Minutes of Board of Studies Meeting

Board of Studies meeting was held on 21.04.2013, 10:00 a.m. at Department of Pharmacy, M. J. P. Rohilkhand University, Bareilly, to initiate start of M. Pharm course in specialization viz Pharmaceutics and Pharmacology with intake of 18 seats in each branch after grant of permission from All India Council for Technical Education vide letter no. F.No.Northern/1-490318252/2013/EOA dated 19.03.2013. The syllabus and ordinance of M. Pharm (Pharmaceutics), M.Pharm (Pharmacology) were formed, discussed and finalized following members attended the meeting.

1. Shri S. D. Singh  
   Convenor
2. Dr. Vijay Jyoti Kumar  
   External Expert Member
3. Dr. Sobhna Singh  
   Member
4. Dr. Kamal Kishore  
   Member
5. Dr. S. B. Tiwari  
   Member
6. Mr. Amit Verma  
   Member
7. Mr. Lakshyaveer Singh  
   Member
8. Mr. Kaushal Kumar  
   Member
9. Dr. Saurabh Mishar  
   Member

The external member Dr. Pawan Krishan could not come due to unavoidable circumstances.

Following recommendations were made:

a) M. Pharm programme should be started from academic session 2013-14 with intake of 18 seats in each branch viz Pharmaceutics and Pharmacology.

b) The ordinances, syllabus, teaching and evaluation scheme was finalized by the committee constituted for same.

c) These courses should run strictly as per norms laid by statutory bodies (AICTE) in terms and norms of University. The convenor ended the meeting with vote of thanks.

( Shri S. D. Singh )  
( Dr. Vijay Jyoti Kumar )  
( Dr. Kamal Kishore )

( Dr. Sobhna Singh )  
( Dr. S. B. Tiwari )  
( Mr. Amit Verma )

( Mr. Lakshyaveer Singh )  
( Mr. Vimal Kumar )  
( Mr. Kaushal Kumar )

( Dr. Saurabh Mishra )
MINUTES

Sub: Meeting of Faculty Board at 12:30PM on 21-04-2013.

A meeting of Faculty Board was convened at 12:30PM on 21-04-2013. Various approved proposals submitted by different departments were discussed. The Faculty Board hereby submit the recommendations for further approval by Academic Council and Executive Council. The recommendations made are as following.

1. The minutes of BOS of the Department of Pharmacy (held on 21-04-2013) pertaining to syllabus & semester systems ordinance of M.Pharm. Pharmaceutics and Pharmacology (which have already been approved by AICTE) were discussed and approved as such by the Faculty Board.

2. Minutes of BOS meeting of the Department of Applied Chemistry which was held on 30-08-2012 were discussed and approved.

3. The semester system ordinances of M.Sc course in Applied Chemistry, Applied Mathematics and Applied Physics under the IET were discussed and approved.

4. The Minute of BOS meeting of the Department of Maths (held on 19-09-2012) were discussed and approved.

5. The minutes of BOS meeting of the Department Physics (held on 19-09-2012) were discussed and approved.

6. Minutes of the meeting of all Departmental Coordinators of Training and Placement Centre from all Departments of Faculty of Engineering & Technology which was held at the office of Training & Placement Officer, M.J.P.R. University on 20-4-2013 at 12:00 noon were discussed and approved as such.

7. Syllabus of B.Tech was revised by the department of EI and implemented without the approvals of Faculty Board, Academic Council & Executive Council. Regarding the above issue a letter was sent to the Registrar. The Registrar replied with the information that Hon’ble Vice-Chancellor has the view that syllabus can only be implemented only after the approvals by AC
& EC. All the members of the Faculty Board were of the opinion that matter may be discussed in the meeting of Academic council for final decision.

8. Minutes of BOS meeting of the Department of CSIT which was held on 19-04-2013 were discussed and approved.

9. As per recommendations of the UGC with reference to directive of the Task force on National Security, it is decided that the subject “cyber security/information security” should be introduced as an elective subject for UG & PG courses.

(S.K. Chaurasia)
HOD ME

(Dr Sudhir Kumar)
HOD Physics

(Sanjay Singh)
HOD EE

(S.D. Singh)
HOD Pharm

(Dr. Saleem Khan)
Member

(Dr. S.K. Pandey)
HOD Chemistry

(Dr Ravendra Singh)
HOD CSIT

(Dr S.K. Tomar)
HOD EC

(Dr. V. Jyoti Kumar)
External Expert

(Dr. K.K. Maheshwari)
Member

(M.S. Karuna)
HOD Chemical

(Dr. A. K. Gupta)
Dean IET

(Dr. A Prasad)
HOD Mathematics
M. J. P. ROHILKHAND UNIVERSITY
BAREILLY
DEPARTMENT OF PHARMACY

Syllabus
Master of Pharmacy (M.Pharm)
(Pharmacology)
Effective from academic session 2013-14
<table>
<thead>
<tr>
<th>Name of Subject</th>
<th>Paper</th>
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<th>Internal</th>
<th>External</th>
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Semester-I  
(Pharmacology)  
Paper 1-MODERN ANALYTICAL TECHNIQUES

External Marks: 70  
Internal Marks: 30  
Total Marks: 100

1- Theory, instrumentation and applications with regard to drug analysis, decomposition product identification and estimation, metabolite analysis and special methods based on: Ultraviolet-visible spectrophotometry, Infrared spectrophotometry and Fluorimetry.

2- Theory, instrumentation and basic principles and recent advances of:
   1. 1H Nuclear Magnetic Resonance Spectroscopy (1H NRM): Concepts of chemical shift, spin-spin coupling, coupling constant, shielding and deshielding effects.
   3. Chromatographic methods, principles and applications of: Gas-chromatography including GC-MS; High performance liquid chromatography; Electrophoresis (gel and capillary) with an emphasis on specific examples of biological assay methods by HPTLC.

Books Recommended:
10. Gordy W., Theory & Applications of Electron Spin Resonance, Willy.
14. Beckett and Stenlake, Practical Pharmaceutical Chemistry, CBS.
16. Giddings J.C., Principles and Theory- Dynamics of Chromatography, Marcel Dekker.
20. Gross - Mass Spectrometry
24. Haffmann, Chromatography.
25. Sethi and Charcgankar, Identification of Drugs in Pharmaceutical Formulations by TLC.
30. Higuchi, Pharmaceutical Analysis.
31. Bidingmeyer, Practical HPLC Methodology and Applications.
33. Scott, Techniques and Practice of Chromatography.
34. Wilkins, Identification of Microorganism by Mass Spectrometry.

**Paper 2: PRACTICALS OF MODERN ANALYTICAL TECHNIQUES**

External Marks: 70  
Internal Marks: 30  
Total Marks: 100  

Practical Based on theory

**Paper 3: PHARMACEUTICAL BIOTECHNOLOGY**

External Marks: 70  
Internal Marks: 30  
Total Marks: 100  

1. Status and Scope of Biotechnology in Pharmacy Enzyme immobilization-Principles and Pharmaceutical applications.
2. Biotechnology based pharmaceutical using recombinant DNA Technology, interferons and reverse transcriptase.
5. Introduction to Bioinformatics.

**Book Recommended:**


PAPER 4: PHARMACOLOGY AND DRUG THERAPY
External Marks: 70
Internal Marks: 30
Total Marks: 100

1: Principles of General Pharmacology
   1. Introduction
   2. Sources of drugs
   3. Dosage forms of drugs
   4. Routes of drug administration
   5. Mechanisms of drug actions
   6. Factors affecting drug actions
   7. Biotransformation of drugs
   8. Pharmacokinetics of drugs
   9. Pharmacodynamics of drugs
  10. Drug interactions
  11. Adverse drug reactions

2: Drugs acting on Autonomic nervous system
   1. Introduction
   2. Parasympathetic nervous system
   3. Sympathetic nervous system
   4. Ganglionic stimulating agents
   5. Ganglionic blocking agents
   6. Adrenergic neuron blocking agents

3: Drugs acting on Peripheral nervous system
   1. Skeletal muscle relaxants
   2. Local anaesthetics

4: Drugs acting on Central nervous system
   1. Introduction
   2. General anaesthetics
   3. Alcohol
   4. Anxiolytics and hypnotics
   5. antidepressants
   6. Antimanic
   7. Antipsychotics
   8. CNS stimulants
   9. Psychomimetics
  10. Antiepileptics
  11. Opioid analgesics
  12. Drug dependence and drug abuse
5: Drugs acting on Gastrointestinal tract
1. Introduction
2. Peptic ulcer
3. Antiemetics
4. Anti-constipation agents
5. Antidiarrhoeals

6: Miscellaneous topics
1. Drug use in the pediatrics
2. Drug use in the geriatrics
3. Vitamins and antioxidants
4. Essential medicines
5. Rational use of drugs
6. Gene therapy
7. Drug patents

Books Recommended

PAPER 5: PRACTICAL OF PHARMACOLOGY AND DRUG THERAPY
External Marks: 70
Internal Marks: 30
Total Marks: 100

Practicals based on theory

SEMESTER-II
(PHARMACOLOGY)

PAPER 6: PHARMACOTHERAPEUTICS
External Marks: 70
Internal Marks: 30
Total Marks: 100

1: Drugs acting on Renal system
1. Diuretics
2. Antidiuretics

2: Drugs acting on Cardiovascular system
1. Pharmacotherapeutic of angina pectoris
2. Pharmacotherapeutic of hypertension
3. Pharmacotherapeutic of cardiac arrhythmias
4. Pharmacotherapeutic heart failure
5. Pharmacotherapeutic of hyperlipidaemia and hypercholestrolaemia

3: Drugs acting on Respiratory system
1. Pharmacotherapeutic of asthma
2. Pharmacotherapeutic of cough

4: Drugs acting on Endocrinal system
1. Introduction
2. Hormones
3. Thyroid and antithyroid drugs
4. Vitamin-D
5. Calcitonin and calcium balance
6. Insulin
7. Hypoglycaemic agents
8. Contraceptives
9. Anabolics and catabolics

5: Drugs acting on Hematopoietic system
1. Hematopoietic agents
2. Coagulants and anticoagulants
3. Fibrinolytics, thrombolytics and antiplatelets

6: Pharmacotherapeutics of microbial diseases
1. Chemotherapy
2. Sulfonamides
3. Tetracyclines and chloramphenicol
4. Quinolones and fleuroquinolones
5. Aminoglycosides
6. Penicillins
7. Cephalosporins
8. β-Lactum antibiotics
9. Macrolides
10. Tuberculosis
11. Leprosy
12. Fungal infections
13. Viral Infections
14. Sepsis
15. Malaria
16. Helminthes
17. Anticancer agents

Books Recommended

PAPER 7: PRACTICAL OF PHARMACOTHERAPEUTICS
External Marks: 70 6 hours/week
Internal Marks: 30
Total Marks: 100
Practicals based on theory

PAPER 8: EXPERIMENTAL PHARMACOLOGY AND DRUG EVALUATION
External Marks: 70 4 hours/week
Internal Marks: 30
Total Marks: 100

1. Principles of experimental pharmacology-
   1.1 Outline of experimental pharmacology.
   1.2 Principles of experimental pharmacology.
   1.3 Euthanasia of experimental animals
   1.4 Common laboratory animals in pharmacological research.
   1.5 Anaesthetics used in laboratory animals.
   1.6 Standard techniques used in laboratory animals.
   1.7 Limitation of animal tests.
   1.8 Statistical design and analysis.
   1.9 Regulations for care and use of laboratory animals.

2. Drug discovery-
   Bio-assays.
   Preclinical (biological and safety evaluation).
   Clinical evaluation (clinical trials) of new drugs.
   Transgenic animal in the development of new drugs.

3. Receptor-ligand binding assays
   1. General principle and techniques
   2. Specific assay design for adrenoceptors, dopamine receptors, histamine receptors, GABA and benzodiazepine receptors.

4. Basics of biotechnology, and biotechnological tools in drug development
5. Basics of nanotechnology, and nano-techniques in drug development.

6. Pharmacological techniques to evaluate the following class of drugs
   1. Analgesics
   2. Anthelmintics
   3. Antianginals
   4. Anti-anxiety or anxiolytics
   5. Antiarrhythmics
   6. Anti-cancers
7. Antidepressants  
8. Anti-epileptics  
9. Anti-fertility  
10. Anti-hypertensives  
11. Anti-parkinsonian agents  
12. Anti-thrombotics  
13. Anti-psychotics  
14. Anti-ulcer agents  
15. Antiviral  
16. Atherosclerosis and Hyperlepidimics  
17. Anti-diabetics  
18. Diuretics  
19. Hypno-sedatives  
20. Anti-pyretics  
21. Anti-inflammatory agents  
22. Local anaesthetics  
23. Neuromuscular blockers  
24. Nootopic and cerebroactive agents  
25. Skeletal muscle relaxants

**Books Recommended**

2. Drug Discovery and Evaluation by Vogel HG. Springer, N Y  
6. Drug Bioscreening by Thompson, E.B. VCH, New York  
7. Various regulatory guidelines like ICH, GCP, Helsinki, USFDA etc.  
8. Pharmacopoeia: IP, BP, USP etc.  

**PAPER 9: PRACTICAL OF EXPERIMENTAL PHARMACOLOGY AND DRUG EVALUATION**

External Marks: 70  
Internal Marks: 30  
Total Marks: 100

Practicals based on theory
1. **Molecular Pharmacology**
   1.1 Receptor occupancy and cellular signaling systems: G-proteins, cyclic nucleotides, calcium and calcium binding proteins, protein kinases, phosphatidylinositol, phospholipases.

2. **Pharmacology of Receptors**
   Classification, cellular signaling systems, pharmacology of agonists and antagonists of the following receptors types:
   - Angiotensin receptors
   - Excitatory amino acid receptors
   - Purinoreceptors
   - Serotonin receptors
   - Dopamine receptors
   - Adrenoceptors
   - GABA and Benzodiazepine receptors
   - Canabinoid receptors
   - Neurosteroid receptors
   - Erb B-receptors

3. **Ionic channels and their modulators**
   Classification and biology of ionic channels. Pharmacology of substances which modulate the following channels:
   - Calcium channels
   - Potassium channels
   - Sodium channels
   - Chloride channels

4. **Neuropeptides**

5. **Biology of vascular endothelium**
   EDRF, EDCF, EDHF. Pharmacology of endothelins and nitric oxide. Clinical implications of endothelial dysfunctions.

6. **Cytokinins and chemokinines**
   Pharmacological, pathological and clinical implications of various cytokinins and chemokines.

7. **Cell adhesion molecules and matrix proteins**
   Biological role of cell adhesion molecules and matrix proteins in various diseases. Potential target sites to develop new drugs for various disorders. GP IIb/IIIa receptors antagonists. Anti-integrin therapy.

8. **Growth factors**
Biology of various growth factors and their therapeutic potentials. Pharmacology of cardiac and vascular remodeling.

**Books Recommended**

4. Latest Reviews of pharmacology, medicine, toxicology, physiology etc.

**SEMESTER-III**

**(PHARMACOLOGY)**

**Paper 11: RESEARCH METHODOLOGY**

External Marks: 30
Internal Marks: 20
Total Marks: 50
4 hours/week

1. Research: meaning, purpose, types, objectives of research.
2. Literature survey: use of library, books, journal, medlines, internet
3. Selecting a problem and preparing research proposal
4. Documentation: Research paper/thesis writing (different parts, key words, implementation of statistics discussion, support or non support of hypothesis, practical and theoretical implications.
5. Statistical Analysis of data including standard deviation, standard error, student t-test, chi-square test, confidence level, null hypothesis, analysis of variance(one and two way), factorial design, ANOVA(one way and two way), multiple comparsion procedures
6. Application of software for statistical calculatons like SPSS, foxtron

**Book Recommended:**

9. Gauthaman, Biostatistics for Pharmacy students.
11. Liwan Po, Statistics for Pharmacist.
Paper 12: WORKSHOP ON RESEARCH METHODOLOGY
External Marks: 30
Internal Marks: 20
Total Marks: 50
Workshop on research methodology

Paper 13: SYNOPSIS PRESENTATION & VIVA-VOCE
External Marks: 100
Total Marks: 100

SEMESTER-IV
(PHARMACOLOGY)

Paper 14: DISSERTATION+PRESENTATION+VIVA-VOCE
External Marks: 300
Total Marks: 300