FACULTY OF LIFE SCIENCES

SYLLABUS

FOR

Interdisciplinary Course in Pharmaceutical Sciences (UG)

Examinations: 2019-20

GURU NANAK DEV UNIVERSITY
AMRITSAR

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## COURSE SCHEME

<table>
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<tr>
<th>Sr. No</th>
<th>Course Code</th>
<th>Subject</th>
<th>Lecture (L)</th>
<th>Tutorial (T)</th>
<th>Practical (P)</th>
<th>Credit</th>
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<tr>
<td>1.</td>
<td>PHL001</td>
<td>Pharmaceutical Chemistry-I: Organic Chemistry</td>
<td>3</td>
<td>1</td>
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<td>2.</td>
<td>PHL002</td>
<td>Pharm. Chem. XI: Pharmaceutical Analysis</td>
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<td>3.</td>
<td>PHL003</td>
<td>Basics of Natural Drugs</td>
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Interdisciplinary Course in Pharmaceuticals Sciences (UG)

Odd Semester
PHL001: Pharmaceutical Chemistry-I: Organic Chemistry

4 Credits (3-1-0)
Max. Marks : 100
Mid Semester Marks : 20
End Semester Marks : 80

Time: 3 Hrs.

Mid Semester Examination: 20% weightage
End Semester Examination: 80% weightage

Instructions for the Paper Setters:
Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

Section A

Section B


Addition to Carbon/Carbon and Carbon/Hetero Multiple Bonds: Electrophilic, nucleophilic and free radicals addition to carbon-carbon and Carbon/Hetero multiple bonds, orientation and stereochemistry.

Section C
Alkanes: Nomenclature, Physical properties, Industrial source and Preparation. Halogenation, combustion and pyrolytic reactions.
Section D

Alcohols: Alkyl Halides and Ethers: Nomenclature, General methods of preparation, physical properties, chemical reactions and applications.


Books Recommended (Latest editions unless specified):


Suggested Readings:


Interdisciplinary Course in Pharmaceuticals Sciences (UG)

Even Semester

PHL 002: Pharm. Chem. XI: Pharmaceutical Analysis

4 Credits (3-1-0)
Max. Marks : 100
Mid Semester Marks : 20
End Semester Marks : 80

Time: 3 Hrs.

Mid Semester Examination: 20% weightage
End Semester Examination: 80% weightage

Instructions for the Paper Setters:
Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

Section A
1. Non-aqueous Titrations: Theoretical consideration, acid base equilibria in non-equeous media, titration of acids and bases, indicators, Applications.
2. Complexometric Titrations: Concept of complexation and chelation, Warner’s coordination number and electronic structure of complex ions, stability constants, titration curves, masking and demasking agents, types of complexometric titration, metal ion indicators, factors influencing the stability of complexes, EDTA-METAL ion Complexes, Determination of hardness of water.

Section B
3. Solvent Extraction: Liquid solid extraction, liquid-lequid extraction, separation of mixtures by extraction, distribution law, successive extraction, the craige method of multiple extraction, contineous counter-current extraction, effect of various factors on extraction.

Section C
5. Electrochemistry: The electric cell, electrode potential, half-cell and its types, sign convention. Nernst equation, the salt bridge, electrochemical- series standard potential, standard hydrogen electrode, measuring relative voltage of half cells, calculations of standard potential, reference electrodes and indicator electrodes.
6. Potentiometry: Theoretical considerations, ion-selective electrodes, measurement of potential, Location of the end point, analytical applications, direct measurement of metal concentration, differential curve, determination of Ksp, pH measurements, pH meter, relation of pH to potential and applications.
Section D

7. **Conductometric Methods**: Introduction measurement of conductance and conductometric titration.

8. **Colorimetric Titration's**: Principle, controlled potential colorimetry, Cell design, instrumentation, advantages and limitations, electrode selection and applications.

9. **Polarography**: Theory, dropping mercury electrode air current potential relationship. Polarization, choice of electrodes, effect of oxygen, instrumentation and applications.

10. **Phase Solubility Analysis**: Theory, experimental procedure and applications.

**Books Recommended (Latest editions unless specified)**


**Suggested Reading (Latest editions).**

Analytical Chemistry by D. A. Skoog and D. M. West.

Principles of Instrumental Analysis by D. A. Skoog and J. J. Lorry.
Interdisciplinary Course in Pharmaceuticals Sciences (UG)

Odd Semester
PHL003: Basics of Natural Drugs

Credits (3-1-0)
Max. Marks : 100
Mid Semester Marks : 20
End Semester Marks : 80

Mid Semester Examination: 20% weightage
End Semester Examination: 80% weightage

Instructions for the Paper Setters:
Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

Section A
Natural Sources of drugs: Biological, marine, mineral and plant tissue cultures as sources of drugs.

Section B

An introduction to active constituents of drugs: Their isolation, classification and properties

Section C
Quality control of crude drugs: Adulteration of crude drugs and their detection by organoleptic, microscopic, physical, chemical and biological methods of evaluation. Herbs as health foods and nutraceuticals.

Section D
The holistic concept of drug administration in traditional systems of medicine. Introduction of ayurvedic preparations like Arishtas, Asvas, Gutikas, Tailas, Churnas, Lehyas and Bhasmas.

Books Recommended: (Latest editions unless specified)
Kokate, C.K., Purohit, A.P. and Gokhale, S.B. Pharmacognosy (Degree). NiraliPrakashan, Pune.

Suggested Books:
Tyler, V.C. Brady, L.R. and Robers, J.E. Pharmacognosy. Lea and Febiger, Philadelphia.