Faculty of Pharmacy  
Program: B. Pharm.

Syllabus | Semester: 5  
Course code with name: 13PH0503 Pharmacognosy and Phytochemistry-II

Scope: The main purpose of subject is to impart the students the knowledge of how the secondary metabolites are produced in the crude drugs, how to isolate and identify and produce them industrially. Also this subject involves the study of producing the plants and phytochemicals through plant tissue culture, drug interactions and basic principles of traditional system of medicine.

Objectives: Upon completion of the course the student shall be able to
1. To know the modern extraction techniques, characterization and identification of the herbal drugs and phytoconstituents.
2. To understand the preparation and development of herbal formulation.
3. To understand the herbal drug interactions.
4. To carryout isolation and identification of phytoconstituents.

Teaching and examination scheme:

<table>
<thead>
<tr>
<th>Teaching scheme (Hours/week)</th>
<th>Total credits</th>
<th>Examination scheme</th>
<th>Total Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory</td>
<td>Tutorial</td>
<td>Practical</td>
<td>CSE</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>4</td>
<td>6</td>
</tr>
</tbody>
</table>

Theory syllabus:

Unit-1
Metabolic pathways in higher plants and their determination: a) Brief study of basic metabolic pathways and formation of different secondary metabolites through these pathways- Shikimic acid pathway, Acetate pathways and Amino acid pathway. b) Study of utilization of radioactive isotopes in the investigation of Biogenetic studies.

Unit-2

Unit-3

Unit-4

Teaching hours: 45 Hours  
14 Hours  
6 Hours  
10 Hours

w.e.f. academic year (AY) 2020-21 and onwards
Industrial production, estimation and utilization of the following phytoconstituents: Forskolin, Sennoside, Artemisinin, Diosgenin, Digoxin, Atropine, Podophyllotoxin, Caffeine, Taxol, Vincristine and Vinblastine.

**Unit-5**

**Basics of Phytochemistry:** Modern methods of extraction, application of latest techniques like Spectroscopy, chromatography and electrophoresis in the isolation, purification and identification of crude drugs.

Tutorials will be based on above syllabus.  

**Teaching hours: 15 Hours**

**Practical syllabus:**  

**Teaching hours: 04 Hours/week**

1. Morphology, histology and powder characteristics & extraction & detection of: Cinchona, Cinnamon, Senna, Clove, Ephedra, Fennel and Coriander.
2. Exercise involving isolation & detection of active principles:
   a. Caffeine - from tea dust.
   b. Diosgenin from Dioscorea
   c. Atropine from Belladonna
   d. Sennosides from Senna
4. TLC of herbal extract.
5. Distillation of volatile oils and detection of phytoconstituents by TLC.

**Recommended Books (Latest edition):**

10. The formulation and preparation of cosmetic, fragrances and flavours.
12. Text Book of Biotechnology by Vyas and Dixit.