

**Table 2: Interdisciplinary Minor Elective Courses  
(Select any one track) 2023-24 Onwards**

S. No	Name of the Offering School	Minor Specialization Track	Minor Elective	Code	Course	Contact Hours / Week			Credits	ESE Duration (Hrs)	Theory						Practical			GT
						L	T	P			MSE	ASG	TA	ATTD	ESE	Total	CE	ESE	Total	
1	School of Engineering & Technology	Digital Marketing	I	ET23DM001	Web Development Fundamentals	2	0	4	4	2	10	3	2	05	30	50	20	30	50	100
			II	ET23DM002	Introduction to Digital Marketing	2	0	4	4	2	10	3	2	05	30	50	20	30	50	100
			III	ET23DM003	Search Engine Optimization and Social Media Marketing	2	0	4	4	2	10	3	2	05	30	50	20	30	50	100
			IV	ET23DA004	Web Analytics	2	0	4	4	2	10	3	2	05	30	50	20	30	50	100
		Data Analytics	I	ET23 DA001	Data Analytics Fundamentals	2	0	4	4	2	10	3	2	05	30	50	20	30	50	100
			II	ET23DA002	Business Analytics	2	0	4	4	2	10	3	2	05	30	50	20	30	50	100
			III	ET23DA003	R Programming	2	0	4	4	2	10	3	2	05	30	50	20	30	50	100
			IV	ET23DA004	Data Visualization	2	0	4	4	2	10	3	2	05	30	50	20	30	50	100
		Web Designing	I	ET23WD001	Web Designing Fundamentals	2	0	4	4	2	10	3	2	05	30	50	20	30	50	100
			II	ET23WD002	Dynamic Website with JavaScript	2	0	4	4	2	10	3	2	05	30	50	20	30	50	100
			III	ET23WD003	Introduction to XML	2	0	4	4	2	10	3	2	05	30	50	20	30	50	100
			IV	ET23WD004	Web Application Development	2	0	4	4	2	10	3	2	05	30	50	20	30	50	100
		Programming	I	ET23PR001	Core Java	2	0	4	4	2	10	3	2	05	30	50	20	30	50	100
			II	ET23PR002	Advanced Java	2	0	4	4	2	10	3	2	05	30	50	20	30	50	100
			III	ET23PR003	Python Programming	2	0	4	4	2	10	3	2	05	30	50	20	30	50	100
			IV	ET23PR004	Web Application Development	2	0	4	4	2	10	3	2	05	30	50	20	30	50	100
2	School of Arts Humanities and Social Sciences	Tours & Travel Management	I	AH23TT001	Hospitality Etiquettes	4	0	0	4	3	20	5	5	10	60	100	-	-	-	100
			II	AH23TT002	World Heritage Sites of MP	4	0	0	4	3	20	5	5	10	60	100	-	-	-	100
			III	AH23TT003	Medical Tourism	4	0	0	4	3	20	5	5	10	60	100	-	-	-	100
			IV	AH23TT004	International Travel Assistance	4	0	0	4	3	20	5	5	10	60	100	-	-	-	100
3	School of Sciences	Laboratory Management	I	SC23LM001	Microbiology & Biotech Lab Skills	4	0	0	4	3	20	5	5	10	60	100	-	-	-	100
			II	SC23LM002	Chemistry Lab Skills	4	0	0	4	3	20	5	5	10	60	100	-	-	-	100
			III	SC23LM003	Electronics & Electrical Lab Skills	0	0	8	4	-	-	-	-	-	-	40	60	100	100	
			IV	SC23LM004	Physics Lab Skills	4	0	0	4	3	20	5	5	10	60	100	-	-	-	100

4	School of Agriculture	Horticulture	I	AG23HR001	Production Technology for Vegetable and Spices	2	0	4	4	2	10	3	2	05	30	50	20	30	50	100
			II	AG23HR002	Production Technology for Fruit and Plantation Crops	2	0	4	4	2	10	3	2	05	30	50	20	30	50	100
			III	AG23HR003	Diseases of Field and Horticultural Crops and their Management –I	2	0	4	4	2	10	3	2	05	30	50	20	30	50	100
			IV	AG23HR004	Diseases of Field and Horticultural Crops and their Management-II	2	0	4	4	2	10	3	2	05	30	50	20	30	50	100
		Agri Business	I	AG23AB001	Agricultural Finance and Cooperation	2	0	4	4	2	10	3	2	05	30	50	20	30	50	100
			II	AG23AB002	Agricultural Marketing Trade & Prices	2	0	4	4	2	10	3	2	05	30	50	20	30	50	100
			III	AG23AB003	Entrepreneurship Development and Business Communication	2	0	4	4	2	10	3	2	05	30	50	20	30	50	100
			IV	AG23AB004	Farm Management, Production & Resource Economics	2	0	4	4	2	10	3	2	05	30	50	20	30	50	100
5	School of Commerce	Basic Accounting Skills	I	CM23BA001	Financial Accounting	4	0	0	4	3	20	5	5	10	60	100	-	-	-	100
			II	CM23BA002	Tally	2	0	4	4	2	10	3	2	05	30	50	20	30	50	100
			III	CM23BA003	Personal Taxation	4	0	0	4	3	20	5	5	10	60	100	-	-	-	100
			IV	CM23BA004	Direct and Indirect Taxes	4	0	0	4	3	20	5	5	10	60	100	-	-	-	100
6	School of Management	Retail Management & Merchandising	I	MG23RM001	Retail Management	4	0	0	4	3	20	5	5	10	60	100	-	-	-	100
			II	MG23RM002	Merchandising	4	0	0	4	3	20	5	5	10	60	100	-	-	-	100
			III	MG23RM003	Supply Chain Management	4	0	0	4	3	20	5	5	10	60	100	-	-	-	100
			IV	MG23RM004	E Business	4	0	0	4	3	20	5	5	10	60	100	-	-	-	100
		Investment Management	I	MG23IM001	Introduction to Financial Markets	4	0	0	4	3	20	5	5	10	60	100	-	-	-	100
			II	MG23IM002	Fundamental & Technical Analysis of Investment	4	0	0	4	3	20	5	5	10	60	100	-	-	-	100
			III	MG23IM003	Risk Management	4	0	0	4	3	20	5	5	10	60	100	-	-	-	100
IV	MG23IM004	Introduction to Derivatives	4	0	0	4	3	20	5	5	10	60	100	-	-	-	100			
7	School of Design	Sketching & Painting	I	DS23SP001	Sketching-I	0	0	8	4	-	-	-	-	-	-	-	40	60	100	100
			II	DS23SP002	Sketching –II	0	0	8	4	-	-	-	-	-	-	-	40	60	100	100
			III	DS23SP003	Painting-I	0	0	8	4	-	-	-	-	-	-	-	40	60	100	100
			IV	DS23SP004	Painting-II	0	0	8	4	-	-	-	-	-	-	-	40	60	100	100
		Interior Design	I	DS23ID001	Building Materials & Processes	0	0	8	4	-	-	-	-	-	-	-	40	60	100	100
			II	DS23ID002	Elements of Interior Spaces	0	0	8	4	-	-	-	-	-	-	-	40	60	100	100
			III	DS23ID003	Basics of Lighting Design	0	0	8	4	-	-	-	-	-	-	-	40	60	100	100
			IV	DS23ID004	Building Services	0	0	8	4	-	-	-	-	-	-	-	40	60	100	100
		Apparel Design	I	DS23AD001	Fashion Illustration-I	0	0	8	4	-	-	-	-	-	-	-	40	60	100	100
			II	DS23AD002	Dyeing and Printing Techniques	0	0	8	4	-	-	-	-	-	-	-	40	60	100	100
			III	DS23AD003	Surface Exploration I	0	0	8	4	-	-	-	-	-	-	-	40	60	100	100
			IV	DS23AD004	Surface Exploration II	0	0	8	4	-	-	-	-	-	-	-	40	60	100	100

8	School of Performing Arts	Dance	I	PA23DN001	Techniques and Theatrical Performance of Dance I	0	0	8	4	-	-	-	-	-	-	-	40	60	100	100	
			II	PA23DN002	Techniques and Theatrical Performance of Dance II	0	0	8	4	-	-	-	-	-	-	-	-	40	60	100	100
			III	PA23DN003	Techniques and Theatrical Performance of Dance III	0	0	8	4	-	-	-	-	-	-	-	-	40	60	100	100
			IV	PA23DN004	Techniques and Theatrical Performance of Dance IV	0	0	8	4	-	-	-	-	-	-	-	-	40	60	100	100
		Music	I	PA23MC001	Musical Roots and Theatrical Performance I	0	0	8	4	-	-	-	-	-	-	-	-	40	60	100	100
			II	PA23MC002	Musical Roots and Theatrical Performance II	0	0	8	4	-	-	-	-	-	-	-	-	40	60	100	100
			III	PA23MC003	Musical Roots and Theatrical Performance III	0	0	8	4	-	-	-	-	-	-	-	-	40	60	100	100
			IV	PA23MC004	Musical Roots and Theatrical Performance IV	0	0	8	4	-	-	-	-	-	-	-	-	40	60	100	100
		Theatre	I	PA23TR001	Basics of Acting Production I	0	0	8	4	-	-	-	-	-	-	-	-	40	60	100	100
			II	PA23TR002	Drama Production II	0	0	8	4	-	-	-	-	-	-	-	-	40	60	100	100
			III	PA23TR003	Drama Production III	0	0	8	4	-	-	-	-	-	-	-	-	40	60	100	100
			IV	PA23TR004	Drama Production IV	0	0	8	4	-	-	-	-	-	-	-	-	40	60	100	100
9	School of Journalism and Mass Communication	Basic Media Production Techniques	I	JM23MP001	Photography	0	0	8	4	-	-	-	-	-	-	-	40	60	100	100	
			II	JM23MP002	Videography	0	0	8	4	-	-	-	-	-	-	-	40	60	100	100	
			III	JM23MP003	Script Writing	4	0	0	4	3	20	5	5	10	60	100	-	-	-	100	
			IV	JM23MP004	Audio Visual Editing	4	0	0	4	3	20	5	5	10	60	100	-	-	-	100	
		Advertising and Public Relations	I	JM23AP001	Introduction to Advertising	4	0	0	4	3	20	5	5	10	60	100	-	-	-	100	
			II	JM23AP002	Content Creation	4	0	0	4	3	20	5	5	10	60	100	-	-	-	100	
			III	JM23AP003	Introduction to Public Relations	4	0	0	4	3	20	5	5	10	60	100	-	-	-	100	
			IV	JM23AP004	Tools and Techniques of Public Relations	4	0	0	4	3	20	5	5	10	60	100	-	-	-	100	
10	SIRT-P / College of Nursing	Health Management	I	PN23HM001	Health Care Management	4	0	0	4	3	20	5	5	10	60	100	-	-	-	100	
			II	PN23HM001	Good Medication Practices	4	0	0	4	3	20	5	5	10	60	100	-	-	-	100	
			III	PN23HM001	Good Nursing Practices	2	0	4	4	2	10	3	2	05	30	50	20	30	50	100	
			IV	PN23HM001	Life Saving Skills – in case of emergency	2	0	4	4	2	10	3	2	05	30	50	20	30	50	100	
11	School of Advanced Computing	Advanced Programming	I	AC23AP001	Programming Practice using C	2	0	4	4	2	10	3	2	05	30	50	20	30	50	100	
			II	AC23AP002	Operating System	2	0	4	4	2	10	3	2	05	30	50	20	30	50	100	
			III	AC23AP003	Object Oriented Programming using Python	2	0	4	4	2	10	3	2	05	30	50	20	30	50	100	
			IV	AC23AP004	Web Technologies	2	0	4	4	2	10	3	2	05	30	50	20	30	50	100	

**Track: Digital Marketing**

<b>COURSE CODE</b>		<b>Web Development Fundamentals</b>	<b>Theory: 30 Practical: 30</b>
<b>ET23DM001</b>			<b>(LTP 2 – 0 – 4)</b>
<b>Course Objectives:</b>			
<ul style="list-style-type: none"> <li>• Code a handful of useful HTML &amp; CSS examples</li> <li>• Develop skills to create interactive animations, multimedia content, and web applications.</li> <li>• Create web pages using HTML and Cascading Style Sheets.</li> <li>• Create Dynamic Web Pages using Java Script in HTML forms.</li> <li>• Build interactive web applications using AJAX.</li> </ul>			
<b>UNIT</b>	<b>CONTENTS</b>	<b>HOURS</b>	
<b>I</b>	Introduction: Web Development, importance and Benefits, what is fundamental of web development, Domain Names & DNS, Client and Server Software, Static & Dynamic, Careers in Web Technologies.	<b>6</b>	
<b>II</b>	HTML: History of HTML, what you need to do to get going and make your first HTML page, what are HTML Tags and Attributes? HTML Tag vs. Element, HTML Attributes, HTML Basic Tags, HTML Formatting Tags, HTML Color Coding.	<b>6</b>	
<b>III</b>	CSS- Benefits of CSS, CSS Versions History, CSS Syntax, External Style Sheet using < link >, Multiple Style Sheets, Value Lengths and Percentages, CSS Syntax, single Style Sheets, Multiple Style Sheets, Value Lengths and Percentages, ID Selectors, Class Selectors, Grouping Selectors, Universal Selector, Descendant / Child Selectors, Attribute Selectors, CSS - Pseudo Classes	<b>6</b>	
<b>IV</b>	What is JavaScript? Evolution of JavaScript, Features of JavaScript, Advantages and Disadvantages of JavaScript, How does JavaScript works?, Structure of a JavaScript program, How to write JavaScript in Notepad++, Visual Studio Code, and Eclipse IDE?, How to add JavaScript in HTML?, How to include External JavaScript in HTML?.	<b>6</b>	
<b>V</b>	JavaScript Comments, JavaScript Keywords, Data Types in JavaScript, JavaScript Variables, Types of Variables in JavaScript, Key Difference between Var, Let, and Const, what are Operators in JavaScript, Assignment Operator, Comparison Operators, Logical Operators, Conditional Operators, Bitwise Operators, Unary Operators, TypeOf Operator, Operator Precedence	<b>6</b>	
<b>List of Experiments</b>			
<ul style="list-style-type: none"> <li>• Design a home page which displays information about your collage department using heading HTML entities and Paragraph.</li> <li>• Implement different type of list tags in the college department homepage.</li> <li>• Create 3 Hyperlinks in home page connecting it to 3 different pages.</li> <li>• List out and describe the tools used in the adobe Flash.</li> <li>• Design a Web page by using different CSS border styles.</li> <li>• Demonstrate the use of CSS Box Model.</li> <li>• Design a Sample code to illustrate the Inline Style Sheet &amp; External Style Sheet for your web page.</li> <li>• Develop and Demonstrate a HTML file that include JAVASCRIPT for taking a number n as input and display first n Fabonacci numbers in a paragraph</li> <li>• Design HTML form for keeping student record, apply JavaScript validation in it for restriction of mandatory fields, numeric field, email-address field, specific value in a field etc.</li> <li>• Write a JavaScript code that displays text "Bigger Text" with increasing font size in the interval of 10ms in red color, when the font size reaches 50pt it displays "Smaller Text" in green color. Then the font size should decrease to 5pt and then stop.</li> </ul>			
<b>Course Outcomes as per Bloom's Taxonomy</b>			
At the end of the course the students should be able to:			
<b>CO 1</b>	<b>Apply</b> <sup>2</sup> web development practices.		
<b>CO 2</b>	<b>Create</b> <sup>6</sup> Knowledge about Photoshop tools.		
<b>CO 3</b>	<b>Analyze</b> <sup>3</sup> a web page and identify its elements and attributes.		
<b>CO 4</b>	<b>Develop</b> <sup>5</sup> a fully functioning website and deploy on a web server.		
<b>CO 5</b>	<b>Create</b> <sup>6</sup> basic JavaScript.		
<b>Text Books</b>	<ul style="list-style-type: none"> <li>• Jon Duckett,HTML and CSS: Design a Build Website, Wiley.</li> <li>• Felke Morris,Basics of Web Design, 5th Edition ,Pearson Education, 2019.</li> <li>• Felke Morris,Web Development and Design foundation with HTML5, 10th Edition, Addition Wesley,2020.</li> </ul>		
<b>Reference Books</b>	<ul style="list-style-type: none"> <li>• Xavier C, Web Technology and Design, New age International</li> <li>• Dt Editorial Services, Hml 5 Black Book - Covers CSS 3, JavaScript, XML, XHTML, AJAX, PHP and Jquery, DreamTech Press Publication</li> </ul>		

COURSE CODE	Introduction to Digital Marketing		Theory: 30 Practical: 30
ET23DM002			(LTP 2 – 0 – 4)
<b>Course Objectives:</b> To understand the applications of Digital Marketing to undertake Marketing Campaigns in digital format and how to apply the tools of Digital Marketing to gain competitive advantage in the Market To analyze consumer buying behavior using Web Analytics and offer the right products or services to the right customers			
UNIT	CONTENTS	HOURS	
I	BASICS DIGITAL MARKETING, Introduction To Online Digital Marketing,,Importance Of Digital Marketing,,How did Internet Marketing work , Traditional Vs. Digital Marketing , Types of Digital Marketing , Increasing Visibility, Visitors' Engagement , Bringing Targeted Traffic ,Lead Generation	6	
II	ANALYSIS AND KEYWORD RESEARCH Market Research, Keyword Research And Analysis, Types Of Keywords ,Tools Used For Keyword Research ,Localized Keyword Research ,	6	
III	Competitor Website Keyword Analysis ,Choosing Right Keywords To The Project, Up-to-date website development trends, Definition and importance of domain names and extensions ,Identifying the best hosting servers.	6	
IV	Understanding various server types, Utilizing a content management system, Popular user experience trends, Defining website objectives, Essential steps in website creation , Introduction To Online Advertising And Ad words, Ad words Account And Campaign Basics ,Ad words	6	
V	What is affiliate marketing, Benefits, Affiliate marketing Networks, Techniques used for Affiliate marketing, Common Mistakes done by user, best practice in Affiliate marketing	6	
<b>List of Experiments</b>			
<ul style="list-style-type: none"> <li>• Digital Marketing Implementation in Business Scenario</li> <li>• Create the Digital Marketing Webpage</li> <li>• Using Google Analytics to analyze website performance</li> <li>• Fanatics Boosts Traffic Through Content Marketing</li> <li>• Amazon Leverages CRM to Become E-Commerce Giant</li> <li>• Case study on Lays SmileDekeDekho</li> <li>• Case Study on Burger King</li> <li>• Case study on Zomato</li> <li>• Case study on Times of India</li> <li>• Case study on MakeMyTrip</li> </ul>			
<b>Course Outcomes as per Bloom's Taxonomy</b>			
At the end of the course the students should be able to:			
<b>CO 1</b>	To <b>Understand</b> <sup>2</sup> digital marketing tools like search engine optimization and associated analytics.		
<b>CO 2</b>	To <b>Apply</b> <sup>2</sup> digital marketing tools to a) improve websites' rankings and optimize it in the process. b) Improve the brand's visibility c) improve brands reach which physically is relatively difficult and less effective.		
<b>CO 3</b>	To <b>analyze</b> <sup>4</sup> relative importance of digital marketing strategies to optimize digital marketing campaign		
<b>CO 4</b>	To <b>evaluate</b> <sup>5</sup> the performance of different social media in conjunction with overall digital marketing plan.		
<b>CO 5</b>	To <b>design</b> <sup>6</sup> search engine optimization and search engine marketing campaigns		
<b>Text Books</b>	1. Ryan, D. (2014). Understanding Digital Marketing: Marketing Strategies for Engaging the Digital Generation, Kogan Page Limited. 2. Digital Marketing –Kamat and Kamat-Himalaya Quick win Digital Marketing, H. Anmmarie , A. Joanna, Paperback edition		
<b>Reference Books</b>	1. The Beginner's Guide to Digital Marketing (2015). Digital Marketer. Pulizzi,J.(2014) Epic Content Marketing, Megraw Hill Education. 2. Digital Marketing, V. Ahuja, Oxford University Press		

COURSE CODE	Search Engine Optimization and Social Media marketing	Theory: 30 Practical: 30  (LTP 2 – 0 – 4)
ET23DM003		
<b>Course Objectives:</b>		
<ul style="list-style-type: none"> <li>• Understand how to reach your target customers using SEO.</li> <li>• Define the main elements of a well-optimized website.</li> <li>• Utilize keyword research insights to understand user intent.</li> <li>• Determine how to build and grow sustainable and qualified website traffic.</li> <li>• Learn how to optimize your web pages and content for more conversions.</li> <li>• Discover current and future trends in the SEO industry.</li> </ul>		
UNIT	CONTENTS	HOURS
I	Introduction to search engine optimization, how did search engine work, SEO fundamentals & Concepts, Understanding the SERP, Google Processing	6
II	Traffic and its meaning, Different types of keywords, Techniques for identifying the best keyword, Strategies for keyword optimization, Indexing, Crawling	6
III	Content planning and optimization, Internal linking and its importance, Techniques for creating effective meta tags, SEM	6
IV	Google Adwords, Introduction to Online Advertising and Adwords, Adwords Account and Campaign Basics, Adwords Targeting and Placement, Adwords Bidding and Budgeting, Adwords Tools & Opportunities, Optimizing Performance, Ads Type	6
V	Social media Marketing, Introduction to various social media platforms, Techniques for achieving high user engagement on social media, Understanding the importance of building a community on Facebook, Methods for promoting your brand on social media, The fundamentals of using Twitter and LinkedIn for business, Optimizing your Google Plus profile and utilizing Google My Business, Techniques for creating a successful branding strategy on Social media	6
<b>List of Experiments</b>		
<ul style="list-style-type: none"> <li>• Creating Promotional banner through Canva</li> <li>• Facebook Promotion using banners</li> <li>• Creating YouTube Channel for Marketing</li> <li>• To study Twitter Marketing</li> <li>• To study Instagram Marketing</li> <li>• To study Email Marketing Additional</li> <li>• Process and implementation of Digital Marketing Final Analysis and Report</li> <li>• Create a ranking chart of 5 popular brand</li> <li>• Case study on Google Search Central</li> <li>• Case study on Rayan Darani</li> </ul>		
<b>Course Outcomes as per Bloom's Taxonomy</b>		
At the end of the course the students should be able to:		
<b>CO 1</b>	Ability to <b>classify</b> <sup>4</sup> and exemplify different tactics of search engine optimization and how they can be used in business and other organizations.	
<b>CO 2</b>	Ability to work effectively as a team to <b>design</b> <sup>6</sup> effective search keywords, phrases, tags and landing pages to optimize the online presence and searchable results of websites	
<b>CO 3</b>	Capability to <b>analyze</b> <sup>4</sup> search engine optimization practice skills and mechanisms to evaluate, adapt and measure the search engine result page (SERP) for the achievement of personal and/or organizational search result.	
<b>CO 4</b>	Ability to <b>classify</b> <sup>2</sup> and exemplify different tactics of search engine optimization and how they can be used in business and other organizations.	
<b>CO 5</b>	<b>analyze</b> <sup>4</sup> SEO progress using free tools.	
<b>Text Books</b>	1. Eric Enge, Stephan Spencer, Jessie Stricchiola, and Rand Fishkin , <b>The Art of SEO: Mastering Search Engine Optimization</b> , 3 <sup>rd</sup> edition.	
<b>Reference Books</b>	2. Marketing Strategies for Engaging the Digital Generation, D. Ryan, 1. SEO For Beginners: An Introduction To SEO Basics, Loren Baker, Julie Joyce, Ryan Jones, Danny Goodwin., 1 <sup>st</sup> edition 2. Quick win Digital Marketing, H. Anmarie , A. Joanna, Paperback edition	

COURSE CODE	Web Analytics	Theory: 30 Practical: 30  (LTP 2 – 0 – 4)
ET23DM004		
<b>Course Objectives:</b>		
<ul style="list-style-type: none"> <li>• Understand the role of web analytics within the digital marketing landscape</li> <li>• Identify, define and interpret commonly used web metrics and KPIs</li> <li>• Understand analytical methods to transform social media data into marketing insights</li> <li>• Understand the process of informed decision making using case based method</li> <li>• Understand how to effectively use insights to support website design decisions, campaign optimization, search .analysis etc.</li> </ul>		
UNIT	CONTENTS	HOURS
I	Introduction: Definition, Process, Key terms: Site references, Keywords and Key phrases; building block terms: Visit characterization terms, Content characterization terms,	6
II	Conversion metrics; Categories: Offsite web, On site web; Web analytics platform, Web analytics evolution, Need for web analytics, Advantages, Limitations,	6
III	Data Collection: Click stream Data: Web logs, Web Beacons, JavaScript tags, Packet Sniffing; Outcomes Data: E-commerce, Lead generation, Brand/Advocacy and Support; Research data: Mindset, Organizational structure, Timing; Competitive Data: Panel-Based measurement, ISP-based measurement, Search Engine data	6
IV	Qualitative Analysis: Heuristic evaluations: Conducting a heuristic evaluation, Benefits of heuristic evaluations; Site Visits: Conducting a site visit, Benefits of site visits; Surveys: Website surveys, Post-visit surveys, Creating and running a survey, Benefits of surveys.	6
V	Google Analytics- How Google analytics works, Google analytics setup, navigation Google analytics, understanding overview report and full report, Audience report, acquisition report, Behavior report	6
<b>List of Experiments</b>		
<ul style="list-style-type: none"> <li>• How to set up automated campaign reports in Mailchimp</li> <li>• Get Analytics for Email campaign</li> <li>• Adobe Analytics</li> <li>• Mixpanel</li> <li>• Omniture Web analytics service</li> <li>• Google analytics implementation</li> <li>• Digital agency web analytics service</li> <li>• Create your Analytics account.</li> <li>• Create goals</li> <li>• Auto-Tagging</li> <li>• Enabling E-Commerce on your site</li> <li>• Tracking transactions on 3rd party sites</li> <li>• Analytics Reports</li> <li>• Additional Resources</li> </ul>		
<b>Course Outcomes as per Bloom's Taxonomy</b>		
At the end of the course the students should be able to:		
CO 1	<b>Understand<sup>2</sup></b> social media, web and social media analytics, and their potential impact.	
CO 2	<b>Understand<sup>2</sup></b> usability, user experience, and customer experience.	
CO 3	<b>Identify<sup>1</sup></b> key performance indicators for a given goals.	
CO 4	<b>Use<sup>3</sup></b> ready-made web analytics tools (Google Analytics)	
CO 5	<b>Understand<sup>2</sup></b> how to effectively use insights to support website design decisions, campaign optimization, search analytics, etc.	
<b>Text Books</b>	<ol style="list-style-type: none"> <li>1. Clifton B., Advanced Web Metrics with Google Analytics, Wiley Publishing, Inc. (2010), 2nd ed.</li> <li>2. Kaushik A., Web Analytics 2.0 The Art of Online Accountability and Science of Customer Centricity, Wiley Publishing, Inc. (2010), 1st ed.</li> </ol>	
<b>Reference Books</b>	<ol style="list-style-type: none"> <li>1. Sterne J., Web Metrics: Proven methods for measuring web site success, John Wiley and Sons (2002), 1sted</li> <li>2. Wexler, Steve; Shaffer, Jeffrey, and Cotgreave, Andy. The Big Book of Dashboards : Visualizing Your Data Using Real-World Business Scenarios. John Wiley &amp; Sons</li> </ol>	

**Track: Data Analytics**

<b>COURSE CODE</b>	<b>Data Analytics Fundamental</b>	<b>Theory: 30 Practical: 30</b>
<b>ET23DA001</b>		<b>(LTP 2 – 0 – 4)</b>
<b>Course Objectives:</b>		
<ul style="list-style-type: none"> <li>Understand and can interpret the most fundamental concepts.</li> <li>Build probability and statistics background for Data Analytics.</li> <li>Practice learned skill sets via using software package for data analysis.</li> <li>Implement the analytic algorithms.</li> <li>Handle large scale analytics projects from various domains.</li> </ul>		
<b>UNIT</b>	<b>CONTENTS</b>	<b>HOURS</b>
<b>I</b>	<b>DESCRIPTIVE STATISTICS:</b> Probability Distributions, Inferential Statistics ,Inferential Statistics through hypothesis tests Regression & ANOVA ,Regression ANOVA(Analysis of Variance)	<b>6</b>
<b>II</b>	<b>INTRODUCTION TO BIG DATA:</b> Big Data and its Importance, Four Vs of Big Data, Drivers for Big Data, Introduction to Big Data Analytics, Big Data Analytics applications. <b>BIG DATA TECHNOLOGIES:</b> Hadoop’s Parallel World, Data discovery, Open-source technology for Big Data Analytics, cloud and Big Data, Predictive Analytics, Mobile Business Intelligence and Big Data, Crowd Sourcing Analytics, Inter- and Trans-Firewall Analytics, Information Management.	<b>6</b>
<b>III</b>	<b>PROCESSING BIG DATA:</b> Integrating disparate data stores, Mapping data to the programming framework, Connecting and extracting data from storage, transforming data for processing, subdividing data in preparation for Hadoop Map Reduce.	<b>6</b>
<b>IV</b>	<b>HADOOP MAPREDUCE:</b> Employing Hadoop Map Reduce, Creating the components of Hadoop Map Reduce jobs, distributing data processing across server farms, Executing Hadoop Map Reduce jobs, monitoring the progress of job flows, The Building Blocks of Hadoop Map Reduce Distinguishing Hadoop daemons, Investigating the Hadoop Distributed File System Selecting appropriate execution modes: local, pseudo-distributed, fully distributed.	<b>6</b>
<b>V</b>	<b>BIG DATA TOOLS AND TECHNIQUES:</b> Installing and Running Pig, Comparison with Databases, Pig Latin, User- Define Functions, Data Processing Operators, Installing and Running Hive, Hive QL, Querying Data, User-Defined Functions, Oracle Big Data.	<b>6</b>
<b>List of Experiments</b>		
<ol style="list-style-type: none"> <li>Implement and analyze Linear regression in python (Single variable &amp; Multivariable).</li> <li>Implement and analyze Logistic regression in python.</li> <li>Implement and analyze Decision tree algorithm in python.</li> <li>Implement and analyze Random Forest algorithm in python.</li> <li>Implementation of two samples T-test and paired two-sample T-test in excel.</li> <li>Write steps for installing the Hadoop in windows 10.</li> <li>Working with Hadoop commands.</li> <li>Implementation of word count example using Map Reduce.</li> <li>Implementation of Map Reduce program to count unique number Of times a song is played based on userid and trackid</li> <li>Write steps for installing the Pig in windows.</li> </ol>		
<b>Course Outcomes as per Bloom’s Taxonomy</b>		
At the end of the course the students should be able to:		
<b>CO 1</b>	<b>Understand<sup>2</sup></b> Data and its analytics in the real world.	
<b>CO 2</b>	<b>Design<sup>6</sup></b> of Algorithms to solve Data Intensive Problems using Map Reduce Paradigm.	
<b>CO 3</b>	<b>Analyze<sup>4</sup></b> the Data framework like Hadoop and NOSQL to efficiently store and process Big Data to generate analytics	
<b>CO 4</b>	<b>Design<sup>6</sup></b> and Implementation of Data Analytics using pig and spark to solve data intensive problems and to generate analytics	
<b>CO 5</b>	<b>Analysis<sup>4</sup></b> with professional statistical software.	
<b>Text Books</b>	<ol style="list-style-type: none"> <li>Probability &amp; Statistics for Engineers &amp; Scientists (9th Edn.) , Ronald E. Walpole, Raymond H. Myers, Sharon L. Myers and Keying Ye, Prentice Hall Inc.</li> <li>Software for Data Analysis: Programming with R (Statistics and Computing), John M. Chambers, Springer</li> <li>Mining Massive Data Sets, A. Rajaraman and J. Ullman, Cambridge University Press, 2012.</li> </ol>	
<b>Reference Books</b>	<ol style="list-style-type: none"> <li>Hadoop: The Definitive Guide (2nd Edn.) by Tom White, O’Reilly, 2014</li> <li>MapReduce Design Patterns: Building Effective Algorithms and Analytics for Hadoop and Other Systems, Donald Miner, Adam Shook, O’Reilly, 2014</li> </ol>	



COURSE CODE	Business Analytics		Theory: 30 Practical: 30
ET23DA002	(LTP 2 – 0 – 4)		
<b>Course Objectives:</b>			
<ul style="list-style-type: none"> <li>This subject aims to presents the importance of data and data warehouse</li> <li>To become familiar with the processes needed to develop, report, and analyze business data.</li> <li>Practice learned skill sets via using software package for data analysis.</li> <li>It focuses on Business performance measures.</li> <li>To gain an understanding of how managers use business analytics to formulate and solve business problems and to support managerial decision making.</li> </ul>			
UNIT	CONTENTS		HOURS
I	Basic Statistical Terms - Population and Sample (Theory), Understanding Data-Qualitative Vs Quantitative Data / Continuous vs Discrete (Theory) -Measurement Scales - Nominal, Ordinal, Interval & Ratio Installation of software (R and R Studio) –Working with various data files –Data Cleaning –Data Manipulation / Descriptive Statistics –Summary statistics [Mean/Median/Mode/Quartiles, Percentiles / Standard Deviation / Coefficient of Variation/Measures of Skew ness & Kurtosis] Importance of data visualization- types of charts - Bar/Pie Charts -Histogram -Box and Whisker.		6
II	Basic Probability Concepts –Types - Rules - Concept of Bayes’ theorem Probability Distribution - Types (Discrete, continuous) -Random variable -Use of expected value in Decisions making - Binomial Distribution - Poisson Distribution - Normal Distribution Theory of Sampling-Types probability sampling, non-probability sampling - Introduction to Sampling Distribution (Concept of SE) - Sample Size Estimation.		6
III	Theory of Estimation- Types - Interval Estimates and Confidence Interval - Calculation Interval Estimates (C.I) for small & large samples Tests for Mean and Proportions –One Sample test) [One Sample z Test - One Sample t Test- One Sample p Test] Testing of Hypothesis (two sample test) - Test for differences between means (large, small samples) - Test for proportions (small, large samples).		6
IV	Parametric Tests–Introduction to Univariate Analysis –one sample mean tests/one sample proportion tests/t-tests Bivariate Analysis –two sample mean tests/two sample proportion tests / t-tests Chi Square Analysis - Test of Independence - Test of Goodness of fit Analysis of Variance - One-Way Classification - Two way Classification.		6
V	Theory of Correlation - scattered diagram, Karl-Pearson & Spearman Rank Correlation - Introduction to partial Correlation - Regression Analysis- Introduction to Time series and Forecasting Introduction to non-parametric tests –univariate and bivariate analysis.		6
<b>List of Experiments</b>			
<ol style="list-style-type: none"> <li>Installation of VMWare to setup the Hadoop environment and its ecosystems.</li> <li>Perform setting up and Installing Hadoop in its three operating modes. i. Standalone. ii. Pseudo distributed. iii. Fully distributed.</li> <li>Implementing the basic commands of LINUX Operating System – File/Directory creation, deletion, update operations.</li> <li>Write Pig Latin scripts sort, group, join, project, and filter your data.</li> <li>Use Hive to create, alter, and drop databases, tables, views, functions, and indexes.</li> <li>Write Pig Latin scripts sort, group, join, project, and filter your data.</li> <li>Write a Map Reduce program that mines weather data.</li> <li>Calculate arithmetic mean, geometric mean and Harmonic mean .</li> <li>Calculate median from raw &amp; grouped data.</li> <li>Online analytics processing using (OLAP) tools.</li> </ol>			
<b>Course Outcomes as per Bloom’s Taxonomy</b>			
At the end of the course the students should be able to:			
<b>CO 1</b>	<b>Understand<sup>2</sup></b> and apply the Perform setting up and Installing Hadoop in its three operating modes.		
<b>CO 2</b>	<b>Apply<sup>3</sup></b> Map Reduce program that mines weather data.		
<b>CO 3</b>	<b>Understand<sup>2</sup></b> Pig Latin scripts sort, group, join, project, and filter your data.		
<b>CO 4</b>	<b>Analyze<sup>4</sup></b> data using statistical and data mining techniques for business intelligence.		
<b>CO 5</b>	<b>Understand<sup>2</sup></b> the installation of PIG.		
<b>Text Books</b>			
1. Panneerselvam, R., RESEARCH METHODOLOGY, PHI Learning Pvt. Ltd., New Delhi,2004.			
2. Levin R., and Rubin D, Statistics for Managers, Prentice Hall of India, New Delhi, 2006 (7 <sup>th</sup> Edition)			
<b>Reference Books</b>			
1. Panneerselvam, R. (2012). Design and Analysis of Experiments, PHI, New Delhi			
2. Wayne, Winston (2014). Microsoft Excel 2013: Data Analysis and Business Modelling, Microsoft Press, Washington			

COURSE CODE	R Programming	Theory: 30 Practical: 30
ET23DA003		(LTP 2 – 0 – 4)
<b>Course Objectives:</b>		
<ul style="list-style-type: none"> <li>To enable the students to know about the information needs of Management.</li> <li>To use different functions in R, how to read data into R, accessing R packages, writing R functions, debugging, and organizing data using R functions.</li> <li>To introduce the concepts of data analysis methods.</li> <li>To have hands-on training of Statistical Data Analysis through R Programming.</li> <li>To covers data reading and its manipulation using R, which is widely used for data analysis.</li> </ul>		
UNIT	CONTENTS	HOURS
I	Introduction to R: What is R? – Why R? – Advantages of R over Other Programming Languages - R Studio: R command Prompt, R script file, comments – Handling Packages in R: Installing a R Package, Few commands to get started: installed.packages(), packageDescription(), help(), find. Package(), library() - Input and Output – Entering Data from keyboard – Printing fewer digits or more digits – Special Values functions : NA, Inf and – inf.	6
II	Installing, loading and using packages: Read/write data from/in files, extracting data from web-sites, Clean data, centring, scaling and normalizing the data values, converting types of values, using string in-built functions, Statistical analysis of data for summarizing and understanding data, Visualizing data using scatter plot, line plot, bar chart, histogram and box plot.	6
III	Filtering – Vectorised if-then else –Vector Equality Vector Element names. Creating matrices –Matrix operations –Applying Functions to Matrix Rows and Columns –Adding and deleting rows and columns.	6
IV	Vector/Matrix Distinction –Avoiding Dimension Reduction –Higher Dimensional arrays –lists –Creating lists –General list operations –Accessing list components and values –applying functions to lists –recursive lists.	6
V	Creating Data Frames –Matrix-like operations in frames –Merging Data Frames –Applying functions to Data frames –Factors and Tables –factors and levels –Common functions used with factors –Working with tables – Other factors and table related functions – Control statements .	6
<b>List of Experiments</b>		
<ol style="list-style-type: none"> <li>Implementation of Classification algorithm in R Programming.</li> <li>Practical Implementation of Decision Tree using R Tool.</li> <li>Implementation k-means clustering using R.</li> <li>Create a package in R to perform certain basic statistics functions.</li> <li>Write an R program to make a simple calculator that can add, subtract, multiply and divide using switch cases and functions.</li> <li>Create a database medicines that contains the details about medicines such as {manufacturer, composition, price}. Create an interactive application using which the user can find an alternative to a given medicine with the same composition.</li> <li>Write a program to create two 3 X 3 matrices A and B and perform the following operations a) Transpose of the matrix b) addition c) subtraction.</li> <li>Write a program to perform searching within a list (1 to 50). If the number is found in the list, print that the search is successful otherwise print that the number is not in the list.</li> <li>Write the steps to import data from Excel to CSV files and apply data viewer functions like rm(), dim(), head(), tail(), sorting, filtering, searching to view few set of rows.</li> <li>Read the file Coweeta.CSV and write an R script to do the following: <ol style="list-style-type: none"> <li>count the number of observations per species.</li> <li>take a subset of the data including only those species with at least 10 observations.</li> <li>make a scatter plot of biomass versus height, with the symbol colour varying by species, and use filled squares for the symbols. Also add a title to the plot, in italics.</li> <li>log-transform biomass, and redraw the plot.</li> </ol> </li> </ol>		
<b>Course Outcomes as per Bloom's Taxonomy</b>		
At the end of the course the students should be able to:		
CO 1	Develop <sup>6</sup> an R script and execute it.	
CO 2	Integrate <sup>5</sup> , load and deploy the required packages, and build new packages for sharing and reusability.	
CO 3	Prepare <sup>5</sup> data from different sources using API and use it for data analysis.	
CO 4	Categorize <sup>4</sup> and summarize the data.	
CO 5	Design <sup>6</sup> application with database connectivity for data analysis.	
<b>Text Books</b>	<ol style="list-style-type: none"> <li>“R Cookbook”, Paul Teetor</li> <li>“R for Data Science”, Garrett Grolemond and Hadley Wickham</li> <li>“Hands-On Programming with R”, Garrett Grolemond</li> </ol>	
<b>Reference Books</b>	<ol style="list-style-type: none"> <li>Cotton, R., Learning R: a step by step function guide to data analysis. 1st edition. O'reilly Media Inc.</li> <li>Gardener, M.(2017). Beginning R: The statistical programming language, WILEY.</li> </ol>	
COURSE CODE	Data Visualization	Theory: 30 Practical: 30

ET23DA004		(LTP 2 – 0 – 4)
<b>Course Objectives:</b>		
<ul style="list-style-type: none"> <li>To recognize the importance of Visualization tools.</li> <li>To have comprehensive knowledge of various graphs, charts and plots</li> <li>Practice learned skill sets via using software package for data Visualization.</li> <li>To be familiar in various data visualization tools such as tableau, powerbi and plotly</li> <li>To understand the various search methods and visualization techniques.</li> </ul>		
UNIT	CONTENTS	HOURS
I	Introduction to Tableau –Installation –Tableau Interface –Data Importing (live vs extract) Continuous and discrete data –Different kinds of plots and their usage (bar chart, line chart, scatter plot, histogram, dual axis) .	6
II	Parameters –Functions and calculated field –Row and aggregate calculations –Time series analysis –Bin & group –Forecast & clusters –Joins and blends –Dashboard and interactive plots –Data interpretation –Connecting to real time database	6
III	Introduction to Power BI –Working with data –Importing from flat files, excel files, other sources–Power Pivot data types –Column operations - Table relationship –PowerPivot data analysis –PivotTable and PivotChart –Slicers –Dashboard Implementation –Dates, hierarchies, and perspectives .	6
IV	Data Analysis Expressions –Introduction to Power Query –Introduction to Power View –Power View visualizations –Power View filtering options –Introduction to Power Map –Preparing geospatial data –Publish from Power BI desktop –Publish Dashboard to Web.	6
V	Introduction to Plotly–Using Plotly with R, Python and Javascript - Introduction to Chart.js, d3.js, ggplot–Building web apps in Python –Introduction to Shiny.	6
<b>List of Experiments</b>		
<ol style="list-style-type: none"> <li>Visualization of Spreadsheet Models.</li> <li>Oracle Database Connectivity using Python.</li> <li>Introduction to Tableau and Aggregation Methods in Tableau..</li> <li>Visual Encodings and Basic Dashboards in Tableau.</li> <li>Interactive Plots in Python.</li> <li>Visualization of Semi-Structured Data.</li> <li>Apply the what – if Analysis for data visualization. Design and generatenecessary reports based on the data warehouse data. case study on Visualizing energy for a green energy company.</li> <li>Case study on Using data to improve local business for a business development company.</li> <li>case studies of data visualization for strategic analysis?</li> </ol>		
<b>Course Outcomes as per Bloom’s Taxonomy</b>		
At the end of the course the students should be able to:		
<b>CO 1</b>	<b>Understand</b> <sup>2</sup> and describe the main concepts of data visualization.	
<b>CO 2</b>	<b>Create</b> <sup>6</sup> ad-hoc reports, data visualizations, and dashboards using Tableau Desktop.	
<b>CO 3</b>	<b>Prepare</b> <sup>6</sup> the created visualizations to Tableau Server and Tableau Public.	
<b>CO 4</b>	<b>Analyze</b> <sup>4</sup> and interpret data visualization.	
<b>CO 5</b>	<b>Integrate</b> <sup>6</sup> basic python and javascript.	
<b>Text Books</b>	<ol style="list-style-type: none"> <li>“Learning Tableau”, Joshua N. Milligan.</li> <li>“Practical Tableau”, Ryan Sleeper.</li> <li>“Mastering Microsoft Power BI”, Brett Powell.</li> </ol>	
<b>Reference Books</b>	<ol style="list-style-type: none"> <li>Interactive Data Visualization for the Web by Scott Murray 2nd Edition (2017) .</li> <li>D3.js in Action by Elijah Meeks 2nd Edition (2017).</li> </ol>	

**Track: Web Designing**

COURSE CODE	Web Designing Fundamentals	Theory: 30 Practical: 30  (LTP 2 – 0 – 4)
ET23WD001		
<b>Course Objectives:</b>		
<ul style="list-style-type: none"> <li>• Code a handful of useful HTML &amp; CSS examples .</li> <li>• Develop skills to create interactive animations, multimedia content, and web applications.</li> <li>• Create web pages using HTML and Cascading Style Sheets.</li> <li>• Create Dynamic Web Pages using Java Script in HTML forms.</li> <li>• Build interactive web applications using AJAX.</li> </ul>		
UNIT	CONTENTS	HOURS
<b>I</b>	What is Web Design: Introduction to Web Design, Domain Names & DNS, Client and Server Software, Static & Dynamic, Careers in Web Technologies. Adobe Photoshop CSS-2: Introduction of Stock Photography, Types of Images and Image Editing Tools, Introduction to Adobe Photoshop, Using Photoshop Tools, Layers, Actions, Filters, Creating Custom Effects, Design Banners, Basic Website Layout, Design Complex website Layout, Conversation of PSD to XHTML.	<b>6</b>
<b>II</b>	Adobe Flash: Introduction to Adobe Flash, Tools in Adobe Flash, Frame Animation, Various Flash Effects, Creating Flash Banners, Creating Flash Website, Basics of Action Scripting. HTML & DHTML: Structure of HTML, Basic HTML Tags, Advanced HTML Tags, Difference between HTML & DHTML, DHTML Basic tags, Creating Simple HTML Pages.	<b>6</b>
<b>III</b>	Cascading Style Sheets: Introduction to CSS, Types of style sheets, Types of CSS Selectors, Complete CSS properties, Converting Table layout to CSS, Custom CSS Layout Design. Java Script: Client and Server-side scripting, Introduction to Java Scripting, Types of Java Scripts, Variables, operators, loops, Introduction to Ajax, Real time Ajax Examples.	<b>6</b>
<b>IV</b>	How to Create Website: Client Requirements/Specifications, creating a concept and layout, design a Professional Layout, Conversation of PSD to CSS, Implementing JavaScript. Web Hosting By FTP: Web Hosting Basics, Types of Hosting Packages, Changing Name Servers.	<b>6</b>
<b>V</b>	Adobe Dreamweaver CS3: Intro to Adobe Dreamweaver; Learning the interface, defining a Dreamweaver site, importing a website design, creating user submission forms, Adding Content and Multimedia, Dynamic Features. Testing and Implementation: Various Browser Versions, Validating the HTML & CSS, Common Compatibility Issues	<b>6</b>
<b>List of Experiments</b>		
<ol style="list-style-type: none"> <li>1. Design a home page which displays information about your collage department using heading HTML entities and Paragraph.</li> <li>2. Implement different type of list tags in the college department homepage.</li> <li>3. Create 3 Hyperlinks in home page connecting it to 3 different pages.</li> <li>4. List out and describe the tools used in the adobe Flash.</li> <li>5. Design a Web page by using different CSS border styles.</li> <li>6. Demonstrate the use of CSS Box Model.</li> <li>7. Design a Sample code to illustrate the Inline Style Sheet &amp; External Style Sheet for your web page.</li> <li>8. Develop and Demonstrate a HTML file that include JAVASCRIPT for taking a number n as input and display first n Fabonacci numbers in a paragraph</li> <li>9. Design HTML form for keeping student record, apply JavaScript validation in it for restriction of mandatory fields, numeric field, email-address field, specific value in a field etc.</li> <li>10. Write a JavaScript code that displays text "Bigger Text" with increasing font size in the interval of 10ms in red color, when the font size reaches 50pt it displays "Smaller Text" in green color. Then the font size should decrease to 5pt and then stop.</li> </ol>		
<b>Course Outcomes as per Bloom's Taxonomy</b>		
At the end of the course the students should be able to:		
<b>CO 1</b>	<b>Understand</b> <sup>2</sup> the use of web application and webhosting and Photoshop tools.	
<b>CO 2</b>	<b>Apply</b> <sup>3</sup> the various attribute to design a web page.	
<b>CO 3</b>	<b>Apply</b> <sup>3</sup> CSS to design web application.	
<b>CO 4</b>	<b>Understand</b> <sup>2</sup> the use of JavaScript and AJAX and <b>Apply</b> <sup>3</sup> JavaScript on various web application.	
<b>CO 5</b>	<b>Understand</b> <sup>2</sup> the use of responsive web and design it.	
<b>Text Books</b>	<ol style="list-style-type: none"> <li>1. Jon Duckett, HTML and CSS: Design a Build Website, Wiley.</li> <li>2. Felke Morris, Basics of Web Design, 5th Edition ,Pearson Education, 2019.</li> <li>3. Felke Morris, Web Development and Design foundation with HTML.5, 10th Edition, Addition Wesley,2020.</li> </ol>	
<b>Reference Books</b>	<ol style="list-style-type: none"> <li>1. Xavier C, Web Technology and Design , New age International</li> <li>2. Dt Editorial Services, Html 5 Black Book - Covers CSS 3, JavaScript, XML, XHTML, AJAX, PHP and Jquery, DreamTech Press Publication</li> </ol>	

COURSE CODE	<b>DYNAMIC WEBSITE WITH JAVASCRIPT</b>	Theory: 30 Practical: 30
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ET23WD002	(LTP 2 – 0 – 4)	
<b>Course Objectives:</b> <ul style="list-style-type: none"> <li>• To understand the concepts and architecture of the World Wide Web.</li> <li>• To understand and practice markup languages.</li> <li>• To understand and practice embedded dynamic scripting on client-side Internet Programming.</li> <li>• To understand and practice web development techniques on client-side.</li> </ul>		
UNIT	CONTENTS	HOURS
I	<b>INTRODUCTION TO WWW:</b> Internet Standards – Introduction to WWW – WWW Architecture – SMTP – POP3 – File Transfer Protocol – Overview of HTTP, HTTP request – response — Generation of dynamic web pages.	6
II	<b>UI DESIGN:</b> Markup Language (HTML5): Basics of Html -Syntax and tags of Html- Introduction to HTML5 -Semantic/Structural Elements -HTML5 style Guide and Coding Convention– Html Svg and Canvas – Html API's – Audio & Video – Drag/Drop – Local Storage – Web socket API– Debugging and validating Html.	6
III	<b>OVERVIEW OF JAVASCRIPT:</b> Introduction – Core features – Data types and Variables – Operators, Expressions, and Statements Functions – Objects – Array, Date and Math Related Objects – Document Object Model – Event Handling – Controlling Windows & Frames and Documents – Form validations.	6
IV	<b>ADVANCED FEATURES OF JAVASCRIPT :</b> Browser Management and Media Management – Classes – Constructors – Object-Oriented Techniques in JavaScript – Object constructor and Prototyping – Sub classes and Super classes – Introduction to JSON – JSON Structure –Introduction to jQuery –Introduction to AJAX– Bootstrap – Bootstrap components.	6
V	<b>PHP:</b> Introduction – How web works – Setting up the environment (LAMP server) – Programming basics Print/echo – Variables and constants – Strings and Arrays – Operators, Control structures and looping structures – Functions – Reading Data in Web Pages – Embedding PHP within HTML – Establishing connectivity with MySQL database.	6
<p style="text-align: center;"><b>List of Experiments</b></p> <ol style="list-style-type: none"> <li>1. JavaScript program that shows the use of variables, datatypes</li> <li>2. Use table tag to format web page. Also create the Time Table of your class using table tag.</li> <li>3. Create your profile page i.e. educational details, Hobbies, Achievement, My Ideals etc.</li> <li>4. Create Style sheet to set formatting for text tags and embed that style sheet on web pages created for your site.</li> <li>5. Design a web page and embed various multimedia features in the page.</li> <li>6. Design signup form to validate username, password, and phone numbers etc using Java script.</li> <li>7. Write a JavaScript program to determine whether a given year is a leap year in the Gregorian calendar.</li> <li>8. Write a JavaScript program to convert temperatures to and from celsius, Fahrenheit.</li> <li>9. Design the following static web pages required for an online book store web site. 1) HOME PAGE: The static home page must contain three frames. 2) LOGIN PAGE 3) CATALOGUE PAGE: The catalogue page should contain the details of all the books available in the web site in a table. 4) REGISTRATION PAGE</li> <li>10. Write JavaScript to validate the following fields of the Registration page. 1. First Name (Name should contains alphabets and the length should not be less than 6 characters) 2. Password (Password should not be less than 6 characters length). 3. E-mail id (should not contain any invalid and must follow the standard pattern name@domain.com) 4. Mobile Number (Phone number should contain 10 digits only). 5. Last Name and Address (should not be Empty).</li> </ol>		
<b>Course Outcomes as per Bloom's Taxonomy</b>		
At the end of the course the students should be able to:		
CO 1	<b>Create<sup>6</sup></b> a basic website using HTML and Cascading Style Sheets.	
CO 2	<b>Design<sup>3</sup></b> and implement dynamic web page with validation using JavaScript objects and by <b>applying<sup>3</sup></b> different event handling mechanisms.	
CO 3	<b>Design<sup>3</sup></b> rich client presentation using AJAX	
CO 4	<b>Design<sup>3</sup></b> and <b>implement<sup>3</sup></b> simple web page in PHP, and to present data in XML format.	
CO 5	<b>Design<sup>3</sup></b> front end web page and connect to the back end databases	
<b>Text Books</b>		
1. Powell A. Thomas (2010): <b>HTML &amp; CSS: The Complete Reference</b> , Fifth Edition 2. Flanagan David (2011): <b>JavaScript: The Definitive Guide, Sixth Edition</b> , O'Reilly Media.		
<b>Reference Books</b>		
1. Powell A. Thomas, Schneider Fritz (2013): <b>JavaScript: The Complete Reference</b> , Third Edition, Tata McGraw Hill.		

COURSE CODE	Introduction to XML		Theory: 30 Practical: 30  (LTP 2 – 0 – 4)
ET23WD003			
<b>Course Objectives:</b>			
<ul style="list-style-type: none"> <li>• You will learn the basics of creating XML documents, transforming XML documents, and validating XML documents.</li> <li>• Student will learn XML AJAX.</li> <li>• Student will learn how to write valid XML documents based on a DTD.</li> <li>• Student will learn how to transform XML documents.</li> <li>• Student will learn XML DOM, Web Services.</li> </ul>			
UNIT	CONTENTS		HOURS
<b>I</b>	XML: Introduction to XML, Characteristics of XML, Advantages & Disadvantages of XML, XML Usage, What is Markup, Is XML a Programming Language, XML – Syntax, Document Prolog Section, Document Elements Section, XML – Declaration, XML – Tags.		6
<b>II</b>	XML – Elements: Empty Element, XML Elements Rules, Attributes: Attribute Types, Element Attribute Rules, XML – Comments, Character Entities with their types.		6
<b>III</b>	XML AJAX, AJAX - The XML Http, AJAX Request, AJAX Response, AJAX XML File, AJAX PHP, AJAX ASP, AJAX Database, AJAX Application.		6
<b>IV</b>	XML DOM: DOM Introduction, DOM Nodes, DOM Accessing, DOM Node Info, DOM Node List, DOM Traversing, DOM Navigating, DOM Get Values, DOM Change Nodes & DOM Remove Nodes, DOM Replace Nodes, DOM Create Nodes, DOM Add Nodes, DOM Clone Nodes.		6
<b>V</b>	XPath: Introduction, Nodes, Syntax, Operation, XML DTD, XML Web Services.		6
<b>List of Experiments</b>			
<ol style="list-style-type: none"> <li>1. Case Study of XML.</li> <li>2. Create an XML document with the following sample real estate data: Root element real-estate will contain a sequence of sub-elements agencies, owners, properties and flats, all with an empty content, Ensure well-formedness.</li> <li>3. Create an internal DTD for the previous XML document</li> <li>4. Move the DTD to an external file and validate the XML document.</li> <li>5. Case Study of XML DOM.</li> <li>6. Modify both the DTD and XML</li> <li>7. Extend the XML document.</li> <li>8. Extend both the DTD and XML.</li> <li>9. Case Study of AJAX XML.</li> <li>10. Case Study of XML Web Services.</li> </ol>			
<b>Course Outcomes as per Bloom's Taxonomy</b>			
At the end of the course the students should be able to:			
<b>CO 1</b>	Apply <sup>3</sup> web development practices.		
<b>CO 2</b>	Create <sup>6</sup> Knowledge about XML documentation.		
<b>CO 3</b>	Identify <sup>2</sup> its elements and attributes of XML.		
<b>CO 4</b>	Develop <sup>3</sup> a fully functioning XML document on a web services.		
<b>CO 5</b>	Student will learn about Create <sup>6</sup> the DOM Nodes.		
<b>Text Books</b>			
<ol style="list-style-type: none"> <li>1. Learning XML: Creating Self-Describing Data, 2nd Edition, Kindle Edition, O'Reilly Media by Erik T. Ray.</li> <li>2. Understanding XML, S P, Infinity Publishing Solutions.</li> </ol>			
<b>Reference Books</b>			
<ol style="list-style-type: none"> <li>1. Beginning XML, 5th Edition, Wrox, ISBN-9781118162132</li> </ol>			

COURSE CODE	Web Application Development Using PHP		Theory: 30 Practical: 30
ET23WD004	(LTP 2 – 0 – 4)		
<b>Course Objectives:</b>			
<ul style="list-style-type: none"> <li>• PHP Basic syntax for variable types and calculations.</li> <li>• Understand how server-side programming works on the web.</li> <li>• Develop a fully functioning website and deploy on a web server.</li> <li>• Build interactive web applications using PHP.</li> <li>• Create database connectivity with MySQL.</li> </ul>			
UNIT	CONTENTS		HOURS
<b>I</b>	Introduction to PHP, Basic Syntax, Introduction of Dynamic Website, XAMPP and WAMP Installation, PHP Data type, Operator and Expression, PHP Functions, Call by value and Call by reference, Recursive function, Making Decisions.		6
<b>II</b>	Creating an Array, Modifying Array Elements, Processing Arrays with Loops, Grouping Form Selections with Arrays, Using Array Functions, Using Predefined PHP Functions, Creating User-Defined Functions		6
<b>III</b>	Handling Html Form with PHP: Capturing Form, Data Dealing with Multi-value filed, and Generating File uploaded form, redirecting a form after submission.		6
<b>IV</b>	OOPS Concept: Class, Object, Abstractions, Encapsulation, Inheritance, Polymorphism, Creating Classes and Object in PHP. Using Conditional Statements, if(), else if() and else if condition Statement, switch() Statements, Using the while() Loop. Using the for() Loop		6
<b>V</b>	Exception Handling, Introduction to RDBMS, Database Connectivity with MySql		6
<b>List of Experiments</b>			
<ol style="list-style-type: none"> <li>2. Install and configure PHP, web server, MYSQL</li> <li>3. Get name of the user from a form and show greeting text.</li> <li>4. Write a PHP program to check whether given number is palindrome or not.</li> <li>5. Write a PHP program to demonstrate the use of Decision-making control structures using <ul style="list-style-type: none"> <li>o If statement      b) If-else statement      c) Switch statement</li> <li>a) While statement      b) Do-while statement      c) For statement</li> </ul> </li> <li>6. Write a PHP program to demonstrate the use of Looping structures using</li> <li>7. Write a PHP program to Array manipulation.</li> <li>8. Design a web page using following form controls: a. Text box, b. Radio button, c. Check box, d. Buttons</li> <li>9. Create a PHP page for login page with sql connection.</li> <li>10. Develop web page with data validation.</li> <li>11. Create a web page for software company websites.</li> </ol>			
<b>Course Outcomes as per Bloom's Taxonomy</b>			
At the end of the course the students should be able to:			
<b>CO 1</b>	Develop <sup>3</sup> program using control statement.		
<b>CO 2</b>	Understand <sup>2</sup> the use of PHP for web development.		
<b>CO 3</b>	Design <sup>6</sup> PHP programs by applying various object oriented concepts.		
<b>CO 4</b>	Develop <sup>3</sup> a fully functioning website.		
<b>CO 5</b>	Classify <sup>2</sup> database operations in PHP.		
<b>Text Books</b> <ol style="list-style-type: none"> <li>1. Learning PHP, MySQL, books by 'O' riley Press</li> <li>2. PHP: The Complete Reference-Steven Holzner</li> <li>3. Web Based Application Development with PHP, SomwanshiPrashant, ISBN: 9789389825077, Edition: 2019, Nirali Publisher</li> </ol>			
<b>Reference Books</b> <ol style="list-style-type: none"> <li>1. Web Based Application Development Using PHP ,BrahmankarPankaj B., Tech-Neo Publications</li> <li>2. PHP and MySQL, Prof SagatSawant ,Aruta Publishers, Edition: 1, 2014</li> </ol>			

**Track: Programming**

COURSE CODE	Core Java	Theory: 30 Practical: 30  (LTP 2 – 0 – 4)
ET23PR001		
<b>Course Objectives:</b>		
<ul style="list-style-type: none"> <li>• To become familiar with the features of Java Language.</li> <li>• To discover how to write Java code according to Object-Oriented Programming principles.</li> <li>• To become comfortable with concepts such as Classes, Objects, Inheritance, Polymorphism and Interfaces</li> <li>• To learn Java APIs for Collections, I/O Streams</li> <li>• To design GUI applications and Applets using AWT and Swing.</li> <li>• To develop Multithreaded and Networking applications.</li> </ul>		
UNIT	CONTENTS	HOURS
<b>I</b>	Data types, Operators, Control Statements, Arrays ,Enhanced for-loop, Enumerated types, Static import, Auto boxing, C-style formatted I/O, Variable arguments, Object and Class Definition, Using encapsulation to combine methods and data in a single class, Inheritance and Polymorphism	6
<b>II</b>	Encapsulation, Polymorphism, Inheritance, OOP in Java, Class Fundamentals, Using Objects, Constructor, Garbage Collection, Method Overloading, Method Overriding, Static Members, Interfaces, this, super	6
<b>III</b>	Packages, Class path, Access modifiers & their Scope, exception handling and types of exceptions., Using try and catch, throw, throws, finally, Writing User defined Exceptions, Byte Oriented Streams, File Handling, Readers and Writers, Introduction to Multi-Threading, Understanding Threads & its States, Java Threading Model, Thread class & Runnable Interface, Thread Priorities, Thread Synchronization	6
<b>IV</b>	Collection & Iterator Interface, Enumeration, List and Array List, Vector ,Comparator ,Set Interface & Sorted Set, Hash table , Properties, Generics	6
<b>V</b>	Graphics, Color and Font, AWT Components/Controls ,Event Handling & Layouts, Introduction to Swing , Light Weight Component, Swing Hierarchy, Atomic Components e.g. JButton, JList, Containers, Swing Events, Applets	6
<b>List of Experiments</b>		
<ol style="list-style-type: none"> <li>1. Write a Program to add, subtract, multiply, divide and remainder of two numbers</li> <li>2. Write a program to find out the biggest of three numbers using logical operators</li> <li>3. Write a java program to print first 10 numbers in Fibonacci series.</li> <li>4. Write a java program to print Factorial of a given number.</li> <li>5. Write a java program to print sum of Sum of Digits.</li> <li>6. Write a java Program for swapping two numbers.</li> <li>7. Write a java program to print primes up to the given prime number.</li> <li>8. Write java program to check given string is a palindrome or not.</li> <li>9. Write a program to print sum of n terms in the series 1/1! +1/2!+1/3!.....</li> <li>10. Write a java program to print the names in sorted order using arrays.</li> <li>11. Write a java program to print multiplication table using arrays.</li> <li>12. Write a java program to demonstrate method overloading.</li> <li>13. Write a java program to find the volume of a Box using method overloading with different number of parameters.</li> <li>14. Write a java program to illustrate the concept of constructors and its overloading.</li> <li>15. Write a java program for Rectangle class using constructor overloading with different no. of parameter list.</li> </ol>		
<b>Course Outcomes as per Bloom's Taxonomy</b>		
At the end of the course the students should be able to:		
<b>CO 1</b>	<b>Identify</b> <sup>3</sup> classes, objects, members of a class and relationships among them needed for a specific problem.	
<b>CO 2</b>	<b>Solve</b> <sup>3</sup> exception related problems and also able to handle and store data in different types of files.	
<b>CO 3</b>	<b>Apply</b> <sup>3</sup> suitable type of data structures to solve problems.	
<b>CO 4</b>	<b>Develop</b> <sup>3</sup> programs/software working in parallel and utilize maximum CPU time.	
<b>CO 5</b>	<b>Develop</b> <sup>3</sup> software/programs networking based and store data for further uses.	
<b>Text Books</b>	<ol style="list-style-type: none"> <li>1. SchildtHerbert (2017):<b>JavaTheCompleteReference</b>,8<sup>th</sup>edition,NewDelhi:TMH.</li> <li>2. SierraKathy &amp; BatesBert(2005):<b>Head FirstJava</b>, 2<sup>nd</sup>Edition,California:O'Reilly.</li> <li>3. E.Balaguruswamy(2008):<b>ProgrammingwithJavaAPrimer</b>, 3<sup>rd</sup>Edition,NewDelhi:TMH.</li> </ol>	
<b>Reference Books</b>	<ol style="list-style-type: none"> <li>1. DeitelHarveyM.&amp;DeitelPaul(2000):<b>JAVA,HowtoProgram</b>,3<sup>rd</sup>Edition,U.S.:PHI,Pearson.</li> <li>2. HughesS.Merlin(1999):<b>JavaNetworkProgramming</b>,2<sup>nd</sup> Edition,NewYork:ManningPublications/PrenticeHall.</li> </ol>	



COURSE CODE	Advanced Java	Theory: 30 Practical: 30  (LTP 2 – 0 – 4)
ET23PR002		
<b>Course Objectives:</b>		
<ul style="list-style-type: none"> <li>To understand Java Servlets and their life cycle</li> <li>To understand Java Web application directory structure</li> <li>To develop Server side components in a Java Web application</li> <li>To understand Java server Pages (JSP) technology</li> <li>To develop reusable components using JavaBeans.</li> </ul>		
UNIT	CONTENTS	HOURS
I	Overview of RDBMS, Introduction to Call Level Interface(CLI), Introduction to JDBC, JDBC Architecture, Types of JDBC Drivers, Establishing a JDBC Connection, Using Statement, Using Prepared Statement, Using Callable Statement, Scrollable and Updatable Result Set, Inserting & Fetching from BLOB Columns, Managing Transactions in JDBC, New Features introduced in JDBC 3.0, Auto Increment Columns	6
II	extensible Markup Language (XML), Introduction to XML, Document Object Model (DOM) using JAXP, Understanding DOM, Using DOM in Java, Stax in Java, Understanding Stax, Programming with Stax,, Introduction to CGI, Understanding Environment Variables, Disadvantages and Limitations of CGI	6
III	Servlet as J2EE Web Component, Servlet as an improved CGI, Servlet Fundamentals / API, What is a Web-Container, Servlet Life Cycle / Architecture, HTTP GET and POST Request Methods, Processing Html Forms, What is Name-Value pair, Content Types and MIME, Configuration of Web Application, Understanding the Deployment Descriptor (DD) / web.xml, Specifying the Welcome file list, Servlet URL Pattern Mapping, Init Parameters, State Management, Using HTTP Session, Using Cookies, Using Application	6
IV	Java Server Pages (JSP), JSP Architecture, JSP Standard / Implicit Objects, Request Response Out con fig Application, Session Page, Page Context exception, JSP Page Implementation Class, JSP Basics & Syntax, JSP Directive Tags, Page Directive, Include Directive, Tag lib Directive, JSP Action Tags, Forward Action Tag, Include Action Tag, JSP Script related Tags, Script let Tag, Expression Tag, Declaration Tag, Using Java Beans from JSP, Use Bean Tag, set Property Tag, get Property Tag, JSP Custom Tag Library, JSP 2.0 Tag Files, JSP 2.0 Simple Tag, Empty Tag, Tag with Body Content, (JSP Fragment)	6
V	Java Bean Architecture, Java Bean Characteristics, Providing Properties & Methods, JSP Expression Language (EL), Syntax, Using different scope objects, Calling Functions from EL, JSP Standard Tag Library (JSTL), General Purpose Actions, Conditional Actions, Iterator Actions	6
<p><b>List of Experiments</b></p> <ol style="list-style-type: none"> <li>Implement TCP Server for transferring files using Socket and Server Socket</li> <li>Implement cookies to store first name and last name using Java server pages.</li> <li>Implement the shopping cart for users for the online shopping. Apply the concept of session.</li> <li>Implement student registration form with enrollment number, first name, last name, semester, contact number. Store the details in database. Also implement search, delete and modify facility for student records.</li> <li>Write a Servlet program to print system date and time.</li> <li>Design a web page that takes the Username from user and if it is a valid username prints “Welcome Username”. Use JSF to implement</li> <li>Write Hibernate application to store customer records and retrieve the customer record including name, contact number, address.</li> <li>Write an application to keep record and retrieve record of student. The record includes student id, enrollment number, semester</li> </ol>		
<b>Course Outcomes as per Bloom’s Taxonomy</b>		
At the end of the course the students should be able to:		
CO 1	Understand <sup>2</sup> the concepts related to Java Technology	
CO 2	Explore <sup>3</sup> and understand <sup>2</sup> use of Java Server Programming	
CO 3	Create <sup>6</sup> dynamic web pages, using Servlets and JSP	
CO 4	Design <sup>6</sup> a re-usable software component, using Java Bean	
CO 5	Students can <b>Understand<sup>2</sup></b> the skills to develop real time applications.	
<b>Text Books</b>	<ol style="list-style-type: none"> <li>Complete Reference Java by Schield Herbert, Mcgraw Hill Education</li> <li>Advance Java by Dr. RajendraKawale, Devraj Publications, Mumbai</li> </ol>	
<b>Reference Books</b>	<ol style="list-style-type: none"> <li>Java 6 Programming, Black Book, Dreamtech</li> <li>Java Server Programming, Java EE6 (J2EE 1.6), Black Book, Dreamtech</li> <li>Advanced Java Technology, By M.T. Savaliya, Dreamtech</li> </ol>	

COURSE CODE	Python Programming	Theory: 30 Practical: 30
ET23PR003		(LTP 2 – 0 – 4)
<b>Course Objectives:</b>		
<ul style="list-style-type: none"> <li>This course introduce data types, control structures, algorithm development, and program design</li> <li>The course discusses the fundamental principles of Object – Oriented Programming</li> <li>Learn about data and information processing techniques.</li> <li>Use Arrays, and Data structures.</li> <li>To learn how to write loops and decision statements in Python.</li> </ul>		
UNIT	CONTENTS	HOURS
I	Introduction, Python Basics: Entering Expressions into the Interactive Shell, The Integer, Floating-Point, and String Data Types, String Concatenation and Replication, Storing Values in Variables, Your First Program, Dissecting Your Program.	6
II	Flow control: Boolean Values, Comparison Operators, Boolean Operators, Mixing Boolean and Comparison Operators, Elements of Flow Control, Program Execution, Flow Control Statements, Importing UNITS, Ending a Program Early with sys. exit() Arrays.	6
III	Functions : def Statements with Parameters, Return Values and return Statements, The None Value, Keyword Arguments and print(), Local and Global Scope, The global Statement, Exception Handling, Lists: The List Data Type, Working with Lists, Augmented Assignment Operators, Methods.	6
IV	Dictionaries and Structuring Data : The Dictionary Data Type, Pretty Printing, Using Data Structures to Model Real - World Things. Manipulating Strings- Working with Strings, Useful String Methods.	6
V	Pattern Matching with Regular Expressions: Finding Patterns of Text without Regular Expressions, Finding Patterns of Text with Regular Expressions, More Pattern Matching with Regular Expressions, Reading and Writing Files: Files and File Paths, The os.path UNIT, The File Reading/Writing Process, Saving Variables with the shelve UNIT, Saving Variables with the pprint. Pformat() Function. Organizing Files : The shutil UNIT, Walking a Directory Tree, Compressing Files with the zip file UNIT.	6
<p style="text-align: center;"><b>List of Experiments</b></p> <ol style="list-style-type: none"> <li>Create a program that asks the user to enter their name and their age. Print out a message addressed to them that tells them they are that they will turn 100 years old</li> <li>Enter the number from the user and depending on whether the number is even or odd, print out an appropriate message to the user.</li> <li>Write a program to generate the Fibonacci series</li> <li>Write a function that reverses the user defined value.</li> <li>Write a function to check the input value is Armstrong and also write the function for palindrome.</li> <li>Write a recursive function to print the factorial for a given number.</li> <li>Write a function that takes a character (i.e. as string of length 1 ) and returns True if it is a vowel, False otherwise.</li> <li>Define a function that computes the length of a given list or string.</li> <li>Write a program that takes two lists and returns True if they have at least one common member.</li> <li>Write a program to print a specified list after removing the 0<sup>th</sup>, 2<sup>nd</sup>, 4<sup>th</sup> and 5<sup>th</sup> elements.</li> </ol> <p><b>Course Outcomes as per Bloom's Taxonomy</b></p> <p>At the end of the course the students should be able to:</p>		
CO1	Apply <sup>3</sup> the principles of python programming	
CO2	Write <sup>6</sup> clear and effective python code	
CO3	Create <sup>6</sup> applications using python programming	
CO4	Apply <sup>3</sup> various fundamentals for problem solving using python.	
CO5	Create <sup>6</sup> object oriented solution by applying various concepts like polymorphism, inheritance and package with python programming.	
<ol style="list-style-type: none"> <li>Lambert, Kenneth A. (2011): The Fundamentals of Python: First Programs, Cengage Learning, ISBN:978-1111822705.</li> <li>Kanetkar Yashavant and Kanetkar Aditya (2019): Letus Python, First Edition, Delhi: BPB Publications.</li> <li>Payne James (2010): Beginning Python: Using Python and Python 3.1, Delhi: Wrox Publication</li> <li>R. Nageswara Rao (2016): Core Python Programming, Dream tech Press, Wiley Publication.</li> </ol>		
<b>Text Books</b>		
<b>Reference Books</b>	<ol style="list-style-type: none"> <li>Gaddis Tony (2009): Starting Out with Python, U.K.: Pearson</li> <li>Norton Peter, Samuel Alex (2005): Beginning Python, Delhi: Wrox Publication</li> <li>Phillips Dusty: Python Object Oriented Programming, Fourth Edition, Mumbai: PAKCT Press.</li> <li>Shaw Zed A. (2018): Learn Python 3 the Hard Way, First Edition, U.K.: Pearson Education Inc.</li> <li>Balaguruswamy E. (2017): Introduction to Computing and Problem Solving using Python, Noida, McGraw Hill Publication.</li> </ol>	
COURSE CODE	Web Application Development	Theory: 30 Practical: 30

ET23PR004		(LTP 2 – 0 – 4)	
<b>Course Objectives:</b>			
<ul style="list-style-type: none"> <li>• Code a handful of useful HTML &amp; CSS examples</li> <li>• Develop skills to create interactive animations, multimedia content, and web applications.</li> <li>• Create web pages using HTML and Cascading Style Sheets.</li> <li>• Create Dynamic Web Pages using Java Script in HTML forms.</li> <li>• Design ASP web forms.</li> </ul>			
UNIT	CONTENTS		HOURS
I	Internet Fundamentals: Introduction to Internet, Web browser, webpage, website, home page, hyperlinks, hypermedia, HTTP, WWW, Web server, Client server architecture model for web requests, URL. Creating static web pages: HTML document structure, singular and paired tags, test formatting, hyperlinks, adding images, audio and video, creating lists, tables, forms, frames, using multiple windows for web pages.		6
II	Cascading Style Sheets: Style tag, DIV and SPAN, Internal and External style sheets, Creating and using Classes, applying style on text and images. Scripting Language: Java Script programming, Data Types, Variables, Arrays, Operators, Loops, functions, Dialog boxes, String Manipulation functions, Using Timer in web page. Setting and Getting date object in a web page.		6
III	DOM Model: Events handling through JavaScript, How to use forms in JavaScript. ASP: Introduction to asp, installing IIS, ASP variable, ASP operators, conditional, loops and case statements and arrays.		6
IV	ASP Web Forms: Introduction to CGI, Client side and server side scripting, building and processing web forms. ASP Objects: Response, Request, Server, Session, Application. Purpose of Global As a file, #include, Record set objects.		6
V	ASP Cookies and Caching: Procedures, Cookies, ASP file system, sender-mail, Caching: page, data, fragment, and output. Database Connectivity: Open and Close a connection, reading from the database, inserting, deleting and updating the database records Building Database Applications Using Active X Data Objects.		6
<b>List of Experiments</b>			
<ol style="list-style-type: none"> <li>1. Designing a web page using an html that contains a time table and form for Registration Page.</li> <li>2. Designing a web page with CSS containing Relative, Absolute positioning, Margin and padding, Pseudo class.</li> <li>3. Design a table and listusing Bootstrap with CSS.</li> <li>4. Write a program using the concept of Java Script.</li> <li>5. Write PHP code to print the first 10 Fibonacci numbers.</li> <li>6. Dynamic Search bar that fetches search options from the database.</li> <li>7. Develop a program in php &amp; Java Script that demonstrates insert, update &amp; Delete operation.</li> <li>8. Learning Login management with session and cookies in PHP.</li> <li>9. Create a form with validation.</li> <li>10. Create a rest API.</li> </ol>			
<b>Course Outcomes as per Bloom's Taxonomy</b>			
At the end of the course the students should be able to:			
CO 1	Apply <sup>3</sup> web development practices.		6
CO 2	Create <sup>6</sup> Knowledge about Photoshop tools.		
CO 3	Analyze <sup>4</sup> a web page and identify its elements and attributes.		
CO 4	Develop <sup>3</sup> a fully functioning website and deploy on a web server.		
CO 5	Apply <sup>3</sup> basic JavaScript.		
<b>Text Books</b>	<ol style="list-style-type: none"> <li>1. Jon Duckett, HTML and CSS: Design a Build Website, Wiley.</li> <li>2. Felke Morris, Basics of Web Design, 5th Edition, Pearson Education, 2019.</li> <li>3. Felke Morris, Web Development and Design foundation with HTML5, 10th Edition, Addition Wesley, 2020.</li> </ol>		
<b>Reference Books</b>	<ol style="list-style-type: none"> <li>1. Xavier C, Web Technology and Design , New age International</li> <li>2. Dt Editorial Services, Hml 5 Black Book - Covers CSS 3, JavaScript, XML, XHTML, AJAX, PHP and JQuery, Dream Tech Press Publication.</li> </ol>		

**Track: Tours & Travel Management**

COURSE CODE	HOSPITALITY ETIQUETTES	Theory: 60
AH23TT001	(LTP 4 – 0 – 0)	
<b>Course Objectives:</b> <ul style="list-style-type: none"> <li>• To understand the basic hospitality and etiquettes.</li> <li>• To recognize the Effective verbal and non-verbal communication.</li> <li>• To analyse uniform standards in various hospitality sectors.</li> <li>• To explore the Dining Etiquette and Table Manners.</li> <li>• To examine the cases of Handling guest complaints and resolving issues</li> </ul>		
UNIT	CONTENTS	HOURS
<b>I</b>	Introduction to Hospitality Etiquette Overview of hospitality industry and the importance of etiquette in professional settings, Understanding the role of etiquette in creating a positive guest experience, Basic principles of professional behaviour and communication, Introduction to cultural sensitivity and diversity in hospitality	<b>12</b>
<b>II</b>	Communication and Interpersonal Skills Effective verbal and non-verbal communication in hospitality settings, Active listening skills and empathy towards guests and colleagues, Telephone etiquette and handling guest inquiries, Developing professional email and written communication skills, Conflict resolution and handling difficult situations with tact and professionalism	<b>12</b>
<b>III</b>	Professional Appearance and Grooming Importance of personal grooming and hygiene in the hospitality industry, Dress codes and uniform standards in various hospitality sectors, Understanding the impact of appearance on guest perception, Maintaining a professional and presentable image at all times	<b>12</b>
<b>IV</b>	Dining Etiquette and Table Manners Understanding formal and informal dining settings, Table manners and etiquette for different occasions, Proper use of utensils, glassware, and tableware. Etiquette for hosting and attending business meals, Handling various dining situations with grace and poise	<b>12</b>
<b>V</b>	Guest Relations and Customer Service Providing exceptional customer service and anticipating guest needs, Greeting and welcoming guests with warmth and professionalism, Handling guest complaints and resolving issues to ensure guest satisfaction, Managing guest expectations and exceeding their expectations, Creating a personalized and memorable guest experience	<b>12</b>
<b>Course Outcomes as per Bloom's Taxonomy</b>		
At the end of the course the students should be able to:		
<b>CO 1</b>	To <b>list</b> <sup>1</sup> the principles of professional behaviour and communication	
<b>CO 2</b>	To <b>classify</b> <sup>2</sup> the Active listening skills and empathy towards guests and colleagues	
<b>CO 3</b>	To <b>generalize</b> <sup>3</sup> personal grooming and hygiene in the hospitality industry	
<b>CO 4</b>	To <b>demonstrate</b> <sup>3</sup> the Table manners and etiquette for different occasions.	
<b>CO 5</b>	They will be able to <b>criticize</b> <sup>4</sup> Managing guest expectations and exceeding their expectations	
<b>Text Books</b>	1. Lead with Etiquettes – Taylor Scott 2. Correct manners and etiquettes – Seema Gupta 3. Introduction to Hospitality – John R. Walker 4. Bussiness Etiquette – Sheetal Kakkar Mehra	
<b>Reference Books</b>	1. Mobilizing Hospitality The Ethics of Social Relations in a Mobile World – Sarah Gibson 2. ETIQUETTE AND PROTOCOL IN HOSPITALITY – Amelda Premezwray 3. The Fine Art of Fine Dining -The Essential Guide to Advancing Your Career Or Business with Confidence and Elegance – Chinha Raheja	

COURSE CODE	WORLD HERITAGE SITES OF MP	Theory: 60
AH23TT002		(LTP 4 – 0 – 0)
<b>Course Objectives:</b>		
<ul style="list-style-type: none"> <li>• To understand the criteria for World Heritage site selection.</li> <li>• To recognize the Study of the cultural heritage sites.</li> <li>• To analyse dimensions of human values.</li> <li>• To explore the ethical values suited for the modern world.</li> <li>• To examine the values and ethics to be acquired, pursued and imparted to the future generations.</li> </ul>		
UNIT	CONTENTS	HOURS
I	Introduction to World Heritage Sites Introduction to World Heritage and its significance, Understanding the criteria for World Heritage site selection, Overview of the World Heritage Convention and its role in preserving cultural and natural heritage, Exploration of the World Heritage sites in Madhya Pradesh	12
II	Cultural World Heritage Sites in Madhya Pradesh Study of the cultural heritage sites in Madhya Pradesh, Detailed analysis of the Khajuraho Group of Monuments, Examination of the Sanchi Stupa and its architectural and historical significance, Discussion on the Rock Shelters of Bhimbetka and their importance in understanding prehistoric art, Exploration of other notable cultural sites such as Mandu, Orchha, and Gwalior Fort.	12
III	Natural World Heritage Sites in Madhya Pradesh Study of the natural heritage sites in Madhya Pradesh, Detailed analysis of the UNESCO-listed Kanha National Park and its unique flora and fauna, Examination of the Pachmarhi Biosphere Reserve and its ecological significance, Discussion on the Satpura National Park and its diverse landscapes, Exploration of other notable natural sites such as Amarkantak and Chambal River Sanctuary	12
IV	Management and Conservation of World Heritage Sites Introduction to the principles of heritage management and conservation, Study of the challenges faced in preserving World Heritage sites in Madhya Pradesh, Examination of the role of UNESCO and other organizations in safeguarding heritage, Analysis of best practices and case studies in heritage site management, Discussion on sustainable tourism and its impact on World Heritage sites	12
V	Interdisciplinary Perspectives on World Heritage Exploration of interdisciplinary approaches to understanding World Heritage sites, Examination of the intersection between cultural, natural, and historical aspects of heritage, Study of the socio-economic impacts of World Heritage designation, Analysis of the role of local communities and indigenous knowledge in heritage preservation, Discussion on the future of World Heritage and the importance of sustainable development	12
<b>Course Outcomes as per Bloom's Taxonomy</b>		
At the end of the course the students should be able to:		
CO 1	To list <sup>1</sup> various World Heritage sites .	
CO 2	To classify <sup>2</sup> the cultural heritage sites of MP.	
CO 3	To generalize <sup>3</sup> natural heritage sites of MP.	
CO 4	To demonstrate <sup>3</sup> the utility of management and conservation of world heritage sites .	
CO 5	They will be able to criticize <sup>4</sup> different interdisciplinary perspectives on world heritage	
<b>Text Books</b>	<ol style="list-style-type: none"> <li>1. Educational Heritage of Ancient India – Sahana Singh</li> <li>2. Indian Agriculture and Heritage – Devdutt Patnaik</li> <li>3. India's culture heritage and Identity – Kapila Vatsya I</li> </ol>	
<b>Reference Books</b>	<ol style="list-style-type: none"> <li>1. Tribal Heritage of Madhya Pradesh – H L Shukla</li> <li>2. World Heritage sites in India – Dr. Lavkush Mishra</li> <li>3. Heritage of India – Subhash Kulkarni</li> </ol>	

COURSE CODE	MEDICAL TOURISM	Theory: 60
AH23TT003		(LTP 4 – 0 – 0)
<b>Course Objectives:</b>		
<ul style="list-style-type: none"> <li>To understand basic concept of Health Tourism.</li> <li>To recognize growth and benefits of medical tourism.</li> <li>To analyse dimensions of wellness.</li> <li>To explore role of government in health tourism.</li> <li>To examine guest relations and customer service</li> </ul>		
UNIT	CONTENTS	HOURS
I	Introduction to Health Tourism Historical overview, Definitions- Concept of health & wellness - Determinants of health and wellness- Health, medical and wellness tourism.	12
II	Medical Tourism Business Growth of Medical Tourism - benefits of medical tourism, Factors responsible for the growth of health and medical tourism, Global medical tourism scenario- Stakeholders, Certification and Accreditation in health and medical tourism, Ethical, legal, economic and environmental issues in health and medical tourism	12
III	Tourism and Wellness Dimensions of wellness, Spa tourism experiences, types of Spas-Day Spa, Destination Spa, Medical Spa, Resort Spa- Different areas in wellness, health and wellness programs- ESPN aspects of Healing.	12
IV	Medical and Wellness Tourism Market Tourist profile, market analysis, designing medical tour packages, Approvals and formalities, Pre-tour arrangements, tour-operations and post-tour management, Health Insurance, Role of Government in Health Tourism-Case studies about selected medical and wellness tourism destinations.	12
V	Guest Relations and Customer Service Providing exceptional customer service and anticipating guest needs, Greeting and welcoming guests with warmth and professionalism, Handling guest complaints and resolving issues to ensure guest satisfaction, Managing guest expectations and exceeding their expectations, Creating a personalized and memorable guest experience	12
<b>Course Outcomes as per Bloom's Taxonomy</b>		
At the end of the course the students should be able to:		
CO 1	To list <sup>1</sup> Different areas in wellness, health and wellness programs	
CO 2	To classify <sup>2</sup> Global medical tourism scenario	
CO 3	To generalize <sup>3</sup> Handling guest complaints and resolving issues to ensure guest satisfaction	
CO 4	To demonstrate <sup>3</sup> Determinants of health and wellness.	
CO 5	They will be able to <b>criticize</b> <sup>4</sup> tour-operations and post-tour management	
<b>Text Books</b>	<ol style="list-style-type: none"> <li>Medical Tourism – Akhil Mathur</li> <li>The complete Medical Tourist – David Hanscock</li> <li>Medical Tourism Prospect and emerging issue – Annamalia Murgan</li> </ol>	
<b>Reference Books</b>	<ol style="list-style-type: none"> <li>Medical tourism a reference handbook – Katthey S. Stoley</li> <li>Medical Tourism Facilitator Handbook – Maria K . Todd</li> <li>Medical Tourism – R.L Parekh</li> <li>Medical Tourism – John Connell</li> </ol>	

COURSE CODE		INTERNATIONAL TRAVEL ASSISTANCE	Theory: 60
AH23TT004		(LTP 4 – 0 – 0)	
<b>Course Objectives:</b>			
<ul style="list-style-type: none"> <li>• To understand the main currents of services in travel assistance.</li> <li>• To recognize the travel documents and logistics.</li> <li>• To analyse common travel health risks and vaccination.</li> <li>• To explore the cultural sensitivity and awareness.</li> <li>• To examine the crisis management and problem solving methods.</li> </ul>			
UNIT	CONTENTS		HOURS
I	Introduction to International Travel Assistance Overview of the travel assistance industry, Roles and responsibilities of a travel assistant, Understanding the importance of customer service in travel assistance, Ethical considerations in international travel assistance	12	
II	Travel Documentation and Logistics Understanding passport and visa requirements, Assisting with visa applications and processing, Knowledge of travel insurance policies and coverage, Transportation options and booking procedures, Managing travel itineraries and reservations	12	
III	Health and Safety Considerations Identifying common travel health risks and vaccinations, Providing guidance on travel health insurance and medical services abroad, Understanding travel advisories and alerts, Emergency preparedness and response in foreign destinations, Cultural considerations for promoting safe and respectful travel experiences	12	
IV	Cultural Awareness and Communication Developing cultural sensitivity and awareness, Effective communication strategies for diverse cultures and languages, Interacting with travellers from different backgrounds and addressing their needs, Understanding cultural norms and customs for various destinations, Promoting responsible and sustainable tourism practices	12	
V	Crisis Management and Problem-Solving Identifying and responding to travel emergencies, such as natural disasters, political unrest, and medical emergencies, Collaborating with relevant authorities and organizations during crisis situations, Problem-solving skills for travel-related challenges and conflicts, Dealing with unexpected situations, including lost documents, delayed flights, and accommodation issues, Case studies and real-life scenarios to apply crisis management skills	12	
<b>Course Outcomes as per Bloom's Taxonomy</b>			
At the end of the course the students should be able to:			
CO 1	To list <sup>1</sup> Roles and responsibilities of a travel assistant.		
CO 2	To classify <sup>2</sup> travel insurance policies and coverage		
CO 3	To generalize <sup>3</sup> travel advisories and alerts		
CO 4	To demonstrate <sup>3</sup> the cultural norms and customs for various destinations .		
CO 5	They will be able to <b>criticize</b> <sup>4</sup> Case studies and real-life scenarios to apply crisis management skills		
<b>Text Books</b>	<ol style="list-style-type: none"> <li>1. International Travel Secrets – Micheal Weda</li> <li>2. Travel Agency and Tour Operation – Jagmohan Negi</li> <li>3. Tourism Development – A.K Bhatia</li> <li>4. Fundamentals of Travel and Tourism – Arpita Mathur</li> </ol>		
<b>Reference Books</b>	<ol style="list-style-type: none"> <li>1. Healthful Travel : Your peace of mind companion – Marlene coelman</li> <li>2. International Translator for personal safety and travel – kwikpoint</li> <li>3. Traveling Abroad Post "9-11" &amp; in the Wake of Terrorism -A Practical Guide for Americans and Other International Travelers – Gladson INwanna</li> </ol>		

**Track: Laboratory Management**

<b>COURSE CODE</b>	<b>Microbiology and Biotechnology Laboratory Skills</b>	<b>Theory: 60</b>
<b>SC23LM001</b>		<b>(LTP 4 – 0 – 0)</b>
<b>Course Objectives:</b>		
<ul style="list-style-type: none"> <li>• Develop a very good understanding of several biotechnological &amp; microbiological techniques in students.</li> <li>• Basic instruments which are commonly used in biotechnology &amp; microbiology laboratory and their principles are discussed.</li> <li>• They also get introduced a variety of modifications in the field of biotechnology &amp; microbiology.</li> <li>• Concepts learnt can be applied to perform basic experimental techniques.</li> </ul>		
<b>UNIT</b>	<b>CONTENTS</b>	<b>HOURS</b>
<b>I</b>	Biochemistry: Preparation of buffer, Colour reactions of Carbohydrates, Colour reactions of amino acids, Extraction of lipids, Estimation of protein by Bradford method. Paper chromatography of sugars, Amino Acids, Use of spectrophotometer.	<b>12</b>
<b>II</b>	Cell Biology: Cytological preparations, Fixation, dehydration and staining, Squash preparation of meiotic and mitotic cells, Embedding and sectioning.	<b>12</b>
<b>III</b>	Microbiology: Preparation of media, cotton plugging and sterilization. Isolation of microorganisms from air, water and soil samples: dilution, pour plating and colony purification. Enumeration of microorganisms: total vs. viable counts.	<b>12</b>
<b>IV</b>	Genomics & Proteomics: DNA extraction from plant leaves, blood, microbes etc, check the quality of Genomic DNA by Agarose Gel electrophoresis, check the purity and concentration of genomic DNA by Spectrophotometer, Protein analysis by SDS PAGE, Amplification of DNA by using polymerase chain reaction (PCR).	<b>12</b>
<b>V</b>	Bioinformatics: Pubmed searching, Entrez (meta search engine), Phylogenic software, Sequence analysis tools, Multiple sequence analysis Clustal W, Protein structure visualization tool.	<b>12</b>
<b>Course Outcomes as per Bloom's Taxonomy</b>		
At the end of the course the students should be able to:		
<b>CO 1</b>	<b>Characterize<sup>3</sup></b> cell division, DNA, RNA & central dogma	
<b>CO 2</b>	<b>Differentiate<sup>3</sup></b> a large number of common bacteria by their salient characteristics	
<b>CO 3</b>	<b>Understand<sup>2</sup></b> gene cloning, PCR & mutagenesis	
<b>CO 4</b>	<b>Correlate<sup>5</sup></b> different techniques and its application in biotechnology & microbiology	
<b>CO 5</b>	<b>Perform<sup>4</sup></b> basic laboratory experiments to study cells; methods of gene cloning	
<b>Text Books</b>	<ol style="list-style-type: none"> <li>1. GM Cooper and Hausman RE, The Cell: A Molecular Approach, 5th edition. 2009, ASM Press &amp; Sunderland, Washington, D.C, Sinauer Associates, MA.</li> <li>2. WM Kleinsmith, LJ Hardin and GP Bertoni, The World of the Cell. 7<sup>th</sup> edition., 2009. Pearson Benjamin Cummings Publishing, San Francisco.</li> <li>3. Biotechnology by U. Satyanarayana</li> <li>4. Molecular Biology of the Gene by Watson, hopkin, Robert et al</li> <li>5. Microbiology 5th Edition. Prescott, L.M.; Harley, J.P. and Klein, D.A. (2003) McGraw Hill, USA</li> </ol>	
<b>Reference Books</b>	<ol style="list-style-type: none"> <li>1. G Karp, Cell and Molecular Biology: Concepts and Experiments, 6th Edition, 2010. John Wiley &amp; Sons Inc.</li> <li>2. EDP Robertis and De Robertis EMF, Cell and Molecular Biology, 2006, 8<sup>th</sup> edition, Lippincott Williams and Wilkins, Philadelphia.</li> <li>3. Advanced Instrumentation, Data Interpretation, and Control of Biotechnological Processes, J.F. Van Impe, Kluwer Academic</li> </ol>	



COURSE CODE	CHEMISTRY LAB SKILLS	Theory: 60
SC23LM002		(LTP 4 - 0 - 0)
<b>Course Objectives:</b>		
<ul style="list-style-type: none"> <li>• Various safety rules at chemistry laboratory.</li> <li>• How to handle various types of lab instruments.</li> <li>• How to perform different types of experiments/reactions.</li> </ul>		
UNIT	CONTENTS	HOURS
I	Introduction to chemistry laboratory: Practice safety at chemistry lab, do's and don't's at chemistry lab, use of personal protective equipment (PPE), MSDS (Material Safety Data Sheet) to get the information of a given chemical, how to dispose the waste chemicals properly.	12
II	Analytical Chemistry: Theory of separation techniques through chromatography; Separation of amino acids by Thin Layer chromatography. Separation of Compounds using Column Chromatography. Separation of Fe <sup>3+</sup> , Co <sup>2+</sup> and Cu <sup>2+</sup> through Paper chromatographic Determination of the Exchange Capacity of a Cation Ion Exchange Resin.	12
III	Organic Chemistry: Theory for preparation of different types of organic compounds; Preparation of Paracetamol from 4-aminophenol. Preparation of Aspirin from salicylic acid. Preparation of Benzyllic acid from benzoin Synthesis (Benzyllic acid rearrangement). Preparation of trans-Stilbene from benzyl chloride Wittig reaction. Preparation of Acetanilide (N-acylation).	12
IV	Inorganic Chemistry: Theory of estimation of compounds through titration; Estimation of oxalic acid by titrating it with KMnO <sub>4</sub> . Estimation of water of crystallization in Mohr's salt by titrating with KMnO <sub>4</sub> . Estimation of Fe (II) ions by titrating it with K <sub>2</sub> C <sub>2</sub> O <sub>7</sub> using internal indicator. Estimation of sodium carbonate and sodium hydrogen carbonate present in a mixture.	12
V	Physical Chemistry: Theory of pH metry, conductometry, potentiometry; Measurement of pH of different solutions like aerated drinks, fruit juices, shampoos and soaps (using dilute solutions of soaps and shampoos to prevent damage to the glass electrode) using pH-meter. Preparation of buffer solution of sodium acetate-acetic acid and ammonium chloride-ammonium hydroxide Measurement of the pH of buffer solutions and comparison of the values with theoretical values. Conductometric titration of a weak acid with strong base. Conductometric titration of a mixture of weak and strong acids. Potentiometric titration of a strong acid with strong base using quinhydrone electrode.	12
<b>Course Outcomes as per Bloom's Taxonomy</b>		
At the end of the course the students should be able to:		
CO 1	Students will gain <b>knowledge</b> <sup>2</sup> of safety in chemistry laboratory.	
CO 2	They will have <b>knowledge</b> <sup>2</sup> of hazard information of different chemicals	
CO 3	They will be able to <b>define</b> <sup>1</sup> the various measuring instruments	
CO 4	They will have <b>understanding</b> <sup>2</sup> of performing different types of reactions.	
CO 5	They will be able to <b>analyze</b> <sup>4</sup> the experimental skills.	
<b>Text Books</b>	<ol style="list-style-type: none"> <li>1. Furniss et al, Vogel's Textbook of Practical Organic Chemistry, 2003</li> <li>2. B. Vishwanathan, P.S. Raghavan, Practical Physical Chemistry Paperback, 2012</li> <li>3. Ms.Pooja, R. Popat, Practical Book of Analytical Chemistry (First Edition), 2020</li> <li>4. Gurdeep Raj, Advanced Practical Inorganic Chemistry, 2013</li> </ol>	
<b>Reference Books</b>		

COURSE CODE	ELECTRONICS AND ELECTRICAL LAB SKILLS	Practical: 60
SC23LM003		(LTP 0 – 0 – 8)
<p><b>Course Objectives:</b></p> <ul style="list-style-type: none"> <li>• Demonstrate safety measures against electric shocks.</li> <li>• Identify the tools used for electrical wiring, electrical accessories, wires, cables, batteries and standard symbols.</li> <li>• Develop the connection diagram, identify the suitable accessories and materials necessary for wiring simple lighting circuits for domestic buildings</li> <li>• Identify and test various electronic components</li> <li>• Assemble and test electronic circuits on boards</li> <li>• Work in a team with good interpersonal skills</li> </ul>		
<b>LIST OF EXPERIMENTS</b>		
<p>1. a) Demonstrate the precautionary steps adopted in case of Electrical shocks.  b) Identify different types of cables, wires, switches, fuses, fuse carriers, MCB, ELCB and MCCB with ratings.</p> <p>2. Wiring of simple light circuit for controlling light/ fan point (PVC conduit wiring)</p> <p>3. Wiring of light/fan circuit using Two way switches. (Staircase wiring)</p> <p>4. Wiring of Fluorescent lamps and light sockets (6A) with a power circuit for controlling power device. (16A socket)</p> <p>5. Wiring of power distribution arrangement using single phase MCB distribution board with ELCB, main switch and Energy meter.</p> <p>6. a) Identify different types of batteries with their specifications.  b) Demonstrate the Pipe and Plate Earthing Schemes using Charts/Site Visit.</p>		
<p>1. Familiarization/Identification of electronic components with specification (Functionality, type, size, colour coding, package, symbol, cost etc. [Active, Passive, Electrical, Electronic, Electro-mechanical, Wires, Cables, Connectors, Fuses, Switches, Relays, Crystals, Displays, Fasteners, Heat sink etc.)</p> <p>2. Drawing of electronic circuit diagrams using BIS/IEEE symbols and introduction to EDA tools (such as Dia or Xcircuit), Interpret data sheets of discrete components and IC's, Estimation and costing.</p> <p>3. Familiarization/Application of testing instruments and commonly used tools. [Multimeter, Function generator, Power supply, DSO etc.] [Soldering iron, Desoldering pump, Pliers, Cutters, Wire strippers, Screw drivers, Tweezers, Crimping tool, Hot air soldering and de- soldering station etc.]</p> <p>4. Testing of electronic components [Resistor, Capacitor, Diode, Transistor and JFET using multimeter.]</p> <p>5. Inter-connection methods and soldering practice. [Bread board, Wrapping, Crimping, Soldering - types - selection of materials and safety precautions, soldering practice in connectors and general purpose PCB, Crimping.]</p> <p>6. Printed circuit boards (PCB) [Types, Single sided, Double sided, PTH, Processing methods, Design and fabrication of a single sided PCB for a simple circuit with manual etching (Ferric chloride) and drilling.]</p> <p>7. Assembling of electronic circuits using SMT (Surface Mount Technology) stations.</p> <p>8. Assembling of electronic circuit/system on general purpose PCB, test and show the functioning (Any Two circuits).</p> <ul style="list-style-type: none"> <li>• Fixed voltage power supply with transformer, rectifier diode, capacitor filter, zener/IC regulator.</li> <li>• Square wave generation using IC 555 timer in IC base.</li> <li>• Sine wave generation using IC 741 OP-AMP in IC base.</li> <li>• RC coupled amplifier with transistor BC107</li> </ul>		
<b>Course Outcomes as per Bloom's Taxonomy</b>		
At the end of the course the students should be able to:		
<b>CO 1</b>	define <sup>1</sup> electrical components, circuits and networks	
<b>CO 2</b>	analyze <sup>4</sup> how fuse work.	
<b>CO 3</b>	identify the MCB and cutout <b>apply</b> <sup>3</sup> in physical problems.	
<b>CO 4</b>	<b>calculate</b> <sup>4</sup> the electronic components.	
<b>CO 5</b>	<b>understand</b> <sup>2</sup> the electronic circuits and problems	
<b>Text Books</b>	<ol style="list-style-type: none"> <li>1. A text book in Electrical Technology - B L Theraja – S. Chand and Company.</li> <li>2. Performance and design of AC machines – M.G. Say, ELBS Edn.</li> </ol>	
<b>Reference Books</b>	<ol style="list-style-type: none"> <li>1. Mechanical workshop practice, K.C. John, 2010, PHI Learning Pvt. Ltd.</li> <li>2. Workshop Processes, Practices and Materials, Bruce J Black 2005, 3rd Edn., Editor Newnes [ISBN: 0750660732]</li> <li>3. New Engineering Technology, Lawrence Smyth/Liam Hennessy, The Educational Company of Ireland [ISBN: 0861674480]</li> </ol>	

COURSE CODE	PHYSICS LAB SKILLS	Theory: 60
SC23LM004		(LTP 4 – 0 – 0)
<b>Course Objectives:</b>		
<ul style="list-style-type: none"> <li>The aim of this course is to enable the students to familiar and experience with various mechanical and electrical tools through hands-on mode</li> <li>Use of computer language as a tool in solving physics problems</li> <li>Course will consist of hands on training on the Problem solving on Computers</li> </ul>		
UNIT	CONTENTS	HOURS
I	Introduction: Measuring units. conversion to SI and CGS. Familiarization with meter scale, Vernier calliper, Screw gauge and their utility. Measure the dimension of a solid block, volume of cylindrical beaker/glass, diameter of a thin wire, thickness of metal sheet, etc. Use of Sextant to measure height of buildings, mountains, etc.	15
II	Mechanical Skill: Concept of workshop practice. Overview of manufacturing methods: casting, foundry, machining, forming and welding. Types of welding joints and welding defects. Common materials used for manufacturing like steel, copper, iron, metal sheets, composites and alloy, wood. Concept of machine processing, introduction to common machine tools like lathe, shaper, drilling, milling and surface machines. Cutting tools, lubricating oils. Cutting of a metal sheet using blade. Smoothing of cutting edge of sheet using file. Drilling of holes of different diameter in metal sheet and wooden block. Use of bench vice and tools for fitting. Make funnel using metal sheet.	15
III	Electrical and Electronic Skill: Use of Multimeter. Soldering of electrical circuits having discrete components (R, L, C, diode) and ICs on PCB. Operation of oscilloscope. Making regulated power supply. Timer circuit, Electronic switch using transistor and relay.	15
IV	Introduction to prime movers: Mechanism, gear system, wheel, Fixing of gears with motor axel. Lever mechanism, Lifting of heavy weight using lever. braking systems, pulleys, working principle of power generation systems. Demonstration of pulley experiment.	15
<b>Course Outcomes as per Bloom's Taxonomy</b>		
At the end of the course the students should be able to:		
CO 1	define <sup>1</sup> the various measuring instruments.	
CO 2	analyze <sup>4</sup> themechanical skills.	
CO 3	identify the electrical and electronic skills <sup>apply</sup> <sup>3</sup> it in physical problems.	
CO 4	calculate <sup>4</sup> the proper circuit designing or rectifying.	
CO 5	understand <sup>2</sup> the prime movers required in physics.	
<b>Text Books</b>	<ol style="list-style-type: none"> <li>A text book in Electrical Technology - B L Theraja – S. Chand and Company.</li> <li>Performance and design of AC machines – M.G. Say, ELBS Edn.</li> </ol>	
<b>Reference Books</b>	<ol style="list-style-type: none"> <li>Mechanical workshop practice, K.C. John, 2010, PHI Learning Pvt. Ltd.</li> <li>Workshop Processes, Practices and Materials, Bruce J Black 2005, 3rd Edn., Editor Newnes [ISBN: 0750660732]</li> <li>New Engineering Technology, Lawrence Smyth/Liam Hennessy, The Educational Company of Ireland [ISBN: 0861674480]</li> </ol>	

**Track: Horticulture**

<b>COURSE CODE</b>	<b>Production Technology for Vegetables and Spices</b>	<b>Theory: 30 Practical: 30</b>
<b>AG23HR001</b>		<b>(LTP 2 – 0 – 4)</b>
<b>Course Objectives:</b>		
Understanding importance of vegetables, spices, kitchen gardening in human nutrition & in national economy. To know about various vegetables – their origin, area, climate, soil, improved varieties, spacing, transplanting, fertilizer requirement, irrigation, weed management, harvesting and yield.		
<b>UNIT</b>	<b>CONTENTS</b>	<b>HOURS</b>
<b>I</b>	Importance of vegetables & spices in human nutrition and national economy. Kitchen gardening. Brief about origin, area, climate, soil, improved varieties and cultivation practices such as time of sowing, transplanting techniques, planting distance, fertilizer requirements, irrigation, weed management, harvesting and yield, physiological disorders, of important vegetable and spices: Tomato, Brinjal, Chili, Capsicum, French bean, Peas;	<b>6</b>
<b>II</b>	Brief about origin, area, climate, soil, improved varieties and cultivation practices such as time of sowing, transplanting techniques, planting distance, fertilizer requirements, irrigation, weed management, harvesting and yield, physiological disorders: Cucumber, Melons, Gourds, Pumpkin.	<b>6</b>
<b>III</b>	Brief about origin, area, climate, soil, improved varieties and cultivation practices such as time of sowing, transplanting techniques, planting distance, fertilizer requirements, irrigation, weed management, harvesting and yield, physiological disorder: Cole crops such as Cabbage, Cauliflower, Knol-khol	<b>6</b>
<b>IV</b>	Brief about origin, area, climate, soil, improved varieties and cultivation practices such as time of sowing, transplanting techniques, planting distance, fertilizer requirements, irrigation, weed management, harvesting and yield, physiological disorder: Bulb crops such as Onion, Garlic; Root crops such as Carrot, Raddish, Beetroot; Tuber crops such as Potato;	<b>6</b>
<b>V</b>	Brief about origin, area, climate, soil, improved varieties and cultivation practices such as time of sowing, transplanting techniques, planting distance, fertilizer requirements, irrigation, weed management, harvesting and yield, physiological disorder: Leafy vegetables such as Amaranth, Palak. Perennial vegetables).	<b>6</b>
<b>List of Experiments</b>		
1. Identification of vegetables & spice crops and their seeds.		
2. Nursery raising.		
3. Direct seed sowing and transplanting.		
4. Fertilizers applications.		
5. Study of morphological characters of different vegetables & spices.		
6. Harvesting & preparation for market Economics of vegetables and spices cultivation		
<b>Course Outcomes as per Bloom's Taxonomy</b>		
At the end of the course the students should be able to:		
<b>CO 1</b>	Understanding the importance of vegetables & spices in human nutrition and national economy.	
<b>CO 2</b>	To know about the importance of kitchen gardening in nutrition of households.	
<b>CO 3</b>	Thorough understanding of cultural practices involved in Tomato, Brinjal, Chili, Capsicum.	
<b>CO 4</b>	Thorough understanding of cultural practices involved in Cucumber, Melons, Gourds, Pumpkin.	
<b>CO 5</b>	Thorough understanding of cultural practices involved in French bean & peas.	
<b>Text Books</b>	PranabHazra, A. Chattopadhyay, K. Karmakar and S. Dutta. 2010. <i>Modern Technology in Vegetable Production</i> . New India Publishing Agency, New Delhi.	
<b>Reference Books</b>	NeerajPratap Singh, .2007. <i>Basic Concepts of Vegetable Science</i> . International Book Distributing Co. New Delhi. Academic Press, New Delhi.	

COURSE CODE	Production Technology for Fruit and Plantation Crops		Theory: 30 Practical: 30
AG23HR002	(LTP 2 – 0 – 4)		
<b>Course Objectives:</b> To teach the students about the types of fruit and plantation crops, their basic requirement and cultural practices of growing different fruits like mango, guava, banana, pomegranate, etc. and the same for plantation crops like tea, rubber, coffee, etc.			
UNIT	CONTENTS	HOURS	
I	Importance and scope of fruit and plantation crop industry in India; Importance of rootstocks;	6	
II	Production technologies for the cultivation of major fruits-mango, banana, citrus,	6	
III	Production technologies for the cultivation of grape, guava, litchi, papaya, sapota,	6	
IV	Production technologies for the cultivation of apple, pear, peach, walnut, almond.	6	
V	Production technologies for the cultivation of minor fruits- date, ber, pineapple, pomegranate, jackfruit, strawberry, plantation crops-coconut, arecanut, cashew, tea, coffee & rubber.	6	
<b>List of Experiments</b>			
1. Seed propagation. 2. Scarification and stratification of seeds. 3. Propagation methods for fruit and plantation crops. 4. Description and identification of fruit. 5. Preparation of plant bio regulators and their uses, 6. Important pests, diseases and physiological disorders of above fruit and plantation crops, 7. Visit to commercial orchards.			
<b>Course Outcomes as per Bloom's Taxonomy</b>			
At the end of the course the students should be able to:			
<b>CO 1</b>	Well acquainted with good quality root stock.		
<b>CO 2</b>	Know about the cultivation practices of fruits trees.		
<b>CO 3</b>	Good knowledge of managing the orchards of different fruits.		
<b>CO 4</b>	Know about minor fruits and their importance.		
<b>CO 5</b>	Will be able to manage the orchard of plantation crops.		
<b>Text Books</b>	1. Chattopadhyaya, P. K. Year. <i>Text Book on Pomology (Fundamentals of Fruit Growing)</i> . Kalyani Publishers, Ludhiana. 2. Parthasarathy, V. A., P.K. Chattopadhyay and Bose, T.K. 2006. <i>Plantation Crops</i> . Vol I and II. Parthasankarbasu Naya Udyog, Kolkata.		
<b>Reference Books</b>	1. Bose, T.K. and Mitra, S.K. 1990. <i>Fruits – Tropical and Sub-tropical</i> . NayaPrakashan, Calcutta. 2. Bijendra Singh. 2012. <i>Horticulture at a Glance</i> . Kalyani Publishers, Ludhiana		

COURSE CODE	Disease of Field and Horticultural crops and their Management-I	Theory: 30 Practical: 30
AG23HR003	(LTP 2 – 0 – 4)	
<b>Course Objectives:</b> To make the students well acquainted with various insects-pests of crops and their diagnosis procedure and control measures.		
UNIT	CONTENTS	HOURS
I	Symptoms, etiology, disease cycle and management of major diseases of following crops: Field Crops: Rice: blast, brown spot, bacterial blight, sheath blight, false smut, khaira and tungro; Maize: stalk rots, downy mildew, leaf spots; Sorghum: smuts, grain mold and anthracnose, Bajra: downy mildew and ergot; Groundnut: early and late leaf spots, wilt, Soybean: Rhizoctonia blight, bacterial spot, seed and seedling rot and mosaic.	6
II	Pigeonpea: Phytophthora blight, wilt and sterility mosaic; Finger millet: Blast and leaf spot; Black& Green gram: Cercospora leaf spot and anthracnose, web blight and yellow mosaic; Castor: Phytophthorablight; Tobacco: black shank, black root rot and mosaic.	6
III	Horticultural Crops: Guava: wilt and anthracnose; Banana: Panama wilt, bacterial wilt, Sigatoka and bunchy top; Papaya: foot rot, leaf curl and mosaic, Pomegranate: bacterial blight;	6
IV	Cruciferous vegetables: Alternaria leaf spot and black rot; Brinjal: Phomopsis blight and fruit rot and Sclerotinia blight; Tomato: damping off, wilt, early and late blight, buck eye rot and leaf curl and mosaic; Okra: Yellow Vein Mosaic.	6
V	Beans: anthracnose and bacterial blight; Ginger: soft rot; Colocasia: Phytophthora blight; Coconut: wilt and bud rot; Tea: blister blight; Coffee: rust	6
<p style="text-align: center;"><b>List of Experiments</b></p> 1. Identification and histopathological studies of selected diseases of field and horticultural crops covered in theory. 2. Field visit for the diagnosis of field problems. 3. Collection and preservation of plant diseased specimens for Herbarium; Note: Students should submit 50 pressed and well mounted specimens.		
<b>Course Outcomes as per Bloom's Taxonomy</b>		
At the end of the course the students should be able to:		
<b>CO 1</b>	Understand the symptoms, etiology, disease cycle and management of major diseases	
<b>CO 2</b>	Understand the symptoms, etiology, disease cycle of Pigeonpe.	
<b>CO 3</b>	Understand the symptoms, etiology, disease cycle of Horticultural Crops	
<b>CO 4</b>	Understand the symptoms, etiology, disease cycle of Cruciferous vegetables	
<b>CO 5</b>	Understand the symptoms, etiology, disease cycle of Beans	
<b>Text Books</b>	1. An Introduction to Fungi - H. C. Dubey, Scientific Publishers (2012)	
<b>Reference Books</b>	1. Plant Disease - R. S. Singh, Oxford and IBH Publishing (2009)	
<b>Books</b>	2. Plant Pathology - R.S. Mehrotra, Tata Mc Grow Hill Pub. Co. Ltd., New Delhi (1998)	

COURSE CODE	Diseases of Field and Horticultural Crops and their Management – II	Theory: 30 Practical: 30
AG23HR004		(LTP 2 – 0 – 4)
<b>Course Objectives:</b>		
To learn the importance of disease management in different field crops and horticultural crops		
UNIT	CONTENTS	HOURS
I	Symptoms, etiology, disease cycle and management of following diseases: Field Crops: Wheat: rusts, loose smut, karnal bunt, powdery mildew, alternaria blight, and ear cockle; Sugarcane: red rot, smut, wilt, grassy shoot, ratoon stunting and PokkahBoeng. Sunflower: Sclerotinia stem rot and Alternaria blight; Mustard: Alternaria blight, white rust, downy mildew and Sclerotinia stem rot.	6
II	Gram: wilt, grey mould and Ascochyta blight; Lentil: rust and wilt; Cotton: anthracnose, vascular wilt, and black arm; Pea: downy mildew, powdery mildew and rust.	6
III	Horticultural Crops: Mango: anthracnose, malformation, bacterial blight and powdery mildew; Citrus: canker and gummosis; Grape vine: downy mildew, Powdery mildew and anthracnose; Apple: scab, powdery mildew, fire blight and crown gall; Peach: leaf curl. Strawberry: leaf spot Potato: early and late blight, black scurf, leaf roll, and mosaic.	6
IV	Cucurbits: downy mildew, powdery mildew, wilt; Onion and garlic: purple blotch, and Stemphylium blight; Chillies: anthracnose and fruit rot, wilt and leaf curl; Turmeric: leaf spot Coriander: stem gall Marigold: Botrytis blight; Rose: dieback, powdery mildew and black leaf spot.	6
<p>1. Identification and histopathological studies of selected diseases of field and horticultural crops covered in theory.</p> <p>2. Field visit for the diagnosis of field problems.</p> <p>3. Collection and preservation of plant diseased specimens for herbarium.</p> <p><b>Note:</b> Students should submit 50 pressed and well-mounted specimens.</p>		
<b>Course Outcomes as per Bloom's Taxonomy</b>		
At the end of the course the students should be able to:		
<b>CO 1</b>	Learn about the symptoms, etiology, disease cycle and management of Field Crops	
<b>CO 2</b>	Know about the symptoms, etiology, disease cycle and management of Sunflower	
<b>CO 3</b>	Understand about the symptoms, etiology, disease cycle and management of Gram	
<b>CO 4</b>	Understand about the symptoms, etiology, disease cycle and management of Horticultural Crops	
<b>CO 5</b>	Understand about Cucurbits	
<b>Text Books</b>	<ol style="list-style-type: none"> <li>Plant Diseases - R. S. Singh, Science Publisher, U.S. (2001)</li> <li>Plant Pathology - R.S. Mehrotra, McGraw Hill Publication (2003)</li> </ol>	
<b>Reference Books</b>	<ol style="list-style-type: none"> <li>Sharma, P.D. (2013). Plant Pathology. Rastogi Publication</li> <li>Rangaswami, G. (1998). Diseases of Crop Plants in India. Prentice Hall India Private Limited</li> </ol>	

**Track: Agri Business**

<b>COURSE CODE</b>	<b>Agricultural Finance and Co-operation</b>	<b>Theory: 30 Practical: 30  (LTP 2 – 0 – 4)</b>
<b>AG23AB001</b>		
<b>Course Objectives:</b>		
Improvement in knowledge of agriculture finance, credit, banking system, need of finance for farmers. Insights of IMF, ADB, World Bank, NABARD, agriculture cooperation, significance of cooperation, farming cooperatives, role of NAFED etc.		
<b>UNIT</b>	<b>CONTENTS</b>	<b>HOURS</b>
<b>I</b>	Agricultural Finance- meaning, scope and significance, Sources of agricultural finance: institutional and non-institutional sources, commercial banks, social control and nationalization of commercial banks.	<b>6</b>
<b>II</b>	Agricultural credit: meaning, definition, need, classification. Credit analysis: 4 R's, and 3C's of credits. Credit needs and its role in Indian agriculture. Cost of credit. Recent development in agricultural credit. Preparation and analysis of financial statements – Balance Sheet and Income Statement.	<b>6</b>
<b>III</b>	Micro financing including KCC. Lead bank scheme, RRBs, Scale of finance and unit cost. An introduction to higher financing institutions – RBI, NABARD, ADB, IMF, world bank, Insurance and Credit Guarantee Corporation of India.	<b>6</b>
<b>IV</b>	Basic guidelines for preparation of project reports- Bank norms – SWOT analysis.	<b>6</b>
<b>V</b>	Agricultural Cooperation – Meaning, brief history of cooperative development in India, objectives, principles of cooperation, significance of cooperatives in Indian agriculture	<b>6</b>
<b>List of Experiments</b>		
1. Determination of most profitable level of capital use. Optimum allocation of limited amount of capital among different enterprise. Analysis of progress and performance of cooperatives using published data.		
2. Analysis of progress and performance of commercial banks and RRBs using published data. Visit to a commercial bank, cooperative bank and cooperative society to acquire firsthand knowledge of their management, schemes and procedures.		
3. Estimation of credit requirement of farm business – A case study. Preparation and analysis of balance sheet – A case study. Preparation and analysis of income statement – A case study.		
4. Appraisal of a loan proposal– A case study. Techno-economic parameters for preparation of projects.		
5. Preparation of Bankable projects for various agricultural products and its value added products. Seminar on selected topics.		
<b>Course Outcomes as per Bloom's Taxonomy</b>		
At the end of the course the students should be able to:		
<b>CO 1</b>	Understand need for credit and agricultural finance in our country.	
<b>CO 2</b>	Understand agricultural credit, its classification and analysis.	
<b>CO 3</b>	To know about various sources of agricultural finance.	
<b>CO 4</b>	To know about micro credit and higher financial institutions in our country.	
<b>CO 5</b>	Understand development in agricultural credit, analysis of financial statements.	
<b>Text Books</b>	1. Johil S.S. and C.V. Moore. 1970. <i>Essentials of Farm Financial Management</i> . Today and Tomorrow Printers and Publishers, New Delhi. 2. Mamoria, C.B. and R.D. Saksena. 1973. <i>Co-operatives in India</i> . KitabMahal, Allahabad.	
<b>Reference Books</b>	1. John, J. Hampton.1983. <i>Financial Decision Making: Concepts, Problems and Cases</i> , of India. New Delhi. 2. Mamoria, C.B. and Saxena. <i>Agricultural Problems in India</i> . KitabMahal, Allahabad.	



Agricultural Marketing Trade and Prices		Theory: 30 Practical: 30
COURSE CODE	AG23AB002	
Course Objectives: To make the students well equipped with agricultural marketing trade and pricing issues so as to get the better price of the products there in the market		
UNIT	CONTENTS	HOURS
I	Agricultural Marketing: Concepts and definitions of market, marketing, agricultural marketing, market structure, marketing mix and market segmentation, classification and characteristics of agricultural markets; demand, supply and producer's surplus of agri-commodities: nature and determinants of demand and supply of farm products, producer's surplus – meaning and its types, marketable and marketed surplus, factors affecting marketable surplus of agri-commodities;	6
II	product life cycle (PLC) and competitive strategies: Meaning and stages in PLC; characteristics of PLC; strategies in different stages of PLC; pricing and promotion strategies: pricing considerations and approaches – cost based and competition based pricing; market promotion – advertising, personal selling, sales promotion and publicity – their meaning and merits & demerits; marketing process and functions: Marketing process – concentration, dispersion and equalization;	6
III	Exchange functions – buying and selling; physical functions – storage, transport and processing; facilitating functions – packaging, branding, grading, quality control and labeling (Agmark); Market functions and marketing channels: Types and importance of agencies involved in agricultural marketing; meaning and definition of marketing channel; number of channel levels; marketing channels for different farm products;	6
IV	Integration, efficiency, costs and price spread: Meaning, definition and types of market integration; marketing efficiency; marketing costs, margins and price spread; factors affecting cost of marketing; reasons for higher marketing costs of farm commodities; ways of reducing marketing costs; Role of Govt. in agricultural marketing;	6
V	Public sector institutions – CWC, SWC, FCI, CACP & DMI – their objectives and functions; cooperative marketing in India; Risk in marketing: Types of risk in marketing; speculation & hedging; an overview of futures trading; Agricultural prices and policy: Meaning and functions of price; administered prices; need for agricultural price policy; Trade: Concept of International Trade and its need, theories of absolute and comparative advantage. Present status and prospects of international trade in agri-commodities; GATT and WTO; Agreement on Agriculture (AoA) and its implications on Indian agriculture; IPR.	6
<b>List of Experiments</b>		
<ol style="list-style-type: none"> <li>1. Plotting and study of demand and supply curves and calculation of elasticities;</li> <li>2. Study of relationship between market arrivals and prices of some selected commodities;</li> <li>3. Computation of marketable and marketed surplus of important commodities;</li> <li>4. Study of price behaviour overtime for some selected commodities;</li> <li>5. Construction of index numbers;</li> <li>6. Visit to a local market to study various marketing functions performed by different agencies, identification of marketing channels for selected commodity, collection of data regarding marketing costs, margins and prices spread and presentation of report in the class;</li> <li>7. Visit to market institutions – NAFED, SWC, CWC, cooperative marketing society, etc. to study their organization and functioning; Application of principles of comparative advantage of international trade.</li> </ol>		
<b>Course Outcomes as per Bloom's Taxonomy</b>		
At the end of the course the students should be able to:		
<b>CO 1</b>	Understand the agricultural market, their characteristics, demand and supply rule, market surplus and factors affecting agricultural markets.	
<b>CO 2</b>	Understand the product life cycle, understand the competitions in market.	
<b>CO 3</b>	Understand the exchange functions and facilitating mechanisms.	
<b>CO 4</b>	Understand the cost and price policy in farm products.	
<b>CO 5</b>	Understanding the government and public institution, their role and functions in world trade, i.e. WTO and GATT.	
<b>Text Books</b>	<ol style="list-style-type: none"> <li>1. S S Acharya and N L Agarwal. 2012. <i>Agricultural Marketing in India</i>. Oxford &amp; IBH Publications Co. Pvt. Ltd., New Delhi.</li> <li>2. S S Acharya and N L Agarwal. <i>Agricultural Price: Analysis and Policy</i>. Oxford &amp; IBH Publications Co. Pvt. Ltd., New Delhi.</li> <li>3. Mamoria, C.B. and Joshi, R.L. 1995. <i>Principles and Practices of Marketing in India</i>. Kitab Mahal, Allahabad</li> </ol>	
<b>Reference Books</b>	<ol style="list-style-type: none"> <li>1. Kahlon, A.S and Tyagi, D.S. 1983. <i>Agricultural Price Policy in India</i>. Allied Publishers Pvt. Ltd., New Delhi.</li> </ol>	

COURSE CODE	Entrepreneurship Development and Business Communication	Theory: 30 Practical: 30
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AG23AB003		(LTP 2 – 0 – 4)	
<b>Course Objectives:</b> To make the students well acquainted with entrepreneurship ideas, business setting and required communication communication skills according to the market demand.			
UNIT	CONTENTS	HOURS	
I	Concept of Entrepreneur, Entrepreneurship Development, Characteristics of entrepreneurs; Impact of economic reforms on Agribusiness/ Agrienterprises.	6	
II	SWOT Analysis & achievement motivation, Government policy and programs and institutions for entrepreneurship development.	6	
III	Impact of economic reforms on Agribusiness/ Agrienterprises, Entrepreneurial Development Process; Business Leadership Skills; Developing organizational skill (controlling, supervising, problem solving, monitoring & evaluation).	6	
IV	Developing Managerial skills, Business Leadership Skills (Communication, direction and motivation Skills), Problem solving skill, Supply chain management and Total quality management).	6	
V	Project Planning Formulation and report preparation; Financing of enterprise, Opportunities for agrientrepreneurship and rural enterprise.	6	
<b>List of Experiments</b>			
1. Assessing entrepreneurial traits, problem solving skills, managerial skills and achievement motivation,			
2. Exercise in creativity,			
3. Time audit through planning, monitoring and supervision,			
4. Identification and selection of business idea,			
5. Preparation of business plan and proposal writing,			
6. Visit to entrepreneurship development institute and entrepreneurs.			
<b>Course Outcomes as per Bloom's Taxonomy</b>			
At the end of the course the students should be able to:			
CO1	Understand the concept of Entrepreneur		
CO2	Understand and conduct SWOT Analysis		
CO3	Analyse the impact of economic reforms on Agribusiness / Agrienterprises,		
CO4	Understand the method of Developing Managerial skills		
CO5	Understand Project Planning Formulation and report preparation		
<b>Text Books</b>	1. Diwase, S. (2014). Indian Agriculture & Agri-Business Management -, Scientific Publisher India 2. Kadam, Sanket, S. (2016). A Textbook of Agri-Business Management. Universal Prakashan, Pune, India.		
<b>Reference Books</b>	1. Rajpara, Yashasvi R. (2012). Agri-Business Management. Pragun Publication India. 2. Naidu, N. V. R. and Krishna Rao, T. (2008). Management and Entrepreneurship I K International Publishing House Pvt. Ltd. 3. Lall, M. and Sahai, S. (2008). Entrepreneurship, Excel Books.		

COURSE CODE	Farm Management Production and Resource Economics	Theory: 30 Practical: 30
AG23AB004	(LTP 2 – 0 – 4)	
<b>Course Objectives:</b> To gain a thorough understanding of farm and its management and factors affecting it for profit maximization and resource minimization.		
UNIT	CONTENTS	HOURS
I	Meaning and concept of farm management, objectives and relationship with other sciences. Meaning and definition of farms, its types and characteristics, factor determining types and size of farms. Principles of farm management: concept of production function and its type, use of production function in decision-making on a farm, factor-product, factor-factor and product product relationship, law of equi-marginal/or principles of opportunity cost and law of comparative advantage.	6
II	Meaning and concept of cost, types of costs and their interrelationship, importance of cost in managing farm business and estimation of gross farm income, net farm income, family labour income and farm business income. Farm business analysis: meaning and concept of farm income and profitability, technical and economic efficiency measures in crop and livestock enterprises. Importance of farm records and accounts in managing a farm, various types of farm records needed to maintain on farm, farm inventory, balance sheet, profit and loss accounts.	6
III	Meaning and importance of farm planning and budgeting, partial and complete budgeting, steps in farm planning and budgeting-linear programming, appraisal of farm resources, selection of crops and livestock's enterprises. Concept of risk and uncertainty occurs in agriculture production, nature and sources of risks and its management strategies,	6
IV	Crop/livestock/machinery insurance – weather-based crop insurance, features, determinants of compensation. Concepts of resource economics, differences between NRE and agricultural economics, unique properties of natural resources.	6
V	Positive and negative externalities in agriculture, Inefficiency and welfare loss, solutions, Important issues in economics and management of common property resources of land, water, pasture and forest resources etc.	6
<b>List of Experiments</b>		
<ol style="list-style-type: none"> <li>1. Preparation of farm layout and</li> <li>2. Determination of cost of fencing of a farm and computation of depreciation cost of farm assets.</li> <li>3. Application of equi-marginal returns/opportunity cost principle in allocation of farm resources.</li> <li>4. Determination of most profitable level of inputs use in a farm production process.</li> <li>5. Determination of least cost combination of inputs.</li> <li>6. Selection of most profitable enterprise combination</li> <li>7. Application of cost principles including CACP concepts in the estimation of cost of crop and livestock enterprises.</li> <li>8. Preparation of farm plan and budget, farm records and accounts and profit &amp; loss accounts.</li> <li>9. Collection and analysis of data on various resources in India.</li> </ol>		
<b>Course Outcomes as per Bloom's Taxonomy</b>		
At the end of the course the students should be able to:		
<b>CO 1</b>	Understand the Meaning and concept of farm management	
<b>CO 2</b>	Understand the Meaning and concept of cost, types of costs and their interrelationship	
<b>CO 3</b>	Understand the Meaning and importance of farm planning and budgeting	
<b>CO 4</b>	Understand the crop/livestock/machinery insurance	
<b>CO 5</b>	Understand the positive and negative externalities in agriculture, Inefficiency and welfare loss	
<b>Text Books</b>	1. Reddy, S. S., Raghu Ram, P., Sastry, N. and Devi, B. D. (2018). Agricultural economics. Oxford & IBH Publishing Company Pvt. Limited.	
<b>Reference Books</b>		

**Track: Basic Accounting Skills**

<b>COURSE CODE</b>	<b>Financial Accounting</b>	<b>Theory: 60</b>
<b>CM23BA001</b>		<b>(LTP 4 – 0 – 0)</b>
<b>Course Objectives:</b>		
To develop conceptual understanding of the fundamentals of financial accounting system which processes transactions and other events through a book-keeping mechanism to prepare financial statements, and also to impart skills in accounting for recording various kinds of business transactions?		
<b>UNIT</b>	<b>CONTENTS</b>	<b>HOURS</b>
<b>I</b>	<b>Introduction</b> - Financial Accounting Concepts, importance and scope, Single entry vs Double entry system of as accounting. Journal, Ledger, Trial Balance, Errors and their rectification, Cash Book, Bank reconciliation statement.	<b>12</b>
<b>II</b>	<b>Accounting Standards &amp; IFRS</b> - GAAP Meaning of Accounting Standards, Types of Accounting Standards, Meaning of IFRS, Types of IFRS, Difference between IFRS & Indian GAAP.	<b>12</b>
<b>III</b>	<b>Depreciation Accounting-(AS 6) &amp; bill of exchange</b> - Depreciation accounting and its methods, Inventory valuation and its methods. Bill of Exchange – Meaning, Parties of Bills of Exchange, Journal Entry in the books of drawer & drawee in different cases, Dishonor of bill & renewal of bill, Insolvency of drawee.	<b>12</b>
<b>IV</b>	<b>Final Account of Sole Proprietor &amp; Incomplete Record</b> - Final accounts – Meaning Preparation of trading, Profitable Loss Account and Balance Sheet with adjustments, Non Profit organization – Meaning, Preparation of receipts and payments, income and expenditure accounts & balance sheet.	<b>12</b>
<b>V</b>	<b>Royalties &amp; Voyage Account</b> - Meaning of Royalties, Short working, Short working receipt, Journal entry in the books of landlord & lessee, Preparation of Ledger Accounts. Voyage account – Meaning, Preparation of voyage account in case of complete & Incomplete voyage account.	<b>12</b>
<b>Course Outcomes as per Bloom’s Taxonomy</b>		
At the end of the course the students should be able to:		
<b>CO 1</b>	Define the various concepts of financial accounting.	
<b>CO 2</b>	Outline the various accounting principles.	
<b>CO 3</b>	Understanding Depreciation and various bills of exchange.	
<b>CO 4</b>	Elaborate on the preparation of final accounts	
<b>CO 5</b>	Interpret the royalties and voyage accounts.	
<b>Text Books</b>	2. Dr. S.N. Maheswari, Financial Accounting 3. BS Raman, Financial Accounting 4. Sehgal, A and Sehgal,D “Advanced Accounting”, Part – I, Taxmann Applied services, New Delhi	
<b>Reference Books</b>	1. Grewal and Gupta, Advanced Accounting 2. Radhaswamy and R.L. Gupta, Advanced Accounting 3. P.C. Tulasian, Pearson Editions, Introduction to Accounting 4. Jain &Narang, Financial Accounting	

COURSE CODE	Tally	Theory: 30 Practical: 30  (LTP 2 – 0 – 4)
<b>Course Objectives:</b> Tally is accounting software that is very much useful in making calculations in small and mid-level businesses. It usually stands for Transactions Allowed in a Linear Line Yards. You can do all the Banking, Auditing and Accounting Works using this software. Tally's accounting features permit you to record business transactions instantly and easily. Record transactions necessary for your business by creating and maintaining vouchers, masters and generating reports. It helps you manage all the major accounting operations in your business		
UNIT	CONTENTS	HOURS
<b>I</b>	Business: Meaning and forms of Business, Inventory	4
<b>II</b>	Meaning of Financial Accounting, Book Keeping Business Book keeping Accounting Concepts and Conventions - Double entry book-keeping Accounting Cycle: Journal, Ledger, Trial Balance, Final Accounts - Rectification of Errors -Suspense Account - Capital and Revenue Item	7
<b>III</b>	Financial Accounting Statements and Reports, Final Accounts of Trading Concerns, Non-Trading concerns, Manufacturing Concerns, Service Organizations, Inventory Management - Analysis of Financial Statements with Ratio Analysis - Cash Flow Analysis and Funds Flow Analysis, Practical Questions.	7
<b>IV</b>	Accounting Software: Company Creation, Account Information, Accounting Vouchers. Introduction to ERP 9 Advantages and Salient Features of Tally. ERP 9 - Company Creation Ledger Creation with predefined Primary Groups, Predefined Sub Groups and New Sub Groups, Tally Short keys, Setting up Inventory Information, Inventory Vouchers, Display Information	6
<b>V</b>	Office Automation Accounts Basics - Understanding the Components of Computer, Classification of Softwares - Challenges associated with accounting on computers and solutions there on - Software training to enhance employability - Growth of Tally.ERP	6
<b>List of Experiments</b>		
<ol style="list-style-type: none"> <li>1. Create a company with the given details.</li> <li>2. Create ledger account under appropriate groups for the given trial balance.</li> <li>3. Create a company, ledgers and appropriate voucher types for the following transactions on April 1<sup>st</sup>:  <ul style="list-style-type: none"> <li>Introduced capital Rs. 1,00,000</li> <li>Purchased furniture Rs. 50,000</li> <li>Paid salary Rs. 10,000</li> <li>Received commission Rs. 3,000</li> <li>Computer purchased Rs. 20,000</li> </ul> </li> <li>4. Prepare final accounts</li> <li>5. Prepare bank reconciliation statement of company for a given month</li> <li>6. Prepare balance sheet</li> <li>7. Create a company, Ledgers and appropriate vouchers and check the Balance sheet for the following Program. <ol style="list-style-type: none"> <li>1. Bindu started a new business with 5,00,000/-</li> <li>2. Purchase as Follows: <ul style="list-style-type: none"> <li>i) Computers – 15 Sets Each one 16,000/-</li> <li>ii) Pen drives – 50 No's Each one 350/-</li> <li>iii) Headphones – 35 Sets Each one 170/-</li> </ul> </li> <li>3.Purchase Returns: <ul style="list-style-type: none"> <li>i) Computers – 3 Sets</li> <li>ii) Pen drives – 7 No's</li> <li>iii) Headphones – 5 Sets</li> </ul> </li> <li>4. Sales as Follows: <ul style="list-style-type: none"> <li>i) Computers – 12 Sets Each one 25,000/-</li> <li>ii) Pen drives – 43 No's Each one 550/-</li> <li>iii) Headphones – 30 Sets Each one 300/-</li> </ul> </li> <li>5.Sales Returns: <ul style="list-style-type: none"> <li>i) Pen drives – 8 No's</li> <li>ii) Computers – 2 Sets</li> <li>iii) Headphones – 5 Set</li> </ul> </li> </ol> </li> <li>8. Create a company, Ledgers and appropriate vouchers for the following Tally program and display the balance sheet. <ol style="list-style-type: none"> <li>1. Mr. Ganesh started a new small business with 50,000/-</li> <li>2. Purchase order given to Anand Traders with Order No:301 – It contain following stock items <ul style="list-style-type: none"> <li>a. Liril soaps 10 Peaces Each one 150/-</li> <li>b. Lux soaps 20 Peaces Each one 200/</li> <li>c. Dove soaps 15 Peaces Each one 170/-</li> <li>d. Santoor soaps 10 Peaces Each one 130/-</li> <li>e. Pears soaps 25 Peaces Each one 220/-</li> </ul> </li> <li>3. Received goods from Anand Traders Order No: 301.</li> </ol> </li> </ol>		

<p>4. Sales order received to Sindhu Traders with Order No.:205 – It contain following stock items</p> <ol style="list-style-type: none"> <li>Liril soaps 8 Peaces Each one 200/-</li> <li>Lux soaps 18 Peaces Each one 230/-</li> <li>Dove soaps 10 Peaces Each one 210/-</li> <li>Santoor soaps 6 Peaces Each one 160/-</li> <li>Pears soaps 20 Peaces Each one 250/-</li> </ol> <p>5. Goods given to Sindhu Traders Order No.:205</p> <p>6. Cash Paid to Anand Traders</p> <p>7. Cash from Sindhu Traders</p>	
<p><b>Course Outcomes as per Bloom's Taxonomy</b></p>	
<p>At the end of the course the students should be able to:</p>	
<b>CO 1</b>	Define Accounting, feature of Tally ERP, the very first thing that comes to anyone's mind after listening about Tally is Accounting.
<b>CO 2</b>	Understand the meaning of Financial Accounting, Book Keeping Business Book keeping Accounting Concepts and Conventions.
<b>CO 3</b>	Discuss Final Accounts of Trading Concerns, Non-Trading concerns, Manufacturing Concerns, Service Organizations, Inventory Management - Analysis of Financial Statements with Ratio Analysis.
<b>CO 4</b>	Accounting Software: Company Creation, Account Information, Accounting Vouchers. Introduction to ERP 9 Advantages and Salient Features of Tally. ERP 9.
<b>CO 5</b>	Understand the Components of Computer, Classification of Software's.
<b>Text Books</b>	Sanjay Satpathy, (2017) Tally.ERP9 Book Advanced Usage: A Practical Hands-on Self Study Book on TallyERP 9 Accounting Software.
<b>Reference Books</b>	Education Tally, Official Guide to Financial Accounting Using Tally. ERP 9 with GST (Release 6.4)

COURSE CODE	Personal Taxation	Theory: 60
CM23BA003		(LTP 4 – 0 – 0)
<b>Course Objectives:</b>		
To provide basic knowledge and equip students with the application of principles and provisions of the Income-tax Act, 1961 applicable to individuals and the relevant Rules; and to enable the students to apply them to real world situations		
UNIT	CONTENTS	HOURS
I	<b>Introduction</b> - Origin of Tax System in India; Taxation – Voluntary practice to the involuntary system, Kautilya's philosophy of Taxation. Basic concepts: Income, agricultural income, person, assessee, assessment year, previous year, gross total income, total income, the maximum marginal rate of tax; Permanent Account Number (PAN). Residential status (only individual); Scope of total income on basis of residential status.	12
II	<b>Computation of Income</b> - Income from Salaries: Meaning, the basis of charge, different forms, allowances, perquisites. Income from house property: Basis of charge, computing income from letting out, self-occupied and partly let out and partly self-occupied, provisions related to unrealized rent, taxation of arrears of rent. Deductions from Annual Value (Sec 24)	12
III	<b>Computation of Income</b> - Profits and gains of business or profession: Basis of charge, computing business or profession income, the relevance of method of accounting, scheme of deductions and allowances, specific deductions under the act, specific disallowances under the act.	12
IV	<b>Computation of Income</b> - Capital gains: Basis of charge, capital asset, transfer of a capital asset, consideration, cost of acquisition, cost of improvement, indexation, and computation of capital gains.	12
V	<b>Computation of Income</b> - Income from other sources: Basis of charge, the relevance of method of accounting, dividend, interest on securities, winnings from lotteries, crossword puzzle, horse race, and card games and their taxation	12
<b>Course Outcomes as per Bloom's Taxonomy</b>		
At the end of the course the students should be able to:		
<b>CO 1</b>	Analyze the basic concepts of income tax and determine the residential status of different persons	
<b>CO 2</b>	Compute income under the heads 'salaries' and 'income from house property	
<b>CO 3</b>	Compute income under the heads 'Profits and gains of business or profession' and 'capital gains	
<b>CO 4</b>	Compute income under the head 'income from other sources' and understand the provisions relating to income of other persons included in assesses total income	
<b>CO 5</b>	Analyze various deductions and computation of total income and tax liability of individuals.	
<b>Text Books</b>	<ol style="list-style-type: none"> <li>1. Singhania, V. K., &amp;Singhania, M. (2021). Students' Guide to Income Tax. University Edition. Taxmann Publications Pvt. Ltd., New Delhi.</li> <li>2. Ahuja, G., &amp; Gupta, R. (2022). Systematic Approach to Income Tax. Commercial Law House, Delhi</li> </ol>	
<b>Reference Books</b>	<ol style="list-style-type: none"> <li>1. Taxman. Taxman Allied Services Pvt. Ltd., New Delhi</li> <li>2. Income Tax Reports. Company Law Institute of India Pvt.Ltd., Chennai</li> <li>3. Current Tax Reporter. Current Tax Reporter, Jodhpur</li> <li>4. Pagare, D. (2021). Law and Practice of Income Tax. Sultan Chand and Sons, New Delhi.</li> <li>5. Lal, B. B. (2011). Income Tax Law and Practice. Konark Publications, New Delhi</li> </ol>	

COURSE CODE		Direct and Indirect Taxes	Theory: 60
CM23BA004			(LTP 4 – 0 – 0)
<b>Course Objectives:</b>			
To gain knowledge of the provision of the income-tax law relating to the topic mentioned in the contents below. To gain ability to solve simple problems concerning assesses with the status of Individual and Hindu Undivided Family covering the areas mentioned in the contents below			
UNIT	CONTENTS		HOURS
<b>I</b>	Important definition in the Income Tax, 1961: its origin burden and liability on Individual, residential status: Rules and taxable income Tax Free Income for various groups of people and institutions Treatment of Agriculture income in Income Tax Act 1961 Brief Introduction of various Income heads		12
<b>II</b>	Introduction of GST and its role in economy development Brief history of Indirect tax submitted in GST and which are not subsumed, Impact of GST on various business and traders, Supply: Time, Valuation of exempted goods and services, concept of GST: inter-state supply, Local supply and Import		12
<b>III</b>	Various Authorities and regulation bodies related to GST in India Taxation mechanism: Method of collection, payment and Input tax credit Composition and normal schemes under GST		12
<b>IV</b>	Bill of Supply or Tax Invoice: essential content of Invoice as per GST Council Registration under GST: various business forms, E-Business		12
<b>V</b>	Assessment: Audit, Collection and Recovery of Tax, power of GST Authorities, Appeal, Revision, Rectification and Advance Ruling		12
<b>Course Outcomes as per Bloom's Taxonomy</b>			
At the end of the course the students should be able to:			
<b>CO 1</b>	Analyze the basic concepts of Direct Taxes		
<b>CO 2</b>	Enumerate the basic features of Indirect Tax		
<b>CO 3</b>	Identify the need for GST in India		
<b>CO 4</b>	Understand the scope of Supply		
<b>CO 5</b>	Identify the non-taxable supplies under GST		
<b>Text Books</b>	1. Abhishek, "Goods and Service Tax – New face of Indirect Taxes in India," – Govt. of India, 2 <sup>nd</sup> edition, April 2009 2. Sharma KK, "A guide on goods and service tax – an introductory study", Sterling House, New Delhi		
<b>Reference Books</b>	1. Pradeep S Shah, Rajesh S Kadakia, "Master Guide to Income tax Act 2. Aditya Singhania, "GST and Audit and Annual return", Taxman		



**Track: Retail Management & Merchandising**

<b>COURSE CODE</b>	<b>Retail Management</b>	<b>Theory: 60</b>
<b>MG23RM001</b>		<b>(LTP 4 – 0 – 0)</b>
<b>Course Objectives:</b>		
1. To introduce the students to the basic concepts and components of marketing. 2. To develop an understanding of different functional areas of marketing management. 3. To apply the knowledge of Marketing Management in Business problem solving.		
<b>UNIT</b>	<b>CONTENTS</b>	<b>HOURS</b>
<b>I</b>	Retailing – Meaning – Characteristics and Functions – Retail Management – Marketing concepts applied to Retailing – Retailing as career –Trends in retailing.	<b>12</b>
<b>II</b>	Retail Model and Theories of structural changes in retailing – Classification of retailers and retail markets – Life cycle and phase in growth of retail markets –Methods of customer interaction.	<b>12</b>
<b>III</b>	Retail location strategy – Importance of location decision – Types of location decision and its determining factors – Site selection analysis – Selection of shopping centre or market – Retail location theories – Location assessment procedures.	<b>12</b>
<b>IV</b>	Retail in India – Evaluation and Size of retail in India – Drivers of retail change in India – Foreign Direct Investment in retail – Challenges to retail developments in India.	<b>12</b>
<b>V</b>	Global retail market: Strategic planning process for global retailing – Challenges facing global retailers – Challenges and threats in global retailing – Factors affecting the success of a global retailing strategy.	<b>12</b>
<b>Course Outcomes as per Bloom’s Taxonomy</b>		
At the end of the course the students should be able to:		
<b>CO 1</b>	Identify concepts of Marketing management and its importance in the various areas of the business.	
<b>CO 2</b>	Demonstrate interactive use of promotion mix to for brand building.	
<b>CO 3</b>	Obtain an understanding of the emerging areas of marketing in business.	
<b>CO 4</b>	Apply critical thinking skills to complex business problems.	
<b>CO 5</b>	Be able to use analytic skills in addressing business problems using various functions of marketing management.	
<b>Text Books</b>	1. Bajaj C., Tuli, R., Srivastava N. (2017): Retail Management , New Delhi Oxford University Press. 2. Gibson. (2017): Retail Management . United States:Pearson. 5 th Ed	
<b>Reference Books</b>	1. Jain J.N., Singh P.P. (NewDelhi): Modern Retail Management – Principles and Techniques, Regal Publications. 2. Pradhan S. (2004): RetailingManagement –Text andCases. Uttar Pradesh: TataMcGrawHill, 2ndEd.	

COURSE CODE	Merchandising	Theory: 60
MG23RM002		(LTP 4 – 0 – 0)
<b>Course Objectives:</b>		
<ol style="list-style-type: none"> <li>1. To understand the merchandising &amp; its importance.</li> <li>2. To learn the roles and responsibilities of merchandiser and buyer.</li> <li>3. To prepare to create merchandise plan.</li> <li>4. To enable to procure right merchandise.</li> </ol>		
UNIT	CONTENTS	HOURS
<b>I</b>	Overview: Meaning of merchandising, Evolution of merchandising, Factors affecting the merchandising function, Roles and Responsibilities of merchandiser, Roles and responsibilities of the buyer, The concept of Life style merchandising.	12
<b>II</b>	Merchandise Plans: Devising merchandise plans, Developing Sales Forecast, Forecasting at the store (SKU), Collaborative planning forecasting and replenishment (CPFR).	12
<b>III</b>	Merchandise Implementation and Evaluation: Merchandising sourcing, Identifying the source of supply, Merchandise Implementation, Supply Sources: Vendor Search, Selection & Evaluation Contracting & evaluating the sources of supply, negotiating with vendors, establishing vendor relationship, Analyzing vendor performance	12
<b>IV</b>	Financial Merchandise Management: Financial Merchandise Management, Merchandise Budget Plan, Components Evaluation – Open – to – Buy Systems, Allocating Merchandise to Stores, Evaluating the Merchandise Performance.	12
<b>V</b>	Pricing Strategies: Pricing in Retailing, External influences on retail pricing strategy, Retail pricing objectives, Retail pricing strategies, Consumer response to pricing.	12
<b>Course Outcomes as per Bloom’s Taxonomy</b>		
At the end of the course the students should be able to:		
<b>CO 1</b>	Forecast sales and determine the merchandise requirements	
<b>CO 2</b>	Negotiate with vendors.	
<b>CO 3</b>	Understand Consumer response to pricing.	
<b>CO 4</b>	Evaluate merchandise performance.	
<b>CO 5</b>	Enable to procure right merchandise.	
<b>Text Books</b>	<ol style="list-style-type: none"> <li>1. Michael Levy and Barton A Weitz, (2017),Retailing Management - Global Edition, 8th Edition, McGraw Hill Higher Education, New Delhi.</li> <li>2. Ralph D. Shipp, (1985), Retail Merchandising : Principles and Applications, 3rd Edition, Houghton Mifflin Co, Boston, USA.</li> </ol>	
<b>Reference Books</b>	<ol style="list-style-type: none"> <li>1. R. Sudharshan, S. Ravi Prakash and M. SubrahmanyaSarma, (2007),Retail Management: Principles and Practice 1st Edition, New Century Publications, New Delhi.</li> <li>2. William R. Davidson, Daniel J. Sweeney and Ronald W. Stampfl, (1988),Retailing Management, 6th Edition, John Wiley &amp; Sons, Hoboken, NJ.</li> </ol>	

COURSE CODE	Supply Chain Management	Theory: 60
MG23RM003		(LTP 4 – 0 – 0)
<b>Course Objectives:</b>		
This course enables the students to familiarize with the Supply Chain from the very basic concepts.		
UNIT	CONTENTS	HOURS
I	<b>Introduction to SCM:</b> Meaning, Importance, Overview, Objective, Process Overview, Process tools, Supply chain dynamics, A model of SCM, Focus areas in SCM, Evolution of SCM	12
II	<b>Supply Chain Network Design:</b> Logistics and SCM Network design, Factors influencing network design decisions, Framework - Design – and Functions, Types and Functions of Distribution Channel,	12
III	<b>Demand Management:</b> Introduction, Relationship between customer service and demand management, Performance measures for customer service, Demand management process, The Role of forecasting and production, how to establish customer service strategy?, Customer service audit, Development of Customer service standards.	12
IV	<b>Supply Chain Planning, implementation and Strategies:</b> Aggregate planning strategies, Planning supply and demand in a supply chain, Planning and managing inventories in a supply chain, Transportation management, The customer order cycle, Order management system, Supply chain strategies, Strategy classification, Corporate strategy, Logistics strategies, Demand-driven strategies.	12
V	<b>Location and Transportation Strategy in Supply Chain:</b> The need for long range planning, The role of transportation in a supply chain, Traffic and transportation strategy, Carrier selection decision, Transportation Management System (TMS).	12
<b>Course Outcomes as per Bloom’s Taxonomy</b>		
At the end of the course the students should be able to:		
CO 1	Understand fundamental supply chain management concepts.	
CO 2	Apply knowledge to evaluate and manage an effective supply chain.	
CO 3	Understand the foundational role of logistics as it relates to transportation and warehousing.	
CO 4	How to align the management of a supply chain with corporate goals and strategies.	
CO 5	Analyze and improve supply chain processes.	
<b>Text Books</b>	1. K. ShridharaBhat, Supply Chain Management, Himalaya Publishing House, Latest Edition 2. Sunil Chopra, Peter Meindl, DharamVirKatra Supply Chain Management – Strategy, Planning and Operatio Pearson Latest Edition	
<b>Reference Books</b>	1. Sarika Kulkarni, Ashok Sharma Supply Chain Management – Creating Linkages for Faster Business Turnaroun Tata McGraw-Hill Publishing Company Ltd, Latest Edition 2. James B. Ayers, Supply Chain Project Management – A Structured Collaborative and Measurable Approach, CRC Press, Latest Edition	

COURSE CODE	E-Business	Theory: 60
MG23RM004		(LTP 4 – 0 – 0)
<b>Course Objectives:</b>		
The object of his course is to guide students about various aspects of E - Business Fundamentals and to introduce to the new window for expanding Business.		
UNIT	CONTENTS	HOURS
I	<b>Introduction to e-Business:</b> Concept and Framework of e-Business, e-Business application, e-Business Technology and Infrastructure	12
II	<b>E-Business Models:</b> Elements of Business Models, B2B Model, B2C Model	12
III	<b>Payment Systems:</b> Types of e-Payment, Digital Token Based e-Payment, Smart Card and Credit Card Payment System, Risk on e-Payment, Designing e-Payment.	12
IV	<b>Inter-organization Business:</b> EDI application in Business, EDI: Legal, Security and Standardization, EDI software implementation, Value Added Network and Internet Based EDI	12
V	<b>Online Marketing Concepts and Future of e-Business:</b> Online Marketing Process, Marketing Communication, Marketing Tools, Virtual Factory, Portal and Vortal Concepts, Search Engine Optimization	12
<b>Course Outcomes as per Bloom's Taxonomy</b>		
At the end of the course the students should be able to:		
CO 1	Define and acquire an understanding of the role and purpose(s) of special events in the organizations	
CO 2	Demonstrate techniques and strategies required to plan successful special events	
CO 3	Utilize the knowledge to diagnose and solve coordination related issues	
CO 4	Illustrate and evaluate events.	
CO 5	Interpret social responsibility and ethics ideologies to organize ethical events.	
<b>Text Books</b>	1. Dr. Kotler P. (2019): Decoding Digital. New Delhi: Notion Press. ●Sharda R., Delen D., Turban E. (2019) : Business Intelligence, Analytics, and Data Science , New Delhi: Pearson. 2. S.J. P.T. Joseph, E-COMMERCE : An Indian Perspective(2019). PHI Publications.	
<b>Reference Books</b>	1. NagDebjani B.K. (2005): E – Commerce. Tata McGraw Hill, New Delhi: Latest Edition. 2. Schneider. (2015): E-commerce (2015). Cengage Learning. LatestEdition. 3. Hansom.,Kalyanam. (2007): E-commerce and web marketing. Cengage Learning. Latest Edition.	

**Track: Investment Management**

<b>COURSE CODE</b>	<b>Introduction to Financial Markets</b>	<b>Theory: 60</b>
<b>MG23IM001</b>		<b>(LTP 4 – 0 – 0)</b>
<b>Course Objectives:</b> To introduce students to concepts of financial Institutions and markets the usage and impact of various concepts related to the same		
<b>UNIT</b>	<b>CONTENTS</b>	<b>HOURS</b>
<b>I</b>	Financial Markets: Money Market, Meaning & Functions, Capital Market, Meaning, Types: Primary Market, Secondary Market,	<b>12</b>
<b>II</b>	Stock Exchange: Meaning, Features, Functions, and Regulatory Framework: NSE, BSE, OTCEI, Meaning of important terms: online trading, stock brokers, insider trading, speculation, short selling in trade, functions of stock exchange - listing & formalities in stock exchange	<b>12</b>
<b>III</b>	Financial Services: Objectives of financial services – types of financial services – capital market services & money market services – intermediaries: banking financial corporations, non-banking financial corporations & insurance corporations- financial services sector problems and reforms.	<b>12</b>
<b>IV</b>	Mutual funds: concepts and objectives – functions and portfolio classification-guidelines for mutual funds – working of public and private mutual funds in India – debt securitization – demat services – need and operations –role of NSDL & CSDL.	<b>12</b>
<b>V</b>	Regulatory & legal framework of government in banking-- role of RBI – laws governing SEBI -- role of SEBI – laws governing non-banking financial corporations – laws pertaining anti- money laundering.	<b>12</b>
<b>Course Outcomes as per Bloom's Taxonomy</b>		
At the end of the course the students should be able to:		
<b>CO 1</b>	Identify the different types of Financial Markets.	
<b>CO 2</b>	Illustrate the role of several of Stock Exchange.	
<b>CO 3</b>	Explain and differentiate between the Financial Services.	
<b>CO 4</b>	Demonstrate the effect of different Mutual funds on the economy.	
<b>CO 5</b>	Examine the impact of different services on day-to-day life and business SEBI	
<b>Text Books</b>	1. Saunders A., Cornett M. (2021): Financial Markets and Institutions, Tata McGraw Hill, Eighth Edition. Khan M.Y. (2018): Financial Services, Tata McGraw Hill, Ninth Edition.	
<b>Reference Books</b>	1. Financial Services, Nalini Prava Tripathy, Prentice Hall of India Private Limited. Indian Financial System, M.Y.Khan, 2013	

COURSE CODE	Fundamental and Technical Analysis of Investment	Theory: 60
MG23IM002		(LTP 4 – 0 – 0)
<b>Course Objectives:</b>		
To introduce students to concepts of Fundamental and Technical Analysis of Investment and the usage and impact of various concepts of the same.		
UNIT	CONTENTS	HOURS
<b>I</b>	Investment Environment, Investment Process, Investment, Speculation and Gambling, Classification of Investors, Investment Avenues, Diversification and Hedging, Factors Affecting Investment Decision, Contemporary issues in Investment Management. Types of investors – Investment objectives – The investment process – Security Analysis – Meaning of security – Types of securities – Meaning of security analysis	12
<b>II</b>	Sources of Risk: Risk and Return – Computation of return – Meaning and definition of risk – Types: (Systematic risk- Market risk, Purchasing power risk, Interest rate risk, Unsystematic risk Business risk (Internal, External), Financial risk) – Minimizing risk, exposure,	12
<b>III</b>	Risk measurement - Standard deviation – Meaning of Beta – Computation and Interpretation – Use of beta in estimating returns: (Including simple problems), Systematic and Unsystematic risk, Computation of Risk and Return, Valuation of Securities	12
<b>IV</b>	Security Analysis : Fundamental Analysis: Economic Analysis, Forecasting Models, Techniques used in Industry Analysis, Factors affecting Industry Analysis, Industry Life Cycle and Industry Characteristics, Tools for Company Analysis,	12
<b>V</b>	Technical Analysis: General Principles and Techniques of Technical Analysis, Evaluation of Technical Analysis	12
<b>Course Outcomes as per Bloom's Taxonomy</b>		
At the end of the course the students should be able to:		
<b>CO 1</b>	Identify the various concepts related to Investment:	
<b>CO 2</b>	Illustrate the use of different Sources of Risk	
<b>CO 3</b>	Explain the impact of different variables on decisions pertaining to Risk measurement	
<b>CO 4</b>	Analyse the current company/country policy for different aspects related to Security Analysis and Portfolio Management.	
<b>CO 5</b>	Examine the impact of different Technical Analysis.	
<b>Text Books</b>	1. Jeevanandam (2016). Foreign Exchange & Risk Management. S Chand, India.	
<b>Reference Books</b>	1. Institute of Company Secretaries of India Financial Treasury and Forex Management ICSI 7 edition 2. Institute of Chartered Accountants of India Forex and Treasury Management ICAI	

COURSE CODE	Risk Management	Theory: 60
MG23IM003		(LTP 4 – 0 – 0)
<b>Course Objectives:</b>		
To introduce students to concepts of Risk Management and the usage and impact of various concepts of the same.		
UNIT	CONTENTS	HOURS
I	Financial Risk - Financial risks of a business, types of financial risks and its dimensions, strategies of corporate financial risks, Enterprise Risk Management (ERM), Treasury Risk Management - Treasury risks, function the market risks role of asset-liability management	12
II	Corporate Liquidity Risk Management - Type of risk – liquidity risk – origin of liquidity risk, tactics for mitigating the risk. Interest Rate Risk Management- Treasury risk, interest rate risk, traditional and modern theories of interest rate, management strategies and the role of financial intermediaries.	12
III	Business Risk Management - Business risks, Measurement of business risks and mitigation by effective treasury management.	12
IV	Foreign Exchange Risk Management - risk of forex fluctuations, impacts of global milieu, Types of forex risks, strategies for managing the risk, comprising policies, procedures and controls.	12
V	Accounting risks associated with financial reporting and disclosure of treasury exposures in the balance sheet.	12
<b>Course Outcomes as per Bloom's Taxonomy</b>		
At the end of the course the students should be able to:		
CO 1	Define Evaluation of the Financial Risk	
CO 2	Demonstrate the Corporate Liquidity Risk Management	
CO 3	Utilize the knowledge to diagnose Business Risk Management	
CO 4	Illustrate the Foreign Exchange Risk Management	
CO 5	Interpret concepts to analyze accounting risks	
<b>Text Books</b>	1. Rejda (2010). Principles of Risk Management and Insurance. Pearson, 9, India. 2. Arunajatesan (2010). Risk Management and Insurance. Macmillan Publishers, India.	
<b>Reference Books</b>	1. Hull (2010). Risk Management and Financial Institutions, Pearson, India. 2. Joshi, V & Joshi, V. (2010). Managing Indian Banks. Response Books, India	

<b>COURSE CODE</b>		<b>Introduction to Derivatives</b>	<b>Theory: 60</b>
<b>MG23IM004</b>			<b>(LTP 4 – 0 – 0)</b>
<b>Course Objectives:</b>			
To introduce students to concepts of derivatives and alternative investments and the usage and impact of various theories of the same.			
<b>UNIT</b>	<b>CONTENTS</b>		<b>HOURS</b>
<b>I</b>	Derivatives and Alternative Assets – Overview, History of alternative investing, Characteristics and Methods of alternative investing, ecology of alternative investments- Key contributors, key elements, key regulations.		<b>12</b>
<b>II</b>	Financial Derivatives- meaning, Option, Future, Forward, Swap, Structures products, Collateralized Debt Obligations, Market for CDOs, creation of tranches, Types of CDOs, Volatile Products, Aggregation of risk to the portfolio levels.		<b>12</b>
<b>III</b>	Hedge Funds- Introduction, Hedge fund structure, Hedge fund liquidity, Terms of hedge funds investments, Hedge fund strategies, Event driven hedge funds, relative value funds, equity hedge funds, diversification, funds of funds, Multi strategy funds, hedge fund indexes.		<b>12</b>
<b>IV</b>	Real Assets- Introduction, Key Attributes, Accessing and valuation of real assets, Infrastructure, Intellectual Property, Commodities as Real Assets, Potential Benefits of Commodities, Commodity Returns, and Sources of returns.		<b>12</b>
<b>V</b>	Private Equity- meaning, Types, Venture capital and leveraged buyouts, Debt Securities and Private Equity, Private Equity fund, The internal rate of return, j- curve.		<b>12</b>
<b>Course Outcomes as per Bloom's Taxonomy</b>			
At the end of the course the students should be able to:			
<b>CO 1</b>	Define Evaluation of the Financial Risk		
<b>CO 2</b>	Demonstrate the Corporate Liquidity Risk Management		
<b>CO 3</b>	Utilize the knowledge to diagnose Business Risk Management		
<b>CO 4</b>	Illustrate the Foreign Exchange Risk Management		
<b>CO 5</b>	Interpret concepts to analyze accounting risks		
<b>Text Books</b>	<ol style="list-style-type: none"> <li>Donald R Chambers, Keith H.Black, Nelson J.Lacey, (2018), Alternative Investments : A primer for Investment professionals CAIA Association, 2018 Latest Edition</li> <li>Stuart R Veale, (2017), The Investor's Guidebook to Alternative Investments: The Role of Alternative Investments in Portfolio Design, , Prentice Hall Press, 2017 Latest Edition</li> </ol>		
<b>Reference Books</b>	<ol style="list-style-type: none"> <li>The Alternative Answer: The Nontraditional Investments That Drive the World's Best performing Portfolios, Bob Rice, Harper Collins Publications</li> </ol>		



**Track: Sketching & Painting**

COURSE CODE	Sketching-I	Practical: 60
DS23SP001	(LTP 0 – 0 – 8)	
<b>Course Objectives:</b> Design Learners need to learn to visualize and communicate their concepts/ideas through various representation techniques like freehand drawing and sketches through manual and digital methods.		
<p align="center"><b>Experiments / Contents</b></p> <p>How pencil to be used, different grades &amp; tone –graphite, charcoal etc.            line-straight, curve, long hand.            Pencil texture on different papers &amp; surfaces.            Basic geometric forms &amp; shapes.            Observation of objects in surroundings –details, texture, light &amp; shadow            Sketching indoor objects            Still Life – Furniture,            Equipment – Understanding Depth, light, shade, Shadow Etc.            Outdoor objects            Outdoor Sketching            Natural Forms/Built Forms.            Understanding variety in Forms.            Landscape drawing-natural objects.            Sketching human form - Anatomy and Expressions            Graphical Representations.</p>		
<b>Course Outcomes as per Bloom’s Taxonomy</b>		
At the end of the course the students should be able to:		
<b>CO 1</b>	To develop an understanding of various marking devices and surfaces and learn to draw freehand through observation and using motor skills	
<b>CO 2</b>	To develop skills to understand the size, scale, and proportion, surface textures through drawing techniques of line, shapes and volume.	
<b>CO 3</b>	To develop techniques of various methods of visual representation such as longhand drawing, isometric drawings, perspective drawing.	
<b>CO 4</b>	Illustrate the ability of design idea through 2D and 3D visuals	
<b>CO 5</b>	To observe the environment and draw exterior and interior spaces	
<b>Text Books</b>	1. Pauken K.M. (2017)“Quick and lively urban sketching” 2. Kumari D. (2021), “History of Indian Art”	
<b>Reference Books</b>	1. Powell D.(1996), “Design Rendering Techniques: A Guide to Drawing and Presenting Design Ideas”, North Light Books publication, 2. Steve C. et.al. (2003), “The Complete Guide to Digital Illustration”, Watson-Guption Publications. 3. Bill B. (2007) “ Sketching User Experiences: Getting the Design Right and the Right Design(Interactive Technologies)”, Morgan Kaufmann publications	

COURSE CODE	Sketching-II	Practical: 60
DS23SP002		(LTP 0 – 0 – 8)
<b>Course Objectives:</b> Design Learners need to learn to visualize and communicate their concepts/ideas through various representation techniques like freehand drawing and sketches through manual and digital methods		
<b>Experiments / Contents</b>		
Introduction to other medium of sketching Charcoal Pencils, Chalk, pen Line, Negative space drawing Object composition Live object drawing in all medium-pencil, charcoal etc. Long hand composition Landscape Composition & Creative Drawings Landscape sketching on different themes Composition of leaves, rocks, flowers etc. Creative Composition Portraits, Critical Design, Geometrical composition. Perspective Views 1 Point Perspective views of indoor 2 Point Perspective view of indoor and outdoor Portfolio Making On Individual discipline aspects		
<b>Course Outcomes as per Bloom's Taxonomy</b>		
At the end of the course the students should be able to:		
<b>CO 1</b>	To Develop an understanding of various marking devices and surfaces and learn to draw freehand through observation and using motor skills.	
<b>CO 2</b>	To Develop skills to understand the size, scale, and proportion, surface textures through drawing techniques of line, shapes and volume.	
<b>CO 3</b>	To Develop techniques of various methods of visual representation such as longhand drawing, isometric drawings, perspective drawing.	
<b>CO 4</b>	To Illustrate the ability of design idea through 2d and 3d visuals	
<b>CO 5</b>	To observe the environment and draw exterior and interior spaces.	
<b>Text Books</b>	1. Powell, D. Design Rendering Techniques: A Guide to Drawing and Presenting Design Ideas, Publisher: North Light Books, 1996 1. Caplin, Steve; Banks, Adam; The Complete Guide to Digital Illustration, Publisher: Watson-Guption Publications, 2003 2. Buxton, Bill; Sketching User Experiences: Getting the Design Right and the Right Design (Interactive Technologies), Morgan Kaufmann, 2007	
<b>Reference Books</b>		

COURSE CODE	Painting-I	Practical: 60
DS23SP003		(LTP 0 – 0 – 8)
<b>Course Objectives:</b> <ul style="list-style-type: none"> <li>• Students identify the elements of art in a painting.</li> <li>• Convey ideas, express emotion, use their senses, explore color, explore process and outcomes, and create aesthetically pleasing works and experiences.</li> </ul>		
<b>Experiments / Contents</b>		
<p>Explanation about paint. &amp; different types of water base paints.</p> <p>Use of different type of brushes.</p> <p>Form lines by using different types of brush with different shades.</p> <p>Paint flowers &amp; leafs.</p> <p>Shading, blending, contrast</p> <p>Create 1 on a A3 sheet each for following topics practices.</p> <p>Paint 1 sunset painting.</p> <p>3D objects with shadow</p> <p>First create multiple 3D objects on a A3 sheet.</p> <p>Create same 3D objects with shadow on A3 sheets.</p> <p>Different types of texture form by paints.</p> <p>Create 2 A3 sheets of different form of texture.</p> <p>Paint 5 trees with the help of texture on A3 sheets.</p> <p>Birds painting, live objects and street painting.</p> <p>Students should be painting 1 bird, 1 live object &amp; 1 Street painting on A3 sheet</p>		
<b>Course Outcomes as per Bloom’s Taxonomy</b>		
At the end of the course the students should be able to:		
<b>CO 1</b>	To Use of brushes and know about different types of colors.	
<b>CO 2</b>	Student will able to create shading & blending.	
<b>CO 3</b>	Student will able to create shadow by using colors.	
<b>CO 4</b>	Student will able to create different types of texture with colors.	
<b>CO 5</b>	Student will able to create live objects & birds.	
<b>Text Books</b>	1. How to Paint: A Complete Beginner's Guide to Watercolors, Acrylics, and Oils. 2. Painting Party: Acrylic Painting for Beginners.	
<b>Reference Books</b>	1. 15-Minute Watercolor Masterpieces, Create Frame-Worthy Art in Just a Few Simple Steps, by Anna Koliadych, 2019	

<b>COURSE CODE</b>	<b>Painting -II</b>	<b>Practical: 60</b>
<b>DS23SP004</b>		<b>(LTP 0 – 0 – 8)</b>
<b>Course Objectives:</b>		
<ul style="list-style-type: none"> <li>• Students identify the elements of art in a painting.</li> <li>• Convey ideas, express emotion, use their senses, explore color, explore process and outcomes, and create aesthetically pleasing works and experiences.</li> </ul>		
<b>Experiments / Contents</b>		
<p>Explanation about oil base paint.  Medium of oil base paints.  Use of different type of brushes.  Paint rose flower with leafs on A3 sheet.  Paint Apple on A3 sheet.  Shading, blending, contrast.  3D objects with shading with oil base paints.  Paint a coffee mug with shadow.  Paint a tress with shadow.  Different style of abstract art.  Paint 2 Abstract painting.  Knife painting on canvas.  Paint 1 temple painting on canvas.  Paint 1 tree with background on canvas.  Live landscape painting on canvas.  Paint 1 college campus live landscape paint on canvas.</p>		
<b>Course Outcomes as per Bloom’s Taxonomy</b>		
At the end of the course the students should be able to:		
<b>CO 1</b>	To Use of brushes and know about different types of colors,	
<b>CO 2</b>	create shading, blending & Shading.	
<b>CO 3</b>	abstract painting.	
<b>CO 4</b>	create canvas painting with help of knife..	
<b>CO 5</b>	create live painting on canvas.	
<b>Text Books</b>		
<b>Reference Books</b>	<ol style="list-style-type: none"> <li>1. The New Oil Painting, Your Essential Guide to Materials and Safe Practices. byKimberly Brooks. 2021</li> <li>2. Alla Prima II Everything I Know about Painting--And More by Richard Schmid with Katie Swatland, 2013</li> </ol>	

**Track: Interior Design**

COURSE CODE	Building Materials & Processes	Practical: 60
<b>DS23ID001</b>	<b>(L/TP 0 – 0 – 8)</b>	
<b>Course Objectives:</b>		
To understand the importance of lifelong learning. Be able to design and conduct experiments, and to analyze data. Possess the skills and techniques necessary for modern materials in design process and to be able to select materials.		
<b>Experiments / Contents</b>		
<ul style="list-style-type: none"> <li>• Explanation about Wood and types of Wood</li> <li>• Explanation about Glasses and types of glasses</li> <li>• Students will go for wood case study</li> <li>• Understanding of Different natural material</li> <li>• Introduction to other medium of sketching</li> <li>• Design a table using different materials</li> <li>• Understanding of Advanced Materials</li> <li>• Draw different types Bricks bonds</li> <li>• Understanding of different types of flooring</li> <li>• Design false ceiling</li> <li>• Case study of acoustic materials</li> <li>• Different plastering process</li> </ul>		
Please Note:		
<ul style="list-style-type: none"> <li>• Students will use A3 sheets for all the drawings</li> <li>• Different Grade pencil</li> <li>• Different pens</li> </ul>		
<b>Course Outcomes as per Bloom’s Taxonomy</b>		
At the end of the course the students should be able to:		
<b>CO 1</b>	To Examine the properties of construction materials and their behaviors under environments	
<b>CO 2</b>	To Appraise appropriateness and sustainability of materials for construction projects.	
<b>CO 3</b>	To Analysis the use of material in Interiors.	
<b>CO 4</b>	To analyze Scope of new material in Construction which praise sustainability.	
<b>CO 5</b>	To gain knowledge about doors, windows, plastering, painting, damp proofing, scaffolding, shoring, underpinning and to take suitable engineering measures.	
<b>Text Books</b>	<ol style="list-style-type: none"> <li>1. Simmons, H: Leslie: Ollins Construction Principles, Materials and Methods; John Wiley &amp; Sons, 9<sup>th</sup> edition, ISBN: 978-0-470-54740-3</li> <li>2. Basic Construction Materials – 7<sup>th</sup> Edition.</li> </ol>	
<b>Reference Books</b>	<ol style="list-style-type: none"> <li>1. Sustainable Construction -2 Edition</li> <li>2. Green Building &amp; Project Planning – 2<sup>nd</sup> Edition</li> </ol>	

<b>COURSE CODE</b>	<b>Elements of Interior Spaces</b>	<b>Practical: 60</b>
<b>DS231D002</b>		<b>(LTP 0 – 0 – 8)</b>
<b>Course Objectives:</b>		
To develop an understanding of point, line & planar elements in defining an interior space.		
<b>Experiments / Contents</b>		
<ul style="list-style-type: none"> <li>• Explanation about Wall planes</li> <li>• Draw different types planes</li> <li>• Explanation about Roof planes</li> <li>• Students will go for Light fixtures case study</li> <li>• Understanding of different Floor planes</li> <li>• Understanding of Doors, windows</li> <li>• Draw different types Doors</li> <li>• Draw different types windows</li> <li>• Draw different types Ventilator</li> </ul>		
Please Note:		
<ul style="list-style-type: none"> <li>• Students will use A3 sheets for all the drawings</li> <li>• Different Grade pencil</li> <li>• Different pens</li> </ul>		
<b>Course Outcomes as per Bloom's Taxonomy</b>		
At the end of the course the students should be able to:		
<b>CO 1</b>	To Develop an understanding of Positive and Negative spaces.	
<b>CO 2</b>	To Develop skills on utilization of available space in efficient and effective manner.	
<b>CO 3</b>	To Develop space planning using basic furniture layouts.	
<b>CO 4</b>	To Recognize different types of door and window styles for use in two-dimensional floor plans.	
<b>CO 5</b>	To Analyze, justify, and rate interior applications of concepts	
<b>Text Books</b>	1. New Project: The First Penguin Special, Exhibition, Vol. 129	
<b>Reference Books</b>	2. The Complete Book of Home Organization: 336 Tips and Projects	

<b>COURSE CODE</b>	<b>Basics of Lighting and Design</b>	<b>Practical: 60</b>
<b>DS23ID003</b>		<b>(LTP 0 – 0 – 8)</b>
<b>Course Objectives:</b>	<ul style="list-style-type: none"> <li>• Understand and learn to execute the entire process.</li> <li>• Understand the parameters required to be considered during the selection of light for various space and design.</li> <li>• Identify basis parameters for lighting design.</li> </ul>	
	<b>Experiments / Contents</b>	
	<ul style="list-style-type: none"> <li>• Explanation about Natural lighting</li> <li>• Explanation about Artificial lighting</li> <li>• Draw different Artificial light</li> <li>• Explanation about levels</li> <li>• Students will go for Light fixtures case study</li> <li>• Understanding of different Lights</li> <li>• Draw different light fixtures</li> <li>• Create economic data</li> </ul>	
	Please Note:	
	<ul style="list-style-type: none"> <li>• Students will use A3 sheets for all the drawings</li> <li>• Different Grade pencil</li> <li>• Different pens</li> </ul>	
<b>Course Outcomes as per Bloom's Taxonomy</b>		
At the end of the course the students should be able to:		
<b>CO 1</b>	To gain basic understanding of light	
<b>CO 2</b>	To gain an overview of lighting technologies, lighting applications	
<b>CO 3</b>	To familiarize how light effect your perception.	
<b>CO 4</b>	To familiarize to develop lighting concepts	
<b>CO 5</b>	To understand simple lighting calculations	
<b>Text Books</b>	<ol style="list-style-type: none"> <li>1. PräkelDavid.(2010).Lighting.AVAPublishing.SA</li> <li>2. Daylighting: Natural Light in Architecture – Derek Phillips</li> </ol>	
<b>Reference Books</b>	<ol style="list-style-type: none"> <li>1. Fundamentals of Lighting – Susan M. Winchip ©<a href="https://www.bloomsbury.com/in/fundamentals-of-lighting-">https://www.bloomsbury.com/in/fundamentals-of-lighting-</a></li> </ol>	

COURSE CODE	Building Services	Practical: 60
DS231D004		(LTP 0 – 0 – 8)
<b>Course Objectives:</b> <ul style="list-style-type: none"> <li>• Introduction to the principles of water supply, sanitation and drainage system</li> <li>• Various types of sanitary fittings and fixtures.</li> <li>• Principles of Electrification and lighting</li> <li>• Gaining overall knowledge of general services in a building.</li> </ul>		
<b>Experiments / Contents</b>		
<ul style="list-style-type: none"> <li>• Water supply</li> <li>• Explanation about Cold and hot water system</li> <li>• Explanation about Sanitary Fittings</li> <li>• Draw different Sanitary Fittings</li> <li>• Understanding of Electricity</li> <li>• Installations process</li> <li>• Understanding of Water Harvesting</li> <li>• Long and Short - term harvesting techniques</li> <li>• Understanding of Soil Conservation</li> </ul>		
Please Note:		
<ul style="list-style-type: none"> <li>• Students will use A3 sheets for all the drawings</li> <li>• Different Grade pencil</li> <li>• Different pens</li> </ul>		
<b>Course Outcomes as per Bloom's Taxonomy</b>		
At the end of the course the students should be able to:		
<b>CO 1</b>	To Apply concepts of primary services	
<b>CO 2</b>	To Develop the skills in understanding in understanding the function of services	
<b>CO 3</b>	To familiarize to optimize the resources	
<b>CO 4</b>	To familiarize to develop lighting concepts	
<b>CO 5</b>	To understand simple lighting calculations	
<b>Text Books</b>	<ol style="list-style-type: none"> <li>1. Electrical wiring and contracting (vol. 1 to vol.4), London. The New era Publishing Company.</li> <li>2. Dr Frith Abnwoos and others, Electrical Engineering hand book.</li> <li>3. William . J. Guinness, Mechanical and Electrical Systems for Buildings, New York : Mc Graw Hill.</li> <li>4. Faber, Oscar and Kell, J.R. Heating and Air conditioning of Building. Architectural Press, surrey, 1945.</li> <li>5. Prasad Manohar, Refrigeration and air-conditioning. 5th ed, New Age Intl. pub, New Delhi, 1996.</li> </ol>	
<b>Reference Books</b>	<ol style="list-style-type: none"> <li>1. Rangawala, S.C Engineering Materials, Charter publishing house, Anand 1963..</li> <li>2. Rangawala, S.C, Building construction, Charter publishing house, Anand 1963</li> <li>3. Singh Gurmel, C. Venkataraman, G. Sastry and B. P. Joshi. 2004, 6thed. Manual of Soil and Water Conservation Practices. Oxford and IBH Publishing Co. Pvt. Ltd., New Delhi.</li> <li>4. Michael, A.M. and T.P. Ojha 2003. Principles of Agricultural Engineering. Volume II. 4th Edition, Jain Brothers, New Delhi.</li> </ol>	



**Track: Apparel Design**

COURSE CODE	Fashion Illustration-I	Practical: 60
DS23AD001		(LTP 0 – 0 – 8)
<p><b>Course Objectives:</b>                      The students will have strong foundation in designing and have the ability to visually represent it by illustrations, photographs, graphics and visual display of merchandise.                      The students will be able to convert their design into a product or a garment using appropriate construction techniques.</p>		
<p align="center"><b>Experiments / Contents</b></p> <p>Introduction to Fashion Illustration                      Changes in fashion illustration styles and proportion over the centuries.                      Basic gesture drawing                      Make stick figures in different poses.                      Make geometric figures. Blocking the human body.                      Bodyline reading through different poses.                      Fleshed figure                      Understanding Human Anatomy and studying the different body parts in detail.                      Drawing features                      Face analysis.                      Draw features eyes, nose, ear, lips, face, hands, arms, feet, legs and hairstyles.                      The Fashion figure - The Greek Canon , 8½, 10 and 12 heads, front, back and ¾ profiles</p>		
<p><b>Course Outcomes as per Bloom's Taxonomy</b></p>		
<p>At the end of the course the students should be able to:</p>		
<b>CO 1</b>	To Gain an understanding of <b>Fashion Styling</b> in the design world.	
<b>CO 2</b>	To Explore and learn new Sketching and <b>Drawing</b> techniques.	
<b>CO 3</b>	To Improve overall artistic abilities.	
<b>CO 4</b>	To tap into the creative depths of the mind.	
<b>CO 5</b>	Be able to look at his or her work objectively and critique it constructively.	
<b>Text Books</b>	1. Fashion Illustration, Anna Kiper, David & Charles Book, 2011 2. Fashion Illustration Children, Patric, John Ireland, BT Bastford Ltd,2005 3 New Fashion	
<b>Reference Books</b>	1. New Fashion Illustration (New Illustration Series) English, Paperback, Martin Dawber 2006	

COURSE CODE	Dyeing And Printing Techniques	Practical: 60
DS23AD002		(LTP 0 – 0 – 8)
<b>Course Objectives:</b> <ol style="list-style-type: none"> <li>1. To enable students to develop articles from natural and synthetic dyes.</li> <li>2. Students will be able to understand different methods of dyeing and printing</li> <li>3. Students will develop and understanding to create commercial products by using techniques of dyeing and printing</li> </ol>		
<b>Experiments / Contents</b>		
Tie and dye of cotton with Direct dyes (Resist Print). Batik Print on the Cotton Fabrics (Resist Print). Printing on the polyester fabrics by Pigment colour. Printing on cotton fabrics by Naphthol colors Printing on cotton fabric with natural colors		
<b>Course Outcomes as per Bloom's Taxonomy</b>		
At the end of the course the students should be able to:		
<b>CO 1</b>	To Use of innovative techniques for development of interesting surfaces,	
<b>CO 2</b>	To gain an overview of processes involved in Dyeing, Printing and Finishing of Textile materials	
<b>CO 3</b>	To familiarize students about chemical processing and its role in fabric Manufacturing	
<b>CO 4</b>	To introduce preparatory process of major Textile fibers	
<b>CO 5</b>	To study dyeing printing and finishing of Natural fibers	
<b>Text Books</b> Joyce Storey – 1972-1992, The Thames and Hudson manual of Textile printing		
<b>Reference Books</b>	Carol Joyce – Watson- Guptill publication – 1997, the complete Guide to Printed textile for apparel and Home Furnishing	

COURSE CODE	Surface Exploration -I	Practical: 60
DS23AD003		(LTP 0 – 0 – 8)
<b>Course Objectives:</b> To understand traditional paintings and prints of Indian textiles. After completion of this application-based course, students will be able to design products with techniques.		
<b>Experiments / Contents</b>		
Design a table cloth using Warli Painting. Design a dupatta/top using Gond/ and Bheel painting (hand painting). Madhubani Painting - Design a table cloth using Madhubani Painting. Design a table cloth using Patachitra/ Pichwai Painting. Documentary screening of Indian traditional block print techniques. Design a cushion cover set using block printing technique. Design any product using stencil painting technique. Different tie and dye techniques. Types of tie and dye textiles in Indian craft. Make samples of different tying techniques. (Any 7) Dye any garment/scarf using any tie and dye technique. Weaves – Plain, Jacquard and Dobby Textiles Different types of Handlooms, power looms and Jacquard looms in Indian handloom. Visit any industry and understand Jacquard loom working.		
<b>Course Outcomes as per Bloom's Taxonomy</b>		
At the end of the course the students should be able to:		
<b>CO 1</b>	To introduce traditional Painting of Indian craft and make different products using same technique.	
<b>CO 2</b>	To introduce traditional Painting of Indian craft and make different products using same technique.	
<b>CO 3</b>	To introduce different Block Printing textiles and make different products using same technique.	
<b>CO 4</b>	To introduce Tie and Dye printing technique and make different products using same technique.	
<b>CO 5</b>	To introduce Indian looms, Textiles and Jacquard loom working.	
<b>Text Books</b>	1. Warli Painting: Step-by-step Instruction and Designs – Amrita Gupta. 2. Signature: Patterns in Gond Art - Gita Wolf, Bhajju Shyam, Jonathan Yamakami 3. Tara Books, 2010	
<b>Reference Books</b>	1. Block Printed Textiles of India: Imprints of Culture Book by Eiluned Edwards 2. INDIAN TIE-DYED FABRICS Alfred Bühler, Eberhard Fischer and Marie-Louise Nabholz, 3. Jacquard Technique – Ek Saral Vidya – SS Satsangi	

COURSE CODE	Surface Exploration -II	Practical: 60
DS23AD004		(LTP 0 – 0 – 8)
<b>Course Objectives:</b> To understand different fabric manipulation and ornamentation techniques. After completion of this application-based course, students will be able to design products with learnt techniques.		
<b>Experiments / Contents</b>		
10 types of embroidery techniques. Make a swatch book of different embroideries. Use any embroidery on your existing garment to enhance/change the look. Make cushion cover using applique techniques. Make any product using patchwork techniques. Construct different samples of piping and lace attachment constructions. Construct any product using smocking technique. Zari Zardozi Workshop of Zari zardozi Design and construct any product using the technique.		
<b>Course Outcomes as per Bloom's Taxonomy</b> At the end of the course the students should be able to:		
<b>CO 1</b>	To introduce traditional Painting of Indian craft and make different products using same technique.	
<b>CO 2</b>	To introduce traditional Painting of Indian craft and make different products using same technique.	
<b>CO 3</b>	To introduce different Block Painting textiles and make different products using same technique.	
<b>CO 4</b>	To introduce Tie and Dye printing technique and make different products using same technique.	
<b>CO 5</b>	To introduce Indian looms, Textiles and Jacquard loom working.	
<b>Text Books</b>	1. Warli Painting: Step-by-step Instruction and Designs – Amrita Gupta. 2. Signature: Patterns in Gond Art - Gita Wolf, Bhajju Shyam, Jonathan Yamakami 3. Tara Books, 2010	
<b>Reference Books</b>	1. Indian Embroidery – Jamila Brijbhushan 2. The Complete Book of Patchwork, Quilting and Applique – Linda Seward 3. A-Z of Smocking: A complete manual for the beginner through to the advanced smocker (A-Z of Needlecraft) 4. The glittering embroidery Zardozi and the Zardozi – Surabhi Mahajan Jacquard Technique – Ek Saral Vidya – SS Satsangi	

**Track: Dance**

COURSE CODE	Techniques and Theatrical Performance of Dance – I	Practical: 60
PA23DN001		(LTP 0 – 0 – 8)
<p><b>Course Objectives:</b></p> <ul style="list-style-type: none"> <li>● Initiate the relative beginners into the world of dance, where she/he made aware of the rich culture heritage of India that Indian classical dance is.</li> <li>● Teach the very basic of dance such as exercise, stretching exercise, basics techniques of Kathak dance, rhythm etc, to make their foundation strong.</li> <li>● Introduce to different neck and head gestures and movement.</li> <li>● Teach students very basics of Tala (rhythm) and Laya (tempo), so that his foundation can be strong.</li> <li>● Introduce and demonstrate the first Taal of Kathak dance repertoire i.e. Teental.</li> </ul>		
<b>Experiments / Contents</b>		
<p>BASIC Movements for Beginners:            Tatkaar (Leg Movements or Footwork) on 16 Beats (Teental)            Hastak (Hand Movements) on 16 Beats (Teental)            ABHINAYA DARPAN            Presentation of Neck and Head Movement According to Abhinaya Darpan.            TAL-PAKSH:            Presentation of Teental (16 Beats):            Thaata, Namaskar, Aamad, Tukda and Toda, Paran, Tihaayi, Chakradar – Paran or Toda            Reading of Syllables of Taal (Beats):            Teentaal, Jhaptaal, Dadra, Kaharwal            Practice of tal on Hand in Ekgun, Dugun, Tigun and Chaugun.            BHAV-PAKSH:            Kavitt            Gatbhava:            Work on Theme Dance            Gatmikasa:            Work on Symbolic Dance            ANCIENT DANCE STYLE            Lyrical and Theatrical dance movement on Sanskrit Shloka.            Practical Movement Training (PMT) on Sanskrit Shloka's, Vandana and Songs            Presentation of Production</p>		
<b>Course Outcomes as per Bloom's Taxonomy</b>		
At the end of the course the students should be able to:		
<b>CO 1</b>	To understand the basic techniques and terminologies of Dance.	
<b>CO 2</b>	To practice exercise, stretching, foot works, hand gestures, and neck movements of kathak.	
<b>CO 3</b>	To get knowledge of the Bhavapaksha in Gatbhav and Gatmikasa.	
<b>CO 4</b>	To apply the concept of Ancient Dance Movement (Sanskrit).	
<b>CO 5</b>	To create the first part of Kathak dance repertoire; related to Teental.	
<b>Text Books</b>	<ol style="list-style-type: none"> <li>1. Shri Lakshminarayan Garg Kathak Nritya Anubhav Publishing House 1 Jan 2016</li> <li>2. Dr Purudadheech – Kathak Nritya Siksha Vol 1 – Bindu Prakashan – 9<sup>th</sup> edition - 1 Jan 2016</li> <li>3. Dr. Purudadheech – Abhinaya Darpan – Bindu Prakashan – 2010</li> <li>4. Shri Bhagwatsharan Sharma – Tal Prakash – Sangeet Karyalaya – 1 jan 2014</li> <li>5. Shri Damodar Pandit – Sangeet Darpan – Sangeet Karyalaya – 1 JAN 2015</li> </ol>	
<b>Reference Books</b>	<ol style="list-style-type: none"> <li>1. Manmohan Ghosh- Nandikeshwar's Abhinaya Darpan – Indian Mind/Dist. By Indica – 12 april 2018</li> <li>2. Dr Mandavi Singh - Kathak Parampara – Swati Prakashan – 1 jan 1990</li> <li>3. Shri Kartikram ji - Raigarh mein Kathak – Vjaya Books – 1 jan 2016</li> <li>4. Dr. Vidhi Nagar - Kathak Nartan – B R Rhythms – 1 jan 2013</li> <li>5. Mansi Saxena – The kathak quiz book – Independently Published – 21 August 2020</li> <li>6. Tetiana Kapranova – Kathak – Indian Classical Dance – Independently Published – 5 June 2020</li> </ol>	

COURSE CODE	Techniques and Theatrical Performance of Dance - II	Practical: 60
PA23DN002		(LTP 0 – 0 – 8)
<p><b>Course Objectives:</b></p> <ul style="list-style-type: none"> <li>● Initiate the relative beginners into the world of dance, where she/he made aware of the rich culture heritage of India that Indian theatrical dance is.</li> <li>● Teach the very basic of Kathak dance such as exercise, stretching exercise, basics techniques of Kathak dance, rhythm etc, to make their foundation strong.</li> <li>● Introduce to different eye and eye brow movement according Abhinaya Darpan.</li> <li>● Introduce and demonstrate the second Taal of Kathak dance repertoire i.e. Jhaptaal</li> <li>● Teach folk and tradition dance on floor.</li> </ul>		
<p><b>Experiments / Contents</b></p> <p>Practical elements of Drishti Bheda.  Practical elements of Brikuti Bheda.  Notation and Applied Of Jhaptaal (10 Beats)  Thaat, Namaskar, Tukde, Tode, Aamad, Paran, Tihaayi, Chakradar (Toda And Paran)  Reading of Syllables of Taal:  Teentaal, Jhaptaal, Sooltal, Ektaal, Chartaal  Practice of Ekguna, Duguna, Tiguna And Chauguna on hand.  Bhava Paksha:  Kavitt  GATNIKAS:  Work on Symbolic Dance  GATBHAV:  Work on Theme Dance  INDIAN DANCE STYLE  Traditional Dance Movement on Folk Songs.  Practical Movement Training (PMT) on Indian Theatrical Songs  Presentation of Production</p>		
<p><b>Course Outcomes as per Bloom's Taxonomy</b></p>		
<p>At the end of the course the students should be able to:</p>		
<b>CO 1</b>	To get knowledge of Indian theatrical dance.	
<b>CO 2</b>	To Practice exercise, stretching, foot works, hand gestures, head movements of Kathak.	
<b>CO 3</b>	To apply of eye and eye brow on beats.	
<b>CO 4</b>	To acquire the Bhavapaksha in Gatbhav and Gatnikas.	
<b>CO 5</b>	To create the second part of Kathak dance repertoire; related to Jhaptaal.	
<b>Text Books</b>	<ol style="list-style-type: none"> <li>1. Shri Lakshminarayan Garg Kathak Nritya Anubhav Publishing House 1 Jan 2016</li> <li>2. Dr Purudadheech – Kathak Nritya Siksha Vol 1 – Bindu Prakashan – 9<sup>th</sup> edition - 1 Jan 2016</li> <li>3. Dr. Purudadheech – Abhinaya Darpan – Bindu Prakashan – 2010</li> <li>4. Shri Bhagwatsharan Sharma – Tal Prakash – Sangeet Karyalaya – 1 jan 2014</li> <li>5. Shri Damodar Pandit – Sangeet Darpan – Sangeet Karyalaya – 1 JAN 2015</li> </ol>	
<b>Reference Books</b>	<ol style="list-style-type: none"> <li>1. Manmohan Ghosh- Nandikeshwar's Abhinaya Darpan – Indian Mind/Dist. By Indica – 12 april 2018</li> <li>2. Dr Mandavi Singh - Kathak Parampara – Swati Prakashan – 1 jan 1990</li> <li>3. Shri Kartikram ji - Raigarh mein Kathak – Vijaya Books – 1 jan 2016</li> <li>4. Dr. Vidhi Nagar - Kathak Nartan – B R Rhythms – 1 jan 2013</li> <li>5. Mansi Saxena – The kathak quiz book – Independently Published – 21 August 2020</li> <li>6. Tetiana Kapranova – Kathak – Indian Classical Dance – Independently Published – 5 June 2020</li> </ol>	

COURSE CODE	Techniques and Theatrical Performance of Dance - III	Practical: 60
PA23DN003		(LTP 0 – 0 – 8)
<p><b>Course Objectives:</b></p> <ul style="list-style-type: none"> <li>● Initiate the expression of gesture on Kavitt, Gatbhava and Gatnikas.</li> <li>● Teach the intermediate level of Kathak dance such as exercise, stretching exercise, basics techniques of Kathak Dance, rhythm etc, to make their foundation strong.</li> <li>● Introduce to different movement of foots and spins according Abhinaya Darpan.</li> <li>● Introduce and demonstrate the second Taal of Kathak dance repertoire i.e. Ektaal</li> <li>● Teach contemporary and jazz dance on floor.</li> </ul>		
<b>Experiments / Contents</b>		
<p>Practical Work On Chari Bhed &amp; Bhramri Bhed And Its Types According To Acharya Nandikeshwar In Abhinaya Darapan.  Practice Of Doing Tigan Laya, Syllables Of Various Jati, Bandishein And Tihayee.  Practice Of Doing Ladi And Chalan Under Tatkaar.  Tal-Paksh:  Notation and Applied Of Ektaal (12 Beats)  Thaat, Namaskar, Tukde, Tode , Aamad, Paran , Tihaayi, Chakradar (Toda And Paran)  Reading Of Syllables of Taal:  Teentaal, Jhaptaal, Sooltal, Ektaal, Chartaal, Dhamar, Aadachartaal  Practice of Ekguna, Duguna, Tiguna And Chauguna on hand.  Bhav-Paksh:  Kavitt  Gatnikasa:  Work on Symbolic Dance  Gatbhava:  Work on Theme Dance  WESTERN DANCE STYLE  Lyrical and Theatrical dance movement on Contemporary and Jazz.  Practical Movement Training (PMT) on Western Songs  Presentation of Production</p>		
<b>Course Outcomes as per Bloom's Taxonomy</b>		
At the end of the course the students should be able to:		
<b>CO 1</b>	To get knowledge of western dance as dance drama.	
<b>CO 2</b>	To practice exercise, stretching, foot works, hand gestures, spin movements of Kathak.	
<b>CO 3</b>	To understand high level of foots and spins exercise.	
<b>CO 4</b>	To apply the Bhavapaksha in Gatbhav and Gatnikas.	
<b>CO 5</b>	To create the third part of Kathak dance repertoire; related to Ektaal.	
<p><b>Text Books</b></p> <ol style="list-style-type: none"> <li>1. Shri Lakshminarayan Garg Kathak Nritya Anubhav Publishing House 1 Jan 2016</li> <li>2. Dr Purudadheech – Kathak Nritya Siksha Vol 1 – Bindu Prakashan – 9<sup>th</sup> edition - 1 Jan 2016</li> <li>3. Dr. Purudadheech – Abhinaya Darpan – Bindu Prakashan – 2010</li> <li>4. Shri Bhagwatsharan Sharma – Tal Prakash – Sangeet Karyalaya – 1 jan 2014</li> <li>5. Shri Damodar Pandit – Sangeet Darpan – Sangeet Karyalaya – 1 JAN 2015</li> </ol>		
<p><b>Reference Books</b></p> <ol style="list-style-type: none"> <li>1. Manmohan Ghosh- Nandikeshwar's Abhinaya Darpan – Indian Mind/Dist. By Indica – 12 april 2018</li> <li>2. Dr Mandavi Singh - Kathak Parampara – Swati Prakashan – 1 jan 1990</li> <li>3. Shri Kartikram ji - Raigarh mein Kathak – Vijaya Books – 1 jan 2016</li> <li>4. Dr. Vidhi Nagar - Kathak Nartan – B R Rhythms – 1 jan 2013</li> <li>5. Mansi Saxena – The kathak quiz book – Independently Published – 21 August 2020</li> <li>6. Tetiana Kapranova – Kathak – Indian Classical Dance – Independently Published – 5 June 2020</li> </ol>		

COURSE CODE	Techniques and Theatrical Performance of Dance - IV	Practical: 60
PA23DN004		(LTP 0 – 0 – 8)
<p><b>Course Objectives:</b></p> <ul style="list-style-type: none"> <li>Initiate the relative beginners into the world of dance, where she/he made aware of the rich culture heritage of India that Indian classical dance is.</li> <li>Teach the intermediate level of Kathak dance such as exercise, stretching exercise, and basics techniques of Kathak dance, rhythm etc, to make their foundation strong.</li> <li>Introduce to different Rasa and Bhava according Natyashastra.</li> <li>Introduce and demonstrate the next Taal of Kathak dance repertoire i.e. Dhamar Taal.</li> <li>Teach modern Indian theatrical dance on floor.</li> </ul>		
<b>Experiments / Contents</b>		
<p>Indian Mythology: Any mythological act Practice of Rasa and Bhava Tal-Paksh: Notation And Applied Of Dhamaar (14 Beats)  <ul style="list-style-type: none"> <li>Thaat, Namaskar, Tukde, Tode, Aamad, Paran, Tihayi, Chakradar (Toda And Paran)</li> </ul>           Reading Of Syllables Of Taal:  <ul style="list-style-type: none"> <li>Tentaal, Jhaptaal, Sooltal, Ektaal, Chartaal, Dhamar, Panchamsawari, Gajjampa</li> <li>Practice Of Ekguna, Duguna, Tiguna And Chauguna On Hand.</li> </ul>           Bhav-Paksh:            Kavitt            Gatnikas:            Work on Symbolic Dance            Gatbhav:  <ul style="list-style-type: none"> <li>Work on Theme Dance</li> </ul> <b>MODERN INDIAN THEATER DANCE STYLE</b>            Lyrical and Theatrical dance movement on Modern Ballet.            Practical Movement Training (PMT) on Modern Beats.            Presentation of Production         </p>		
<p><b>Course Outcomes as per Bloom's Taxonomy</b></p>		
<p>At the end of the course the students should be able to:</p>		
<b>CO 1</b>	To get knowledge of modern Indian theater dance.	
<b>CO 2</b>	To practice exercise, stretching, foot works, hand gestures, spin movements of Kathak.	
<b>CO 3</b>	To understand of Kathanak according to Nayak Bheda of Kathak dance.	
<b>CO 4</b>	To apply the Rasa and Bhava in Gatbhav and Gatnikas.	
<b>CO 5</b>	To create the second part of Kathak dance repertoire; related to Dhamar tal.	
<b>Text Books</b>	<ol style="list-style-type: none"> <li>Shri Lakshminarayan Garg Kathak Nritya Anubhav Publishing House 1 Jan 2016</li> <li>Dr Purudadheech – Kathak Nritya Siksha Vol 1 – Bindu Prakashan – 9<sup>th</sup> edition - 1 Jan 2016</li> <li>Dr. Purudadheech – Abhinaya Darpan – Bindu Prakashan – 2010</li> <li>Shri Bhagwatsharan Sharma – Tal Prakash – Sangeet Karyalaya – 1 jan 2014</li> <li>Shri Damodar Pandit – Sangeet Darpan – Sangeet Karyalaya – 1 JAN 2015</li> </ol>	
<b>Reference Books</b>	<ol style="list-style-type: none"> <li>Manmohan Ghosh- Nandikeshwar's Abhinaya Darpan – Indian Mind/Dist. By Indica – 12 april 2018</li> <li>Dr Mandavi Singh - Kathak Parampara – Swati Prakashan – 1 jan 1990</li> <li>Shri Kartikram ji - Raigarh mein Kathak – Vijaya Books – 1 jan 2016</li> <li>Dr. Vidhi Nagar - Kathak Nartan – B R Rhythms – 1 jan 2013</li> <li>Mansi Saxena – The kathak quiz book – Independently Published – 21 August 2020</li> <li>Tetiana Kapranova – Kathak – Indian Classical Dance – Independently Published – 5 June 2020</li> </ol>	



**Track: Music**

<b>COURSE CODE</b>	<b>Technical &amp; Experimental Study of Music – I</b>	<b>Practical: 60</b>
<b>PA23MC001</b>		<b>(LTP 0 – 0 – 8)</b>
<p><b>Course Objectives:</b></p> <ul style="list-style-type: none"> <li>● To preserve, promote and propagate performing arts, particularly Hindustani Vocal Music.</li> <li>● To promote amongst youth and children the interest of Hindustani Vocal Music.</li> <li>● To impart methodical training of classical music, dance and Theatre to promote and propagate 'Guru-Shishya Parampara', the soul of Indian Music tradition and the proven method for developing new generations of performing artists.</li> <li>● Teach students very basics of Swar, Tala (rhythm) and Laya (tempo), so that his foundation can be strong.</li> </ul>		
<p align="center"><b>Experiments / Contents</b></p> <p>General Introduction to Music: Types of notations, Minor notations, Major notations, Sargam, Basic alankars, Concept of Thaata. Classical Concept: Raag Parichay, Basic raga – Raag Yaman with details , Aroh, Avroh, Pakad, Alap, Sargamgeet, Khayal gayeki , Chota Khayal. TAAAL-PAKSH: Presentation of Teentaal: Lay, Avartan , Maatra , Vibhaag , Sum , Taali and Khaali , Importance and basic knowledge of Taals in Music , Tabla , Tanpura and Harmonium Vaman. Reading of Syllables of Taal: Different types of taal - Teentaal, Jhaptaal, Dadra, Kaharwa Practice of tal on Hand in Ekgun, Dugun, Tigun And Chaugun. Indian Folk Music: Basic concepts of folk music, Different categories of Indian folk music, A range of songs, popular instrumental music and music from various cultures. styles &amp; practices Different types of folk styles &amp; practices, types of techniques &amp; voice modulations, costumes &amp; makeup, Genres &amp; folk songs, Details of instruments &amp; patterns. Raag based composition related to Sanskrit Language. Presentation of alankars. Folk Song of Any State. Stage Presentation</p>		
<p><b>Course Outcomes as per Bloom's Taxonomy</b></p>		
<p>At the end of the course the students should be able to:</p>		
<b>CO 1</b>	To understand the basic techniques and terminologies of Indian Classical music.	
<b>CO 2</b>	To demonstrate each and every aspects of the art form.	
<b>CO 3</b>	To use modern technologies for enhancing the performance of entertainment industry.	
<b>CO 4</b>	To apply the concept of Taal and Laya and its usage in Indian Classical music.	
<b>CO 5</b>	To create the first part of Indian Classical music repertoire; related to Teental.	
<b>Text Books</b>	<ol style="list-style-type: none"> <li>1. Acharya Brihaspati - Sharangdeva ( Adayar Edition) - Sangeet Ratnakar, Year- 1<sup>st</sup> January 2006</li> <li>2. R. K. Shringy &amp; Premlata Sharma - Sangeet Ratnakar, Year- 1<sup>st</sup> January 2006</li> <li>3. Pt. Ahobal Ahobal - Sangeet Parijat , Year- 1941 by Shri Kalinga</li> <li>4. Shri Harish Chandra Shrivastava – Raag Parichay Bhaag – I Published by Sangeet Sadan Prakashan 2010</li> </ol>	
<b>Reference Books</b>	<ol style="list-style-type: none"> <li>1. V.N. Bhatkhande - Sangeet Shastra Part I – IV (Author-Dr. Tej Singh Tak , Year- 1<sup>st</sup> January 2018)</li> <li>2. Late Pandit Omkarnath Thakur, Sangeetanjali Part I – VI , Pilgrims Publications , Year- 1<sup>st</sup> January 2012)</li> </ol>	

COURSE CODE	Technical & Experimental Study of Music – II	Practical: 60
PA23MC002	(LTP 0 – 0 – 8)	
<p><b>Course Objectives:</b></p> <ul style="list-style-type: none"> <li>This course is intended for students with little or no background in music who would like to develop a theoretical and practical understanding of how music works.</li> <li>Students will be introduced into the technical details of music such as musical notation, intervals, basic harmony, meter and rhythm.</li> <li>Familiarity with basic music theory will enable students to read and perform at sight as well as to compose melodies with chords accompaniment.</li> <li>The music we analyze and perform will draw from folk, popular, and concert traditions from around the world, including the Western tonal tradition.</li> <li>Introduce and demonstrate the Second Taal of Indian Classical music repertoire i.e. Jhaptaal</li> </ul>		
<p style="text-align: center;"><b>Experiments / Contents</b></p> <p>Basic alankars, sound, origin of sound, types of Nada, Saptak-Mandra, Madhya &amp; Taar Saptak, Concept of Shruti, Elements of music (gamak, murkhi, khatka, zamzama, andolan)</p> <p>Raag Parichay , Basic raga – Raag Bhairvi or Raag Vrindavani Sarang with details , Aroh, Avroh, Pakad, Alap, Sargamgeet, Khayal gayeki , Chota Khayal.</p> <p>Notation and Applied Of Jhaptal (10 Beats)</p> <p>Lay , Avartan , Maatra , Vibhaag , Sum , Taali and Khaali , Importance and basic knowledge of Taals in Music , Tabla , Tanpura and Sitar Varman.</p> <p>Reading of Syllables of Taal:</p> <p>Teentaal, Jhaptaal, Sooltal, Ektaal, Chartaal</p> <p>Practice of Ekguna, Duguna, Tiguna And Chauguna on hand.</p> <p>World Music :</p> <p>Description of Popular genres of music in all over The World, Knowledge about different types of genres in music, Learn about different types of instruments &amp; techniques, The Era of music.</p> <p>styles &amp; practices :</p> <p>Different types of styles &amp; practices related to World Music, types of techniques &amp; voice modulations, costumes &amp; makeup, Genres of Jazz &amp; Blues songs, Details of instruments &amp; patterns, Introduction of World fusion music.</p> <p>Raag based composition related to Indian Languages.</p> <p>RAAG BASED COMPOSITION :</p> <p>Practical Presentation</p> <p>Western song – PART 2</p> <p>Stage performance</p>		
<p><b>Course Outcomes as per Bloom's Taxonomy</b></p>		
<p>At the end of the course the students should be able to:</p>		
<b>CO 1</b>	To understand the ways in which musical knowledge may shape certain musical practices.	
<b>CO 2</b>	To identify the role digital methodologies play in music research.	
<b>CO 3</b>	To Use, and make sense of, a number of online databases.	
<b>CO 4</b>	To apply the relevance of various different kinds of document for the study of music.	
<b>CO 5</b>	To create the second part of Indian Classical music repertoire; related to Jhaptal.	
<b>Text Books</b>	<ol style="list-style-type: none"> <li>Shri Harish Chandra Shrivastava – Raag Parichay Bhaag – 1 &amp; 2 Published By Sangeet Sadan Prakashan , Edition -2010.</li> <li>Govind Rao Rajurkar , Sangeet Shastra Parag , Publisher – Rajasthan Hindi Granth Academy.</li> <li>Dr. Swatantra Sharma , Fundamentals Of Indian Music , Publisher – Pratibha Prakashan, Edition – 1996.</li> <li>Dr. Indrani Chkravarti , Sangeet Manjusha , Publishing Place – Delhi , Edition – 1<sup>st</sup> Edition 2007. Author - Pt. V.N. Bhatkhande - Hindustani Sangeet Paddhati Kramik Pustak Maalika (Vol - 1) Publisher – Sangeet Karyalay , Edition – 2017</li> </ol>	
<b>Reference Books</b>	<ol style="list-style-type: none"> <li>Nidel, Richard , World Music, The Basics , Publisher - Routledge , Edition – 23<sup>rd</sup> Dec 2004.</li> <li>Piero Weiss And Richard Taruskin, Music In The Western World , Edition – 2<sup>nd</sup> Edition 1984 , Publisher – Clark Baxter.</li> <li>Marion Mckay And Neil Mackay, Fundamentals Of Western Music , Edition – 1986 , Publisher - Schirmer Books.</li> <li>Terry E. Miller, World Music A Global Journey, Edition - 3rd Edition , Publisher – Taylor.</li> <li>Alison E.Arnold, What In The World Is Music , Edition – 2015 , Publisher – Routledge.</li> </ol>	

COURSE CODE	Technical & Experimental Study of Music – III	Practical: 60
PA23MC003		(LTP 0 – 0 – 8)
<p><b>Course Objectives:</b></p> <ul style="list-style-type: none"> <li>Summarize The Origins of Rock 'N' Pop Music.</li> <li>Explain Key Characteristics of The Rock 'N' Pop Musical Genre.</li> <li>Discuss How the Genre Has Changed from Its Roots.</li> <li>List Influential Rock 'N' Pop Artists.</li> </ul>		
<b>Experiments / Contents</b>		
<p>Kan swar, Nyas swar, Concept of Thaaf in detail, bhajan or geet, gazal, basic introduction of dhrupad gayan. Raag Parichay, Basic raga – Raag Desh or Raag Bhimpalasi with details , Aroh, Avroh, Pakad, Alap, Sargameet, Khayal gayeki , Chota Khayal. Notation and Applied of Ektaal (12 Beats) Lay, Avartan , Maatra, Vibhaag , Sum , Taali and Khaali , Importance and basic knowledge of Taals in Music , Tabla , Tanpura and Sarangi Varnan. Reading of Syllables of Taal: Teentaal, Jhaptaal, Sooltal, Ektaal, Chartaal Dhamar, Adachartaal, Duguna, Tiguna and Chauguna on hand. Rock &amp; Pop Music: Description Of Indian Rock Music &amp; Indian Pop Music (Indi-Pop)., Knowledge about different types of genres related to Rock &amp; Pop music, Learn about different types of instruments &amp; techniques. styles &amp; practices: Different types of styles &amp; practices related to Rock &amp; Pop Music, types of techniques &amp; voice modulations, costumes &amp; makeup, Genres of Rock &amp; Pop songs, Details of instruments &amp; patterns, Introduction of Rock &amp; Pop music. Raag based composition related to Western Language. RAAG BASED COMPOSITION: Practical Presentation Rock Fusion song – PART 2 Stage performance</p>		
<p><b>Course Outcomes as per Bloom's Taxonomy</b></p>		
<p>At the end of the course the students should be able to:</p>		
<b>CO 1</b>	To perform music on a primary instrument or voice from a broad historical and stylistic range of solo and ensemble repertoire with technique, accuracy, expressivity, stage presence, and creativity.	
<b>CO 2</b>	To identify musical elements and organizational patterns through aural and visual analysis.	
<b>CO 3</b>	To demonstrate proficiency in keyboard techniques and fingerings through the performance of scales, sight-reading, prepared musical pieces, harmonization, and improvisation.	
<b>CO 4</b>	To get knowledge related to the history of music, including various time periods, historical figures, styles and genres in western and non-western musical traditions.	
<b>CO 5</b>	To design the application of knowledge and abilities related to music technology including digital audio workstation and music notation software.	
<b>Text Books</b>	<ol style="list-style-type: none"> <li>Author - Shri Harish Chandra Shrivastava – Raag Parichay Bhaag – 1 , 2 &amp; 3 Published By Sangeet Sadan Prakashan , Edition - 2013.</li> <li>Author - Govind Rao Rajurkar , Sangeet Shastra Parag , Publisher – Rajasthan Hindi Granth Academy.</li> <li>Author - Dr. Swatantra Sharma , Fundamentals Of Indian Music , Publisher – Pratibha Prakashan , Edition – 1996.</li> </ol>	
<b>Reference Books</b>	<ol style="list-style-type: none"> <li>The Cambridge History Of Music Theory – Thomas W. Christenen</li> <li>The Oxford History Of Music – Richard Taruskin</li> <li>A Concise History Of Music – Paul Griffiths</li> </ol>	

COURSE CODE	Technical & Experimental Study of Music – IV	Practical: 60
PA23MC004		(LTP 0 – 0 – 8)
<p><b>Course Objectives:</b></p> <ul style="list-style-type: none"> <li>● Summarize The Origins of Unplugged Music.</li> <li>● Explain Key Characteristics of the Unplugged Musical Genre.</li> <li>● Discuss How the Genre Has Changed from Its Roots.</li> <li>● List Influential Unplugged Artists.</li> </ul>		
<b>Experiments / Contents</b>		
<p>Nibaddh gaan, Anibaddh gaan, Raag-Ragini paddhati, Taan, Bol Taan, Advance alankars. Raag Parichay. Basic raga – Raag Sohni or Raag Bahar with details, Aroh, Avroh, Pakad, Alap, Sargameet, Khayal gayeki , Chota Khayal. Taal-Pakshi: Notation And Applied of Dhamaar (14 Beats) Lay, Avartan, Maatra, Vibhaag, Sum, Taali and Khaali, Importance and basic knowledge of Taals in Music, Tabla, Tanpura and Veena Varnan. Reading of Syllables of Taal: Teentaal, Jhaptaal, Sooltal, Ektaal, Chartaal, Dhamar, Panchamsawari, Gajjampa Practice Of Ekguna, Duguna, Tiguna And Chauguna On Hand. Unplugged Music: Description Of Unplugged music., Knowledge about different types of genres related to Unplugged music, Learn about different types of instruments &amp; techniques. styles &amp; practices: Different types of styles &amp; practices related to Unplugged Music, types of techniques &amp; voice modulations, costumes &amp; makeup, Genres of Unplugged songs, Details of instruments &amp; patterns, Introduction of Unplugged music. Raag based composition related to Modern Indian Theatre. Raag Based Composition: Unplugged song – PART 4 Stage Performance</p>		
<b>Course Outcomes as per Bloom’s Taxonomy</b>		
At the end of the course the students should be able to:		
<b>CO 1</b>	To calculate a variety of acoustic phenomena such as wavelength, frequency, amplitude, transmission loss.	
<b>CO 2</b>	To demonstrate and understanding of psycho-acoustic response in human and be able to account for these resonances in audio production.	
<b>CO 3</b>	To get knowledge how sound will be captured and the ability to control both wanted and unwanted sounds acoustically.	
<b>CO 4</b>	To analyze spaces and apply techniques for managing the acoustic properties of those spaces.	
<b>CO 5</b>	To create the ability to have a basic understanding of unplugged rendition.	
<b>Text Books</b>	<ol style="list-style-type: none"> <li>1. Author - Shri Harish Chandra Shrivastava – Raag Parichay Bhaag – 1 &amp; 2 Published By Sangeet Sadan Prakashan , Edition - 2010.</li> <li>2. Author - Govind Rao Rajurkar , Sangeet Shastra Parag , Publisher – Rajasthan Hindi Granth Academy.</li> <li>3. Author - Dr. Swatantra Sharma , Fundamentals Of Indian Music , Publisher – Pratibha Prakashan , Edition – 1996.</li> <li>4. Author - Dr. Indrani Chkravarti , Sangeet Manjusha , Publishing Place – Delhi , Edition – 1<sup>st</sup> Edition 2007. Author - Pt. V.N. Bhatkhande - Hindustani Sangeet Paddhati Kramik Pustak Maalika (Vol - 1) Publisher – Sangeet Karyalay , Edition – 2017</li> </ol>	
<b>Reference Books</b>	<ol style="list-style-type: none"> <li>1. Mtv Coke Studio Season- 1 to Season – 9</li> <li>2. Music Mojo (Kappa Tv) all seasons</li> <li>3. Nescafe Basement all seasons</li> </ol>	

**Track: Theatre**

<b>COURSE CODE</b>	<b>BASICS OF ACTING PRODUCTION I</b>	<b>Practical: 60</b>
<b>PA23TR001</b>		<b>(LTP 0 – 0 – 8)</b>
<b>Course Objectives:</b>		
<ul style="list-style-type: none"> <li>● Demonstrate the origin of Sanskrit Drama.</li> <li>● Initiate the student to rich history of Sanskrit Playwrights and their work</li> <li>● Initiate the student to rich history of Indian dance, through the study of ancient musical concept.</li> <li>● Understand the origin of dance from ancient period to medieval period.</li> <li>● Prepare and present a number of well-polished performance assignments, Including Scenes with a Partner and monologues.</li> </ul>		
<b>Experiments / Contents</b>		
<p>The beginning of theatre, Origin of Sanskrit theatre, Introduction to Greek Theatre.            Introduction to Natya Shastra, Natya Shastra chapters Abhimaya            Dasha Roopakas &amp; Upa Roopakas            a) Nataka b) Prakarana c) Prahasana d) Natika e) Upa Roopakas etc.            Sanskrit play writers – Bhasa, Kalidasa – Shudraka – Bhavabhuti and the like.            Introduction to Dance Theatre. History of Dance Theatre in India.            Basic concepts in music: Swar, Laya, Tala, Sam, Avartan, etc.            Production I</p>		
Participation in the process of creating the play production, responsibility of any of the elements of Sanskrit Drama Theatre.		
<b>Course Outcomes as per Bloom’s Taxonomy</b>		
At the end of the course the students should be able to:		
<b>CO 1</b>	To practice collaborative skills in various folk theatrical contexts	
<b>CO 2</b>	To develop and apply process skills in rehearsal, production and classroom settings	
<b>CO 3</b>	To get knowledge about the status of dance from ancient to medieval period of Indian history(students would be connecting to Indian culture, rituals and customs)	
<b>CO 4</b>	To clarify in aspects of Tal and Laya.	
<b>CO 5</b>	To apply discipline-specific skills to the creation of performance.	
<b>Text Books</b>	1. Dr. Purudadheech – Kathak Nritya Siksha Vol 1– Bindu Prakashan – 9 <sup>th</sup> edition - 1 Jan 2016 2. Dr. Purudadheech – Abhinaya Darpan – Bindu Prakashan – 2010	
<b>Reference Books</b>	1. Tetiana Kapranova – Kathak – Indian Classical Dance – Independently Published – 5 June 2020 2. M.L. Varadpande , History Of Indian Theatre (Lok Rang Panorama of Indian Folk Theatre), Abhinav Publication(1992) 3. Sanford Meisner & Dennis Long well, Sanford Meisner on Acting, Vintage.	

COURSE CODE	DRAMA PRODUCTION II	Practical: 60
PA23TR002		(LTP 0 – 0 – 8)
<p><b>Course Objectives:</b> Upon completion of this course, the student should be able to:</p> <ul style="list-style-type: none"> <li>● The Folk theatre having roots in native culture is embedded in local identity and social values.</li> <li>● To let students get the vast knowledge about Folk Theatre whereas, folk Theatre is a composite art form in India with a fusion of elements from music, dance, pantomime, versification, epic and ballad recitation, graphic and plastic arts, religion and festival peasantry.</li> <li>● Initiate the student to rich history of Indian dance, through the study of ancient musical concept.</li> <li>● Understand the origin of dance from ancient period to medieval period.</li> <li>● Prepare and present a number of well-polished performance assignments, Including Scenes with a Partner and monologues.</li> </ul>		
<b>Experiments / Contents</b>		
<p>Indian Traditional Folk Theatre: (e.g. Jaatraa, Nautanki, Yakshagaan, Dashavatar, Tamasha, Ramamale, Jagor etc.) Professional theater (Introduction) Amateur Theater (Introduction) Roots in traditional Indian folk dance forms. Understanding the diversity in musical expressions in India. How the music evolves: Cultural Context. Production II Participation in the process of creating the play production, responsibility of any of the elements of Indian Theatre.</p>		
<b>Course Outcomes as per Bloom's Taxonomy</b>		
At the end of the course the students should be able to:		
<b>CO 1</b>	To get knowledge about the status of dance from ancient to medieval period of Indian history(students would be connecting to Indian culture, rituals and customs)	
<b>CO 2</b>	To understand Folk forms inspire and support us to create newer idioms for communication	
<b>CO 3</b>	To apply folk theatre as It unfurls the saga of the voyage of Indian drama from the eposes to the modish theatre pattern.	
<b>CO 4</b>	To Perform in any reputed events, music festivals.	
<b>CO 5</b>	To apply discipline-specific skills to the creation of performance.	
<b>Text Books</b>	<ol style="list-style-type: none"> <li>1. Bhagavat, D.N. (1958). An Outline of Indian Folklore. Bombay: Popular Book Depot.</li> <li>2. Kidd, Ross (1984). The Performing Arts and Development in India: three case studies and a comparative analysis. In G. Wang and W. Dissanayake (eds). Continuity and Change in Communication systems (pp. 95-125). New Jersey: Abiax.</li> <li>3. Shri Harish Chandra Shrivastava – Raag Parichay Bhaag – I Published by Sangeet Sadan Prakashan 2010.</li> </ol>	
<b>Reference Books</b>	<ol style="list-style-type: none"> <li>1. Ashish Mohan Khokhar, Folk Dance Tribal, Ritual &amp; Martial Art Forms, Rupa Publications Pvt. Ltd.(2003)</li> <li>2. Author - Dr. Swatantra Sharma , Fundamentals of Indian Music , Publisher – Pratibha Prakashan , Edition – 1996.</li> </ol>	

COURSE CODE	DRAMA PRODUCTION III	Practical: 60
PA23TR003		(LTP 0 – 0 – 8)
<p><b>Course Objectives:</b>  Upon completion of this course, the student should be able to:</p> <ul style="list-style-type: none"> <li>● The Western theatre having roots in native culture is embedded in western identity and social values.</li> <li>● To let students get the vast knowledge about Western Theatre whereas, To Various 'Isms' In Relation To Drama Including: (Realism, Naturalism, Symbolism, Expressionism, Absurd And Epic)</li> <li>● Initiate the student to rich history of Western Theatre, through the study of ancient concept.</li> <li>● Get experience of performance wester plays on stage.</li> <li>● As Drama Provides a Different But Equally Viable Alternative To The Scientific Approach To Knowledge, In That It Seeks To Use Intuition And The Imagination In Addition To Rational Thinking As a Method Of Learning.</li> </ul>		
<b>Experiments / Contents</b>		
<p>Concept Of Western Theatre.  Origin Of Theatre, Elements and Structure of Western Dramaturgy  A Brief Study of Different Classifications of Western Dramas – (Tragedy, Comedy, Tragic Comedy, Melodrama and Farce)  A Brief Introduction to Various 'Isms' in Relation to Drama Including: (Realism, Naturalism, Symbolism, Expressionism, Absurd and Epic)  Ancient Greek and Roman – (Aeschylus, Sophocles, Euripides, Seneca)  Western – (Shakespeare, Moliere, Ibsen, Brecht/irandello, Miller, Chekov, Beckett, Ionesco)  Production II</p>		
<p>Participation in the process of creating the play production, responsibility of any of the elements of Western Theatre.</p>		
<p><b>Course Outcomes as per Bloom's Taxonomy</b></p>		
<p>At the end of the course the students should be able to:</p>		
<b>CO 1</b>	To get knowledge about the status of western theatre of Western history.	
<b>CO 2</b>	To understand the vast knowledge about Western Theatre whereas, To Various 'Isms' In Relation To Drama Including	
<b>CO 3</b>	To apply Different Classifications Of Western Dramas in their production/projects.	
<b>CO 4</b>	To Perform in any reputed events.	
<b>CO 5</b>	To apply discipline-specific skills to the creation of performance.	
<b>Text Books</b>	<ol style="list-style-type: none"> <li>1. Bhagavat, D.N. (1958). An Outline of Indian Folklore. Bombay: Popular Book Depot.</li> <li>2. Kidd, Ross (1984). The Performing Arts and Development in India: three case studies and a comparative analysis. In G. Wang and W. Dissanayake (eds). Continuity and Change in Communication systems (pp. 95-125). New Jersey: AbIax.</li> <li>3. Shri Harish Chandra Shrivastava – Raag Parichay Bhaag – I Published by Sangeet Sadan Prakashan 2010.</li> </ol>	
<b>Reference Books</b>	<ol style="list-style-type: none"> <li>1. Ashish Mohan Khokhar, Folk Dance Tribal, Ritual &amp; Martial Art Forms, Rupa Publications Pvt. Ltd.(2003)</li> <li>2. Author - Dr. Swatantra Sharma , Fundamentals of Indian Music , Publisher – Pratibha Prakashan , Edition – 1996.</li> </ol>	

COURSE CODE	DRAMA PRODUCTION IV	Practical: 60
PA23TR004		(LTP 0 – 0 – 8)
<p><b>Course Objectives:</b>  Upon completion of this course, the student should be able to:</p> <ul style="list-style-type: none"> <li>● Students Will Be Introduced To Post-Independence Theatre In India.</li> <li>● The Idea Is To Look At Historical Debates Surrounding Indian Theatre Post-1947.</li> <li>● How Did Indian Theatre Makers Envisage A Theatre That Would Reflect “Indians?”.</li> <li>● Efforts Went Into Decolonizing Theatre And Towards That End There Was Focus On Indian History, Mythology, Folk And Traditional Arts To Create Modern Theatre.</li> <li>● Get experience of performance modern plays on stage.</li> </ul>		
<b>Experiments / Contents</b>		
<p>Concept Of Indian Modern Theatre.  A Brief Study of Different Classifications of Western Dramas – (Tragedy, Comedy, Tragic Comedy, Melodrama and Farce)  A Brief Introduction to Various Theatres of Modern Style: Ipta Movement, Root Theatre Movement, Third Theatre, Alternate Theatre, Street Theatre, Theatre of The Oppressed, Applied Theatre, Forum Theatre, Site Specific Theatre  An Overview of Major Playwrights, Directors and Other Contributing Personalities of Various Regions, Whose Plays Are Widely Performed at The National Level.  Production II  Participation in the process of creating the play production, responsibility of any of the elements of Modern Theatre.</p>		
<b>Course Outcomes as per Bloom’s Taxonomy</b>		
At the end of the course the students should be able to:		
<b>CO 1</b>	To get knowledge about the status of western theatre of Modern history.	
<b>CO 2</b>	To understand the vast knowledge about Modern Theatre whereas.	
<b>CO 3</b>	To apply Different Various Theatres of Modern Style In Their Production/Projects.	
<b>CO 4</b>	To Perform in any reputed shows and events.	
<b>CO 5</b>	To apply discipline-specific skills to the creation of performance.	
<b>Text Books</b>	<ol style="list-style-type: none"> <li>1. Bhagavat, D.N. (1958). An Outline of Indian Folklore. Bombay: Popular Book Depot.</li> <li>2. Kidd, Ross (1984). The Performing Arts and Development in India: three case studies and a comparative analysis. In G. Wang and W. Dissanayake (eds). Continuity and Change in Communication systems (pp. 95-125). New Jersey: Ablex.</li> <li>3. Shri Harish Chandra Shrivastava – Raag Parichay Bhaag – I Published by Sangeet Sadan Prakashan 2010.</li> </ol>	
<b>Reference Books</b>	<ol style="list-style-type: none"> <li>1. Ashish Mohan Khokhar, Folk Dance Tribal, Ritual &amp; Martial Art Forms, Rupa Publications Pvt. Ltd.(2003)</li> <li>2. Author - Dr. Swatantra Sharma , Fundamentals of Indian Music , Publisher – Pratibha Prakashan , Edition – 1996.</li> </ol>	



**Track: Basic Media Production Techniques**

COURSE CODE	PHOTOGRAPHY	Practical: 60
JM23MP001		(LTP 0 – 0 – 8)
<p><b>Course Objectives:</b>            Students undergo a sound learning on technical aspects of Photography ranging from various formats of digital technology in photography, Identify different kinds of Still camera, Camera shots, and moments. Composition along with basic operation and the function of still camera.            Lighting techniques, fundamentals of photography, and editing of Photography using high professional equipment and resources.</p>		
<p align="center"><b>Experiments / Contents</b></p>		
<p>History of Photography, Introduction to camera, Types of Still Camera, Parts of Still Camera, Parts of camera and its function, other equipment's.            Origin of Photography – early cameras and technology            Photography as art            Evolution of Camera- from film to digital era            History of different genre of photography            Current trends in technology and style            Depth of field, aperture, shutter speed, lenses and functions.            Composition- different types of shots, Camera angle and camera movements, subject and camera relationship.            Lights and its properties, different types of lights, other tools used in lighting, diffuser, reflectors, cutter and gels.            Basic lighting techniques accessories used in the lighting.            Scanning and image editing            Scanning- scanners as input device. Working of a scanner, scanner procedure, scanning resolution            Image Editing- Editing through Software (Photoshop)            Adjustment of brightness, contrast, tonal and colour values.</p>		
<p><b>Course Outcomes as per Bloom's Taxonomy</b></p>		
<p>At the end of the course the students should be able to:</p>		
<b>CO 1</b>	Students will understand history of photography – introduction to camera	
<b>CO 2</b>	Characterize and analyze origin of photography- early cameras and technology	
<b>CO 3</b>	They will learn different types of shots, camera angle, and camera movements	
<b>CO 4</b>	They will also have capacity to integrate knowledge and to analyse uses of lighting in different condition	
<b>CO 5</b>	They will also have capacity to obtain prints through scanning and photo editing.	
<b>Text Books</b>	1. “Digital Photography essentials” by E. Duncan, Jul 21, 2012, ISBN:9781476211718 2. “The Art of Photography” by Bruce Barnbaum, Published April 2017	
<b>Reference Books</b>		

COURSE CODE	VIDEOGRAPHY	Practical: 60
JM23MP002	(LTP 0 – 0 – 8)	
<b>Course Objectives:</b> This syllabus is specially catered for beginners, and no prior videography experience is required. Students, who are keen to produce videos either as a hobby, or for marketing purposes, will find this highly useful. It will also greatly help professionals who are outsourcing their video production to external vendors.		
<b>Experiments / Contents</b>		
<ul style="list-style-type: none"> <li>• Introduction of Video Camera</li> <li>• Various Video Camera &amp; Smart phones and their uses</li> <li>• Video Camera Parts &amp; Functions</li> <li>• Camera Equipments</li> <li>• Different types of lenses for different types of cameras</li> <li>• Exposure Triangle</li> <li>• Types of Shots</li> <li>• Framing</li> <li>• Composition</li> <li>• Checklist &amp; Tips for a Perfect Shot</li> <li>• Video Shot types</li> <li>• filming angles</li> <li>• Lighting for Videos</li> <li>• Lighting techniques</li> <li>• Preparation and location scouting</li> <li>• Framing and composing Video Shots</li> <li>• Production of videos from Photo and script.</li> <li>• On Shoot Challenges</li> <li>• Fundamentals of Video Editing Application</li> <li>• Preparation of Promo</li> <li>• Preparation of Documentary</li> <li>• Preparation of Interview</li> <li>• Preparation of Short Film</li> <li>• Screening project by Students of Promo, Documentary, Interview, Short film</li> </ul>		
<b>Course Outcomes as per Bloom’s Taxonomy</b>		
At the end of the course the students should be able to:		
<b>CO 1</b>	Understanding of part & function of Video Camera	
<b>CO 2</b>	Developing Technical Skill	
<b>CO 3</b>	Developing knowledge of Lighting	
<b>CO 4</b>	Understand concept of Shoot, Script & Editing.	
<b>CO 5</b>	Developing Production of videos.	
<b>Text Books</b>		
1. Ralph Donald, Thomas Spann, Fundamentals of TV Production, Surjeet Publications, New Delhi 2. Herbert Zettl, TV production Handbook, Thomas Wardsworth Publishing		
<b>Reference Books</b>		

COURSE CODE	Script Writing	Theory: 60
JM23MP003		(LTP 4 – 0 – 0)
<b>Course Objectives:</b>		
<ol style="list-style-type: none"> <li>To acquaint students with advanced journalism and writing for media practices.</li> <li>To make the students understand about the news values, representation of news-views and ethical issues associated with it.</li> <li>To offer proper understanding about the writing skills and it's techniques for different mass media.</li> <li>To acquaint students with writing capabilities for different media formats.</li> <li>To acquaint students with the knowledge of Audio- Visual storytelling and implement it in writing.</li> </ol>		
Unit	Contents	Hours
<b>I</b>	<b>Media Writing</b> Concept and meaning of media writing, Media writing as communication, Principles of good writing, Basic tools of writing, Characteristics of media writings, Revision of grammar, syntax and style. Drafting and revising	12
<b>II</b>	<b>Forms of Writing</b> Ideas for writing, Narrative writing, Introduction to narratives, telling stories, Non-fiction, Engaging the reader Descriptive writing; Explanatory writing; Persuasive writing, writing for community	12
<b>III</b>	<b>Writing News</b> News meaning and definition, The language of journalism: concrete, specific, active, clear, democratic, non-sexist, non-racist. Principles of News writing, News values, News story, News structure, concept of inverted pyramid, quotations and back grounding, Lead writing	12
<b>IV</b>	<b>Writing of different media</b> Print Media Writing: Headlines and caption writing, Feature writing, types of features, writing book reviews and film reviews, Writing columns. Stylebook, writing for magazines, writing for broadcast: Writing for eyes and ears, and writing for web	12
<b>V</b>	<b>Writing for Cinema</b> Introduction to a script, Elements of Script, Script writing for Cinema, Importance of Narration, Features of successful Scripts	12
<b>Course Outcomes as per Bloom's Taxonomy</b>		
At the end of the course the students should be able to:		
<b>CO 1</b>	The course will equip students with knowledge of Reporting/Writing/News room functioning/Understanding media	
<b>CO 2</b>	They will learn the importance of writing skills. and various styles for different mass media.	
<b>CO 3</b>	They will learn various styles of writing for different mass media formats.	
<b>CO 4</b>	They will learn to implement understanding of Audio- Visual story telling in writing.	
<b>CO 5</b>		
<b>Text Books</b>	<ol style="list-style-type: none"> <li>Quinn Stephen . Convergent Journalism: The Fundamentals of Multimedia Reporting.Lang Publishing.</li> <li>Batty Craig and Cain Sandra . Media Writing: A Practical Introduction, Palgrave Macmillan.</li> <li>Stovel G . Writing for Mass Media, 6th edition, Allyn and Bacon.</li> <li>Melvin Mencher . News Reporting and Writing, 10th edition, McGraw-Hill.</li> <li>Strunk, William &amp; White, E.B., The Elements of Style. Longman.</li> </ol>	
<b>Reference Books</b>	<ol style="list-style-type: none"> <li>Clark, Roy Peter. Writing Tools: 50 Essential Strategies for Every Writer. Little, Brown.</li> <li>Raman, Usha , Writing for the Media, OUP.</li> <li>Foust James, Online Journalism – Principles and Practices of News for the Web,</li> <li>Holcomb Hathaway Publishers, Scottsdale, AZ.</li> </ol>	

COURSE CODE	Basics of Audio Video Editing	Theory: 60
JM23MP004		(LTP 4 – 0 – 0)
<b>Course Objectives:</b>		
<ol style="list-style-type: none"> <li>To familiarize the students with the basic concept of Audio and Video editing.</li> <li>To understand the various techniques and Approaches of Audio Video Editing.</li> <li>To understand the process of Title generation.</li> <li>To master the trait of multi-track recording and mixing.</li> <li>To learn exporting the final output as per industry standards.</li> </ol>		
Unit	Contents	Hours
<b>I</b>	<b>Introduction to Sound:</b> Introduction to Sound, Sound Quality, Reproduced Sound, Acoustics, Sound Monitor	12
<b>II</b>	<b>Introduction to Microphone:</b> The Sound, Sound System, Introduction to Microphone, Microphone Directional Characteristics and Property, Sound Balancing And Quality, Sound Effects And Music	12
<b>III</b>	<b>Sound: Recording and Editing</b> Use of Software's for Sound Recording – Sound Forge and Nuendo / Vegas/ Audacity, Sound Recording, Sound Editing and Mixing, Noise Reduction, Multi-Track Recording & Editing	12
<b>IV</b>	<b>Video editing Basic:</b> Introduction to Editing- Editing Basics, Types of Editing - Linear and Non-Linear Editing, In Camera Editing, Editing with The Production Switcher, Editing Techniques and Approaches, Transitions- Cut, Fade, Dissolve, Wipe and their associated meaning, Order of Shots, Montage, Titles	12
<b>V</b>	<b>Exploring NLE Software: Features and Application</b> Adobe Premiere- Creating Project, Customizing Workspace, Import Setting, Interface (Digitize and Organize Source Footage, Edit Sync and Non-Sync Material, Editing Dialog & Working with Audio, Timeline Editing, Adding Video Effects & Transitions) Adobe After Effects - Creating Project, Customizing Workspace, Import Setting, Interface (Digitize and Organize Source Footage, Edit Sync and Non-Sync Material, Editing Dialog & Working with Audio, Timeline Editing, Adding Video Effects & Transitions) Final Cut Pro (FCP) - Creating Project, Customizing Workspace, Import Setting, Interface (Digitize and Organize Source Footage, Edit Sync and Non-Sync Material, Editing Dialog & Working with Audio, Timeline Editing, Adding Video Effects & Transitions) Tools, Rendering & Export Setting	12
<b>Course Outcomes as per Bloom's Taxonomy</b>		
At the end of the course the students should be able to:		
<b>CO 1</b>	<b>Familiarity</b> with the basic concept of Audio and Video editing.	
<b>CO 2</b>	<b>Understanding</b> of various techniques and Approaches of Audio Video Editing	
<b>CO 3</b>	<b>Understanding</b> of the process of Title generation.	
<b>CO 4</b>	<b>Command</b> in the trait of multi-track recording and mixing.	
<b>CO 5</b>	Will be able to <b>export the final output</b> as per industry standards.	
<b>Text Books</b>	<ol style="list-style-type: none"> <li>Wallace. Jackson(2016)Digital Audio Editing Fundamentals</li> <li>Mitch S. Ra (2013) Basics of Audio - Visual Editing</li> </ol>	
<b>Reference Books</b>	<ol style="list-style-type: none"> <li>Huber . David Miles(2017)Modern Recording Techniques</li> </ol>	

**Track: Advertising and Public Relations**

<b>COURSE CODE</b>	<b>Introduction to Advertising</b>	<b>Theory: 60</b>
<b>JM23MP001</b>		<b>(LTP 4 – 0 – 0)</b>
<b>Course Objectives:</b>		
	<ul style="list-style-type: none"> <li>● Develop an understanding of the concept of advertising and recognize the social and ethical implications of advertising.</li> <li>● Explain the role and methods of media planning</li> <li>● Acquaint the students with role of creativity in advertising and the various techniques of idea visualization to develop effective concepts effectively utilize creative elements of ad making.</li> <li>● Explain the different job functions and responsibilities of those employed in advertising agencies.</li> <li>● Refine critical thinking and decision-making in advertising campaign development through class activities and assignments.</li> </ul>	
<b>Unit</b>	<b>Contents</b>	<b>Hours</b>
<b>I</b>	Definition, need, role & Importance, Evolution and growth. Advertising as a tool of communication and its difference, Types of Advertising: Consumer, Business Advertising, Commercial vs Social Advertising, Corporate Advertising, Action vs Awareness Advertising.	<b>12</b>
<b>II</b>	Understanding Media & its creative co-ordination with other Marketing Functions. Types of Media: Print Media, Broadcast Media, Outdoor, Transit, Traditional, Direct Mail & Internet, their characteristics, Benefits & Drawbacks, New Media. Media Planning Methods: Media Strategies & Media Mix.	<b>12</b>
<b>III</b>	Creativity: Concept & Role in Advertising. Copywriting: Role & Importance of a Copywriter, Copy Elements- Headline, Subhead, Body Copy, Logos & Slogans.	<b>12</b>
<b>IV</b>	Ad agency – definition, role and functions of various departments, Types of Agencies. Structure of an Advertising Agency, Client-Agency relationship; Selection of an Advertising Agency. Indian Advertising Agencies: Trends & Status	<b>12</b>
<b>V</b>	Advertising and Society, Advertising ethics & social responsibility. Regulation of Advertising: Govt. & Non-Govt. Regulations. Advertising Statutory Bodies in India -Role of AAAL, ASCI, INS, DAVP	<b>12</b>
<b>Course Outcomes as per Bloom's Taxonomy</b>		
At the end of the course the students should be able to:		
<b>CO 1</b>	Understand the history and societal impact of advertising and the need for ethical practitioners.	
<b>CO 2</b>	Participate in the development of creative solutions to address advertising and marketing communications challenges.	
<b>CO 3</b>	Demonstrate proficiency in writing, speaking, and being creative in a variety of media.	
<b>CO 4</b>	Identify the role of account management, research, creative, and the media department plays in a full-service advertising agency and the skills required pursuing a successful career in the advertising industry.	
<b>CO 5</b>	Apply all work in a professional, ethical and timely manner.	
<b>Text Books</b>	<ol style="list-style-type: none"> <li>1. Chunawala &amp; Sethia. Foundations of Advertising, 8th edition. India:Himalaya Publishing (2011)</li> <li>2. Jones, Philip John. How To Use Advertising To Build Strong Brands. India: Sage(1999)</li> <li>3. Halve, Bhaskar Anand. Planning For Power Advertising. India: Response Books (2005)</li> <li>4. Tiwari,S Uncommon Sense of Advertising: Getting the Facts Right. India: Response(2003).</li> </ol>	
<b>Reference Books</b>	<ol style="list-style-type: none"> <li>1. Bovee &amp; Arens. Contemporary Advertising. USA: Irwin (1991)</li> <li>2. Dennison, DellThe Advertising Handbook. India: Jaico (2006).</li> <li>3. Wells, Burnett, Moriarty . Advertising Principles &amp; Practices -5th edition.India: Prentice Hall (2002)</li> <li>4. Altstiel,Tom &amp; Grow, Jean . Advertising Creative Strategy, Copy &amp; Design, 3<sup>rd</sup>edition. India: Sage (2019)</li> </ol>	

COURSE CODE	Content Creation	Theory: 60
JM23AP002		(LTP 4 – 0 – 0)
<b>Course Objectives:</b>		
	<ul style="list-style-type: none"> <li>To introduce the concept of content creation.</li> <li>To enhance the skills of content collection for different types of writing.</li> <li>To enable students to create content for different mediums.</li> <li>To develop the skills of creative thinking.</li> <li>To make students ready for different type of content writing.</li> </ul>	
<b>Unit</b>	<b>Contents</b>	<b>Hours</b>
<b>I</b>	<b>Content Creation Print Media</b> Writing for News Paper, Writing for Magazine, Writing for Newsletter/ flyer/Brochure	12
<b>II</b>	<b>Content Creation Electronic Media</b> Writing for Television, Writing for Radio, Writing for Films	12
<b>III</b>	<b>Content Creation Advertisements</b> Copywriting for Print Advertisements, Writing for TV Commercials, Writing for Digital Ads .	12
<b>IV</b>	<b>Content Creation digital media</b> Crime Reporting, Basics of Investigative Reporting, Developing crime Scene	12
<b>V</b>	<b>Content Creation social media</b> Writing for Website, Writing for Blogs, Writing for Face book/Twitter/linked-in	12
<b>Course Outcomes as per Bloom's Taxonomy</b>		
At the end of the course the students should be able to:		
<b>CO 1</b>	Understanding of content creation.	
<b>CO 2</b>	Developing skills of different types of content collection.	
<b>CO 3</b>	Enable to write for different mediums.	
<b>CO 4</b>	Design Content for various types of advertisements.	
<b>CO 5</b>	Creating content for digital platforms.	
<b>Text Books</b>	1. Anjana Nair Dev,Creative Writing: Bigginer's Mannual,Pearson India, (2016) 2. Sujcet Govindani: The Digital Era: All About Content writing,Startup India publication, (2020)	
<b>Reference Books</b>	1. Kounal Gupta: Content Writing Hand Book,Hanery Harvin,( 2021) 2. Lee Goldberg: Successful Television Writing, Sage Publication, (2003)	

COURSE CODE	Introduction to Public Relation	Theory: 60
JM23AP003		(LTP 4 – 0 – 0)
<b>Course Objectives:</b>		
<ol style="list-style-type: none"> <li>To provide knowledge about the definitions and concepts of public relation, publicity, propaganda, advertising and e-PR.</li> <li>To Know the differences between public relations and corporate communications, public relations and advertising, public relation and propaganda, public relation and publicity, propaganda and publicity.</li> <li>To understand the basic tools of public relations.</li> <li>To impart the fundamental of public relations writings.</li> <li>To learn the ethics and laws of public relations.</li> </ol>		
Unit	Contents	Hours
<b>I</b>	Definitions and concept of public relations. Definitions and concept of publicity. Definitions and concept of propaganda. Definitions and concept of advertising. Definitions and concept of e-PR	12
<b>II</b>	Difference between public relations and corporate communications. Difference between public relations and advertising. Difference between public relation and propaganda. Difference between public relations and publicity. Difference between propaganda and publicity.	12
<b>III</b>	Tools of Public Relation. Newspaper and magazine. Radio, television and film. New media and social media Alternative media and traditional media.	12
<b>IV</b>	Writing for P.R, Press Release writing, Promotional article writing, writing for internal Publics, Writing for social media	12
<b>V</b>	Ethics of Public Relations, Code of ethics by professional bodies, ASCI Codes. PRSI and PRCAL, Working of PR Agencies	12
<b>Course Outcomes as per Bloom's Taxonomy</b>		
At the end of the course the students should be able to:		
<b>CO 1</b>	Students would learn about the definitions and concepts of public relations, publicity, propaganda.	
<b>CO 2</b>	Students would be able to understand the difference between P.R. and Advertising and propaganda .	
<b>CO 3</b>	Students would gain knowledge about the tools and techniques of P.R.	
<b>CO 4</b>	Students would know the public sector and private sector working of P.R.	
<b>CO 5</b>	Students would learn the code of ethics of Public Relation practices.	
<b>Text Books</b>	<ol style="list-style-type: none"> <li>Jaishri Jethwani and N.N. Sarkar, (2009) Public Relations Management, Sterling Publishers PVT.LTD. New Delhi.</li> <li>Dann Lattimore, (2012),Public Relation the Profession and Practice, McGraw Hill Publication</li> </ol>	
<b>Reference Books</b>	<ol style="list-style-type: none"> <li>E.Grunig James and Hunt Todd.(2002) Managing Public Relations , Rinehart and Winston Publication, Newyork.</li> </ol>	

COURSE CODE	Tools & Techniques of Public Relations	Theory: 60
JM23AP004		(LTP 4 – 0 – 0)
<b>Course Objectives:</b>		
<ol style="list-style-type: none"> <li>Understanding extensively the status and utilization of Print and Traditional tools of Public Relations &amp; their utility for the media.</li> <li>To practice developing and applying strategy based on Electronic Media as a Public Relations tool.</li> <li>To encourage students to think strategically about how to select and employ public relations tactics for new media.</li> <li>To develop skills in planning and conducting PR events this should become part of students' professional portfolios.</li> <li>To apply the knowledge and understanding gained in this course as well as that from course prerequisites to the development of a campaign and execution.</li> </ol>		
Unit	Contents	Hours
<b>I</b>	<b>Print &amp; Traditional tools for PR Communication</b> Print: Introduction to Press release, writing techniques for Press release, types of release, structure of press release, Press Kit House Journal, Annual Reports, Flyers or Brochures, Embargo, Speeches for different occasions; Professional interviews and Preparation, Press Tour Business Letter: Types of Business Letter: Formal & Informal; Letter to editor, Fact sheet, Back grounders, Advertorial, Press Handout	12
<b>II</b>	<b>Electronic tools for PR</b> Television Programmes: News, Talks, Panel Discussion, Studio Interviews, Documentary Films, Infotainment, Public Service Announcements, Specialised Audience Programmes Radio Programmes: News Bulletins, Current Affairs, Talks, Panel Discussions, Audio News Releases, Sponsored Serials, Studio Interviews, Newsreels, Public Service Announcements Film and Documentary as a tool of PR: meaning and use, Types: Expository, Observational, Participatory, Reflexive, Performative	12
<b>III</b>	<b>New Media for PR</b> Websites: Writing for Web, News on Web, Videos on Web, Weblogs Social Media: Facebook, Twitter, Instagram, LinkedIn, YouTube, Google Plus, Pinterest Search Engine Optimization & Search Engine Marketing: key words generation	12
<b>IV</b>	<b>Events &amp; Sponsorships</b> Events: Definition, Importance, Purpose, Role of Event in Public Relations, Types of Events Sponsorship, Exhibition, Conferences: Purpose and types Planning & Conducting an Event: Awareness event for Social Cause, Exhibition for Product Promotion	12
<b>V</b>	<b>Campaign Development</b> Campaign: Definition, Public Relations Campaign, Public Awareness Campaign, Public Information Campaign, Public Education Campaign Components: Research, Identification of Problem, Setting Objectives, Target Audience, Action Plan, PR Programme and Messages, Communication or Media Strategy, Budgeting, Implementation, Evaluation Campaign Planning and Execution: Public Awareness Campaign, Brand Image Campaign	12
<b>Course Outcomes as per Bloom's Taxonomy</b>		
At the end of the course the students should be able to:		
<b>CO 1</b>	Acquainted with various PR tools to strengthen the PR Practice.	
<b>CO 2</b>	Understand the current dominant tools and the traditional tool of PR, as well as how and why PR tools relates to PR practice.	
<b>CO 3</b>	Why and How PR campaigns are evaluated and why this evaluation is important.	
<b>CO 4</b>	Realize how different forms of media are changing the nature of PR practice.	
<b>CO 5</b>	Strategically clarity of organizing a successful PR campaign.	
<b>Text Books</b>	<ol style="list-style-type: none"> <li>Banik, G. C.(2006).<i>PR &amp; Media Relations</i>. Mumbai. Jaico Publishing House.</li> <li>Butterick, Keith.(2012).<i>Introducing Public Relations</i>. New Delhi. Sage Publications India Pvt Ltd.</li> <li>Center, Allen H. Jackson, Patrick. Smith, Stacey. Stansberry, Frank R.(2008).<i>Public Relations Practices</i>. Delhi. PHI Learning Pvt. Ltd.</li> </ol>	
<b>Reference Books</b>	<ol style="list-style-type: none"> <li>Lesly, Philip. (2002). <i>Handbook of Public Relations and communication</i>. Delhi. Jaico Publishing House.</li> <li>Nayyar, Deepak. (2006). <i>Public Relations Communication</i>. Jaipur. ABD Publishers</li> <li>Reddi,C V Narasimha(2009).<i>Effective Public Relations and Media Strategy</i>. New Delhi. PHI Learning Pvt. Ltd</li> </ol>	



**Track: Health Management**

<b>COURSE CODE</b>	<b>Health Care Management</b>	<b>Theory: 60</b>
<b>PN23HM001</b>		<b>(LTP 4 – 0 – 0)</b>
<b>Course Objectives:</b>		
This course is designed to help students to develop knowledge and competencies required to provide evidence-based, comprehensive basic nursing care for Children, Adolescents, Women and elderly.		
<b>UNIT</b>	<b>CONTENTS</b>	<b>HOURS</b>
<b>I</b>	Introduction to Public Health, Evolution of Public Health. Important Public Health Acts, Health problems of developed and developing countries, Health problems in India, Environment and Health.	<b>6</b>
<b>II</b>	Basic Epidemiology, Definition and Concepts of Epidemiology, Concepts of Health and Disease. Role of Genetics in Health and Disease, Levels of Prevention, Types of Epidemiology, Uses of Epidemiology.	<b>6</b>
<b>III</b>	Health Systems in India, Health planning in India including various committees and National Health Policy and Health Goals set from time to time. Organized sector with reference to Centre, State, District and Block level structures and local bodies and Panchayati Raj Organization and functions of community health centers and Primary Health Centres (PHCs). Health Manpower, Primary Health care and concept, Alternative systems of medicine, like Ayurveda, Homeopathy, etc. Holistic Approach Non-Governmental Organizations (NGOs) and Private Voluntary Organizations (PVOs). Unorganized Sector.	<b>6</b>
<b>IV</b>	Nutrition and Communicable & Non-communicable diseases, Major nutritional problems, etiology, manifestations and prevention. Family Welfare and Planning, Reproductive and Child health- Components of RCH care, Need and package of services under RCH Program.	<b>6</b>
<b>V</b>	Communicable and Non-communicable diseases- Epidemiology, Etiology, Pathogenesis, Prevention and Control of Communicable Diseases- Malaria, Cholera, Tuberculosis, Leprosy, Diarrhea, ARI, Poliomyelitis, Viral Hepatitis, Measles, Dengue, Rabies, AIDS, etc. Non-communicable diseases- coronary heart disease, hypertension, diabetes mellitus, cancers, etc.	<b>6</b>
<b>Course Outcomes as per Bloom's Taxonomy</b>		
At the end of the course the students should be able to:		
<b>CO 1</b>	Good communication, interpersonal relations, management and leadership in matter of health services	
<b>CO 2</b>	Evaluate the efficacy of information technology in improving patient care, patient outcomes	
<b>CO 3</b>	Utilize knowledge of management in social and professional life	
<b>CO 4</b>	Develop understanding nutrition, communicable & non-communicable.	
<b>CO 5</b>	Understand basic concept of management	
<b>Text Books</b>	<ul style="list-style-type: none"> <li>● Koontz and Wehrlich, H. (2008). Essentials of Management. Tata McGraw Hill Education, India.</li> <li>● Introduction to Health Care Management 4th Edition, Navigate advantage Access pulisher.</li> <li>● Health Care and Hospital Management Contemporary Issues and Strategies Exceles book Publishers</li> </ul>	
<b>Reference Books</b>	<ul style="list-style-type: none"> <li>● Krejcie table, R. K. (1970). Educational and Psychological Measurement.</li> <li>● WHO. (Oct 2007). Public Health Innovation. World Health Organisation</li> </ul>	

COURSE CODE		Good Medication Practices	Theory: 60
PN23HM002		(LTP 4 – 0 – 0)	
<b>Course Objectives:</b>			
This course covers various basic first aid techniques including basic CPR and common emergencies. It further aims to train students to develop first aid competencies to deal with specific emergencies to preserve life.			
UNIT	CONTENTS		HOURS
I	The process of rational treatment, Definition of the Diagnosis, Specify the therapeutic objectives, Choose effective group according to the criteria, Safety, suitability, cost of the treatment.		6
II	Introduction to P-drugs, Guidelines for selecting P-drugs, List of Prescription drugs & their used in the treatment of disease like Asthma, Angina, Hypertension, Kidney disease, Peptic Ulcer, Headache etc.		6
III	Treating your Patient Step-1 Define the Patient Problem, Specify the therapeutic objectives, Verify the suitability of your P drugs, how to Write a Prescription, give information instructions and warning, Monitor and stop treatment.		6
IV	How to keep update about drugs, Drug information bulletin, Pharmacopeia, Compendia, Medical Journal, Verbal information Centre, Efficient reading like Research Articles.		6
V	Adverse effect of the drugs, Types of the Adverse effects of the drugs, How to manage the adverse effect of the drugs by the use of the drugs and other methods.		6
<b>Course Outcomes as per Bloom's Taxonomy</b>			
At the end of the course the students should be able to:			
CO 1	Understand diagnosis and therapeutic objectives		
CO 2	Understand different category of drugs and their uses.		
CO 3	Understand prescription, error of prescription.		
CO 4	Understand source of drug information & their uses		
CO 5	Understand ADR & techniques of ADR minimization		
<b>Text Books</b>	<ul style="list-style-type: none"> <li>• Avery GS. Drug Treatment. 2nd ed. Sydney: ADIS Press, 1987.</li> <li>• Laurence DR, Bennett PN. Clinical Pharmacology. 7th ed. Edinburgh: Churchill Livingstone, 1992. Goodman &amp; Gilman.</li> <li>• The Pharmacological Basis of Therapeutics. 8th ed. New York: McMillan Publications Co, 1992.</li> </ul>		
<b>Reference Books</b>	<ul style="list-style-type: none"> <li>• Goodman &amp; Gilman's Pharmacological Basis of Therapeutics.</li> <li>• Guide to good prescribing: a practical manual T. P. G. M. de Vries</li> <li>• Laurence DR, Bennett PN. Clinical Pharmacology. 7th ed. Edinburgh: Churchill Livingstone, 1992.</li> </ul>		

COURSE CODE	Good Nursing Practices	Theory: 30 Practical: 30 (LTP 2 – 0 – 4)
PN23HM003		
<b>Course Objectives:</b> This course is designed to help students to develop knowledge and competencies required to provide evidence-based, comprehensive basic nursing care for Children, Adolescents, Women and elderly.		
UNIT	CONTENTS	HOURS
I	<b>Introduction to Good Nursing Practices:</b> Definition of Nursing, Concept of Health – Definitions (WHO), Dimensions, Maslow’s hierarchy of needs, Factors influencing health, Causes and risk factors for developing illnesses, Illness – Types, illness behaviour, Impact of illness on patient and family	5
II	<b>Health Assessment:</b> Definition/Meaning, Purposes, Preparation for Health Assessment, Methods of Health Assessment Inspection, Palpation, Percussion, and Auscultation.	4
III	<b>Assisting individuals and families to promote and maintain their health:</b> Assessment of children, women, adolescents, elderly. Children Monitoring growth and development, milestones, Anthropometric measurements, BMI, Social development, Adolescents: Common health problems among adolescents, Adjustment & conduct disorders, Mental disorders, eating disorders, substance use disorders.	7
IV	<b>Women:</b> Menstrual cycle, Breast self-examination (BSE), Warning Signs of various diseases <b>Elderly:</b> Aging process and age-related body changes and psychosocial aspects, Stress and coping in elder patient, Role of family and formal and non-formal caregivers, National programs for elderly, community programs and health services <b>Tests:</b> Urine for sugar and albumin, blood sugar, Hemoglobin, Temperature and Blood pressure monitoring	8
V	<b>Provision of health services/primary health care:</b> Routine check-up, Immunization, counselling, and diagnosis, Management of common diseases at home and health centre level	6
<b>List of Experiments</b>		
<ul style="list-style-type: none"> <li>• Methods of Health Assessment Inspection, Palpation, Percussion, and Auscultation.</li> <li>• Assessment of children, women, adolescents.</li> <li>• Children: Monitoring growth and development, milestones, Anthropometric measurements, BMI.</li> <li>• Women: Breast self-examination (BSE)</li> <li>• Tests: Urine for sugar and albumin, blood sugar, hemoglobin, Temperature and Blood pressure monitoring</li> </ul>		
<b>Course Outcomes as per Bloom’s Taxonomy</b>		
At the end of the course the students should be able to:		
<b>CO 1</b>	<b>Understand<sup>2</sup></b> about the concept of health, illness among the care providers.	
<b>CO 2</b>	<b>Perform<sup>3</sup></b> comprehensive health assessment that includes nursing health history and system wise physical examination. .	
<b>CO 3</b>	<b>Demonstrate<sup>2</sup></b> skill in nutritional assessment for different age groups in the community and provide appropriate nutritional counselling	
<b>CO 4</b>	<b>Demonstrate<sup>3</sup></b> the various laboratory test.	
<b>CO 5</b>	<b>Understand<sup>2</sup></b> the Provision of health services/primary health care.	
<b>Text Books</b>	<ul style="list-style-type: none"> <li>• Kimberly Ernst Meyer, 2020. Nursing Fundamental, WI technical colleges open press.</li> <li>• Basvantappa BT, 2009. Fundamentals of Nursing, Jaypee brother’s Publication</li> <li>• Potter and Perry 2017. Fundamentals of Nursing, Elsevier Publishers.</li> </ul>	
<b>Reference Books</b>	<ul style="list-style-type: none"> <li>• Suresh K. Sharma, 2016. Lippincott Manual of Medical - Surgical Nursing: Lippincott Manual of Nursing, Wolters Kluwer   Lippincott Williams and Wilkins</li> <li>• Brunner and Suddarth’s, 2018. Textbook of Medical-Surgical Nursing, Wolters Kluwer India Pvt Ltd</li> </ul>	

COURSE CODE	Life Saving Skills – in case of emergency		Theory: 30 Practical: 30
PN23HM004	(LTP 2 – 0 – 4)		
<b>Course Objectives:</b> This course covers various basic first aid techniques including basic CPR and common emergencies. It further aims to train students to develop first aid competencies to deal with specific emergencies to preserve life.			
UNIT	CONTENTS	HOURS	
<b>I</b>	Definitions, Basic principles, Scope & Rules First Aid Management: Wounds, Hemorrhage & Shock	6	
<b>II</b>	Musculoskeletal Injuries – Fractures, Dislocation, Muscle injuries, Transportation of Injured persons, Respiratory Emergencies & Basic CPR	6	
<b>III</b>	Unconsciousness, Foreign Bodies – Skin, Eye, Ear, Nose, Throat & Stomach	6	
<b>IV</b>	Burns & Scalds, Poisoning, Bites & Stings	6	
<b>V</b>	Frostbite & Effects of Heat, Community Emergencies	6	
<b>List of Experiments</b>			
<ul style="list-style-type: none"> <li>• First Aid Management: Wounds, Hemorrhage &amp; Shock</li> <li>• Musculoskeletal Injuries – Fractures, Dislocation, Transportation of Injured persons.</li> <li>• CPR, Removal of Foreign Bodies – Skin, Eye, Ear, Nose, Throat.</li> <li>• Burns &amp; Scalds, Poisoning, Bites &amp; Stings</li> </ul>			
<b>Course Outcomes as per Bloom’s Taxonomy</b>			
At the end of the course the students should be able to:			
<b>CO 1</b>	<b>Explain</b> <sup>3</sup> basic principles of first aid and law related to first aid..		
<b>CO 2</b>	<b>Describe</b> <sup>2</sup> various first aid techniques such as basic CPR, recovery position, top to toe assessment and hygiene and handwashing		
<b>CO 3</b>	<b>Identify</b> <sup>1</sup> common emergencies that require immediate attention and first aid.		
<b>CO 4</b>	<b>Perform</b> <sup>3</sup> basic first aid techniques to deal with specific and common emergencies to preserve life.		
<b>CO 5</b>	<b>Perform</b> <sup>3</sup> first aid measures such as dressings, bandages, and safe transportation.		
<b>Text Books</b>	<ul style="list-style-type: none"> <li>• Learning Resources: (Latest version to be consulted as and when revised)</li> <li>• Indian First aid manual by IRCS (Seventh edition, 2016)</li> <li>• Standard first aid training course outline (IRCS, 2019)</li> </ul>		
<b>Reference Books</b>	<ul style="list-style-type: none"> <li>• Subsequent and latest revisions must be consulted and used by teachers and students.</li> <li>• FAST mobile app prepared by NDMA &amp; IRCS may also be used.</li> </ul>		

**Track: Advanced Programming**

COURSE CODE	Programming Practice using C		Theory: 30 Practical: 30
AC23AP001			(LTP 2 – 0 – 4)
<b>Course Objectives:</b>			
<ul style="list-style-type: none"> <li>Develop a solid understanding of fundamental programming concepts and problem-solving techniques using C language.</li> <li>Acquire proficiency in writing well-structured and efficient C programs by algorithmic thinking and stepwise refinement.</li> <li>Familiarize oneself with different data types, operators, and expressions in C, enabling effective manipulation and representation of data.</li> <li>Gain hands-on experience in utilizing control structures to create flexible and interactive programs.</li> <li>Master essential programming skills involving functions, arrays, strings, pointers, file handling, and data structures like structures, unions, and enumerated types in the C language.</li> </ul>			
UNIT	CONTENTS		HOURS
I	<b>Programming and C:</b> Introduction to computers and computer-based problem solving, Algorithm and Flowchart, Top-down design and stepwise refinement, Programming environment –Assemblers, Compilers, Interpreters. Introduction to Structure of a C program, preprocessor directives, Compiling and executing C programs.		6
II	<b>Data Types, Decision Control and Looping Statements:</b> Data Types, Input/Output Statements in C, Constants, Variables, Scope of Variables, Operators, Expressions. Type conversion, Type casting, Decision control- if, if-then-else, nested if, nested else. Looping statements- while, Do-While, for, switch, break, continue and go to statements. Type modifiers and storage class specifiers for data types.		6
III	<b>Functions:</b> Introduction to functions, function definition, function declaration, function call, return statement, passing parameters to functions: Call by Value, Call by reference, recursive functions. <b>Arrays:</b> Declaration of arrays, accessing the elements of an array, storing values in arrays, Operations on arrays, Passing arrays to functions, two dimensional arrays, operations on two-dimensional arrays, multidimensional arrays, applications of arrays.		6
IV	<b>Strings and Pointers:</b> Strings-Introduction, string taxonomy, operations on strings, Miscellaneous string and character functions, arrays of strings. Pointers- The & and * operator, pointer expression, initializing pointers, malloc vs calloc, array of pointers, pointers to pointers, pointers to functions, function returning pointers.		6
V	<b>Files, Structures, Unions and Enumerated data types:</b> File Handling – Files: Introduction to files, using files in C, reading and writing data files, detecting end of file .The file pointer, file accessing functions, fopen, fclose, puts, getch, fprintf. Structure, Union, and Enumerated Data Type: Introduction, structures and functions, Unions, unions inside structures, Enumerated data type.		6
<b>List of Experiments</b>			
<ul style="list-style-type: none"> <li>Write a Program to calculate and display the volume of a CUBE having its height (h=10cm), width (w=12cm) and depth (d=8cm).</li> <li>Write a program to take input of name, roll no and marks obtained by a student in 4 subjects of 100 marks each and display the name, roll no with percentage score secured.</li> <li>Write a program to print whether a given number is even or odd.</li> <li>Write a program to print positive integers from 1 to 10.</li> <li>Write a program to insert 5 elements into an array and print the elements of the array.</li> <li>Write a program to demonstrate the functions and its types.</li> <li>Write a program to calculate factorial of a number using recursion.</li> <li>Write a program to find the biggest among three numbers using pointer.</li> <li>Write a C program to create, declare and initialize structure.</li> <li>Write a program to create a file called emp.rec and store information about a person, in terms of his name, age and salary.</li> <li>Write a C program to add two matrices A and B of size 3x3 and store the result in matrix C.</li> <li>Check whether the given string is a palindrome or not.</li> </ul>			
<b>Course Outcomes as per Bloom’s Taxonomy</b>			
At the end of the course the students should be able to:			
CO1	Understand fundamental concepts and principles of programming using the C language.		
CO2	Implement decision control statements to control program flow based on specific conditions.		
CO3	Use functions, arrays in program development.		
CO4	Utilize strings and pointers effectively in C programming.		
CO5	Apply file handling techniques and utilize structures, unions, and enumerated data types in C programs.		
<b>Text Books</b> <ul style="list-style-type: none"> <li>The C Complete Reference by Herbert Schildt - 4th edition, McGraw Hill Education, July 2017.</li> <li>The Complete Guide for Beginners to Master C Programming Step by Step by Byron Francis, 2021.</li> </ul>			
<b>Reference Books</b> <ul style="list-style-type: none"> <li>Programming in ANSI C by Balaguruswamy, 3rd Edition, 2005, Tata McGraw Hill.</li> <li>Let us C by Yashwant Kanetkar, 6th Edition, PBP Publication</li> <li>The C programming Language by Richie and Kernighan, 2004, BPPB Publication.</li> </ul>			

COURSE CODE	Operating System		Theory: 30 Practical: 30  (LTP 2 – 0 – 4)
AC23AP002			
<b>Course Objectives:</b>			
<ul style="list-style-type: none"> <li>Understand the core concepts and principles of operating systems, including their structure, design, and implementation, in order to analyze and evaluate different operating systems effectively.</li> <li>Gain proficiency in process management, including process scheduling, multi-threading, and inter-process communication, to ensure efficient and concurrent execution of tasks within an operating system.</li> <li>Develop a comprehensive understanding of memory management techniques, including memory allocation, paging, segmentation, and virtual memory, to optimize memory utilization and enhance system performance.</li> <li>Acquire the skills to design and implement file systems, including file organization, access methods, and file sharing, while ensuring data protection and efficient storage management.</li> <li>Explore input/output systems, including I/O devices, device drivers, I/O operations, and control mechanisms, to optimize I/O performance, manage device resources, handle errors, and understand the significance of I/O virtualization in virtualized environments.</li> </ul>			
UNIT	CONTENTS		HOURS
I	<p><b>Introduction to Operating Systems:</b> Computer System Organization, Computer System architecture, Operating System generations, Operating System structure, Operating System Types, Operating System design and implementation, Operating System Operations-Process management, Memory management, Storage management, Protection and security, Special-purpose systems, Operating System Services-Process scheduling, Memory allocation, Interrupt handling, Device driver management, File system operations, Network protocol handling, Error handling, Power management, User interface, System calls, System programs, Computing environments, System boot. Case Study on Windows/Linux.</p> <p><b>Process Management:</b> Process concept, Process scheduling- Scheduling criteria, Scheduling algorithms, Multiple-Processor scheduling, Operations on processes, Inter-process communication, Thread scheduling-Multi-Threaded Programming Overview, Multithreading models, Thread Libraries, Threading issues, Case Study on Windows/ Linux.</p>	6	
II	<p><b>Process Synchronization and Deadlocks:</b> Process Synchronization, The Critical section problem, Peterson’s solution, Synchronization hardware, Semaphores, Classical problems of synchronization, Monitors, Deadlocks System model, Deadlock characterization, Methods for handling deadlocks, Deadlock prevention, Deadlock avoidance, Deadlock detection and recovery from deadlock- Case Study on Windows/ Linux.</p>	6	
III	<p><b>Memory Management and File System:</b> Memory Management Background, Strategies, Swapping, Contiguous memory allocation, Paging, Structure of page table, Segmentation, Virtual Memory Management Background, Demand paging, Copy-on-write, Page replacement, Allocation of frames, Thrashing. Case Study on Windows/ Linux. File System: File concept, Access methods, Directory structure, File system mounting, File sharing, Protection. Implementing File System: File system structure, File system implementation, Directory implementation, Allocation methods, Free space management- Case Study on Windows/ Linux.</p>	6	
IV	<p><b>Input-Output Systems:</b> Introduction to I/O Systems: Overview of I/O devices and their characteristics, the role of I/O systems in the overall system architecture. I/O Operations and I/O Control: Study of I/O operations, including reading from and writing to I/O devices. I/O Scheduling: Study of popular I/O scheduling algorithms, such as FCFS (First-Come-First-Served), SSTF (Shortest Seek Time First), SCAN, C-SCAN, etc.</p> <p><b>Buffering and Caching:</b> Introduction to the concepts of buffering and caching in I/O systems.</p> <p><b>Device Management:</b> Study of device management techniques, including device allocation, device reservation, and dealing with device conflicts.</p> <p><b>Error Handling and Recovery:</b> Overview of error handling and recovery mechanisms in I/O systems.</p> <p><b>I/O Virtualization:</b> Introduction to I/O virtualization techniques and their significance in virtualized environments. How virtualization allows multiple virtual machines to share physical I/O devices efficiently.</p>	6	
V	<p><b>List of Experiments</b></p> <ul style="list-style-type: none"> <li>Implement a program that simulates different process scheduling algorithms (e.g., First-Come, First-Served, Round Robin, Priority Scheduling) using a set of processes with arrival times and burst times.</li> <li>Develop a program that simulates memory allocation strategies (e.g., First-Fit, Best-Fit, Worst-Fit) by allocating and deallocating memory blocks for a set of processes with varying memory requirements.</li> <li>Write a program that performs common file system operations like creating a file, reading from a file, writing to a file, and deleting a file using system calls or file system APIs.</li> <li>Implement a program that simulates different disk scheduling algorithms (e.g., FCFS, SSTF, SCAN, C-SCAN) to demonstrate how disk I/O requests are scheduled and serviced.</li> <li>Create a simple shell or command-line interface program that can execute basic commands such as listing files, changing directories, creating files/folders, and executing other programs.</li> <li>Develop a program that demonstrates synchronization mechanisms like semaphores or mutexes to solve the classical synchronization problems like the producer-consumer problem or the dining philosopher’s problem.</li> <li>Write a program that detects and recovers from deadlock situations using resource allocation graphs or deadlock detection algorithms like Banker’s algorithm.</li> </ul>		

- Create a program that visually demonstrates how different CPU scheduling algorithms work by simulating the movement of processes in a CPU scheduling queue and the execution on the CPU.
- Execute 25 basic commands of UNIX.
- Develop a simple paging system that includes a page table and a mechanism for translating virtual addresses to physical addresses. Implement page fault handling and page replacement algorithms such as FIFO or LRU.
- Build a segmentation mechanism that supports variable-sized memory segments. Implement functions for segment creation, deletion, and protection.
- Implement a basic file system that includes file creation, reading, and writing functionalities. Use a simple data structure to maintain file metadata and allocate storage space for files.

**Course Outcomes as per Bloom's Taxonomy**

At the end of the course the students should be able to:

<b>CO 1</b>	Discuss the core concepts and principles of operating systems.
<b>CO 2</b>	Evaluate the performance and scalability of process management techniques in different scenarios.
<b>CO 3</b>	Compare different memory management techniques, such as memory allocation strategies (e.g., first-fit, best-fit, worst-fit), paging, segmentation, and virtual memory.
<b>CO 4</b>	Describe the principles of file system mounting and directory structures, and their role in managing file organization and hierarchical file access.
<b>CO 5</b>	Identify different I/O scheduling algorithms, such as FCFS, SSTF, SCAN, and C-SCAN, in terms of their advantages and limitations.

<b>Text Books</b>	<ul style="list-style-type: none"> <li>• Operating System Concepts by Abraham Silber Schatz, Greg Gagne, and Peter B. Galvin - Tenth edition published in 2018</li> <li>• Operating Systems: Principles and Practice by Thomas Anderson and Michael Dahlin - Second edition published in 2014.</li> <li>• Windows Internals, Part 2: Covering Windows Server 2016 and Windows 10 by Mark E. Russinovich, David A. Solomon, and Alex Ionescu - Seventh edition published in 2017.</li> </ul>
<b>Reference Books</b>	<ul style="list-style-type: none"> <li>• Modern Operating Systems by Andrew S. Tanenbaum and Herbert Bos - Fourth edition published in 2014.</li> <li>• Operating Systems: Three Easy Pieces by Remzi H. Arpaci-Dusseau and Andrea C. Arpaci-Dusseau - First edition published in 2015.</li> </ul>

COURSE CODE	Object Oriented Programming using Python	Theory: 30 Practical: 30
AC23AP003		(LTP 2 – 0 – 4)
<b>Course Objectives:</b>		
	<ul style="list-style-type: none"> <li>Understand the fundamental concepts of programming and the importance of procedural and object-oriented approaches</li> <li>Develop proficiency in creating and working with classes and objects in Python.</li> <li>Learn to handle different types of errors and exceptions in Python programs.</li> <li>Gain proficiency in multithreading and database programming concepts using Python.</li> <li>Acquire the skills to create graphical user interfaces (GUI) using Python.</li> </ul>	
UNIT	CONTENTS	HOURS
I	<b>Introduction:</b> Procedural and Object-Oriented Programming, Classes and working with instances, Features of Object-Oriented Programming.	6
II	<b>Class and Objects:</b> Creating Classes and Objects, Instance Variables, Access Specifiers, Importance of self, init() Method, Instance Method, Class Method, Method overloading, Operator overloading, Inheritance, Polymorphism.	6
III	<b>Exception Handling:</b> Types of errors, exception handling using: try-expect, try-except-else, try-except-finally, Argument of Exception, Raising Exception, Raising User define Exception.	6
IV	<b>Multithreading and Database Programming:</b> Model of network security, Firewall types and configuration, Virtual Private Networks, Demilitarized Zone, VLAN, Network access control, Access control lists, Port security, Intrusion Detection Systems, Intrusion Prevention Systems.	6
V	<b>Database Programming:</b> Connecting to MySQL database, create database, create table, update table, delete table, fetch data from table using where and orderby clause, joining tables, generate reports. <b>GUI:</b> Hello World using GUI, Add Components to GUI: Label, Textbox, Checkbox, Combo box, Radio button, Click/Submit Button, Insert Data in database using GUI.	6
	<b>List of Experiments</b>	
	<ul style="list-style-type: none"> <li>Write a program to calculate the area of a rectangle using variables and arithmetic operators.</li> <li>Implement a function to check if a given number is prime or not.</li> <li>Create a program that simulates a basic calculator with addition, subtraction, multiplication, and division operations.</li> <li>Create a class to represent a student with attributes like name, roll number, and marks. Implement methods to display student information and calculate the average marks.</li> <li>Build a class hierarchy for different types of vehicles, such as cars, motorcycles, and bicycles, with common properties and behaviors.</li> <li>Write a program to handle division by zero exception and display an appropriate error message.</li> <li>Develop a multithreaded application that performs parallel computation of prime numbers within a given range.</li> <li>Create a Python program to connect to a MySQL database, perform CRUD operations (create, read, update, delete) on a table, and display the results.</li> <li>Design a GUI application to convert temperature from Celsius to Fahrenheit and vice versa.</li> <li>Develop a graphical interface for a simple address book application that allows users to add, delete, and search for contacts.</li> <li>Build a library management system using classes and objects, with features like adding books, borrowing books, and generating reports.</li> <li>Implement a multithreaded web scraping application that fetches data from multiple websites concurrently.</li> <li>Create a GUI-based chat application using sockets and multithreading to enable real-time communication between multiple users.</li> <li>Develop a database-driven web application using a Python web framework like Django or Flask, with user authentication, data manipulation, and dynamic content rendering.</li> </ul>	
<b>Course Outcomes as per Bloom's Taxonomy</b>		
At the end of the course the students should be able to:		
CO 1	<b>Explain<sup>1</sup></b> the key features of object-oriented programming, such as encapsulation, inheritance, and polymorphism.	
CO 2	<b>Demonstrate<sup>2</sup></b> understanding of method overloading and operator overloading.	
CO 3	<b>Implement<sup>6</sup></b> exception handling using try-except blocks and handle specific exception types.	
CO 4	<b>Implement<sup>6</sup></b> multithreading in Python using Thread objects and synchronization mechanisms.	
CO 5	<b>Create<sup>6</sup></b> a basic GUI application with components like labels, textboxes, checkboxes, combo boxes, and radio buttons.	
<b>Text Books</b>	<ul style="list-style-type: none"> <li>Python Programming: An Introduction to Computer Science, John Zelle, 2016, Franklin, Beedle &amp; Associates Inc</li> <li>Python Crash Course: A Hands-On, Project-Based Introduction to Programming, Eric Matthes, 2019, No Starch Press</li> <li>Python for Data Analysis: Data Wrangling with Pandas, NumPy, and IPython, Wes McKinney, 2017, O'Reilly</li> <li>Python Documentation", Python Software Foundation <a href="https://docs.python.org">https://docs.python.org</a></li> <li>Object-Oriented Programming (OOP) in Python", Real Python, 2021 <a href="https://realpython.com">https://realpython.com</a></li> </ul>	
<b>Reference Books</b>		



COURSE CODE	Web Technologies	Theory: 30 Practical: 30  (LTP 2 – 0 – 4)
AC23AP004		
<b>Course Objectives:</b> <ul style="list-style-type: none"> <li>Identify the design principles and protocols used in internet communication.</li> <li>Understand the concept of embedding CSS into HTML documents.</li> <li>Design XML documents using elements, attributes, DTDs, and XML schemas.</li> <li>Implement HTTP requests/response handling and secure HTTP practices using PHP.</li> <li>Develop different types of websites with appropriate structures and navigation</li> </ul>		
UNIT	CONTENTS	HOURS
I	<b>Introduction to the Internet and the World Wide Web</b> Introduction, History of internet, Internet Design Principles, Internet Protocols - FTP, TCP/IP, SMTP, Telnet, etc., Client Server Communication, Web System architecture. Evolution of the Web, Web architectures, Web clients and servers, Static and Dynamic Web Applications, Front end and back-end web development. JS, XML.	6
II	<b>HTML and CSS-</b> Introduction to Html, Html Document structure, Html Editors, Html element/tag and attributes, Designing simple page - Html tag, Head tag, Body tag, More Html tags - Anchor tag, Image tag, Table tag, List tag, Frame tag, Div tag; Html forms - Input type, Text area, Select , Button, Images. Introduction to CSS, Syntax, Selectors, Embedding CSS to Html, Formatting fonts, Text and background color, Inline styles, External and Internal Style Sheets, Borders, and boxing. Introduction to HTML5, CSS3, New features, Local storage, Web Sockets, Server events, Canvas, Audioand Video, Geolocation, Microdata, Drag and Drop. Browser life cycle and browser rendering stages. Service workers.	6
III	<b>XML and JAVA Script-</b> Introduction to XML, Difference b/w Html and XML, XML editors, XML Elements and Attributes XML DTD, XML Schema, XML Parser, Document Object Model (DOM), XML DOM. <b>Working with JAVASCRIPT</b> Introduction to java script, Advantages of javascript, Javascript syntax, Execution of javascript, Data, Data Types, Data Operators, Composite data types, Arrays, Decision Making in javascript, Windows methods. Functions in javascript, Events in javascript. Javascript with user interaction.	6
IV	<b>PHP Server side scripting</b> -Introduction to PHP, Basic Syntax, Variables, constants and operators, Loops, Arrays Strings, HTTP, responding to HTTP requests, secure HTTP, etc; URL, Web Services – SOAP, REST, Environment and environment variables, Files, Cookies, Sessions, Examples.	6
V	<b>Practical website development</b> -Commonly used Web Servers and browsers, Setting up a server and domain name, website types and structures, web authoring tools, Web hosting, website maintenance, generating traffic to the website.	6
<b>List of Experiments</b>		
<ul style="list-style-type: none"> <li>Design a web page to capture the user information such as name, gender, mobile number, mail id, city, state, and country using form elements.</li> <li>Design a web page with nice formatting like background image, text colors and border for text using external CSS.</li> <li>Design a web page to display timer in the web page using Java Script with Mostly fluid pattern.</li> <li>Design web page to implement Responsive images, Images in CSS, SVG icons.</li> <li>Create a simple registration web page and perform all Mouse Events</li> <li>Create a login page and demonstrate different touch events.</li> <li>Create a web page to show log cat, different debugging options and steps.</li> <li>Design web page with HTML Forms and perform different operations</li> <li>Create simple registration page and do HTML5 Client Side Validation.</li> <li>Create an XML document that defines a student's information including name, age, and address.</li> <li>Use JavaScript to manipulate an XML document and display its contents on a web page.</li> <li>Implement a PHP script to display the current date and time.</li> </ul>		
<b>Course Outcomes as per Bloom's Taxonomy</b>		
At the end of the course the students should be able to:		
<b>CO 1</b>	<b>Evaluate</b> <sup>5</sup> different web architectures and their components.	
<b>CO 2</b>	<b>Create</b> <sup>6</sup> well-structured HTML documents using appropriate tags and attributes.	
<b>CO 3</b>	<b>Explore</b> <sup>4</sup> the new features of HTML5 and CSS3 for enhanced web development.	
<b>CO 4</b>	<b>Manage</b> <sup>6</sup> files, cookies, and sessions using PHP for enhanced website functionality.	
<b>CO 5</b>	<b>Understand</b> <sup>2</sup> website maintenance tasks and techniques, as well as strategies for generating	
<ul style="list-style-type: none"> <li>Learning Web Design: A Beginner's Guide to HTML, CSS, JavaScript, and Web Graphics (5th Edition) by Jennifer Niederst Robbins Publisher: O'Reilly Media Publication Date: November 2, 2018.</li> <li>CSS: The Definitive Guide: Visual Presentation for the Web (4th Edition) by Eric A. Meyer and Estelle Weyl Publisher: O'Reilly Media Publication Date: November 30, 2017.</li> <li>HTML and CSS: Design and Build Websites by Jon Duckett Publisher: Wiley Publication April 18, 2014.</li> </ul>		
<b>Text Books</b>		
<b>Reference Books</b>		