

**B.Pharm-IV (Semester- VIII)**  
**DOSAGE FORM TECHNOLOGY II (BP-801)**

SN	Topics	Hrs
01	<p><b>Oral Controlled Drug Delivery Systems</b> Introduction, Design and fabrication of novel drug delivery system for oral controlled release: - osmotic pressure controlled gastrointestinal delivery systems, hydrodynamic pressure-controlled gastrointestinal delivery systems, membrane permeation-controlled gastrointestinal delivery systems, gel diffusion-controlled gastrointestinal delivery systems, pH-controlled gastrointestinal delivery systems, and ion-exchange-controlled gastrointestinal delivery systems. Modulation of gastrointestinal transit time:- gastrointestinal anatomy and dynamics, prolongation of GI retention (hydrodynamically balanced intragastric delivery system, intragastric floating gastrointestinal drug delivery system, inflatable gastrointestinal drug delivery system, intragastric osmotically controlled drug delivery system, intrarumen controlled-release drug delivery device, bio/mucoadhesive gastrointestinal drug delivery systems, co administration with GI motility-reducing drugs). Overcoming of hepatic first pass elimination and its approaches.</p>	<b>13</b>
02	<p><b>Sterile Dosage Form:</b> Type of injections, parenteral routes of administrations, water for injection, pyrogenicity, its sources and elimination, large &amp; small volume parenteral. Formulation and development of sterile dosage forms, active ingredients, solvent and vehicles, surfactant and solubilizers, antimicrobials, antioxidants, buffers, chelating agents, tonicity adjusters. Containers and closures for sterile dosage forms. Quality control tests like sterility, pyrogen, clarity, safety and leakage testing.</p>	<b>10</b>
03	<p><b>Microencapsulation:</b> Introduction, importance of microencapsulation in pharmacy, concept of core &amp; coating materials, Techniques of microencapsulation:., coacervation phase separation, multi orifice centrifugal process, spray drying &amp; spray congealing, air suspension and coating pan, solvent evaporation, evaluation of microcapsules.</p>	<b>07</b>
04	<p><b>Fundamental Concepts in Controlled Release</b> Introduction, Rationale, Classification and Factors influencing design and performance of sustained/controlled drug delivery system, Physicochemical properties of a drug influencing drug product design and performance, Biological factors influencing design and performance of sustained/controlled release system, Polymer properties influencing drug permeation.</p>	<b>07</b>
05	<p><b>Parenteral Controlled Drug Delivery Systems</b> Introduction, Sustained/controlled release dosage forms: - aqueous solution (high viscosity products, complex formation), oil solution, oil suspensions, biocompatible carriers (erythrocytes, biological and synthetic macromolecules), liposomes, implants, infusion devices, prodrugs. Drug targeting :- Active and passive drug targeting, carriers for targeted drug delivery system (Monoclonal antibodies,immunoliposomes, lipoproteins, polymeric micelles and nanoparticles)</p>	<b>08</b>

## DOSAGE FORM TECHNOLOGY II (BP-807)

### PRACTICALS:

Preparation and evaluation of following dosage forms:

1. Small volume parenterals: solution, emulsion, suspension, powder ready to use.
2. Large volume parenterals
3. Ophthalmic solutions
4. Otic solution.
5. Microspheres.
6. Matrix tablet.
7. Microencapsule

### REFERENCE BOOKS:

1. Kydoneius A. Treatise on controlled drug delivery: Fundamentals, Optimization, Applications, Marcel Dekker, New York.
2. Ansel HC, Allen LV, Popovich NG . Pharmaceutical Dosage Form and Drug Delivery Systems, Lippincott, Williams & Wilkins, Philadelphia.
3. Chien YW. Controlled drug delivery, Fundamentals and Applications, 2<sup>nd</sup> ed. Marcel Dekker.
4. Hickey AJ. Pharmaceutical Inhalation Aerosol Technology, 1<sup>st</sup> ed, Marcel Decker, 2004.
5. Benita. Microencapsulation- methods & Industrial Applications, 2<sup>nd</sup> ed, vol-158, Taylor & Francis Publication, 2006.
6. Bean HS, Beckett AH, Carless JE. Advances in Pharmaceutical sciences, Academic Press
7. Lieberman HA, Lachman L, Pharmaceutical Dosage Forms: Parenteral Medication, Edited By: Avis KE, Marcel Dekker Inc., NY.
8. Indian Pharmacopoeia. Published by the IP commission, Ghaziabad, Delhi.
9. Lachman L, Lieberman HA, Kanig JL. The Theory and Practice of Industrial Pharmacy, Verghese Publishing House, Mumbai.
10. Jain NK. Controlled and novel drug delivery, CBS publishers and distributors, New Delhi.
11. Remingtons. The Science and Practice of Pharmacy, Lippincott, Williams & Wilkins, Philadelphia.
12. Vyas SP, Khar RK. Controlled Drug Delivery: Concepts and Advances, Vallabh Prakashan, 1<sup>st</sup> ed. 2002.
13. Chien YW. Novel Drug Delivery Systems. 2<sup>nd</sup> ed. Drugs and Pharmaceutical Sciences; 50, Marcel Dekker.
14. Robinson and Lee. Controlled drug delivery: Fundamentals and applications, 2<sup>nd</sup> ed, Marcel Dekker, Inc., 1987.
15. Aulton ME. Pharmaceutics: The science of dosage form design, ELBS publisher, 1988.
16. Warbrick JS. Novel drug delivery systems, Vol. 14

**B.Pharm-IV (Semester- VIII)**  
**MEDICINAL CHEMISTRY III (BP-802)**

SN	Topics	Hrs
01	Drug acting on respiratory system: Antiasthamatics, Bronchodialators, Phosphodiesterase Inhibitors, Expectorants, Decongestants and Antitussives.	08
02	Sympathetic and parasympathetics drugs: Adrenergic Neurotransmitters Anti Adrenergic, Cholinergic and Anticholinergics, Antispasmodics, Ganglionic Stimulants and Blockers, Neuromuscular Blockers.	13
03	Thyroids and antithyroids.	03
04	Histamine and Antihistaminic agents	06
05	Narcotic Analgesics and NSAIDS	04
06	Prostaglandins and Eicosanoids.	03
07	Steroids.	06
08	Oxytocics	02

**Medicinal Chemistry III(BP-808)**

**PRACTICAL:**

**Assay of following drugs**

Ibuprofen, Sulfanilamide, Isoniazid, Aspirin, Ascorbic acid, Sulfamethoxazole  
Paracetamol

**Synthesis and physico-chemical characterization of following compounds**

Benzotriazole from o-phenylene diamine  
Phenytoin from benzoin  
Chlorobutanol from chloroform  
Quinoline from aniline by skrup method  
Benzlidine acetone from benzaldehyde

**Microwave assisted synthesis of following.**

2-cyano-3-(4'-methoxyphenyl)-propenoate from P-anisaldehyde  
2, 3 diphenyl quinaxaline from o-phenylene diamine

**REFERENCES:**

1. Wilson and Gisvold's Text Book of Medicinal Chemistry, Lippincott Williams and Wilkins.
2. Indian Pharmacopoeia, Government of India, Ministry of Health and Family Welfare, Published by the Controller of Publications and Information Directorate (CSIR), New Delhi
3. Ashutosh Kar, Advanced Practical Medicinal Chemistry, New Age International Publication.
4. J. N. Delgado and W. A. R. Remers, Eds, Wilson and Gisvold's Textbook of Organic, Medicinal and Pharmaceutical Chemistry, J. Lipponcott Co. Philadelphia.
5. W. C. Foye, Principles of Medicinal Chemistry, Lea & Febiger, Philadelphia.
6. H. E. Wolff, Ed. Burger's Medicinal Chemistry, John Wiley & Sons, New York Oxford University Press, Oxford.
7. Daniel Lednicer, Strategies for Organic Drug Synthesis & Design, John Wiley & sons, USA.
8. B. N. Ladu, H. G. Mandel & E. L. Way, Fundamental of Drug Metabolism & Disposition, William & Wilkins co., Baltimore.
9. I. L. Finar, Organic Chemistry, Vol. I & II, ELBS/ Longman, London.
10. Vogel's Text book of Practical Organic Chemistry, ELBS/ Longman, London
11. Mann & Saunder, Practical Organic Chemistry, Orient Longman, London.
12. Shriner, Hermann, Morrill, Curtin & Fuson, The Syntematic Identification of Organic Compounds, John Wiley & Sons. USA.
13. R. M. Silverstein, G. Claytron Bassel's, T. C. Movvill, Spectormetric identification of Organic compounds, John Wiley & Sons, USA
14. Kadam, Mahadik and Bothra "Advanced Practical Medicinal Chemistry"

**B.Pharm-IV (Semester- VIII)**  
**PHARMACEUTICAL ANALYSIS V (BP-803)**

SN	Topics	Hrs
01	<b>Chromatography:</b> Introduction and classification of chromatography.	<b>02</b>
02	<b>Column Chromatography:</b> Adsorption column chromatography, Development Techniques (Frontal, displacement and elution analysis), Preparation of column, Factors affecting column efficiency, Partition chromatography.	<b>05</b>
03	<b>Ion exchange Chromatography:</b> Principle, Ion exchange resins/material, Properties of ion exchangers, Mechanism of ion exchange process, Factors affecting ion exchange.	<b>05</b>
04	<b>Paper chromatography:</b> Principle, Choice of filter papers, Solvents, Chromatographic chambers, Development techniques (Descending, Ascending, Radial multiple chromatography, two dimensional chromatography), Factors affecting retention factor.	<b>05</b>
05	<b>Thin layer chromatography (TLC):</b> Principle, Different methods / techniques, Development of chromatograph, Rf value (Retention factor) and factors affecting Rf value.	<b>07</b>
06	<b>Gas chromatography</b> Theory, Instrumentation (Carrier gas, Columns, stationary phases for gas-liquid and gas-solid chromatography, Detectors- flame ionization, electron capture and thermal conductivity detector), Quantitative analysis.	<b>07</b>
07	<b>High Performance Thin layer chromatography (HPTLC)</b> Principle, Instrumentation, Preparation of plate, Development techniques.	<b>04</b>
08	<b>High Performance Liquid chromatography (HPLC)</b> Principle, Instrumentation, Solvent treatment systems, Pumps, column packing material, Detectors.	<b>07</b>
09	<b>Gel chromatography:</b> Theory, instrumentation and applications.	<b>03</b>

**Pharmaceutical analysis-V (BP-809)**

**PRACTICAL:**

1. Separation of mixture of amino acids / sugars / dicarboxylic acids by paper Chromatography. (Minimum four)
2. Experiment based on column chromatography.(Minimum two)
3. Experiment based on TLC.(Minimum three)
4. Experiment based on ion-exchange chromatography.
5. Demonstration HPLC
6. Biochemical analysis of glucose, cholesterol, creatinine, creatine in biological samples.

**References:**

1. S. Lindsay, High Performance Liquid Chromatography, Analytical Chemistry by Open Learning (ACOL), Wiley.
2. J. E. Willett, Gas Chromatography, Wiley.
3. Veronika Meyers, Practical High Performance Liquid Chromatography
4. William Kemp. Organic Spectroscopy, Palgrave, New York.
5. United States Pharmacopoeia & National Formulary, The United States Pharmacopoeial Convention, Washington DC.
6. Skoogh, Principles of Instrumental Analysis, Saunders College Publishing, USA.
7. K.A. Connors, Text Book of Pharmaceutical Analysis- Wiley Intersciences, New York.
8. Indian Pharmacopoeia, Government of India, Ministry of Health and Family Welfare, Published by the Controller of Publications and Information Directorate ( CSIR), New Delhi
9. H.H., Willard, L.L. Merrit & John A. Dean, Instrumental Method of Analysis, CBS Publishers & Distributors, New Delhi.
10. D.C.Garatt, Quantitative Analysis of Drug, CBS Publishers and Distributors, New Delhi.
11. D.A., Skoog, F.J. Holler, S.R. Crouch, Principles of Instrumental Analysis. Baba Barkha Nath Printers, Haryana. Ed. Fennirl Hicham, Combinatorial Chemistry, Oxford University.
12. British Pharmacopoeia, MHRA, London
13. Bentley and Driver, Textbook of Pharmaceutical Chemistry, Oxford University Press, Walton Street, Oxford

14. A.H. Beckett, J.B. Stenlake, Practical Pharmaceutical Chemistry, Part I and Part II, CBS Publishers and Distributors, New Delhi.
15. B.K. Sharma. Instrumental Methods of Chemical Analysis, Goel Publishing House, Meerut.
16. G. R. Chatwal And Shyam K. Anand “instrumental methods of chemical analysis”
17. A. V. Kasture, K. R. Mahadik, S. G. Wadodkar, H. N. More, A Textbook of Pharmaceutical Analysis, Vol. I, 6th edition, 2002, Nirali Prakashan, New Delhi.

<b>B.Pharm-IV (Semester- VIII)</b> <b>Clinical Pharmacotherapeutics-II (BP-804)</b>		
SN	Topics	Hrs
01	General - Prescribing Guidelines for – Pediatric patients, Geriatric patients, Pregnant and Breast Feeding womens.	<b>05</b>
02	<b>Etiopathogenesis and pharmacotherapy of diseases / disorders associated</b> <b>Endocrine system:</b> Diabetes mellitus, Disorders of Thyroid gland, Adrenocortical dysfunction, Oral Contraceptives.	<b>05</b>
03	<b>Etiopathogenesis and pharmacotherapy of Infectious diseases:</b> Tuberculosis, Leprosy, Meningitis, Respiratory Tract Infections, Gastroenteritis, Endocarditis, Septicemia, Urinary Tract Infections, Malaria, AIDS and Opportunistic Infections, Fungal Infections, Viral Infections, Gonorrhea and Syphilis.	<b>18</b>
04	<b>Etiopathogenesis and pharmacotherapy of Oncology:</b> Basic principles of Cancer therapy, Chemotherapy of Breast cancer, Leukemia, Cancer of G.I. Tract, Lungs, Prostate, Skin, Gynecological. Management of adverse effects of anticancer drugs.	<b>09</b>
05	<b>Pharmacology of special topics:</b> Gene therapy-Approach and Application of gene therapy, Stem Cell therapy	<b>02</b>
06	<b>Pharmacovigilance (drug safety):</b> Introduction to Pharmacovigilance, Development of Pharmacovigilance system in India, Various legislations enacted, Safety regulations, WHO, CIOMS and Pharmacovigilance, ICH guidelines.	<b>06</b>

#### References:

1. B. Widdop. Therapeutic Drug Monitoring. Churchill Livingstone
2. Bennett P.N, Brown M.J. Clinical Pharmacology. Churchill Living Stone
3. C. W. Blissit. Clinical Pharmacy Practice. Philadelphia, Lea & Febiger
4. Cotrun, Kumar, Collins, Robbins Pathologic Basis of Disease. Thomson Press (I) Ltd. Noida.
5. Craig C.R, Stitzel R.E. Modern Pharmacology with Clinical application. Lippincott Williams & Wilkins, New York
6. Eric T. Herfindel, Dick. R. Gourley. Textbook of therapeutics, Drug & disease management, Lippincott Williams & Wilkins, New York
7. Harold Varley, Practical Clinical Biochemistry. Heinemann Medical Books
8. Harsh Mohan, Text book of Pathophysiology. Jaypee Brothers medical Publishers (P) Ltd, New Delhi.
9. I. Sunshine. Recent developments in TDM & Clinical toxicology, Marcel – Dekker.
10. Joseph T. Dipiro, Pharmacotherapy- A Pathophysiological Approach. McGraw-Hill Medical.
11. Karen Rascati. Essentials of Pharmacoeconomics. Lippincott Williams & Wilkins.
12. Katzung B. G. Basic and Clinical Pharmacology. Prentice Hall International Inc. London.
13. Klaassen C.D, Casarett & Doull’s. Toxicology. The basic science of poison Mc-Graw Hill
14. Kumar, Abbas, Fausto, Mitchell, Robbins Basic Pathology. Elsevier Health Scientific Marketing, New Delhi.
15. Lawrence, D.R. and Bacharach, A.L.: Evaluation of Drugs Activities : Pharmacometrics. Academic press, London
16. Melmon & Morrelli’s Clinical Pharmacology. Mc-Graw Hill.
17. Parrthsarathi G, Hansen Kavin Nytor & Nahata Milap C. A Textbook of Clinical Practice: Essential Concepts & skills, Orient Longman
18. P G Yeole, Dhanlakshmi Iyer, Highlights on Pharmacovigilance, Studium Press (India) Pvt. Ltd.
19. Perry, W. L. M. Pharmacological Experiments on isolated preparations. E and S Livingstone, London. Publications.
20. Raymond J.M. Niesink, John de vries. Hollinger M.A. Toxicology- Principle and applications, CRC, Florida

21. Remington's Pharmaceutical Science and practice pharmacy. Lippincott Williams and Wilkins, New Delhi
22. Roger Walkar, Clinical Pharmacy and Therapeutics. Churchill Livingstone Publication.
23. Satoskar R. S. and Bhandarkar S. Pharmacology and Pharmacotherapeutics. Popular Prakashan Pri. Ltd., Mumbai
24. Turner R.A. Screening methods in Pharmacology. Academic Press, London.
25. Vogel H.G. Drug Discovery and Evaluation, Pharmacological Basis. Springer-Verlag Berlin, Heidelberg.
26. Waldman S.A., Pharmacology and Therapeutics – Principles to Practice. Saunders, Elsevier Philadelphia.
27. Wilma M and Hayek R.N. Essential Drug Dosage Calculations. Prentice Hall.
28. Aviado, Domingo M Krantz and Carrs Pharmacologic Principles of Medical Practice. The Williams and Wilkins Co., Baltimore, U.S.A.
29. Braunwald E., Harrison's Principles of Internal Medicine. McGraw-Hill Medical.
30. Brunton L. L. and Others Goodman and Gilman's The Pharmacological Basis of Therapeutics. McGraw Hill Medical Pub. Div. New York.
31. Christopher H., Davidson's Principles and Practice of Medicine. Churchill Livingstone.
32. Girdwood R.H. Clinical Pharmacology. Varghese Publishing House, Bombay
33. James Crossland, Lewis Pharmacology. Churchill Livingstone.
34. Maickel, Pradhan, Pharmacology in Medicines – Principles and Practice. SP Press International INC.
35. Rang, H.R. Dale, M. Pharmacology E.L.B.S., London
36. Rosenteld, G.C., Loose Mitchell and Jones J. B. Lippincott Williams and Wilkins U.S.A. Board Review Pharmacology.

**B.Pharm-IV (Semester- VIII)**  
**Industrial Pharmacognosy (BP-805)**

SN	Topics	Hrs
01	Importance and status of herbal medicine	<b>02</b>
02	<b>Phytopharmaceuticals</b> Industrial methods of isolation and utilization of the following Phytopharmaceuticals: Quinine, Cardiac glycosides, Sennosides, Diosgenin, Glycyrrhizin, Andrographolides, Rutin, Guggul lipids.	<b>10</b>
03	<b>Herbal Formulations</b> A comparative study of Ayurvedic and modern dosage forms, Different stages of Herbal formulations , study of methods of preparations of various ayurvedic dosages forms. like Aristas, Asava, Ghutika, Tailia, Churna, Avaleha, Ghritaand Bhasms, Unani formulations like Majooms, Safoofs and their evaluation. Determination of heavy metals in herbal preparation and alcohol contents in Aristas and Asvas.	<b>10</b>
04	<b>Chemotaxonomy –</b> Introduction, merits& demerits and application with examples.	<b>04</b>
05	<b>Herbal Cosmetics:</b> Brief study of Phytocosmetics of industrial significance and current status. Herbs used for different cosmetic preparations like Shampoos, Conditioners, Hair Darkeners and Skin Care. Study of following herbs used in different cosmetics formulations-- Soapnut, Amla, Henna, Hibiscus, Tea, Aloe vera, Glycyrrhiza, Turmeric, Sandalwood and others involved in the suitable formulation. Basic evaluation parameter for skin care and shampoos.	<b>08</b>
06	<b>Quality control in the production chain of herbal product</b> Introduction, product chain, Benefits of integral quality control and basic requirements of quality control of herbal production.	<b>04</b>
07	<b>Neutraceuticals</b> Introduction, classification, Neutraceuticals and diseases cardiovascular, obesity, Diabetes, cancer and inflammatory diseases.	<b>05</b>
08	<b>Brief account of plant based industries involved in medicinal and aromatic plants in India.</b>	<b>02</b>

## **INDUSTRIAL PHARMACOGNOSY (BP 8010)**

### **PRACTICAL**

1. Isolation of aloin from *Aloe vera*.
2. Formulation and evaluation of following category of Ayurvedic preparations (Minimum one of each category)
  - i. Asava and Arista
  - ii. Churna
  - iii. Lepas
  - iv. Ghrita and Taila
  - v. Natural sunscreen oil
  - vi. Natural blooming bath oil
3. Extraction /Isolation of tannic acid from myrobalan.
4. Extraction and estimation of cardiac glycoside.
  
5. Preparation and evaluation of herbal cosmetics-
  - Hairs cosmetics
  - Skin cosmetics
  
6. Evaluation of Marketed Herbal Formulations.

### **Reference Books**

1. Ashutosh Kar. Pharmacognosy and Pharmacobiotechnology, New Age International Publishers, New Delhi.
2. C.K. Atal and B.M. Kapoor: Cultivation and Utilization of Medicinal & Aromatic Plants, RRL, Jammu.
3. Pharmacognosy and Phytochemistry- Part I and Part II – V. D. Rangari, Career Publication, Nashik.
4. C.K. Kokate. 1994. Practical Pharmacognosy, 4 th Ed., Vallabh Prakashan, Delhi.
5. C.S. Shah, J.S. Quadri. Textbook of Pharmacognosy, 7th edition, B.S. Shah Prakashan, Ahmedabad.
7. G.E. Trease, W.C. Evans, 2008. Pharmacognosy, 15 th Ed., WB Saunders, Balliere, Tindall, London.
8. H.S. Puri. Rasayana - Traditional Herbal Medicines for modern times, Vol. I- II, Taylor & Francis, London
9. Indian Herbal Pharmacopoeia, 2002. Vol. I-II, Indian Drug Manufacturers' Association, RRL Jammu Tawi, IDMA, Mumbai.
10. Indian Pharmacopoeia. Government of India, Ministry of Health and Family Welfare, New Delhi.
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14. PDR for Herbal Medicines, 2007, 4th Ed., Medicinal Economic Company, New Jersey.
15. Quality Standards of Indian Medicinal Plants, Vol. I-X, ICMR, New Delhi.
16. Quality Control Methods for Medicinal Plant Material, WHO, Geneva, 1998.
17. S.S. Agarwal, M. Paridhavi, 2007. Herbal Drug Technology, Universities Press.
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<b>B.Pharm-IV (Semester- VIII)</b> <b>PHARMACEUTICAL JURISPRUDENCE (BP-806)</b>		
<b>SN</b>	<b>Topics</b>	<b>Hrs</b>
01	<b>Drug legislation in India.</b> Origin and nature of pharmaceutical legislation in India, scope and objective, New drug policy.	<b>03</b>
02	<b>Code of Ethics for Pharmacists.</b> Pharmaceutical code of ethics, Study of code of pharmaceutical ethics drafted by PCI regarding to pharmacist in relation to his job, to his trade, and to medical profession.	<b>02</b>
03	<b>Pharmacy Act 1948.</b> Objective, Definitions, Pharmacy council of India and State Pharmacy Councils, Composition and Function, Preparation of Registers and qualifications for entry into registers, Educational Regulation and Approval of Courses and Institutions, Offences & Penalties.	<b>06</b>
04	<b>Medicinal and Toilet Preparations (Excise Duties) Act 1955, Rules 1976.</b> Definitions, Restricted and unrestricted preparations, Manufacturing in bond and outside bond, Offences and Penalties.	<b>04</b>
05	<b>Drugs Price Control Order, 1995</b> Definition, price of bulk drugs, Retail price of formulation, DPEA, Maintenance of records.	<b>02</b>
06	<b>Drugs and Magic Remedies (Objectionable Advertisements) Act 1954</b> Definitions, Prohibited Advertisement, Savings.	<b>02</b>
07	<b>Drugs and Cosmetics Act 1940, Rules 1945.</b> Definitions, Administrative bodies -DTAB and DCC, Composition and function, Central Drug Laboratories and Government Analysts, Drug inspectors, Licensing Authorities, Controlling Authorities and Customs Collectors Provisions, Manufacture and Sale of Drugs, Labeling and Packaging of Drugs, Provisions applicable to manufacture and Sale of Ayurvedic Drugs, Provisions Governing Import, Various offences and corresponding Penalties, Schedules of the Drugs and Cosmetic Act and Rules.	<b>15</b>
08	<b>Narcotic Drugs and Psychotropic Substances Act, 1985 and Rules, 1985</b> Introduction & objective, Definitions, Prohibited and controlled operation, Authorities and officers, Offences and corresponding penalties.	<b>07</b>
09	<b>Indian patent act</b>	<b>04</b>

#### **REFERENCE BOOKS:**

1. The Bare Acts & Rules (With Latest Amendments), Government of India.
2. Mittal B.M., "A Text Book of Forensic Pharmacy," X ed., National Book Depot.
3. Jain N. K. "A Text Book of Forensic Pharmacy," Vallabh Prakashan,
4. Mallick "Drug and Cosmetics Act & Rules together with Drug (Prices Control) Order," XI ed., Eastern Book Company, 1998.
5. Despande, S.W. "Drugs & Cosmetics Acts Rules," CBS Publications
6. Kokate C.K. and Gokhale S.B., "Text Book of Forensic Pharmacy" Pharma Book Syndicate, 2006
7. Kuchekar B. S., Khadatare A.M. and Itkar S.C., "Forensic Pharmacy", 4th Edition, Nirali Prakashan, Pune, 2004
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9. Correa CM, AA Yusuf. "Intellectual property and international trade: The TRIPS agreements", Kluwer Law International, London.
10. Mathews D, "Globalizing intellectual property rights: The TRIPS Agreement", Taylor and Franchis Group, London.

**B.Pharm-IV (Semester- VIII)**  
**SEMINAR AND PROJECT WORK (BP-8011)**

<b>SN</b>	<b>Topics</b>	<b>Hrs</b>
01	<b>Project Work:-</b> The topic for the project shall be based on the practical work/theoretical/review oriented/any topic from current Pharmaceutical development and shall be assigned to him/her by the respective guide from faculty member (Maximum eight students per teacher) immediate from the date of the commencement of the eighth semester. Internal assessment will be based on average marks obtained after delivering three seminars on given topic during this semester.	