

**DR. A.P.J. ABDUL KALAM TECHNICAL UNIVERSITY,
UTTAR PRADESH, LUCKNOW**



Syllabus

For

**M.Pharm.
2nd Year (III & IV Sem)**

Applicable for all specializations

(Effective from the Session: 2018-19)

Schemes for Internal Assessments and End Semester Examinations (Semester III & IV)

Course Code	Course	Internal Assessment				End Semester Exams		Total Marks	Credit Points
		Continuous Mode	Sessional Exams		Total	Marks	Duration		
			Marks	Duration					
Semester III									
MRM301T (New)	Research Methodology and Biostatistics	40	60	2 Hr	100	-	-	100	4
MRM302T (New)	Journal Club	-	-	-	25	-	-	25	1
MRM303P (New)	Discussion /Presentation (Proposal Presentation)	-	-	-	50	-	-	50	2
MRM304P (New)	Research Work	350	-	-	-	-	-	350	14
Total								525	21
Semester IV									
MRM401T (New)	Journal Club	-	-	-	25	-	-	25	1
MRM402P (New)	Discussion / Presentation (Proposal Presentation)	-	-	-	75	-	-	75	3
MRM403P (New)	Research Work and Colloquium	-	-	-	-	400	1 Hr	400	16
Total								500	20

M. Pharm.-IIInd Year
THIRD SEMESTER
RESEARCH METHODOLOGY & BIOSTATISTICS
(MRM301T)

THEORY

1. General Research Methodology: Research, objective, requirements, practical difficulties, review of literature, study design, types of studies, strategies to eliminate errors/bias, controls, randomization, crossover design, placebo, blinding techniques.
2. Biostatistics: Definition, application, sample size, importance of sample size, factors influencing sample size, dropouts, statistical tests of significance, type of significance tests, parametric tests (students “t” test, ANOVA, Correlation coefficient, regression), non-parametric tests (wilcoxon rank tests, analysis of variance, correlation, chi square test), null hypothesis, P values, degree of freedom, interpretation of P values.
3. Medical Research: History, values in medical ethics, autonomy, beneficence, non-maleficence, double effect, conflicts between autonomy and beneficence/non-maleficence, euthanasia, informed consent, confidentiality, criticisms of orthodox medical ethics, importance of communication, control resolution, guidelines, ethics committees, cultural concerns, truth telling, online business practices, conflicts of interest, referral, vendor relationships, treatment of family members, sexual relationships, fatality.
4. CPCSEA guidelines for laboratory animal facility: Goals, veterinary care, quarantine, surveillance, diagnosis, treatment and control of disease, personal hygiene, location of animal facilities to laboratories, anesthesia, euthanasia, physical facilities, environment, animal husbandry, record keeping, SOPs, personnel and training, transport of lab animals.
5. Declaration of Helsinki: History, introduction, basic principles for all medical research, and additional principles for medical research combined with medical care.

Recommended Books: (Latest Editions)

1. Fisher RA "Statistical Methods for Research Works", Oliver & Boyd, Edinburgh.
2. Chow SS & Liu JP "Statistical Design & Analysis in Pharmaceutical Sciences", Marcel Dekker, New York.
3. Buncher CR, "Statistics in the Pharmaceutical Industry", Marcel Dekker, New York.
4. Finney DJ, "Statistical Methods in Biological Assays", Hafner, New York.
5. Montgomery DC, "Introduction to Statistical Quality Control", Wiley, New York.
6. Kothari C.R., Research Methodology Methods and Techniques, 2nd Edition, Wishwa Prakashan, New Delhi.
7. Lokesh K., Methodology of Educational research, 3rd revised Edition, Vikash Publishing House Pvt. Ltd., New Delhi.
8. Kumar R., Research Methodology, 2nd Edition, Dorling Kindersley (India) Pvt. Ltd., New Delhi.
9. Rao G.N., Research Methodology and Qualitative Methods, B.S. Publications, Hyderabad.
10. Saunders M., Lewis P. and Thornhill A., Research Methods for Business Students, 3rd Edition, Dorling Kindersley (India) Pvt. Ltd., New Delhi.
11. Bolton S. and Bon C., Pharmaceutical Statistics: Practical and Clinical Applications, 4th edition, Marcel Dekker, New York.
12. Matad V., Anusuya D., Medicomarketing Writing, PharmaMed Press, Hyderabad.
13. Garg, B.L., Karadia, R., Agarwal, F. and Agarwal, U.K., 2002. An introduction to Research Methodology, RBSA Publishers.