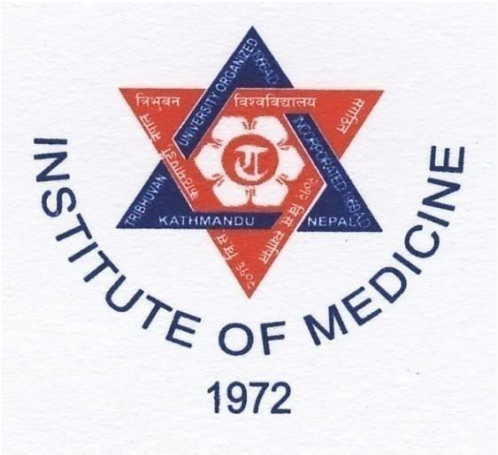
Curriculum

on

Bachelor in Pharmacy

(B. Pharm)



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NATIONAL CENTRE FOR HEALTH PROFESSIONS EDUCATION

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PHARMACEUTICAL ANALYSIS AND QUALITY ASSURANCE I

Subject: Theory	Year: Second	Code: BP 506 A
Full Marks: 100	Total Teaching hours: 90	Credit hour: 6

Course description: This course deals with analytical procedures and analytical methods for chemicals and pharmaceutical products.

General objectives:

At the end of this course, the students will be able to

a. Describe volumetric and gravimetric analysis.

b. Discuss principle, instrumentation and application in drug analysis of various equipments.

Specific objectives:

Unit 1: Fundamentals of volumetric analysis and titrametry methods [4 Hrs]

After the completion of the course, students will be able to

a Discuss Mole concept

b Discuss different methods of expressing concentration

c Define and list primary and secondary standards

d Discuss preparation, standardisation and storage of various volumetric solutions.

Unit 2: Principles of neutralisation in titration [6 Hrs]

After the completion of the course, students will be able to

a Discuss various acid-base titrations

b Explain dissociation of acids and bases

c Discuss pH hydrolysis of salts

d Discuss neutralisation curves

e Discuss analysis of various acids and bases, mixtures of acids and bases.

Unit 3: Principles of Redox titrations [9 Hrs]

After the completion of the course, students will be able to

a Discuss the concept of Oxidation and Reduction

b Discuss the Strength and equivalent weights of oxidising and reducing agents,

c Explain Iodometry, Iodimetry and Bromometry

d Discuss Titrations of drugs with Potassium iodate, Potassium bromate, Titannous chloride, 2,6, dichlorophenol indiophenol.

Unit 4: Non-aqueous titrations [5 Hrs]

After the completion of the course, students will be able to

a Disucss theory and principle of non-aqueous titration

b Discuss classifications of solvents used in non-aqueous titrations.

c Discuss application of non-aqueous titration in drug analysis.

Unit 5: Precipitation titrations [6 Hrs]

After the completion of the course, students will be able to

a Discuss the theory and principles of Precipitation titrations

b Explain Precipitation titrations using different methods – Mohr's, Modified Mohr's,Volhard's, Modified Volhard's, Fajans.

c Discuss the application of Precipitation titrations in drug analysis.

Unit 6: Complexometric titrations [5 Hrs]

After the completion of the course, students will be able to

a Discuss the theory and principles of Complexometric titrations

b Discuss different types of complexometric titrations

c Discuss themethods of detecting the endpoints in complexometric titrations.

d Discuss the application of Complexometric titrations in drug analysis.

Unit 7: Theory of Indicators [8 Hrs]

After the completion of the course, students will be able to

a Explain theory and classification of indicators,

b Discuss Indicators used in neutralisation, Redox, precipitation, Non–aqueous and complexometric titrations.

Unit 8: Gravimetry [14 Hrs]

After the completion of the course, students will be able to

a Discuss the theory and principles of Gravimetry

b Explain the advantages and disadvantages of different gravimetric techniques.

c Explain the following:Precipitation, conditions of precipitation, coagulation, peptisation, digestion and incineration

d Discuss different aspects like solubility product, common ion effect and complex ion formation,

e Explain the effect of temperature and solvent on the precipitate, purity of the precipitate, co-precipitation, post precipitation, precipitation from homogeneous solution.

Unit 9: Different methods of Drug analysis

After the completion of the course, students will be able to

9.1. Potentiometry [5 Hrs]

a Discuss the principle, instrumentation and application of Potentiometry in drug analysis

9.2. Polarimetry [4 Hrs]

a Discuss the principle, instrumentation and application of Polarimetry in drug analysis

9.3. Refractometry [4 Hrs]

a Discuss the principle, instrumentation and application of Refractometry in drug analysis

9.4. Polarography [4Hrs]

a Discuss the principle, instrumentation and application of Polarography in drug analysis

1.1.Conductimetry [4 Hrs]

a Discuss the principle, instrumentation and application of Conductimetry in drug analysis

1.2.Amperometric titrations [4 Hrs]

a Discuss the principle, instrumentation and application of Amperometric titrations in drug analysis

Unit 10: Miscellaneous methods of analysis of drugs [8 Hrs]

After the completion of the course, students will be able to

a Discuss the Principle and application of Diazotisation titrations

b Discuss the Principle and application of Kjeldahl method of nitrogen estimation

c Discuss the Principle and application of Karl-Fischer titration

d Discuss the Principle and application of Oxygen flask combustion, Gasometry.

PHARMACEUTICAL ANALYSIS AND QUALITY ASSURANCE I

Subject: Practical	Year: Second	Code: BP 506 B
Full Marks: 50	Total Teaching hours: 90	Credit hour: 2

At the end of the course, students will be able to

1. Standardise analytical weights and calibration of volumetric apparatus.

2. Perform Acid Base Titrations: Preparation and standardisation of acids and bases, some exercise related with determination of acids and bases separately or in mixture form, some official assay procedures e.g., boric acid.

3. Perform Oxidation reduction Titrations: Preparation and standardisation of some redox titrants e.g., potassium permanganate, potassium dichromate, iodine, sodium thiosulphate, potassium iodate, potassium bromate, iodine solution, titianous chloride, using various indicators.

4. Perform Precipitaion Titrations: Preparation and standardisation of titrants like silver nitrate and ammonium thiocyanate, Titrations according to Mohrs, Volhard and Fajans methods.

5. Perform Gravimetric Analysis of drug such as piperazine.

6. Determine of water using Karl-Fischer method.

7. Determine of loss on drying of *given sample.*

Reference books (Latest Editions)

1. Mendhanm J, Denny R.C, Barnes J.D. Thomas M, Jeffery G.H. Vogel's Textbook of Quantitative Chemical Analysis. Pearson Education Asia.

2. Beckett, A. H, Stenlake, J.B. Practical Pharmaceutical Chemistry, Vol. I &II. The Atherden Press of the University of London.
3. British Pharmacopocia, Her Majesty's Stationary Office, University Press, Cambridge
4. Pharmacopoeia of India. Published by The Controller of Publications, Delhi.
5. Sethi P. D. Quantitative analysis of drugs in pharmaceutical formulations. Unique Publishers
6. Kar A. Pharmaceutical Drug Analysis. New Age International Publishers.