Four Year Undergraduate Program (2024-28)
Department of Biotechnology
Course Curriculum

Part A: Introduction			
Program: BSc in Life Sciences (Certificate/ Diploma/Degree/Honors)		Semester: I Sem	Session:2024-2025
1	Course Code	**BTVAC-01**	
2	Course Title	**Plants-based Secondary Metabolites**	
3	Course Type	Value Addition Course (VAC)	
4	Pre-requisite (if any)	As per requirement.	
5	Course Learning Outcomes (CLO)	After completing this course, the students will be able to - • Understand the medicinal values applicable to the Indian knowledge system. • Identify the plants with medicinal viability. • Explore the scientific validation of our traditional knowledge. • Develop competency for exploration of secondary metabolites and their application.	
6	Credit Value	02 credits (Credit = 15 Hours - learning & observation)	
7	Total Marks	Max. Marks: 50	Min Passing Marks: 20

Part B: Content of Course (Theory)		
Total No. of Teaching–learning Periods (01 Hr. per period)- 30 Periods (30 Hours)		
Unit	Topic (Course content)	No. of Period
I	**Medicinal plants and their viability** 1. General account of medicinal plant. 2. Scope of medicinal plants in the Indian market and abroad. 3. Role of medicinal plants in human health, advantage and limitation. 4. The basic theory of instrumental mechanism e.g. Soxhlet, oven, lyophilizer, etc.	08 (08 Hrs)
II	**Significance of the Indian knowledge system** 1. Extraction techniques used for secondary metabolite isolation. 2. Secondary metabolite storage. 3. Systems of Indian medicines: Ayurveda, Unani, Siddha, and Homeopathy. 4. Classification of crude drugs: Morphological, taxonomical, chemical, and pharmacological.	07 (07 Hrs)
III	**Methods for phytochemical screening** 1. Preparation technique of herbal infusions, decoctions, lotions, etc. 2. Introduction to phytochemical screening-alkaloids, polyphenolic compounds. 3. Introduction to phytochemical screening- glycosides. 4. Introduction to biological testing of herbal drugs (analgesics, anti-inflammatory and antianxiety agents).	08 (08 Hrs)
IV	**Essential industrial regulations** 1. Calibration and validation as per ICH and USFDA guidelines. 2. Production management, supply chain management & challenges 3. Government subsidy & industries,	07 (07 Hrs)

	4. Types of diseases by controlled bioagent formulations.	
Keywords	Secondary metabolite, alkaloids, medicinal plants, phytochemicals.	

• Part C - **Learning Resource**
Text Books, Reference Books, Other Resources -
Text Book- Plants Secondary Metabolites- AK Sharma **Plant Secondary Metabolites for Human Health- Dr. M M Abid Ali Khan**
• Ethnobiology – R.K.Sinha & Shweta Sinha – 2001. Surabhe Publications – Jaipur. • Tribal medicine – D.C. Pal & S.K. Jain 1998, Naya Prakash, 206, Bidhan Sarani, Calcutta – 700 006. • Contribution to Indian ethnobotany – S.K. Jain 1995, 3rd edition, Scientific publishers, P.B.No. 91, Jodhpur, India. • A Manual of Ethnobotany – S.K.Jain, 1995, 2nd edition.
Online resources- https://onlinecourses.nptel.ac.in/noc20_bt34/preview http://acl.digimat.in/nptel/courses/video/102106080/lec14.pdf

Part D: Assessment and Evaluation			
Suggested Continuous Evaluation Methods:			
Maximum Marks:		**50 Marks**	
Continuous Internal Assessment (CIA):		**15 Marks**	
End Semester Exam (ESE):		**35 Marks**	
Continuous Internal Assessment (CIA) (By course teacher):	Internal Test / Quiz-(2): Assignment / Seminar - Total Marks -	**10 +10** **05** **35**	Better marks out of the two Test / Quiz + obtained marks in Assignment shall be considered against 15 Marks