

Department of Botany
Revised Syllabus of II Year Advanced Diploma Program (PG)
(Keep one of above as per year)

Preamble:

The Certificate Course in Processing and Packaging Herbal Technology under autonomy will be effective from the academic year 2018 – 2019. It has been prepared keeping in view the unique requirements of the plant based industries and society. The emphasis of the contents is to provide students the latest information of application of botany with the aim of disseminating skills of entrepreneurship. The course content also lists new practical exercises so the students gets a hands on experience of the latest techniques that are currently in use. The course will also inspire students towards becoming an entrepreneur and enable students to get employed in plant based industries.

Program Objectives of the Course:

1. To instil in the students the importance of studying traditional knowledge with respect to the usage of plants.
2. To equip the students with practical knowledge of processing and packaging of herbal products.
3. To acquaint the students with the plant based herbal industry at the national and international level.
4. To impart the basic skills of entrepreneurship in the students.

Program Outcomes:

1. The students shall learn the techniques of packaging of herbal products.
2. The students will learn the marketing essentials and strategies for herbal products .
3. The students will learn the entrepreneurial skill for setting up an industry.
4. The students will learn to test the quality of different types of herbal products.

Title of Program : PROCESSING AND PACKAGING OF HERBAL PRODUCTS

2. YEAR OF IMPLEMENTATION: 2021-22

3. GENERAL OBJECTIVES OF THE COURSE:

1. To instil in the students the importance of studying traditional knowledge with respect to the usage of plants.
2. To equip the students with practical knowledge of processing and packaging of herbal products.

3. To acquaint the students with the plant based herbal industry at the national and international level.
4. To impart the basic skills of entrepreneurship in the students.
4. DURATION: One Year
5. PATTERN: Annual
6. MEDIUM OF INSTRUCTION: English

Syllabus Structure (PG)

Year	Semester	Course No.	Course Code	Contact Hours	Credits (1Credit=15 H)	Total Marks	
2	III	CT III	AD B T 303	30	2	75	
		CL III	AD B L303	60	2	150	
	IV	CT IV	AD BT 404	30	2	75	
		CL IV	AD B L404	60	2	150	
	Annual	CP II	AD B P202	60	2	150	
	Industrial and or Incubation and or Research and or Field Training				60	2	-
	Total				270	12	600
Total				510	22	1200	

AD: Advanced Diploma, *: Departmental Code (C: Chemistry, MI: Microbiology, CSE: Computer Science (Entire), etc)

C: Course, T: Theory, L: Lab (Practical), P: Project

Total No. of Papers: 06 (Theory: 02, Practical: 02, Project: 01)

Theory and Practical: Semester, **Project: Annual**

Keep only one table for UG or PG syllabus

Semester III

CT-III: ADBT 303: Title: PACKAGING AND MARKETING OF HERBAL PRODUCTS-I

(Contact Hrs: 30 Credits: 2)

Learning Objectives:

Students will be able

1. To acquaint the students with concepts and techniques of processing and packaging of herbal products.
2. To make the students appreciate the importance of plants in day to day life.

(Minimum 2)

Unit I: Packaging of Herbal Products (12)

Introduction of concept and need of packaging

Classification of Herbal Products: Classification based on product texture- dry, liquid, emulsion, aromatic oils, Classification based on product usage- cosmetic, edible, Nutraceutical, pharmaceutical

Concept of shelf life and stability of product, Packaging materials, packaging techniques

Unit II: Quality Testing of Herbal Products (12)

WHO guidelines for preparation of herbal products, Guidelines of Materia Medica and Charak Samhita, quality and active principles (alkaloids, flavonoids, antioxidant potential) testing procedures, Laboratories in India for quality testing of herbal products

Learning Outcomes:

After completion of the unit, Student is able to

- 1.The student will learn the techniques of packaging of herbal products.
- 2.The students will learn the significance of quality testing of herbal products

Reference Books:

1. Maheshwari JK, Kunkel G, Bhandari MM, Duke J (1993) Ethnobotany in India. Scientific Publishers. Jodhpur, Rajashtan. (Unit I)
2. Deshmukh LP (2013) Medicinal Plants of India. Oxford Book Co., New Delhi(Unit I)
3. Bogers RJ, Craker LE, Lange D(2006) Medicinal and Aromatic Plants: Agricultural, Commercial, Ecological, Legal, Pharmacological and social aspects. Springer(Unit I)
4. Hoffmann F, Manning M (2009) Herbal Medicene and Botanical Medical Aids. Viva Books. New Delhi.(Unit I, II)

CL-III: ADBL303: Title: PACKAGING AND MARKETING OF HERBAL PRODUCTS-I

(Contact Hrs: 60 Credits: 02)

Learning Objectives:

Students will be able to

1. To acquaint the students with concepts and techniques of processing and packaging of herbal products.
2. To make the students appreciate the importance of plants in day to day life.

List of Practical's (15)

1. Study of different processes of packaging of dry herbal products.
2. Study of different processes of packaging of liquid herbal products.
3. Study of different processes of packaging of emulsified herbal products.
4. Study of different processes of packaging of aromatic herbal products.
5. Market study of herbal products- cosme
6. Market study of herbal products- edibles
7. Market study of herbal products- Nutraceuticals
8. Market study of herbal products- Pharmaceuticals.
9. Quality testing of herbal products for presence of active compounds like flavonoids, alkaloids and antioxidant molecules.
10. Quality testing of herbal products for physical contamination.
11. Quality testing of herbal product for microbial contamination
12. Quality testing of aromatic herbal product

Learning Outcomes:

After completion of the unit, Student is able to

1. The student will learn the techniques of packaging of herbal products.
2. The students will learn the significance of quality testing of herbal products.

Reference Books:

1. Maheshwari JK, Kunkel G, Bhandari MM, Duke J (1993) Ethnobotany in India. Scientific Publishers. Jodhpur, Rajasthan. (Unit I)

2. Deshmukh LP (2013) Medicinal Plants of India. Oxford Book Co., New Delhi(Unit I)
3. Bogers RJ, Craker LE, Lange D(2006) Medicinal and Aromatic Plants: Agricultural, Commercial, Ecological, Legal, Pharmacological and social aspects. Springer(Unit I)
4. Hoffmann F, Manning M (2009) Herbal Medicene and Botanical Medical Aids. Viva Books. New Delhi.(Unit I, II)

Semester IV

CT-IV: A D BT 404: Title: PACKAGING AND MARKETING OF HERBAL PRODUCTS-II

(Contact Hrs: 30 Credits: 2)

Learning Objectives:

Students will be able to

1. To inculcate the skill of application of knowledge for benefit to society.
2. To inculcate entrepreneurial skills in students.

Unit I: Marketing and Sales of Herbal Products (12)

Introduction;basic concepts: market survey, advertisement, online marketing, sales, demand and supply, profit, loss, audit statement; importance of market survey, transportation and goodwill; ethics of sales and marketing

(15)

Unit II: Profile of Herbal Product Manufacturing Units (12)

Case study of leading herbal products industry in Satara, India and Abroad, Setting up your business on a small budget, Putting together a business plan, Indemnity insurance, paying tax.

Learning Outcomes:

After completion of the unit, Student is able to

- 3.The student will learn the marketing essentials and strategies for herbal products.
- 4.The student will learn the entrepreneurial skills for setting up an industry.

Reference Books:

1. Ambasta SP (1986) Useful Plants of India. CSIR, Delhi.(Unit I, II)
2. Pal DC, Jain SK(1998) Tribal medicine. NayaPrakash Publication, New Delhi(Unit III)
3. Nadkarni KM(2002) Indian MateriaMedica Vol. I and II. Popular Prakashan, Mumbai (Unit II)
4. Wallis TE (1985) Textbook of Pharmacognosy. CBS Publishers and Distributers, New Delhi (Unit II)
5. Roseline A (2011) Pharmacognosy. MJP Publishers, New Delhi. (Unit II)
6. Chowdhary V (2014) Fundamentals of food processing, packaging, labeling and marketing. Anmol Publications, Pune (Unit IV)

CL-IV:ADBL404: Title (Practical): PACKAGING AND MARKETING OF HERBAL PRODUCTS-II

(Contact Hrs: 60 Credits: 02)

Learning Objectives:

Students will be able to

1. To inculcate the skill of application of knowledge for benefit to society.
2. To inculcate entrepreneurial skills in students.

List of Practical's (15)

1. Preparation of a business plan.
2. Preparation of business budget.
3. Preparation of advertising strategy- Print.
4. Preparation of advertising strategy- Radio.
5. Preparation of advertising strategy- Video.
6. Preparation of advertising strategy- Internet and online shopping.
7. Preparation of accounting ledgers- Basic, Profit and loss statement.
8. Preparation of accounting ledger- Audit statement.
9. Survey of options of transportation of herbal products in Satara.
- 10-11.Visits to industry related to herbal products and quality testing centres related to herbal products.

Learning Outcomes:

After completion of the unit, Student is able to

4. The student shall learn the use of different modes of advertising for marketing herbal products.
5. The student shall learn the basics of transportation industry use in business of herbal products
6. The student shall learn from the industry and testing centres about the herbal industry.

Reference Books:

1. Ambasta SP (1986) Useful Plants of India. CSIR, Delhi.(Unit I, II)
2. Pal DC, Jain SK(1998) Tribal medicine. NayaPrakash Publication, New Delhi(Unit III)
3. Nadkarni KM(2002) Indian MateriaMedica Vol. I and II. Popular Prakashan, Mumbai (Unit II)
4. Wallis TE (1985) Textbook of Pharmacognosy. CBS Publishers and Distributers, New Delhi (Unit II)
5. Roseline A (2011) Pharmacognosy. MJP Publishers, New Delhi. (Unit II)
6. Chowdhary V (2014) Fundamentals of food processing, packaging, labeling and marketing. Anmol Publications, Pune (Unit IV)

CP-II: AD BP202: Project
(Contact Hrs. 60, Credits: 2)

Industrial and or Incubation and or Research and or Field Training
(Contact Hrs. 60, Credits: 2)

BOS Sub-Committee		Expert Committee	
1.	Chairman	1.	Name of Academic Expert
2.	Member	2.	Name of Industrial Expert