounting Vol - I	2018/ 978-9352533022	S.CHAND
M C ShuklaS C GuptaT S Grewal	Advanced Accounting Vol - II	2018/ 978-8121911009	S.CHAND

End Semester Examination Scheme. Maximum Marks-70. Time allotted-3hrs.

Group	**Unit**	**Objective Questions** (MCQ only with the correct answer)		**Subjective Questions**			
		No of question to be set	Total Marks	No of question to be set	To answer	Marks per question	Total Marks
A	**1,2,3, 4**	**10**	**18**	**3**	**2**	**4**	**52**
B	**4,5, 6, 7, 8**	**10**		**4**	**3**		

- Only multiple choice type question (MCQ) with one correct answer are to be set in the objective part.
- Specific instruction to the students to maintain the order in answering objective questions should be given on top of the question paper.

(GE5B-04): PRINCIPLES OF MANAGEMENT & ORGANIZATIONAL BEHAVIOUR

Credit Point 6

Total Credit Hours: 60 Hrs.

Course Objective

1. To help the students to develop cognizance of the importance of management principles.
2. To understand the planning process in the organization.
3. To enable them to analyze and understand the environment of the organization.
4. To study the system and process of effective controlling in the organization.
5. To understand the concept of behavior in a organizational settings & to explain, predict and influence behavior of others.
6. To help the students to develop the concepts of Human Behaviour.
7. To know the concept of motivation &how to motivate people for their work according to various theories.
8. To enable them to understand the group behavior & the communication process in an organization.
9. To help the students to develop the process of leading individuals, managing conflicts.
10. To enable them to understand the culture of the organization & execute the strategy according to the situation.

Course Outcomes (CO):

SL NO.	Course Outcome	Mapped Modules
1	Students will be able to have clear understanding of managerial functions like planning, and have same basic knowledge on international aspect of management	Module I – Unit 1
2	Students will be able to explain the relationship between strategic, tactical and operational plans	Module I – Unit 2
3	Students will be able to understand the concept of organization.	Module I – Unit 3
4	Students will be able to analyze isolate issues and formulate best control methods	Module I – Unit 4
5	Students will be able to develop insight on how employees behave & perform in the workplace.	Module II – Unit 5

6	Students will get knowledge to improve personal adjustment & interpersonal relationship	Module II – Unit 6
7	Students will be able to analyze & compare different models used to explain individual behavior related to motivation & rewards.	Module II – Unit 7
8	Students will be able to explain group dynamics & demonstrate skills required for working in groups.	Module II – Unit 8
9	Students will learn to explore & will develop a sense of confidence & belief in themselves & their ideas.	Module II – Unit 9
10	Students will be able to understand that how organizational culture influences the behavior of organizational members.	Module II – Unit 10

Module I

Unit 1: Introductionto Management **[4L]**

Nature, purpose and scope of management, Skills and roles of a Manager, Functions, Development of Management Theories (Classical, Neo-Classical and Modern)

Unit 2: Planning Process **[6L]**

Types of plans, Levels of planning, planning process, Management by objectives, Strategic Management, premising and forecasting; Decision-Making process, barriers, styles of decision making

Unit 3: Organizing Procedure **[8L]**

Organizational design and structure, Coordination, centralization and de- centralization, Delegation, Authority & power – concept & distinction, Line and staff organizations.

Unit 4: Controlling System **[8L]**

Concept, planning-control relationship, process of control, Types of Control, Control Techniques, and Staffing: Human Resource Management and Selection

Module II

Unit 5: Introduction to Organizational Behaviour **[4L]**

The nature and determinants of organizational behaviour, need for knowledge of OB, contributing disciplines to the field, OB Model

Unit 6: Individual differences **[6L]**

Learning, Values, attitudes, Personality (MBTI, Big Five Model), Emotional

Intelligence, Perception, Attribution theory

Unit 7: Work Motivation[6L]

Early Theories (Mc. Gregory's Theory X & Y , Abraham Maslow's Need Hierarchy Theory Herzberg's Two Factor Theory) & Contemporary Theories (Mc. Clelland's 3 Needs Theory , Alderfer's ERG Theory , Adam's Equity Theory & Vroom's Expectancy Theory, Goal Setting Theory), Application of Motivation Theories & workers participation management.

Unit 8: Group Behaviour[6L]

Types of Groups, Stages of Group Development, Group Decision Making, understanding Teamwork: Types of Teams, Creating Effective teams, Communication: significance, types, barriers, overcoming barriers.

Unit 9: Leadership[6L]

Basic Approaches (Trait Theories, Behavioral Theories & Contingency Theories) & Contemporary Issues in Leadership. Conflict: levels of conflict, resolving conflicts; power and politics: sources of power, use of power

Unit 10: Organization culture and Change[6L] Effects of culture, changing Organizational culture forces of change, Resistance to change, the change process.

Suggested Readings:

1. Management, Robbins, Stephen P, and Mary Coulter, Prentice Hall, New Delhi. Robbins, Stephen P: Organizational Behavior" Prentice Hall
2. Principles of Management, Govindarajan & Natarajan, Prentice Hall of India Private Limited.
3. Management, Stoner, Freeman & Gilbert, Jr., Prentice Hall of India private Limited
4. Organizational Behavior: Human Behavior at Work, Newstrom, John W. and Keith Davis, Tata McGraw-Hill.

Module No.	Content	Total Hours	%age of questions	Covered CO	Covered PO	Blooms Level (if applicable)	Remarks (if any)
Module I Unit 1	Introduction to Management	4	7	1	8		
Module I Unit 2	Planning Process	6	10	2	8		
Module I Unit 3	Organizing Procedure	8	10	3	8		
Module I Unit 4	Controlling System	8	10	4	8		

Module II Unit 5	Introduction to Organizational Behavior	4	7	6	8		
Module II Unit 6	Individual differences	6	12	6	8		
Module II Unit 7	Work Motivation	6	12	7	8		
Module II Unit 8	Group Behavio r	6	10	8	8		
Module II Unit 9	Leadership	6	12	9	8		
Module II Unit 10	Organization culture an d Change	6	10	10	8		

(GE5B-05): BASICS OF ACCOUNTING AND FINANCE IN HEALTHCARE MANAGEMENT

Credit Point: 6

Total Credit Hours: 60 Hrs.

Course Objective

1. To understand the meaning of accounting, different accounting concepts and principles.
2. To understand the rules of journal, ledger and trial balance.
3. To understand different concepts and methods of depreciation and provision.
4. To understand the preparation of final accounts with different adjustment.
5. To understand the knowledge of business finance, financial management and management decision.
6. To understand the concept and classification of working capital and importance of working capital management.
7.

Course Outcomes (CO):

SL NO.	Course Outcome	Mapped Modules
1	Ability to know the objective and advantages of accounting.	Module I – Unit 1
2	Ability to know how to record the journal entries, posting to the ledger and preparation of trial balance.	Module I – Unit 2
3	Ability to calculate depreciation by applying various methods.	Module I – Unit 3
4	Ability to prepare trading account, profit & loss account and balance sheet along with different	Module I – Unit 4
	adjustments.	
5	Ability to determine the value and wealth maximization of business and scope of financial management.	Module II – Unit 5
6	Ability to compute working capital using both the cash cost approach and the operating cycle approach.	Module II – Unit 6

Module 1

Unit1: Meaning and Scope of Accounting[5L] Accounting: meaning, Objective, Scope and Advantages; Accounting Principles: GAAP, Accounting Concepts and Accounting Conventions; Cash Basis and Accrual Basis of Accounting.

Unit2: Recording of Business Transactions[15L] Accounting Cycle, Golden Rule of Accountancy, Journal, Ledger, Trial Balance, Capital and Revenue expenditure.

Unit 3: Depreciation and Provision [8L] Concept of Depreciation; Causes of Depreciation; Depletion, Amortization; Depreciation accounting; Methods of recording depreciation; Straight line and Diminishing

Balance method.

Provision and Reserve: Preparation of provision for doubtful debt account, provision for discount on Debtors, provision for discount on Creditors, Differentiate between Provision and Reserve.

Unit4: Preparation of Final Accounts[12L] Trading account; Profit and Loss Account; Balance Sheet; Adjustment entries with respect to Closing stock, Outstanding Expenses, Prepaid Expenses, Pre-received Income, Accrued Income, Depreciation, Provision for Bad Debts, Stock lost by Fire, Goods withdrawal by Proprietors, Free sample

Module II[8L]

Unit 5: Introduction to Financial Management

Meaning, Core Elements, Objectives and Scope, Role of Finance Manager, Profit Vs Goal Maximization, Investment Decision, Financing Decision, Dividend Decision.

Unit6: Working Capital Management[12L] Definition, Classification of Working Capital Management, Factors of Working Capital Management, Operating Cycle, Practical problem on Working Capital Requirement.

Suggested Readings:

1. Financial Accounting, Ashoke Banerjee, Excel Books
2. Financial Accounting, Basu & Das, Rabindra Library
3. Financial Accounting, M. Hanif, A. Mukherjee, TMH.
4. Financial Management: Theory and Practice, Chandra, P., TMH.
5. Financial Management, Pandey, I.M., Vikas Publishing House Pvt. Ltd.

Module No.	Content	Total Hours	%age of questions	Covered CO	Covered PO	Blooms Level (if applicable)	Remarks (if any)
Module I Unit 1	Meaning and Scope of Accounting	5	9	1	6		
Module I Unit 2	Recording of Business Transactions	15	25	2	6		
Module I Unit 3	Depreciation and Provision	8	13	3	6		
Module I Unit 4	Preparation of Final Accounts	12	20	4	6		

Module II Unit 5	Introduction to Financial Management	8	13	5	6		
Module II Unit 6	Working Capital Management	12	20	6	6		

(GE5B-06): HEALTH ECONOMICS

Credit Point: 6
Total Credit Hours: 60 Hrs.

Course Objectives:

1. To understand the basic concepts of economics
2. To demonstrate demand supply law and elasticity concepts
3. To overview the understanding of Cost analysis
4. To learn the market mechanism indetails
5. To understand scope of health economics
6. To know about healthcare financing avenues
7. To define the ideas about healthcare budget
8. To discuss health programmes in details

Course Outcomes (CO):

SL NO.	Course Outcome	Mapped Modules
1.	Effectively understand the basic concepts Economics	Module I - Unit 1
2	Properly demonstrate demand supply law and elasticity concepts	Module I - Unit 2
3	Able to overview the understanding of Cost Analysis	Module I - Unit 3
4	Properly understand the market mechanism in details	Module I - Unit 4
5	Able to understand scope of health economics	Module II - Unit 5
6	Explore and know about healthcare financing avenues	Module II - Unit 6
7	Effectively define the ideas about healthcare budget	Module II - Unit 7
8	Thoroughly discuss and interpret the results of health programmes	Module II - Unit 8

Module I

Unit 1: The Fundamentals of Economics **[6L]**

Economic Organizations-Utility, Wealth, Production, Capital- Central Problems of an Economy.

Unit 2: Demand & Supply **[8L]**

Meaning- determinants of demand- law of demand- elasticity of demand- price, income and cross elasticity. Supply -meaning- determinants- law of supply - Demand vs. Supply.

Unit 3: Concepts of Cost **[8L]**

Short-run and long-run costs, average and marginal costs, total, fixed and variable costs.

Unit 4: Various forms of market **[12L]**

Monopoly, Perfect Competition, Monopolistic Competition and Oligopoly- Pricing strategies.

Module II

Unit 5: Scope and coverage of Health Economics **[6L]**

Health as an investment- Population and Economic Development

Unit 6: Health financing **[8L]**

Various sources. Cost Benefit Analysis and Cost Effective Analysis.

Unit 7: Health Care Budget **[6L]**

Purpose, types and practices in Indian context.

Unit 8: Health Programmes **[6L]**

Economics of Health Programmes for Nutrition, Economics of abuse of tobacco & Alcohol, Economics of Breast feeding

Suggested Readings:

1. The Economics of Health and Health Care, Sherman Folland, Allen C. Goodman, Miron Stano, Prentice Hall
2. Health Economics-Jay Bhattacharya,Timothy Hyde & Peter Tu, Kindle Edition
3. Health Economics- Dr. Jeyasingh, Dr. D. Solomon Raj, Dr.D Jery Josephin, Creative Crows Publishers LLP
4. Health Economics for Hospital Management, Dutta, Shuvendu, Bikash, Jaypee Brothers Medical Publishers

Module No.	Content	Total Hours	%age of questions	Covered CO	Covered PO	Blooms Level (if applicable)	Remarks (if any)
Module I Unit 1	The Fundamentals of Economics	6	10	1	6		
Module I Unit 2	Demand & Supply	8	13	2	6		
Module I Unit 3	Concepts of Cost	8	13	3	6		
Module I Unit 4	Various forms of market	12	20	4	6		

Module II Unit 5	Scope and coverage of Health Economics	6	10	5	6		
Module II Unit 6	Health financing	8	14	6	6		
Module II Unit 7	Health Care Budget	6	10	7	6		
Module II Unit 8	Health Programmes	6	10	8	6		

(GE5B-07): MEDICAL MICROBIOLOGY

Credit Point:6

Total Credit Hours: 60 Hrs.

Course Objectives:

1. The objective of this course is that after 50 hours of lectures and demonstrations in Addition to clinical the student will be able to understand the causes, findings, investigations, management in relation with physiotherapy.
2. To understand various pathological conditions due to bacteria.
3. To understand viruses
4. To understand various pathological conditions due to viruses

Course Outcomes (CO):

Sl.No.	Course Outcome	Mapped Modules
1	The course will enable students to understand the conditions in Microbiology and its application in relation with physiotherapy.	Module I – Unit 1
2	Students will learn various pathological conditions due to bacteria's	Module I – Unit 2
3	After studying this course the students will understand various pathological conditions and their causative organisms.	Module II – Unit 3
4	Students will learn various pathological conditions due to viruses	Module II – Unit 4

Module I

Unit 1: Bacteria **[20L]**

Cell structure, classification of bacteria. Staining reactions— gram staining, spore staining, acid fast staining. Bacterial growth-nutritional requirement, physical factors affecting. Culture media, growth curve. Bactericidal agents- phenol, alcohol, ETC Sterilization-principles, types, methods.

Unit 2: Outline the bacteria causing the following diseases **[10L]**

RTI, Meningitis, Enteric infection, Anaerobic infection, UTI, Leprosy, TB, STD, Wound infection, Hospital acquired infection.

Module II

Unit 3: Virus **[20L]**

Elementary knowledge of viral morphology, viral genome and classification, viral replication.

Unit 4: Outline the virus causing the following diseases **[10L]**

HIV, Hepatitis, Polio, Measles, Rubella, Herpes

Suggested Readings:

1. Essentials of Medical Microbiology, Sastry Apurba S and Bhat Sandhya
2. The Short Textbook of Medical Microbiology, Satish Gupte
3. Jawetz Melnick & Adelbergs Medical Microbiology, Stefan Riedel, Stephen Morse, et al.
4. A Text Book of Microbiology, P.Chakraborty

Module No.	Content	Total Hours	%age of questions	Covered CO	Covered PO	Blooms Level (If applicable)	Remarks (If any)
Module I Unit 1	Bacteria	20	40	1	4		
Module I Unit 2	Outline the bacteria causing the following diseases	10	10	2	4		
Module II Unit 3	Virus	20	40	3	4		
Module II Unit 4	Outline the virus causing the following diseases	10	10	4	4		

(GE5B-08): BIOCHEMISTRY& NUTRITION

Credit Point: 6

Total Credit Hours: 60 Hrs.

Course Objectives:

1. To understand the concept of solutions and how PH buffers work.
2. To understand the aspects of various nutrients and its preventive effects.
3. To understand the cell and it structure.
4. To obtain knowledge on nutrition and its function.
5. To have a detailed study on nucleic acid and enzymes.
6. To gain a vivid idea on Biological oxidation.
7. To understand the process of metabolism of different energy substances.
8. To understand general Mechanism of tissues & metabolism.
9. To differentiate regulation and production of different hormones.

Course Outcomes (CO):

Sl.No.	Course Outcome	Mapped Modules
1	Ability to understand the concept of solutions and how PH buffers work.	Module I – Unit 1
2	Ability to understand the aspects of various nutrients and its preventive effects.	Module I – Unit 2
3	Ability to define cell and its structures	Module I – Unit 3
4	Ability to gain knowledge on nutrition and its function.	Module I – Unit 4
5	Ability to get an idea on nucleic acid and on enzymes	Module II – Unit 5
6	Ability to define biological oxidation.	Module II – Unit 6
7	Ability to understand To understand the process of metabolism of different energy substances.	Module II – Unit 7
8	Ability to define general Mechanism of tissues & metabolism.	Module II – Unit 8
9	Ability to differentiate regulation and production of different hormones.	Module II – Unit 9

Module I

Unit 1: Biophysics [5L]

Concepts of PH and buffers, Acid-base equilibrium, osmotic pressure and its physiological applications.

Unit 2: Nutrition & Prevention [5L]

Nutritional aspects of carbohydrate, fat and proteins, Balanced diet, metabolism in exercise and injury. Diet for chronically ill and terminally ill patients.

Unit 3: Cell Organelle [5L]

Morphology, Structure and functions of cell, cell membrane, Nucleus, Chromatin, mitochondria,

endoplasmic reticulum, Ribosome.

Unit 4: Introduction to nutrition **[5L]**

Definition, functions, sources, classification, monosaccharide, Disaccharides, Polysaccharides, Muco-polysaccharides and its importance, Definition, functions, sources, classification, simple lipids, compound lipids, derived lipids, Saturated and unsaturated fatty acids, Essential fatty acids and their importance, Blood lipids and their implications, cholesterol and its importance. Definition, Sources, Functions, Classification, simple protein, congregated proteins and derived proteins properties and reactions of proteins. Classification, Fat-soluble vitamins A, D, E, K Water soluble vitamins-B Complex and Vitamin C. Daily requirement physiological functions and disease of vitamin deficiency.

Unit 5: Nucleic acid & Enzymes **[5L]**

Structure and functions of DNA, RNA, Nucleosides, Nucleotides, biologically important Nucleotides including energy rich compounds. Definition, Classification, mode of action, factors, affection, enzyme action.

Module II

Unit 6: Biological Oxidation **[5L]**

Respiratory chain and process of Biological oxidation.

Unit 7: Metabolism on Energy Substances **[10L]** Metabolism of Carbohydrate, Lipid, Protein, Mineral: Glycolysis, TCA Cycle, Glycogenesis, Glycogenolysis, Gluconeogensis, maintenance of Blood glucose, Inter conversion of different sugars. Metabolism of cholesterol, Ketone bodies, Athero- sclerosis and obesity, Lipo Protein of their metabolism, Transamination, Transmethylation, Dearmination, Fate of Ammonia Urea synthesis and synthesis of creatinine, inborn errors of metabolisms.Iron, Calcium, Phosphorous, Trace elements.

Unit 8: Metabolism & the types of tissues **[10L]**

Mucopolysacharides, Connective tissue proteins, Glyco-proteins, Chemistry and metabolism of bone and teeth. Metabolism of skin. Composition, Metabolism, Chemical mediators of nerve activities. Structure, metabolism of muscles, muscle contraction.

Unit 9: Regulation & Production of Hormones **[5L]**

General characteristics and Mechanism of Hormone actions, Insulin, Glucose, Thyroid and Para-Thyroid hormones. Cortical sex hormones.

Suggested Readings:

1. Textbook of Biochemistry, Chatterjee M.N –Jaypee Brothers
2. Textbook of Biochemistry for medical students, Vasudevan D.M – JaypeeBrothers
3. Clinical Biochemistry – Metabolic & Clinical aspects , Marshall & Bangert– Churchill Livingstone
4. Dietetics – B. Srilakshmi , New age International Publisher
5. Nutrition science -- B. Srilakshmi , New age International Publisher

Module No.	Content	Total Hours	%age of questions	Covered CO	Covered PO	Blooms Level(If applicable)	Remark (If any)
Module I Unit 1	Biophysics	5	9	1	4		
Module I Unit 2	Nutrition & Prevention	5	8	2	4		
Module I Unit 3	Cell Organelle	5	9	3	4		
Module I Unit 4	Introduction to Nutrition	10	17	4	4		
Module I Unit 5	Nucleic acids & Enzymes	5	8	5	4		
Module II Unit 6	Biological Oxidation	5	9	6	4		
Module II Unit 7	Metabolism on Energy Substances	10	16	7	4		
Module II Unit 8	Metabolism and types of tissues	10	16	8	4		
Module II Unit 9	Regulation & Production of Hormones	5	8	9	4		

(GE5B-09) : MICRO ECONOMICS IN BUSINESS

Credit Points– 6

Total Contact Hours - 60

Course Objectives

1. To demonstrate an understanding, usage and application of basic economic principles.
2. To describe and apply the methods for analysing consumer behaviour through demand and supply, elasticity and marginal utility.
3. To understand the role of Consumer behaviour in respect of demand supply elasticity
4. To identify and appraise various models of how markets are organized, and the price and output decisions for maximizing profit.
5. To know how markets uses cost concept to utilise resources efficiently to create maximum output
6. To identify and appraise various models of how markets are organized, and the price and output decisions for maximizing profit.
7. To explain theories and prices of factors of production

Course Outcomes (CO):

SL NO.	Course Outcome	Mapped Modules
1.	Students will be able to explain the concepts of insatiable wants, scarcity and choice more over identify the factors of production and production possibilities.	Unit 1
2	Students will be able to Demonstrate the measurement of individual demand, supply and market demand and how equilibrium price and quantity are determined	Unit 2
3	Students will be able to Explain the concept of consumer equilibrium and elasticity	Unit 3
4	Students will be able to understand the law of diminishing returns and Differentiate and Explain the concepts of economies of scale and diseconomies	Unit 4
5	Students will be able to Demonstrate the calculation of various production costs; fixed, variable and marginal costs	Unit 5

6	Students will be able to Distinguish between the features of the four market structures; monopoly, oligopoly, monopolistic and perfect competition & Demonstrate how firms in the four market structures determine their price, output and profit maximization	**Unit 6**
7	Students will be able to understand basic concepts of factor prices along with their determination concepts.	**Unit 7**

MODULE I

Unit 1: Introduction to Economics

Distinction between Economics and Business Economics. Tools required – Functional relationships, schedules, graphs, concept of slope and its measurement- etc. Resources-scarcity and efficiency - Production Possibility Frontier-it's shifting. **(4L)**

Unit 2: Basics of Demand and Supply

The concept of demand and demand function - Derivation of Individual demand curve and Market demand curve– Shifting of the demand curve – The supply function and the supply curve – Derivation of individual supply curve and market supply curve – Shifting of the supply curve-Determination ofequilibrium price. **(4L)**

Unit 3: Theory of Consumer Behaviour

Cardinal analysis – Law of diminishing marginal utility – consumer surplus Ordinal approach – Indifference curve analysis – Budget line – Consumer Equilibrium – Income consumption curve and Price consumption curve – Hicksian decomposition of price effect into substitution effect and income effect – Demand curve for Normal, inferior and Giffen goods Concept of Elasticities of demand – Measurement pf various elasticities of demand – Distinction between slope of a demand curve and the elasticity of demand – Elasticity of supply – Measurement. **(6L)**

Unit 4: Theory of Production

Production Function – The Law of variable proportions – Relationships among TP, AP, and MP. Concept of Isoquant and Isocost – Finding the optimal employment of inputs – Ridge lines: the economic region of production – Output expansion path and homogeneous production function. **(6L)**

MODULE II

Unit 5: Theory of Cost

Cost analysis – Different concepts – Accounting and Economic costs, Opportunity cost, Private and social costs; short run and long run costs. **(6L)**

Unit 6: Concepts under Different Market Conditions:

TR, AR, MR and relationship among AR, MR and elasticity of demand. Perfect competition – Short run and long run equilibrium – Supply curve in the short run (shutdown and breakeven point concepts). Monopoly – Short run and long run equilibrium – Concept of Price discrimination. Monopolistic competition, Oligopoly Market – Short run and long run equilibrium. **(10L)**

Unit 7: Factor Price Determination

Theory of Wage Determination - Backward Bending Supply curve of labour; Determination of Rent, Profit and Interest rate. **(4L)**

Suggested Readings

1. Pindyke and Rubinfeld, Micro Economics
2. Gould & Ferguson, Micro Economic Theory
3. Banerjee & Majumdar, Fundamentals of Business Economics
4. Banerjee & Majumdar, Banijjik Arthaniti –o- Banijjik Paribesh

Module No.	Content	Total Hours	%age of questions	Covered CO	Covered PO	Blooms Level (if applicable)	Remarks (if any)
Module I Unit 1	**Introduction to Economics**	4	10	1	7		
Module I Unit 2	**Basics of Demand and Supply**	4	10	2	7		
Module I Unit 3	**Theory of Consumer Behaviour**	6	15	3	7		
Module I Unit 4	**Theory of Production**	6	15	4	7		
Module II Unit 5	**Theory of Cost**	6	15	5	7		
Module II Unit 6	**Concepts under Different Market Conditions**	10	25	6	7		
Module II Unit 7	**Factor Price Determination**	4	10	7	7		

(GE5B-10) : MACRO ECONOMICS IN BUSINESS

Credit Points– 6
Total Contact Hours - 60

Course Objectives

1. To understand the differentiation between macro & micro economics and scope of macro economics
2. To demonstrate the concepts of national income accounting with all the measurement parameters
3. To determine the concept of multiplier in the economy along with income and savings function
4. To describe IS LM framework and effectiveness of the fiscal & monetary policy
5. To understand the concepts of demand and supply of money with understanding of effects of inflation in the economy
6. To explore the concepts of balance of trade and payment with international trade theories.

Course Outcome

SL NO.	Course Outcome	Mapped Modules
1.	Students will be able to define macroeconomics	Unit 1
2	Students will be able to explain how economic indicators like GDP are used to assess the state of the economy and differentiate between and calculate nominal and real GDP	Unit 2
3	Students will be able to examine factors that shift aggregate supply and aggregate demand & explain why multiplies works and how to calculate its size	Unit 3
4	Students will be able to understand fiscal policies, including automatic, expansionary, and contractionary fiscal policies along with how monetary policy affects GDP and the interest rates and will establish general equilibrium in real and monetary sector	Unit 4
5	Students will be able to define money & inflation, explain the functions of money, and define liquidity and how money is created by lending, demonstrate the controlling measures of inflation.	Unit 5

6	Students will be able to understand Balance of Payment statement & international trade theory	**Unit 6**

MODULE I

Unit 1: Concepts of Aggregate demand & supply
Macroeconomics – scope and basic concepts, Concept of Aggregate Demand and Aggregate Supply, Marginal Propensity to Consume(MPC), APC, MPS, MPI: Basic concepts Only, Paradox of thrift. (8L)

Unit 2: National Income
National Income Accounting - Concepts and measurement of GDP, GNP, NNP, NI and DPI - Circular flow of income – Real and Nominal GDP –Implicit deflator. (10L)

Unit 3: Income Determination
Theory of Equilibrium Income Determination: Simple Keynesian Model; Consumption, saving and investment functions – National income determination; Investment and Government expenditure multipliers (10L)

MODULE II

Unit 4: IS-LM framework
Commodity market and Money market equilibrium; Derivation of IS and LM curves –Shifts of IS and LM curves-equilibrium in IS-LM model – Effectiveness of monetary and fiscal policies. (8L)

Unit 5: Money and Inflation
Concept of demand for and supply of money. Quantity theory of money and Keynesian theory of demand for money. Measures of money supply – High powered money – Money multiplier. Concept of Inflation – Demand-pull and cost-push theories of inflation – Monetary and fiscal policies to control inflation – Instruments, objectives and limitations. (12L)

Unit 6: Balance of Payments
Items of BOP, Causes of Disequilibrium in BOP, Strategies to Correct Adverse BOP Situation, Purchasing Power Parity Theory (Only basic concept), Absolute and Comparative Cost Advantage Theory, Gains from international trade. (12L)

Suggested Readings

1. W. H. Branson, Macro Economic Theory and Policy
2. Joydeb Sarkhel, Macro Economic Theory
3. Banerjee & Majumdar, Fundamentals of Business Economics
4. Dornbusch, Fischer & Startz, Macroeconomics, TMH
5. Debes Mukherjee: Essentials of Micro and Macro Economics, Central

Module No.	Content	Total Hours	%age of questions	Covered CO	Covered PO	Blooms Level (if applicable)	Remarks (if any)
Module I Unit 1	**Concepts of Aggregate demand & supply**	8	13	1	7		
Module I Unit 2	**National Income**	10	17	2	7		
Module I Unit 3	**Income Determination**	10	17	3	7		
Module I Unit 4	**IS-LM framework**	8	13	4	7		
Module II Unit 5	**Money and Inflation**	12	20	5	7		
Module II Unit 6	**Balance of Payments**	12	20	6	7		

(GE5B-11) : BUSINESS REGULATORY FRAMEWORK

Credit Points– 6
Total Contact Hours - 60

Course Objectives

1. To understand the Basic Concepts of Indian Contract Act 1872.
2. To understand the concept of Sale of Goods Act 1930.
3. To know the concept of Negotiable Instrument Act 1881.
4. To know the concept of Consumer Protection Act 1986.
5. To understand the concept of Companies Act 2013
6. To explore the issues related to IT act 2000.

Course Outcomes (CO)

Sl. No	Course Outcome	Mapped Modules
1	Memorize the Basic Concepts of Indian Contract Act	Module I/ Unit 1
2	Understand the concept of Sale of Goods Act	Module I/ Unit 2
3	Memorize the concept of Negotiable Instrument Act.	Module I / Unit 3
4	Memorize the concept of Consumer Protection Act.	Module II/ Unit 4
5	Understand the concept of Companies Act 2013	Module II/ Unit 5
6	Learn the concepts of IT act 2000	Module II/ Unit 6

MODULE I

Unit 1: Indian Contract Act 1872

Elements of contract -Offer and Acceptance - Consideration - Legal capacity -Intention to create legal relations - Free Consent -Legality of the Object - Possibility of Performance - Void and Voidable Agreement-Contingent Contract -Discharge of Contract-Indemnity and Guarantee-Quasi Contract -Bailment and Pledgement - Agency Contract. (12L)

Unit 2: Sale of Goods Act 1930

Formation of contracts of sale-Goods and their classification, price -Conditions &Warranties-Performance the contract of sale - Unpaid seller and his rights-Hire Purchase agreement, Auction (12L)

Unit 3: Negotiable Instrument Act 1881

Definition of negotiable instruments- Features-Types of negotiable instruments -Dishonor of a Negotiable Instrument (10L)

MODULE II

Unit 4: Consumer Protection Act 1986

Concept - Consumer protection Councils -Dispute Redressal Procedures (10L)

Unit 5: Companies Act 2013

Concept -Type of Companies- steps in formation of a company-Concept and features of AOA MOA and prospectus –Meetings (10L)

Unit 6: Information Technology Act 2000

Overview of Computer and Web Technology , Need for Cyber Law , Cyber Jurisprudence at International and Indian Level , Jurisdictional Aspects in Cyber Law , Issues of jurisdiction in cyberspace , Types of jurisdiction ,Prerequisites of jurisdiction, Cyber Crimes , Cyber Crimes Vs. Conventional Crime, Reasons for cybercrimes and cyber criminals ,Cyber Crimes against Individuals, Institution and State. (6L)

Suggested Readings

1. Sen & Mitra: Commercial law; World Press
2. Pathak: Legal Aspect of Business, TMH
3. Das & Ghosh: Business Regulatory Framework: Ocean Publication, Delhi 4.Pillai & Bagavathi: Business law ,S Chand
6. Tulsian: Business law: Tata Mcgrawhill

Module Number	Content	Total Hours	%age of questions	Covered CO	Covered PO	Blooms Level (if applicable)	Remarks (If any)
Module I /unit 1	**Indian Contract Act 1872**	12	20	1	7		
Module I /unit 2	**Sale of Goods Act 1930**	12	20	2	7		
Module I /unit 3	**Negotiable Instrument Act 1881**	10	16.67	3	7		
Module II /unit 4	**Consumer Protection Act 1986**	10	16.67	4	7		
Module II /unit 5	**Companies Act 2013**	10	16.66	5	7		
Module II /unit 6	**Information Technology Act**	6	10	6	7		

Course: Decision Support System
Code: GE5B-12

Course Objective:

1. To review and clarify the fundamental terminologies, ideas and concepts associated with Decision Support Systems and other aligned systems.
2. To discuss and grow skills in the analysis, design and implementation of computerized Decision Support Systems.
3. To understand and evaluate the importance of Decision Support Systems in organizational and social context.

Sl	Course Outcome	Mapped modules
1	Remembering	M1, M2, M3, M4, M5, M6
2	Understanding the course	M1, M2, M3, M4, M5, M6
3	Applying the general problem	M3, M4, M5, M6
4	Analyse the problems	M2, M4, M5.
5	Evaluate the problems after analysing	M2, M3.
6	Create using the evaluation process	M1, M2 (Case study), M3, M4, M5, M6.

Module Number	Content	Total Hours	%age of questions	Bloom's Level (if applicable)	Remarks (If any)
M 1	Introduction	10	10	L1, L2	
M 2	Application of DSS techniques	10	25	L1, L2, L4	
M 3	Excel Basics	10	10	L1, L2, L3	
M 4	Advanced excel functions	10	25	L1, L2, L3, L4	
M 5	Pivot tables and statistical functions	10	25	L1, L2, L3, L4	
M6	Intro to VBA	10	5	L1, L2, L3	
		60	**100**		

Paper Code: GE5B-12
Decision Support System
Total Credit: 6
Total hours of lectures: 60 hours

Sl.	Topic/Module	Hour
1.	**Module 1:** Understand concepts of a Decision Support System (DSS) and its effect on management, purpose of a DSS. Data warehousing, Differentiate between the data warehouse, Data Marts, and Data Mining. Differentiate between OLAP and OLTP systems. Contrast data, information, and knowledge as they apply to the DSS. Define computer-based inferencing. Discuss various tools assisting IT professionals surrounding DSS.	10
2.	**Module 2**: Application of DSS techniques to real-world scenarios and situations Construct an expert system using a programming language or the Microsoft Office suite of tools. Perform data analysis using Microsoft Excel pivot tables. Apply the Nominal Group Technique (NGT) and the Delphi method. Use linear programming methods to solve multivariate problems.	10
3.	**Module 3**: Excel Basics, Formatting, Referencing and Names, Functions and Formulas, Charts: When to use which chart.	10
4.	**Module 4** : Advanced excel functions: vlookup, hlookup, fuzzy lookup, match, index, statistical functions, etc.	10
5.	**Module 5**: Pivot Tables, Statistical Analysis , The Solver and other tools (what-if analysis etc).	10
6.	**Module 6**: Intro to VBA, Recording Macros, Objects and Variables.	10

Suggested Readings:

1. Clyde W. Holsapple: Decision Support Systems: A Knowledge Based Approach, West Group
2. Douglas Schwartz : Decision Support Systems, Clanrye International
3. Clyde W. Holsapple: Decision Support Systems: Theory and Application, Springer-Verlag .
4. Manish Nigam: Advance Excel 2019 Training Guide: Tips and tricks to kick start your excel skills, BPB Publications.
5. Wayne Winston: Microsoft Excel Data Analysis and Business Modeling, Microsoft Press.

COURSE NAME: **ENGRAIN QUALITY IN CUSTOMER**

Paper Code: GE5B-13

MODE – **OFFLINE/BLENDED** **CREDITS: 6**

COURSE OBJECTIVE:

The Course Is Designed To Provide Basic Knowledge About Healthcare Quality. Students Will Be Able To Use This Course Tocollect Information About Quality In Healthcare, Its Uses And Various Aspects Of Quality. It Will Help Students To Provide Efficient Service To Patients.

SL	COURSE OUTCOME	MAPPED MODULES
1	Understand hospital organization	M1,M3
2	Understand Healthcare Consumerism	M2
3	Understand Healthcare Business Process	M3,M1
4	Understand BASICS OF QUALITY	M4,M5
5	Measure quality, tools for quality improvement	M5,M6
6	Understand QUALITY DATA	M6.M5

MODULE NUMBER	CONTENT	TOTAL HRS	% OF QUESTIONS	BLOOMS LEVEL	REMARKS
M1	An introduction to hospital organization	10	20	1,2	
M2	Healthcare Consumerism	10	10	1,2	
M3	Define health need assessment	10	20	1,2	
M4	BA SICS OF QUALITY	10	20	1,2,3	
M5	Measuring quality, tools for quality improvement	10	20	1,2	
M6	An introduction to QUALITY DATA	10	20	1,2	
		60	100		

Detailed syllabus:

Module 1: hospital organization-definition, Characteristics, Healthcare Organization Accreditation, Accreditation of Indian healthcare, NABH, NABL, Healthcare Administration-Definition Evidence-Based Healthcare Administration Practice, skill and knowledge of hospital administrator

Module 2: Healthcare Consumerism-definition, concept, healthcare delivery model,Sickness and Treatment Model, Individual View of Health and Wellness Models,Healthcare Organization Business Process Definition,

Module 3: Healthcare Organization Business Process Definition, business process management, uses of electronic health record in business process management

Module 4: quality- definition, types, benefits, importance, quality improvement- definition and process, demingphilosophy for quality improvement, PDCA and PDSA cycle,Healthcare Organization Quality Improvement Frameworks/Models, QUALY CONTROL, QUALITY PLANNING.

Module 5: Measuring quality, tools for quality improvement, Public Health Quality Measures of Healthcare Organization, Public Health Quality Measures of Healthcare Organization, quality gurus and their recommendation, concept of TQM

Module 6: Types of Quality Data in Health, Quality Tools in Healthcare Organizations: Cause-and-Effect Diagram care Organizations, Quality Tools in Healthcare Organizations: Pareto Chart, Scatter Diagram, and Stratification, 5s in quality, KAIZAN, BENCH MARKING. SIX SIGMA

SUDGGESTED READING:

1. Hospital AdministrationBook by DC Joshi and Mamta Joshi, Jaypee Brothers Medical Pub (P) Ltd (Publisher)

Course Name: **Entrepreneurship: Launching an Innovative Business**

Paper Code: GE5B-14

Mode:Offline/Blended

Credits: 6

Course Objective: -

This course will assist aspiring and active entrepreneurs in developing great ideas into great companies. With strong economies presenting rich opportunities for new venture creation, and challenging economic times presenting the necessity for many to make their own job, the need to develop the skills to develop and act on innovative business opportunities is increasingly vital.This course will also help the aspiring or active entrepreneurs who want to understand how to secure funding for their company.

Course Outcome (CO):-

Sl No.	Course Outcome	Mapped Modules
1	Identifying and analyzing entrepreneurial opportunities	M1, M2, M3, M4, M5, M6
2	Enhancingentrepreneurial mindset	M1, M2
3	Improvingstrategic decision-making	M1, M2, M3, M4
4	Developing the ability to build innovative business models	M1, M3, M4
5	Exploring kinds of investors invest by stage	M5, M6
6	Understanding different fund-raising options	M5, M6

Module No.	Content	Total Hours	%age of Questions	Blooms Level	Remarks
M1	Introduction to Innovation and Entrepreneurship	12	20	1,2,3	
M2	Entrepreneurial Mindset, Motivations, and Behaviors	10	20	1,2	
M3	Industry Understanding	10	15	1,2	
M4	Customer Understanding and Business Modeling	12	20	1, 2, 3	
M5	Early Stage Investment Landscape	10	15	1, 2	
M6	Sources of Capital for the Early Stage Company	6	10	1, 2	
		60	100		

Detailed Syllabus:-

Module- 1:- Introduction to Innovation and Entrepreneurship

What is entrepreneurship, Who is an entrepreneur, Entrepreneurship, creativity, & innovation, entrepreneurial opportunities, factors influence the feasibility of an innovation,The world's most innovative companies, Types of innovation, Entrepreneurs and strategic decisions, The opportunity analysis canvas.

Module- 2:-Entrepreneurial Mindset, Motivations, and Behaviors

Introduction to entrepreneurial mindset, motivations, and behaviors, Entrepreneurial mindset, Entrepreneurial motivations, How to decide to become an entrepreneur?, Entrepreneurial behaviors, Risk taking in entrepreneurial decision-making, Risk, uncertainty, and stakeholder involvement.

Module- 3:-Industry Understanding

Introduction to industry understanding, Knowledge conditions, Demand conditions, Industry lifecycle, Industry structure, Competitive advantage, Learning curve, Complementary assets, Reputation effects, Product-market fit.

Module- 4:-Customer Understanding and Business Modeling

Introduction to customer understanding, Macro changes that increase new venture opportunities, How can government and entrepreneurs work together, Why is skills training and development important for entrepreneurs and government?, Exploring real market needs, Satisfying real market needs, Strategic positioning, Strategic planning, Value innovation, Opportunity identification.

Module- 5:-Early Stage Investment Landscape

New Venture Finance, Investment landscape, What are the information venture capitalists look for in a "good plan", What are the financial statements investors want to see, Howto develop a balance sheet, content of an income statement, purpose of the cash flow statement.

Module- 6:-Sources of Capital for the Early Stage Company

Sources of capital, Where to find investors, consider friends and family as investors, What's bootstrapping, Are incubators and accelerators a fit, What are angel investors.

Suggested Readings:

1. Entrepreneurship, Innovations & Start-Ups in Indiaby Dr Savita Joshi; New Century Publications
2. A Practical Guide to Entrepreneurship: Be Your Own Boss by Alison Price and David Price.
3. Fundamentals of Entrepreneurship by Dr. G.K. Varshney.
4. Fundamentals of Entrepreneurshipby N.K. Jain.
5. Management and Entrepreneurship by Havinal Veerabhadrappa, New Age International (P) Ltd.
6. Entrepreneurship: Theory and Practice by Raj Shankar; McGraw Hill Education.
7. Entrepreneurship: Development and Management by Dr. Vasant Desai and Dr. Kulveen Kaur; Himalaya Publishing House.
8. Entrepreneurship Development & Management by Dr. R.K. Singal.
9. Fundamentals of Entrepreneurship by Dr. A.N. Bharti, Dr. Vishwjeet Singh, Sanjay Gupta, Dr. Pramod Kumar Tripathi.
10. Entrepreneurship: Text and Cases by P Narayana Reddy, Cengage Learning.

Course Name: **Finance Made Easy**

Paper Code: GE5B-15

Mode: Blended/Offline **Credits: 6**

Course Objective: Provide easy understanding to non finance background towards easy understanding of corporate finance and factors that influence financial decision making of business.

SL. NO.	COURSE OUTCOME	MAPPED MODULE
1	Understand Accounting and Finance	M1
2	Understand accounting mechanics and process	M1,M2
3	Understand basic financial statements & Understand financial analysis tools	M3, M4
4	Understand scope of financial management	M5
5	Understand capital budgeting	M6

MODULE NO.	CONTENT	TOTAL HOURS	% OF QUESTIONS	BLOOMS LEVEL	REMARKS
M1	Introduction to accounting and finance	6	10	1	
M2	Accounting mechanics	12	15	1,2	
M3	Preparation of financial statements	12	20	2,3	
M4	Analysis of financial statements	12	30	1, 2, 3	
M5	Introduction to financial management	6	5	1	
M6	Capital budgeting	12	20	1, 2, 3	
		60	**100**		

Detailed Syllabus

Module 1: Introduction to accounting and finance: Concept and necessity of Accounting- concept of finance- sources of finance-financial statements- users of accounting information- accounting concepts and conventions- GAAP

Module 2: Accounting mechanics: Concept of debit and credit- types of account and rules of debit and credit- preparation of journal- posting to ledger- accounting cycle and trial balance

Module 3: Preparation of financial statements: Income statement and balance sheet as per schedule VI- concept of capital and revenue- preparation of final accounts with adjustments (closing stock, depreciation, bad debts & provision for doubtful debts, prepaid & outstanding expenses, abnormal loss, deferred revenue expenditure)- share capital-concept of provisions and reserves.

Module 4: Analysis of financial statements: Meaning and objective of Financial analysis- ratio analysis (uses, types, calculation of liquidity, profitability, leverage, and turnover ratio)- Break even analysis and marginal costing- Funds flow analysis- cash flow analysis

Module 5: **Introduction to financial management:** Meaning, Objectives and Scope of financial management- Role of Finance Manager- Profit Vs wealth Maximization- Investment Decision- Financing Decision- Dividend Decision- risk & return trade off

Module 6: **Capital budgeting:** Definition- objectives-concept of time value of money- evaluation techniques (discounting and non-discounting techniques)- computation of cash inflow- Payback period, ARR, NPV, IRR, PI- merits and demerits of each technique- NPV vs IRR

Suggested Readings:

1. Financial Accounting, Basu & Das, Rabindra Library
2. Financial Accounting, M. Hanif, A. Mukherjee, TMH.
3. Financial Management: Theory and Practice, Chandra, P., TMH.
4. Financial Management, Pandey, I.M., Vikas Publishing House Pvt. Ltd.

COURSE NAME—**Green marketing**

Paper Code: GE5B-16

Mode—offline/ blended **Credits: 6**

Course objective—

- This course is designed to understand the importance of green marketing on consumer satisfaction and environmental safety.
- Help students understand the value of Green Marketing and Sustainable Development in enhancing the corporate image
- Introduce the fundamentals of Societal Marketing with emphasis on the "social", "cause" and "values-based" marketing
- Emphasize the need for a new strategic decision-making approach within a firm based on the Societal Marketing Orientation.

Course Outcome [CO]

SL	Course outcome	Mapped modules
1	• Student will learn about -- What does it mean for a firm to be "green"? Why would a firm decide to go green and pursue environmental activities? Why is a social license to operate important for green business? • Which, why and under what circumstances an environmental strategy can be successful and a very useful framework for environmental strategies.	M- I
2	Student will learn • The core concepts of corporate sustainability and • The key dimensions that distinguish a sustainable organization.	M- II
3	In this section student will understand about--- • Business & the Environment • Strategic Issues and Strategic Options • Environmental Interest Groups • Differences across Industries and Around the World • How to develop a sustainability strategy	M- III
4	Here student will learn about---- • Sustainability and Consumption • Sustainable Product Design and Market Research • Sustainable Value Chains and Communications • BOTTOM-UP ENTERPRISE	M- IV

Module number	Content	Total hours	% of questions	Blooms level [if applicable]	Remarks [if any]
M- I	GREEN BUSINESS STRATEGY	8	16	1,2,3	
M- II	CORPORATE SUSTAINABILITY	16	28	2,3	
M- III	STRATEGY AND SUSTAINIBILITY	16	28	1,2,3	
M- IV	SUSTAINABLE BUSINESS ENTERPRISES	20	28	1,2,3	
		60	100		

Detailed syllabus

Module-- I GREEN BUSINESS STRATEGY

Why Be "Green"?
How to be green: Environmental Strategy
Case studies in environmental strategy
Looking back and looking ahead in green business

Module-- II CORPORATE SUSTAINABILITY

Understanding the Sustainability Challenge: The Systemic Level
Understanding the Sustainability Challenge: The Business Level
Why Corporate Sustainability? Assessing the Strategic Opportunity
Seizing the Strategic Opportunity: Managing Sustainability Transitions across Business Functions
Transitioning Organizations to Sustainable Enterprises: Developing the Road-Map

Module—III STRATEGY AND SUSTAINIBILITY

Business & the Environment
Strategic Issues
Strategic Options
Environmental Interest Groups
Differences across Industries and Around the World
How to develop a sustainability strategy

Module—IV SUSTAINABLE BUSINESS ENTERPRISES

Sustainability and Consumption
Sustainable Product Design and Market Research
Sustainable Value Chains and Communications
BOTTOM-UP ENTERPRISE

REQUIRED MATERIALS

Textbook: Green Marketing Management, Robert Dahlstrom. # South-Western College Pub; ISBN: 978-0324789140

Cases, available from Harvard Business Publishing.

1. "Bp and Corporate Greenwash" (Prod. #: 905C10-PDF-ENG).
2. "Method: Sustainable Design for the Home as Corporate Strategy" (Prod. #:UV0812- PDF-ENG)
3. "Cradle-to-Cradle Design at Herman Miller: Moving Toward Environmental Sustainability" (Prod. #: 607003-PDF-ENG)
4. "Shaklee Corporation: Corporate Social Responsibility" (Prod #:509031-PDF-ENG)
5. "Anatomy of a Corporate Campaign: Rainforest Action Network and Citigroup" (Prod. #: P42B-PDF-ENG)

Course name: **HANDLING HUMAN RESOURCES IN WORKPLACES**

Paper Code: GE5B-17

Mode-Offline/Blended **Credits: 6**

Course Objectives: The course has been designed to explore the Human Resource Management concept. The learner will be able to apply the knowledge of recruitment, selection, appraisal, training, compensation and effect on the personal and professional.

Sl	Course Outcome	Mapped modules
CO1	Explaining the concept Human Resource, functions, history, scope	(M1)
CO2	Understanding the Recruitment, Selection	(M2)
CO3	Explaining the concept of Training, Performance Appraisal	(M3)
CO4	Explain the concept Wage and salary and attrition	(M4)
CO5	Understanding new policies of Human Resource Management	(M5)
CO6	HRD in Public ,private and MNCs	(M6)

Module	Content	Total Hours	%ageofquestions	Blooms Level (ifapplicable)	Remarks (If any)
Module 1	Explaining the concept Human Resource, functions, history, scope	6	15	2	
Module 2	Understanding the Recruitment, Selection	9	20	2	
Module 3	Explaining the concept of Training, Performance Appraisal	8	20	2	
Module 4	Explain the concept Wage and salary and attrition	10	15	2	
Module 5	Understanding new policies of Human Resource Management)	12	15	2	
Module 6	HRD in Public ,private and MNCs	15	15	1,2	
		60	100		

Detailed Syllabus:

Module 1- Definition of HRM, objective of HRM, Theory pf HRM, Function of HRM, role of HR manager, Scope of HRM
Module 2- Definition of recruitment, sources of recruitment, recruitment techniques used in different Industries, definition of selection, selection methods, techniques used in Govt. sectors
Module 3- Understanding the concept of training and development, techniques of training used in IT, Govt, MNCs, Concept of appraisal, Modern techniques of appraisal (BASRS,360 DEGREE, HRA etc.), Case study of using modern appraisal techniques in Industries
Module 4- Concept of wage and salary, calculation of salary, concept pf DA,DP, Fringe benefits, Concept of leave structure, Wage and salary administration, process, Concept of PF,BONUS,PENSION. Concept of attrition
Module 5- New HRM policies used in new trends. Case study and term paper.
Module 6- **Practical** HRD in Public ,private and MNCs term paper

Suggested Readings

1. Human Resource Management --- Gary Dessler
2. Human Resource Management--- P.Subba Rao
3. Human Resource Management --- Millokovich

Course Name: **Introduction to Managerial Economics and Business Analysis**

Paper Code: GE5B-18

Mode: Offline/Blended **Credits: 6**

Course Objective: Analyze macroeconomic and microeconomic variables at the firm and country levels. Assess market characteristics and firm level behaviors as frameworks for making business decisions. Create a business plan that requires the application of data analysis tools and interpretations of statistical findings.

SL. NO.	COURSE OUTCOME	MAPPED MODULE
1	Understand Demand and Supply and their application in market economy.	M1,
2	Understand the scope of Managerial Economics.	M2
3	Understand basic of production and cost	M3,
4	Understand the characteristics of different types of Market structure and firm level behaviors as frameworks for making business decisions.Pricing decision of different types of market	M1, M3, M4
5	Understand Macro economic variable and business cycle.	M5
6	Understand National Income accounting.	M5, M6
7	Understand different components of Business Environment	M7
8	Application of mathematical tool in solving business world problem.	M1 , M2, M3 ,M4 and M8

MODULE NO.	CONTENT	TOTAL HOURS	% OF QUESTIONS	BLOOMS LEVEL	REMARKS
M1	Introduction to Demand and Supply.	6	10	1, 2,	
M2	Nature and scope of Managerial Economics.	2	5	1	
M3	Theory of production and cost	12	20	1,2	
M4	Pricing strategies of different types of market structure.	14	20	1,2	
M5	Introduction to Macro Economics and different macro economic variable.	4	5	1,2	
M6	National Income accounting	6	10	1,2	
M7	Components of business environment.	8	10	1,2	
M8	Application of mathematical tools in solving business firm's problem	8	20	1,2,3	
		60	100		

Detailed Syllabus

Module 1: Introduction **of Demand and Supply:** Concepts of Demand: Definition and factors affecting demand. Concept of Elasticity of demand : Measurements and diagrams. Definition and factors affecting Supply. Concept of Equilibrium price and output .

Module 2: Nature and scope of Managerial Economics: Nature and scope of Managerial Economics. Main problems of managers.

Module 3: Theory of Production and Cost: Concept of Short run and long run production function. Relationship between TP, AP and MP . Definition of Isoquants and it's properties.Cost : Different types of Short run cost curves :All short run and long run cost curves.

Module 4: Pricing strategies of different market structure: Types of market: Perfect Competition: definition, characteristics and equilibrium of a firm in the short run. Monopoly : Definition, characteristics and short run and long run of a firm. Idea of price discrimination. Monopolistic Competition : Definition , characteristics and short run and long run equilibrium of a firm. Oligopoly market : Definition and Characteristics. Kink demand curve model and Cartel.

Module 5: **Macro economic variables:** Macro economics and theirs implications in business: Concept of GDP, GNP, PRICE LEVEL. Theory of Business Cycle and policy implications. : Fiscal and Monetary policies taken during different phases of business cycle.

Module 6: **National Income accounting:** Different measurements of National Income: Value added method, Income method and Expenditure method. Importance of National Income on an economy.

Module 7: **Business Environment and different components of business environment:** Definition of different internal and external components of business environment.

Module 8: **Application of Mathematical tool to solve business problems:** Use of Lagrange Multiplier and Game theory: Prisoners Dilemma. Use of trend analysis in solving business economic problem : Demand forecasting.

Suggested Readings:

1. Business Economics and Business Environment: A. Banerjee and D. Majumder, ABS Publishing house.
2. Macroeconomics : Sampat Mukherjee, NCBA
3. Managerial Economics : D. N . Dwivedi, Vikash Publisher.

Course name: **Leadership Skill Development**

Paper Code: GE5B-19

Mode: Offline/ Blended **Credits: 6**

Course Objective: The course is designed to provide a general understanding of Leadership. The students will be able to gain a multiple leadership theories, based on they can enhance their leadership qualities so that they can manage themselves, stress as well control their followers.

Sl	Course Outcome	Mapped modules
1	Understand the fundamental components of leadership	M1
2	Understand the theories of leadership	M2
3	**Understand the emotions and self-management**	M3
4	Understand Leader and his or her followers.	M4
5	Analyze Leadership and teams	M5
6	Analyze the Creative leadership	M6

Module Number	Content	Total Hours	%age of questions	Blooms Level (if applicable)	Remarks (If any)
Module 1	fundamental components of leadership	10	15	1, 2	
Module 2	theories of leadership	14	15	1, 2	
Module 3	Emotions and self-management	08	15	1, 2	
Module 4	**Leadership and followers**	06	15	1, 2	
Module 5	Leadership and teams	10	15	2, 3	
Module 6	Creative leadership.	12	25	2, 3	
		60	100		

Detailed Syllabus:

M1	Definition of leadership, objectives, importances, styles with advantages and disadvantages
M2	Theories of leadership, Trait approach in theories of leadership (development and the present situation). Personal characteristics that support effective leadership. Leader and values. The significance of self-knowledge for the role of leader (identity and integrity of leader).
M3	. Emotions and self-management, emotional intelligence and its significance in the role of leader. Handling emotions and stress. Personal risk of leader: personal traits endangering

	effective leadership
M4	Understand Leader and his or her followers. Models of relation between leadership and followership. LMX theory.
M5	Leadership of workgroups and teams. Group structure and dynamics. Individual in a group. Formation of teams and team work. Group problem-solving. Team excellence. Participative leadership.
M6	Creative leadership. Influence on the creative potential of work groups and teams; formation of innovative climate in organizations.

Suggested Readings:

1. Robbins, S. P: Management, Prentice Hall.
2. Stoner, J and Freeman, R. E: Management; Prentice-Hall
3. Daft, R. L: Management, Thomson
4. Aswathappa, K: Organizational Behaviour (Text, Cases and Games).Bangalore: Himalaya Publication.
5. Greenberg, J., & Baron, R. A. (2008). Behaviour in Organizations, Pearson.
6. Robbins, S. P.: Essentials of Organizational Behaviour, Prentice Hall

Course Name: Social Media management, Advertising & Marketing

Paper Code: GE5B-20

Mode: Blended/Offline **Credits: 6**

Course Objective: Social media management helps to capitalize on the surging popularity of social media platforms by creating and overseeing engagement, branding and marketing Campaigns.

Sl	Course Outcome	Mapped modules
1.	Understand Social Media	M1
2.	Understand Audience	M2
3.	Understand content	M3
4.	Understand Content Management	M3,M4
5.	Evaluation of study	M5
6.	Understanding social media advertising	M6
7.	Effects of Ad in social media	M6,M7
8.	Privacy policy for ad in social media	M8
9.	Concept of marketing in social media	M9
10.	Branding	M10

Module number	Content	Total Hour	% of question	Blooms level	Remark in any
1.	Social media: Concept	10	5	1	
2.	Audience : Definition and nature	4.5	5	2	
3.	Content creation	4.5	10	3	
4.	Content management: concept and application	6	10	2,3	
5.	Project on assignment-1 Project on Assignment 2	6	10	3	
6.	Social media advertising	4.5	5	2	
7.	AD in social media	5	10	2	
8.	How to put Ad in social media	4.5	10	3	
9.	Marketing in social media	4.5	10	3	
10.	Branding in social media	4.5	10	3	
11.	Capstone Project	6	15	3	
		54	100		

Detailed Syllabus:

Module 1: Social media: Concept; what is social media, Social media management (definition), Digital marketing: concept, scope and limitation,

Module 2: Audience: Definition and nature, Understanding social media pages, Choice of social media platforms.

Module 3: Content creation: What is content in social media, impact, role, influences, judging the impact of Post in various social media platform: anatomy and structure, Role of various posts in social media, nature of post (text, audio, and audio visual, visual?)

Module 4: Content management: concept and application How to create content (intro, body, Overview), Planning of storyboard, Judging the content, Make a deadline for the content (maintaining time frame,),scheduling the content, auditing the content, Social media content management.

Module 5: Project on assessing the content in various social media platforms (Facebook, Instagram)

Module 6: Social media advertising: Fundamentals of advertisement in social media, overview, Concept of Ad in social media, Paid ad in social media, Anatomy of Advertisement in social media platforms.

Module7: Advertisement in social media: Identify the nature of ad in social media, creating effective ad, writing copy for ad, working with brief.

Module 8: How to put Ad in social media: what is data, Policy of social media, norms of putting ad in social media, privacy policy, and data protection: various government regulations relating to data, Self- Regulation, Company Data policy

Module 9: Posting ad in social media, Anatomy of various ad in Face book, Instagram

Module 10: Brand: existence, purpose, identity, connection

Module 11: Capstone project

List of Experiments:

1. Creating a page in social media platform (Facebook, Instagram)
2. Creating posts on Facebook , Instagram
3. Effective use of hashtag in twitter
4. Creating Content calendar in excel sheet
5. How to post image effectively in social media

6. How to develop writing content in social media.

SUGGESTED READING:

1. Content Writing, Joseph Robinson
2. Writing for the Web; Lynda Felder
3. Handbook of Social Media Management; Value , Chain and Business Models in Changing Media Markets: Mike Friedrichsen, Wolfgang Mühl-Benninghaus
4. Strategic Social Media Management: Theory and Practice: Karen E. Sutherland
5. Social Media Marketing:Tracy L. Tuten, Michael R. Solomon
6. The New Community Rules: Marketing on the Social We:Tamar Weinberg

Course Name - CORPORATE ENTREPRENEURSHIP

Paper Code: GE5B-21

Mode—Offline/ Blended Credits: 6

Course objective—

The Corporate Entrepreneurship course is designed for those interested in learning how to innovate and apply entrepreneurship principles in the corporate setting.

The objective of this course is to----

1. Develop knowledge on how to navigate the barriers to creating, developing, and sustaining innovative new businesses or initiatives within existing companies.

2. Develop the skills, and learn the tools and best practices, for identifying and developing the entrepreneurial opportunities, building business models, creating strategies for leading innovation, and financing innovation.

Course Outcome [CO]

SL	Course outcome	Mapped modules
1	Student will learn about---- How to Develop Opportunities for Corporate Entrepreneurs, Thinking Entrepreneurially, Seeing Entrepreneurially and Acting Entrepreneurially	M- I
2	Understanding about---- • Business Modelling • Customer Discovery and Customer Validation • Customer Segmentation and Analysis • Creating the Business Model for the Corporate Venture	M- II
3	Understand about---- • Innovation, Environments and Capabilities • Organizational Structures and Operational Formats • Corporate Culture • Creating an Innovation Strategy	M- III
4	Understand about---- • How to Finance Corporate Ventures • Corporate Venture Valuation Techniques • Sources of Financing for Corporate Ventures • Creating the Investment Proposal for the Corporate	M- IV

	Venture	

Module number	Content	Total hours	% of questions	Blooms level [if applicable]	Remarks [if any]
M- I	**Developing the Opportunity for Corporate Entrepreneurs**	**25**	**35**	**1,2,3**	
M- II	**Building the Business Model for Corporate Entrepreneurs**	**11**	**20**	**2,3**	
M- III	**Crafting Strategies for Innovation Initiatives for Corporate Entrepreneurs**	**14**	**25**	**2,3**	
M- IV	**Financing and Profiting from Innovation for Corporate Entrepreneurs**	**10**	**20**	**1,2,3**	
		60	**100**		

Detailed syllabus

MODULE—I Developing the Opportunity for Corporate Entrepreneurs

Introduction to Developing Opportunities for Corporate Entrepreneurs
Thinking Entrepreneurially
Seeing Entrepreneurially
Acting Entrepreneurially

MODULE—II Building the Business Model for Corporate Entrepreneurs

Introduction to Business Modelling
Customer Discovery and Customer Validation
Customer Segmentation and Analysis
Creating the Business Model for the Corporate Venture

MODULE—III Crafting Strategies for Innovation Initiatives for Corporate Entrepreneurs

Innovation, Environments and Capabilities
Organizational Structures and Operational Formats
Corporate Culture

Creating an Innovation Strategy

MODULE-- IV Financing and Profiting from Innovation for Corporate Entrepreneurs
Introduction to Financing Corporate Ventures
Corporate Venture Valuation Techniques
Sources of Financing for Corporate Ventures
Creating the Investment Proposal for the Corporate Venture

Suggested readings:

1. Corporate Entrepreneurship
Vronique Bouchard; Allain Fayolle
ISBN-13:-- 9781138813687
Publication--- Routledge

2. Corporate Entrepreneurship: Innovation and Strategy in Large Organizations by Paul Burns

Course Name: Advanced Diagnostic Techniques
Paper Code: GE5B-22

Mode: Offline/ Blended

Credits: 6

Objective:

1. To understand the basic concepts of Chromatography
2. To demonstrate Planning and Objectives of electrophoresis in clinical diagnosis.
3. To overview the understanding of Immunoassay particularly ELISA, RIA, FIA, FACS and their applications in clinical diagnosis.
4. To learn the Radioisotopes, Radioactivity, instruments for radioactivity measurement.
5. To know about Centrifugation.

Duration: 1 Semester

Course Outcomes (CO):

Sl. No.	Course Outcome	Mapped Modules
1.	Ability to understand and apply the concepts and knowledge of the Chromatography.	Module I - Unit 1
2.	Ability to Understand and apply the Planning and Objectives of electrophoresis in clinical diagnosis.	Module 2 - Unit 2
3.	To know about Centrifugation, fixed angle and swinging bucket rotors, RCF and sedimentation coefficient.	Module 3 - Unit 3
4.	To learn the Radioisotopes, Radioactivity, instruments for radioactivity measurement.	Module 4 - Unit 4
5.	Application of Immunoassay particularly ELISA, RIA, FIA, FACS and their applications in clinical diagnosis.	Module 5 - Unit 5

Module	Content	Total Hours	%age of questions	Blooms Level	Remarks (if any)
Module-I	Chromatography, its principle, types and applications	12	15	2	
Module-II	Basic Principle of electrophoresis	12	15	2	
Module-III	Centrifugation, fixed angle and swinging bucket rotors, RCF and sedimentation coefficient, differential centrifugation, density gradient centrifugation and Ultracentrifugation	12	20	2	

Module-IV	Radioisotopes, Radioactivity, instruments for radioactivity measurement, applications of radioisotopes in clinical biochemistry	12	25	3	
Module-V	Immunoassay: ELISA, RIA, FIA, FACS and their applications in clinical diagnosis	12	25	3,4	

Detailed Syllabus:

MODULE-I: Chromatography, its principle, types and applications. Paper Chromatography, Thin layer chromatography, HPLC, Gas liquid chromatography, Ion exchange chromatography and their application in diagnosis.

MODULE-II: Basic Principle of electrophoresis, Paper electrophoresis, Gel electrophoresis, PAGE, SDS-PAGE, Agarose gel electrophoresis, buffer systems in electrophoresis. Electrophoresis of proteins and nucleic acids, haemoglobin, immunoglobulin's, isoenzymes Applications of electrophoresis in clinical diagnosis.

MODULE-III: Centrifugation, fixed angle and swinging bucket rotors , RCF and sedimentation coefficient, differential centrifugation, density gradient centrifugation and Ultracentrifugation

MODULE-IV: Radioisotopes, Radioactivity, instruments for radioactivity measurement, applications of radioisotopes in clinical biochemistry

MODULE V: Immunoassay: ELISA, RIA, FIA, FACS and their applications in clinical diagnosis.

Suggested Readings:

1.Teitz,(2007),Fundamentals of Clinical Chemistry,6th edition, Elsevier Publications

2. Henry's Clinical Diagnosis and Management by Laboratory Methods,(2011),22nd edition, Elsevier

3. Singh &Sahni,(2008),Introductory Practical Biochemistry,2nd edition, Alpha science

4. Lehninger,(2013),Principles of Biochemistry,6th edition, W H Freeman

5. Wilson & Walker, Practical Biochemistry,2nd edition

Course Name: Bio-Medical Waste Management
Paper Code: GE5B-23

Mode: Offline/ Blended **Credits: 6**

Objective:

1. To understand the basic concepts of Bio-medical waste Management
2. To demonstrate Planning and Objectives of Bio-medical waste Management.
3. To overview the understanding of Record keeping.
4. To learn the treatment for Bio-medical waste Management in details.
5. To understand Occupational Safety and related Health Issues.
6. To know about healthcare Legal Aspects.
7. To discuss environment concern implementation of action plan.

Duration: 1 Semester

Course Outcomes (CO):

Sl. No.	Course Outcome	Mapped Modules
1.	Ability to understand and apply the concepts and knowledge of the Bio-medical waste Management.	Module I - Unit 1
2.	Ability to Understand and apply the Planning and Objectives of Bio-medical waste Management.	Module 2 - Unit 2
3.	Ability to overview the understanding of Record keeping, treatment for Bio-medical waste Management.	Module 3 - Unit 3
4.	Ability to Understand and evaluate the Occupational Safety and Health Issues	Module 4 - Unit 4
5.	Explore and know about Legal Aspects and environment concern implementation of action plan.	Module 5 - Unit 5

Module	Content	Total Hours	%age of questions	Blooms Level	Remarks (if any)
Module-I	Present Scenario Bio-medical waste – Concepts and Perceptions, Waste Generation, Segregation , Disposal	[12]	25%	2	
Module-II	Planning and Objectives of BMW Management, Survey, Policies and Perspectives of BMW Management	[12]	20%	2,3	
Module-III	Record Keeping, Management of Bio-medical Waste, Technologies	[12]	20%	3,4	

	for Treatment for BMW, Criteria for selecting appropriate Medical Waste Technologies				
Module-IV	Training, Occupational Safety and Health Issues	**[12]**	15%	2	
Module-V	Legal Aspects and Environment Concern, Implementation of Action Plan, Approaches to Common Regional facility	**[12]**	20%	2	

Detailed Syllabus:

MODULE-I: Unit I (Present Scenario Bio-medical waste – Concepts and Perceptions, Waste Generation, Segregation, Disposal)

MODULE-II: Unit II (Planning and Objectives of BMW Management, Survey, Policies and Perspectives of BMW Management)

MODULE-III: Unit III (Record Keeping, Management of Bio-medical Waste, Technologies for Treatment for BMW, Criteria for selecting appropriate Medical Waste Technologies)

MODULE-IV: Unit IV (Training, Occupational Safety and Health Issues)

MODULE V: Unit V (Legal Aspects and Environment Concern, Implementation of Action Plan, Approaches to Common Regional facility)

Suggested Readings:

1. The Book of Hospital Waste Management: Dr. D.B. Acharya & Dr. Meeta Singh (Minerva Press, New Delhi)

2. Hospital Waste Management & its Monitoring: Madhuri Sharma (Jaypee Brothers, Medical Publishers (P) Ltd. New Delhi)

Course Name: Principles of Laboratory Management & Medical Ethics
Paper Code: GE5B-24

Mode: Offline/ Blended

Credits: 6

Objective:

1. To understand the basic concepts of Good Laboratory Practice.
2. To demonstrate Planning and Objectives of Patient management for clinical samples collection.
3. To overview the understanding of Sample analysis.
4. To learn the Quality Management system in details.
5. To understand Audit in a Medical Laboratory.
6. To Explore and know about Introduction and Importance of NABL & CAP.

Duration: 1 Semester

Course Outcomes (CO):

Sl. No.	Course Outcome	Mapped Modules
1.	Ability to understand and apply the concepts and knowledge of the Good Laboratory Practice.	Module I - Unit 1
2.	Ability to Understand and apply the Planning and Objectives of Patient management for clinical samples collection.	Module 2 - Unit 2
3.	Ability to Understand and evaluate the Sample analysis	Module 3 - Unit 3
4.	Ability to overview the understanding of Quality Management system.	Module 4 - Unit 4
5.	Explore and know about Audit in a Medical Laboratory, Introduction and Importance, NABL & CAP, Responsibilities.	Module 5 - Unit 5

Module	Content	Total Hours	%age of questions	Blooms Level	Remarks (if any)
Module-I	Ethical Principles and standards for a clinical laboratory professional.	12	20	2	
Module-II	Awareness/Safety in a clinical laboratory, General safety precautions.	12	20	2	
Module-III	Sample analysis	12	15	3,4	

Module-IV	Quality Management system	12	25	2,3	
Module-V	Audit in a Medical Laboratory, Introduction and Importance, NABL & CAP, Responsibility, Planning, Horizontal, Vertical and Test audit, Frequency of audit, Documentation	12	20	4,5	

Detailed Syllabus:

MODULE-I: Ethical Principles and standards for a clinical laboratory professional duty to the patient, duty to colleagues and other professionals, Good Laboratory Practice (GLP) ,Introduction to Basics of GLP and Accreditation, Aims of GLP and Accreditation, Advantages of Accreditation, Brief knowledge about National and International Agencies for clinical laboratory accreditation

MODULE-II: Awareness/Safety in a clinical laboratory, General safety precautions. HIV: pre- and post-exposure guidelines, Hepatitis B & C: pre- and post exposure guidelines, Drug Resistant Tuberculosis Patient management for clinical samples collection, transportation and preservation, Sample accountability, Purpose of accountability, Methods of accountability

MODULE-III: Sample analysis: Introduction, factors affecting sample analysis, reporting results, basic format of a test report, reported reference range, clinical alerts, abnormal results, results from referral laboratories, release of examination results, alteration in reports

MODULE-IV: Quality Management system: Introduction, Quality assurance, Quality control system, Internal and External quality control, quality control chart Biomedical Introduction and importance of calibration and Validation of Clinical Laboratory instrument Ethics in Medical laboratory Practice, Ethics in relation to Pre-Examination procedures, Examination procedures, reporting of results, preserving medical records Procurement of equipment and Inventory Control,

MODULE V: Audit in a Medical Laboratory, Introduction and Importance, NABL & CAP, Responsibility, Planning, Horizontal, Vertical and Test audit, Frequency of audit, Documentation

Suggested Readings:

1. Teitz,(2007),Fundamentals of Clinical Chemistry,6th edition, Elsevier Publications
2. Bishop (2013), Clinical Chemistry,7th edition, Wiley Publications
3. Henry's Clinical Diagnosis and Management by Laboratory Methods, (2011),22nd edition, Elsevier

Paper: Building your Leadership Skill
Code: GE5B-25
Contacts Hours / Week:
Credits: 6

Details Syllabus to be supplied by Coursera

Paper Name: Tourism Geography

Code: GE5B-26
Total Credit: 6
Total hours of lectures: 60 hours

1) CO1: To Understand the basic geography.
2) CO 2: To Understand the scope, approaches and methodology of tourism geographyas well as basic knowledge about world tourism attractions.
3) CO 3: To understand the different physical dimensions of earth and its need in geography of tourism as well as to study the different physical and political features of world geography.
4) CO 4: To familiarize with maps & map study along with basic knowledge about tourist circuits & marketing and selling with travel geography.
5) CO3: Discuss the changes in climatic and weather condition of the world and its impact on tourist destination as well as importance of seasonality in tourism and its utilization.
6) CO4: To study the factors affecting global and regional tourist movements& few major case studies.

Module Number	Content	Total Hours
M 1	Importance of Geography in Tourism. Earth's movement, Continental drift, Latitude, Longitude. International Data Line, Elapsed Travel times World Time Zones.	10
M 2	Major tourist attractions around the world – North America, SouthAmerica, Europe, Asia, Africa and Australasia.	10
M 3	Elements of weather and climate. Climatic regions of the world in brief. Impact of weather and climate on tourist destinations. Major landforms as tourist resources-Major rivers, Lakes, Mountains and natural vegetations of the world.	10
M 4	Physical geographic features of India- Mountainous features of India, Plain Area, Coastal area, Deccan, major rivers, lakes, plateaus, deserts	10
M 5	Understanding and reading maps, maps of India showing the major tourist circuits. Marketing and selling with travel geography-Destination Geography, Physical & Cultural Geography, Case studies of selected Indian states like Rajasthan, Kerala, West Bengal, Goa and Uttaranchal.	10
M 6	Factors affecting global and regional tourist movements, demand	10

	and origin factors, destinations and resource factors. Contemporary trends in international tourists movements. Major outbound tourism countries.	
		60

Suggested Readings:

1) Robinson HA: A Geography of Tourism
2) Burton Rosemary: The Geography of Travel & Tourism
3) Boniface B. & Cooper C.: The Geography of Travel & Tourism
4) Velvet Nelson : An Introduction to the Geography of Tourism
5) Stephen Williams, Alan A. Lew: Tourism Geography: Critical Understandings of Place, Space and Experience
6) Lloyd E. Hudman Richard H Jackson , Jan van Harssel: National Geographic Learning's Visual Geography of Travel and Tourism

Indian Constituency
Code: GE5B-29

Mode-Offline/ Blended

Contact: 5L+1T
Credits: 6

Course Outcomes:

Sl. No.	Course Outcome	Mapped modules
1.	Understand the emergence and evolution of Indian Constitution	Module1
2.	Understand the structure and composition of Indian Constitution	Module2, Module3, Module 4
3.	Understand the Election and role of Election Commission of India	Module 5

Module No.	Content	Total Hour	%age of questions	Blooms level (if applicable)	Remarks (if any)
Module 1	Introduction	7	20		
Module 2	Union Government and its Administration	15	20		
Module 3	State Government and its Administration Governor	15	20		
Module 4	Local Administration District's Administration head	15	20		
Module 5	Election Commission	8	20		
		60	100		

Unit	Content	Hrs/Unit
1	**Introduction:** 'Constitution' meaning of the term, Indian Constitution: Sources and constitutional history, Features: Citizenship, Preamble, Fundamental Rights and Duties, Directive Principles of State Policy	7
2	**Union Government and its Administration:** Structure of the Indian Union: Federalism, Centre-State relationship, President: Role, power and position, PM and Council of ministers, Cabinet and Central Secretariat, Lok Sabha, Rajya Sabha	15
3	**State Government and its Administration Governor:** Role and position, CM and Council of ministers, State Secretariat: Organisation, Structure and Functions	15
4	**Local Administration District's Administration head:** Role and Importance, Municipalities: Introduction, Mayor and role of Elected Representative, CEO of Municipal Corporation, Pachayati raj: Introduction, PRI:	15

	Zila Pachayat, Elected officials and their roles, CEO Zila Pachayat: Position and role, Block level: Organizational Hierarchy (Different 4.departments), Village level: Role of Elected and Appointed officials, Importance of grass root democracy	
5	**Election Commission:** Role and Functioning, Chief Election Commissioner and Election Commissioners, State Election Commission: Role and Functioning, Institute and Bodies for the welfare of SC/ST/OBC and women	8

TEXT BOOK AND REFERENCE BOOKS:

1. 'Indian Polity' by Laxmikanth
2. 'Indian Administration' by Subhash Kashyap
3. 'Indian Constitution' by D.D. Basu
4. 'Indian Administration' by Avasti and Avasti