Undergraduate Programmes
2023 May
Tentative Template

Terminologies

Abbreviation	Full-form	Remarks	Related to Major and Minor Courses	
Major (Core)	Main Discipline			
Major (Elective)	Elective Options		related to the Major Discipline	
Minor Stream	Other Disciplines (Inter/ Multidisciplinary) not related to the Major	either from the same Faculty or any other faculty		
OEC	Open Elective Courses/ Generic		**Not** Related to the Major and Minor	
VSEC	Vocational and Skill Enhancement Courses			
VSC	Vocational Skill Courses		~~Not~~ Related to the Major and Minor	Advanced laboratory practical of Major
SEC	Skill Enhancement Courses		**Not** Related to the Major and Minor	
AEC	Ability Enhancement Courses	Communication skills, critical reading, academic writing, etc.	**Not** Related to the Major and Minor	
VEC	Value Education Courses	Understanding India, Environmental science/education, Digital and technological solutions, Health & Wellness, Yoga education, sports, and fitness	**Not** Related to the Major and Minor	

IKS	Indian Knowledge System	I. Generic IKS Course: basic knowledge of the IKS II. Subject Specific IKS Courses: advanced information pertaining to the subject: part of the major credit.	Subject Specific IKS related to Major	
OJT	On-Job Training (Internship/Apprenticeship)	corresponding to the Major Subject	Related to the Major	
FP	Field projects	corresponding to the Major Subject	Related to the Major	
CC	Co-curricular Courses	Health and Wellness, Yoga education sports, and fitness, Cultural Activities, NSS/NCC and Fine/ Applied/Visual/ Performing Arts	Not Related to the Major and Minor	
CE	Community Engagement and service		Not Related to the Major and Minor	
RP	Research Project	corresponding to the Major Subject	Related to the Major	

Programme Template:

Programme Degree e.g. B.A./B.Com./B.Sc./ B.M.S., etc.		B.Sc and honor / Research
Parenthesis if any (Specialization) e.g. History, Human Development, English, etc.		Chemistry
Preamble (Brief Introduction to the programme)		BSc Honours is an undergraduate degree programme of three to four academic years, designed to provide a comprehensive understanding of specific Science subjects. BSc Honours degree programme focuses on research, critical thinking, and course curriculum of the particular science subject
Programme Specific Outcomes (PSOs) *Action Verbs demonstrating (Major) discipline-related knowledge acquisition, mastery over cognitive and professional, vocational skills are to be used e.g. demonstrate sound understanding of.., analyse, compare, create, design, etc… (minimum 5)*		After completing this programme, Learner will
	1.	Research-related skills and Scientific temper: Develop the working knowledge and applications of instrumentation and laboratory techniques. Able to apply skills to design and conduct independent experiments, interpret, establish hypothesis and inquisitiveness towards research.
	2.	Disciplinary Knowledge: Demonstrate comprehensive knowledge of the disciplines that form a part of an graduate programme. Execute strong theoretical and practical understanding generated from the specific graduate programme in the area of work.
	3.	critical Thinking and Problem solving: Exhibit the skills of analysis, inference, interpretation and problem-solving by observing the situation closely and design the solutions.
	4.	Environment and Sustainability: Understand the impact of the scientific solutions in societal and environmental contexts and demonstrate the knowledge of and need for sustainable development.
	5.	Self-directed and Life-long learning: Acquire the ability to engage in independent and life-long learning in the broadest context of socio-technological changes.
	6.	Trans-disciplinary knowledge: Integrate different disciplines to uplift the domains of cognitive abilities and transcend beyond discipline-specific approaches to address a common problem.
	7.	competence: Display the understanding, behavioural skills needed for successful social adaptation, work

		in groups, exhibits thoughts and ideas effectively in writing and orally.
Eligibility Criteria for Programme		Candidates should clear Class 12 in the Science stream with a minimum of 50% - to 60% aggregate from a recognised board.
Intake (For SNDT WU Departments and Conducted Colleges)		

- *External Examination does not always mean Theory paper. It may practical examination, Product submission, projects, etc. checked by external examiners.*
- *Internal evaluation should not be Written Theory papers like Unit tests.*
  Internal marks will be acquired through practical, small group or individual Projects, activities, presentations, seminars, workshops, products, assignments, application-based work, reports, etc.
- Practical may be part of the main courses alongwith theory modules instead of having separate courses of practical work.

Structure with Course Titles

(Options related to our area of study to be provided with "OR" for baskets of different types).

SN	Courses	Type of Course	Credits	Marks	Int	Ext
	Semester I					
10132111	Chemistry 1	Major (Core)	4	100	50	50
10132122	Practical of chemistry	Major (Core)	2	50	0	50
10432111	Dyes and Pigment	OEC	4	100	50	50
10632101	Industrial Report	VSC	2	50	50	0
10732101	Leadership Development Program	SEC	2	50	50	0
10832111	Resume writing.	AEC	2	50	0	50
11032111	Indian science & Technology	IKS	2	50	0	50
10932101	Physical Education	VEC	2	50	50	0
11432101 (different code for each course)	Co curriculum course	CC	2	50	50	0
			22	**550**	**300**	**250**
	Semester II					
20132111	Chemistry II	Major (Core)	4	100	50	50
20132122	Chemistry II Practical	Major (Core)	2	50	0	50
20332111	Research Project	Minor Stream	2	50	0	50
20432111	Science Café	OEC	4	100	50	50
20632111	Lab skill development	VSC	2	50	0	50
20732101	Personality and Communication	SEC	2	50	50	0
20832101	Types and Modes of Communication	AEC	2	50	50	0
20932111	Environmental Science	VEC	2	50	0	50
21432101	Sports CC	CC	2	50	50	0
			22	**550**	**250**	**300**

Exit with UG Certificate with 10 extra credits (44 + 10 credits)

SN	Courses	Type of Course	Credits	Marks	Int	Ext
	Semester III					
30132111	Physical chemistry I	Major (Core)	4	100	50	50
30132112	Organic chemistry I	Major (Core)	4	100	50	50
30332111	Fashion and jewelry design	Minor Stream	4	100	50	50
30432111	Fermentation technology	OEC	2	50	0	50
30632101	Technical communication skills	VSC	2	50	50	0
30832111	Dialogue communication program	AEC	2	50	0	50
31332101	Subject research project	FP	2	50	50	0
31432101	Plant cultivation and technology	CC	2	50	50	0
			22	**550**	**300**	**250**
	Semester IV					
40132111	Analytical Chemistry I	Major (Core)	4	100	50	50
40132112	Inorganic Chemistry I	Major (Core)	4	100	50	50
40332111	Nutrition and Dietary	Minor Stream	4	100	50	50
40432111	Cement technology	OEC	2	50	0	50
40732111	Data Analysis and Computer Science Application	SEC	2	50	0	50
40832111	Society Culture and Human Behaviour	AEC	2	50	0	50
41732101	Leadership and Development skills	CEP	2	50	50	0
41432101	Workshop on Tobacco	CC	2	50	50	0
			22	**550**	**250**	**300**

Exit with UG Diploma with 10 extra credits (44 + 10 credits)

SN	Courses	Type of Course	Credits	Marks	Int	Ext
	Semester V					
50132111	Physical Chemistry II	Major (Core)	4	100	50	50
50132112	Organic Chemistry II	Major (Core)	4	100	50	50
50132123	Experimental work	Major (Core)	2	50	0	50
50232111	Data analysis	Major (Elective)	4	100	50	50
50332111/ 50332112	Biochemistry / making measurement	Minor Stream	4	100	50	50
50632101	Self skills for leadership	VSC	2	50	50	0
51332101/ 51732101	Workshop Visit report	FP/CEP	2	50	50	0
			22	**550**	**300**	**250**
	Semester VI					
60132111	Analytical CHEMISTRY II	Major (Core)	4	100	50	50
60132112	Inorganic Chemistry II	Major (Core)	4	100	50	50
60132123	Experimental work	Major (Core)	2	50	0	50
60232111	Molecular Modelling & Drug Design	Major (Elective)	4	100	50	50
60332111	Anthropology of Gender and Sexuality	Minor Stream	4	100	50	50
61232131	Internship	OJT	4	100	50	50
			22	**550**	**250**	**300**

Exit with Degree (3-year)

4-Year Degree with Honors

SN	Courses	Type of Course	Credits	Marks	Int	Ext
	Semester VII					
70132111	Advance analytical chemistry	Major (Core)	4	100	50	50
70132112	Advance inorganic chemistry	Major (Core)	4	100	50	50
70132113	Organic chemistry III	Major (Core)	4	100	50	50
70132104	Fuel chemistry	Major (Core)	2	50	50	0
70232111	Nano technology	Major (Elective)	4	100	50	50
70332111	Research Methodology	Minor Stream (RM)	4	100	50	50
			22	**550**	**300**	**250**
	Semester VIII					
80132111	Advance Analytical Chemistry II	Major (Core)	4	100	50	50
80132112	Advance Inorganic Chemistry II	Major (Core)	4	100	50	50
80132113	Physical Chemistry III	Major (Core)	4	100	50	50
80132114	Green chemistry	Major (Core)	2	50	0	50
80232111	Industrial chemistry	Major (Elective)	4	100	50	50
81232131	Internship/ training	OJT	4	100	50	50
			22	**550**	**250**	**300**

4-Year Degree with Research

SN	Courses	Type of Course	Credits	Marks	Int	Ext
	Semester VII					
70132161	Research on different types of metals	Major (Core)	4	100	50	50
70132162	Research and application of chromatographic technology	Major (Core)	4	100	50	50
70132163	Chemotherapeutic agents	Major (Core)	2	50	0	50
70232161	Science tread research	Major (Elective)	4	100	50	50
70332161	Research Methodology II	Minor Stream (RM)	4	100	50	50
71632101	Research project and presentation	Research Project	4	100	100	0
			22	**550**	**300**	**250**
	Semester VIII					
80132171	Practical research of	Major (Core)	4	100	50	50
80132162	Research Methodology and Applied Biostatistics	Major (Core)	4	100	50	50
80132163	Advance Chemotherapeutic Techniques	Major (Core)	2	50	0	50
80232161	Clinical research	Major (Elective)	4	100	50	50
81632171	Research dissertation	Research Project	8	100	100	100
			22	**550**	**250**	**300**

Course Syllabus

Semester I

1.1 Major (Core)

Course Title	Chemistry I
Course Credits	4 / 2
Course Outcomes	After going through the course, learners will be able to
	• Promote understanding of basic facts and concepts in chemistry while retaining the excitement of chemistry.
	• make students capable of studying chemistry in academic and professional courses (such as medicine, engineering, technology) at tertiary level.
	• expose the students tO various emerging new areas of chemistry and apprise them with their relevance in future studies and their application in various spheres of chemical sciences and technology.
	• equip students to face various challenges related to health,nutrition, environment, population,weather, industries and agriculture.
	• develop problem solving skills in students.
Module 1 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	• Students will learn the concept of micromolecular and macromolecular and associated colloids. • Students will understand the term catalysis and classification of colloids. • Students will learn about adsorption and their characteristics.

Content Outline	● Adsorption- Physisorption and chemisorption and their characteristics, factors affecting adsorption of gasses on solids - Freundlich and Langmuir adsorption isotherms, adsorption from solutions. ● Catalysis - Homogeneous and heterogeneous, activity and selectivity of solid catalysts, enzymecatalysis and its mechanism. ● Colloidal state- distinction among true solutions, colloids and suspensions, classification of colloids -lyophilic. Lyophobic; multimolecular, macromolecular and associated colloids (micelles). preparation and properties of colloids - ● Tyndall effect. Brownian movement, electrophoresis, dialysis, coagulation and flocculation: Emulsions and their characteristics.
Module 2 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	● Students will understand elimination and substitution reaction and carbon carbon Sigma bond ● Students will learn about electrophiles and Nucleophiles, their types shapes and stability. ● Students will study electronic displacement, organic acids and bases, dipole moment.Students will learn the concept of micromolecular and macromolecular and associated colloids.
Content Outline	● Electronic Displacements: Inductive, electromeric, resonance and mnesomeric effects,hyperconjugation and their applications; Dipole moment; Organic acids and bases; their relativestrength. Homolytic and heterolytic fission with suitable examples. Curly arrow rules; ● Electrophiles and Nucleophiles; Nucleophilicity and basicity; Types, shape and relative stability of carbocations, carbanions, free radicals and carbenes. Introduction to types of organicreactions and their mechanism: Addition, ● Elimination and Substitution reactions. Carbon-carbonsigma bonds Chemistry of alkanes: Formation of alkanes, Wurtz Reaction, Wurtz-Fittig Reactions, Free radical substitutions: Halogenation -relative

	reactivity and selectivity.
Module 3 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	• Students will study about the band theories and coordinate covalent compounds. • Students will learn about covalent bonds, polarization of covalent bonds • Students will understand hybridization and geometry of covalent molecules.
Content Outline	• Hybridization and geometry of covalent molecules - VSEPR theory - polar and nonpolar • COvalent bonds, polarization of covalent bond - polarizing pOwer, polarisability of ions and • Fajan's rule, dipole moment, percentage ionic character from dipole moment, dipole moment and structure of molecules, co-ordinate covalent compounds and their characteristics, metallicbond -free electron, valence bond and band theories, weak chemical bonds- inter and intra molecular hydrogen bond - van der VWaals forces.
Module 4 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	• Students will understand the general methods of preparation. • Students will learn the structure of benzene nomenclature of aromatic compounds.
Content Outline	• Structure of benzene - nomenclature of aromatic compounds general methods of preparation - physical chemical properties - Electrophilic and nucleophilic substitution reactions -orientation in aromatic disubstitution - Aromaticity -Huckel's rule - anisotropic ring current aromatic –nonaromatic and antiaromatic compounds.

Assignments/Activities towards Comprehensive Continuous Evaluation (CCE)

1. –

2. –

3. –

4.

REFERENCE BOOKS

1. F. A. Cotton, G. Wilkinson and P. L. Gaus, „Basic Inorganic Chemistry", 5th edition, John Wiley,1987.

2.C. N. R. Rao, ,University General Chemistry", Macmillan, India, 2000.

3. Manas Chanda, „Atomic Structure and Chemical Bond", 4th edition, Tata McGraw-Hill, New Delhi, 2000

1.2 Major (Core) practical

Course Title	**Chemistry I practical**
Course Credits	**4 / 2** *(Pl keep relevant)*
Course Outcomes	After going through the course, learners will be able to
	● Determine the nature, functional groups and physical constant of organic compounds,
	● Identify and separate the mixture of organic compounds based on thin layer chromatography
	● Purifies organic compounds by recrystallization and sublimation method
	● Analyze and verify the mixture of cations and anions
Module 1 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	● Students will learn about Basic titration
	● Students understand types of titration
Content Outline	● Determination of iodine using sodium thiosulphate (Standardize sodium thiosulphate solution ● using standard potassium dichromate solution. ● Determination of phenol by bromination method ● Determination of aniline by bromination method. ● Determination of acetamide by hydrolysis method. ● Determination of ethyl benzoate by hydrolysis method.
Module 2 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	● Students will learn about Complexometric titration
	● Students understand Mohr's titration
Content Outline	● Determination of sodium carbonate and sodium bicarbonate in a mixture.

	● Determination of carbonate and hydroxide present together in a mixture. ● Determination of Mohr's salt and oxalic acid separately using standardized KMnO4 solution. ● Determination of ferrous and ferric ions in a solution using standard solution of K2Cr2O7 byinternal indicator method (diphenylamine or N- phenylanthranilic acid). ● Determination of magnesium using standard EDTA solution (Standardize EDTA solution using standard zinc sulfate solution).

Assignments/Activities towards Comprehensive Continuous Evaluation (CCE)

1. –

2. –

3. –

4.

References

- Industrial Chemistry, B. K. Sharma, Goel publishing House, 18th Ed. (2014)
- Riegeal's Handbook of industrial chemistry, James A. kent. 9th Ed. CBS publishers
- Advanced Inorganic Chemistry, Satyaprakash, Tuli, Basu pages 458-463.
- Advanced Inorganic Chemistry, Satyaprakash, Tuli, Basu pages 830-849
- Handbook of Industrial Chemistry and Biotechnology, James A. Kent, Tilak V.
- Bommaraju, Scott D. Barnicki, Thirteenth Edition, Springer.

1.3 Major core

Course Title	**Dyes and Pigment**
Course Credits	**4 / 2** *(Pl keep relevant)*
Course Outcomes	After going through the course, learners will be able to
	● Students should know about it. Dyes: introduction, i. Dye intermediates, ii. Structural features of a dye; iv. Classification of dyes, v. Synthesis, Structures,
	● properties and applications of dyes Pigments: Students should know about i

	• Introduction, ii. Classification and general properties of pigment
Module 1 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	• Students will understand the properties and classification of pigments. • Students will study about properties and application of dyes. • Students will learn about the Dyes, it's structural features and synthesis of dyes.
Content Outline	• Fundamental of dyes: General, Important chemical chromophore of dyes • Dyes Class for principle applications, Description of individuals of class and synthesis of some commercial dyes.
Module 2 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	• Students will understand the concept of textiles auxiliaries, non textile dye. • Students will learn about process of textiles.
Content Outline	• Dying processes of textiles: Pre-treatment of textile fibers, dyeing methods for various textiles, • Textile finishes and Textile auxiliaries. Non textile dyes: Leather, Fur, Hair, Food, Ink, Photographic, indicator dyes.
Module 3 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	• Students will learn about Fundamentals and properties of pigments. • Students will study about Zinc oxide and Iron oxide pigments
Content Outline	• Zinc Oxide pigments (Fundamentals and properties, Raw materials, Direct process (American process), Precipitation process) • Iron oxide pigments (Fundamentals and properties, Production of iron oxide pigment by precipitation process),

Module 4 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	● Students will learn the concept and aspects related to dyes. ● Students will learn about organic pigments.
Content Outline	● Synthesis, Characterization and application. ● Some other aspects related to dyes: Non mutagenic dyes, colorants for high technology Fluorescent Brightening agents.

1.4 Industrial Report VSC – Vocational skill courses

Course Title	**Industrial Reports**
Course Credits	**4 / 2** *(Pl keep relevant)*
Course Outcomes	After going through the course, learners will be able to
	● Industry information
	● Industrial SOPs (Standard Operating Procedures
	● Industry Ongoing consideration.
	● Overview of industrial experience
Module 1 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	● Students will understand the industrial SOPs.
	● Students have to maintain the training report.
Content Outline	● The students have to prepare two types of reports: ● Weekly report in the form of a diary to be submitted to the concerned staff in-charge of the institution. ● This will be reviewed while awarding Internal Assessment marks. ● Industrial Training Diary ● Students are required to maintain the record of day-to-day work done. Such a record is called Industrial ● training Diary. Students have to write this report regularly. All days for the week should be accounted for

	● clearly giving attendance particulars (Presence, absence, Leave, Holidays etc) The concern Industrial ● supervisor is to check periodically these progress reports.
Module 2 (Credit 1)	
Learning Outcomes *(Specific related to the module..* *e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	● Students will study about the plant/products/process
Content Outline	● In addition to the diary, students are required to submit a comprehensive report on training with details ● of the organization where the training was undergone after attestation by the supervisors. The ● comprehensive report should incorporate study of plant/product/process/construction along with ● intensive in-depth study on any one of the topics such as processes, methods, tooling, construction and ● equipment, highlighting aspects of quality, productivity and system. The comprehensive report should be ● completed in the last week of Industrial training. Any data, drawings etc should be incorporated with the ● consent of the Organisation.

1.5 LEADERSHIP DEVELOPMENT PROGRAM (SKILLS ENHANCEMENT COURSE)

Course Title	**1.5 LEADERSHIP DEVELOPMENT Program**
Course Credits	**4 / 2** *(Pl keep relevant)*
Course Outcomes	After going through the course, learners will be able to
	● To understand and gain Conceptual knowledge of Leadership.
	● To demonstrate an understanding of the current leadership theories and how they apply to the modern organizations.
	● To Analyze the impact of effective leadership perspectives on organizational performance
	● To Reengineer the mindset of students which will help them to become effective leaders

Module 1 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	● Students will learn about leadership and great man theories. ● Students will learn skills behavior and vision
Content Outline	● Traits, styles, skills, behaviors, vision, inspiration and momentum of leadership-International ● framework for analyzing leadership-Personality Types and Leadership-Five factor model of ● personality ● Great Man Theory-Trait theory- Behavioral Theories: Michigan studies, Ohio State University ● studies, Leadership Grid, Role theory- Contingency Theories: Casual model of Leadership, ● Normative Decision model, Hersey Blanchard situational model, Vroom & Jago's model, ● House's Path Goal theory- Contemporary leadership styles
Module 2 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	● Students will understand about leaders and follower ● Students will learn Characteristics, types and evaluation of leadership.
Content Outline	● Characteristics, types and evaluation of Leadership Development-Leadership Succession- ● Choosing a successor, Emotional aspects of leadership succession, developing pool of ● successors, Followership- Essential qualities of effective followers, Collaboration between ● leaders and followers.

Reference

1. Peter G. Northouse, "Leadership", 2015, 6th Ed, Sage Publications.

2. Lussier/Achua, Effective Leadership, 3rd Ed, Cengage Learning, 2016.

3. Richard L. Daft, Leadership, Cengage Learning, 2015.

4. Gary Yukl, Leadership in Organizations, 6th Edition, Pearson Education, 2016.

1.6 Resume writing. Abilities Enhancement course (AEC)

Course Title	1.6 Resume writing.
Course Credits	4 / 2
Course Outcomes	After going through the course, learners will be able to
	• To understand the purpose and importance of a resume • To learn how to write an effective and professional resume • To develop skills in tailoring resumes for specific job opportunities • To gain knowledge on how to optimize resumes for applicant tracking systems (ATS) • To improve overall communication and writing skills
Module 1 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	• Students will study about effective resume writing.
	• Students will study about effective resume writing.
Content Outline	• The purpose and importance of a resume, • Types of resumes, Resume formats and styles • Writing an Effective Resume • Identifying key skills and experiences • Crafting a strong summary statement and objective • Showcasing accomplishments and achievements • Using action verbs and keywords
Module 2 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	• Students will study to optimise the resumes
	• Students will learn how to research on job requirements.
Content Outline	• Researching job requirements and qualifications • Customizing resumes for different industries and positions • Highlighting relevant skills and experiences • Optimizing Resumes for ATS • Understanding how ATS works • Formatting resumes for ATS • Avoiding common mistakes that can lead to rejection

	by ATS ● Assessment: - Weekly assignments and quizzes - Final project: Creating a professional resume tailored to a specific job opportunity

1.7 INDIAN SCIENCE & TECHNOLOGY IKS – INDIAN KNOWLEDGE SYSTEM

Course Title	1.7 INDIAN SCIENCE & TECHNOLOGY
Course Credits	4 / 2
Course Outcomes	After going through the course, learners will be able to
	●
	●
Module 1 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	● Students will study about the current affairs of science and technology.
	● Students will study about the current affairs of science and technology.
Content Outline	● Development in different branches of Science in Ancient India: Astronomy, Mathematics, Engineering and Medicine. ● Developments in metallurgy: Use of Copper, Bronze and Iron in Ancient India. ● Development of Geography: Geography in Ancient Indian Literature. ● Why there is a need for Science and technology. ● Current affairs of Science and technology. ● Science and technology as a source of Human development. ● Role in development of India
Module 2 (Credit 1)	

Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	• The role of industrialization in the development of country can be Analysed as follows:
	• Students will understand the investments and per capita income. • Students will learn about the growth of India and its technologies.
Content Outline	• Increase in per capita income. • Growth in international trade • High level of investment • Generation of employment • Meets the requirements of people

1.8 PHYSICAL EDUCATION VEC (VALUE EDUCATION COURSE)

Course Title	1.8 PHYSICAL EDUCATION
Course Credits	4 / 2
Course Outcomes	After going through the course, learners will be able to
	• To impart the students with basic concepts of Physical Education, Sports and Yoga for health and wellness.
	• To familiarize the students with health related Exercise, Sports and Yoga for Overall growth & development
	• To create a foundation for the professionals in Physical Education, Sports and Yoga.
	• To impart the basic knowledge and skills to teach Physical Education,Sports & Yoga activities.
Module 1 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	• Yoga & Fitness Training
	• Introduction physical education
Content Outline	• Importance of Yoga & Fitness Fundamentals Principles of Yoga & Fitness Training Components of Fitness and Fitness Equipments Types of Yoga Practices - Asanas, Pranayama and Meditation • Introduction to Balanced Diet for Fitness • Meaning and definition of Physical Education, Sports

	and Yoga. Aims, Objectives and Importance of Physical Education, Sports and Yoga.History of Physical Education, Sports and Yoga. ● Modern trends of Physical Education, Sports and Yoga. ● Brief concept of Education in relation to Physical Education,Sports and Yoga.
Module 2 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	● Introduction to Athletics and Officiating of Sports and Games
	● Career Opportunities in Physical Education, Sports and Yoga
Content Outline	● Characteristics and Measurement of Standard Track ● Duties and Principles of officiating Qualities and Qualification of Technical officials for Athletics,Sports and Games ● Officiating of AthleticsOfficiating of Sports and Games ● Physical Education, Sports and Yoga professionals at various levels of educational institutions. ● Sports Trainers, Yoga Instructors, Coach, Managers,Researcher, Event Organizers, Technical ● Officials,Entrepreneurs and others

1.9 CO CURRICULUM COURSE

Course Title	CO CURRICULUM COURSE
Course Credits	4 / 2
Course Outcomes	After going through the course, learners will be able to
	● Take leadership
	● Create self interest in various sports.
	● Maintain disciplines of all kinds.
	● Maintain his physical fitness and health.
Module 1 (Credit 1)	
Learning Outcomes	After learning the module, learners will be able to

(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)	● NATIONAL SERVICE SCHEME NSS ●
Content Outline	Importance And Role Of Youth Leadership Meaning, types and traits of leadership, qualities of good leaders; importance and roles of youth leadership Life competencies Definition and importance of life competencies, problem-solving and decision-making, inter personal communication ● Youth development programmes Development of youth programmes and policy at the national level, state level and voluntary sector; youth-focused and youth-led organizations ● Health, hygiene and sanitation Definition needs and scope of health education; role of food, nutrition, safe drinking water, water born diseases and sanitation (Swachh Bharat Abhiyan) for health; national health programmes and reproductive health. ● Youth health, lifestyle, HIV AIDS and first aidHealthy lifestyles, HIV AIDS, drugs and substance abuse, home nursing and first aid ● Youth and yoga History, philosophy, concept, myths and misconceptions about yoga; yoga traditions and its impacts, yoga as a tool for healthy lifestyle, preventive and curative method
Module 2 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to ● NATIONAL CADET CORPS NCC ●
Content Outline	● Arms Drill- Attention, stand at ease, stand easy. Getting on parade. ● Dismissing and falling out.Ground/take up arms, examine arms. ● Shoulder from the order and vice-versa, present from the order and vice-versa. ● Saluting at the shoulder at the halt and on the march. Short/long trail from the order and vice-versa. ● Guard mounting, guard of honor, Platoon/Coy Drill.

	• Characteristics of rifle (.22/.303/SLR), ammunition, fire power, stripping, assembling,care,cleaning and sight setting. • Loading, cocking and unloading. The lying position and holding. • Trigger control and firing a shot. Range Procedure and safety precautions. • Aiming and alteration of sight. • Theory of groups and snap shooting. Firing at moving targets. Miniature range firing. • Characteristics of Carbine and LMG. • Introduction to map, scales and conventional signs. Topographical forms and technical terms. • The grid system. Relief, contours and gradients. Cardinal points and finding north. • Types of bearings and use of service protractor. • Prismatic compass and its use. Setting a map, finding north and own position. Map to groundand ground to map. • Knots and lashings, Camouflage and concealment, Explosives and IEDs. • Field defenses, obstacles, mines and mine lying. Bridging, watermanship • Field water supplies, tracks and their construction. • Nuclear, Chemical and Biological Warfare (NCBW) • Judging distance. Description of ground and indication of landmarks. • Recognition and description of target. Observation and concealment. Field signals. Section formations. • Fire control orders. Fire and movement. Movement with/without arms. • Section battle drill. • Types of communication, media, latest trends and developments

Reference

Cadet's Hand book – Common subject..all wings. BY DG NCC, New Delhi.

Cadet's Hand book – Specialised Subjects, Army, Navy, Air-force BY DG NCC, New Delhi

NCC OTA Precise BY DG NCC, New Delhi

"AVAN" Model of Disaster Mang. Vinayak Dalvie Proceedings of Int. Conf. on Urban Plan. and Env Strat & Challenges, Elphinstone College, Jan 2007.

2.1 CHEMISTRY PAPER II

Course Title	CHEMISTRY PAPER II

Course Credits	4 / 2
Course Outcomes	After going through the course, learners will be able to
	• Understand the science of surface reactions and colloids for practical applications.
	• Develop deep knowledge in determine the rate of chemical reactions and assessing the suitable experimental conditions for better yield in reactions.
	• Understand the theory behind the working of catalysis and explore its applications
Module 1 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	• Students will understand theories and reaction mechanism. • Students will learn about reaction rates and orders of reactions.
	•
Content Outline	• Reaction rates and order of reactions, determination of order of reactions, complex reactions,reversible, consecutive and concurrent reactions, reactions of variable order, steady statetreatment, reaction mechanism and molecularity, theories of unimolecular reactions and termolecular reactions, Arrhenius equation, collision theory and transition state theory, • comparative study of the theories of reaction rates, free energy of activation, • effect of solvent on rate of reactions, ionic reactions and effect of ionic strength - salt effect, effect of pressure on velocity of gas reactions.
Module 2 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	• Students will understand about the properties and reaction phase equilibria. • Students will learn about the laws of thermodynamics.
	•

Content Outline	• The laws of thermodynamics; enthalpy, entropy, internal energy, free energy, chemical potential,phase equilibria; mixtures, solutions, colligative properties and chemical reaction equilibrium; • Boltzmann's distribution law, ensembles and partition functions; Laboratory methodology. • Numerical calculations of thermodynamic properties.
Module 3 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	• Students will understand the structures synthesis reactions and mechanism. • Students will study about the classification and nomenclature.
Content Outline	• Classification and nomenclature, structure, aromaticity in 5-numbered and 6-membered • ringscontaining one heteroatom; synthesis, reactions and mechanism of substitution reactions of:furan, pyrrole (paal-knorr synthesis, knorr pyrrole synthesis, hantzsch synthesis),thiophene,pyridine (hantzsch synthesis), pyrimidine, structure elucidation of indole,fischer indole synthesis and madelung synthesis), structure elucidation of quinoline and isoquinoline, skraup synthesis, • friedlander's synthesis, knorr quinoline synthesis, doebner-miller synthesis, • bischler-napieralski reaction, pictet-spengler reaction, pomeranz-fritsch reactionderivatives of furan: furfural and furoic acid
Module 4 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	• Students will understand the theory, stereochemistry and spectra in coordination chemistry
	• Students will learn the importance and scope of coordination chemistry
Content Outline	• Introduction to coordination chemistry: Definition, importance, and scope of coordinationchemistry. • Werner's theory: Coordination compounds, ligands, coordination number, and isomerism. • Nomenclature of coordination compounds: IUPAC rules for naming coordination compounds. • Bonding in coordination compounds: Valence bond theory, crystal field theory, and molecular orbital theory. • Stereochemistry of coordination compounds:

	Geometrical isomerism, optical isomerism, and chelation. ● Electronic spectra of coordination compounds: Spectrochemical series, selection rules, and interpretation of spectra. ● Magnetic properties of coordination compounds: Magnetic moment, spin-only formula, and interpretation of magnetic data. ● Thermodynamic and kinetic aspects of coordination chemistry: Stability constants,thermodynamic parameters, and kinetic factors affecting the formation and dissociation of coordination compounds. ● Metal carbonyls: Synthesis, structure, bonding, and reactions of metal carbonyls. ● Metal complexes with biological molecules: Metalloproteins, metalloenzymes, and their functions.

Reference

Ahuja & Jespersen, Modern Instrumental Analysis, Elsevier Science, 1st Edition,2006.

D.C. Harris, Exploring Chemical Analysis, W.H. Freeman, 3rd Edition, 2005. .

Edited by Pradyot Patnaik, Dean's Analytical Chemistry Handbook, McGraw Hill, 2nd Edition, 2004.

Klaus Danzer, Analytical Chemistry, Springer-BBH, 2007. .

A.L. Underwood, Quantitative Analysis, Prentice-Hall of India Pvt Ltd., 1999.

M. Koel & M. Kaljurand, Green Analytical Chemistry, RSC Publishing, 2012.

M. L. Guardia, S. Carrigues, A Handbook of Green Analytical Chemistry, Wiley Interscience, 2012.

2.2 CHEMISTRY II PRACTICAL

Course Title	CHEMISTRY II PRACTICAL
Course Credits	4 / 2
Course Outcomes	After going through the course, learners will be able to
	● To introduce the contribution from Ancient Indian system & tradition to modern science & Technology

	• To help to study the enriched scientific Indian heritage.
	• To help student to understand the knowledge, art and creative practices, skills and values in ancient Indian system.
	• To sensitize the students about context in which they are embeded i.e. Indian culture and civilisation including its Knowledge System and Tradition.
Module 1 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	• Student will understand practically about Concentration and surface tension of soap solution
	• Student will understand practically about Oswald theory, refraction and CMS
Content Outline	• Determination of surface tension and parachor of –CH2 in alcohol series. • Determination of surface tension for different concentrations of soap solutions(Sodiumlaurate) and calculation of Critical Micellar Concentration(CMC) Graphically. • Determination of the viscosity of liquids (ethyl acetate & ethyl alcohol /toluene, & Chlorobenzene or any other two non hazardous liquids)using Ostwald's Viscometer. • Study of the variation of viscosity for different concentrations of sucrose solution and calculation of radius of sucrose by graphical method. • Determination of specific and molar refraction by Abbes refractometer (ethyl Acetate,methyl acetate, ethylene chloride)
Module 2 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	• Student will understand practically about composition of salt, soap etc • Student will understand practically about total hardness of water and how water is purify.
Content Outline	• Determination of the composition of liquid mixture by refractometry (toluene & Alcohol,water & sucrose solution). • Determination of total alkalinity in antacids in terms of calcium carbonate(two Different samples). • Determination of Vitamin C in fruit juice / formulations by iodate method (two Different

	samples). ● Determination of temporary, permanent and total hardness of water using standard EDTA solution ● Determination of Ni (II) using DMG by gravimetric method.

Reference

1. Skoog D.A., West D.M., Holler and Crouch, Fundamentals of Analytical Chemistry, Cengage Learning, Wiley-VCH Weinheim, 2011.

2. J. Mendham, R. C. Denney, J. D. Barnes, M.J.K. Thomas, Vogel's Quantitative Chemical Analysis, Pearson Education, ELBS, 6th Edition, 2009.

3.Fifield F.W. and Kealey D, Principle & Practice of Analytical Chemistry, Blackwell Science,5th Edition, 2000.

4. Gary D. Christian, Purnendu Dasgupta, Kevin Schug, Analytical Chemistry, John Wiley, 7th Edition, 2013.

5. Douglas A. Skoog, F. James Holler and Stanley R. Crouch, Principles of Instrumental Analysis, Cengage Learning, 6th Edition, 2006.

2.3 RESEARCH PROJECT (Minor stream)

Course Title	RESEARCH PROJECT (Minor stream)
Course Credits	4 / 2
Course Outcomes	After going through the course, learners will be able to
	● Acquire knowledge and skills for higher level research work.
	● Able to use statistical aids for data processing
	● Able to collect data and literature survey.
Module 1 (Credit 1)	
Learning Outcomes *(Specific related to the module..* *e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	● Student will Able to use statistical aids for data processing ● Student will Able to collect data and literature survey.

Content Outline	• Students will be given guidance on basic research approaches, methodology and tools; and expected to collect data (primary, secondary), conduct literature survey and complete a small research project in the institution or industries. After completion of research study,
Module 2 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	• Student will Acquire knowledge and skills for higher level research work. • Student will understand tge Evaluation of research project.
Content Outline	• each student will submit a report 50-60 pages (12,000 to 15,000 words). The chapter wise indexing and typing rules will be the same as thesis writing. Each report will be evaluated by the guide and external referee. Evaluation of research project will be conducted internally and externally.

Reference

1. J. R. Dean, A. M. Jones, D. Holmes, R. Reed, J. Weyersand A Jones, Practical Skills in Chemistry, Pearson Education Ltd. [Prentice Hall], 2002. 2. C. R. Kothari, Research Methodology: Methods and Techniques, New Age International, 2013. 3. A. K. Singh, Tests, Measurements and Research Methods in Behavioral Sciences, BhartiBhawan Publisher And Distributor, 2012. 4. Martyn Denscombe, The Good Research Guide, McGraw-Hill International, 2007. 5. Ranjit Kumar, Research Methodology, Sage Publication Ltd, 3rd Edition, 2011. 6. Edited by J.C. Taylor, Advances in Chemistry Research, Vol 17, Nova Science Publishers INC, 2013. 7. Oklahoma State University Laboratory Safety Manual, 1999.

2.4 Science Café

Course Title	Science Café
Course Credits	4 / 2
Course Outcomes	After going through the course, learners will be able to
	• To know composition and properties of food
	• To know the major and minor components of foods.

	● Know and understand the functions, importance of all nutrients for different age groups and special groups
	● Understand the relationship between nutrition and human well being.
Module 1 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	● Introduction to nutrition –
	● Srudent will know the major and minor components of foods. ● Student will Know and understand the functions, importance of all nutrients for different age groups and special groups
Content Outline	● Functions of foods, definition of nutrition, nutrients, adequate optimum and good nutrition, malnutrition. Food as a source of nutrients. ● Inter relationship between nutrition and health, visible symptoms of good health. ● Food guide-basic five food groups and usage of food guide. Use of food in body-digestion,absorption, transport, utilization of nutrients in the body.
Module 2 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	● Importance of minerals
	● Student will Understand the relationship between nutrition and human well being. ● To know composition and properties of food
Content Outline	● Water as a nutrient, function, sources, requirement, structure, water balance – effect of deficiency. Introduction to chemistry of water and ice. ● Moisture in food: Hydrogen bonding, Bound water, Free water, Water activity and Food stability. ● Energy – UNIT of energy, food as a source of energy, energy value of food, the body's need for energy, B.M.R. activities. Utilization of food for energy requirements . Acid – base balance.
Module 3 (Credit 1)	
Learning Outcomes *(Specific related to the module..*	After learning the module, learners will be able to
	● Sources and properties of carbohydrates

e.g. Define, Differentiate, Carry out, Design, etc. …)	• Student will know the properties of carbohydrates with sources • Student will understand the importance of lipids in our body and there function
Content Outline	• Carbohydrates- composition, classification, sources, functions, structure, physical & chemical properties. • Other sweetening agents, functions of sugar in food (Browning reaction), changes during cooking and processing. • Lipids – composition, nomenclature, saturated, unsaturated fatty acids, classification, food sources, functions of fats. Physical and chemical properties, emulsions, chemistry & technology of fat and oil processing. Role of food lipids in flavour
Module 4 (Credit 1)	
Learning Outcomes *(Specific related to the module..* *e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to • Student will understand importance of macro and micro elecment present in our body • Student will know different type of Flavouring agents
Content Outline	• Mineral functions, sources, Bio-availability, and deficiency of following minerals – calcium, Iron,Iodine, Fluorine, sodium, potassium. • Pigments indigenous to food, structure, chemical and physical properties. Effect of processing and storage. • Flavors – Vegetables, fruit and spice flavours, fermented food, Meat and sea food.

REFERENCES:

Damodaran, S., Parkin, K.L and Fennema, D.R. (2007). Fennema's Food Chemistry. 4th edition. CRC Press.

Guthrie, H.A. (1983). Introductory nutrition. 5th Edition. Mosby, St. Louis.Meyer, L.H. (2004). Food Chemistry. Textbook Publishers. ISBN: 0758149204.

Mudambi, S.R., Rao, S.M. and Rajagopal, M.V.(2006). Food science. 2nd Edition. New Age International publishers.

Mudambi, S.R and Rajgopal, M.V. (2001). Fundamentals of Foods and Nutrition. 4th Edition.new Age International Publishers.

Shakuntla, M.N and Shadaksharaswamy, M. (2013). Food Facts and Principles. New Age International.

2.5 Lab skill development VSC - Vocational Skill Courses

Course Title	Lab skill development VSC - Vocational Skill Courses
Course Credits	4 / 2
Course Outcomes	After going through the course, learners will be able to
	● Identify methods of skill learning
	● Prepare skill lab environment
	● Plan for student lab skill assessment
	● Describe stages of skill development
	● Select and adapt lab skill learning materials
Module 1 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	● Practical skill
	● understanding of theoretical knowledge ● manipulation of measuring equipment (dynamometer). ● enhancement of experimental knowledge and competence.
Content Outline	● Skill learning is the learning of a task to give accuracy, speed and performance after a high Degree of practice. ● Skills may be perceptual, cognitive, motor or combination of any two. "In ● Skill learning we use motor, cognitive or a combination of these skills." ● The delivery of water, sanitation and hygiene services requires a combination of skills, primarily ● In the areas of communication, WASH technical, critical thinking, and management. ● Communication skills include listening, asking questions, educating, informing, advising, ● Counseling, and checking understanding. Water technology professionals need communication ● Skills not only in interactions with individuals, but also with the whole community and other WASH crades.
Module 2 (Credit 1)	
Learning Outcomes *(Specific related to the module..*	After learning the module, learners will be able to
	● Critical thinking and management skill

e.g. Define, Differentiate, Carry out, Design, etc. …)	• Students will understand data investigation and problem solving expertise • Student will learn teamwork and patience
Content Outline	• WASH technical skills involve the abilities to identify a community's water problem, collect Water samples, conduct water quality, install water distribution system and design and Implement a safe water supply strategy. • Critical thinking skills entail drawing on past experience and seeking out new information in • Order to analyze, reason, reflect, create ideas, and clarify information. Critical thinking is • Essential for solving problems and making sound decisions. • Management skills include organizing, regulating, or being in charge of functions such as Assigning tasks to staff, maintaining records, ensuring the availability of essential supplies and Equipment, or designing a water safety plan.

Reference

2.6 PERSONALITY AND COMMUNICATION

Course Title	PERSONALITY AND COMMUNICATION
Course Credits	4 / 2
Course Outcomes	After going through the course, learners will be able to
	• Soft skills comprise pleasant and appealing personality traits as self-confidence, positive attitude, emotional intelligence, social grace, flexibility, friendliness and effective communication skills.
	• The course aims to cause a basic awareness about the significance of soft skills in professional
Module 1 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	• Connection between emotions and personality development
	• Student will Develop skills to embrace change, handle setbacks, and thrive in dynamic work environments.

	• Student will Build self-confidence, overcome self-doubt, and be able to assert oneself in professional settings
Content Outline	• Define Personality, Determinants of Personality Development, Perception – Definition,Perceptual Process • Factors of Association – Relationship, Personality Traits, Developing Effective Habits, Emotional Intelligence • Motivation, Introspection, Self-Assessment, Self-Appraisal & Self-development, Sigmund Freud Id, Ego & SuperEgo • Self Esteem and Maslow, Self Esteem & Erik Erikson, Mind Mapping, Competency Mapping & 360 Degree Assessment,Types of Personalities – Introvert, Extrovert & Ambivert person, Effective Communication & Its key aspects • Assertiveness, Decision making skills, Conflict: Process & Resolution, Leadership & Qualities of Successful Leader
Module 2 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	• Different factors affecting personality development
	• Student will Improve both verbal and non-verbal communication abilities, active listening, and expressing ideas effectively. • Student will increases self-awareness, self-esteem, increases skills, and fulfills aspirations.
Content Outline	• Interpersonal Relationship, Personality – Spiritual journey beyond management of change,Good manners & Etiquettes,Effective Speech, Understanding Body language, projective positive body language • Attitude - Concept -Significance -Factors affecting attitudes – Positive attitude–Advantages–Negative attitude-Disadvantages – • Ways to develop positive attitude, Carl Jung `s contribution to personality development theory • Stress Management: Introduction, Causes, stress management techniques, • Time management: Importance of time management, Techniques of time management, Time management styles.

Books and references

1. Seven Habits Of Highly Effective People – Stephen Covey

2. You Can Win – Shiv Khera

3. Three Basic Managerial Skills For All – Hall Of India Pvt Ltd New Delhi

4. Hurlock Elizabeth B Personality Development Tata Mcgraw Hill New Delhi

5. Understanding Psychology: By Robert S Feldman. (Tata McGraw Hill Publishing)

6. Personality Development and Career management: By R.M.Onkar

2.7 Types and modes of communication

Course Title	Types and modes of communication
Course Credits	4 / 2
Course Outcomes	After going through the course, learners will be able to
	• One of the critical links among human beings and an important thread that binds society together is the ability to share thoughts, emotions and ideas through various means of communication: both verbal and non-verbal.
	• The purpose of this course is to introduce students to the theory, fundamentals and tools ofcommunication and to develop in them vital communication skills which should be integral to personal, social and professional interactions.
Module 1 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	• COMMUNICATION: THEORY AND TYPES
	• Students will Identify key principles of effective public speaking. • Student will Describe delivery techniques for use during a public speech. • Student will Identify the role and importance of your audience. • Student will know tips and tricks to giving an effective speech.
Content Outline	• Theory of Communication, Types and modes of Communication Verbal and Non-verbal (Spoken and Written) Barriers and Strategies Inter-personal and Group communication • SPEAKING SKILLS:Dialogue , Group Discussion , Effective Communication/ - Communication Interview

Module 2 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	• READING AND UNDERSTANDING
	• Students will describe the measurable skills, abilities, knowledge or values that students should be able to demonstrate as a result of a completing a course • Students learn to ask questions, make connections between what they are reading and previous experiences, make connections among multiple texts, and self-check their comprehension when confusion arises.
Content Outline	• Close Reading, Comprehension, Summary, Paraphrasing , Analysis and Interpretation • WRITING SKILLS:Documenting, Report Writing , Making notes, Letter writing

Reference

A) 7 Types of Communication

1. Verbal Communication

2. Non-verbal Communication

3. Written Communication

4. Listening

2.8 ENVIRONMENTAL SCIENCE (VEC)

Course Title	ENVIRONMENTAL SCIENCE (VEC)
Course Credits	4 / 2
Course Outcomes	After going through the course, learners will be able to
	• The students will get the knowledge about trends of biological diversity and conservation strategies and thereafter be able to create awareness for its conservation and development.
	• The understanding of issues concerning different natural resources will be helpful to find scientific solution based on participatory approach.

	• To know about the local environmental issues, movements and an important role to minimize the impact of these aspects.
	• Knowledge about the types of pollution and pollution control.
Module 1 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	• INTRODUCTION TO ENVIRONMENTAL SCIENCES
	• The students will get the knowledge about trends of biological diversity and conservation strategies and thereafter be able to create awareness for its conservation and development. • The understanding of issues concerning different natural resources will be helpful to find
Content Outline	• Definition, scope and importance of the environmental science, Natural Resources: • Renewable and non-renewable resources: Natural resources and associated problems. • Introduction, kinds of ecosystem, structure and functions, abiotic and biotic component, • Ecological energetics, Energy flow models, Food chain and Food web, Ecological Pyramids-types, Ecological succession, Introduction, types, structure and function of the following • Ecosystem: a. Forest ecosystem b. Grassland ecosystem c. Desert ecosystem d. Aquatic ecosystems.
Module 2 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	• BIODIVERSITY AND ITS CONSERVATION
	• To know about the local environmental issues, movements and an important role too minimize the impact of these aspects. • Knowledge about the types of pollution and pollution control.
Content Outline	• Introduction – Definition, value and types genetic, species and ecosystem diversity. Bio-geographical classification and Hot-spots of India. Threats to biodiversity: habitat loss,poaching of wildlife, man-wildlife conflicts. Endangered and endemic species of India. • Conservation of biodiversity: In-situ and Ex-situ conservation.

	• Definition, cause, effects and control measures of Air, Water, Soil, Marine and Noisepollution. • Solid Waste Management: Causes, effects and control measures of wastes. • Seventeen Sustainable Developmental Goals, Environment Protection Act, Air Act, Water Act, Wildlife Protection Act, Forest Conservation Act, Public awareness.

Reference books

1. D. Thangadurai, G. Ching, S. Jeyabalan, and S. Islam Biodiversity and Conservation: Characterization and

Utilization of Plants, Microbes and Natural Resources for Sustainable Development and Ecosystem

Management. United States: Apple Academic Press, 20192.

I. Khan, Forest Governance and Sustainable Resource Management. SAGE Publications. India, 2019

3. P. D. Sharma, Ecology and Environment. 13th Edition, Rastogi Publications, 2017

4. G. Cao, R. Orru, Current Environmental Issues and Challenges. 14th Edition; Springer, 2014

5. D. Ginley, D. Cahen, Fundamentals of Materials for Energy and Environmental Sustainability. Cambridge

University Press, 2011

2.9 SPORTS CC

Course Title	SPORTS CC
Course Credits	4 / 2
Course Outcomes	After going through the course, learners will be able to
	• Students are provided opportunities to participate in various games and sports such as races, cross country races, table tennis, chess, kabaddi, volleyball, basket ball, swimming, cricket, archery, Badminton, football, basketball, Athletics, Kho-Kho, handball, hockey, weight lifting, taekwondo etc.
	• The students take part in games organised at college/district/state/national levels of sports competition.

	• The college seriously promotes the participation of students in extra-curricular and co-curricular activities
	• The college has a regular Sports Officer among our faculty, and sufficient outdoor and indoor games facilities within and outside the campus.
Module 1 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	• Indoor Games:- Chess and table Tennis.
	• Students will able to understand critical thinking
Content Outline	• Board Games • Card Games • Strategy Games • Pencil and Paper Games • Guessing Games • Online Games • Lawn Games • Educational Games • Role Play Games
Module 2 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	• Outdoor Game:- Cricket, Hockey, Volleyball, Football, Basket ball, Kho-Kho, kabaddi
	• Students learn physical training
Content Outline	• Cricket • Football • Tennis • Basketball • Volleyball • Swimming • Golf • Roller Skating • Badminton • Table Tennis • Eight-Ball Pool • Meditation

Reference

1.A Lynn, A.L.,(2010) Effective Sports Coaching: A Practical Guide. Wiltshire: The Crowood Press Limited.

2.Carling, C.C., Reilly, T.R. and Williams, M.A.W. (2009) Performance assessment for field sports. Oxon: Routledge.

3.Coaches Colleague . (2009) Notational Analysis.

4.C Carling, C.C., A M Williams , A.M.W. and T Reilly, T.R. (2008) Handbook of Soccer Match Analysis. Oxon: Routledge.

5.M Haines, M.H. (2013) The role of performance analysis within the coaching process.

3.1 PHYSICAL CHEMISTRY

Course Title	3.1 PHYSICAL CHEMISTRY
Course Credits	4 / 2
Course Outcomes	After going through the course, learners will be able to
	1. The main objective of this paper is to give a basic and updated knowledge for students on Thermodynamics, Surface phenomena and phase equilibria, Electroche mistry, Chemical kinetics and Microwave Spectroscopy and Rotational Vibrational Spectroscopy.
Module 1 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	1. ATOMIC STRUCTURE
	2.
Content Outline	Review of Bohr's theory and its limitations, dual behaviour of matter and radiation, de Broglie's relation, Heisenberg Uncertainty principle. Hydrogen atom spectra. Need of a new approach to atomic structure -Introduction to Quantum mechanics: Time independent Schrodinger equation and meaning of various terms in it (no derivation). Significance of ψ and ψ Thermodynamics of ideal solutions: Ideal solutions and Raoult's law, deviations from Raoult's law non-idcal solutions. Vapour pressure-composition and temperature- composition curves of ideal and non-ideal solutions. Distillation of solutions. Partial miscibility of liquids: Critical solution temperature; cffect of impurity on partial miscibility of liquids. Immiscibility of liquids- Principle of steam distillation. Nernst distribution law and its applications, solvent extraction. Liquids: Surface tension and its determination using a stalagmometer. Viscosity of a liquid and

	determination of coefficient of viscosity using Ostwald viscometer. Effect of temperature on surface tension and coefficient of viscosity of a liquid (qualitative treatment only).
Module 2 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to 1. CHEMICAL BONDING AND MOLECULAR STRUCTURE IONIC BONDING: 2.
Content Outline	Ionic bonding, lattice energy, Statement of Born-Landé equation for calculation of lattice energy, Born-Haber cycle and its applications, polarizing power and polarizability. Fajan's rulcs, ionic character in covalent compounds, dipole moment and percentage ionic character. Covalent bonding: VB Approuch: Shapes of some inorganic molecules and ions on the basis of VSEPR and hybridization with suitable examples of linear, trigonal planar, square planar, tetrahedral, trigonal bipyramidal and octahedral arrangements.MO Approach: Rules for the LCAO method, bonding and antibonding MOs and their characteristics for s-s, s-p and p-p combinations of atomic orbitals, nonbonding combination of orbitals, MO treatment of homonuclear diatomic molecules of Ist and 2nd periods (including idea of s-p mixing) and heteronuclear diatomic molecules such as CO, NO and NO". Comparison of VB and MỘ approaches
Module 3 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to 3. ELECTROCHEMISTRY AND PHASE EQUILIBRIUM 4.
Content Outline	Electrochemistry: Reversible and irreversible cells. Concept of EMF of a cell. Measurement of EMF of a cell. Nernst equation and its importance. Types of electrodes. Standard electrode potential. Electrochemical series. Thermodynamics of a reversible cell, calculation of thermodynamic properties: AG, AH and AS from EMF data. Phase Equilibrium: Phases, components and degrees of

	freedom of a system, criteria of phase equilibrium. Phase diagrams of one-component systems (water and sulfur) and two component systems involving eutectics, congruent and incongruent melting points (KIH,0, Bi-Cd).
Module 4 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	5. LIQUID AND GAS CHEMISTRY
	6.
Content Outline	Thermodynamics of ideal solutions: Ideal solutions and Raoult's law, deviations from Raoult's law non-ideal solutions. Vapour pressure-composition and temperature- composition curves of ideal and non-ideal solutions. Distillation of solutions. Partial miscibility of liquids: Critical solution temperature; effect of impurity on partial miscibility of liquids. Immiscibility of liquids- Principle of steam distillation. Nernst distribution law and its applications, solvent extraction. Liquids: Surface tension and its determination using a stalagmometer. Viscosity of a liquid and determination of coefficient of viscosity using Ostwald viscometer. Effect of temperature on surface tension and coefficient of viscosity of a liquid (qualitative treatment only).

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1.Gurdeep Raj, _Advanced Physical Chemistry‘, 35thedition, Goel Publishing House, 2009.

2.Puri, Sharma Pathania, _Principles of Physical Chemistry‘, 42ndedition, Vishal Publishing

& Co, 2007.

1.R. Stephen Berry, Stuart A. Rice & John Ross, _Physical Chemistry‘, 2ndedition, Oxford

University press, 2000..Levin, _Physical Chemistry‘, 6thedition, Tata Mcgraw-Hill Education,

2011.

3.2 ORGANIC CHEMISTRY

Course Title	3.2 ORGANIC CHEMISTRY
Course Credits	4 / 2
Course Outcomes	After going through the course, learners will be able to
	1. To acquire skills in the preparation of organic compounds, their separation, purification and identification
	2. To understand the process of preparation of organic through various reactions
	3. To develop an insight into the preparation of organic compounds in various reactions
	4.
	5.
Module 1 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	1. STEREOCHEMISTRY:
	2.
Content Outline	Structure, shape and reactivity of organic molecules Nucleophiles and electrophiles. Reactive Intermediates: Carbocations, Carbanions and free radicals. Strength of organic acids and bases: Comparative study with emphasis on factors affecting pK values. Aromaticity: Benzenoids and Hückel's rule.Alkenes: Methods of preparation of alkenes by (i) dehydration of alcohols (ii) dehydrohalogenation. Saytezaff's elimination (Formation of highly substituted alkene, 2-butene), Hofmann orientation (Formation of least substituted alkene, 1-pentene). Chemical reactions of alkenes- Peroxide effect and its mechanism, hydroboration, oxidation, oxy-mercuration–reduction and mechanism, ozonolysis with respect to2-butene and 2-methyl2-butene, oxidation with KMnO4.
Module 2 (Credit 1)	
Learning Outcomes *(Specific related to the module..*	After learning the module, learners will be able to
	1. CYCLOALKANES:

e.g. Define, Differentiate, Carry out, Design, etc. …)	2.
Content Outline	Baeyer's strain theory, calculation of angle strain, Sachse Mohr theory of strain-less rings. Chair and boat forms of cyclohexane. Axial and equatorial bonds. Conformational isomerism: Basic concept of conformational analysis with reference to ethane and butane. Geometrical isomerism: definition, E and Z notation for 2-butene and butenedioic acid, rules for assigning notations. Determination of configuration of butenedioic acid by anhydride formation, dipole moment measurement, melting point and stability. Optical isomerism: Chirality, van't Hoff-Lebel hypothesis, optical activity, D and L configurations, R and S notations, sequence and priority rules, enantiomers, diastereoisomers, epimers, anomers, racemic and meso (with suitable examples like lactic and tartaric acids.). racemisation, resolution of racemic mixture by chemical method, asymmetric synthesis, Walden inversion
Module 3 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	3. SPECTROSCOPY, ALKYL AND ARYL HALIDES SPECTROSCOPY:
	4.
Content Outline	Spectroscopy: Introduction to conventional methods of elucidation of structure of organic compounds (chemical degradation) and comparison with spectroscopic methods, electromagnetic spectrum. UV spectroscopy: Principle, types of transitions, chromophores, concept of auxochromes and their effect on λmax, bathochromic shift, hypsochromic shift, hypochromic and hyperchromic shift. Woodward and Fieser rules and illustration of calculation of λmax taking myrcene and Phellandrene as examples. Alkyl Halides: Types of Nucleophilic Substitution (SN1, SN2 and SNi) reactions. Preparation of alkyl halides from alkenes and alcohols. Aryl Halides: Preparation of aryl halides (Chloro, bromo and iodo-benzene) from phenol, Sandmeyer & Gattermann reactions
Module 4 (Credit 1)	

Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	5. ALDEHYDES AND KETONES, CARBOXYLIC ACIDS:
	6.
Content Outline	Aldehydes and ketones (aliphatic and aromatic): (Formaldehyde, acetaldehyde, acetone and benzaldehyde) Preparation: from acid chlorides and from nitriles. Reactions – Reaction with HCN, ROH, NaHSO3, NH2-G derivatives. Iodoform test. Aldol Condensation, Cannizzaro's reaction, Wittig reaction, Benzoin condensation. Clemensen: Reduktion. Carboxylic Acids: Nomenclature, structure and bonding, acid strengths of mono, di and tri chloroacetic acids and nitro, chloro and hydroxy substituted benzoic acids, mechanism of esterification and hydrolysis of ester (SN1 and SN2). Reactions of carboxylic acids - i) Conversion into acid derivatives(acid chlorides, amides, esters and anhydrides), ii) Curtius rearrangement, iii) Reaction with organometallic compounds and iv) Hell-Volhard-Zelinsky reaction.

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Organic Chemistry, T. W. Graham Solomons,Craig B. Fryhle, John Wiley & Sons; 10th edition(December, 2009)

Morrison and R. N. Boyd, „Organic Chemistry", 6th Edition, Prentice Hall, 1992.

D. Nasipuri Stereochemistry of Organic Compounds", 2nd Edition, New Age International (P) Ltd., Publishers, 1994.

Peter Sykes, „A Guide book to Mechanism in Organic Chemistry", 6th Edition, Pearson Education, 2009.

P. S. Kalsi" „Organic Reactions and their Mechanisms"", New Age International Publishers,2009.

J. Clayden, N. Greeves, S. Warren and P. Wothers, „Organic Chemistry", 2nd edition, OxfordUniversity Press, 2012. .

K. S. Tewari and N. K. Vishnoi „Organic Chemistry", 3rd Edition, Vikas Publishing House, 2005.

3.3 Fashion and jewellery design

Course Title	Fashion and jewellery design
Course Credits	4 / 2
Course Outcomes	After going through the course, learners will be able to
	1. Students will learn about the traditional jewellery of India. 2. Students will understand the manufacturing technology of jewellery. 3. Students will learn about Gem and Gem stones. 4. Students will learn about the Jewellery Entrepreneurship.
Module 1 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	1. Students will understand the history of jewellery. 2.Students will learn the types of jewellery.
Content Outline	Traditional Jewellery of India Introduction to traditional jewellery-History of jewellery-Significance of Indian jewellery. Bridal jewellery - Antique jewellery - Bead jewellery - Custom jewellery - Copper jewellery -Fashion jewellery - Filigree jewellery - Gold jewellery – Hand made jewellery - Ivory jewellery -Jadu jewellery.
Module 2 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	1. 1. Students will learn the terminology of Gems and Gem stones. 2. 2. Students will understand the properties of Gems and Organic gems.
	3.
Content Outline	Jewellery Manufacturing technology Introduction to tools used in the jewellery manufacturing - Safety measures taken while making jewellery-Dimensions used in the jewellery. Process of jewellery making - Designing, Moulding, Casting, Polishing, Embellishment, Finishing, Plating, Quality Checking, Packing and Transporting, Marketing.

Module 3 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	1. Students will learn the features of entrepreneurship. 2. Students will understand the creativity innovation and evolution of jewellery
Content Outline	Gem and Gem stones Introduction to Gem stone and their Influence - Terminology- Origin- Structure-Classification. Properties of Gem stone – Hardness, Cleavage and Fracture, Density – Cutting and Polishing of Gems. Organic Gemstones – Diamonds, Opals, Pearls, Amber, Coral.
Module 4 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	1. Students will understand the history of jewellery. 2.Students will learn the types of jewellery.
Content Outline	Jewellery Entrepreneurship Entrepreneurship and entrepreneur – Define and Concepts, Essential features of entrepreneurship, Characteristic of entrepreneur, Functions of entrepreneur, Role of creativity and innovation in entrepreneurship, Evolution of entrepreneurship. Steps for starting a small scale enterprise -Steps to be taken. Preparation of Project report - Guidelines. Procedure and formalities for registration. Types of organization -Sole proprietorship. Partnership. Joint stock company. Factors influencing the choice of organization.

References

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2. Industrial Engineering: Concepts, Methodologies, Tools, and Applications: Concepts, Methodologies, Tools, and Applications, IGI Global, 20123. Entrepreneurship development - C.B. Gupta & N.P. Srinivasan.

4. Gems and Gemstones: Timeless Natural Beauty of the Mineral World, Lance Grande, Allison Augustyn, University of Chicago Press, 2009

3.4 Fermentation Technology

Course Title	Fermentation Technology
Course Credits	4 / 2
Course Outcomes	After going through the course, learners will be able to
	1. To identify enzymes of interest for target biotransformation's by genome 2. To introduce the students to the various concepts of Microbial fermentation. 3. To empower the students with various designs of fermenter. 4. The knowledge on fermentation process enable the students to manipulate microbes for 5. improvement.
Module 1 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	1. Students able to differentiate between sterilization and disinfection
	2. Students understand the enzymes of interest for target biotransformation's by genome
Content Outline	Principles of sterilization and disinfection. Physical and chemical methods of microbial control. Maintenance and preservation of microorganism, Antimicrobial agent and resistant mechanisms. Bacterial spores. Major types of organisms used in fermentation. Microbial growth kinetics, Batch culture, Continuous Culture, Fed – Batch – Type, applications, fermentation kinetics.
Module 2 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	1. Students understand the Development of inoculum for industrial
	2. Students understand the

Content Outline	Isolation, preservation and improvement of industrially important microorganisms, media for industrial fermentations – media formulation, Development of inoculum for industrial fermentations,Fermentor design and types-basic functions of a Fermentor for microbial and animal cell culture . Control of fermentation – requirements for control, design of a fermentation control systems, sensors and controllers, control of incubation, aeration and agitation, Computers in fermentation, modelling, software sensors, control and supervision of fermentation processes

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Coulson, J.M. and J.F. Richardson; 6th Edition, Chemical Engineering Elsevier. Mc Graw Hill Publication.

Emt.el-Mansi & CFA. Bryce Fermentation Microbiology & Biotechnology, Taylor & Francis Ltd. Stanbury, P.F., A. Whitaker & S.J. Hall. Principles of fermentation technology Oxford Press.

3.5 Technical communication skills VSC – Vocational Skill Courses

Course Title	3.5 Technical communication skills VSC – Vocational Skill Courses
Course Credits	4 / 2
Course Outcomes	After going through the course, learners will be able to
	1. Fundamentals of technical communication skills.
	2. Types of communication skills.
	3. Characteristics of technical communication skills.
	4. Technical communication as a profession.
	5. Types of communication skills.
Module 1 (Credit 1)	
Learning Outcomes	After learning the module, learners will be able to

(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)	1. Introduction to Technical Communication
	2.
Content Outline	Fundamentals of Technical Communication Skills, Barriers to Effective Communication, Different Styles in Technical Communication. Interpersonal Communication Skills, How to improve Interpersonal Communication Skills, Developing Interpersonal Skills. Grammar: Basic English Grammar and Parts of Speech – Nouns, Pronouns, Adjectives, Verbs, Adverbs, Preposition, Articles, Conjunctions. Speech Sounds: Vowels and Consonants – Exercises on it. Preposition, Kinds of Preposition And Prepositions Often Confused. Word Accent – Rules for Word Accent, Stress Shift, Question Tags, Question Tags for Assertive Sentences (Statements) – Some Exceptions in Question Tags And Exercises, One Word Substitutes and Exercises. Vocabulary– Synonyms and Antonyms, Exercises on it
Module 2 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	1. Introduction to Listening Skills and Phonetics – I
	2.
Content Outline	Introduction to Phonetics, Sounds Mispronounced, Silent and Non-silent Letters,Homophones and Homonyms, Aspiration, Pronunciation of 'The', Words Ending with '-age', Some Plural Forms. Use of Articles – Indefinite and Definite Articles.

3.6 Dialogue communication program and group Discussion

Course Title	Dialogue communication program and group Discussion
Course Credits	4 / 2

Course Outcomes	After going through the course, learners will be able to
	1. Directions of communication
	2. Channels of communication
	3. Nature of communication
	4. Process of communication
	5. The concept of communication
Module 1 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	1. The Seven Cs of Effective Communication
	2.
Content Outline	Completeness, Conciseness, Consideration, Concreteness, Clarity, Courtesy, Correctness Understanding Business Communication: Nature and Scope of Communication, Non-verbal Communication, Cross-cultural communication, Technology-enabled Business Communication
Module 2 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	1. Writing Business Messages and Documents:
	2.
Content Outline	Business writing, Business Correspondence, Instructions Business Reports and Proposals, Career building and Resume writing. Developing Oral Communication Skills for Business: Effective Listening, Business Presentations and Public Speaking, Conversations, Interviews Meetings and Conferences, Group Discussions and Team Presentations, Team Briefing, Understanding Specific Communication Needs: Communication across Functional Areas

Reference

Angenot, Marc. 2008. Dialogues de sourds. Traité de rhétorique. Paris: Mille et Une Nuits.

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Bakhtin, Mikhail. 1981. The dialogical imagination: Four essays by M.M. Bakhtin. Austin: University of Texas Press.

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Bayley, Paul (ed.). 2004. Cross-cultural perspectives on parliamentary discourse. Amsterdam: John Benjamins.

Bazzanella, Carla (ed.). 1996. Repetition in dialogue. Tübingen: Niemeyer.

Bazzanella, Carla. (ed.). 2002. Sul dialogo: Contesti e forme di interazione verbale. Milano: Guerini.

3.7 Field Project

Course Title	Field Project
Course Credits	4 / 2
Course Outcomes	After going through the course, learners will be able to
	6. Field reports are also an opportunity to obtain evidence through methods of observing professional practice that challenge or refine existing theories.
	7. Field reports facilitate the development of data collection techniques and observation skills and allow you to understand how theory applies to real world situations
Module 1 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	3. STRUCTURE OF THE PROJECT REPORT
	4.
Content Outline	INTRODUCTION – to the topic under study, e.g. if it is a study on Marketing Research practices, an Introduction as to what is Marketing Research and its practices, and other information should be given. BACKGROUND – A brief background about the company/organization under study, like Name, Location Etc. and also relevant details like organization structure, existing systems related to the

	particular subject Under study and a brief write up of the problem you want to study in that organization. METHODOLOGY – It forms the crux of the report. It should clearly identify the Problem, the main Objectives of the study, the scope which indicates the usefulness of the project, how applicable it is, and How it can be used by the organization for improved performance. Review of Literature can be done included, which indicates the research done so far with regard To the particular subject. The relevant data gathered should be presented in the form of tables, graphs, flow charts etc. Detailed discussion about the present practices related to the subject. If new practices/augments Have been introduced, a discussion of the same may be done. Analysis of the data collected or the effect of the new practices on the existing one.
Module 2 (Credit 1)	
Learning Outcomes *(Specific related to the module..* *e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	4. CONCLUSIONS & RECOMMENDATIONS
	5.
Content Outline	Based on the study done, what conclusions/inferences can be Drawn? Recommendations are based on the conclusions of the study. It is important lo indicate that a set of Recommendations should follow from the conclusions inferred. The recommendations should have value to the Organization. If possible quantify the benefits that can be gained from following the recommendations. Indications as to what other techniques can be applied to improve the systems viz. Cost saving techniques, Precautions. LIMITATIONS of the study if any should be highlighted.

3.8 Plant Cultivation technology CC - Co-curricular courses

Course Title	3.8 Plant Cultivation technology CC - Co-curricular courses
Course Credits	4 / 2
Course Outcomes	After going through the course, learners will be able to
	1. Technologies and skills used for plant cultivation.
	2. Factors affecting plant cultivation.
	3. Steps for plant cultivation.
	4. Definition and Introduction
	5. What is the Aim of Plant cultivation.
Module 1 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	1. Basics of Plant cultivation
	2.
Content Outline	Theory: Seed as a propagule, Germination of seeds, Seed dormancy and viability, Seed Production – method of collection and processing, Seed treatment, Classes of seed, Seed testing, commercial vegetable seedling production. Practicals: Demonstration of seed germination; Raising of seedlings on beds and in trays; Demonstration of seed collection, processing, packing and storage; Demonstration of seed Testing; Demonstration of seed treatment methods; chemicals and organic preparations used For seed treatment; Demonstration of commercial seedling production of vegetables (chili, Knol-khol, brinjal).
Module 2 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	1. Seed Propagation
	2.

Content Outline	Theory: Seed as a propagule, Germination of seeds, Seed dormancy and viability, Seed Production – method of collection and processing, Seed treatment, Classes of seed, Seed testing, commercial vegetable seedling production. Practicals: Demonstration of seed germination; Raising of seedlings on beds and in trays; Demonstration of seed collection, processing, packing and storage; Demonstration of seed Testing; Demonstration of seed treatment methods; chemicals and organic preparations used For seed treatment; Demonstration of commercial seedling production of vegetables (chili, Knol-khol, brinjal).

4.1 ANALYTICAL CHEMISTRY

Course Title	ANALYTICAL CHEMISTRY
Course Credits	4 / 2
Course Outcomes	After going through the course, learners will be able to
	1. Imparting skills in the scientific method of planning, conducting, reviewing, reporting experiments and problem solving in chemical analysis.
	2. Developing skills in contemporary methods of separation and appropriate selection of instruments for the successful analysis of chemical compounds
	3. Understanding of principle and working of the range of instrumental methods in analytical chemistry
Module 1 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	5. FUNDAMENTALS OF ANALYTICAL CHEMISTRY
	6.
Content Outline	Concepts of Quality, Quality Assurance & Quality Control. Importance of quality in industries. Error, Accuracy & Precision. Chemical Calculations Percentage composition of elements in chemical compounds. Mean,

	Median, Average deviation, relative average deviation, standard deviation. Sampling Terms involved, importance of sampling, sampling techniques, Sampling of solids - Sample size – Bulk ratio size to weight ratio. Size reduction Methods. Sampling of compact solids Sampling of liquids – Homogeneous and heterogeneous, static and flowing liquid. Sampling of Gases – Ambient and stack sampling. Apparatus and methods used for sampling.
Module 2 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	1. Analysis of water
	6.
Content Outline	Analysis of water: Definition of pure water, sources responsible for contaminating water, water sampling methods, determination of dissolved oxygen (DO) of a water sample, analysis of total hardness, analysis of total suspended solid, analysis of total dissolved solid, analysis of oil& grease in water
Module 3 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	1. SOLVENT EXTRACTION
Content Outline	Partition coefficient and distribution ratio, extraction efficiency, separation factor, role of complexing agents in solvent extraction, types of solvent extraction, batch continuous. Solid Phase Extraction – Principle, Process, and Application with special reference to water and industrial effluent analysis. Comparison of Solid phase extraction and solvent extraction.
Module 4 (Credit 1)	
Learning Outcomes *(Specific related to the module..*	After learning the module, learners will be able to
	7. CHROMATOGRAPHIC SEPARATION

e.g. Define, Differentiate, Carry out, Design, etc. …)	8.
Content Outline	Introduction to chromatographic techniques, Classification of chromatographic techniques. Planar Chromatography – Principle, technique and Application of I) Paper chromatography II) Thin layer chromatography.

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2. Sharma, B.K., ‗Instrumental Methods of Chemical Analysis‘, Goel Publishing House, Merrut,1997.

3. Gopalan. R., Subramaniam P.S. and Rengarajan K., ‗Elements of Analytical Chemistry‘,Sultan Chand and Sons, 2004.

4.2 INORGANIC CHEMISTRY

Course Title	INORGANIC CHEMISTRY
Course Credits	4 / 2
Course Outcomes	After going through the course, learners will be able to
	1. Understanding of anomalous behavior of elements
	2. Ability to understand, explain predict various rules involved in chemical bonding
	3. In-depth knowledge about standard electrode potential and volumetric analysis
	4. Understand the importance and application of chemical bonds, intermolecular and intramolecular weak chemical forces and their effect.
	5. Understand the periodicity in atomic and ionic radii, electronegativity, ionization energy,electron affinity of elements of the periodic table
Module 1 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	1. Students will understand the properties of s-block elements.
	2. Students will understand different types of bonding.

Content Outline	S block elements General characteristics – atomic and ionic radii – ionization energies – electropositive character – reducing properties – hydration of ions – flame coloration – lattice energies – chemical properties – extraction of alkali and alkaline earth metals – uses of alkali and alkaline earth metals – complexes of alkali and alkaline earth metals – compounds of alkali and alkaline earth metals and their applications.
Module 2 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	Students will learn the concept of alkaline earth metals and their industrial applications.
	Students will learn the periodicity of elements.
Content Outline	PERIODICITY OF ELEMENTS S, P, D, F block elements, the long form of periodic table. Detailed discussion of the following properties of the elements, with reference to s and p-block. (a) Effective nuclear charge, shielding or screening effect, Slater rules, variation of effective nuclear charge in periodic table. (b) Atomic radii (van der Waals) (c) Ionic and crystal radii. (d) Covalent radii (octahedral and tetrahedral) (e) Ionization enthalpy, Successive ionization enthalpies and factors affecting ionization energy. Applications of ionization enthalpy. (f) Electron gain enthalpy, trends of electron gain enthalpy (g) Electronegativity, Pauling's/ Mulliken's/ Allred Rachow's/ and Mulliken-Jaffé's electronegativity scales. Variation of electronegativity with bond order, partial charge, hybridization, group electronegativity. Sanderson's electron density ratio
Module 3 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	1. Students will understand general characteristics of f-block elements.
	2. Students will learn the different Extraction lanthanides series.
Content Outline	General characteristics of d block elements- Electronic configuration, oxidation states, metallic property, color, reactivity, reducing property, magnetic, catalytic and complex formation properties.

	f block elements: General characteristics of f block elements - Electronic configuration, cause and consequences of lanthanide contraction, oxidation states, colour, magnetic properties, General features of actinides- electronic configuration, oxidation state, extraction of uranium from pitchblende.separation of lanthanides (ion exchange method only).
Module 4 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to 1. Students will learn the enormous behaviour of oxygen, Halogen and nitrogen. 2. Students will understand metallic and non Metallic properties of p-block elements.
Content Outline	p block elements General characteristics – metallic and non-metallic character – diagonal relationship – extraction – Lewis acids – back bonding – boron compounds. Catenation – structure of graphite – intercalation compounds – metal carbonyls – carbides – silica, silicates, glass manufacturing – zeolites. Allotropy in P and S. compounds of N and P - hydrazine – hydrazoic acid – hydroxyl amine – phosphazenes. Anomalous behavior of oxygen, structure of ozone. Hydrides, halides, oxides, oxoacids, persulfuric acids, nitrides of group VI and VII elements. Inter halogen compounds and their structure. Isolation of noble gases – preparation, properties, structure and uses of noble gas compounds.

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2. Lee J. D., ‗Concise Inorganic Chemistry', Black Well Science, UK. 2006

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2. S. F. A. Kettle, ‗Physical Inorganic Chemistry', Spectrum, 1996.

3. B. E. Dogulas DH McDaniel‘s and Alexander, ⎯Concepts and Models of Inorgani Chemistry‘,Oxford IBH, 1983

1.1

Course Title	
Course Credits	4 / 2
Course Outcomes	After going through the course, learners will be able to
	To know the effect of the various diseases on nutritional status and nutritional and dietary requirements.
	Understand the regulation of metabolism
	Understand the metabolism of nutrients in health and diseases
	Learn the role of nutrients in foods and deficiency diseases.
Module 1 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	1.Chemistry and Metabolism of Carbohydrates
	2.
Content Outline	Definition Classification Biological role Metabolism - Digestion and absorption, Glycolysis, Krebs cycle, Electron Transport System, Gluconeogenesis, Glycogenesis, Glycogenolysis, HMP pathway, Galactose Metabolism, Fructose Metabolism, Disorders related to Carbohydrate metabolism. Water and Electrolyte balance Functions of Water Distribution of Body Water Water Intake And Water Output Electrolyte Composition of Body Fluids Regulation of Electrolyte Balance Dehydration and Over hydration.
Module 2 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	9.
	10.

Content Outline	Liver Function Tests Kidney Function Tests Gastric Function Tests Pancreatic Function Tests Thyroid Function Tests Hormones Definition Classification Mechanism of Action Hormones of Hypothalamus, Pituitary Gland, Thyroid Gland, Adrenal Gland, Gonads and Gastrointestinal Hormones.
Module 3 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	11.
	12.
Content Outline	Introduction Anorexia Nervosa Bulimia Nervosa Binge Eating Disorders DIET IN FEVER: Nutrition and Infection Metabolic changes during Infection Typhoid fever Tuberculosis HIV Infection and AIDS
Module 4 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	13.
	14.
Content Outline	Coronary Heart Diseases (CHD) Prevalence Risk Factors Pathophysiology Dyslipidemia Atherosclerosis Hypertension Angina Pectoris Myocardial infarction Congestive Cardiac Failure DIET IN CANCER AND COUNSELING: Risk factors Metabolic Alterations and Nutritional Problems related to Cancer Nutritional requirements of Cancer patients related to Cancer Therapy Cancer Prevention

Reference:

1. Mahan L. K., Escott- Stump, S. and Raymond J. L. (2012): "Krause's Food and the Nutrition Care Process", 13th Edition, Elsevier.

2. Ross, A.C., Caballero B., Cousins R. J., Tucker K.L. and Ziegler T. (2014)Modern Nutrition in Health and Disease. Wolters Kluwer Health/ Lippincott Williams and Wilkins. Ed 11th

3. Garrow, J. S., James, W.P.T. and Ralph, A. (2000): Human Nutrition and Dietetics. 10th Edition, Churchill Livingstone.

4. Nix Staci (2013) William's Basic Nutrition and Diet Therapy. Elsevier Ed.

4.4 Cement technology

Course Title	Cement technology
Course Credits	4 / 2
Course Outcomes	After going through the course, learners will be able to
	8. To understand its composition, manufacture and its influence on performance.
	9. The course is design to familiarise the students with some special cement and application of cement .
	10. The objective of the course to understand chemical aspect of cement,
Module 1 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
Content Outline	Sampling and pre blending of cement raw materials, estimation of Silica Modulus, Alumina Modulus, Hydraulic Modulus, Lime saturation Factor, Liquid Content, Cement manufacturing process, chemical composition of various types cement, cement component and their phase relation, Binary and ternary compounds of cement . Introduction to Geopolymeric cement, characteristic of fly ash, Granulated blast furnace slag for cement production. Durability consideration of concrete, sulphate attacks, corrosion of reinforcing steel in concrete, attack by acid and other aggressive agencies.
Module 2 (Credit 1)	
Learning Outcomes *(Specific related to the module..*	After learning the module, learners will be able to

e.g. Define, Differentiate, Carry out, Design, etc. …)	
Content Outline	Special Cement: Chemical, Mineralogical and physical Characteristic of some of special cement such as Portland Pozzolana Cement (PPC) Portland Slag Cement (PSC) – Super sulphate Cement – Oil Well Cement Application of Cement and Performance Requirement: A).Concrete and mortars, introduction to various infrastructure and use of cement,. Requirement of setting, strength and durability of different concrete constructions, B) effect of chemical composition and physical characteristic of cement on performance, fineness and particle size distribution , tailoring performance of cements.

Reference Books :

Chemistry of Cement and Concrete: F M Lea, Arnold, London

Properties of Concrete : Neville, A.M. Longmans.

Cement Industry Data Book, CAM , New Delhi.

World Cement Directory: CEMBUREAU

1.2

Course Title	
Course Credits	4 / 2
Course Outcomes	After going through the course, learners will be able to
	11.
	12.
	13.
	14.
	15.

Module 1 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	7.
	8.
Content Outline	• ---- • ---- •
Module 2 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	15.
	16.
Content Outline	• ---- • ---- •

1.3

Course Title	
Course Credits	4 / 2
Course Outcomes	After going through the course, learners will be able to
	16.
	17.
	18.
	19.
	20.

Module 1 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	9.
	10.
Content Outline	• ---- • ---- •
Module 2 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	17.
	18.
Content Outline	• ---- • ---- •

1.4

Course Title	
Course Credits	4 / 2
Course Outcomes	After going through the course, learners will be able to
	21.
	22.
	23.
	24.
	25.

Module 1 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	11.
	12.
Content Outline	• ---- • ---- •
Module 2 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	19.
	20.
Content Outline	• ---- • ---- •

1.5

Course Title	
Course Credits	4 / 2
Course Outcomes	After going through the course, learners will be able to
	26.
	27.
	28.
	29.
	30.
Module 1 (Credit 1)	

Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	13.
	14.
Content Outline	• ---- • ---- •
Module 2 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	21.
	22.
Content Outline	• ---- • ---- •

1.6

Course Title	
Course Credits	4 / 2
Course Outcomes	After going through the course, learners will be able to
	31.
	32.
	33.
	34.
	35.
Module 1 (Credit 1)	

Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	15.
	16.
Content Outline	• ---- • ---- •
Module 2 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	23.
	24.
Content Outline	• ---- • ---- •
Module 3 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	25.
	26.
Content Outline	• ---- • ---- •
Module 4 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	27.
	28.

Content Outline	• ---- • ---- •

1.7

Course Title	
Course Credits	4 / 2
Course Outcomes	After going through the course, learners will be able to
	36.
	37.
	38.
	39.
	40.
Module 1 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	17.
	18.
Content Outline	• ---- • ---- •
Module 2 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	29.
	30.

Content Outline	• ---- • ---- •
Module 3 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	31.
	32.
Content Outline	• ---- • ---- •
Module 4 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	33.
	34.
Content Outline	• ---- • ---- •

1.8

Course Title	
Course Credits	4 / 2
Course Outcomes	After going through the course, learners will be able to
	41.

	42.
	43.
	44.
	45.
Module 1 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	19.
	20.
Content Outline	• ---- • ---- •
Module 2 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	35.
	36.
Content Outline	• ---- • ---- •
Module 3 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	37.
	38.
Content Outline	• ---- • ---- •
Module 4 (Credit 1)	

Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	39.
	40.
Content Outline	• ---- • ---- •

1.9

Course Title	
Course Credits	4 / 2
Course Outcomes	After going through the course, learners will be able to
	46.
	47.
	48.
	49.
	50.
Module 1 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	21.
	22.
Content Outline	• ---- • ---- •
Module 2 (Credit 1)	

Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	41.
	42.
Content Outline	• ---- • ---- •
Module 3 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	43.
	44.
Content Outline	• ---- • ---- •
Module 4 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	45.
	46.
Content Outline	• ---- • ---- •