SANJEEV AGRAWAL GLOBAL EDUCATION

SAGE UNIVERSITY, BHOPAL

Bachelors of Design (B Des)

(Apparel Design)

4 years Degree Program

School of Design

SAGE UNIVERSITY, BHOPAL

About the program:

Great design begins with an even greater story. Its fruits are in the chair you sit in, the website you scroll, or your favorite brand's logo. Design is always evolving in relation with how humans interact with their creations. Designers are innovators who enhance the way we lead our lives and interact with the world around us.

Within SAGE University (School of Design) B.Des. programs, you would be learning the core concepts of design, gaining expertise in how to apply creative, open-ended and inclusive approaches to define and (re-)solve problems. This enables organizations, that you start-up your own or you are employed in, to pursue innovative paths, unlike business-as-usual, and take decisions that create lasting value.

Program Objectives (POs)

PEO 1. Confident young Entrepreneur or Designer with his or her own design house or boutique or Garment manufacturing units.

PEO 2.Garment Industry Professional who will excel in the job responsibility entrusted on him or her.

PEO 3.Confident and comprehensive academician having completed under graduate design program inside India or abroad with strong portfolio.

PEO 4. Freelance Consultant who helps the core and allied industry or individual or organization in a specific design domain with their expertise.

PEO 5. Educator or Trainer in fashion schools or organizations imparting and sharing the knowledge acquired by them

Program Educational Outcomes (PEOs):

PO 1. To promote an understanding of Fashion and Textile Design in relation to the needs of fashion, contractual furnishings, home textiles, and the business to business textile products.

PO 2. Explore and ideate new designs and solutions to fulfill the evolving needs and aspirations of an individual and the society and produce work of contemporary relevance.

PO 3. Analyze progress of human civilization through study of art, materials, techniques and technologies and their influence through ages.

PO 4. Recognize the need for and have ability to engage in independent and lifelong learning in the context of socio-technological changes.

PO 5.Develop logical and creative thinking for the solutions for Apparel Manufacturing & Merchandising.

PO 6. Create a fashion portfolio of finished art, collections, and work and presentation boards expressing a personal voice and vision.

PO 7. Articulate the history of fashion and costume design in a context of applied research and analysis.

PO 8. Collaborate with design, merchandising, management, and specialty groups to make informed garment design decisions.

PO 9. Undertake professional work as per established ethics, norms and law that govern the industry keeping social, economic and ecological perspective in cognition.

PO 10. Apply knowledge of legal and regulatory framework and codes of practice in establishing and managing.

Bachelor of Design

Curriculum Components

Components	Credits
Program Core (27 Courses)	**82**
Program Electives (Discipline Specific Electives) (06Courses)	**12**
Generic Electives (04 Courses)	**08**
Ability & Skill Development (Ability Enhancement Courses) (04 Courses)	**10**
Ability & Skill Development (Skill Enhancement Courses) (06 Courses)	**12**
Project Based Learning (PBL) (07 courses)	**34**
Project (01 Courses)	**25**
International Context/Yoga & Mediation (05 Courses) *	**-**
Green Credit (06 Courses) *	**-**
Total	**183**

Scheme for B Des (w.e.f. 2021-22)

First Semester																
Course Code	**Course Title**	**Contact Hours per Week**			**Credits**	**ESE Duration (Hours)**	**Weightage (Theory)**						**Weightage (Practical)**			**GT**
		L	**T**	**P**			**MSE**	**ASG**	**TA**	**ATTD**	**ESE**	**T**	**CE**	**ESE**	**T**	
UC20B101	Environment Studies and Disaster Management	2	-	-	2	3	30	05	05	10	50	-	-	-		100
UC20B102	Communication Skills	2	-	-	2	3	30	05	05	10	50	-	-	-		100
DN21B101	Sketching. I	-	2	2	2	3	-	-	-	-	-	-	50	50	100	100
DN21B102	Design Fundamentals	1	-	4	3	3	30	05	05	10	50	100	50	50	100	200
DN21B103	Material Exploration – I	1	-	2	2	3	30	05	05	10	50	100	50	50	100	200
DN21B104	Image Representation and Transformations	1	-	2	2	3	30	05	05	10	50	100	50	50	100	200
	DSE-I	-	-	4	2	3		-	-	-	-	-	50	50	100	100
PB21B101	Design Studio-I Project based learning	-	-	4	2	2	50 (2 assessments by panel of Experts)				50	-	-	-	100	100
IY20B101	Yoga & Meditation -I*	-	-	2	-	2	50 (2 assessments by panel of Experts)				-	-	-	-	-	-
GC20B101	Green Credit-I*	-	-	2	-	2	50 (2 assessments by panel of Experts)				-	-	-	-	-	-
		Total			17											

*Mandatory Non-Credit Course

Scheme for B Des (w.e.f. 2021-22)

Second Semester																
Course Code	**Course Title**	**Contact Hours per Week**			**Credits**	**ESE Duration (Hours)**	**Weightage (Theory)**						**Weightage (Practical)**			**GT**
		L	**T**	**P**			**MSE**	**ASG**	**TA**	**ATTD**	**ESE**	**T**	**CE**	**ESE**	**T**	
UC20B201	Computer Application-I	2	-	-	3	3	30	05	05	10	50	100	-	-	-	100
UC20B202	Entrepreneurship Development	2	-	-	2	3	30	05	05	10	50	100	-	-	-	100
DN21B201	Sketching-II	-	-	4	2	3	-	-	-	-	-	-	50	50	100	100
DN21B202	Typography Fundamentals	-	-	4	2	3	-	-	-	-	-	100	50	50	100	200
DN21B203	Fashion Representation and Construction	1	-	4	3	5	30	05	05	10	50	100	50	50	100	200
DN21B204	Material Exploration –II	1	-	2	2	5	30	05	05	10	50	100	50	50	100	200
	DSE-II	-	-	4	3	4	50 (2 assessments by panel of Experts)				50	-	-	-	100	100
PB21B201	Design Studio-II Project based learning	-	-	6	2	2	50 (2 assessments by panel of Experts)				50	-	-	-	100	100
IY20B201	Yoga and Meditation-II	-	-	2	-	2	50 (2 assessments by panel of Experts)					-	-	-	-	-
GC20B201	Green Credit-II	-	-	2	-	2	50 (2 assessments by panel of Experts)					-	-	-	-	-
		Total			**19**											

*Mandatory Non-Credited Course

MSE- Mid Semester Exam, ASG- Assignment, TA- Teacher's Assessment, ATTD-Attendance, ESE- End Sem Exam

Scheme for B Des (w.e.f. 2021-22)

Third Semester																
Course Code	**Course Title**	**Contact Hours per Week**			**Credits**	**Duration (Hours)**	**Weightage (Theory)**						**Weightage (Practical)**			**GT**
		L	**T**	**P**			**MSE**	**ASG**	**TA**	**ATTD**	**ESE**	**T**	**CE**	**ESE**	**T**	
UC20B301	Computer Application-II	3	-	-	3	3	30	05	05	10	50	100	-	-	-	100
UC20B302	Quantitative Aptitude - I	2	-	-	2	3	30	05	05	10	50	100	-	-	-	100
DN21B301	Basics of Pattern Making -I	-	2	2	2	3	-	-	-	-	-	-	50	50	100	100
DN21B302	Fabric Studies & Performance	2	-	-	2	3	30	05	05	10	50	100	50	50	100	200
DN21B303	Basics of Garment Construction & Production Technology	-	4	2	3	3	-	-	-	-	-	-	50	50	100	100
DN21B304	Fashion Illustration-I	-	2	2	2	3	-	-	-	-	-	-	50	50	100	100
	DSE-III	2	-	-	2	3	50 (2 assessments by panel of Experts)				50	100	50	50	100	200
	Generic Elective – I	2	-	-	2	3	50 (2 assessments by panel of Experts)				50	100	50	50	100	200
PB21B301	Design Studio-III (Project based learning) Tunic Design	-	4	2	3	2	50 (2 assessments by panel of Experts)				50	-	-	-	100	100
IY20B301	Yoga & Meditation-III	-	-	2	-	-	50 (2 assessments by panel of Experts)					-	-	-	-	-
GC20B301	Green Credit-II	-	-	2	-	-	50 (2 assessments by panel of Experts)					-	-	-	-	-
Total					**21**											

*Mandatory Non-Credit Course

Fourth Semester																
Course Code	**Course Title**	**Contact Hours per Week**			**Credits**	**Duration (Hours)**	**Weightage (Theory)**						**Weightage (Practical)**			**GT**
		L	**T**	**P**			**MSE**	**ASG**	**TA**	**ATTD**	**ESE**	**T**	**CE**	**ESE**	**T**	
UC20B401	Design Thinking	2	-	-	2	3	30	05	05	10	50	100	-	-	-	100
UC20B402	Quantitative Aptitude - II	2	-	-	2	3	30	05	05	10	50	100	-	-	-	100
DN21B401	Pattern Making and Draping-II	-	4	2	3	3	-	-	-	-	-	-	50	50	100	100
DN21B402	Design software	-	2	2	2	3	-	-	-	-	-	-	50	50	100	100
DN21B403	Garment Construction II		2	2	2	3	-	-	-	-	-	-	50	50	100	100
DN21B404	Dyeing and Printing Techniques		4	2	3	3	-	-	-	-	-	-	50	50	100	100
DN21B405	History of Indian Textiles & Costumes	2	-	-	2	3	30	05	05	10	50	100	50	50	100	200
	DSE-IV	2	-	-	2	3	30	05	05	10	50	100	50	50	100	200
	Generic Elective – II	2	-	-	2	3	30	05	05	10	50	100	50	50	100	200
PB21B401	Design Studio IV (Project based learning) Women's wear		2	4	3	2	50 (2 assessments by panel of Experts)				50				100	200
IY20B401	Yoga & Meditation-IV	-	-	2	-	-	50 (2 assessments by panel of Experts)					-	-	-	-	-
GC20B401	Green Credit-IV	-	-	2	-	-	50 (2 assessments by panel of Experts)					-	-	-	-	-
	Total				23											

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Fifth Semester																
Course Code	**Course Title**	**Contact Hours per Week**			**Credits**	**ESE Duration (Hours)**	**Weightage (Theory)**						**Weightage (Practical)**			**GT**
		L	**T**	**P**			**MSE**	**ASG**	**TA**	**ATTD**	**ESE**	**T**	**CE**	**ESE**	**T**	
UC20B501	Introduction to Management and Leadership	2	-	-	2	3	30	05	05	10	50	100	-	-	-	100
DN21B5201	Fashion Branding, Retailing and Merchandising	3	-	-	3	3	30	05	05	10	50	100	-	-	-	100
DN21B502	Apparel CAD I	-	-	4	2	3	-	-	-	-	-	-	50	50	100	100
DN21B503	3Apparel Portfolio and Collection	-	-	6	3	3	-	-	-	-	-	-	50	50	100	100
DN21B504	Surface Exploration	1	-	4	3		30	05	05	10	50	100	50	50	100	200
	DSE-IV	-	-	4	2	3	-	-	-	-	-	-	50	50	100	100
	Generic Elective – III	-	-	4	2	3	-	-	-	-	-	-	50	50	100	100
PB21B501	Design Studio V (Project based learning)Jacket & Shirt Design	-	2	4	3	2	50 (2 assessments by panel of Experts)				50	-	-	-	100	100
IY20B501	Yoga & Meditation-V*	-	-	2	-	-	50 (2 assessments by panel of Experts)								-	-
GC20B501	Green Credit-V*	-	-	2	-	-	50 (2 assessments by panel of Experts)								-	-
		Total			20											

*Mandatory Non-Credited Course

Sixth Semester																
Course Code	**Course Title**	**Contact Hours per Week**			**Credits**	**ESE Duration (Hours)**	**Weightage (Theory)**						**Weightage (Practical)**			**GT**
		L	**T**	**P**			**MSE**	**ASG**	**TA**	**ATTD**	**ESE**	**T**	**CE**	**ESE**	**T**	
UC20B601	Social and Professional Ethics	2	-	-	2	3	30	05	05	10	50	100	-	-	-	100
DN21B601	Visual History of Fashion	2	-	-	2	3	30	05	05	10	50	100	-	-	-	100
DN21B602	Apparel CAD- II	-	2	4	3	3	-	-	-	-	-	-	50	50	100	100
DN21B603	Textile and Apparel Testing	1	-	4	3	3	30	05	05	10	50	100	50	50	100	200
DN21B604	Surface Exploration	1	-	4	3	3	30	05	05	10	50	100	50	50	100	200
	DSE-V	-	-	4	2	3	-	-	-	-	-	-	50	50	100	100
	Generic Elective – IV	-	-	4	2	3	-	-	-	-	-	-	50	50	100	100
PB21B601	Design Studio VI- (Project based learning)Apparel for Special Needs	-	2	4	3	2	50 (2 assessments by panel of Experts)				50	-	-	-	50	100
IY20B601	Yoga & Meditation- VI*	-	-	2	-	-	50 (2 assessments by panel of Experts)								-	-
GC20B601	Green Credit-VI*	-	-	2	-	-	50 (2 assessments by panel of Experts)								-	-
		Total			**20**											

*Mandatory Non-Credited Course

MSE- Mid Semester Exam, ASG- Assignment, TA- Teacher's Assessment, ATTD-Attendance, ESE- End Sem Exam

Seventh Semester																
Course Code	**Course Title**	**Contact Hours per Week**			**Credits**	**ESE Duration (Hours)**	**Weightage (Theory)**						**Weightage (Practical)**			**GT**
		L	**T**	**P**			**MSE**	**ASG**	**TA**	**ATTD**	**ESE**	**T**	**CE**	**ESE**	**T**	
DS21B701	Entrepreneurship Development and IPR in Fashion	2	-	4	4	3	30	05	05	10	50	100	50	50	100	200
DN21B702	Fashion Business Management	4	-	-	4	3	30	05	05	10	50	100	-	-	-	100
DN21B703	Apparel Quality Assurance	2	-	2	3	3	30	05	05	10	50	100	50	50	100	200
DN21B704	Design Studio VII (Project based learning) Repurposing Old Apparels	-	2	8	5	2	50 (2 assessments by panel of Experts)				50	-	-	-	100	100
PB21B702	Design Studio VII (Project based learning) Story Telling and Apparel Design	-	-	8	4	2	50 (2 assessments by panel of Experts)				50	-	-	-	100	100
		Total			20											

*Mandatory Non-Credited Course

Eighth Semester																
Course Code	**Course Title**	**Contact Hours per Week**			**Credits**	**ESE Duration (Hours)**	**Weightage (Theory)**						**Weightage (Practical)**			**GT**
		L	**T**	**P**			**MSE**	**ASG**	**TA**	**ATTD**	**ESE**	**T**	**CE**	**ESE**	**T**	
DN21B701	Dissertation (R&D, Creating Ensemble, Fashion Show**	-	-	20	10	-	-	-	-	-	-	-	50	50	100	100
DN21B702	Graduation Project	-	-	20	10	-	-	-	-	-	-	-	50	50	100	100
		Total			**20**											

*Mandatory Non-Credited Course

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Note:

****Dissertation (R&D, Creating Ensemble, Fashion Show:

1. Inspiration board / Mood Board
2. Concept Development
3. Textile board
4. Colour board
5. Pattern development
6. Approval
7. Range developed

**Graduation Project:

1. Selection of industry for internship
2. Approval letter from the industry (Joining)
3. Six months internship
4. Graduating Project preparation
5. Presentation (Viva)

List of Program (Discipline Specific) Electives (DSE)

First Semester		
SN	**Course Code**	**Course Title**
1.	DN21B116	Art appreciation
2.	DN21B117	Contemporary Art
Second Semester		
SN	**Course Code**	Course Title
1.	DN21B215	Basic Photography
2.	DN21B205	Fashion Photography
3.	DS21B225	Product Photography
Third Semester		
SN	**Course Code**	Course Title
1.	DN21B315	Sustainable Design
2.	DN21B325	Accessory Design
3.	DN21B325	Design for Interactive Media
Fourth Semester		
SN	**Course Code**	Course Title
1.	DN21B415	Design with Natural Material
2.	DN21B406	Fashion Styling & Representation
3.	DN21B425	Narratives and Story Telling
Fifth Semester		
SN	**Course Code**	Course Title
1.	DN21B515	Vernacular Architecture and Interiors
2.	DN21B515	Craft, Creativity and Post-Modernism
3.	DN21B524	Automobile Accessory Design
Sixth Semester		
SN	**Course Code**	Course Title
1.	DN20BI604	Exhibition Design
2.	DN21B605	Fashion Journalism
3.	DN21B625	3D modeling and prototyping

Distribution of credits across all components

SEM No.	Prog. Core	Discipline Specific Electives (DSE)	Generic Electives (GE)	Ability & Skill Development		Project Based Learning (PBL)	Project	International Context/Yoga & Mediation	Green Credit	Total Credit
				Ability Enhancement Courses	Skill Enhancement Courses					
I.	9	2		2	2	2		*	*	**17**
II.	10	2		2	2	3		*	*	**19**
III.	10	2	2	2	2	3		*	*	**21**
IV.	12	2	2	2	2	3		*	*	**23**
V.	9	2	2		2	5		*	*	**20**
VI.	08	2	2		2	6		-	*	**20**
VII	01					19		-	-	**20**
VIII							20	-	-	**20**
Total	**65**	**12**	**08**	**10**	**12**	**50**	**25**	*	*	**160**

Generic Electives

Students of all Undergraduate programs are required to study 1 generic elective in each of the semesters from 3rd to 6th. They may choose any one of the following courses (excluding the courses offered by the parent departments, if not stated otherwise).

List of Generic Electives

Generic Electives for III Semester

SN	Code	Nomenclature of the Course	Offering School
1.	GE20B301	Introductory Biology	School of Sciences
2.	GE20B302	Basic Analytical Chemistry	School of Sciences
3.	GE20B303	Basic Instrumentation Skills	School of Sciences
4.	GE20B304	Elementary Number Theory	School of Sciences
5.	GE20B305	Production Technology for Vegetable and Spices	School of Agriculture
6.	GE20B306	General Studies – I	Arts and Humanities
7.	GE20B307	Basics of Acting	School of Performing Arts
8.	GE20B308	C++ Programming	School of Advances Computing
9.	GE20B309	Photography	School of JMC
10.	GE20B310	Introduction to Retail Chain System	School of Commerce

Generic Electives for IV Semester

SN	Code	Nomenclature of the course	Offering School
1.	GE20B401	Genetics and Society	School of Sciences
2.	GE20B402	Green Chemistry and Green Methods in Chemistry	School of Sciences
3.	GE20B403	Electrical circuit Network Skills	School of Sciences
4.	GE20B404	Introduction to statistical methods and probability	School of Sciences
5.	GE20B405	Farming System & Sustainable Agriculture	School of Agriculture
6.	GE20B406	General Studies – II	Arts and Humanities
7.	GE20B407	Bollywood's Signature Moves	School of Performing Arts
8.	GE20B408	R Programming	School of Advances Computing
9.	GE20B409	Typography	School of Design
10.	GE20B410	Building Leadership &Fellowship Skills	School of Commerce

Semester I

University Core-I

Code	Environment Studies and Disaster Management	Total Lecture:30
UC20B101		**2-0-0-2**
Learning Objectives:	The course prepares students for careers as leaders in understanding and addressing complex environmental issues from a problem-oriented, interdisciplinary perspective. Students: • Understand the transnational character of environmental problems and ways of addressing them, including interactions across local to global scales. • Apply systems concepts and methodologies to analyze and understand interactions between social and environmental processes. • Reflect critically about their roles and identities as citizens, consumers and environmental actors in a complex, interconnected world.	
Pre-requisites:	**None**	
UNIT	**CONTENT**	**HOURS**
I	Definition, Components of Environment, Relationship between different components, Man- Environment relationship, Impact of Technology on the environment, Environmental Degradation, Sustainable Development, Environmental Education.	6
II	Introduction: Ecology- Objectives and Classification, Concepts of an ecosystem- structure & function of ecosystem, Components of ecosystem- Producers, Consumers, Decomposers, Energy flow in the ecosystem - Ecological succession, Food chains, food webs and ecological pyramids, Forest ecosystem, Grassland ecosystem, Desert ecosystem, Aquatic ecosystems and its types, Bio- Geo-Chemical Cycles - Hydrological Cycle, Carbon cycle, Oxygen Cycle, Nitrogen Cycle, Sulfur Cycle.	6
III	Composition of air, Structure of atmosphere, Ambient Air Quality Standards, Classification of air pollutants, Sources of common air pollutants like SPM, SO2, NOX , Natural & Anthropogenic Sources, Effects of common air pollutants, Air Pollution Episodes, Sound and Noise measurements, Sources of Noise Pollution, Ambient noise levels, Effects of noise pollution, Noise pollution control measures, Water Quality Standards, Sources of Water Pollution, Classification of water pollutants, Effects of water pollutants, Eutrophication, Water Pollution Episodes, Global Warming and Green Houses Effect, Acid Rain, Depletion of Ozone Layer.	6
IV	Renewable & Nonrenewable Resources: Renewable Resources, Nonrenewable Resources, Indian Scenario, Conventional Energy Sources & its problems, non-conventional energy sources- Advantages and its Limitations	6
V	Natural Disasters and its types, Accidental Disasters, Impact of Disasters on Trade and International Trade, Introduction, Natural disasters , Earthquakes, Hurricanes, Tornadoes, Floods, Drought, Tsunami, Volcanoes, Cyclones and Storms, Forest Fires, Severe Heat Waves, Landslides and Avalanches, Epidemics and Insect	6

	Infestations, Technological and Social Disasters Types of Technological Hazards, Social Disasters, Political and Crowd Disasters, War and Terrorism, Components of Disaster Management, Government's Role in Disaster Management through Control of Information, Actors in Disaster Management, Organizing Relief measures at National and Local Level, Psychological Issues, Carrying Out Rehabilitation Work, Government Response in Disaster.	
Course Outcomes		
CO1	Students will Understand[2] the natural environment and its relationships with human activities.	
CO2	Characterize[2] and analyze[4] human impacts on the environment	
CO3	They will learn to Integrate facts, concepts, and methods from multiple disciplines and apply[3] to environmental problems.	
CO4	They will have capacity to integrate knowledge and to analyses[4], evaluate[5] and manage the different public health aspects of disaster events at local and global levels.	
CO5	They will also have capacity to obtain, analyse[4], and communicate information on risks, relief needs and lessons learned from earlier disasters in order to formulate strategies for mitigation in future scenarios	
Text Books:	1. Allaby M. (2000) "Basics of Environmental Science", Books India Publications, Routledge Publication. 2. Dhunna M. (2011), "Disaster Management" Vayu Education of India, Delhi Publication	
Reference Books:	1. Rajagopalan R.(2015) "Environmental Studies",3rd edition, Oxford University Press 2. Wright R. & Boorse D. (2016), "Environmental Science: towards a sustainable future",13th edition, Benjamin-cummings Pub.co. 3. Botkin D.& Keller E.(2014), "Environmental Science: Earth as a living planet", John Wiley and sons Publications.	

University Core-II

Code	**Communication Skills**	**Total Lecture:30**
UC20B102		**2– 0– 0-2**
Learning Objectives:	The purpose of this course is to introduce students to the theory, fundamentals and tools of communication and to develop in them vital communication skills which should be integral to personal, social and professional interactions. Along with the above mentioned, care has been taken to enhance the grammatical skills of the students with sufficient practical purposes. The recommended readings given at the end are only suggestive; the students and teachers have the freedom to consult other materials on various units/topics given below. Similarly, the questions in the examination will be aimed towards assessing the skills learnt by the students rather than the textual content of the recommended books. The students are advised to arrange	

	the prescribed texts well before beginning the classes. The course provides good introduction and understanding about the following: The concept and understanding of different types of Communication 1. Introduce different tools of communication that are useful in various techniques of problems solving. 2. The Grammatical knowledge of Language learning with the enhancement of word power. To introduce the tricks and methods of official and technical writing.	
Pre-requisites:	None	
UNIT	**CONTENT**	**HOURS**
I	Introduction: Theory of Communication, Types and Modes of Communication, Effective Communication, Barriers of Communication, Strategies to overcome the Barriers	6
II	Professional Skills: Social skills - small talks and leading the Conversation, conducting Debate and Discussions, Public Speaking, Public Speech, Presentation skills and Meeting etiquettes, Business Communication, GD and Interview Skills, Critical Conversations	6
III	Cross Cultural Communication: Contextual Conversation, dos and don'ts of Cross-Cultural Communication, Verbal and Non-Verbal Communication, Bias and Prejudice, Body Language.	6
IV	Internet Etiquettes: Email writing, Social Media Articles/Blogs, Notes, Memos, Reports & Proposal Writing, Writing Letters, Formal & Informal. Self-profiling - Making Job Resume/CV, Elevator Pitch (3 minutes self- introduction during interviews), Twitter/Facebook bio.	6
V	Critical Thinking: Where the Mind is without Fear: Rabindranath Tagore The Portrait of a Lady: Khushwant Singh On the Rule of the Road: AG Gardiner Cherry Tree: Ruskin Bond Close Reading, Comprehension, Analysis and Interpretation, Paraphrasing and Summary	6
Course Outcomes		
At the end of the course the students will be able to:		
CO 1	Students will apply correct usage of English grammar in writing and speaking.	
CO 2	Students will analyze and improve their speaking ability in English both in terms of fluency and comprehensibility	
CO 3	Students will evaluate themselves by giving oral presentations and will receive feedback on their performances.	
CO 4	Students will develop their reading speed and comprehension of academic articles	
CO 5	Students will compare their reading fluency skills.	

Text Books:	1. Department of English, University of Delhi (2006), "*Fluency in English - Part II"*, OUP(India) press. 2. Taylor J. and Zeter J. (2011)," *Business English"*, express publishing. 3. Swann J. et.al. (2011), *Creativity in Language and Literature: The state of Art* 4. Kumar S. and Lata P. (2011) "C*ommunication Skills*" Oxford University Press.
Reference Books:	1. Warriner J. et. al (1973) "Warriner's English Grammar and Composition: Complete Course"

__Professional skills__- report writing, presentation skills and meeting etiquettes, business communication, GD and interview skills, critical conversation

Code	**Sketching-I**	**Total Lecture:30**
DN21B101		**0-2-2-2**
Learning Objectives:	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.	
Pre-requisites:	NIL	
UNIT	**CONTENT**	**HOURS**
I	Introduction to pencil exercises - The course introduces the fundamental techniques of concept sketches, design development sketches, presentation sketches, presentation renderings and architectural drawing and develops the appropriate skills for visualization and representation. How pencil to be used, different grades & tone –graphite, charcoal etc. line-straight, curve, long hand. Pencil texture on different papers & surfaces.	6
II	Exercises of object drawings - Basic geometric forms & shapes. Observation of objects in surroundings –details, texture, light & shadow	6
III	Sketching indoor objects - Still Life – Furniture, Equipment – Understanding Depth, light, shade, Shadow Etc.	6
IV	Outdoor objects - Outdoor Sketching: Natural Forms/Built Forms. Understanding variety in Forms. Landscape drawing-natural objects.	6
V	Sketching human form - Anatomy and Expressions – Graphical Representations.	6
Course Outcomes		
After successful completion of course students will able to:		

CO1	Develop an understanding of various marking devices and surfaces and learn to draw freehand through observation and using motor skills
CO2	Develop skills to understand the size, scale, and proportion, surface textures through drawing techniques of line, shapes and volume.
CO3	Develop techniques of various methods of visual representation such as longhand drawing, isometric drawings, perspective drawing.
CO4	Illustrate the ability of design idea through 2d and 3d visuals
CO5	To observe the environment and draw exterior and interior spaces
Text Books:	1. Pauken K.M. (2017)"*Quick and lively urban sketchin*g" *2.* Kumari D. (2021), "*History of Indian Art"* .
Reference Books:	• Powell D.(1996), "Design Rendering Techniques: A Guide to Drawing and Presenting Design Ideas", North Light Books publication, • Steve C. et.al. (2003), "The Complete Guide to Digital Illustration", Watson-Guptill Publications. • Bill B. (2007) " Sketching User Experiences: Getting the Design Right and the Right Design(Interactive Technologies)", Morgan Kaufmann publications

Code	**Design Fundamentals**	**Total Lecture:45**
DN21B102		**1-0-4-3**
Learning Objectives:	Design Learners need to learn to observe various phenomena in nature and in the human world around them with curiosity, sensitivity and empathy. They also need to develop skills to perceive shapes, form, space, colors and develop an interconnection between them and the meaning inherent in them.	
Pre-requisites:	NIL	
UNIT	**CONTENT**	**HOURS**
I	Introduction to Elements & Principle of Design Study of Elements of Design- Point, line, form, volume, color, texture. Principle of Design- Balance, Rhythm, Symmetry, Emphasis, Contrast, Harmony, Unity Principle of Composition-Gestalt Theory of visual Exploration	**10**
II	Color Theory and its explorations. - Introduction –visible spectrum, colored light, color temperature, color interaction, color blindness. Color wheel – primary, secondary, tertiary colors, color wheel, color schemes color value, intensity, and modification of color hues – tints, shades, neutralization. Color charts – types, making and using. Color harmony, use of color	**10**

	harmony.	
III	Psychology of Color, - Psychological impact of color – warm, cool and neutral colors, impact of specific hues, meanings of color, color and form, color and light, color and surface qualities, color and distances and scales	**10**
IV	Texture, creative Compositions- Different type of texture-visual Texture, Tactile Texture; Natural & Artificial Textures, Techniques of creating textures,	**8**
V	Visual Sense- Recognize ways of perceiving the world through visual, auditory, touch, smell, taste and visual senses and develop skills to hone them through various exercises in studio. Develop methods and create experiences to hone these senses in the studio	**7**
Course Outcome		
CO1	Develop an understanding of various Elements of design	
CO2	Develop an understanding of various Principles of Design	
CO3	Develop an understanding of the world of colors and emotional connect with human perception.	
CO4	Develop an unbiased view of the phenomena around them and develop a sense of curiosity, empathy.	
CO5	Develop awareness of various senses and learn ways to sharpen them to perceive the world around us with a new perspective	
Text Books:	1. Brommer G. (2010) "Illustrated elements of art and principles of design"	
Reference Books:	1. Wong W. (1972) "*Principles of Two-Dimensional Design*", John Wiley and Sons publication. 2. Bowers J. (1999) "*Introduction to Two---Dimensional Design: Understanding Form And function*", John Wiley & Sons publication 3. Wong W. (1993) "*Principles of form and design* "John Wiley and Sons publication.	

Code	**Material Exploration-I**	**Total Lecture:30**
DN21B103		**1-0-2-2**
Learning Objectives:	Design Learners need to understand and explore the materials in the man-made environment and develop an understanding of their physical, chemical and visual properties to use them meaningfully through the use of various tools, processes and manipulations. Develop a sense of precision and accuracy handling the materials.	

Pre-requisites:	NIL	
UNIT	**CONTENT**	**HOURS**
I	Understand the world of PAPER and learn to manipulate it through various exercises by learning skills and using them	6
II	Understand the world of CLAY and learn to prepare and manipulate it through forming, coiling, throwing and other explorations	6
III	CASE STUDY: Clay Workshops	6
IV	Understand the world of various FABRICS and develop a sense of manipulating them by touch-feel, physical and visual properties.	6
V	CASE STUDY: Fabric studies	6

Course Outcomes	
CO1	Develop an understanding of materials through sensory perception and methods to manipulate them.
CO2	Develop an understanding of PAPER, CLAY and FABRICS as material and its inherent properties.
CO3	Develop knowledge of various tools available to manipulate PAPER, CLAY and FABRIC
CO4	Develop a sense of accuracy and precision through manipulating the materials into various meaningful and abstract forms
CO5	Apply knowledge of legal and regulatory framework and codes of practice in establishing and managing organizations.
Text Books:	1. Lefteri C. (2014) "Materials for Design" Laurence king publication. 2. Johnson A. &Hallett C. (2014) "Fabric for Fashion: The complete guide: Natural& Man-Made Fabrics". Laurence king publication. 3. Hirsch J. (2015) "Clay Modelling for Beginners"
Reference Books:	1. Thomas H. (1996) "Design" Barron's Educational Series publication. 2. Thompson R. (2007) "Manufacturing process for design professionals", London

Code	**IMAGE REPRESENTATION & TRANSFORMATION**	**Total Lecture:45**
DN21B104		**1-0-2-2**
Learning Objectives:	Learning the fundamental skills and knowledge of image representation to represent object in every form.	
Pre-	NIL	

requisites:		
UNIT	**CONTENT**	**HOURS**
I	The role of analytical drawings- classification of the volumes of the spaces	5
II	Perspective Drawing-One point, two point, three point	5
III	Mimetic Imagery and Abstraction	5
IV	Memory & Ideation Drawing	5
V	Studies in Light & shadows on 3D form representation	5
Course Outcomes		
CO1	Students should be able to analyze different experiments in technical drawings, to increase use technical and architectural scales	
CO2	Conduct analysis of objects in terms of form, geometry and structure through drawing and modeling	
CO3	Evaluate idea in terms of 2D and 3D projections	
CO4	Apply various techniques in drawing with respect to technical drawing	
CO5	Apply sociography in design projects	
Text Books:	1. Pogany W. (1996) "*The Art of Drawing*", Madison books publication 2. Phaidon (1980)The complete guide to illustration & design, Chartwell books publication.	
Reference Books:	1. Kasprin R.(1999) "*Design Media – Techniques for water color, pen and ink, pastel and colored markers*" John Wiley & Sons publication	

Code	**DESIGN STUDIO**	**Total Lecture: 30**
PB21B101		**0-0-4-2**
Learning Objectives:	The course has a purpose to generate new ideation in Design & explore new alternate solutions.	
Pre-requisites:	NIL	
UNIT	CONTENT	HOURS
I	Creative & Ideation Method-Brain storming & lateral thinking	6
II	Design Exploration & Concepts	6
III	Exposure to outer world in term of ideation	6

IV	Drafting of creative solution & creating a virtual out of planning.	6
V	Finalize the Design &creating in Portfolio	6
Course Outcomes		
CO1	Produce visual and verbal presentations.	
CO2	Analyze, justify, and rate applications of concepts	
CO3	To observe and experience how people from diverse background identify their needs and the constraints they face solving them	
CO4	To apply the design process to identify the Need of the target audience	
CO5	Apply sustainable practices in everyday life.	
Text Books:	1. Norman(1998) "*The Design Of Everyday things*", London The MIT Press 2. Norman P. (2002) "*What Is a Designer: Things, Places, Messages*" Princeton Architectural Press,	
Reference Books:	1. Thomas H.(1996) "*Design*",Barron's Educational Series publication. 2. Cross N (2011) "*Design Thinking: Understanding How Designers Think and Work*", Berg, Oxford publication.	

Discipline Specific Electives

(DSE)

Code	**Art Appreciation**	**Total Lecture: 30**
DN21B101		0-0-4-2
Learning Objectives:	Design Learners need to develop the ability to visualize ideas, see patterns, understand abstract ideas, solve problems, device processes and understand how ideas interlink with other ideas and with systems. They need to develop Analytical, Critical and Creative Thinking abilities.	
Pre-requisites:	None	
UNIT	**CONTENT**	**HOURS**
I	. Art Description: A work of art from an objective point of view – its physical attributes and formal construction	6
II	Analysis: Historical, religious, or environmental information that surrounds a particular work of art that helps to understand the work's meaning	6

III	Context & Meaning: A statement of the work's content; a message or narrative expressed by the subject matter • Defining Art • Who Makes Art – Process and Training? • How Art Speaks – Finding Meaning • How Art Works – The Elements and Principles of Visual Language	6
IV	Artistic Media Architecture Our World – Nature, the Body, Identity, Sexuality, Politics, and Power Other Worlds – Myths, Dreams, and Spirituality Art in Time and Place – The Western World Judgment: A critical point of view about a work of art concerning its aesthetic or cultural value	6
V	Portfolio on different form of Art –Contemporary or modern	6
Course Outcomes		
CO1	To compare and contrast different methods, mediums, and materials artists use to create two- and three-dimensional works of visual art	
CO2	To evaluate the effect of society and cultures on a work of art	
CO3	To analyze different art of different periods	
CO4	To express own art work after detail study arts of different periods	
CO5	To Visualize the key elements of an art of particular period.	
Text Books:	1. Elke Linda Buchholz, Susanne Kaeppele, et al. |Art: A World History, Nov 1, 2007 2. Carolyn Schlam:The Joy of Art	
Reference Books:	1. Itten, Johannes; The Art of Color: The Subjective Experience and Objective Rationale of Color, Wiley Publications,1997 2. Hauffe, Thomas; Design, Publisher: Barron's Educational Series, 1996	

Code	Yoga and Meditation
IY20B101	0-0-2*
Learning Objectives:	• To practice mental hygiene. • To possess emotional stability. • To integrate moral values. • To attain higher level of consciousness.
Pre-requisites:	None
It will prepare the students physically and mentally for the integration of their physical, mental and spiritual faculties so that the students can become healthier, saner and more integrated members of the society and of the nation	
Course Outcomes	
CO1	The students will equip their self with basic knowledge about one's personality
CO2	Students learn to handle oneself well in all life situations,
CO3	Students learn techniques of gaining good health.
CO4	Students will develop a discriminative mind capable of knowing the real from the unreal and to face the dualities of life with equanimity.

Code	Green Credit
GC20B201	**0-0-2***
Learning Objectives:	Green Credit helps in self-discipline and self-control, leading to immense amount of awareness, concentration and higher level of consciousness. Main objective are: • To provide the basic practical understanding about plantation. • To familiarize the various issues related with plantation and associated problems. • To make a bonding between tree and students.
Pre-requisites:	None
Preparing basic awareness about the environmental issues confronted by the humanity in the present global scenario and to equip the students to understand the environmental movements and basic of plantations.	
Course Outcomes	
CO1	To monitor various stages of tree growth.
CO2	To aware about of issues associate with plantations.
CO3	Understand the environmental issues and goals.
CO4	This allows “forests” to be traded as a commodity.

Semester II

University Core-I

Code	Computer Application	Total Lectures: 45
UC20B201		**3-0-0-3**
Learning Objectives:	The subject aim to provide the students with: • Understand various component of computer and their usage. • Understand software categories and how to use this software. • Acquire knowledge of Microsoft office suit and have hands on it. • Understand the usage of internet, its pros and cons. • Acquire knowledge of different types of virus and how to keep your computer safe. • Getting familiar with the DOS command. • Getting familiar with modern technologies like Artificial Intelligence, Cloud Computing, Internet of Things, Data science and about Big Data.	
Pre-requisites:	Elementary knowledge about computer	
UNIT	**CONTENT**	**HOURS**
I	Introduction to Computers: Basics of computer, Characteristics of computers, Limitations of computers, System Components, Input devices, Output devices, Computer Memory, Central Processing Unit, Mother Board. Computer Generations & Classifications: Evolution of computers, Classification of Computers	9
II	Computer Memory: Memory System, Memory Cells, Memory Arrays, Random Access Memory (RAM) Read Only Memory (ROM), Physical Devices Used to construct Memories, Bus, Bus Interface, Industry standard architecture (ISA), Micro Channel Architecture (MCA), VESA (Video Electronics Standards Association, Peripheral component Interconnect, Accelerated graphics Port, FSB, USB, Dual Independent Bus, Troubleshooting. Storage Devices: Hard Disk- Construction, IDE drive standard and features, Troubleshooting, DVD, Blue-Ray disc, Flash Memory, Input Output Devices: Wired and Wireless connectivity, Wired and Wireless Devices, Input Devices, Touch Screen, Visual Display Terminal, Troubleshooting	9
III	Introduction to Computer Software: Computer Software, Overview of different operating systems, Overview of different application software, Overview of proprietary software, Overview of open-source technology. Software Development, Design and Testing: Requirement Analysis, Design Process, Models for System Development, Software Testing Life Cycle, Software Testing, Software Paradigms, Programming Methods, Software Applications. Operating System Concepts: Operating System Concepts, Functions of Operating System, Development of Operating System, Operating system virtual memory, Operating System Components, Operating System Services, Operating System Security.	9
IV	Internet and Its Working: History of Internet, Web browsers, Web servers, Hypertext Transfer Protocol, Internet Protocols Addressing, Internet Connection Types, How Internet Works. Internet and Its Uses: Internet Security, Uses of Internet, Virus, Antivirus, Cloud System, Cloud	9

	Technologies, Cloud Architecture, Cloud Infrastructure, Cloud Deployment Models.	
V	Introduction, Types of websites, Components of web site, Domain rank, Architecture of Website, Website Designing Basics, Domain, Hosting, Difference between dynamic & static website, Introduction to SEO, Page Rank, Domain Rank, Google Maps.	9
Course Outcomes		
CO1	Define[1] the need of hardware and software required for a computation task.	
CO2	Demonstrate[2] the working of important application software and their use to perform any engineering activity.	
CO3	Utilize[3] the operating system commands and shell script.	
CO4	Illustrate[2] the typical provisions of cyber law that govern the proper usage of internet and computing resources.	
CO5	Interpret[5] the emerging trends and applications of Computers Science and Engineering, impact of Computer in Science and Engineering.	
Text Books:	1. Nagpal D.P. (2010) "Computer Fundamental" Chand Publication 2. Goel A. (2010) "Computer Fundamental" Pearson Education publication. 3. Salagrama E. (2009) "Fundamental of computers" McGraw Hill publication	
Reference Books:	1. Dubey S.K. (2012) "Basic Computer Engineering" JBC Publisher and distributers 2. Sinha P.K (2004) "Computer Fundamental" BPB Publication.	

University Core-II

Code	**Entrepreneurship Development**	**Total Lectures: 30**
UC20B202		**2-0-0-2**
Learning Objectives:	Develop understanding and confidence in students to venture into entrepreneurship by giving them baseline understanding of the various aspects impacting decision making on various frontiers as faced by an enterprise.	
Pre-requisite:	NIL	
UNIT	**CONTENT**	**HOURS**
I	Entrepreneurship Development Introduction: Concept and importance, qualities, nature, types, traits, Goal determination – Problems Challenges and solutions. Role of Entrepreneur in Indian economy and developing economies with reference to Self-Employment Development Entrepreneurial Culture.	6
II	Entrepreneurial Process: Environment, culture and stages in entrepreneurial process, changing dimensions in entrepreneurship – Digital entrepreneurship. Entrepreneur Vs. Intrapreneur, Entrepreneur Vs. Entrepreneurship, Entrepreneur Vs. Manager;	6

	Role of Regulatory Institutions; Role of Development Organizations; Self Employment Oriented Schemes; Various grant schemes.	
III	Business Ideation & Business Model Canvas: Meaning and Objectives of a Business Plan, Advantages and cost of preparing a Business Plan, Elements, Critical Assessment Generating business idea – sources of new ideas, methods of generating ideas, opportunity recognition. Choice of the organization: Sole Proprietorship, partnerships, Joint Stock Co., Co-Operatives Family Business – meaning, characteristics, importance, types and models.	6
IV	Entrepreneurship Training & Promotion: Training Preparation and Development Programme. Evaluating entrepreneurial development programs. Developing support system. Feasibility study – market feasibility, technical/operational feasibility, financial feasibility, environmental scanning, competitor and industry analysis. Role of Central Government and State Government in promoting Entrepreneurship - Introduction to various incentives, subsidies and grants.	
V	Project Proposal: Need and Objects; Nature of organization, Production Management; Financial Management; Marketing Management; Consumer Management. Planning and Monitoring entrepreneurship. Entrepreneurs before independence and entrepreneurial growth after independence under planning system.	6
Course Outcomes		
At the end of the course student would be able to:		
CO1	Develop[3] managerial qualities and competencies of an entrepreneur	
CO2	Acquaint[2]himself with the challenges of starting a new venture and the process of setting up a business.	
CO3	Build[3] essential skills and creativity needed to build teams and work in and with them.	
CO4	Know[2] the essential procedure and funding avenues for setting up a new business.	
CO5	Learn[2] the various government initiatives and accordingly plan for his business.	
Text Books	1. Mohanty S.K. (2017) "Fundamental of Entrepreneurship"PHI learning Pvt.Ltd. 2. Nagarajan K. ("Project Management"New Age International, Second Edition 3. Desai V. (2011) "Dynamics of Entrepreneurship Development", Himalaya Publishing House. 4. Dr. Shejwalkar P.C. (2011), "Entrepreneurship Development",Everest Publishing House.	
Reference Books	1. Peters H. et.al. (2007), "Entrepreneurship",Tenth Edition Mc Graw Hills 2. Berger B. (1991), "The Culture of Entrepreneurship", ICS Press. 3. Narula G. (2001), "The Entrepreneurial Connection",Tata McGraw Hills.	

Code	SKETCHING-II	Total Lecture:30
DN21B201		0-0-4-2
Learning Objectives:	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	
Pre-requisites:	.	
UNIT	CONTENT	HOURS
I	INTRODUCTION TO OTHER MEDIUM OF SKECTING- Charcoal Pencils, Chalk, pen Line, Negative space drawing	6
II	OBJECT COMPOSITION- Live object drawing in all medium-pencil, charcoal etc., long hand composition	6
III	LANDSCAPE COMPOSITION- Landscape sketching on different themes, composition of leaves, rocks, flowers etc.,	6
IV	. CREATIVE DRAWING- Creative Composition, Portraits, Critical Design, Geometrical composition	6
V	Portfolio Making- On Individual discipline aspects	6
Course Outcomes		
After successful completion of course students will able to:		
CO1	Develop an understanding of various marking devices and surfaces and learn to draw freehand through observation and using motor skills.	
CO2	Develop skills to understand the size, scale, and proportion, surface textures through drawing techniques of line, shapes and volume.	
CO3	Develop techniques of various methods of visual representation such as longhand drawing, isometric drawings, perspective drawing.	
CO4	Illustrate the ability of design idea through 2d and 3d visuals	
CO5	To observe the environment and draw exterior and interior spaces.	
Text Books:	1. Maslen M. (2012), "Drawing Projects, 2. Oloffson E. (2017), "Design Sketching" 3. Eisen K. (2014), "Sketching: The Basics"	
Reference Books:	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-	

	Guptill Publications. 3. Bill B. (2007) " Sketching User Experiences: Getting the Design Right and the Right Design(Interactive Technologies)", Morgan Kaufmann publications

Code	**TYPOGRAPHY FUNDAMENTALS**	**Total Lecture:30**
DN21B202		**0-0-2-2**
Learning Objectives:	Develop an understanding of the important role of typography in design, including the formal elements of Typography.	
Pre-requisites:	**NIL**	
UNIT	CONTENT	HOURS
I	Visualization and application of Typography. Exploration of various typography styles.	6
II	Logic, basic characteristics and difference of Serif and Sans Serif. Understanding the natural form of Typeface and its anatomy.	6
III	Psychological, Semantic and Expressive value of Typography and its applications. Guidelines for Typography in printing and production.	6
IV	Grids and Various sizes of printing products for Typography application. Layout making.	6
V	Ability to play with various other graphic elements emphasizing Typography. Choosing the right Font, size, orientation, balancing the Type forms with space.	6
Course Outcomes		
CO1	Acquire understanding of various typefaces and develop sensitivity.	
CO2	Develop skills to use Typography in engaging visual compositions	
CO3	Develop skills to reproduce type in appropriate media and printing method	
CO4	Acquire neatness and ability to present high quality output	
CO5	Develop skills to develop new types in a specific context. Acquire skills to creatively intervene type to emote a specific expression	

Text Books:	1. Helmut S. (2003), "Typographytoday",2nd Edition, Seibundo Shinkosha 2. Paul R. (1993), "Design, Form, and Chaos", Yale University Press
Reference Books:	3. Bringhurst R. (2004) "The Elements of Typographic Style: Version 4.0" Hartley & Marks publication. 4. Brown T. (2000) "Flexible Typesetting", a book apart publication.

Code	**MATERIAL EXPLORATION- II**	**Total Lecture: 45**
DN21B204		**1-0-2-2**
Learning Objectives:	Design Learners need to understand and explore the materials in the man-made environment and develop an understanding of their physical, chemical and visual properties to use them meaningfully through the use of various tools, processes and manipulations. Develop a sense of precision and accuracy handling the materials.	
Pre-requisites:		
UNIT	CONTENT	HOURS
I	Understand the world of METAL in sheet form and learn to manipulate it through various exercises by learning cutting, beating, polishing and forming skills and using them to develop associative and emotive qualities	9
II	Variation in Metal Fabrication of object.	9
III	Understand the world of WOOD and learn to manipulate it through cutting, planning, sawing, sculpting and joining and other surface treatments like polishing, staining and texturing	9
IV	Variation in Wood composition of object.	9
V	Model representation	9
	Course Outcomes	
After successful completion of course:		
CO1	Develop an understanding of materials through sensory perception and methods to manipulate them	
CO2	Develop an understanding of hard materials like Metal, Wood and their inherent properties.	
CO3	Develop knowledge of various tools and processes available to manipulate these materials	
CO4	Develop a sense of accuracy and precision through manipulating the materials into various meaningful and abstract forms	

CO5	To understand what constitutes 'Designedly' thinking.
Text Books:	1. Lefteri C. (2014) "Materials for Design" Laurence king publication. 2. Johnson A. &Hallett C. (2014) "Fabric for Fashion: The complete guide: Natural& Man-Made Fabrics". Laurence king publication. 3. Hirsch J. (2015) "Clay Modelling for Beginners"
Reference Books:	1. Thomas H. (1996) "Design" Barron's Educational Series publication 2. Thompson R. (2007) "Manufacturing process for design professionals", London

Code	**DESIGN STUDIO-II** **Project based learning**	**Total Lecture: 30**
PB21B201		**0-0-4-2**
Learning Objectives:	The course has a purpose to generate new ideation in Design & explore new alternate solutions.	
Pre-requisites:	NIL	
UNIT	**CONTENT**	**HOURS**
I	Creative & Ideation Method-Brain storming & lateral thinking	6
II	Design Exploration & Concepts	6
III	Exposure to outer world in term of ideation	6
IV	Drafting of creative solution & creating a virtual out of planning.	6
V	Finalize the Design & creating in Portfolio	6
Course Outcomes		
CO1	Produce visual and verbal presentations.	
CO2	Analyze, justify, and rate applications of concepts	
CO3	To observe and experience how people from diverse background identify their needs and the constraints they face solving them	
CO4	To apply the design process to identify the Need of the target audience	
CO5	Apply sustainable practices in everyday life.	
Text Books:	1. Norman (1998) "The Design Of Everyday things", London The MIT Press 2. Norman P. (2002) "What Is a Designer: Things, Places, Messages" Princeton Architectural Press,	

GC20B201	GREEN CREDIT **0-0-2***

Learning Objectives:	Green Credit helps in self-discipline and self-control, leading to immense amount of awareness, concentration and higher level of consciousness. Main objective are: • To provide the basic practical understanding about plantation. • To familiarize the various issues related with plantation and associated problems. • To make a bonding between tree and students.
Pre-requisites:	None
Preparing basic awareness about the environmental issues confronted by the humanity in the present global scenario and to equip the students to understand the environmental movements and basic of plantations.	
Course Outcomes	
CO1	To monitor various stages of tree growth.
CO2	To aware about of issues associate with plantations.
CO3	Understand the environmental issues and goals.
CO4	This allows “forests” to be traded as a commodity.

Code	Yoga and Meditation
IY20B201	**0-0-2***
Learning Objectives:	• To practice mental hygiene. • To possess emotional stability. • To integrate moral values. • To attain higher level of consciousness.
Pre-requisites:	None
	It will prepare the students physically and mentally for the integration of their physical, mental and spiritual faculties so that the students can become healthier, saner and more integrated members of the society and of the nation
Course Outcomes	
CO1	The students will equip their self with basic knowledge about one's personality
CO2	Students learn to handle oneself well in all life situations,
CO3	Students learn techniques of gaining good health.
CO4	Students will develop a discriminative mind capable of knowing the real from the unreal and to face the dualities of life with equanimity.

Semester III

UNIVERSITY CORE COURSES

Code	COMPUTER APPLICATION-II	Total Lecture:45
UC20B301		3-0-0-3

Course Objectives (CO): The aim of Computer Application is to provide students with an opportunity to develop & understanding the latest trends & technologies of computer system and computer software. Meanwhile, they also develop the skill of using computer applications software for solving problems.

Unit	Contents	Hours
1	**Computer Network:** Overview, Types (LAN, WAN and MAN), Data communication, topologies. **Internet :**Overview, Architecture, Functioning, Basic services like WWW, FTP, Telnet, Gopher etc., Search engines, E-mail, Web Browsers. **Internet of Things (IoT):** Definition, Sensors, their types and features, Smart Cities, Industrial Internet of Things.	9
2	**Computer Security Basics**: Introduction to viruses, worms, malware, Trojans, Spyware and Anti- Spyware Software, Different types of attacks like Money Laundering, Information Theft, Cyber Pornography, Email spoofing, Denial of Service (DoS), Cyber Stalking, ,Logic bombs, Hacking Spamming, Cyber Defamation , pharming Security measures Firewall, Antivirus, Computer Ethics & Good Practices, Introduction of Cyber Laws about Internet Fraud, Good Computer Security Habits,	9
3	**Operating system:** Definition, Functions, Types, Classification, Elements of command based and GUI based operating system. **Data base Management System**: Introduction, File oriented approach and Database approach, Data Models, Architecture of Database System, Data independence, Data dictionary, DBA, Primary Key, Data definition language and Manipulation Languages	9
4	**Block chain:** Introduction, overview, features, limitations and application areas fundamentals of Block Chain. **Crypto currencies:** Introduction , Applications and use cases **Cloud Computing:** It nature and benefits, AWS, Google, Microsoft & IBM Services	9
5	**Emerging Technologies:** Introduction, overview, features, limitations and application areas of Artificial Intelligence, Augmented Reality , Virtual Reality, Grid computing, Green computing, Big data analytics, Quantum Computing and Brain Computer Interface.	9
Course outcomes		

At the end of the course the students will be able to:	
CO 1	Demonstrate the knowledge of the basic structure, components, features of computers network.
CO 2	Describe the concept of computer security issues & their solutions.
CO 3	Compare and contrast features, functioning & types of operating system and bms.
CO 4	Demonstrate architecture, functioning & services of the Internet and basics of multimedia.
CO 5	Illustrate the emerging trends and technologies in the field of Information Technology.
Text Books	Rajaraman(2002),"Fundamentals of Computers", Prentice -HallofIndia.
Reference Books	TD malhotra,2020, New trends in computer 1st EDITION, Evergreen Publications

Code	**Quantitative Aptitude-I**	**Total Lecture:30**
UC20B302		**2-0-0-2**

Course Objectives

1. To enhance the problem solving skills
2. To improve the basic mathematical skills.
3. Enable students to manage the placement challenges more effectively

UNIT	Contents	Hours
1	Numbers, H.C.F & L.C.M of Numbers, Decimal Fraction, Coding deductive logic, Data Sufficiency, Directional Sense	6
2	Simplification, Square root & Cube root, Average, Problem on Numbers & Problem on Ages, Percentage	6
3	Profit & Loss, Ratio & Proportion, Height & Distance Partnership, Chain Rule, Time & Work.	6
4	Deductive Reasoning, Logical Word Sequence, Objective Reasoning, Selection decision tables, Puzzles	6
5	Inductive reasoning- Analogy Pattern Recognition, Classification Pattern Recognition, Coding Pattern Recognition, Number Series Pattern Recognition	6

Course Outcomes

At the end of the course the students should be able to:	
CO1	Able to analyzing data

CO2	Able to constructing hypotheses & solving problems
CO3	Able to understand mathematical and statistical concepts
Text Book	1. R S Aggarwal "Quantitative Aptitude for Competitive Examinations" S Chand Publication 2. D P Gupta &Burnwal "General Quantitative Aptitude for Competitive Exams" Disha Publication
Reference Books	1. Deepak Agrawal & D P Gupta "Rapid Quantitative Aptitude: With Shortcuts & Tricks for Competitive Exams" Disha Publication 2. Abhijit Guha "Quantitative Aptitude for All Competitive Examinations" McGraw Hill Education

Code	**Basics of Pattern Making -I**	**Total Lecture:30**
DN21B301		**0-2-2-2**
Learning Objectives:	After completion of the course the candidate would be a professional with technical skills about Pattern Making and can work as Assistant Pattern Master or Quality Controller in cutting department	
Pre-requisites:	None	
UNIT	**CONTENT**	**HOURS**
I	Introduction to seams and stitches, Introduction to industrial sewing machines	6
II	Importance of work aids and machine attachments , Introduction to pattern making tools and equipment	6
III	Knowledge of drafting of basic bodice block, sleeve, shirt and trouser block	6
IV	Development of various styles of collar, sleeves, shirts, cuffs,	6
V	Introduction to garment styles and identification of components and parts	6
Course Outcomes		
CO1	Practice Health & Safety – select, use,	
CO2	Maintain & store – tools, equipments& clothing safely	
CO3	Practice of seams, samples and garment components	
CO4	Practice of various exercises on Industrial sewing machine using different work aids and machine attachments	
CO5	Practice on made to measure garment construction method	
Text Books:	Armstrong(1 January 2013), "Patternmaking for Fashion | Fifth Edition | By Pearson"	
Reference Books:	Helen Joseph-Armstrong(1987), "Patternmaking for Fashion Design"	

Code	FABRIC STUDIES & PERFORMANCE	Total Lecture:30
DN21B302		2-0-0-2
Learning Objectives:	**Course Objective**: To impart knowledge about different fiber, yarns and **fabrics** along with their properties. To enable students to understand **fabric** structures and their analysis.	
Pre-requisites:	None	
UNIT	CONTENT	HOURS
I	**Overview of Textile Industries and Textile Fibers** The major Textile Production Segments in India. Sources of Fabrics. Classification of Textile Fibers according to origin and chemical composition; Essential Properties and Performances of Textile Materials like Aesthetic, Durability, Comfort, Safety, Care and Maintenance Properties.	6
II	**Textile Spinning and Yarn** • Classification of Yarns; Spun Yarn Production Process, Carded and Combed Yarns; Woollen and Worsted Yarns; Mono Filament and Multi Filament Yarns. • Yarn Numbering Systems - Cotton Count, Metric Count, Denier, Tex and Deci-Tex. Single and Plied Yarns; Yarn Twist, Amount of Twist and Direction of Twist. • Textured Yarns - Core Spun Yarn; Novelty and Fancy Yarns, Blended Yarns, Sewing Threads.	6
III	**Textile Weaving and Woven Fabrics** • Preparatory to weaving, including High speed machines for Winding, Warping, Sizing, Beaming and Weft Winding. • The Loom, types of Looms, classification and selvedge formations. • Basic motions of the loom, including the application of Dobby and Jacquards.	6
IV	Introduction to basic weaves; plain, basket, rib, twill, satin, sateen, dobby	6
V	Introduction to jacquard, crepe, pique, seer sucker, terry, velvet and velveteen.	6
Course Outcomes		
CO1	Explore the Sources of Fabrics	
CO2	Understand basic weaves	
CO3	Identify Knitted or woven fabrics	
CO4	Classify textile fibers on the basis of their properties	
CO5	Understand complex handloom machines like Jacquard etc.	
Text Books:	Armstrong(1 February 2009), “Patternmaking for Fashion | Fifth Edition | By Pearson”	
Reference Books:	JosephHelen-Armstrong(2002), “Patternmaking for Fashion Design”	

Code	BASICS OF GARMENT CONSTRUCTION AND PRODUCTION TECHNOLOGY	Total Lecture:45
DN21B303		0-4-2-3
Learning Objectives:	After completion of this subject the student will be able to develop garment components and identify various fabric sewing techniques.	
Pre-requisites:	None	
UNIT	CONTENT	HOURS
I	Practice of seams, samples and garment components	9
II	Practice of various exercises on Industrial sewing machine using different work aids and machine attachments	9
III	Practice on made to measure garment construction method	9
IV	Development of commercial patterns from spec sheets/ tech pack	9
V	Practice of cutting various upper & Lower garments, cutting techniques	9
Course Outcomes		
CO1	Identify garment components	
CO2	Understand working of Industrial machines	
CO3	Explore made to measure techniques	
CO4	Develop commercial patterns	
CO5	Learn to make upper and lower garment parts.	
Text Books:	Lori A. Knowles (1 February 2009), "Practical Guide to Patternmaking for Fashion Designers: Juniors, Misses and Women"	
Reference Books:	Joseph-Armstrong(2002), "Patternmaking for Fashion Design"	

Code	FASHION ILLUSTRATION-I	Total Lecture:30
DN21B304		0-2-2-2
Learning Objectives:	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.	
Pre-requisites:	None	
UNIT	CONTENT	HOURS
I	Introduction to Fashion Illustration Changes in fashion illustration styles and proportion over the centuries. The role of fashion illustration as a mode of expression and representation for contemporary apparel styles and trends.	6
II	Basic gesture drawing Make stick figures in different poses. Make geometric figures. Blocking the human body. Bodyline reading through different poses.	6
III	Fleshed figure	6

	Understanding Human Anatomy and studying the different body parts in detail.	
IV	Drawing features Face analysis. Draw features eyes, nose, ear, lips, face, hands, arms, feet, legs and hairstyles.	6
V	The fashion figure Fashion figure - The Greek Canon , 8½, 10 and 12 heads, front, back and ¾ profiles	6
Course Outcomes		
CO1	Gain an understanding of **Fashion** Styling in the design world.	
CO2	Explore and learn new Sketching and **Drawing** techniques.	
CO3	Improve overall artistic abilities.	
CO4	Tap into the creative depths of the mind.	
CO5	Be able to look at his or her work objectively and critique it constructively.	
Text Books:	1. FashionIllustration, AnnaKiper,David&CharlesBook,2011 2 2. FashionIllustrationChildren,Patric,JohnIreland,BTBastfordLtd,2005 3 New Fashion	
Reference Books:	New Fashion Illustration (New Illustration Series) English, Paperback, Martin Dawber 2006	

Discipline Specific Electives

(DSE)

Code	**Design for Interactive Media**	**Total Lecture:30**
DN21B325		**2-0-0-2**
Learning Objectives:	To understand the connection between design, media and technology.	
Pre-requisites:	NIL	
UNIT	**CONTENT**	**HOURS**
I	Communication and tools of Communication; Storytelling and narratives in Interactive medias	6
II	Media and changing technologies	6
III	Potential of technology and its impact on society	6
IV	Media artefacts and convergences	6
V	New Applications and ways of working	6
Course Outcomes		
After successful completion of course students will able to:		
CO1	Define the functional aspects of plants in interior.	
CO2	To explore methods for creatively investigating landscapes.	
CO3	Apply knowledge of the Natural World to guide design decisions and activities taking into account natural resource constraints that impact land use.	
CO4	Employ Creative Inquiry and Discovery in addition to a range of analytical skills, and general knowledge to develop design proposals, solve problems, generate new ideas, and produce creative work	
CO5	Build Knowledge & Develop Reasoning Skills in applying broad and deep knowledge across academic disciplines and fields and using this knowledge to develop design proposals.	

Text Books:	1. Time saver standards for landscape architecture. 2. Planting design by Theodore D. Walker, VNR Publications New York.
Reference Books:	3. Landscaping Principles and Practices by Jack E. Ingles, Delmar Publishers

Code	**Sustainable Design**	**Total Lecture:30**
DN21B315		**2-0-0-2**
Learning Objectives:	To understand the connection between design, media and technology.	
Pre-requisites:	NIL	
UNIT	**CONTENT**	**HOURS**
I	Communication and tools of Communication; Storytelling and narratives in Interactive medias	6
II	Media and changing technologies	6
III	Potential of technology and its impact on society	6
IV	Media artefacts and convergences	6
V	New Applications and ways of working	6
Course Outcomes		
After successful completion of course students will able to:		
CO1	Define the functional aspects of plants in interior.	
CO2	To explore methods for creatively investigating landscapes.	
CO3	Apply knowledge of the Natural World to guide design decisions and activities taking into account natural resource constraints that impact land use.	
CO4	Employ Creative Inquiry and Discovery in addition to a range of analytical skills, and general knowledge to develop design proposals, solve problems, generate new ideas, and produce creative work	
CO5	Build Knowledge & Develop Reasoning Skills in applying broad and deep knowledge across academic disciplines and fields and using this knowledge to develop design proposals.	
Text Books:	1. Time saver standards for landscape architecture. 2. Planting design by Theodore D. Walker, VNR Publications New York.	
Reference Books:	1. Landscaping Principles and Practices by Jack E. Ingles, Delmar Publishers	

Code	**Accessory Design**	**Total Lecture:30**
DN21B305		**2-0-0-2**
Learning Objectives:	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.	
Pre-requisites:	None	
UNIT	**CONTENT**	**HOURS**
I	Introduction to world art and culture; History of Jewelry Design	6
II	Material study and material manipulation.	6
III	Accessory Design Concept	6
IV	Drafting & Rendering accessory Design- Bags, wallets, footwear etc.	6

V	Design portfolio on accessory design.	6
Course Outcomes		
CO1	Student will have an in-depth knowledge, both practical and theoretical, of the jewelry, accessories design processes.	
CO2	Conceptualizing and designing jewelries for bridal wear with the highest form of relevance to modern trends	
CO3	Students will also be able to engage confidently, professionally and successfully with the domestic footwear industry and with the internal fashion accessory landscape.	
CO4	Graduates will be able to carve a niche for themselves in traditional as well as emerging sectors of global fashion industry space namely jewellery, body gears, home accessories, craft, furniture, footwear, bag, interiors, and in the realm of Designing experiences.	
CO5	Student will able to self-entrepreneur in accessory designing.	
Text Books:	NIL	
Reference Books:	1. Hand made in India, Aditi Ranjan & MP Ranjan, Map in PubLtd,2014 2. Fashionpedia, Fashionary InternationalLts, Hongkong,2017	

Code	**DESIGN STUDIO-III (PROJECT BASED LEARNING) TUNIC DESIGN**	**Total Lecture:45**
PB21B301		**0-4-2-3**
Learning Objectives:	the project gives users opportunities to design in an adaptable and everchanging tunic variations.	
Pre-requisites:	None	
UNIT	**CONTENT**	**HOURS**
I	Introduction to tunic design	9
II	Design elements and principles	9
III	Creation of Mood Board for tunic designs	9
IV	Planning the layout	9
V	Final design for tunic collection	9
Course Outcomes		
CO1	Student will have an in-depth knowledge, both practical and theoretical, of the design processes.	
CO2	Conceptualizing and designing tunics with the highest form of relevance to modern trends	
CO3	Students will also be able to engage confidently, professionally and successfully with the domestic footwear industry and with the internal fashion accessory landscape.	
CO4	Graduates will be able to carve a niche for themselves in traditional as well as emerging sectors of global fashion industry	
CO5	Student will able to self-entrepreneur in tunic designing.	
Text Books:	Beth Kempton “Wisdom for a Perfectly Imperfect Life”(15 July 2020)	
Reference Books:	“The Art of Making the Most of Every Moment, the Japanese Way”	

Code	Yoga and Meditation - III
IY20B301	**0**
Learning Objectives:	• To practice mental hygiene. • To possess emotional stability. • To integrate moral values. • To attain higher level of consciousness.
Pre-requisites:	**None**
	It will prepare the students physically and mentally for the integration of their physical, mental and spiritual faculties so that the students can become healthier, saner and more integrated members of the society and of the nation
Course Outcomes	
CO1	The students will equip their self with basic knowledge about one's personality
CO2	Students learn to handle oneself well in all life situations,
CO3	Students learn techniques of gaining good health.
CO4	Students will develop a discriminative mind capable of knowing the real from the unreal and to face the dualities of life with equanimity.

Code	Green Credit– III
GC20B301	
Learning Objectives:	Main objective are: • To provide the basic practical understanding about plantation. • To familiarize the various issues related with plantation and associated problems. • To make a bonding between tree and students.
Pre-requisites:	**NIL**
Preparing basic awareness about the environmental issues confronted by the humanity in the present global scenario and to equip the students to understand the environmental movements and basic of plantations.	
Course Outcomes	
CO1	To monitor various stages of tree growth.
CO2	To aware about of issues associate with plantations.
CO3	Understand the environmental issues and goals.
CO4	This allows "forests" to be traded as a commodity.

SEMESTER – IV

Code	DESIGN THINKING	Total Lecture:45
UC20B401	University Core-I	3-0-0-3
Learning Objectives:	**Course Objectives (CO):** • To familiarize students with design thinking concepts and principles • To ensure students can practices the methods, processes and tools of design thinking. • To ensure students can apply the design thinking approach and have ability to model real world situations. • To enable students to analyse primary and secondary research in the introduction to design thinking and develop ideas. To develop an advance innovation and growth mindset form of problem identification and reframing, foresight, hindsight and insight generation.	
Pre-requisites:	NIL	
UNIT	**CONTENT**	**HOURS**
I	Enterprise design thinking – history, overview Introduction to Design Thinking, History of Design Thinking, Understand what came before Design Thinking, Design making: concepts and prototyping; Identifying and using design principles; Need of design thinking; An approach to design thinking, Design thinking Process, Enterprise Design Thinking, Understand the principles, loop, and keys.	9
II	Enterprise design thinking – 7 key habits, the loop, user research 7 key habits of effective design thinkers, Iteration: understand the importance; Learn how to observe, reflect, & make. An Overview on Loop: - Its principles and keys. User Research Its Importance, Empathy through listening.	9
III	The loop – make, user feedback Understand how Make fits into the Loop, learn how to leverage Observe information, Learn Ideation, Storyboarding, & Prototyping. Understand user feedback and the Loop, Learn the different types of user feedback.	9
IV	Developing ideas & generating innovations Create Thinking, Generating Design Ideas, Lateral Thinking, Analogies, Brainstorming, Mind mapping, National Group Technique, Synectic's, Development of work, Analytical Thinking, Group Activities Recommended;	9
V	Reverse engineering Introduction - Forward Engineering Design, Design Thought and Process, Design Steps; Reverse Engineering Leads to New Understanding about Products; Reasons for Reverse Engineering - Reverse Engineering Process - Step by Step - Case Study.	9
Course Outcomes		
CO1	Examine[3] Design Thinking concepts and principles	
CO2	Understand[2] and apply enterprise Design thinking	
CO3	Practicing and experimenting[5] the methods, processes, and tools of Design Thinking	
CO4	Apply[3] the Design Thinking approach and model to real world situations	
CO5	Apply[3] and Understand Reverse and Forward Engineering	

Text Books:	Daniel Ling, Complete Design Thinking Guide, 2016.
Reference Books:	David West , Rebecca Rikner, Design Thinking: The Key to Enterprise Agility, Innovation, and Sustainability , 2017.

UNIVERSITY CORE-II

Code	**QUANTITATIVE APTITUDE-II**	**Total Lectures: 30**
UC20B402	**2-0-0-2**	
Learning Objectives:	1. To enhance the problem solving skills 2. To improve the basic mathematical skills.	
Pre-requisite:		
UNIT	**CONTENT**	**HOURS**
I	Time & Distance, Problem on Trains, Boats & Streams Simple Interest, Compound Interest, Stocks & Shares, True Discount	**6**
II	Area, Volume & Surface Area, Permutation & Combination, Race & Game of Skill, Calendar, Clock, Probability	**6**
III	Data Interpretation: Tabulation, Bar Graphs, Pie chart & Line Graphs, Information Ordering, Information Processing Engineering Mathematics- Logarithms, Permutation and Combinations, Probability	**6**
IV	Exploratory Analysis- Design of experiments, Sampling, Sampling Error, Sampling Bias, Measures of Central Tendency and Dispersion, Statistical survey and Presentation of data, Statistical Inference	**6**
V	Correlation, Formulating Null & Alternate Hypothesis, Type I and Type II errors Regression, z-test/t-test, p-value	**6**
Course Outcomes		
At the end of the course student would be able to:		
CO1	Able to analyzing data	
CO2	Able to constructing hypotheses & solving problems	
CO3	Able to understand mathematical and statistical concepts	
Text Books	1. R S Aggarwal "Quantitative Aptitude for Competitive Examinations" S Chand Publication 2. D P Gupta &Burnwal "General Quantitative Aptitude for Competitive Exams" Disha Publication	
Reference Books	1. Deepak Agrawal & D P Gupta "Rapid Quantitative Aptitude: With Shortcuts & Tricks for Competitive Exams" Disha Publication 2. Abhijit Guha "Quantitative Aptitude for All Competitive Examinations" McGraw Hill Education	

Code	PATTERN MAKING AND DRAPING-II	Total Lecture:45
DN21B401		0-4-2-3
Learning Objectives:	Aim of introducing this is to prepare students with a professional approach of flat pattern and draping techniques, relevant to today's fashion garment making industry. Introduction of this course is a step forward in educating students in synchronization with the needs of today's garment industry	
Pre-requisites:	None	
UNIT	CONTENT	HOURS
I	**Introduction to Pattern making** 1.1 Importance of pattern making. 1.2 Methods of pattern making. 1.2 (i) Flat pattern method 1.2 (ii) Draping method (Give idea through demonstration on dress form) 1.2 (iii) Drafting method (Drafting of Upper & Lower Block) 1.3 Pattern making in today's world.	9
II	**Introduction to Blocks.** 2.1 Definition of block. and types of blocks 2.1 (i) standard block 2.1 (ii) simplified block 2.1 (iii) tailoring block 2.1 (iv) trade block 2.1 (v) primary block 2.1 (vi) Secondary block 2.2 Importance of blocks.	9
III	**Techniques of Pattern Designing.** 3.1 Material used for flat pattern and draping methods. 3.2 Methods of flat pattern 3.2 (i) Pivot method 3.2 (ii) Slash method 3.3 Principles of flat pattern method, its advantages and disadvantages. 3.4 Principles of draping, its advantages and disadvantages.	9
IV	**Garment Components** 4.1 Definition, Drafting of Basic Sleeves and types of sleeves. 4.1 (i) Set in sleeves and its varieties. 4.1 (ii) Non set in sleeves and its varieties. 4.2 Definition and Drafting of Basic Shirt & Band Collar 4.3 Types of Collars. 4.3 (i) Flat Collars and its varieties. 4.3 (ii) Raised Collars and its varieties. 4.3 (iii) Varieties in neck-lines without Collars. 4.4 Definition of Cuffs 4.4 (i) Varieties of cuffs- detachable cuff, Gauntlet cuff, barrel cuff, Beret cuff, Rollup cuff, French cuff, Button loop Cuff	9
V	5.1 Definition of Skirt and Drafting of Basic Lower Blocks 5.2 Classify various types of skirts according to its length. 5.3 Differentiate between straight and circular skirts.	9
Course Outcomes		
CO1	Explain different methods of pattern making	
CO2	Prepare suitable type of block for given application.	
CO3	Explain principles of flat pattern method and draping method of pattern designing	
CO4	Differentiate between Flat Pattern method and Draping method.	

CO5	Differentiate various types of sleeves and collars.
Text Books:	1. Pattern making for fashion design. Helen Joseph –ArmstrongDorling Kindersley (India) Pvt. Ltd 2. Fabric, form and flat pattern cutting Winifred Aldrich Blackwell Publishing
Reference Books:	1. Pattern making for fashion design. Helen Joseph –Armstrong Harper Collins Publishers 2. Pattern Grading for Women's Cloths Gerry Cooklin Willey –Black Well

Code	**DESIGN SOFTWARE**	**Total Lecture:30**
DN21B402		**0-2-2-2**
Learning Objectives:	Pattern making software with advanced functionality and process engineering to empower accurate pattern building, bespoke grade rules, and marker nesting for every style conceived.	
Pre-requisites:	None	
UNIT	**CONTENT**	**HOURS**
I	Introduction to Design Software	6
II	How to use software tools	6
III	How to access information	6
IV	Draft front and back panel and sleeve panel	6
V	Marking and Grading	6
Course Outcomes		
CO1	Draft a T shirt pattern	
CO2	Grade for four sizes	
CO3	Generate a marker for fabric cutting	
CO4	Create a style report	
CO5	Draft a T shirt pattern	
Text Books:	Patternmaking for Fashion Design 5th Edition by Helen Armstrong	
Reference Books:		

Code	**GARMENT CONSTRUCTION II**	**Total Lecture:30**
DN21B403		**0-2-2-2**
Learning Objectives:	1. Learn the aspects of pattern construction. 2. Know the concept of Garment Making.	
Pre-requisites:	None	
UNIT	**CONTENT**	**HOURS**
I	1) Sewing techniques for the various types of pockets patch / insert welt pocket / Flap pocket / Zip attachments – Any – 3- Types	6
II	2) Construction of Layered Skirt	6
III	3) Construction of Balloon Skirt	6

IV	4) Construction of Hooded jacket with raglan sleeves	6
V	5) Construction of Princess line kurta / top.	6
Course Outcomes		
CO1	Gain knowledge of basic pattern Making	
CO2	Learn the drafting of basic block and flat pattern making techniques	
CO3	Gain knowledge of textiles and Garment construction	
CO4	Understand the Indian Garments of different States	
CO5	Learn the Art of stitching different Indian Garments	
Text Books:	1. Lewis S.D. etal. 'Clothing Construction & Wardrobe Planning', Macmillan Co. NewYork. 2. Gut's M. 'Sewing A to Z' Mills and Boon Ltd., London 1972. 3. Daksha R. ' Daksha's 'Handbook for Dress Making and Tailoring' First edition, 2004.	
Reference Books:	1. 'Creative Sewing' – E. Olive pounds. 2. Golla D.A. and Bark B. 'How to Draft Basic Pattern' USA. Fairchild 1979. 3. Hayden P 'The Complete Dress Makers' Marshall Cavendish London (1976	

Code	**DYEING AND PRINTING TECHNIQUES**	**Total Lecture:45**
DN21B404		**0-4-2-3**
Learning Objectives:	1. To enable students to develop articles from natural and synthetic dyes. 2. Students will be able to understand different methods of dyeing and printing 3.Students will develop and understanding to create commercial products by using techniques of dyeing and printing	
Pre-requisites:	NIL	
UNIT	**CONTENT**	**HOURS**
I	Tie and dye of cotton with Direct dyes (Resist Print).	9
II	Batik Print on the Cotton Fabrics (Resist Print).	9
III	Printing on the polyester fabrics by Pigment colur.	9
IV	Printing on cotton fabrics by Naptholcolors	9
V	Printing on cotton fabric with natural colors	9
Course Outcomes		
CO1	Use of innovative techniques fordevelopment of interesting surfaces,	
CO2	To gain an overview of processes involved in Dyeing , Printing and Finishing of Textile materials	
CO3	To familiarize students about chemical processing and its role in fabric Manufacturing	
CO4	To introduce preparatory process of major Textile fibers	
CO5	To study dyeing printing and finishing of Natural fibers	
Text Books:	Joyce Storey – 1972-1992, The Thames and Hudson manual of Textile printing	
Reference Books:	Carol Joyce – Watson- Guptill publication – 1997, the complete Guide to Printed textile for apparel and Home Furnishing	

Code	HISTORY OF INDIAN TEXTILES & COSTUMES	Total Lecture:30
DN21B405		**2-0-0-2**
Learning Objectives:	4. Appreciate the finer nuances of embroideries. 5. Classify the regional embroideries of India. 6. Identify a specific embroidery style of India on the basis of colors, motifs and layout. 7. Identify the influencing factors for development and evolution of a specific embroidered textile.	
Pre-requisites:	NIL	
UNIT	**CONTENT**	**HOURS**
I	Origin of Indian Textile history	6
II	Costumes of India in Mid centuries	6
III	Influence of British Raj on Clothing Choices of Indians	6
IV	Costumes of 21st Century	6
V	Future Prospects of Textile Industry in India	6
Course Outcomes		
CO1	To understand the origin of Indian costumes	
CO2	To introduce the technique of embroidery for value-addition.	
CO3	To create awareness about the different embroidered textiles of India.	
CO4	To initiate identification of regional embroideries developed by various communities.	
CO5	To understand the origin of technique and design with reference to colours, motifs, layouts of different embroidered textiles.	
Text Books:	**Costumes** and **Textiles** of Royal **India** by Ritu Kumar. Handcrafted **Indian Textiles** by RtaKapur Chishti and rahul Jain, edited by Martand Singh.	
Reference Books:	**Indian Textiles** by John Gillow and Nicholas Barnard. Cloth and **India**: 1947-2015. Edited by Mayank Mansingh Kaul	

Discipline Specific Electives

(DSE)

Code	DESIGN WITH NATURAL MATERIAL	Total Lecture:30
DN21B415		**2-0-0-2**
Learning Objectives:	Student to come across the study of natural material use in Design & Spaces.	
Pre-requisites:	NIL	
UNIT	**CONTENT**	**HOURS**
I	Creative process in Craft. Craft as a means to explore material, process and Form. Study of Form in *Bamboo* and Other Craft. Cultural roots in Craft.	6
II	Identify types of *Stone*. Natural occurring Element with stone, carving,	6

	establishing of stone in interior, use of stone in landscaping	
III	*Leather*: Source of Leathers, Use of leather in furnitutre and interiors	6
IV	Creative exploration in Craft using natural materials. Design to suit urban and export markets.	6
V	Sustainable interior by natural material, zero management technique in modern scenario.	6
Course Outcomes		
After successful completion of course students will able to:		
CO1	Student will come in knowledge of natural material use in interior.	
CO2	Entrepreneurship development with production & manufacturing of Natural materials.	
CO3	To design without exploitation of nature and environment.	
CO4	Learn the new creative in form of craft for sustainable living.	
CO5	To sustain the ancient time of simple living.	
Text Books:	Studio based learning	
Reference Books:	1. Publication on Traditional arts and crafts on india, Ministry of Handicrafts Development, Government of India. 2. JohhanesItten, The Art of colour, John Wiley and Sons, USA, 1973.	

Code	**NARRATIVES AND STORY TELLING**	**Total Lecture:30**
DN21B425		**2-0-0-2**
Learning Objectives:	To introduce storytelling and narrative as a problem-solving process	
Pre-requisites:	NIL	
UNIT	**CONTENT**	**HOURS**
I	Story, narrative and meaning making	6
II	Premise and problem statement	6
III	Characters and personas. Plot and Scenarios	6
IV	Relationship between problem, need and conflict	6
V	Conflict, Action and Resolution	6
Course Outcomes		
After successful completion of course students will able to:		
CO1	Provides the prospect to open on issues/challenges that form the basis of the story	
CO2	Relates to the characters/emotions that pose challenges and try out resolutions	
CO3	Unfolds the idea, process/procedures for a solution that the audience wishes to understand	
CO4	The outcome/resolution for the problems/challenges and inferences	
CO5	Connects to situations in which the challenges occur	
Text Books:	1. Mike Korolenko, Bruce Wolcott; Storytelling and Design: Media Literacy for the Digital Age, Pearson Learning Solutions, 2005 2. Marie-Laure Ryan (editor); Narrative across Media: The Languages of Storytelling, University of Nebraska Press, 2004 –	
Reference Books:	3. Kristin M. Langellier and Eric E. Peterson; Storytelling In Daily Life: Performing Narrative, Temple University Press, 2004	

Code	FASHION STYLING & REPRESENTATION	Total Lecture:30
DN21B406		2-0-0-2
Learning Objectives:	The Fashion Styling course provides students with the techniques to create contemporary images, while meeting the expectations of international luxury, fashion and publishing industries. Fashion stylists play a major role in knowing how to emphasize the style and image of a fashion collection, brand or product from the catwalk to the promotion.	
Pre-requisites:	NIL	
UNIT	CONTENT	HOURS
I	Introduction to fashion styling, fashion system, visual communication, graphic design and presentation skills, and the principles of art and dress.	6
II	Image Development: Photo shoot, script development through styling	6
III	Fashion branding and marketing, and apply acquired visual communication	6
IV	Cultural Studies of various styling in India & Foreign countries.	6
V	Study of various Fashion Carpets, Makeup communication & accessory.	6
Course Outcomes		
After successful completion of course students will able to:		
CO1	Analyze the fashion styling process and develop the creative, intellectual and technical skills necessary to practice within the fashion styling industry	
CO2	Identify, evaluate and use information from a variety of sources and formulate concepts to meet given criteria;	
CO3	Use skills to plan, organize, produce and edit photo shootings	
CO4	Communicate effectively articulating a rational and logical argument in oral and visual form	
CO5	Demonstrate a high degree of professionalism characterised by initiative, creativity, motivation and self-management	
Text Books:	Peter Dabs (2020), "Product Design Styling" Laurence King Publishing	
Reference Books:	Various journals in Fashion & Styling	

Code	Yoga and Meditation -IV
IY20B401	**0**
Learning Objectives:	• To practice mental hygiene. • To possess emotional stability. • To integrate moral values. • To attain higher level of consciousness.
Pre-requisites:	**None**
	It will preparethe students physically and mentally for the integration of their physical, mental and spiritual faculties so that the students can become healthier, saner and more integrated members of the society and of the nation
Course Outcomes	
CO1	The students will equip their self with basic knowledge about one's personality
CO2	Students learn to handle oneself well in all life situations,
CO3	Students learn techniques of gaining good health.
CO4	Students will develop a discriminative mind capable of knowing the real from the unreal and to face the dualities of life with equanimity.

Code	DESIGN STUDIO IV (PROJECT BASED LEARNING)	Total Lecture:45
PB21B401	**WOMEN'S WEAR**	**0-4-2-3**
Learning Objectives:	the project gives users opportunities to design in an adaptable and ever-changing tunic variations.	
Pre-requisites:	None	
UNIT	**CONTENT**	**HOURS**
I	Introduction to tunic design	9
II	Design elements and principles	9
III	Creation of Mood Board for tunic designs	9
IV	Planning the layout	9
V	Final design for tunic collection	9
Course Outcomes		
CO1	Student will have an in-depth knowledge, both practical and theoretical, of the design processes.	
CO2	Conceptualizing and designing tunics with the highest form of relevance to modern trends	
CO3	Students will also be able to engage confidently, professionally and successfully with the domestic footwear industry and with the internal fashion accessory landscape.	

CO4	Graduates will be able to carve a niche for themselves in traditional as well as emerging sectors of global fashion industry
CO5	Student will able to self-entrepreneur in tunic designing.
Text Books:	Beth Kempton "Wisdom for a Perfectly Imperfect Life"(15 July 2020)
Reference Books:	"The Art of Making the Most of Every Moment, the Japanese Way"

Code	**Green Credit - IV**
GC20B401	**0**
Learning Objectives:	Yoga and Meditation helps in self-discipline and self-control, leading to immense amount of awareness, concentration and higher level of consciousness. Main objective are: • To provide the basic practical understanding about plantation. • To familiarize the various issues related with plantation and associated problems. • To make a bonding between tree and students.
Pre-requisites:	**None**
Preparing basic awareness about the environmental issues confronted by the humanity in the present global scenario and to equip the students to understand the environmental movements and basic of plantations.	
Course Outcomes	
CO1	To monitor various stages of tree growth.
CO2	To aware about of issues associate with plantations.
CO3	Understand the environmental issues and goals.
CO4	This allows "forests" to be traded as a commodity.

List of Generic Electives

Students of all Undergraduate programs are required to study **ONE** generic elective in each of the semesters from 3rd to 6th. They may choose any one of the following courses (excluding the courses offered by the parent departments, if not stated otherwise).

Generic Electives for III Semester

SN	Code	Nomenclature of the Course	Offering School
1.	GE20B301	Introductory Biology	School of Sciences
2.	GE20B302	Basic Analytical Chemistry	School of Sciences
3.	GE20B303	Basic Instrumentation Skills	School of Sciences
4.	GE20B304	Elementary Number Theory	School of Sciences
5.	GE20B305	Production Technology for Vegetable and Spices	School of Agriculture
6.	GE20B306	General Studies – I	Arts and Humanities
7.	GE20B307	Basics of Acting	School of Performing Arts
8.	GE20B308	C++ Programming	School of Engineering & Technology
9.	GE20B309	Photography	School of JMC
10.	GE20B310	Introduction to Retail Chain System	School of Commerce

Generic Electives for IV Semester

SN	Code	Nomenclature of the course	Offering School
1.	GE20B401	Genetics and Society	School of Sciences
2.	GE20B402	Green Chemistry and Green Methods in Chemistry	School of Sciences
3.	GE20B403	Electrical circuit Network Skills	School of Sciences
4.	GE20B404	Introduction to statistical methods and probability	School of Sciences
5.	GE20B405	Farming System & Sustainable Agriculture	School of Agriculture
6.	GE20B406	General Studies – II	Arts and Humanities

7.	GE20B407	Bollywood's Signature Moves	School of Performing Arts
8.	GE20B408	R Programming	School of Engineering & Technology
9.	GE20B409	Typography	School of Design
10.	GE20B410	Building Leadership &Fellowship Skills	School of Commerce

SYLLABUS

SEMESTER III

COURSE CODE	**Introductory Biology**	**Total Lec.: 30**
GE20B301		**2-0-0-2**
Learning Objectives:	The course will provide students the understanding of Biology. Biology is the study of organic life, from the structure and function of biomolecules through the complex evolutionary and regulatory processes of cells, organisms, populations, communities, and ecosystems. • Students will be introduced to the fundamental concepts that pass through these levels of organization. • In addition, the students should have in depth of knowledge to facilitate an integrative understanding of the interconnectedness and unity that make biology a cohesive discipline. • The main aim of this course is to provide students with the tools to become life-long learners in the field of Biology.	
Pre-requisites:	None.	
UNIT	**CONTENT**	**HOURS**
I	Introduction:Themes in the study of life, Characteristics of living organisms, (properties of life), life's hierarchy of levels of organization, biological system of classification, grouping of organisms into three domains and multiple kingdoms, branches and sub-disciplines of biology. Living and non-living world,scientific method.	**5**
II	Chemistry of life: The constituents of matter; Structure of an atom; The energy level of electron; The formation and function of molecules depend on chemical bonding between atoms; Chemical reaction make or break chemical bonds; The water molecule is polar; Properties of water; Ionization of water.	**7**
III	Biomolecules:Organic chemistry-the study of carbon compounds; What makes carbon special? Properties of organic compounds. Structure and function of bimolecules. Most macromolecules are Polymers; Carbohydrates act as fuel and building materials; Lipids are group of hydrophobic molecules; Protein have diverse structures and functions; Nucleic acids store and transmit hereditary information.	**7**
IV	Introduction to Cellular Respiration:Laws of Thermodynamics, energy conversion converted through biological systems. Metabolism:(Endergonic (anabolic) reactions Exergonic (catabolic) reactions) .Structure and functions of enzymes in terms of Activation energy, Active site, Co-enzymes, Denaturation, Enzyme inhibitors , Substrate. Structure and role of ATP in the cell. Process of and summary equation for cellular respiration. Major pathways used in the pathways used in the process of cellular respiration: (Glycolysis, Bridge reaction, Citric Acid Cycle, Oxidative Phosphorylation & Electron Transport Chain) Compare and contrast aerobic respiration with fermentation. Importance of carbohydrate, lipid and protein breakdown and how these molecules are utilized in aerobic respiration.	**4**
V	Photosynthesis: Process of and summary equation for photosynthesis, importance of photoautotrophs as producers.Basic structure of a leaf and its component parts: Basic structure of a chloroplast: Electromagnetic spectrum and the significance of visible light as an energy source for photosynthesis.The two stages of	**7**

	photosynthesis, including the location, raw materials and products ofLight Reactions and Calvin Cycle. Interrelationship between the Light Reactionsand the Calvin Cycle. Adaptations in relation to photosynthesis in plants in different environments. Compare the processes of aerobic cellular respiration and photosynthesis to include locations, rawmaterials and products.	
Course Outcomes as per Blooms Taxonomy		
CO1	The student will be able to **understand**[2] Energy and information flow in living systems.	
CO2	They will be able to **characterize**[2] form **analyze**[4] function of cells.	
CO3	They will be able to **understand**[2]concept of Heredity, molecular genetics and **apply**[3] it to individuals to populations	
CO4	They will be able to integrate knowledge and to **analyses**[4] and **evaluate**[5] different biological functions of life.	
CO5	They will be able to **analyse**[4] ecological relationship among organisms, populations, communities and their physical environment	
Text Books:	• GM Cooper and Hausman RE, The Cell: A Molecular Approach, 5th edition. 2009, ASM Press & Sunderland, Washington, D.C, Sinauer Associates, MA. • WM Kleinsmith, LJ Hardin and GP Bertoni, The World of the Cell.7th edition.,2009. Pearson Benjamin Cummings Publishing, San Francisco.	
Reference Books:	• Biology 8th edition Campbell, N.A. and Reece, J. B Pearson Benjamin Cummings, San Francisco. • Biology 7th edition Raven, P.H et al (2006) Tata McGraw Hill Publications, New Delhi. • Griffiths, A.J.F et al (2008) Introduction to Genetic Analysis, 9th edition, W.H. Freeman &Co.NY.	

COURSE CODE	**Basic Analytical Chemistry**	**Total Lec.: 30**
CH20B304		**2-0-0-2**
Learning Objectives :	• Prepare graduates with the basics concept of analytical chemistry. • Produce graduates with knowledge of different analytical techniques.	
Pre-requisite	None	
UNIT	**CONTENT**	**HOURS**
I	Introduction to analytical chemistry and its interdisciplinary nature, concept of sampling, importance of accuracy, precision and sources of error in analytical measurements, presentation of experimental data and results, from the point of view of significant figures.	**6**
II	Analysis of soil: composition of soil, concept of pH and pH measurement, complexometric titrations, chelation, chelating agents, use of indicators, determination of pH of soil samples, estimation of calcium and magnesium ions as calcium carbonate by complexometric titration.	**6**
III	Analysis of water: definition of pure water, sources responsible for contaminating water, water sampling methods, water purification methods, determination of pH, acidity and alkalinity of a water sample, determination of dissolved oxygen (DO) of a water sample.	**6**

IV	Analysis of food products: nutritional value of foods, idea about food processing and food preservations and adulteration, identification of adulterants in some common food items like coffee powder, asafoetida, chilli powder, turmeric powder, coriander powder and pulses, etc., analysis of preservatives and colouring matter.	**6**
V	Analysis of cosmetics: major and minor constituents and their function, analysis of deodorants and antiperspirants, Al, Zn, boric acid, chloride, sulphate, determination of constituents of talcum powder: magnesium oxide, calcium oxide, zinc oxide and calcium carbonate by complexometric titration.	**6**
Course Outcomes as per Bloom's Taxonomy		
CO1	Students will **understand**[2] basic knowledge of analytical chemistry.	
CO2	They will be able to **explain**[2] different types of soil analysis.	
CO3	They will learn to **analyze**[4] different water samples.	
CO4	They will be able to **identify**[3] the nutrients and adulterants in common food products.	
CO5	They will **develop**[3] knowledge about analysis of cosmetics.	
Text Books:	• Vogel, A. I. Vogel's Qualitative Inorganic Analysis 7th Ed., Prentice Hall.	
Reference Books:	• D A Skoog, D.M. West, F.J. Holler, S.R. Crouch , Analytical Chemistry - An Introduction, 7th Edition, 2000, Saunders College Publishing, Philadelphia, London.	

COURSE CODE	**Basic Instrumentation Skills**	**Total Lec.:30**
GE20B303		**2-0-0-2**
Learning Objectives:	• To understand concepts and principle of DC and AC voltage and current measuring techniques. • To familiarize with different electronic measurement instruments. • To be able to measure different physical parameters with the help of CRO.	
Pre-requisite:		
UNIT	**CONTENT**	**HOURS**
I	Basic of Measurement techniques, Instruments accuracy, precision, sensitivity, resolution range etc. Errors in measurements and loading effects, Principles of measurement of DC and AC voltage and current, Measurement of resistance, Specifications of Multimeter and uses	**4**
II	Electronic Voltmeter: Advantage over conventional multimeter for voltage measurement with respect to input impedance and sensitivity. Principles of voltage, measurement, Type of AC millivoltmeters, Block diagram ac millivoltmeter, specifications and their significance, Amplifier- rectifier, and rectifier- amplifier.	**4**

III	Block diagram of basic CRO, Construction of CRT, Electron gun, electrostatic focusing and acceleration (Derivation not required), brief discussion on screen phosphor, visual persistence & chemical composition. Time base operation, synchronization. Front panel controls.	**6**
IV	Application of CRO for the measurement of voltage (dc and ac frequency, time period. Special features of dual trace, introduction to digital oscilloscope, probes. Digital storage Oscilloscope: Block diagram and principle of working, Block diagram, explanation and specifications of low frequency signal generators, pulse generator, and function generator. Brief idea for testing, specifications. Distortion factor meter, wave analysis.	**7**
V	Block diagram of bridge, working principles of basic (balancing type) RLC bridge. Specifications of RLC bridge, Block diagram & working principles of a Q- Meter. Digital LCR bridges, Principle and working of digital meters. Comparison of analog & digital instruments. Characteristics of a digital meter. Working principles of digital voltmeter.	**6**
Course Outcomes as per Bloom's Taxonomy		
CO1	Students will able to **understand**[2]working principle of AC and DC measurement instruments.	
CO2	Students will able to **apply**[3]miltimeter in voltage and current measurement.	
CO3	Students will able to **demonstrate**[3] the operating principle CRO and its use in physical quantity measurement.	
CO4	Students will able to **compute**[4] different parameters for characterizing different circuits like rectifiers and amplifier.	
CO5	Students will able to **distinguish**[4] working of analog and digital instruments.	
Text Books:	1. B.L. Theraja, A text book in Electrical Technology, S Chand and Co. 2. Venugopal, Digital Circuits and systems, Tata McGraw Hill, 2011. 3. S. Ghishal, Digital Electronics, Cengage Learning, 2012. 4. S. Salivahanan& N. S.Kumar Electronic Devices and circuits, , 3rd Ed.,Tata Mc-Graw Hill, 2012.	
Reference Books:	1. M.G. Say, Performance and design of AC machines - ELBS Edn. 2. U.Tietze, Ch.Schenk, Electronic circuits: Handbook of design and applications, Springer, 2008. 3. Thomas L. Floyd, Electronic Devices, 7th Ed., Pearson India, 2008	

COURSE CODE	**Elementary Number Theory**	**Total Lec.: 30**
GE20B304		**2-0-0-2**
Learning Objectives:	To present a rigorous development of Number Theory using axioms, definitions, examples, theorems and their proofs.	
Pre-requisites:	None.	
UNIT	**CONTENT**	**HOURS**

I	**The Integers**: Numbers and Sequences. Sums and Products. Mathematical Induction. The Fibonacci Numbers.	**5**
II	**Primes and Greatest Common Divisors:** Prime Numbers. The Distribution of Primes. Greatest Common Divisors. The Euclidean Algorithm. The Fundamental Theorem of Arithmetic. Factorization Methods and Fermat Numbers. Linear Diophantine Equations.	**7**
III	**Congruences:** Introduction to Congruences. Linear Congrences. The Chinese Remainder Theorem. **Applications of Congruences:** Divisibility Tests. Check Digits.	**5**
IV	**Multiplicative Functions:** The Euler Phi-Function. The Sum and Number of Divisors. Perfect Numbers and Mersenne Primes. Mobius Inversion.	**6**
V	**Primitive Roots:** The Order of an Integer and Primitive Roots. Primitive Roots for Primes. **Quadratic Residues:** Quadratic Residues and Nonresidues. The Law of Quadratic Reciprocity	**7**
Course Outcomes as per Blooms Taxonomy		
CO1	Students will be able to : 1) Effectively express the concepts and results of Number Theory.	
CO2	2) Construct mathematical proofs of statements and find counterexamples to false statements in Number Theory.	
CO3	3) Collect and use numerical data to form conjectures about the integers.	
CO4	4) Understand the logic and methods behind the major proofs in Number Theory.	
CO5	5) Work effectively as part of a group to solve challenging problems in Number Theory	
Text Books:	K. Rosen, Elementary Number Theory and its Applications (5^{th} Edition), Addison-Wesley (2005).	
Reference Books:	• T. Koshy, Elementary Number Theory with Applications, Harcourt/Academic Press (2002) • G. Andrews, Number Theory, Dover Publications (1994) • O. Ore, Number Theory and Its History, Dover Publications (1988)	

Code	**Production Technology for Vegetables and Spices**	**Total Lecture: 30**
GE20B305		**1-0-1-2**

Learning Objectives (CO)

Understanding the 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.

Prerequisite of course –

Fundamentals of Horticulture.

Unit	Contents	Hours
I	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, harvesting and yield,:Tomato, Brinjal, Chilli, Capsicum, French bean,Peas;	**3**
II	Brief about origin, area, climate, soil, improved varieties and cultivation practices such as time of sowing, transplanting techniques, planting distance, fertilizer requirements, irrigation, harvesting and yield,:Cucumber, Melons, Gourds, Pumpkin.	**2**
III	Brief about origin, area, climate, soil, improved varieties and cultivation practices such as time of sowing, transplanting techniques, planting distance, fertilizer requirements, irrigation, harvesting and yield,: Cole crops such as Cabbage, Cauliflower, Knol-khol	**5**
IV	Brief about origin, area, climate, soil, improved varieties and cultivation practices such as time of sowing, transplanting techniques, planting distance, fertilizer requirements, irrigation, harvesting and yield,: Bulb crops such as Onion, Garlic; Root crops such as Carrot, Raddish, Beetroot; Tuber crops such as Potato;	**3**
V	Brief about origin, area, climate, soil, improved varieties and cultivation practices such as time of sowing, transplanting techniques, planting distance, fertilizer requirements, irrigation, harvesting and yield, Leafy vegetables such as Amaranth, Palak. Perennial vegetables).	**4**
	COURSE OUTCOMES At the end of the course the students should be able to	
CO 1	Understanding the importance of vegetables & spices in human nutrition and national economy.	
CO 2	To know about the importance of kitchen gardening in the nutrition of households.	
CO 3	Thorough understanding of cultural practices involved in Tomato, Brinjal, Chilli, Capsicum.	
CO 4	Thorough understanding of cultural practices involved in Cucumber, Melons, Gourds, Pumpkin.	
CO 5	Thorough understanding of cultural practices involved in French bean & peas.	
Text Books	PranabHazra, A. Chattopadhyay, K. Karmakar and S. Dutta. 2010. Modern Technology in Vegetable Production. New India Publishing Agency, New Delhi.	
Reference Books	NeerajPratap Singh, .2007. Basic Concepts of Vegetable Science. International Book Distributing Co. New Delhi. Academic Press, New Delhi.	
	List of Practical • Identification of vegetables & spice crops and their seeds. • Nursery raising.	

	• Direct seed sowing and transplanting. • Fertilizers applications. • Study of morphological characters of different vegetables & spices. • Harvesting & preparation for market. Economics of vegetables and spices cultivation.

Code	**General Studies-I**	Total Lecture: **30**
GE20B306		2-0-0-2
Learning Objectives:	The purpose of orienting students to General Studies is to develop in them an appreciation for the holistic nature of knowledge	
UNIT	**CONTENT**	**HOURS**
I	**Unit: 1. Innovation: (Science & Technology**) 1. Computer VIRUS 2. Cybercrime 3. Computer terms 4. Programming Language 5. Buccal Cavity of human beings & Knock-Knee syndrome	**6**
II	**Unit: 2.The Political India:** 1. Amendment Acts 2. Committee related to Panchayati Raj Institutions 3. CAG and related articles 4. Cyber laws	**6**
III	**Unit: 3. The Democratic India** 1. Make in India 2. Indian Ministry related to FDI 3. Election Commission 4. SC/ST Act 1989, etc 5. Special Acts of law for minorities	**6**
IV	**Unit: 4. Contemporary Problems of Indian Society:** 1. Rural versus Urban **Social Issues**. 2. Poverty. 3. Unemployment. 4. Illiteracy. 5. Caste System & Communalism.	**6**
V	**Unit: 5 Human Rights** 1. Introduction of Human Rights 2. Protection of Human Rights Act 3. State Human Rights Commission 4. National Human Rights Commission 5. Article 21	**6**

Course Outcome

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

CO 1	The course for General Studies for graduation level students has been revised keeping in mind the changing dynamics of today's society.
CO 2	The purpose behind revising the curriculum is to make it more relevant.

CO 3	It is hoped that this course will develop responsible citizens..
CO 4	In the following sections, a brief introduction to each unit has been provided, along with its specific objectives. Further, contemporary issues have been included in each unit to make it pertinent to the lives of students
CO 5	Suggestive transactional strategies have also been incorporated in each unit to facilitate teachers in effectively planning the learning activities
Text Books:	1. Ramesh Singh General Knowledge McGraw-Hill publication 2. M. Laxmikant ,Indian Polity (4th Edition or 5th Edition)
Reference Books:	3. Rajiv AhirSpectrum for Modern Indian History (Latest Edition) 4. MadhyapradeshEkParichaya by McGraw-Hill publication

Code	**Basics of Acting**	**Total Lecture:30**
GE20B307		**0-0-2-2**
Learning Objectives:	The subject aims the students to provide Demonstrate the ability to accurately interpret and utilize written and verbal directions provided for performances. • Apply feedback and criticism from previous performances toward improving and refining skills and techniques in subsequent performances. • Provide constructive feedback to performances by classmates and Audiences. • Compose written criticism of live theatrical productions. • Maintain a detailed journal of the theatrical process.	
Pre-requisites:	Nil	
UNIT	**CONTENT**	**HOURS**
I	Principles and Styles of Acting: Stanislavsky's system, Chekov, Brechtian and alienation Theatre. (Lecture with PPT presentation)	**5**
II	Dimensions of Acting: 1. Body Movement (Aangik), 2.Speech, Improvisation, pronunciation (Vachik), 3. Costume (Aharya), 4. Emotions (Satvik). (lecture and practice of different dimension of drama)	**9**
III	Relationship and Importance between different elements of Drama. (Set design, lightning, sound, stage etc.) (Lecture and understand the production with multiple studio Arrangements.)	**9**
IV	Study of Drama works Pre Independence- (1) Bhartendu Harishchandra (2) Jai Shankar Prasad (3) Dharmveer Bharti etc. (lecture and individual presentation)	**5**

V	Modern Drama works: Mohan Rakesh, Girish Karnad, BheeshmSahini, Badal Sarkar, Saadat Hasan Manto, Habib Tanveer, Vijay Tendulkar. (lecture and individual presentation)	**9**
Course Outcomes		
CO1	Student will perform a broad spectrum of dramatic material both improvised and scripted, ranging from Realism to non-Realism, classical to contemporary.	
CO2	Student will develop vocal, physical and imaginative skills to express a broad spectrum of dramatic material.	
CO3	Student will review, analyze and give constructive criticism on performance.	
CO4	Student will work as an ensemble/collective group.	
CO5	Student will understand the rehearsal and performance process, including the relationship between the actor and the director, the actor and stage manager, actor and production crew, actor and fellow actors.	
Text Books:	Constant in Stanislavski, An Actor Prepares Sanford Meisner, Sanford Meisner on Acting	
Reference Books:	----------	

Code	**C++ Programming**	**Total Lecture: 30**
CS20B205		**2-0-0-2**
Course Objective: The objective of course is to develop programming skills of students, using object oriented programming concepts, learn the concept of class and object using C++ and develop classes for simple applications.		
I	Introduction to Programming – Program and Programming –Programming Languages –Types of software's, Operating Systems –Dos commands –Basic Linux commands and vi editor –Compiler, Interpreter, Loader and Linker Fundamentals in C++ –History of 'C++' –Migrating from procedural oriented language –to object oriented languages Program –Keywords –Variables –Constants –Data type –Operators –Manipulators and uses –Basic Structure of a 'C++' program	**5**
II	Control statements –Conditional Control Statements –if –if-else –nested if-else –else-if ladder –Multiple Branching Control Statement –switch-case –Loop Control Statements –while –do-while –for –Nested Loops –Jump Control statements –break –continue –goto –exit –return –Programming Examples –FAQ's	**6**
III	Pointer array Reference –pointer variable –Reference variable/alias variables? –Reference to Reference variable? –Reference to array? –Reference vs normal variable? –Reference vs pointer variable? –1D and 2D Arrays –What is dynamic memory	**7**

	allocation? –The new and delete operator –new vs malloc –delete vs free –Dynamic 1D and 2D Arrays	
IV	Function –What is function ? –Why function ? –Advantages of using functions – Function Prototype –Defining a function –Calling a function –Actual and Formal Arguments –Types of functions –Parameter Passing Techniques –Call by Value –Call by Reference –Call by Pointer –Return statement –Returning More than one value From A Function –Return by value mechanism –Return by pointer mechanism –Return by reference mechanism –Inline Functions –Default Arguments –Function Overloading – Lambda function. –Recursion	**6**
V	Introduction to oops –c structure vs c++structure –Class –Object –Encapsulation – Abstraction –Polymorphism –Inheritance –Message Passing Classes and Objects – Declaring / defining classes –Data members and member functions –Access specifiers : public and private and protected –Creating objects of a class –Pointers to object – Implicit this pointer –Static data members –Static member functions –Passing objects to a member function –Returning objects from a member function –Friend functions – Friend classes –Nested classes –Local classes –The const member functions –The const objects –Array of objects –static objects –inline functions.	**6**

Course Outcome(s) as per Blooms Taxonomy

Upon completion of this course, students will acquire knowledge about:

CO1	• Able to implement the algorithms and draw flowcharts for solving Mathematical and Engineering problems.
CO2	• Demonstrate an understanding of computer programming language concepts.
CO3	• Able to define data types and use them in simple data processing applications also he/she must be able to use the concept of array of structures. Student must be able to define union and enumeration user defined data types.
CO4	• Ability to design and develop Computer programs, analyzes, and interprets the concept of pointers, declarations, initialization, operations on pointers and their usage.
CO5	• Develop confidence for self education and ability for life-long learning needed for Computer language.
Text Books	1. Herbert Schildt-2017, The complete reference C++, 4th edition,Mcgraw Hill. 2. Bjarne, A Tour of C++,4th edition, Addison-Wesley.
Reference Books	1. Herbert Schildt-2017, The complete reference C++, 4th edition,Mcgraw Hill. 2. Bjarne, A Tour of C++,4th edition, Addison-Wesley.

Code	**Photography**	**Total Lecture:30**
		1-0-1-2
Learning Objectives:	Students undergo a sound learning on technical aspects of photography ranging from using various formats of digital technology in photography; identify different kinds of still camera, camera shots, and moments. Compositions. Along with basic operations and the function of a still camera. Lighting techniques, fundamentals of photography & editing for photography using high end	

	professional equipment and resources.	
Pre-requisites:	BASIC INTEREST & KNOWLEDGE OF STILL CAMERA	
UNIT	**CONTENT**	**HOURS**
I	History of Photography Introduction to camera, Types of a Still camera, Part of a still camera, parts of camera functions, other equipment.	**5**
II	Origin of Photography- early cameras and technology Photography as art Evolution of Camera- From film to digital era History of different genres of photography Current trends in technology and style	**7**
III	Depth of field, aperture, shutter speed, lenses and functions,. Composition- different types of shots, camera angle and camera movements, subject and camera relationship.	**7**
IV	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 lightning.	**7**
V	Scanning and Image Editing; SCANNING: Scanners as input devices- Working of a Scanner– Scanning procedure – Scanning resolution. IMAGE EDITING: Image editing through image editing software's like Adobe Photoshop – Adjustment of Brightness, Contrast, Tonal and Color Values – Experimenting with Level and Curve.	**4**
Course Outcomes		
CO1	Students will Understand History of Photography Introduction to camera	
CO2	Characterize and analyze Origin of Photography- early cameras and technology	
CO3	They will learn to different types of shots, camera angle and camera movements	
CO4	They will have capacity to integrate knowledge and to analyses uses of lighting in different conditions.	
CO5	They will also have capacity to obtain prints through Scanning & photo editing	
Text Books:	1. Digital Photography- Duncan Evans	
Reference Books:	1. Digital Photography-Tom Ang 2. Art History: The Basics By Diana Newall, Grant Pooke	

Code	**Introduction to Retail Chain System**	**Total Lecture: 30**
GE20B310		**2-0-0-2**
Learning Objectives 1 To develop the analytical ability of the students to attain an insight into Retail Management contexts		

2 To Understand the techniques for optimal utilization of resources

Unit	Contents	Hours
I	An Introduction to Retailing: Factors Influencing Retailing, Basic Retail Models, Modern Retail format &Retailing in rural India	**6**
II	Strategic Planning in Retailing: Setting up Retail organization, Site analysis, Store Design / Layout, Cost & inventory control, Designing an information system for retail, Store based Strategy Mix, Store branding and Promotions	**6**
III	Retail Formats : Types, E-tailing, Ownership structures	**6**
IV	Retail Supply Chain : Issues in managing supply chains Networks, Demand Forecasting, sourcing & vendor selection, Overall Inventory Management	**6**
V	Store Operations Store Atmosphere, In-store service, Visual Merchandising, Store-wise inventory Management	**6**

COURSE OUTCOMES

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

CO 1	To Understand basics of Retailing
CO 2	Elaborate the Key elements in Retail planning process
CO 3	Know Different Retail formats
CO 4	Illustrate issues in supply chain
CO 5	Review the customer experience and engagement
Text Books	Retail Management – Chetan Bajaj; Rajnish Tuli; Nidhi Varma – Oxford Fundamentals Of Retailing - K. V. S. Madaan -Tata McGraw-Hill Education Retail Management: A Strategic Approach, - Berman - Pearson Education India
Reference Books	International Retail Marketing: A Case Study Approach - Margaret Bruce, Christopher Moore, Grete Birtwistle - Elsevier Butterworth-Heinemann, Strategic Retail Management: Text and International Cases - Joachim Zentes, Dirk Morschett, Hanna Schramm-Klein - Springer Science & Business Media

SYLLABUS
SEMESTER IV

COURSE CODE	**Genetics and Society**	**Total Lectures.: 30**
GE20B401		**2-0-0-2**
Learning Objectives:	• The course intends to teach concepts and application of modern transmission and molecular genetics. • To identify and describe the process and purposes of the cell cycle, meiosis, and mitosis, as well as predict the outcomes of these processes.	
Pre-requisites:	None.	
UNIT	**CONTENT**	**HOURS**
I	Basic unit of life- Cell:Microscopy. Eukaryotic and prokaryotic cells. Cell size, shape and complexity. Compare the relative sizes of plant, animal and bacterial cells. Plasma membrane. "Fluid Mosaic Model" of the plasma membrane, Cell wall. Sub cellular organelles structure and function. Microtubules, Intermediate filaments, Microfilaments Flagella and Cilia	**5**
II	Cell cycle and genetics, Stages of Cell cycle: Interphase (G1, S, and G2). Structure of chromosome. Homologous chromosomes, Mitosis, cytokinesis in animal cells and plant cells (include cleavage furrow formation, cell plate formation). Cell cycle control and the relevance of uncontrolled growth in cancer cells.	**7**
III	Genetics: Chromosomes and cell division, patterns of inheritance and sex determination, population genetics, Genetic Variation, Methodologies used to study genes and gene activities, Developmental noise, Detecting macromolecules of genetics Mendel's Law Model organisms for the genetic analysis, Distinction between Phenotype and Genotype.	**7**
IV	Introduction to ecology and Evolution, Darwin's theory of evolution, The evolution of populations, Concepts of species, Mechanism of speciation. Genetic approach to Biology Patterns of inheritance and question of biology, Variation on Mendel's Law.	**4**
V	Diversity and classification of life, evidence for evolution, natural selection and adaptation, speciation, evolutionary trees. Regulation and exploitation of populations, ecosystem energy and nutrient flow, species interactions, biodiversity, human impacts. In breeding and out breeding, Hardy Weinberg law (prediction, derivation), allelic and genotype frequencies, changes in allelic frequencies, systems of mating, evolutionary genetics, natural selection.	**7**
Course Outcomes as per Blooms Taxonomy		
CO1	Display a broad **understanding**^{2} of core genetics concepts Mendelian Genetics.	
CO2	**Explain**^{2} key concepts of genome organization and repetitive DNA.	
CO3	**Develop**^{3} quantitative reasoning and analytical skills.	
CO4	Indepth**understanding**^{2}about genetic sequences and their significance in inheritance.	
CO5	**Analyze**^{4}, **interpret**^{5}, and present methodology and results from primary literature in the discipline.	
Text Books:	1. EJ Gardner, MJ Simmons, DP Snustad, Principles of Genetics., VIII Edition, 2006, John Wiley & Sons. 2. AJF Griffiths, SR Wessler, RC Lewontin, and SB Carroll, Introduction to Genetic Analysis, IX Edition, W. H. Freeman & Co	
Reference Books:	3. WS Klug, MR Cummings, CA Spencer, Concepts of Genetics. IX Edition, 2009, Benjamin Cummings. 4. PJ Russell, Genetics- A Molecular Approach. III Edition, 2009, Benjamin Cummings.	

COURSE CODE	Green Chemistry and Green Methods in Chemistry	Total Lectures: 30
CH20B404		**2-0-0-2**
Learning Objectives :	• Prepare graduates with the basic concept of Green Chemistry. • Produce graduates with knowledge of different types of green methods in chemistry.	
Pre-requisite	None	
UNIT	**CONTENT**	**HOURS**
I	Introduction: Definitions of Green Chemistry. Brief introduction of twelve principles of Green Chemistry with examples, special emphasis on atom economy, reducing toxicity, green solvents, Green Chemistry and catalysis and alternative sources of energy, Green energy and sustainability	**10**
II	Surfactants for carbon dioxide – Replacing smog producing and ozone depleting solvents with CO_2 for precision cleaning and dry cleaning of garments.	**5**
III	Designing of environmentally safe marine antifoulant	**5**
IV	Rightfit pigment: Synthetic azo pigments to replace toxic organic and inorganic pigments.	**5**
V	An efficient, green synthesis of a compostable and widely applicable plastic (poly lactic acid) made from corn.	**5**
Course Outcomes as per Bloom's Taxonomy		
CO1	Students will be able to understand[2] Green Chemistry	
CO2	They will be able to explain[2] the green methods for dry cleaning process	
CO3	They will develop[3] the knowledge of use of green methods in real world cases	
CO4	They will be able to identify[3] the toxic organic and inorganic pigments and their replacements.	
CO5	They will be able to explain[3] the green methods of few synthesis.	
Text Books:	• Matlack, A.S. Introduction to Green Chemistry, Marcel Dekker (2001).	
Reference Books:	• Cann, M.C. &Connely, M.E. Real-World cases in Green Chemistry, American Chemical Society, Washington (2000).	

COURSE CODE	Electrical Circuit Network Skills	Total Lec.:30
GE20B403		**2-0-0-2**
Learning Objectives:	• The course enables the students to design and trouble shoots the electrical circuits, networks. • Students learn the fundamentals of Ohm's law, Kirchhoff's current and voltage laws and its practical implementation • Designing of circuits (at least proto type models) for a given set of specifications.	
Pre-requisite:	Basic knowledge of electrostatics and current	
UNIT	**CONTENT**	**HOURS**
I	Voltage, Current, Resistance, and Power, Ohm's law. Series, Parallel, and series-parallel combinations, AC Electricity and DC Electricity, Main electric circuit elements and their combination, Rules to analyze DC sourced electrical circuits, Current and voltage drop across the DC circuit elements. Single-phase and three-phase alternating current sources, Rules to analyze AC sourced electrical circuits, Real, imaginary and complex power components of AC source, Power factor, Saving energy and money.	**7**
II	Drawing symbols, Blueprints, Reading Schematics, Ladder diagrams, Electrical Schematics, Power circuits. Control circuits, Reading of circuit schematics, Tracking the connections of elements and identify current flow and voltage drop.	**5**
III	AC/DC generators, Inductance, capacitance, and impedance and their response with DC or AC sources, Operation of transformers, Electric Motors, Single-phase, three-phase & DC motors, Interfacing DC or AC sources to control heaters & motors, Speed & power of ac motor, Diode and rectifiers. Components in Series or in shunt.	**6**
IV	Electrical Protection, Relays, Fuses and disconnect switches, Circuit breakers, Overload devices, Ground-fault protection, Grounding and isolating, Phase reversal, Surge protection. Interfacing DC or AC sources to control elements (relay protection device)	**5**
V	Different types of conductors and cables, Basics of wiring-Star and delta connection, Voltage drop and losses across cables and conductors, Instruments to measure current, voltage, power in DC and AC circuits, Insulation, Solid and stranded cable, Conduit, Cable trays, Splices: wirenuts, crimps, terminal blocks, split bolts, and solder, Preparation of extension board.	**7**
Course Outcomes as per Bloom's Taxonomy		
CO1	Students will able to apply[3] the basics law of circuit analysis in real world.	
CO2	Students will able to understand[2] basic symbol theory of electrical circuits	
CO3	Student will able to distinguish[3] working AC and DC motors and develop the interface between them.	
CO4	Student will able to implement[3] the electrical protection methods.	

CO5	Student will able to design[5] extension board as per requirement.
Text Books:	5. B.L. Theraja, A text book in Electrical Technology, S Chand and Co. 6. Venugopal, Digital Circuits and systems, Tata McGraw Hill, 2011. 7. S. Ghishal, Digital Electronics, Cengage Learning, 2012. 8. S. Salivahanan& N. S.Kumar Electronic Devices and circuits, , 3rd Ed.,Tata Mc-Graw Hill, 2012.
Reference Books:	4. M.G. Say, Performance and design of AC machines - ELBS Edn. 5. U.Tietze, Ch.Schenk, Electronic circuits: Handbook of design and applications, Springer, 2008. 6. Thomas L. Floyd, Electronic Devices, 7th Ed., Pearson India, 2008

COURSE CODE	**Introduction to Statistical Methods and Probability**	**Total Lec.: 30**
GE20B404		**2-0-0-2**
Learning Objectives:	The main objective of this course is to provide students with the foundations of probabilistic and statistical analysis mostly used in varied applications in engineering and science like disease modelling, climate prediction and computer networks etc.	
Pre-requisites:	None.	
UNIT	**CONTENT**	**HOURS**
I	Probability: Introduction, random experiments, sample space, events and algebra of events. Definitions of Probability – classical, statistical, and axiomatic.	**6**
II	Conditional Probability, laws of addition and multiplication, independent events, theorem of total probability, Bayes' theorem and its applications.	**6**
III	Standard probability distributions: Binomial, Poisson, Normal, geometric, negative binomial, hypergeometric.	**6**
IV	Uniform, normal, exponential, Cauchy, beta and gamma along with their properties and limiting/approximation cases.	**6**
V	Statistics:Scatter diagram; graphical residual analysis, Q-Q plot to test for normality of residuals, autocorrelation and autocovariance functions; stationarity and non stationarity ; correlation and covariance	**6**
Course Outcomes as per Blooms Taxonomy		
CO1	Understand and critically discuss the issues surrounding sampling and significance	
CO2	Discuss critically the uses and limitations of statistical analysis	
CO3	Solve a range of problems using the techniques covered	
CO4	Discuss critically the uses and limitations of statistical analysis	
CO5	Describe and discuss the key terminology, concepts tools and techniques used in statistical analysis	
Text Books:	1. Hogg, R.V., Tanis, E.A. and Rao J.M. (2009): Probability and Statistical Inference, Seventh Ed, Pearson Education, New Delhi. 2. Miller, Irwin and Miller, Marylees (2006): John E. Freund's Mathematical Statistics with Applications, (7th Edn.), Pearson Education, Asia. 3. Myer, P.L. (1970): Introductory Probability and Statistical Applications, Oxford & IBH Publishing, New Delhi. 4. Sheldon M. Ross, "Introduction to Probability and Statistics for Engineers and Scientists", Academic Press, (2009).	
Reference Books:	1. 1. D. C. Montgomery and G.C. Runger, "Applied Statistics and Probability for Engineers", 5th edition, John Wiley & Sons, (2009). 2. Robert H. Shumway and David S. Stoffer, "Time Series Analysis and Its Applications with R Examples", Third edition, Springer Texts in Statistics, (2006).	

Code	Farming System & Sustainable Agriculture	Total Lecture: 30
GE20B405		2-0-0-2

Learning Objectives (CO)

To teach the students about farming systems, their types and management, cropping systems and sustainable agriculture. To give the knowledge of integrated farming systems and their interactions.

Prerequisite of course –Fundamentals of Agronomy.

Unit	Contents	Hours
I	Farming System-scope, importance, and concept, Types and systems of farming system and factors affecting types of farming, Farming system components and their maintenance,	**6**
II	Cropping system and pattern, multiple cropping system, Efficient cropping system and their evaluation, Allied enterprises and their importance, Tools for determining production and efficiencies in cropping and farming system;	**6**
III	Sustainable agriculture-problems and its impact on agriculture, indicators of sustainability, adaptation and mitigation, conservation agriculture strategies in agriculture, HEIA, LEIA and LEISA and its techniques for sustainability,	**6**
IV	Integrated farming system-historical background, objectives and characteristics, components of IFS and its advantages, Site specific development of IFS model for different agro-climatic zones,	**6**
V	Resource use efficiency and optimization techniques, Resource cycling and flow of energy in different farming system, farming system and environment, Visit of IFS model in different agro-climatic zones of nearby states University/ institutes and farmers field.	**6**
	COURSE OUTCOMES At the end of the course the students should be able to:	
CO 1	Well acquainted with farming systems and their components.	
CO 2	Well acquainted with cropping systems and allied enterprises.	
CO 3	Understand sustainable agriculture, their problems and management.	
CO 4	Know about integrated farming systems and their interactions.	
CO 5	Well exposed to use resources efficiently in different activities of farming.	
Text Books	1. Jayanthi C, Devasenapathy P and Vinnila, C. 2008. Farming systems principles and practice. Satish serial publishing house, Delhi 2. Panda.S.C. 2011. Cropping and farming systems. Agrobios (India) Jodhpur.	
Reference Books	Arun K. Sharma. 2006. A hand book of organic farming - Agrobios (India) Jodhpur	

Code	Subject: General Studies-II	Total Lecture:**30**
GE20B406		**2-0-0-2**
Learning Objectives:	The purpose of orienting students to General Studies is to develop in them an appreciation for the holistic nature of knowledge	

UNIT	CONTENT	HOURS
I	**Current National issues** This part is intended to test the Candidate's awareness of current national issues.	6
II	**International Affairs & Institutions** This part will include questions on important events in world affairs and on international institutions.	6
III	**Indian Economy** In this part, questions will be on the planning and economic development in India, economic & trade issues, Foreign Trade, the role and functions of I.M.F., World bank, ADB, W.T.O. etc.	6
IV	**Games & Sports** Questions will assess the awareness of candidates in respect of games and sports at international and national level. It will also have questions pertaining to different awards and personalities in the context of India.	6
V	**Indian Agriculture** Attempt will be made to assess the general awareness of candidates in respect of crops, white revolution, green revolution, agriculture production and their impact on development of rural economy.	6

Course Outcome

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

CO 1	The course for General Studies for graduation level students has been revised keeping in mind the changing dynamics of today's society.
CO 2	The purpose behind revising the curriculum is to make it more relevant.
CO 3	It is hoped that this course will develop responsible citizens..
CO 4	In the following sections, a brief introduction to each unit has been provided, along with its specific objectives. Further, contemporary issues have been included in each unit to make it pertinent to the lives of students
CO 5	Suggestive transactional strategies have also been incorporated in each unit to facilitate teachers in effectively planning the learning activities
Text Books:	5. M. Laxmikant ,**Indian Polity** (4th Edition or 5th Edition) 6. Rajiv Ahir**Spectrum for Modern Indian History** (Latest Edition) 7. **MadhyapradeshEkParichaya** by McGraw-Hill publication

Reference Books:	8. Ramesh Singh **General Knowledge** McGraw-Hill publication 9. Current magazines, News Papers &Journals

Code	Bollywood Signature Moves	Total Lecture: 30
GE20B407		**2-0-0-2**

Course Objective:

• To Identify basic characteristics and vocabulary in Bollywood dance.
• To Establish the capacity to recognize the difference, interconnectedness, and diversity of Bollywood and classical Indian dance, and Indian folk dance.
• To Understand the key concepts, discourses, and formulaic storytelling elements involved in the practice of this form.
• To Understand the transformation of this form from a cinematic experience to a live theatrical experience, and participatory dance culture.
• To Recognize the relationship between the movement and music.
• To Develop an awareness of the context and politics related to performing and viewing Bollywood dance.
• To Recognize how the integration of Western dance styles and forms contributed to the development of a Bollywood dance vocabulary and style.
• To Develop an understanding of personal and collective voice and style

I	**Basic Bollywood :** Introduction to Bollywood dance and cinema. Basic Bollywood combinations/choreography.	**5**
II	**Bollywood Vocabulary:** Introduction to and basic vocabulary of classical Indian dances, rhythmic footwork and hand gestures Introduction to folk dances of the subcontinent and their inclusion in Bollywood cinema	**6**
III	**Indo Jazz & Contemporary Bollywood:** Contemporary and jazz Bollywood Dance: Analyzing it through the Interplay of Social Forces. Introduction of styles of Bollywood: Mujra, Item Number. Introduction of dance choreographies from classic and modern Bollywood films, exploring the differences, and learning choreography from film	**7**
IV	**On-Off Screen Bollywood :** Transition to more intricate and longer combinations/choreography Bollywood in the global landscape for both stage and film, influence and inclusion of western dance Live vs. Film Bollywood Dance: clips provided by lecturer.	**6**
V	**Synergetic Effects of Bollywood:** Group projects: Part One As a small group, learn and execute choreography from your choice of Hindi Film; Part Two- Add original choreography on to Part One as a group, to be performed live as part of final, and to be filmed and edited for presentation as part of final grade.	**6**

Course Outcome(s) as per Blooms Taxonomy

Upon completion of this course, students will acquire knowledge about:

CO1	Identify basic characteristics and vocabulary in Bollywood dance.
CO2	Understanding the key concepts, discourses, and formulaic storytelling elements involved in the practice of this form
CO3	Recognize the relationship between the movement and music.
CO4	Recognize how the integration of Western dance styles and forms contributed to the development of a Bollywood dance vocabulary and style.

CO5	Deeper ability to perform as in Group projects.
Text Books	Shri Lakshminarayan Garg Kathak Nritya Anubhav Publishing House 1 Jan 2016 Dr Purudadheech – Kathak Nritya Siksha Vol 1– Bindu Prakashan – 9th edition - 1 Jan 2016 Dr. Purudadheech – Abhinaya Darpan – Bindu Prakashan – 2010 Shri Bhagwatsharan Sharma – Tal Prakash – Sangeet Karyalaya – 1 Jan 2014 Shri Damodar Pandit – Sangeet Darpan – Sangeet Karyalaya – 1 JAN 2015
Reference Books	Manmohan Ghosh- Nandikeshwar's Abhinaya Darpan – Indian Mind/Dist. By Indica –2018 Dr Mandavi Singh - Kathak Parampara – Swati Prakashan –1990 Shri Kartikram ji - Raigarhmein Kathak – Vijaya Books –2016 Dr. Vidhi Nagar - Kathak Nartan – B R Rhythms –2013 Mansi Saxena – The kathak quiz book – Independently Published –2020 TetianaKapranova – Kathak – Indian Classical Dance – Independently Published – 2020

Code	**R Programming**	**Total Lectures: 30**
GE20B408		**2– 0–0-2**

Course Objective

- To learn how to program in R
- To learn how to use R for effective data analysis.
- You will learn how to install and configure software necessary for a statistical programming environment.

The course covers practical issues in statistical computing which includes programming in R, reading data into R, accessing R packages, writing R functions, debugging, and organizing and commenting R code.

Unit	**Contents**	**Hours**
I	Introduction: Introducing to R, R Data Structures, Help functions in R, Vectors, Scalars, Declarations, recycling, Common Vector operations, Using all and any, Vectorized operations, NA and NULL values, Filtering, Vectorized if-then else, Vector Equality, Vector Element names	**5**
II	Matrices, Arrays And Lists: Creating matrices, Matrix operations, Applying Functions to Matrix Rows and Columns, Adding and deleting rows and columns, 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**
III	Data Frames: 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, Arithmetic and Boolean operators and values, Default values for arguments, Returning Boolean values, functions are objects, Environment and Scope issues, Writing Upstairs, Recursion, Replacement functions, Tools for composing function code, Math and Simulations in R	**7**
IV	OOP: S3 Classes, S4 Classes, Managing your objects, Input/Output, accessing keyboard and monitor, reading and writing files, accessing the internet, String Manipulation, Graphics, Creating Graphs, Customizing Graphs, Saving graphs to files, Creating three-dimensional plots	**6**
V	Interfacing: Interfacing R to other languages, Parallel R, Basic Statistics, Linear Model, Generalized Linear models, Non-linear models, Time Series and Auto-correlation, Clustering	**6**

COURSE OUTCOMES (CO)	
At the end of the course the students should be able to:	
CO 1	Understand the basics in R programming in terms of constructs, control statements, string functions
CO 2	Understand the use of R for Big Data analytics
CO 3	Create applications using R programming
CO 4	Learn to apply R programming for Text processing
CO 5	Able to appreciate and apply the R programming from a statistical perspective
Text Books	1. Norman Matloff , "The Art of R Programming: A Tour of Statistical Software Design", No Starch Press, 2011 2. Jared P. Lander, "R for Everyone: Advanced Analytics and Graphics", Addison-Wesley Data & Analytics Series, 2013.
Reference Books	3. Mark Gardener, " Beginning R – The Statistical Programming Language", Wiley, 2013 4. Robert Knell, "Introductory R: A Beginner's Guide to Data Visualization, Statistical Analysis and Programming in R", Amazon Digital South Asia Services Inc, 2013.

Code	TYPOGRAPHY	Total Lectures: 30
GE20B409		0-0-2-2

Course Objective

- Develop an understanding of the important role of typography in design, including the formal elements of Typography.
- You will learn how to configure typographical elements

The course covers practical issues Design

Unit	Contents	Hours
I	Visualization and application of Typography Exploration of various typography styles.	6
II	Logic, basic characteristics and difference of Serif and Sans Serif. Understanding the natural form of Typeface and its anatomy.	6
III	Psychological, Semantic and Expressive value of Typography and its applications. Guidelines for Typography in printing and production.	6
IV	Grids and Various sizes of printing products for Typography application. Layout making.	6
V	Ability to play with various other graphic elements emphasizing Typography. Choosing the right Font, size, orientation, balancing the Type forms with space.	6

COURSE OUTCOMES (CO)	
At the end of the course the students should be able to:	
CO 1	Acquire understanding of various typefaces and develop sensitivity.
CO 2	Develop skills to use Typography in engaging visual compositions
CO 3	Develop skills to reproduce type in appropriate media and printing method
CO 4	Acquire neatness and ability to present high quality output
CO 5	Develop skills to develop new types in a specific context. Acquire skills to creatively intervene type to emote a specific expression
Text Books	1. Jute,Andre ;Grids : The structure of graphic design. Crans-Pres-Celigny : Rotovision,1996 2. Schmid Helmut, Typography Today,2nd Edition, Seibundo Shinkosha, 2003. 3. Rand,Paul; Design, Form, and Chaos, Yale University Press, 1993
Reference Books	4. Robert Bringhurst:The Elements of Typographic Style: Version 4.0 5. Tim Brown :Flexible Typesetting

Code	Building Leadership & Fellowship Skills	Total Lecture: 30
GE20B410		**2-0-0-2**

Learning Objectives

Learning is achieved through a variety of teaching methods; such as class discussions, interactive exercises, mini-lectures, readings, and videos.

1. Deepen your knowledge of what leadership means, and what it takes to successfully lead and inspire teams in a global environment
2. Recognize, differentiate, and critique observable leadership styles and behaviors, based upon the Mastering Leadership framework introduced in the course
3. Increase your personal effectiveness by understanding your leader tendencies, strengthening your self-awareness, and practicing new skills

Unit	Contents	Hours
I	What Does It Mean to be a "Leader?" Leadership Defined Leadership in Transition	**6**
II	Understanding the Foundations of Leadership Leadership Models	**6**

	Leadership Trait Theory Leadership Behavior Theory Contingency Theory and Situational Leadership Theory	
III	What's Your Leadership Style? Authoritarian vs. Democratic Leadership Power and Leadership The Charismatic Leader Transactional Leadership Transformational Leadership The Servant Leader Situational Leadership Conclusions About Leadership Styles	**6**
IV	Learning Leadership Skills Hard vs. Soft Skills Interpersonal Skills Communicate Effectively Conflict Resolution Negotiation Problem-Solving and Critical Thinking Decision-Making Facilitation	**6**
V	The Visionary Leader Envisioning Strategic Thinking	**6**
COURSE OUTCOMES		
At the end of the course the students should be able to:		
CO 1	Understand your motivational drivers, emotional intelligence, and communication methods to establish a personal leadership style	
CO 2	Apply or adapt your leadership style to meet specific challenges	

CO 3	Manage the conditions that drive team performance
CO 4	Handle stressful and demanding leadership situations
CO 5	Take charge of your professional development as you navigate the challenges of transitioning from an individual contributor to a leader
Text Books	1. Aviolio, Bruce J., Leadership Development in Balance: MADE/Born, Mahway NJ: Lawrence Erlbaum Associates Publishers, 2005. 2. Baker, Michael T. People: the Real Business of Leadership, BookLocker.com, 2010. 3. Bennis, Warren. Why Leaders Can't Lead. San Francisco: Jossey-Bass Publishers, 1989
Reference Books	1. Gordon, Thomas. Leader Effectiveness Training: The No-Lose Way to Release the Productive Potential of People. New York: Bantam Books, 1977. 2. Herman, Robert D. and Heimovics, Richard D. Executive Leadership in Nonprofit Organizations: New Strategies for Shaping Executive-Board Dynamics. San Francisco CA: Jossey-Bass Publishers, 1991.

Generic Electives

Students of all Undergraduate programs are required to study 1 generic elective in each of the semesters from 3rd to 6th. They may choose any one of the following courses (excluding the courses offered by the parent departments, if not stated otherwise).

List of Generic Electives

Generic Electives for III Semester

SN	Code	Nomenclature of the Course	Offering School
1.	GE20B301	Introductory Biology	School of Sciences
2.	GE20B302	Basic Analytical Chemistry	School of Sciences
3.	GE20B303	Basic Instrumentation Skills	School of Sciences
4.	GE20B304	Elementary Number Theory	School of Sciences
5.	GE20B305	Production Technology for Vegetable and Spices	School of Agriculture
6.	GE20B306	General Studies – I	Arts and Humanities
7.	GE20B307	Basics of Acting	School of Performing Arts
8.	GE20B308	C++ Programming	School of Advances Computing
9.	GE20B309	Photography	School of Design
10.	GE20B310	Introduction to Retail Chain System	School of Commerce

Generic Electives for IV Semester

SN	Code	Nomenclature of the course	Offering School
1.	GE20B401	Genetics and Society	School of Sciences
2.	GE20B402	Green Chemistry and Green Methods in Chemistry	School of Sciences
3.	GE20B403	Electrical circuit network Skills	School of Sciences

4.	GE20B404	Introduction to statistical methods and probability	School of Sciences
5.	GE20B405	Farming System & Sustainable Agriculture	School of Agriculture
6.	GE20B406	General Studies – II	Arts and Humanities
7.	GE20B407	Script Writing	School of Performing Arts
8.	GE20B408	R Programming	School of Advances Computing
9.	GE20B409	Typography	School of Design
10.	GE20B410	Building Leadership & Fellowship Skills	School of Commerce

Generic Electives for V Semester

SN	Code	Nomenclature of the course	Offering School
1.	GE20B501	Biotechnology	School of Sciences
2.	GE20B502	Pharmaceutical Chemistry	School of Sciences
3.	GE20B503	Digital, Analog and Instrumentation	School of Sciences
4.	GE20B504	Applications of Mathematic in Finance and Insurance	School of Sciences
5.	GE20B505	Crop Improvement-I	School of Agriculture
6.	GE20B506	Civil Services Aptitude Test – I	Arts and Humanities
7.	GE20B507	Mime	School of Performing Arts
8.	GE20B508	Web designing	School of Advances Computing
9.	GE20B509	Fine Arts	School of Design
10.	GE20B510	Resolving Conflicts and Negotiation Skills	School of Commerce

Generic Electives for VI Semester

SN	Code	Nomenclature of the course	Offering School
1.	GE20B601	Bioinformatics and Systems Biology	School of Sciences
2.	GE20B602	Pesticide Chemistry	School of Sciences
3.	GE20B603	Elements of Modern Physics	School of Sciences
4.	GE20B604	Mathematical Modeling	School of Sciences
5.	GE20B605	Post Harvest Management and Value Addition of Fruits and Vegetables	School of Agriculture
6.	GE20B606	Civil Services Aptitude Test – II	Arts and Humanities
7.	GE20B607	Body Movement (Expressing through Body nuances)	School of Performing Arts
8.	GE20B608	Python programming	School of Advances Computing
9.	GE20B609	Digital learning-Adobe cloud	School of Design
10.	GE20B610	Introduction to IFRS	School of Commerce