



Karmaveer Bhaurao Patil University, Satara

Syllabus for

B.Sc. III Drug Chemistry

(NEP 2.0)

Under

Faculty of Science and Technology

With effect from Academic Year 2026-2027

Syllabus for B. Sc. III Drug Chemistry

PREAMBLE:

This syllabus is prepared for Third-year undergraduate students to encourage them to study drug chemistry and excel in both academic and industrial exposure simultaneously. As per the UGC norms and industry requirements content of the syllabus have been framed. The depth of the syllabi is compatible with the syllabi of other universities; at the same time, it is not rigid for the students at their third year of graduation. The units in the syllabus are well defined with scope and the number of lectures. The references are mentioned with relevance.

GENERAL OBJECTIVES OF THE COURSE:

1. To introduce drug chemistry, which includes a detailed study of the drug, will help them to enhance their interdisciplinary approach with vigour.
2. To understand the fundamentals, principles, concepts, and recent developments in the subject area.
3. To create a skilled workforce to match the requirements of society.
4. To develop a scientific attitude is the major objective to make the students open-minded and curious.
5. To develop laboratory skills through practical work and equipment is including the collection and interpretation of scientific data to contribute to science.

Program specific outcomes:

1. Able to apply the knowledge gained during the course of the program from drug chemistry, biochemistry, drug analysis, medicinal chemistry, and environmental studies.
2. Able to communicate easily and confidently.
3. Able to perform multitasking in the fields, including pharmaceuticals and research.
4. The students will graduate with proficiency in the subject of drug chemistry.
5. The students will be eligible to continue higher studies in their subject.

1. Title: Drug Chemistry
2. Year of Implementation: 2026-27
3. Duration: 01 Year
4. Pattern: Semester
5. Medium of Instruction: English
6. Student Eligibility: B.Sc. I and as per guideline of university
7. Faculty Eligibility: As per guideline of university & UGC guideline
8. Structure of Course: As per NEP-2020 (2.0)

Level	Sem	Subject				AEC T	VSC	CEP	OJT	Total
5.5	V	DSC		DSE*						
		T	P	T	P					
		DSC I (2)	DSC P (2)	DSE I (2)	DSE P (2)	AEC III (2)	VSC III (2)	CEP (2)	OJT (4)	22
		DSC II (2)		DSE II (2)						
		DSC III (2)								

Level	Sem	Subject				AEC T	VSC	SEC	CC	FP	Total
5.5	VI	DSC		DSE*							
		T	P	T	P						
		DSC I (2)	DSC P (2)	DSE I (2)	DSE P (2)	AEC IV (2)	VSC III (2)	SEC (2)	CC (2)	FP (2)	22
		DSC II (2)		DSE II (2)							
		DSC III (2)									

*DSE- 1 Paper out of two for each Semester

Semester: V

Sr. No.	Subject	Course Code	Title of Paper	No. of lectures per week	Credits
1.	DSC IX	BDCT 351	Drug Design and Early Development	2	2
2.	DSC X	BDCT 352	Reaction Mechanisms Reagents & Name Reactions	2	2
3.	DSC XI	BDCT 353	Natural Products	2	2
4.	DSC XII (E1)	BDCT 354	Industrial Pharmacy	2	2
5.	DSC XIII (E2)	BDCT 355	Analytical Chemistry		
6.	DSCP	BDCP 356	Practical VI (Based on BDCT 351, BDCT 352, BDCT 353)	1	2
7.	DSCP	BDCP 357	Practical VII (Based on BDCT 354, BDCT 355)	1	2
8.	AEC III	BDCTAC III	English for Communication III	2	2
9.	VSC III	BDCPVSC III	Analytical Techniques I	1	2
10.	CEP I	BDCPCEP	Community Engagement Program	1	2
11.	OJT I	BDCPOJT1	On Job Training	-	4
Total				10T + 4P	22

Semester: VI

Sr. No.	Subject	Course No. & Course Code	Title of Paper	No. of lectures/ Practical per week	Credits
1.	DSC I	BDCT 361	Therapeutic Areas and It's drugs	2	2
2.	DSC II	BDCT 362	Heterocyclic Drugs	2	2
3.	DSC III	BDCT 363	Herbal Drug Technology	2	2
4.	DSE I	BDCT 364	Industrial Chemistry I	2	2
5.	DSE II	BDCT 365	Industrial Chemistry II		
6.	DSCP	BDCP 366	Practical VIII (Based on BDCT 361, BDCT 362, BDCT 363)	1	2
7.	DSCP	BDCP 367	Practical IX (Based on BDCT 364, BDCT 365)	1	2
8.	AEC IV	BDCTAEC IV	English for Communication IV	2	2
9.	VSC IV	BDCPVSC IV	Analytical Techniques II	1	2
10.	SEC III	BDCPSEC III	Analysis of Commercial Food and Pharmaceuticals	1	2
11.	FP I	BDCPFP 1	Field Project	1	2
12.	CC I	BDCTCC 1	Voluntarism	2	2
Total				12T + 5 P	22

1. Evaluation Structure: Semester V

Course	Course Category	Course Code	Internal Evaluation			ESE	Total Marks	Credits
			CCE-I	CCE II	CCE-III			
DSC	T	BDCT 351	10	10	10	30	50	02
	T	BDCT 352	10	10	10	30	50	02
	T	BDCT 353	10	10	10	30	50	02
	P	BDCP 356	20			30	50	02
DSE (1 Theory Paper Out of 2)	T	BDCT 354	10	10	10	30	50	02
	T	BDCT 355	10	10	10	30	50	02
	P	BDCT 357	20			30	50	02
AEC	T	AEC III	10	10	10	30	50	02
VSC	P	BDCPVSC III	20			30	50	02
CEP	P	BDCPCEP I	20			20	50	02
OJT	P	BDCPOJT I	40			60	100	04
Total							550	22

Best two scores will be considered for final internal evaluation.

Semester VI

Course	Course Category	Course Code	Internal Evaluation			ESE	Total Marks	Credits
			CCE-I	CCE II	CCE-III			
DSC	T	BDCT 361	10	10	10	30	50	02
	T	BDCT 362	10	10	10	30	50	02
	T	BDCT 363	10	10	10	30	50	02
	P	BDCP 366	20			30	50	02
DSE (1 Theory Paper Out of 2)	T	BDCT 364	10	10	10	30	50	02
	T	BDCT 365	10	10	10	30	50	02
	P	BDCT 367	20			30	50	02
AEC	T	AEC IV	10	10	10	30	50	02
VSC	P	BDCPVSC IV	20			30	50	02
SEC	P	BDCPSEC III	20			30	50	02
CC	T	BDCTCC I	10	10	10	30	50	02
FP	P	BDCPFP I	20			30	50	02
Total							550	22

	Karmaveer Bhaurao Patil University, Satara (A State Public University Est. u/s 3(6) of MPUA 2016) Faculty of Science and Technology		
	Yashavantrao Chavan Institute of Science, Satara		
	Board of Studies in Chemistry		
	Programme: B.Sc.III		Semester: V
	Type: Discipline Specific Course (DSC IX)		Marks: 50
	Credits: 2		From: A. Y. 2026-27
	Name of The Course: BDCT 351 Drug Design and Early Development		
Course Objectives: Students should be able to...			
1. study the parameters involved in DMPK.			
2. understand the process of novel drug discovery.			
3. learn different types of screening.			
4. know the biological targets involved in different cases.			
Course Outcomes: By the end of the course, students will be able to...			
1. explain biological targets and binding sites for the drug.			
2. describe volunteer's detailed requirements for clinical study and their importance in assessing safety and efficiency.			
3. carry out a comparative DMPK study for different drugs.			
4. perform various types of screenings.			
Module	Title and Contents	Hrs	
Module -1	Novel Drug Discovery	07	
	1.1 Disease: definition, types of diseases, 1.2 Biological target 1.3 Binding sites of the drug candidate 1.4 Structural design of the pharmacophore Synthesis 1.5 In-vitro study, in-vivo study 1.6 PK study and PD study		
Module -2	Drug Design	08	
	2.1. Screening and types of screening 2.2. Lead candidate identification and its modification for generating SAR with the help of homologation 2.3. Chain branching 2.4. Ring chain transformation 2.5. Bio-isomerism.		
Module -3	Preclinical and Clinical Trials in Drug Development	09	
	3.1 In-vitro study and in-vivo study 3.2 DMPK, toxicity 3.3 Drug metabolite study 3.4 Stability, formulation and solubility. 3.5 Clinical trial Phase I 3.6 Clinical trial Phase II 3.7 Clinical trial Phase III 3.8 Clinical trial Phase IV 3.9 IND Filling and Process of FDA approval		
Module -4	Drug Registration Process	06	
	4.1 Drug registration process in US 4.2 Drug registration process in Europe		

	4.3 Drug registration process in Japan 4.4 Drug registration process in India	
Reference Books:		
1. Caron, G. L., et al. "Biological Targets for Drug Discovery: Principles and Applications." Drug Discovery Today 12, no. 1 2007. 2. Gorini, L. A., and P. P. Wright. "Disease Classification and Disease Mechanisms." The Lancet 384, no. 9944, 2014. 3. Patocka, J., et al. "Synthesis and Biological Evaluation of Medicinal Drugs." Environmental Toxicology and Pharmacology 39, no. 2, 2015 4. Raman, R., et al. "Protein-Protein Interactions and Drug Discovery." Chemical Reviews 114, no. 13, 2014. 5. Wermuth, C. G. The Practice of Medicinal Chemistry. 4 th ed. London: Elsevier, 2015.		
Evaluation Pattern: 60:40		
Total Marks: 50		
Continuous Comprehensive Evaluation: (20 M) • CCE -1 Compulsory Home assignment: 10 M • CCE -2 Short & long Answer Question Test/ Seminar/Open Book Test/ Book Review/Field Work/ Industry Visit: 10 M • CCE- 3 Compulsory MCQ test: 10 M Best two scores will be considered for final internal evaluation.		End Semester Examination: (30 M) • Question -1 10 Marks • Question -2 20 Marks • Question -3 20 Marks Note: 50 Mark converted to 30 Mark

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	Yashavantrao Chavan Institute of Science, Satara		
	Board of Studies in Chemistry		
	Programme: B.Sc.III		Semester: V
	Type: Discipline Specific Course (DSC X)		Marks: 50
	Credits: 2		From: A. Y. 2026-27
	Name of The Course: BDCT 352 Reaction Mechanism, Reagents & Named Reaction		
Course Objectives: Students Should be able to...			
1. understand the basics of chemical reactions.			
2. learn nucleophilic and electrophilic reactions.			
3. familiar with reagents used in organic chemistry.			
4. get an adequate knowledge of name reactions in chemistry.			
Course Outcomes: By the end of the course, students will be able to...			
1. recognize different scientist as per their contribution made.			
2. differentiate nucleophiles and electrophiles.			
3. explain the reaction pathway.			
4. analyze the roles of reagents in chemistry.			
Module	Title and Contents		Hrs
Module -1	Basics of Chemical Reactions and Stereochemistry		07
	1.1. Types of organic reactions: addition, substitution, elimination 1.2. Electronic movement in organic reactions 1.3. Fission of a covalent bond 1.4. Concepts of electrophiles and nucleophiles 1.5. Factors affecting on chemical reactions 1.6. Order of reactivity Stereochemistry: 1.7. Conformational isomerism – Introduction. 1.8. Representation of conformations of ethane by using Saw- Horse, Fischer (dotted line wedge) and Newmann’s projection formulae. 1.9. Conformations and conformational analysis of ethane and n-butane by Newmann’s Projection formula with the help of energy profile diagrams		
Module -2	Nucleophilic and Substitutions Reactions		06
	2.1. SN ¹ reaction 2.2. SN ² reaction 2.3. SN ⁱ reaction 2.4. Aliphatic electrophilic substitution 2.5. Aromatic electrophilic substitution 2.6. Aliphatic nucleophilic substitution 2.7. Aromatic nucleophilic substitution		
Module -3	Synthetic Reagents and Applications		10
	3.1 Preparation and Applications of the following reagents. 3.2 Lithium aluminium hydride (LiAlH ₄) 3.3 Osmium tetroxide (OsO ₄) 3.4 Dicyclohexyl Carbodiimide (DCC)		

	3.5 Raney Nickel 3.6 2,3 - Dichloro - 5,6 - dicyano –1,4-benzoquinone (DDQ) 3.7 Polyphosphoric acid (PPA) 3.8 Diazomethane 3.9 Ceric ammonium nitrate (CAN) 3.10 N-Bromo succinamide (NBS) 3.11 Selenium dioxide (SeO ₂) 3.12 Sodium borohydride (NaBH ₄)	
Module -4	Statement, General Reactions, Mechanisms and Synthetic Applications.	07
	4.1 Diels-Alder reaction 4.2 Oppenauer Oxidation 4.3 Meerwein–Ponndorf–Verley reduction 4.4 Schmidt rearrangement 4.5 Hofmann rearrangement 4.6 Wittig reaction 4.7 Wagner-Meer Wein rearrangement 4.8 Favorskii rearrangement 4.9 Michael reaction 4.10 Dieckmann’s reaction or condensation 4.11 Benzil- Benzilic acid rearrangement 4.12 Benzidine rearrangement.	
Reference Books:		
1. Bahl and B.S. Bahl., 2016 <i>A textbook of Organic Chemistry</i> S. Chand Publication. 2. Carey, Francis A., and Richard J. Sundberg. 2007 <i>Advanced Organic Chemistry: Reaction Mechanisms</i> . 5 th Ed. New York: Springer. 3. I. L. Fina 2022, <i>Organic Chemistry Vol. 1</i> 6 th ed Wiley publications. 4. I. L. Fina 2024, <i>Organic Chemistry Vol. 2</i> 5 th ed Wiley publications 5. Michael B. Smith and Jerry March 2013, <i>March’s Advanced Organic Chemistry</i> , 6 th ed., Wiley India.		
Evaluation Pattern: 60:40		
Total Marks: 50		
Continuous Comprehensive Evaluation: (20 M) - CCE -1 Compulsory Home assignment: 10 M - CCE -2 Short & long Answer Question Test/ Seminar/Open Book Test/ Book Review/Field Work/ Industry Visit: 10 M - CCE- 3 Compulsory MCQ test: 10 M Best two scores will be considered for final internal evaluation.		End Semester Examination: (30 M) - Question -1 10 Marks - Question -2 20 Marks - Question -3 20 Marks Note: 50 Mark converted to 30 Mark

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	Board of Studies in Chemistry	
	Programme: B.Sc.III	Semester: V
	Type: Discipline Specific Course (DSC XI)	Marks: 50
	Credits: 2	From: A. Y. 2026-27
	Name of The Course: BDCT 353 Natural Products	
Course Objectives: Students should be able to... 1. know the sources of natural products. 2. understand the synthesis of different natural products. 3. learn vitamin synthesis. 4. categories different structures into alkaloids, steroids, terpenes, and vitamins.		
Course Outcomes: By the end of the course, students will be able to... 1. differentiate steroids, alkaloids, and terpenoids. 2. explain the synthesis of vitamins. 3. discuss the importance of vitamins and steroids. 4. describe the occurrence of natural products.		
Module	Title and Contents	Hrs
Module -1	Introduction to Natural Compounds 1.1. Introduction to natural products, history, pharmaceutical applications. 1.2. Natural products as leads for new Pharmaceuticals e.g. CNS, Anticancer, Cardiovascular, Antimalarial, antibiotics. 1.3. Alkaloid: Occurrence, Isolation, Classification, Properties, General methods for structure determination. 1.4. Synthesis of nicotine, morphine, codeine, berberine and its applications	07
	Module -2	
Module -3	Steroids 3.1 Introduction, 3.2 Occurrence 3.3 Classification 3.4 Biological Significance and Biosynthesis 3.5 Mevalonate 3.6 Pathway: oestrone, cortisol, testosterone, progesterone	08
	Module -4	

	4.3 Introduction 4.4 Classification 4.5 Properties and biological importance 4.6 Fatty acids Nomenclature and Structures, 4.7 Lipids in cell membrane Cholesterol and steroids, 4.8 Hormones- structure and functions.	
Reference Books:		
1. Charles S. Sell A Fragrant 2003, <i>Introduction to terpenoids chemistry</i> , 1 st edition, RSC. 2. Gerald Combs, Jr., James McClung, 2015, <i>The Vitamins fundamental aspects in nutritional and health</i> . 5 th edition, 3. John William Honour, 2023. <i>Steroids in laboratory and clinical practice</i> , Elsevier Publications, 4. Matthew R. Rhea, Pero J Marin, Mark D. Peterson, Jaffery L. Alexander; 2008, <i>Anabolics steroids</i> , 5. U. Satyanarayana 2013, <i>Textbook of Biochemistry</i> , 4 th ed, Elsevier Publications		
Evaluation Pattern: 60:40		
Total Marks: 50		
Continuous Comprehensive Evaluation: (20 M) - CCE -1 Compulsory Home assignment: 10 M - CCE -2 Short & long Answer Question Test/ Seminar/Open Book Test/ Book Review//Field Work/ Industry Visit: 10 M - CCE- 3 Compulsory MCQ test: 10 M Best two scores will be considered for final internal evaluation.	End Semester Examination: - Question -1 10 Marks - Question -2 20 Marks - Question -3 20 Marks Note: 50 Mark converted to 30 Mark	

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	Board of Studies in Chemistry		
	Programme: B.Sc.III		Semester: V
	Type: Discipline Specific Elective (DSC XII E1)		Marks: 50
	Credits: 2		From: A. Y. 2026-27
	Name of The Course: BDCT 354 Industrial Pharmacy		
Course Objectives: Students should be able to...			
1. understand tablets and their formulation methods.			
2. learn about capsules and their types.			
3. know the advantages and limitations of parenteral products.			
4. explore formulation considerations for cosmetics.			
Course Outcomes: By the end of the course, students will be able to...			
1. explore formulation considerations for cosmetics			
2. discuss advantages and limitations of parenteral products.			
3. explain tablets and their formulation methods.			
4. describe types of capsules.			
Module	Title and Contents	Hrs	
Module -1	Tablets and Liquid Orals	07	
	Tablets 1.1 Introduction, ideal characteristics of tablets. 1.2 Classification of tablets, excipients. 1.3 Formulation of tablets, granulation methods. 1.4 Compression and processing problems, equipment's and tablet tooling. 1.5 Tablet coating: types of coating, coating material formulation of coating compositions methods of coating equipment employed and defects in coating. 1.6 Quality control tests: in process and finished product tests. Liquid orals 1.7 Formulation and manufacturing consideration of syrups and elixirs Suspensions and emulsions; Filling and packaging evaluation of liquid orals official in pharmacopoeia.		
Module -2	Capsules	08	
	Hard gelatin capsules: 2.1 Introduction. 2.2 Production of hard gelatin capsule shells. 2.3 Size of capsules Filling, 2.4 Finishing and special techniques of formulation of hard gelatin capsule. 2.5 Manufacturing defects, in process and final products quality control tests for capsules. Soft gelatin capsules: 2.6 Nature of shell and capsule contain, Size of capsule 2.7 Importance of base adsorption and minimum/gm factors production in process and final product quality control tests. 2.8 Packaging, storage and stability testing of soft gelatin capsules and their applications.		
Module -3	Parenteral Products, Sterile Formulations & Immunological Products		

	3.1 Definition, types, advantages and limitations. 3.2 Pre-formulation factors and essential requirements, 3.3 Vehicles, additives, importance of isotonicity, Production procedure, production facilities and controls, aseptic processing, 3.4 Formulation of injections, sterile powders, 3.5 Large volume parenteral and lyophilized products. 3.6 Eye drops, 3.7 Eye ointments. 3.8 Immunological Products: Sera, Vaccines, Toxoids and their manufacturing methods.	08
Module -4	Cosmetics 4.1 Introduction, 4.2 Types, of cosmetics 4.3 Formulation and preparation of the following cosmetics: i) Lipsticks ii) Shampoo iii) Cold cream and vanishing cream iv) Tooth pastes v) Hair dyes vi) Sunscreens	07
Reference Books:		
1. Chaudhary, R. M., and M. A. Ranjan. 2016, <i>Shampoos: Formulation, Technology, and Applications</i> . Amsterdam: Elsevier. 2. H. A. Liberman, Leon Lachman, and J.B. Schwartz. <i>Pharmaceutical dosage forms- tablets</i> , volume 1, 2, 3. 3. M. E. Aulton <i>Pharmaceutics- science of the dosage forms</i> 4. Tucker, Robert, and John W. Walsh 2006 <i>Cosmetic Science and Technology: Theoretical Principles and Applications</i> . New York: Wiley.		
Evaluation Pattern: 60:40		
Total Marks: 50		
Continuous Comprehensive Evaluation: (20 M) - CCE -1 Compulsory Home assignment: 10 M - CCE -2 Short & long Answer Question Test/ Seminar/Open Book Test/ Book Review/Field Work/ Industry Visit: 10 M - CCE- 3 Compulsory MCQ test: 10 M Best two scores will be considered for final internal evaluation.		End Semester Examination: (30 M) - Question -1 10 Marks - Question -2 20 Marks - Question -3 20 Marks Note: 50 Mark converted to 30 Mark



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Faculty of Science and Technology

Yashavantrao Chavan Institute of Science, Satara

Board of Studies in Chemistry

Programme: B.Sc.III

Semester: V

Type: Discipline Specific Elective (DSC XII E2)

Marks: 50

Credits: 2

From: A. Y. 2026-27

Name of The Course: BDCT 355 Analytical Chemistry

Course Objectives: Students should be able to...

1. learn food and body fluid analysis.
2. know the composition of petroleum and other fuels.
3. categorize various thermal analytical methods based on the physical property being measured
4. identify spectral and chemical interferences in an AAS analysis and propose suitable methods.

Course Outcomes: By the end of the course, students will be able to...

1. explain the composition of petroleum
2. describe the process of determining carbohydrates, proteins, and fats in food material
3. discuss the fundamental principles of thermogravimetric analysis and differential thermal analysis.
4. differentiate between Flame Photometry and AAS in terms of sensitivity, excitation source, and element detection capabilities.

Module	Title and Contents	Hrs
Module -1	Food and Body Fluid Analysis	07
	1.1. Food analysis: Determination of moisture, ash content, fibres, protein, carbohydrates, and fat in different food items. 1.2. Body Fluid analysis: Analysis of blood for hemoglobin, biochemical properties of glucose and carbohydrates 1.3. Protein, lipid and cholesterol analysis. 1.4. Urine analysis: physical and chemical	
Module -2	Thermal Methods of Analysis (TGA & DTA)	08
	2.1. Classification of thermal methods. 2.2. Thermo gravimetric analysis, 2.3. Derivative thermo gravimetric analysis DTG, 2.4. Differential thermal analysis DTA 2.5. Classification of thermal methods.	
Module -3	Atomic Absorption Spectroscopy	08
	3.1 Principles of AAS, 3.2 Difference between AAS and flame Photometry, 3.3 Instrumentation of single beam for atomic absorption spectrometer (Source, chopper, nebulizer, monochromator, detector, amplifier) 3.4 Interference: Spectral and chemical, 3.5 Applications of AAS	
Module -4	Petroleum Industry and Eco-friendly Fuels	07
	4.1 Petroleum industry 4.2 Introduction, Occurrence, composition of Petroleum, 4.3 Resources, processing of petroleum, calorific value of fuel, cracking, octane rating (octane number), cetane number, flash point, petroleum refineries,	

	4.4 Applications of petrochemicals, synthetic petroleum, lubricating oils & additives 4.5 Fuels and eco-friendly fuels: liquid, gaseous fuel (LPG, CNG), fossil fuels, diesel, bio diesel, gasoline, aviation fuels. 4.6 Use of solar energy for power generation.	
Reference Books:		
1. Gabbott, Paul, ed. 2008 <i>Principles and Applications of Thermal Analysis</i> . Oxford: Blackwell Publishing Ltd. 2. Lajunen, Lauri H. J., and Paavo Peramaki. 2004 <i>Spectrochemical Analysis by Atomic Absorption and Emission</i> . 2nd ed. Cambridge: Royal Society of Chemistry. 3. Bishop, Mary Louise, Edward P. Fody, and Carline J. Schoeff, 2018, <i>Clinical Chemistry: Principles, Techniques, and Correlations</i> . 8 th ed. Philadelphia: Wolters Kluwer. 4. Nelson, David L., and Michael M. Cox. 2017, <i>Lehninger Principles of Biochemistry</i> . 7 th ed. New York: W. H. Freeman and Company. 5. Rao, B. K. Bhaskara. 2018, <i>Modern Petroleum Refining Processes</i> . 6 th ed. New Delhi: Oxford & IBH Publishing Co.		
Evaluation Pattern: 60:40		
Total Marks: 50		
Continuous Comprehensive Evaluation: (20 M) • CCE -1 Compulsory Home assignment: 10 M • CCE -2 Short & long Answer Question Test/ Seminar/Open Book Test/ Book Review/Field Work/ Industry Visit: 10 M • CCE- 3 Compulsory MCQ test: 10 M Best two scores will be considered for final internal evaluation.		End Semester Examination: (30 M) • Question -1 10 Marks • Question -2 20 Marks • Question -3 20 Marks Note: 50 Mark converted to 30 Mark



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Faculty of Science and Technology

Yashavantrao Chavan Institute of Science, Satara

Board of Studies in Chemistry

Programme: B.Sc.III

Semester: V

Type: Discipline Specific Course (DSCP)

Marks: 50

Credits: 2

From: A. Y. 2026-27

Name of The Course: BDCP 356 Practical V (Based on BDCT 351, BDCT 352, BDCT 353)

Course Objectives: Students should be able to...

1. understand the chemical structures of different classes of drugs mentioned in the course.
2. develop skills in using cheminformatics software (e.g., chem draw) to draw chemical structures and calculate important physicochemical properties of drug molecules.
3. determine and interpret the physicochemical parameters of various anti-protozoal, anti- fungal, and sulfonamide drugs.
4. apply Lipinski's Rule of Five to predict the drug-likeness of chemical compounds.

Course Outcomes: By the end of the course, students will be able to...

1. draw the chemical structures of the drugs covered in the course.
2. utilize chem draw software to draw accurate chemical structures and calculate physicochemical properties such as clog p, molecular weight, hydrogen bond donors, and hydrogen bond acceptors.
3. determine and interpret the physicochemical parameters of given anti-protozoal agents.
4. analyse the calculated physicochemical properties of drug molecules and predict their adherence to Lipinski's Rule of Five.

Title and Contents

Hrs

(Any 15 of the following)

1. To determine physicochemical parameter of given drug samples.
2. Synthesis of Benzocaine
3. The partition coefficient of succinic acid between ether and water
4. To synthesize sulfanilamide from aniline.
5. To synthesize Tolbutamide from toluene sulfonamide and butyl isocyanates.
6. Diels-Alder reaction between furan and maleic anhydride.
7. Benzil Benzilic acid rearrangement.
8. Aldol condensation reaction (dibenzal propane).
9. Electrophilic aromatic substitution reaction, Bromination of acetanilide by KBr and CAN.
10. Preparation of derivatives:
 - a. 2, 4-DNP,
 - b. Osazone,
 - c. Oxime.
11. Estimation of acid and ester by hydrolysis method.
12. Estimation of unsaturation by bromate bromide
13. Preparation of para-bromoaniline from para- Bromo acetanilide.
14. Preparation of n-butyl acetate from n-butyl alcohol.
15. Preparation of β - naphthyl methyl ether (nerolin) from β - naphthol.
16. Preparation of iodoform from ethyl alcohol

60

	17. Preparation of 2, 4, 6- tribromoaniline from aniline 18. Preparation of N-Bromosuccinamide	
Reference Books:		
1. British Pharmacopoeia Commission. British Pharmacopoeia London: TSO (The Stationery Office), 2023. 2. Ghannoum, Mahmoud A., and John R. Perfect. Antifungal Therapy. Boca Raton: CRC Press, 2009. 3. Lipinski, Christopher A., et al. "Experimental and computational approaches to estimate solubility and permeability in drug discovery and development settings." Advanced Drug Delivery Reviews 46, no. 1-3, 2001 4. Patrick, Graham L. An Introduction to Medicinal Chemistry. 6 th ed. Oxford: Oxford University Press, 2017. 5. The United States Pharmacopeial Convention. USP 43–NF 38. Rockville, MD: United States Pharmacopeia, 2020.		
Evaluation Pattern: 60:40		
Total Marks: 50		
Continuous Comprehensive Evaluation: 20 Mark		End Semester Examination: 30 Mark
• Student performance: 5 • Journal: 10 • Attendance: 5		

	Karmaveer Bhaurao Patil University, Satara (A State Public University Est. u/s 3(6) of MPUA 2016) Faculty of Science and Technology	
	Yashavantrao Chavan Institute of Science, Satara	
	Board of Studies in Chemistry	
	Programme: B.Sc.III	Semester: V
	Type: Discipline Specific Course I	Marks: 50
	Credits: 2	From: A. Y. 2026-27
	Name of The Course: BDCT 357 Practical VI (Based on BDCT 354, BDCT 355)	
Course Objectives: Students should be able to... 1. understand the extraction process of natural products from plant sources. 2. learn the preparation of shampoo. 3. know the synthesis of vitamin b. 4. develop the skill to prepare balms.		
Course Outcomes: By the end of the course, students will be able to... 1. extract natural products from plant sources. 2. determine the total contents of alkaloids. 3. prepare toothpaste. 4. synthesize herbal products.		
Title and Contents		Hrs
1. Vitamin B6 synthesis. 2. Extraction of nicotine from Tobacco. 3. Isolation of beta carotene from carrots 4. Isolation of piperine from black paper 5. Isolation of caffeine from tea leaves. 6. Determination of total contents of alkaloids. 7. Preparation of herbal shampoo. 8. Preparation of hair conditioners. 9. Preparation of lipsticks. 10. Preparation of balm. 11. Preparation of creams. 12. Preparation of cold creams. 13. Preparation of vanishing creams. 14. Preparation of tooth paste. 15. Preparation of hibiscus facial gel.		60
Reference Books:		

1. Bimal Krishna Banik, Bishwa Mohan Sahoo, Abhishek Tiwari, 2022, *Terpenoids Chemistry, Biochemistry, Medicinal effects and Ethno-pharmacology*, CRC Press.
2. Charles S. Sell, 2003, *A fragrant introduction to terpenoids chemistry*, 1st edition, RSC.
3. John William Honour, 2023, *Steroids in laboratory and clinical practice*, Elsevier Publications.
4. Tekade P. V., 2017, *Organic Chemistry, laboratory course book*, Selective and Scientific Books.
5. Vollhardt, K. Peter C., and Neil E. Schore, 2018. *Organic Chemistry: Structure and Function*. 8th Ed. New York: W. H. Freeman and Company.

Evaluation Pattern: 60:40

Total Marks: 50

Internal Continuous Evaluation: 20 Mark

- Student performance: 05
- Journal: 10
- Attendance: 05

End Semester Examination: 30 Mark

	Karmaveer Bhaurao Patil University, Satara (A State Public University Est. u/s 3(6) of MPUA 2016) Faculty of Science and Technology		
	Yashavantrao Chavan Institute of Science, Satara		
	Board of Studies in Chemistry		
	Programme: B.Sc.III		Semester - V
	Type: Vocational Skill Course (VSC III)		Marks: 50
	Credits: 2		From: A. Y. 2026-27
	Name of The Course: BDCPVSC III Analytical Techniques I		
Course Objectives: Students should be able to...			
1. study oxalic acid adsorption on activated charcoal and test isotherms. 2. learn the electrolyte effect on benzoic acid solubility. 3. determine the dissociation constant of mono/dibasic acid by pH meter. 4. titrate a weak and strong acid mixture with strong alkali by conductometry.			
Course Outcomes: By the end of the course, students will be able to...			
1. find the amounts of each acid using conductance changes. 2. determine how salts affect benzoic acid solubility. 3. calculate ka values using pH measurements. 4. analyze adsorption data using the Freundlich and Langmuir isotherms.			
Module	Title and Contents	Hrs	
	(Any 15 of the following) Gravimetric estimations: 1. Gravimetric estimation of iron as ferric oxide (Fe₂O₃) from the given solution containing ferrous ammonium sulphate, copper sulphate and free sulphuric acid. 2. Gravimetric estimation of zinc as zinc pyrophosphste from the given solutions containing zinc sulphate, ferrous ammonium sulphate and free sulphuric acid. 3. Gravimetric estimation of barium sulphate from the given solution containing barium chloride, ferric chloride and free hydrochloric acid. 4. Gravimetric estimation of barium chromate from the given solution containing barium chloride, ferric chloride and free hydrochloric acid. Percentage purity: 5. Determination of percentage purity of ferrous ammonium sulphate. 6. Determination of percentage purity of tetraamine copper (II) sulphate. Analysis of commercial samples: 7. Determination of percentage of Calcium in the given sample of lime. 8. Determination of amount of aluminum in the given solution of alum. 9. Determination of titratable acidity in the given sample of milk or lassi. Adsorption: 10. To investigate the adsorption of oxalic acid by activated charcoal and test the validity of Freundlich& Langmuir isotherm. Solubility: 11. To study the effect of addition of electrolyte (NaCl or KCl) on the solubility of benzoic acid at room temperature.	60	

	Instrumental Experiments: 12. Potentiometric titration of strong alkali with strong acid 13. To determine the normality of citric acid in lemon by titrating it against standard 0.2 N NaOH solution by conductometric Method. 14. To determine the dissociation constant of monobasic/dibasic acid by using pH meter. 15. Titration of a mixture of weak acid and strong acid with strong alkali by using conductometer.	
Reference Books:		
1. Atkins, Peter, and Julio de Paula. 2014, <i>Atkins' Physical Chemistry</i> . 10 th ed. Oxford: Oxford University Press, 2. Bard, Allen J., and Larry R. Faulkner. 2001, <i>Electrochemical Methods: Fundamentals and Applications</i> . 2 nd Ed. New York: John Wiley & Sons. 3. Harris, Daniel C 2016 <i>Quantitative Chemical Analysis</i> . 9 th Ed. New York: W. H. Freeman and Company, 4. Skoog, Douglas A., F. James Holler, and Stanley R. Crouch 2014, <i>Fundamentals of Analytical Chemistry</i> . 9 th ed. Belmont, CA: Brooks/Cole, Cengage Learning,		
Evaluation Pattern: 60:40		
Total Marks: 50		
Continuous Comprehensive Evaluation: 20 Mark • Student performance: 05 • Journal: 10 • Attendance: 05	End Semester Examination: 30 Mark	

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	Yashavantrao Chavan Institute of Science, Satara	
	Board of Studies in Chemistry	
	Programme: B.Sc.III	Semester: V
	Type: Community Engagement Programme (CEP)	Marks: 50
	Credits: 2	From: A. Y. 2026-27
	Name of The Course: BDCPCEP I Community Engagement Programme	
Course Objectives: Students should be able to...		
1. sensitize to the socio-economic factors influencing healthcare and drug accessibility in the local community. 2. get a platform for students to apply their knowledge of pharmacology and toxicology to real-world public health issues. 3. identify common health trends or prevalent ailments in the community and correlate them with local environmental or lifestyle factors. 4. explain ethical responsibility of a drug chemist in ensuring drug quality and safety for the end-consumer		
Course Outcomes: By the end of the course, students will be able to...		
1. illustrate the importance of medication adherence and proper storage of medicines to community members using simplified terminology 2. analyze common health trends or prevalent ailments in the community and correlate them with local environmental or lifestyle factors. 3. assess the impact of an awareness program by gathering and interpreting community feedback or pre- and post-engagement surveys 4. work effectively in multidisciplinary teams to organize health camps, blood donation drives, or diagnostic screenings		
Title and Contents		Hrs
Students will undertake general awareness/ counselling/local problem/ research in a specific area of their Major/ Core with an advisory supported by a teacher/Faculty member. Students are required to take 2-credit community engagement programme for semester III under the guidance of faculty members.		60
Evaluation Pattern: 60:40		
Total Marks: 50		
Continuous Comprehensive Evaluation: • Attendance and Participation: 10 M • Field Diary/ Logbook: 10 M		End Semester Examination: 30 • Scientific activity/ Demonstration: 10 M • Final Report: 10 M • Viva Voce/ Presentation: 10 M

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	Yashavantrao Chavan Institute of Science, Satara	
	Board of Studies in Chemistry	
	Programme: B.Sc.III	Semester: V
	Type: On Job Training (OJT)	Marks: 100
	Credits: 2	From: A. Y. 2026-27
	Name of The Course: BDCPOJT I On Job Training	
Course Objectives: By the end of the course, students should be able to...		
1. get hands-on experience with industry-grade equipment. 2. apply complex theoretical concepts to real-world problems. 3. develop the ability to work within multidisciplinary teams, communicating technical findings to both experts and non-experts. 4. build professional relationships with mentors and industry experts		
Course Outcomes: By the end of the course, students will be able to...		
1. understand the rigor required in a professional environment. 2. communicate effectively with diverse groups, including supervisors, peers, and clients. 3. identify which specific sub-sectors e.g., research & development, quality assurance, or regulatory affairs align with their interests before they graduate. 4. provide tangible evidence of professional experience, making the student more "job-ready" and competitive in the global market.		
Title and Contents		Hrs
OJT will provide opportunities for internships with local/regional industries, business organizations, health and allied areas, local government, etc., so that students may actively engage with the employability opportunities. Students will undergo 4 credit work- based learning/OJT/internship		120
Evaluation Pattern: 60:40		
Total Marks: 100		
Continuous Comprehensive Evaluation: 40 Mark • Attendance: 20 Mark • Day to day performance: 40 Mark (given by Industry)		End Semester Examination: 60 Mark • Report: 20 Mark • Viva: 20 Mark • Presentation: 20 Mark



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Faculty of Science and Technology

Yashavantrao Chavan Institute of Science, Satara

Board of Studies in Chemistry

Programme: B.Sc.III

Semester – VI

Type: Discipline Specific Course (DSC XIII)

Marks: 50

Credits: 2

From: A. Y. 2026-27

Name of the Course: BDCT 361 Therapeutic Areas and Its Drugs

Course Objectives: Students should be able to...

1. study the central nervous system.
2. learn different therapeutic areas.
3. know cardiovascular drugs.
4. understand the severity of the diseases.

Course Outcomes: By the end of the course, students will be able to...

1. describe central nervous system and drugs acting on it.
2. explain the synthesis of salbutamol.
3. discuss mode of action of cardiovascular drugs.
4. illustrate the term Malignancy.

Module	Title and Contents	Hrs
Module -1	Central Nervous System Drugs	08
	1.1. Introduction to Central Nervous system 1.2. Concept of sedation, hypnosis, anesthesia Pharmacological actions of 1.3. Phenobarbitone (Barbiturates) 1.4. Phenytoin (Hydantoins) 1.5. Trimethadione (Oxazolidinediones) 1.6. Piracetam (Pyrans) 1.7. Midazolam 1.8. Alprazolam (Benzodiazepines) 1.9. Methylphenidate, (Piperidines) 1.10. Chlorpromazine (Phenothiazines) 1.11. Fluoxetine (phenyl propyl amines) 1.12. Synthesis of Trimethadione 1.13. Methylphenidate; Phenytoin. 1.14. Mode of action of Barbiturates as sedatives and hypnotics	
Module -2	Cardiovascular Drugs	08
	2.1. Introduction to Cardiovascular system 2.2. Diseases of Cardiovascular system 2.3. Classification based on pharmacological actions 2.4. Cardio tonic 2.5. Antiarrhythmic agents 2.6. Enalapril, (alpha amino acids)	

	2.7. Isosorbide dinitrate (Nitrates) 2.8. Atenolol (Aryloxy propanol amines) 2.9. Nifedipine (pyridines) 2.10. Chlorthiazide (Thiazides) 2.11. Mode of action of Atenolol	
Module -3	Drugs for respiratory system 3.1 Respiratory system anatomy and working mechanism 3.2 Disease of respiratory system 3.3 General idea of Expectorants: Mucolytes: 3.4 Bronchodilators: Decongestants and Antitussives 3.5 Bromohexine (phenyl methyl amines) 3.6 Salbutamol 3.7 Pseudo-ephedrine (Phenyl eth amines) 3.8 Oxymetazoline (Imidazolines) 3.9 Codeine Phosphate (Opiates) 3.10 Synthesis of Salbutamol.	07
Module -4	Anti-Neoplastic Drugs & Anti-HIV Drugs Anti-Neoplastic Drugs 4.1 Malignancy; Causes of cancer, brief idea of Immunostimulants and Immunosuppressants Drugs used for treatment of Cancer 4.2 Lomoustine (Nitrosoureas) 4.3 Fluorouracil (Pyrimidines) 4.4 Estrogen (steroidal hormones) 4.5 Mitomycin C (Antibiotics) 4.6 Vincristine; vinblastine; Vindesine (Vinca alkaloids- no structures) 4.7 Cisplatin 4.8 Synthesis of 5 fluorouracil from urea. Anti-HIV Drugs 4.9 Overview of disease AIDS: symptoms, Causative agents 4.10 Pathogenicity HIV 4.11 Drugs used for treatment of AIDS 4.12 AZT 4.13 Lamivudine 4.14 Stavudine (Pyrimidines), DDI (Purines)	07
Reference Books:		
1. Greenblatt, David J., and Thomas A. Arnold. 1991, "Midazolam: Pharmacokinetics and Pharmacodynamics." Clinical Pharmacokinetics 21, no. 2 2. Muench, John, and Laura H. Hamer. 2004, "The Effects of Alprazolam on Generalized Anxiety Disorder." Journal of Clinical Psychopharmacology 24, no. 6. 3. Rang, H. P., Maureen M. Dale, and James M. Ritter. 2016, Rang & Dale's Pharmacology. 8 th ed. Edinburgh: Churchill Livingstone/Elsevier. 4. Schneider, H. D., et al. 2000, "Methylphenidate: Effects on Attention and Performance in Children with Attention Deficit Hyperactivity Disorder (ADHD)." Neuropsychopharmacology 22, no. 3,		
Evaluation Pattern: 60:40		
Total Marks: 50		

Continuous Comprehensive Evaluation: (20 M)

- CCE -1 Compulsory Home assignment: 10 M
- CCE -2 Short & long Answer Question Test/
Seminar/Open Book Test/ Book Review/Field Work/
Industry Visit: 10 M
- CCE- 3 Compulsory MCQ test: 10 M

Best two scores will be considered for final internal evaluation.

End Semester Examination: (30 M)

- Question -1 10 Marks
- Question -2 20 Marks
- Question -3 20 Marks

Note: 50 Mark converted to 30 Mark



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Faculty of Science and Technology

Yashavantrao Chavan Institute of Science, Satara

Board of Studies in Chemistry

Programme: B.Sc.III

Semester – VI

Type: Discipline Specific Course (DSC XIV)

Marks: 50

Credits: 2

From: A. Y. 2026-27

Name of The Course: BDCT 362 Heterocyclic Drugs

Course Objectives: Students should be able to...

1. study the heterocyclic chemistry.
2. state preparation methods for 5 & 6-membered heterocycles.
3. describe mode of action of heterocyclic drugs.
4. summarize the role of Spiro and bridged compounds in the activities of the drug.

Course Outcomes: By the end of the course, students will be able to...

1. explore heterocyclic chemistry.
2. explain mode of action of drug.
3. paraphrase the applications of different drugs.
4. analyze structurally different types of drugs.

Module	Title and Contents	Hrs
Module -1	Introduction to Heterocyclic Chemistry	05
	1.1. Introduction, 1.2. Classification of heterocyclic compounds, 1.3. Aliphatic heterocyclic compounds, 1.4. Aromatic heterocyclic compounds and 3-6 membered heterocyclic compounds condensed or fused hetero cyclic compounds, 1.5. Applications of heterocyclic compounds	
Module -2	Five & Six Membered Heterocyclic Compounds	10
	2.1. Drugs with 5 & 6 membered heterocyclic compounds with one and two hetero atoms: a) Furan b) Pyrrole c) Thiophene d) Pyridine 2.2. Synthesis, Physical and chemical properties, reactions Mode of action and its applications/uses. 2.3. Drugs with 5 & 6 membered heterocyclic compounds with one and two hetero atoms: a) Furan b) Pyrrole c) Thiophene d) Pyridine 2.4. Synthesis, Physical and chemical properties, reactions 2.5. Mode of action and its applications/uses.	
Module -3	Condensed Heterocyclic Compounds	08
	3.1 Drugs with condensed five and six membered heterocycles, 3.2 Synthesis and applications of	

	a) Indole b) Quinoline c) Isoquinoline 3.3 Condensed six membered heterocycles synthesis. 3.4 Electrophilic and Nucleophilic substitution reactions.	
Module -4	Bridged and Spiro heterocycles	07
	Synthesis and applications of bridged heterocyclic drugs 4.1 Zolpidem, 4.2 Necopidem, 4.3 Aldpiodem, 4.5 Minodronic acid, 4.6 Cephalexin and quinine. 4.7 Spiro heterocycles	

Reference Books:

1. Boulton, Andrew J., and Gareth W. A. S. Hall. 2004, *Aromatic Heterocycles: Synthetic Approaches and Applications*. Cambridge: Royal Society of Chemistry,
2. Gokel, George W. 1983, *Heterocyclic Chemistry: Principles and Applications*. Oxford: Pergamon Press,
3. Nakanishi, Koji, and James K. K. Liu. 1997, "Classifications of Heterocyclic Compounds and Their Biological Significance." *Chemical Reviews* 97, no. 1.
4. Singh, Harsh V., and Surinder S. Chawla. 2006 "Recent Applications of Heterocyclic Compounds in Drug Design." *Bioorganic and Medicinal Chemistry Letters* 16, no. 10
5. Sundberg, R. J. 1990, *Aliphatic Heterocycles*. New York: Academic Press.

Evaluation Pattern: 60:40

Total Marks: 50

Continuous Comprehensive Evaluation: (20 M)

- CCE -1 Compulsory Home assignment: 10 M
- CCE -2 Short & long Answer Question Test/ Seminar/Open Book Test/ Book Review/Field Work/ Industry Visit: 10 M
- CCE- 3 Compulsory MCQ test: 10 M

Best two scores will be considered for final internal evaluation.

End Semester Examination: (30 M)

- Question -1 10 Marks
- Question -2 20 Marks
- Question -3 20 Marks

Note: 50 Mark converted to 30 Mark



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Faculty of Science and Technology

Yashavantrao Chavan Institute of Science, Satara

Board of Studies in Chemistry

Programme: B.Sc.III

Semester – VI

Type: Discipline Specific Course (DSC XV)

Marks: 50

Credits: 2

From: A. Y. 2026-27

Name of The Course: BDCT 363 Herbal Drug Technology

Course Objectives: Students should be able to...

1. recall raw material as a source of herbal drugs from cultivation to the herbal drug product.
2. perceive the knowledge of herbal cosmetics and nutraceuticals.
3. grasp the who & ich guidelines for evaluation of herbal drugs.
4. appreciate patenting of herbal drugs.

Course Outcomes: By the end of the course, students will be able to...

1. explain herbal drugs and nutraceuticals.
2. describe bio prospecting and bio piracy.
3. find side effects and interactions of different drugs.
4. discuss WHO & ICH guidelines.

Module	Title and Contents	Hrs
Module -1	Herbs as raw materials	07
	1.1. Definition of herb, 1.2. Herbal medicine, 1.3. Herbal medicinal product, 1.4. Herbal drug preparation, 1.5. Source of Herbs, Selection, Identification and Authentication of Herbal Materials 1.6. Processing of herbal raw material 1.7. Biodynamic Agriculture Good agricultural practices in cultivation of medicinal plants including Organic farming. 1.8. Pest and Pest management in medicinal plants: Biopesticides/ Bio insecticides.	
Module -2	Nutraceuticals	08
	2.1. General aspects, Market, growth, scope and types of products available in the market. 2.2. Health benefits and role of Nutraceuticals in ailments like Diabetes, CVS diseases, Cancer, Irritable bowel syndrome and various Gastro intestinal diseases. 2.3. Study of following herbs as health food: Alfa alfa, Chicory, Ginger, Fenugreek, Garlic, Honey, Alma, Ginseng, Ashwagandha, Spirulina 2.4. Herbal-Drug and Herb-Food Interactions: General introduction to interaction and classification. Study of following drugs and their possible side effects and interactions: Hypercium, kava-kava, Ginkobiloba, Ginseng, Garlic, Pepper & Ephedra.	
Module -3	Herbal Cosmetics	08

	3.1 Sources and description of raw materials of herbal origin used via, fixed oils, waxes, gums colors, perfumes, protective agents, bleaching agents, antioxidants in products such as skincare, hair care and oral hygiene products. 3.2 Herbal excipients: Herbal Excipients – Significance of substances of natural origin as excipients – colorants, sweeteners, binders, diluents, viscosity builders, disintegrants, flavors& perfumes. 3.3 Herbal formulations: Conventional herbal formulations like syrups, mixtures and tablets and Novel dosage forms like phytosomes.	
Module -4	Evaluation of Drugs	07
	4.1 WHO & ICH guidelines for the assessment of herbal drugs Stability testing of herbal drugs. Patenting and Regulatory requirements of natural products 4.2 Definition of the terms: Patent, IPR, Farmers right, Breeder ‘s right, Bio prospecting and Bio piracy 4.3 Patenting aspects of Traditional Knowledge and Natural Products. Case study of Curcuma & Neem. 4.4 Regulatory Issues - Regulations in India (ASU DTAB, ASU DCC), Regulation of manufacture of ASU drugs - Schedule Z of Drugs & Cosmetics Act for ASU drugs.	
Reference Books:		
1. Barnes, Joanne, Linda A. Anderson, and J. David Phillipson. 2007, <i>Herbal Medicines</i>. 3rd ed. London: Pharmaceutical Press. 2. DeFelice, Stephen L. 2002, <i>The Nutraceutical Revolution: How to Live Healthier and Longer Through Safe Natural Medicines</i>. New York: Avery. 3. Duke, James A. 2009, <i>Duke's Handbook of Medicinal Plants of Latin America</i>. Boca Raton, FL: CRC Press. 4. Winter, Ruth. 2009, <i>A Consumer's Dictionary of Cosmetic Ingredients: Complete Information About the Harmful and Harmless Ingredients Found in Cosmetics and Personal Care Products</i>. 7th Ed. New York: Three Rivers Press. 5. World Health Organization. 2011, <i>Quality Control Methods for Herbal Materials</i>. Geneva: World Health Organization.		
Evaluation Pattern: 60:40		
Total Marks: 50		
Continuous Comprehensive Evaluation: (20 M) • CCE -1 Compulsory Home assignment: 10 M • CCE -2 Short & long Answer Question Test/ Seminar/Open Book Test/ Book Review/Field Work/ Industry Visit: 10 M • CCE- 3 Compulsory MCQ test: 10 M Best two scores will be considered for final internal evaluation.		End Semester Examination: (30 M) • Question -1 10 Marks • Question -2 20 Marks • Question -3 20 Marks Note: 50 Mark converted to 30 Mark



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Board of Studies in Chemistry

Programme: B.Sc.III

Semester – VI

Type: Discipline Specific Elective (DSC XVI E1)

Marks: 50

Credits: 2

From: A. Y. 2026-27

Name of The Course: BDCT 364 Industrial Chemistry I

Course Objectives: Students should be able to...

1. identify various aspects relevant to the establishment and operation of small-scale industries.
2. articulate the compelling need for entrepreneurial activity.
3. Know the process of manufacturing ethyl alcohol from molasses, a key by-product of the sugar industry.
4. provide a general introduction to the significance and scope of industrial heavy chemical manufacturing.

Course Outcomes: By the end of the course, students will be able to...

1. elaborate the preparation methods of small-scale products
2. find a financial support system for entrepreneurship development.
3. discuss the manufacturing process of polymer in detail
4. explain the schematic process of glass manufacturing.

Module	Title and Contents	Hrs
Module -1	Small scale Industries	07
	1.1. Introduction and aspects of small-scale industries, 1.2. Safety matches, 1.3. Agarbatties, 1.4. Naphthalene balls, 1.5. Wax candles, 1.6. Shoe polishes, 1.7. Gum paste, 1.8. Writing and fountain pain ink, 1.9. Plaster of Paris, 1.10. Silicon carbide crucibles,	
Module -2	Entrepreneurship Development and Management	08
	2.1. Entrepreneurship, Concept/Meaning, 2.2. Need, Competencies/qualities of an entrepreneur, 2.3. Entrepreneurial Support System, District Industry Centers (DICs) Commercial Banks State Financial Corporations 2.4. Small Industries Service Institutes (SISIs), 2.5. Small Industries Development Bank of India (SIDBI), 2.6. National Bank for Agriculture and Rural Development (NABARD), 2.7. National Small Industries Corporation (NSIC) and other relevant institutions/ organizations at State level.	
Module-3	Sugar Industry	08
	3.1 Introduction Manufacture of cane sugar in India 3.2 Extraction of juice,	

	3.3 Clarification, 3.4 Concentration, 3.5 Crystallization, centrifugation and other details of industrial process by products of sugar industry 3.6 Manufacture of Ethyl Alcohol from Molasses. 3.7 Preparation of wash, 3.8 Fermentation and Distillation.	
Module - 4	Manufacture of Industrial Heavy Chemicals	07
	4.1 Introduction 4.2 Manufacture of Ammonia by Haber’s process; (NH ₃) i] Physico - chemical principles, ii] Plant and process. 4.3 Manufacture of Sulphuric acid by Contact process; (H ₂ SO ₄) i] Physico - chemical principles, ii] Plant and process. 4.4 Manufacture of Nitric acid by Ostwald’s (Ammonia oxidation process); (HNO ₃): i] Physico - chemical principles, ii] Plant and process. 4.5 Manufacture of Sodium carbonate (Washing soda) by Solvay 4.6 process. (Na ₂ CO ₃): i] Physico - chemical principles, ii] Plant and process.	
Reference Books:		
1. Brydson, J. A. 1999, <i>Plastics Materials</i> . 7 th ed. Oxford: Butterworth-Heinemann 2. Hisrich, Robert D., Michael P. Peters, and Dean A. Shepherd 2020, <i>Entrepreneurship</i> . 11 th Ed. New York: McGraw-Hill Irwin. 3. Holt, David H. 2000, <i>Entrepreneurship: New Venture Creation</i> . Upper Saddle River, NJ: Prentice Hall. 4. Kent, James A. 2017, <i>Kent and Riegel's Handbook of Industrial Chemistry and Biotechnology</i> . 12 th Ed. New York: Springer. 5. Watt, Alexander. 1984, <i>The Art of Soap-Making: A Practical Handbook of the Manufacture of Hard and Soft Soaps, Toilet Soaps, Etc.</i> London: Crosby Lockwood and Son,		
Evaluation Pattern: 60:40		
Total Marks: 50		
Continuous Comprehensive Evaluation: (20 M) - CCE -1 Compulsory Home assignment: 10 M - CCE -2 Short & long Answer Question Test/ Seminar/Open Book Test/ Book Review/Field Work/ Industry Visit: 10 M - CCE- 3 Compulsory MCQ test: 10 M Best two scores will be considered for final internal evaluation.		End Semester Examination: - Question -1 10 Marks - Question -2 20 Marks - Question -3 20 Marks Note: 50 Mark converted to 30 Mark



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Board of Studies in Chemistry

Programme: B.Sc.III

Semester – VI

Type: Discipline Specific Elective (DSC XVI E1)

Marks: 50

Credits: 2

From: A. Y. 2026-27

Name of The Course: BDCT 365 Industrial Chemistry II

Course Objectives: Students should be able to...

1. extrapolate aspects of small-scale industries.
2. remember basic concepts of entrepreneurship development and management
3. study concepts of soil chemistry.
4. know principles of leather chemistry

Course Outcomes: By the end of the course, students will be able to...

1. identify chemical composition of the earth's crust and soils.
2. find financial support system for entrepreneurship development.
3. describe manufacturing process of whey proteins in detail
4. explain preparation methods of small-scale products

Module	Title and Contents	Hrs
Module -1	Small scale Industries	07
	1.1. Introduction and aspects of small-scale industries, 1.2. Safety matches, 1.3. Agarbatties, 1.4. Naphthalene balls, 1.5. Wax candles, 1.6. Shoe polishes, 1.7. Gum paste, 1.8. Writing and fountain pain ink, 1.9. Plaster of Paris, 1.10. Silicon carbide crucibles	
Module -2	Entrepreneurship Development and Management	08
	2.1. Entrepreneurship, Concept/Meaning, 2.2. Need, Competencies/qualities of an entrepreneur, 2.3. Entrepreneurial Support System, District Industry Centers (DICs) Commercial Banks State Financial Corporations 2.4. Small Industries Service Institutes (SISIs), 2.5. Small Industries Development Bank of India (SIDBI), 2.6. National Bank for Agriculture and Rural Development (NABARD), 2.7. National Small Industries Corporation (NSIC) and other relevant institutions/ organizations at State level.	
Module -3	Dairy Chemistry	08
	3.1 Definition and structure of milk, 3.2 Factors affecting composition of milk, 3.3 Nomenclature and classification of milk proteins, 3.4 Casein: Isolation, fractionation and chemical composition,	

	3.5 physico-chemical properties of casein, 3.6 Whey proteins: Preparation of total whey proteins	
Module -4	Soil Chemistry 4.1 Chemical(elemental)composition of the earth's crust and soils, 4.2 Elements of equilibrium thermodynamics, 4.3 Chemical equilibria, 4.4 Electrochemistry and chemical kinetics, 4.5 Soil colloids: inorganic and organic colloids- origin of charge, 4.6 Concept of point of zero-charge (PZC) and its dependence on variable-charge soil components 4.7 Surface charge characteristics of soils; diffuse double layer theories of soil colloids, zeta potential, stability, 4.8 Coagulation/ flocculation and peptization of soil colloids; 4.9 Electrometric properties of soil colloids; adsorption properties of soil colloids; soil organic matter - fractionation of soil organic matter and different fractions, clay-organic interactions)	07
Reference Books:		
1. Brydson, J. A. 1999, <i>Plastics Materials</i> . 7 th ed. Oxford: Butterworth-Heinemann 2. Hisrich, Robert D., Michael P. Peters, and Dean A. Shepherd 2020, <i>Entrepreneurship</i> . 11 th Ed. New York: McGraw-Hill Irwin. 3. Holt, David H. 2000, <i>Entrepreneurship: New Venture Creation</i> . Upper Saddle River, NJ: Prentice Hall. 4. Kent, James A. 2017, <i>Kent and Riegel's Handbook of Industrial Chemistry and Biotechnology</i> . 12 th Ed. New York: Springer. 5. Watt, Alexander. 1984, <i>The Art of Soap-Making: A Practical Handbook of the Manufacture of Hard and Soft Soaps, Toilet Soaps, Etc.</i> London: Crosby Lockwood and Son,		
Evaluation Pattern: 60:40		
Total Marks: 50		
Continuous Comprehensive Evaluation: (20 M) • CCE -1 Compulsory Home assignment: 10 M • CCE -2 Short & long Answer Question Test/ Seminar/Open Book Test/ Book Review//Field Work/ Industry Visit: 10 M • CCE- 3 Compulsory MCQ test: 10 M Best two scores will be considered for final internal evaluation.		End Semester Examination: (30 M) • Question -1 10 Marks • Question -2 20 Marks • Question -3 20 Marks Note: 50 Mark converted to 30 Mark



Karmaveer Bhaurao Patil University, Satara

(A State Public University Est. u/s 3(6) of MPUA 2016)

Faculty of Science and Technology

Yashavantrao Chavan Institute of Science, Satara

Board of Studies in Chemistry

Programme: B.Sc.III

Semester - VI

Type: Discipline Specific Course (DSCP)

Marks: 50

Credits: 2

From: A. Y. 2025-26

Name of The Course: **BDCT 366 Practical VII** (Based on BDCT 361, BDCT 362, BDCT 363)

Course Objectives: Students should be able to...

1. understand the fundamental principles and reaction mechanisms involved in the synthesis of various important heterocyclic compounds.
2. develop practical skills in multi-step organic synthesis, including reaction setup, monitoring, work-up, purification (e.g., recrystallization), and characterization of synthesized heterocyclic compounds and drug molecules.
3. gain experience in the synthesis of important drug molecules like sulfa drugs, paracetamol, phenytoin, and understanding their structural features.
4. learn to apply named reactions like the Shark up synthesis for the preparation of quinolines.

Course Outcomes: By the end of the course, students will be able to...

1. demonstrate proficiency in performing organic synthesis laboratory techniques, including setting up reactions, purification, and characterization.
2. accurately record experimental procedures, observations, and results in a laboratory notebook.
3. analyze experimental data and interpret the results obtained from the synthesis and characterization of heterocyclic compounds and drugs.
4. apply safe laboratory practices and handle chemicals responsibly

Title and Contents

Hrs

1. Synthesis of 1,3 Pyrazole
2. Preparation of Triphenyl imidazole
3. To prepare and submit benzimidazole from orthophenylene diamine
4. Preparation of 2,3 diphenyl quinoxaline from benzil and o- phenylenediamine
5. Synthesis of 3 methyl, 1-phenyl pyrazole 5 one
6. Preparation of 9,10 dihydroanthracene, 9,10 endo alpha beta succinic anhydride
7. To prepare and submit phenothiazine
8. Preparation of anthranilic acid from phthalimide.
9. Preparation of diethyl 1,4- dinhydro- 2,6 dimethyl 4 phenyl pyridine-3, 5 dicarboxylate from ethyl aceto acetate
10. Preparation of 4 aryl-6 methyl 3, 4, dihydro 2 pyrimidinone ester from ethyl aceto acetate. (Biginelli reaction)
11. Synthesis of Hexamine
12. Synthesis of 5, 5 diphenyl hydantoin from Benzil by Microwave Irradiation.
13. To synthesize and submit benzotriazole from o- phenylene diamine and report

60

	its percentage yields. 14. To synthesize and submit 2, 3-diphenyl quinoxaline from o-phenylenediamine and report its percentage yield. 15. To prepare and submit Antipyrine from Phenyl hydrazine.	
Reference Books:		
1. Fieser, L. F., and M. Fieser. 1967 <i>Reagents for Organic Synthesis</i>. New York: John Wiley & Sons. 2. Finar, I. L. 2001, <i>Organic Chemistry: Volume 1: The Fundamental Principles</i>. 6th ed. London: Pearson Education..March, J. 2001 <i>Advanced Organic Chemistry: Reactions, Mechanisms, and Structure</i>. 5th Ed. New York: Wiley-Inter science. 3. Singh, H. S. 2009, <i>Advanced Organic Chemistry Laboratory Manual</i>. New Delhi: S. Chand Publishing. 4. Textbook of Practical Organic Chemistry. 5th ed. Harlow: Longman.		
Evaluation Pattern: 60:40		
Total Marks: 50		
Continuous Comprehensive Evaluation: 20 Mark		End Semester Examination: 30 Mark
• Student performance: 05 M • Journal: 10 M • Attendance: 05 M		

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	Yashavantrao Chavan Institute of Science, Satara	
	Board of Studies in Chemistry	
	Programme: B.Sc.III	Semester - VI
	Type: Discipline Specific Elective	Marks: 50
	Credits: 2	From: A. Y. 2025-26
	Name of The Course: BDCP 367 Practical VIII (Based on BDCT 364, BDCT 365)	
Course Objectives: Students should be able to...		
- familiarize with the use and calibration of a pH meter. - identify and select appropriate herbal ingredients for a face pack based on their properties and benefits. - learn and apply a suitable analytical method for the quantitative determination of aldehyde content in herbal samples - apply a titrimetric method to estimate the amount of oxalic acid present as an impurity or by- product derived from cane sugar.		
Course Outcomes: By the end of the course, students will be able to...		
- perform accurate titrations and calculate the concentration of oxalic acid. - follow a standardized procedure for the formulation and preparation of an herbal face pack. - accurately perform experimental procedures and calculations to determine aldehyde content - operate a pH meter competently and determine the dissociation constant (Ka) of a weak acid.		
Title and Contents		Hrs
- Determination of aldehyde content in herb. - Determination of alcohol content of Asava - Determination of alcohol content of Arista - Preparation of herbal face pack. - Preparation of herbal hair care products. - Preparation of hibiscus facial gel. - Determination of phenol contents in herbs. - Preparation of Aloe Vera gel. - Estimation of Oxalic acid from cane sugar. - Methyl orange, aniline yellow dye preparation. - Evaluation of natural excipients Acacia for physical and chemical properties - Evaluation of natural excipients Starch for physical and chemical properties - Evaluation of natural excipients Honey for physical and chemical properties pH – metry: - To determine the dissociation constant of monobasic acid (Acetic acid). - To determine the pH values of various mixtures of sodium acetate and acetic acid in aqueous solutions and find out the dissociation constant of the acid.		60
Reference Books:		

1. Gautam, S. R., and S. S. Dhiman. 2009 *Herbal Cosmetics: Advances in Research and Development*. New Delhi: Discovery Publishing House.
2. Harborne, J. B. 1998, *Phytochemical Methods: A Guide to Modern Techniques of Plant Analysis*. 3rd ed. London: Springer.
3. Sharma, P. D. 2008 *Herbal Medicines*. 2nd Ed. New Delhi: Springer India.
4. Srinivasan, M., and V. V. Krishnamurthy. 2013 *Herbal Drug Technology: Principles and Applications*. 1st Ed. New Delhi: Wiley-Blackwell.
5. Finar, I. L. 2001 *Organic Chemistry: Volume 1: The Fundamental Principles*. 6th ed. London: Pearson Education.

Evaluation Pattern: 60:40

Total Marks: 50

Continuous Comprehensive Evaluation: 20 Mark

- Student performance: 05 M
- Journal: 10 M
- Attendance: 05 M

End Semester Examination: 30 Mark



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Yashavantrao Chavan Institute of Science, Satara

Board of Studies in Chemistry

Programme: B.Sc.III

Semester - VI

Type: Vocational Skill Course (VSC IV)

Marks: 50

Credits: 2

From: A. Y. 2025-26

Name of The Course: BDCPVSC IV Analytical Techniques II

Course Objectives: Students should be able to...

1. get proficiency in qualitative analysis of organic compounds.
2. determine the amount of acid and amine from a given mixture.
3. understand the process of estimation of sugar.
4. calculate the molecular weight of the given acid.

Course Outcomes: By the end of the course, students will be able to...

1. estimate the amount of reducing sugar.
2. determine saponification value of oil.
3. separate binary mixture and determine its functional group.
4. identify cations and anions from given inorganic mixture.

Title and Contents

Hrs

(Any 15 of the following)

Qualitative Analysis:

1. Separation of a binary mixture and identification of its components (any 8)
 - a) Acid- Base
 - b) Acid- Phenol
 - c) Acid- Neutral
 - d) Base -Phenol
 - e) Phenol- Neutral
 - f) Base- Neutral
2. Separation of a binary mixture and identification of its components by ether separation method

Quantitative Analysis

3. Estimation of Sucrose
4. Saponification value of oil
5. To determine the amount of acid and amide present in the given mixture of acid and amine
6. Determination of molecular weight of monobasic and dibasic acid by volumetric method.
7. Inorganic semi-micro qualitative analysis (any 5) (20 hr)

Anions: Cl^- , Br^- , NO_3^- , NO_2^- , SO_4^{2-} , CO_3^{2-}

Cations: Cd^{++} , Fe^{++} , Al^{+++} , Cr^{+++} , Zn^{++} , Mn^{++} , Co^{++} , Mg^{++} , K^+ , NH_4^+ , Ba^{2+} , Cu^{2+}

60

Reference Books:

1. Furniss, B. S., A. J. Hannaford, P. W. G. Smith, and A. R. Tatchell. 1989, *Vogel's Textbook of Practical Organic Chemistry*. 5th ed. Harlow: Longman.
2. Ghosh A. 2006 *Fundamentals of Experimental Chemistry*. 1st ed. Kolkata: New Central Book Agency.
3. O.P. Pandey, D.N. Bajpai, and S. Giri. 2002, *Practical Chemistry*. 1st Ed. New Delhi: S. Chand & Company Ltd.
4. Vogel, A. 1989, *Vogel's Textbook of Practical Organic Chemistry*. 5th ed. Harlow: Longman Scientific & Technical.

5. Vogel, A. I. 2008, *Vogel's Qualitative Inorganic Analysis: Including Elementary Instrumental Analysis*. Revised by G. Svehla. 7th Ed. New Delhi: Pearson Education.

Evaluation Pattern: 60:40

Total Marks: 50

Continuous Comprehensive Evaluation: 20 Mark

- Student performance: 05 M
- Journal: 10 M
- Attendance: 05 M

End Semester Examination: 30 Mark



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Yashavantrao Chavan Institute of Science, Satara

Board of Studies in Chemistry

Programme: B.Sc. III

Semester - VI

Type: Skill Enhancement Course (SEC III)

Marks: 50

Credits: 2

From: A. Y. 2025-26

Name of The Course: BDCPSEC III Analysis of Commercial Food and Pharmaceutical

Course Objectives: Students should be able to...

1. introduce the basic principles of nutrition.
2. link the nutrition with modern dietary practices for health
3. analyze basic components of traditional diets and commercial food samples.
4. enrich with the knowledge and relevance of the various skills required during analysis of commercial food and pharmaceuticals.

Course Outcomes: By the end of the course, students will be able to...

1. acquainted with different types of adulteration in commercial food samples
2. evaluate the safety and nutritional value of the food.
3. perform and validate pharmacopoeial assay protocols to determine the purity and percentage content of active pharmaceutical ingredients
4. select healthy recipes based on knowledge of nutrition, diet and disease.

Title and Contents

Hrs

60

1. To determine titratable acidity of given food samples/ fruit juice
2. To determine the amount of iodine in the food samples (salts/fortified cereals)
3. To determine the amount of phosphoric acid in the given food samples (Cola/ Milk/ buttermilk)
4. To find the adulteration in given food sample I
5. To find the adulteration in given food sample II
6. To find the adulteration in given food sample III
7. To find the adulteration in given food sample III
8. To determine iodine value by Wijs method for the given oil sample (castor oil)
9. To determine the amount of Vitamin C in the given lemon squash
10. To determine the amount of total reducing sugar in a given sample of honey before and after inversion by Lane- Eynon Method
11. To perform the assay of: Atropine
12. To perform the assay of: Ibuprofen
13. To perform the assay of: Aspirin
14. To perform the assay of: Isoniazid
15. To perform the assay of: Metronidazole

Reference Books:

1. Nielsen, S. Suzanne, ed. 2017, *Food Analysis*. 5th ed. Food Science Text Series. Cham, Switzerland: Springer.
2. Nielsen, S. Suzanne, ed. 2017, *Food Analysis Laboratory Manual*. 3rd ed. Food Science Text Series. Cham, Switzerland: Springer.
3. Indian Pharmacopoeia Commission. *Indian Pharmacopoeia 2022*. 9th ed. Ghaziabad: Ministry of Health and Family Welfare, Government of India
4. Kar, Ashutosh, 2012 *Pharmaceutical Drug Analysis*. 3rd ed. New Delhi: New Age International Publishers.

Evaluation Pattern: 60:40

Total Marks: 50

Continuous Comprehensive Evaluation: 20 Mark

- Student performance: 05 M
- Journal: 10 M
- Attendance: 05 M

End Semester Examination: 30 Mark



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Board of Studies in Chemistry

Programme: B.Sc. III

Semester – VI

Type: Cocurricular Course (CC I)

Marks: 50

Credits: 2

From: A. Y. 2026-27

Name of The Course: BDCTCC I Volunteerism

Course Objectives: Students should be able to...

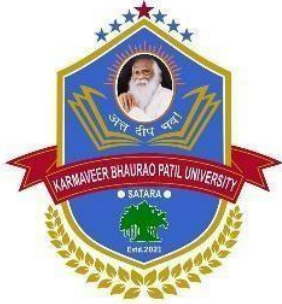
1. understand to basic concepts of NSS
2. knowledge about the importance of NSS in life.
3. Inculcate the awareness and preparation of basic of social importance for increasing personality development.
4. learn the skill in practical work social attachment.

Course Outcomes: By the end of the course, students will be able to...

1. Apply the objectives, structure, activities, and administration of NSS.
2. develop a spirit of volunteerism and participate in community development activities.
3. promote social awareness and public health through community engagement programs.
4. support healthcare initiatives through volunteering.

Module	Title and Contents	Hrs
Module -1	Introduction to Basic concepts of NSS	
	1.1 History, philosophy, aims and objectives of NSS, 1.2 Emblem, Flag, moto, song badge etc. 1.3 Organizational structure, roles and responsibilities of various NSS functionaries. 1.4 NSS Programs and Activities: Concept of regular activities, special campaign Day Camps, 1.5 Basis of adoption of village/lums, methodology of conducting survey, 1.6 Financial pattern of the scheme, other youth programme/schemes of GOI, 1.7 Co-ordination with different agencies, 1.8 Maintenance of the Diary.	08
Module -2	Volunteerism	
	2.1. Indian Tradition of volunteerism, 2.2. Needs and importance of volunteerism, 2.3. Motivation and Constraints of volunteerism, Shramdan as part of volunteerism, Swatch Bharath. 2.4. Awareness in Blood donation/Tree plantation/special camps etc.	07
Module -3	Social Awareness & Volunteerism	
	3.1 Introduction to Volunteering in Public Health, 3.2 Awareness about anti-tobacco, no smoking, anti-drug campaign Social Impact, 3.3 Benefits of being volunteer in public health, health and Wellbeing. 3.4 The health benefits of Volunteering, 3.5 Essentials for Successful Volunteering, 3.6 Volunteerism in Hospitals, Hospice Centres, Nursing and Retirement Homes, 3.7 Mentorship Programs, Health-Related Events	08

Module -4	Medical Volunteers	07
	4.1 Medical volunteering, its significance in healthcare, 4.2 Diverse roles and responsibilities of medical volunteers, 4.3 Types of medical volunteering: discuss different context where medical volunteers are needed (disasters, remote areas, underserved communities, etc. Emphasize qualities like empathy, adaptability, cultural sensitivity, teamwork, healthcare issues, hygiene	
Reference Books:		
1. National Service Scheme Manual (Revised) 2006, Government of India, Ministry of Youth Affairs and sports, New Delhi. 2. University of Mumbai National Service Scheme Manual 2009. 3. Avhan Chancellor's Brigade - NSS Wing, Training camp on Disaster Preparedness Guidelines, March 2012		
Evaluation Pattern: 60:40		
Total Marks: 50		
Continuous Comprehensive Evaluation: (20 M) - CCE -1 Compulsory Home assignment: 10 M - CCE -2 Short & long Answer Question Test/ Seminar/Open Book Test/ Book Review/Field Work/ Industry Visit: 10 M - CCE- 3 Compulsory MCQ test: 10 M Best two scores will be considered for final internal evaluation.		End Semester Examination: (30 M) - Question -1 10 Marks - Question -2 20 Marks - Question -3 20 Marks Note: 50 Mark converted to 30 Mark

	Karmaveer Bhaurao Patil University, Satara (A State Public University Est. u/s 3(6) of MPUA 2016) Faculty of Science & Technology	
	Yashavantrao Chavan Institute of Science, Satara	
	Board of Studies in Chemistry	
	Programme: B.Sc.III	Semester - VI
	Type: Field Project (FP)	Marks: 50
	Credits: 2	From: A. Y. 2025-26
	Name of The Course: BDCFP I Field Project	
Course Objectives: Students should be able to... 1. understand quality control, safety, and regulatory practices. 2. develop skills in data collection, analysis, and report writing. 3. enhance problem-solving, communication, and professional skills. 4. apply theoretical knowledge in real-world situations.		Hrs
Course Outcomes: By the end of the course, students will be able to... 1. identify and formulate a research problem in a selected area of drug chemistry. 2. collect, analyze, and interpret scientific data using appropriate research methods. 3. analyze and interpret experimental or literature-based data. 4. communicate research findings effectively through reports and presentations.		
Title and Contents		
Students will undertake research in a specific area of their Major/ Core with an advisory supported by a teacher/Faculty member. Students are required to take 2-credit field project for semester VI under the guidance of faculty members.		60
Evaluation Pattern: 60:40		
Total Marks: 50		
Continuous Comprehensive Evaluation: (20 M) - Attendance and Participation: 10 M - Field Diary/ Logbook: 10 M		End Semester Examination: (30 M) - Scientific activity/ Demonstration: 10 M - Final Report: 10 M - Viva Voce/ Presentation: 10 M