



# Pravara Institute of Medical Sciences Deemed University

Loni Bk. 413 736, Tal. Rahata, Dist. Ahmednagar (M.S.)

Ref.No. PIMS/SBM / MBA / 2012/ 962

Date : 20 / 07 / 2012

## Notification No : 37 / 2012

It is hereby notified for information of all concerned that as per decision taken by the Academic Council at its meeting held on 13<sup>th</sup> July 2012, the Master of Business Administration (MBA) (Bioscience) two years full time Post Graduate programmes has been revised. The programme structure and curriculum and scheme of Examination is hereby published for information of all concerned.

The said revised M.B.A (Bioscience) structure and curriculum and scheme of Examination shall be implemented from the Academic year 2012 -13 admissions.

All concerned are requested to note the contents of this circular.

Sd/---  
(A. L. Bhosale)  
Registrar

Encl. : As above

Copy for information and necessary action to : -

1. The Director,  
School of Bioscience Management,  
Chincholi, Tal. - Sinnar, Dist – Nashik
2. Controller of Examinations  
PIMS (DU), Loni
3. Finance and Accounts Officer
4. Assistant Registrar (Academic)
5. Assistant Registrar (General)
6. Assistant Registrar (CET)

# **Master of Business Administration (Bioscience)**

**Duration – 2 Years Full Time**

**Revised Programme Structure  
And  
Curriculum & Scheme of Examination  
(From August, 2012)**



**PRAVARA INSTITUTE OF MEDICAL SCIENCES  
(DEEMED UNIVERSITY)**

# Pravara Institute of Medical Sciences

(Deemed University)

Revised Syllabus for Master of Business Administration-MBA (Bioscience)

M.B.A. Part I (First Year) Revised from August 2012-13

M.B.A. Part II (Second Year) Revised from June 2013-14

## **(I) Introduction**

The title of the course shall be Master of Bioscience Business Administration (M.B.A)

## **(II) Objectives**

The basic objectives of an M.B.A. bioscience course are

1. To provide the country a steady stream of competent young men and women with necessary knowledge, skills, values and attitudes to occupy positions of management and administration in business, bio industry, and the government.
2. To impart the students latest and relevant knowledge from the field of technology and Management theory and practices.
3. To provide opportunities to the students for developing necessary managerial skills.
4. To impart/ develop the right kind of values and attitude to function effectively in technical and managerial/ administrative positions to develop bio-business.

## **(III) Eligibility for Admission**

Students possessing following qualifications are eligible for admission to MBA (Bioscience) course-

- (a) A Bachelor's Degree in faculty of science (B. Sc) with specialization in (Chemistry, botany, Zoology, biochemistry, microbiology, biotechnology or any branch of life sciences /Agriculture science (B. Sc), Pharmacy(B.Pharmacy), Engineering (Chemical), of any statutory University with **50%** or more marks

**Or**

A Master's Degree in faculty of science (M. Sc) with specialization in (Chemistry, botany, Zoology, biochemistry, microbiology, biotechnology or any branch of life Sciences /Agriculture science (M. Sc), Pharmacy (M.Pharmacy), Engineering (Chemical), of any statutory University with **50%** or more marks &

- (b) Must have completed selection procedure as prescribed by the Pravara Institute of Medical Sciences- Deemed University competent authority from time to time.

**Course Structure for  
Masters Degree Course in Business Administration (Bioscience)  
SEMESTER – I**

<b>Course Code</b>	<b>Subject Title</b>	<b>Exam.</b>	<b>Total Marks</b>
101	Organizational Behavior & PPM	External	100
102	Basics of Life Sciences	External	100
103	Basics of Marketing Management	External	100
104	Overview of Bio-Industries	External	100
105	Managerial Economics	External	100
106	Accounting for Managers	External	100
107	Business Communication	Internal	50

**SEMESTER – II**

<b>Course Code</b>	<b>Subject Title</b>	<b>Exam.</b>	<b>Marks</b>
201	Human Resource Management	External	100
202	Financial Management	External	100
203	Social and Legal Aspects of Bioscience	External	100
204	Research Methodology and Statistical Techniques	External	100
205	Business Policy and Strategic Management	External	100
206	Practical's With Industrial Applications (P)	External	100
207	Crisis Management	Internal	50

**SEMESTER – III**

<b>Course code</b>	<b>Subject Title</b>	<b>Exam.</b>	<b>Marks</b>
301	Management Information System	External	100
302	Industrial Safety Management	External	100
303	Project Report & Viva Voce	External	100
304	Specialization from Group A/B/C/D	External	100
305	Specialization from Group A/B/C/D	External	100
306	Specialization from Group A/B/C/D	External	100
307	Specialization from Group A/B/C/D	Internal	50

**SEMESTER – IV**

<b>Course Code</b>	<b>Subject Title</b>	<b>Exam.</b>	<b>Marks</b>
401	International Business Management	External	100
402	Entrepreneurship Development in Bio-Industries	External	100
403	Import and Export Management	External	100
404	Specialization from Group A/B/C/D	External	100
405	Specialization from Group A/B/C/D	External	100
406	Specialization from Group A/B/C/D	External	100
407	Specialization from Group A/B/C/D	Internal	50


## NOTES

<b>I</b>	In case of subjects for University evaluation, 30% marks are reserved for internal evaluation and 70% marks are reserved for University evaluation. Passing percentage Will be 50% for internal and external evaluation separately.
<b>II</b>	After every three years, syllabus will be revised.
<b>III</b>	<b>Number of Lectures-</b> For external subjects, there shall be maximum 60 lectures of 45 Minutes and 15 lectures for Presentations/Seminars/Group Discussions per semester
<b>IV</b>	<b>Practical Training and Project Work-</b> Each student shall have to undergo an industrial practical training for a period of not less than 52 days (excluding holiday) during the vacation at the end of Second Semester. Based on the actual training during the vacation, the student shall write a project report on the topic selected under the guidance of a faculty and submit two copies of the same to the Director of the institute. The project Report shall be assessed both internally (30 marks) and externally (70 marks) .For external evaluation there will be a viva voce at the end of third semester. Such viva-voce shall be conducted by a panel of two referees appointed by the University.
<b>V</b>	<b>Marks</b> The papers marked, as “ <b>External</b> ” in the course structure will be evaluated by the University and carry 100 marks. Out of these 100 marks 70 marks are reserved for University Evaluation based upon comprehensive written examination and 30 marks are reserved for internal evaluation by the individual Institutes. The individual Institute will evaluate the Internal marks of each subject internally and such marks will be communicated to the University at the end of each semester. These marks will be considered for the declaration of the results.
<b>VI</b>	<b>Specialization</b> In second year, a student shall select a special subject, consisting of 8 Unit Courses, from following Functional areas :- Group A-Marketing Management Group B-Human Resource Management Group C-Production Planning and Control Management Group D-Quality Assurance Management  For each of the above fields of specialization the syllabus includes four courses for semester III and semester IV separately. Out of the five titles selected, three should relate to full papers (i.e. carrying 100 marks) and one should relate to internal paper( i.e. carrying 50 marks)
<b>VII</b>	<b>Rules for specialization</b> Student for the special course under 304A, 305A, 306A, and 307A, shall offer 404A, 405A, 406A, and 407A only. Student for the special course under 304B, 305B, 306B, and 307B, shall offer 404B, 405B, 406B, and 407B only. Student for the special course under 304C, 305C, 306C, and 307C, shall offer 404C, 405C, 406C, and 407C only. Student for the special course under 304D, 305D, 306D, and 307D, shall offer 404D, 405D, 406D, and 407D only.

VIII	<p><b>Additional Specialization:-</b> A student who has passed the M.B.A. Examination of Pravara Institute of Medical Sciences University may be allowed to appear for the M.B.A. examination again, in any other special group only, by keeping terms for the third and fourth semester for that special group i.e. for papers comprising of 700 marks out of a total of 1300 marks, at proportionate fees (50%) of the Tuitions Fees</p>				
IX	<p><b>Case Studies</b> Case Studies will be mandatory for each subject in each semester; Cases should be normally based on the topics covered by the subject faculty.</p>				
X	<p><b>Assessment</b> The final total assessment of the student shall be made in terms of an internal assessment and an external assessment.</p> <ol style="list-style-type: none"> <li>a) The internal and external assessment will constitute separate heads of passing and they will be shown separately in the marks sheet.</li> <li>(b) For each paper meant for University evaluation, the ratio of marks for internal assessment in relation to external assessment shall be 30:70</li> <li>(c) The external assessment shall be based upon the external written examination to be held at the end of each semester.</li> <li>(d) The project Report and viva shall constitute one head of passing.</li> <li>(e) The marks awarded by a teacher in the internal evaluation for the papers marked as “External” in the courses structure shall be immediately Communicated to the student. The Institute should communicate internal marks to the students</li> <li>(f) Reassessment of Internal Marks –in case of those students who have secured less than passing percentage of marks in the internal evaluation for the paper marked as “ External” in the course structure, the concerned Institute should Administer a separate internal test for these 30 marks in the subsequent semester. The results of such test may be communicated to the University as the Revised Internal marks. If the result of internal test as above results in lower marks should be prevailed. In short, the rule is higher of the two figures of the marks shall be taken into consideration.</li> </ol>				
XI	<p><b>Internal Evaluation</b> <b>Distribution of 30 Internal Marks:</b> The Internal Theory examination will be conducted for 70 marks and will be Converted in to 20 marks, and the remaining 10 marks will be evaluated for Seminar/ppt &amp; GD Internal Theory Examination: 20 Seminar/PPT (5 Marks) &amp; GD (5 Marks):10</p> <p><b>The Internal Marks for Practical paper:</b> The Internal marks for Practical will include</p> <table style="margin-left: 40px;"> <tr> <td>Journal -</td> <td>10 Marks</td> </tr> <tr> <td>Internal Practical Exam</td> <td>20 Marks</td> </tr> </table> <p>Every student shall submit the bound hard copy of practical journal to the institute</p>	Journal -	10 Marks	Internal Practical Exam	20 Marks
Journal -	10 Marks				
Internal Practical Exam	20 Marks				

<b>XII</b>	<p><b>Examinations</b></p> <p>The M.B.A (Bioscience) examination will be held in four semesters. The student will not be allowed to appear for the examination unless his/her attendance is minimum 75%. The student will be allowed to carry maximum backlog of eight (8) heads of passing from any one or more semesters.</p>												
<b>XIII</b>	<p><b>Standard of passing</b></p> <p>Every student must secure 50% marks in both University Evaluation as well as Internal Evaluation.</p>												
<b>XIV</b>	<p>There shall be numerical marking for each course. At the time of declaration of the Result, the marks obtained by a student shall be converted into the grades as shown below.</p> <p><b>The gradation will be as follows:</b></p> <table data-bbox="280 646 1055 877"> <thead> <tr> <th data-bbox="280 646 535 680"><b>Percentage</b></th> <th data-bbox="597 646 787 680"><b>Grade</b></th> </tr> </thead> <tbody> <tr> <td data-bbox="280 699 535 732">75% marks or more</td> <td data-bbox="597 699 1031 732">= Pass with distinction or A+</td> </tr> <tr> <td data-bbox="280 735 535 768">60% - 74% marks</td> <td data-bbox="597 735 998 768">= Pass with first class or A</td> </tr> <tr> <td data-bbox="280 770 535 804">55% - 59% marks</td> <td data-bbox="597 770 1052 804">= Pass with second class or B+</td> </tr> <tr> <td data-bbox="280 806 535 840">50% marks – 54%</td> <td data-bbox="597 806 1031 840">= Pass with second class or B</td> </tr> <tr> <td data-bbox="280 842 535 875">Less than 50%</td> <td data-bbox="597 842 787 875">= Fail (F).</td> </tr> </tbody> </table> <p>(Grade F stands for failure) (Fraction to be rounded up to next higher integer)</p>	<b>Percentage</b>	<b>Grade</b>	75% marks or more	= Pass with distinction or A+	60% - 74% marks	= Pass with first class or A	55% - 59% marks	= Pass with second class or B+	50% marks – 54%	= Pass with second class or B	Less than 50%	= Fail (F).
<b>Percentage</b>	<b>Grade</b>												
75% marks or more	= Pass with distinction or A+												
60% - 74% marks	= Pass with first class or A												
55% - 59% marks	= Pass with second class or B+												
50% marks – 54%	= Pass with second class or B												
Less than 50%	= Fail (F).												
<b>XV</b>	<p><b>Transcript for Students</b></p> <p>Every student shall be given a transcript, showing the name of the Institution, Name of the candidate's mother, the courses Offered by the student, the date of enrollment in the course, the dates of the examination, the dates of the external examination, and details of marks of internal and external assessment. The transcript will further indicate the rank, if the student secures the rank amongst the first 10 ranks in the entire examination.</p>												

<b>XVI</b>	<b>Specimen of the Transcript</b>
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	Pravara Institute of Medical Sciences (Deemed University)				
<b>Statement of Marks For</b>					
<b>Examination:</b> Master in Business Administration(Bioscience) (Rev. 2012-13)					
<b>Seat No.</b>	6554		<b>P. R. No.</b>	05200551633	
<b>Name</b>	XXXX XXXX XXXX		<b>Mother</b>	PQR	
<b>Center No.</b>			<b>Institute Code</b>		
<b>Year</b>		<b>Course Name</b>	<b>Marks Obtained</b>		
			<b>Passing Out of</b>		
<b>Sem.</b>			<b>15/30</b>	<b>35/70</b>	<b>50/100</b>
			Int.	Ext.	Tot.
<b>I</b>	101	Organizational Behaviour and Principles & Practices of Management	XX	XX	XX
	102	Basics of Life Sciences	XX	XX	XX
	103	Basics of Marketing Management	XX	XX	XX
	104	Overview of Bio-Industries	XX	XX	XX
	105	Managerial Economics	XX	XX	XX
	106	Accounting for Managers	XX	XX	XX
	107	Business Communication	XX	XX	XX
<b>II</b>	201	Human Resource Management	XX	XX	XX
	202	Financial Management	XX	XX	XX
	203	Social & Legal Aspects of Bioscience	XX	XX	XX
	204	Research Methodology and Statistical Techniques	XX	XX	XX
	205	Business Policy and Strategic Management	XX	XX	XX
	206	Practical's with Industrial Applications (P)	XX	XX	XX
	207	Crisis Management	XX	XX	XX
<b>III</b>	301	Management Information System	XX	XX	XX
	302	Industrial Safety Management	XX	XX	XX
	303	Project Report & Viva Voce	XX	XX	XX
	304	Spl.in MKT./HRM/PPC Mgt. /QAM	XX	XX	XX
	305	Spl.in MKT./HRM/PPC Mgt. /QAM	XX	XX	XX
	306	Spl.in MKT./HRM/PPC Mgt. /QAM	XX	XX	XX
	307	Spl.in MKT./HRM/PPC Mgt. /QAM	XX	XX	XX
<b>IV</b>	401	International Business Management	XX	XX	XX
	402	Entrepreneurship Development in Bio-Industries	XX	XX	XX
	403	Import and Export Management	XX	XX	XX
	404	Spl.in MKT./HRM/PPC Mgt. /QAM	XX	XX	XX
	405	Spl.in MKT./HRM/PPC Mgt. /QAM	XX	XX	XX
	406	Spl.in MKT./HRM/PPC Mgt. /QAM	XX	XX	XX
	407	Spl.in MKT./HRM/PPC Mgt. /QAM	XX	XX	XX
(I:XXX)(II:XXX)(III:XXX)(IV:XXX)			<b>Grand Total (Out of 2600)</b>		
#- Internal : passing/out of 25/50					
Class:					
SPECIAL SUBJECT: HUMAN RESOURCE MANAGEMENT					
Controller of Examination				Date:	

**Pravara Institute of Medical Sciences  
(Deemed University)**

Established under section 3 of UGC Act. 1956 vide Notification No. F. 9-11/2000 U.3 of the Govt. of India



**PASSING CERTIFICATE**

**Seat No.:**

**Date:**

**Permanent Reg. No. :**

**College:** School of Bioscience Management

**This is to certify that**

**Shri/Smt.:** xxx xxx xxx

**Mother:** xxxxx

**Passed the:** Master In Business Administration (Bioscience)( Rev. 2012-13)

With SPL. SUBJECT HUMAN RESOURCE MANAGEMENT

Examination held by PRAVARA INSTITUTE OF MEDICAL SCIENCES-DU In the month of DD/MM/YYYY

**And was placed in** First / Second / Third Class

**Controller of Examination**

<b>XVII</b>	<p><b>Teaching Faculty</b>          Besides full time faculty members, part-time, adjunct and visiting faculty members Should be invited to conduct the professional courses. Visiting faculty should normally Satisfy one of the following criteria:          (a) Master’s degree of a recognized University in a relevant subject.          (b) Master’s degree of recognized University in any faculty with at least two years Professional experience related to the given subject.</p>
<b>XIX</b>	<p><b>The Question Paper Pattern for University Examination</b></p> <p><b>Instructions to the candidate</b></p> <p>1) Q. 1 is Compulsory</p> <p>2) From Q. 2 – Q. 7 Attempt any 4</p> <p>3) All questions carry equal marks</p> <p>Q. 1 Long Answer Question - 14 Marks</p> <p>Q. 2 Long Answer Question - 14 Marks</p> <p>Q. 3 Long Answer Question - 14 Marks</p> <p>Q. 4 Long Answer Question - 14 Marks</p> <p>Q. 5 Long Answer Question - 14 Marks</p> <p>Q. 6 Long Answer Question - 14 Marks</p> <p>Q. 7 Short notes on (Any Two) - 14 Marks</p>



<b>11.</b>	<b>Leadership:</b> Concept, Nature, Importance, Attributes of a leader, developing leaders across the organization, leadership Grid.	4
<b>12.</b>	<b>Decision Making:</b> Concept, Nature, Importance, and Process. Types of Decision, Problems in decision-making	4
<b>13.</b>	<b>Case Studies</b>	9
	<b>Books Recommended: -</b> 1. Organizational Behaviour, 9th Ed. - Stephen Robbins 2. Human Behaviour at work - Davis and Newstorm 3. Organizational Behaviour - Uma Sekaran 4. Organizational Behaviour - Fred Luthans 5. Organizational Behaviour - K.Aswathappa 6. Human Behaviour at Work - Keith Davis 7. Organizational Behaviour - Jit S.Chandran 8. Human Relations & Organizational Behaviour - R.S.Dwivedi 9. Organizational Behaviour - McShane 10. Organizational Behaviour - Sharma 11. Essentials of Management – Koontz – TMGH - 12. Principles & Practices of Management - Saxena 13. Principles and Practices of Management - Shejwalkar and Ghanekar 14. Management Concepts & Practices - Hannagan	

<b>102-BASICS OF LIFE SCIENCES</b>		
<b>1.</b>	<b>Cell Biology:</b> Levels of organisms and size of organisms. - Cell theory, Pro karyotic and Eu karyotic cells. - Organals; structure and functions. - Cell membrane, Cell cycle.	5
<b>2.</b>	<b>Genetics:</b> Deoxyribonucleic acid (DNA), Ribonucleic acid (RNA) and Protein structure and Functions. -Gene expressions, Phage genetics	6
<b>3.</b>	<b>Introduction to Microbiology:</b> Growth of microorganisms, anti-biotics,. -Application of microbes in various industries.	5
<b>4.</b>	<b>Integrated overview on Biotechnology:</b> Traditional v/s. Modern Biotechnology, Application of Biotechnology in Industry.	6
<b>5.</b>	<b>Application And Methodology of Biotechnology:</b> Recombinant DNA technology, Cloning vectors, Hybridoma technology	6
<b>6.</b>	<b>Industrial Biotechnology:</b> Fermentor, Batch Reactor, Upstream & Downstream Processing & Various Separation Techniques –Ion Exchange-Gel Filtration etc.	7
<b>7.</b>	<b>Tissue Culture:</b> Plant tissue culture – primary culture, callus, somoclonal propagation, application.	5
<b>8.</b>	<b>Animal tissue culture :</b> Basics and techniques, organ culture, application.	6
<b>9.</b>	<b>Immuno Technology</b> - Principles of Immuno Assays, Antibody Engineering Diagnostics based on Antigen and Antibodies detection - Case Studies - Interferons, Protein harmones & Therapeutic Enzymes - First and Second Generation Vaccines , DNA Vaccines	7
<b>10.</b>	<b>Introduction to Pharmaceutical sciences</b> - Dosage forms, routes of Administration - Introduction to Official Pharmacopeia - Drug delivery systems - Basic pharmacological terms	7
	<b>Books Recommended:</b> -Biological Sciences, D.J.Taylor, NPO Green and G.W.Stout. -General Microbiology, H.G.Schlegel. -Biotechnology, John E. Smith -An Introduction to Bioinformation Algorithms, Jones. -Bioinformatics and Molecular Evolution, Higgs. -Biotechnology-Demystifying the Concepts, D.Bourgaize. Biotechnology, A. Borem. -Industrial Pharmacy by Libermann, Lachmann - Indian Pharmacopeia - Remington.	

<b>103 – BASICS OF MARKETING MANAGEMENT</b>		
<b>1.</b>	<b>Introduction to Marketing</b> Definition, functions, scope of Marketing, importance of marketing, Concepts of marketing	<b>3</b>
<b>2.</b>	<b>Product Management</b> Meaning, Product mix, P.L.C., New product – Meaning, sources of new product ideas.	<b>9</b>
<b>3.</b>	<b>Pricing Decisions</b> Meaning objectives, importance, factors influencing pricing decisions, Pricing Strategies & Types	<b>8</b>
<b>4</b>	<b>Managing distribution function:</b> Introduction, importance, Channel levels for Pharma and other industries, Factors determining the length of channel, Factors influencing distribution decision.	<b>8</b>
<b>5.</b>	<b>Promotion</b> Introduction, role in marketing, promotional mix – introduction of advertising, sales promotion, personal selling, public relations.	<b>7</b>
<b>6.</b>	<b>Consumer Behaviour</b> Introduction, Need of study, consumer decision process, Fast moving consumer goods(FMCG) influencing buyer behaviour, Industrial buyer Vs Domestic buyer.	<b>5</b>
<b>7.</b>	<b>Market Segmentation</b> Introduction, definition, bases of segmentation, importance of segmentation, targeting, positioning.	<b>6</b>
<b>8.</b>	<b>Marketing for following sectors</b> Introduction, Importance & Challenges of Healthcare, Chemical, Agriculture, Food, Wine, Cosmetic, Environment, & Over the Counter Drugs (OTC) Markets,	<b>8</b>
<b>9</b>	<b>Case Studies</b>	<b>6</b>
	<b>Books Recommended –</b> 1. Marketing management – Philip Kotler 2. Marketing management – Ramaswamy 3. Marketing management – Rajan Saxena 4. Pharmaceutical Marketing – S.V.Subbarao 5. Marketing strategy – Walker Mullin 6. Basics of Marketing – William Perreault Jr. 7. Case studies in marketing –Indian context – R.Srinivas	

<b>104- OVERVIEW OF BIO-INDUSTRIES</b>		
1.	<b>Overview of Bioscience Sector</b> - Introduction to Bioscience field, sectors included, application - Market overview: national and international level	4
2.	<b>Introduction to Pharmaceutical industry</b> - Components of Pharma Industry, Scope , Application - Market overview at national and international level - Challenges and opportunities for techno-managers in pharma	7
3.	<b>Basics of Biotechnology and Bioinformatics</b> - Structure, Scope and application of Medical Biotechnology, Agricultural Biotechnology and Industrial Biotechnology	7
4.	<b>Agricultural and related Business</b> - Scenario of Indian agro industry -Agro processing industries: an illustrative profile , traditional food industry and modern food industry - Issues affecting agro processing industries	7
5.	<b>Basics of Food and Dairy Industry</b> Components of a food industry, Food commodities, Food spoilage and food preservation , Packaging	6
6.	<b>Wine and beverage industry</b> -Drivers of growth for wine industries: Increasing consumption, Govt. policy and infrastructure support - Industry structure; competitive landscape, production and processing, Distribution - Overview of Alcoholic and non alcoholic beverages industry	7
7.	<b>Emerging trends in biotechnology:</b> Stem cell research, Tissue Engineering, New Drug design and development. Genomes and proteomes., Pharmacogenomes, Transgenic Plants- vit-A containing rice., Transgenic animals- Third generation vaccines.	8
8.	<b>Types of Bio-Products</b> Pharma and agriculture products, a new bio products, natural origin, tissue Culture based products, crop improvement and protection, floriculture, Herbal medicine.	7
9.	<b>Health care industry</b> - Scenario of health care sector - Introduction to health care management ,Planning, administration - Health Insurance:Introduction, benefits - Health Insurance Portability and Accountability Act(HIPPA)	7
	<b>Books Recommended:</b> 1. Bioindustry; By Gus A. Kohler, Ph. D 2. Remington: Science & Practice of Pharmacy Vol. I, 21 <sup>st</sup> Edition 3. Biotechnology in India: India Report 4. <a href="http://www.india-reports.com">www.india-reports.com</a> 5. Indian Agriculture Market Report & forecast 2012-17 6. <a href="http://www.fao.org/sd/PPdirect/PPre0039.htm">http://www.fao.org/sd/PPdirect/PPre0039.htm</a> 7. <a href="http://www.rabobank.com">http://www.rabobank.com</a> 8. <a href="http://www.library.ca.gov/crb/96/07/index.html">http://www.library.ca.gov/crb/96/07/index.html</a>	

<b>105- MANAGERIAL ECONOMICS</b>		
<b>1</b>	Definition, Nature and Scope of Managerial Economics, Managerial Economics and Microeconomic and Macroeconomics. Managerial Economics and decision-making. Definitions of basic concepts: <ol style="list-style-type: none"> <li>a. Positive and normative approach</li> <li>b. Optimization</li> <li>c. Marginal analysis</li> <li>d. Opportunity Cost.</li> <li>e. Economic Model.</li> <li>f. Static and Dynamics.</li> </ol>	<b>08</b>
<b>2</b>	Meaning and Determinants of demand. Demand Function. Law of Demand, Market Demand, Elasticity of demand. Types of elasticity. Measurement of Elasticity. Significance and uses of the elasticity. Methods of Demand estimation. Demand forecasting. Forecasting of an established product. Forecasting of a new product	<b>08</b>
<b>3</b>	<b>Production Function.</b> Law of Variable Proportions. Law of supply. Elasticity of supply. Measurement of elasticity. Significance and uses of the concept of elasticity.	<b>06</b>
<b>4</b>	<b>Costs of production. Private costs and Social Costs.</b> Accounting Costs and Economic costs. Short run and Long Run costs. Economies of scale. Cost estimation. Methods of cost estimation and cost forecasting. Cost reduction and cost control.	<b>06</b>
<b>5</b>	<b>Pricing under various markets including:</b> Perfect Competition, Monopoly, Monopolistic competition, oligopoly. Cartels. Price discrimination. Measurement of Monopoly Power.	<b>08</b>
<b>6</b>	<b>Pricing Strategies and Methods</b> – Cost plus pricing. Marginal cost pricing. Cyclical pricing. Penetration Pricing. Price Leadership. Price Skimming. Transfer pricing.	<b>08</b>
<b>7</b>	<b>Profit Policy:</b> Break Even analysis. Profit Forecasting.	<b>06</b>
<b>8</b>	<b>Capital Budgeting</b> – steps involved in project evaluation. Concept of time value of money. Methods of investment Appraisal: Discounted Cash flow. Net Present Value. Internal Rate of Returns.	<b>06</b>
<b>9</b>	Need for Government Intervention in Markets. Price Controls. Support Price. Preventions and Control of Monopolies. System of Dual Price.	<b>04</b>
	<b>Books Recommended:</b> <ol style="list-style-type: none"> <li>1. Managerial Economics – Analysis, Problems and Case, P.L. Mehta, Sultan Chand Sons, New Delhi.</li> <li>2. Managerial Economics – Varshney and Maheshwari, Sultan Chand and Sons, New Delhi.</li> <li>3. Managerial Economics – D. Salvatore, McGraw Hill, New Delhi.</li> <li>4. Managerial Economics – Pearson and Lewis, Prentice Hall, New Delhi</li> <li>5. Managerial Economics – G.S. Gupta, T M H, New Delhi.</li> <li>6. Managerial Economics – Mote, Paul and Gupta, T M H, New Delhi.</li> <li>7. Managerial Economics –Joel Dean, Prentice Hall, USA.</li> <li>8. Managerial Economics –H L Ahuja, S Chand &amp; Co. New Delhi.</li> </ol>	

<b>106 –ACCOUNTING FOR MANAGERS</b>		
<b>1.</b>	<b>Meaning and Definition of Accounting</b> , Parties or Users interested in Accounting, Branches of Accounting, Meaning and Definition of Management Accounting, Distinction between Management Accounting and Financial Accounting. Accounting, Concepts and Conventions.	10
<b>2.</b>	<b>Basic Accounting terminologies</b> , Classification of Accounts, Meaning of Journal, Writing of Journal Entries.	5
<b>3.</b>	<b>Secondary Books of Accounting</b> , Preparation of Trial Balance, Final Accounts of Sole Traders	12
<b>4.</b>	<b>Elements of Costs;</b> (a) Materials Costs: - Materials purchasing, receiving, storing and issuing including pricing of issues. (b) Labour Costs and Labour Turnover. (c) Overheads- Identifying the overheads with cost centre. Allocation, Apportionment and Absorption – Accounting treatment of Under and Over Absorption. (d) Preparation of Cost Sheet, items to be excluded while preparing cost sheet.	10
<b>5.</b>	<b>Managerial Decision Making Techniques like</b> (a) Marginal costing – Cost volume profit analysis, BEP (b) Budgetary control, Operating and Financial Budgets, Flexible Budgets. (c) Standard Costing – Materials Cost and Labour cost variances only.	20
<b>6.</b>	Introduction to Tally	3
	<b>Books Recommended</b> 1. Introduction to Management Accounting - Horngreen and Sundlem 2. Principles of Management Accounting - Manmohan & Goyal 3. Management Accounting - Dr. E.B. Khedkar, Dr. D.B. Bharati and Dr. A. B. Kharapas. 4. Cost and Management Accounting - S.M.Inamdar 5. Management Accounting - Dr. Mahesh Kulkarni 6. Double Entry Book Keeping - T.S.Grewal 7. Principles and Practice of Cost Accounting – Ashish K. Bhattacharya 8. Management Accounting 3rd Ed. - Khan & Jain 9. Theory & Problems in Management & Cost Accounting - Khan & Jain 10. Cost Accounting – Jawaharlal 11. Management Accounting - Dr. A. P. Rao	

<b>107-BUSINESS COMMUNICATION</b>		
<b>1.</b>	<b>Introduction to managerial communication:</b> Meaning, Importance & objectives - Principles of Communication, forms of communication, Communication Process, Barriers of effective communication, Techniques of effective communication.	<b>2</b>
<b>2.</b>	<b>Nonverbal communication:</b> Body Language, Gestures, Postures, Facial Expressions, Dress codes. The Cross Cultural Dimensions of Business Communication. Listening & Speaking, techniques of electing response, probing questions, Observation. Business and social etiquettes.	<b>6</b>
<b>3.</b>	<b>Managerial speeches:</b> Principles of Effective Speech & Presentations. Technical & Non-technical presentations. Speech of introduction - speech of thanks - occasional speech - theme speech. Use of audio visual aids.	<b>6</b>
<b>4.</b>	<b>Interview Techniques:</b> Mastering the art of conducting and giving interviews, Placement interviews - discipline interviews - appraisal interviews – exit interviews.	<b>2</b>
<b>5.</b>	<b>Group communication:</b> Importance, Meetings - group discussions. Videoconferencing.	<b>2</b>
<b>6.</b>	<b>Introduction to managerial writing:</b> Business letters: Inquiries, Circulars, Quotations, Orders, Acknowledgments Executions, Complaints, Claims & adjustments, Collection letter, Banking correspondence, Agency correspondence, Bad news and persuading letters, Sales letters, Job application letters - Bio-data, Covering Letter, Interview Letters, Letter of Reference. Memos, minutes, Circulars & notices.	<b>8</b>
<b>7.</b>	<b>Reports:</b> Types of Business Reports - Format, Choice of vocabulary, coherence and cohesion, paragraph writing, organization reports by individual, Report by committee.	<b>4</b>
	<b>Books Recommended:-</b> 1. Lesikar, R.V. & Flatley, M.E. (2005). Basic Business Communication Skills for Empowering the Internet Generation. Tata McGraw Hill Publishing Company Ltd. New Delhi. 2. Ludlow, R. & Panton, F. (1998). The Essence of Effective Communications. Prentice Hall of India Pvt. Ltd. 3. Adair, J. (2003). Effective Communication. Pan Mcmillan. 4. Thill, J. V. & Bovee, G. L. (1993). Excellence in Business Communication. McGraw Hill, New York. 5. Bowman, J.P. & Branchaw, P.P. (1987). Business Communications: From Process to Product. Dryden Press, Chicago.	

<b>201-HUMAN RESOURCE MANAGEMENT</b>		
<b>1.</b>	<b>Human Resource Management</b> -An Overview Introduction, Evolution, Definition, Importance, Scope, Objectives, Functions of HR manager (Managerial & Operative functions), difference between Personnel Management and HRM- Strategic HRM-	<b>7</b>
<b>2.</b>	<b>Human Resources Planning</b> -Objectives-Importance-HRP Process- Manpower Estimation-Job analysis-Job Description-Job Specification. Recruitment-Sources of Recruitment-Selection Process-Placement and Induction-Retention of Employees.	<b>6</b>
<b>3.</b>	<b>Training and Development</b> - Objectives and Needs-Training Process- Methods of Training –Tools and Aids-Evaluation of Training Programs.	<b>6</b>
<b>4.</b>	<b>Performance Management System</b> -Definition, Concepts and Ethics- Different methods of Performance Appraisal- Rating Errors-Competency management.	<b>6</b>
<b>5.</b>	<b>Compensation Management</b> –Concepts and Components-Job Evaluation- Incentives and Benefits.	<b>5</b>
<b>6.</b>	<b>Productivity Management</b> -Concepts-TQM-Kaizen-Quality Circles	<b>6</b>
<b>7.</b>	<b>Industrial relations</b> -Grievance Procedure-collective Bargaining-Settlement of Disputes.	<b>4</b>
<b>8.</b>	<b>Retirement/Separation</b> -Superannuation-Voluntary Retirement Schemes- Resignation-Discharge-Dismissal-Suspension-Layoff.	<b>4</b>
<b>9</b>	<b>Employee Welfare</b> Need, Principles, Statutory Labour welfare, Voluntary labour welfare <b>HR Audit</b> Concepts, objectives, need, significance, benefits, process,	<b>4</b>
<b>10.</b>	<b>Current Issues and Trends in HRM</b> Employers Brand, HR and Six-Sigma, TQM, Outsourcing, The psychological contract, Knowledge management,	<b>5</b>
<b>11</b>	<b>Case Studies</b>	<b>7</b>
	<b>Books Recommended:-</b> 1. Human Resources Management- Gary Dessler 2. Personnel Management – C.B Mamoria 3. Managing Human Resources - R.S. Dwiwedi 4. Human Resources Management-V.P.Michael 5. Human Resources Management – Dr.P.C.Pardeshi 6. Essentials of HRM (Text, Case & Games) – Dr. P. Subba Rao 7. HRM (Principles and Practices) – P. G. Aquinas 8. Human Resources Management - Ashwathappa 9. Managing Human Resources - Arun Monppa	

<b>202 – FINANCIAL MANAGEMENT</b>		
<b>1.</b>	<b>Concept of Finance</b> , Introduction, Nature, Scope, Corporation Finance, Finance Functions and other functions.	<b>6</b>
<b>2.</b>	<b>Structures of the Financial System:</b> Types of business organizations, Limited companies Partnership companies, Co-operative society, Trusts	<b>5</b>
<b>3.</b>	<b>Financial Management</b> – Meaning and Objectives, A’s of Financial Management, Scope and Functions of Financial Management, Financial Planning and Forecasting.	<b>5</b>
<b>4</b>	<b>Capitalization</b> – Under and Over Capitalization, Capital Structures – Computation of cost of capital, Trading on Equity, Leverages – Type and Significance	<b>11</b>
<b>5.</b>	Analysis and interpretation of Financial Statements using the techniques of Ratio Analysis and Fund Flow analysis	<b>11</b>
<b>6.</b>	<b>Working Capital Management</b> – Nature of Working Capital Management, Need for working capital – operating cycle, estimation of working capital requirement – Management of Cash and Receivables, Cash Budget	<b>12</b>
<b>7.</b>	<b>Management of Profits</b> -Dividend Policy, Procedural and Legal formalities involved in the payments of dividend-Bonus Shares	<b>10</b>
	<p><b>Note-</b> Problem should be covered on the following topics:</p> <ul style="list-style-type: none"> <li>. Simple problem on Ratio Analysis-Calculation of Ratios and preparation of financial statements from ratios.</li> <li>. Simple problems on Fund Flow Analysis</li> <li>. Simple problems on Capital Structures</li> <li>. Calculation of Cost of Capital</li> <li>. Leverages – operating, financial and combined</li> <li>. Estimation of Working Capital requirement</li> </ul> <p><b>Books Recommended</b></p> <ol style="list-style-type: none"> <li>1. Financial Management – I.M.Pandey</li> <li>2. Financial Management – Khan &amp; Jain</li> <li>3. Financial Management – S.M.Inamdar</li> <li>4. Financial Management – N.M.Vechlekar</li> <li>5. Financial Management – S.C.Kuchal</li> <li>6. Financial Management &amp; Policy – R.M.Shrivastava</li> <li>7. Financial Management – Prasanna Chandra</li> <li>8. Financial Management- P.V. Kulkarni</li> </ol>	

<b>203- SOCIAL &amp; LEGAL ASPECTS OF BIOSCIENCE</b>		
<b>1.</b>	<b>Genetically modified organisms (GMOs) for agriculture</b> – Social acceptance in Europe, US & developing countries	3
<b>2.</b>	Environment concern about GMO release, Issues related to biotechnology <b>Gene patents:</b> Ethics, Environmental Safety	3
<b>3.</b>	Biotechnology Invention, Definition, Difference between discovery and invention	2
<b>4.</b>	<b>Fundamentals of Intellectual Property</b> Introduction to the basic concepts of Intellectual Property, Types of IP protection, International agreements linked to IPR	4
<b>5.</b>	<b>Basics about Patent, copyright, trademark.</b>	3
<b>6.</b>	<b>Indian patent system:</b> Legislation, Administration, Patent office, Patentable & non-patentable subject matter in the Indian context_ <b>From filing to grant:</b> What happens to an application at the Indian Patent Office: Filing, Publication, Examination of the application and grant., Patent Oppositions, Date and Term of patent, Fees, Renewals, Restoration of patents, Infringement, appeal	7
<b>7.</b>	<b>Patenting in Biotechnology</b> What are biotechnological (BT) inventions, Criteria for patentability, Deposit of Biological Materials, The Legal Basis-Patentable/Non Patentable Biotechnological, inventions, IPR regime for plant biotechnology, Protection of new plant varieties	7
<b>8.</b>	Patent Cooperation Treaty (PCT)	3
<b>9.</b>	International filing procedures (Convention & PCT), Importance of PCT, PCT system, and procedures, International phase, National phase	4
<b>10.</b>	<b>Import &amp; Export of cloned genes, Cell lines, Germ plasm, Transgenic</b>	4
<b>11.</b>	Indian & International Patent Laws with recent amendments applicable to Herbal/Natural Products and process, plant breeders right	3
<b>12</b>	<b>Case Studies</b>	7
	<b>Books Recommended</b> 1. Patent law practice & procedures – N.R.Subbaram, 2nd edition. 2. Ethical issues in biotechnology-Richard Sherlock.	

<b>204-RESEARCH METHODOLOGY &amp; STATISTICAL TECHNIQUES</b>		
<b>1.</b>	<b>Foundation of Research</b> Meaning, Objectives, Motivation, Utility. Concept of theory, empiricism, deductive and inductive theory. Characteristics of scientific method - Understanding the language of research - Concept, Construct, Definition, Variable. Research Process	<b>05</b>
<b>2.</b>	<b>Problem Identification &amp; Formulation</b> Measurement Issues - Hypothesis - Qualities of good Hypotheses –Null Hypothesis & Alternative Hypothesis. Hypotheses Testing - Logic & Importance	<b>04</b>
<b>3.</b>	<b>Research Design</b> Concept and Importance in Research - Features of a good research design – Exploratory Research Design – concept, types and uses, Descriptive Research Designs - concept, types and uses. Experimental Design: Causal relationships, Concept of Independent & Dependent variables, concomitant variable, extraneous variable, Treatment, Control group.	<b>07</b>
<b>4.</b>	<b>Qualitative and quantitative research</b> Qualitative research - Quantitative research – Concept of measurement, causality, generalization, replication. Merging the two approaches.	<b>04</b>
<b>5.</b>	<b>Measurement</b> Concept of measurement – Problems in measurement in management research - Validity and Reliability. Levels of measurement - Nominal, Ordinal, Interval, Ratio.	<b>04</b>
<b>8.</b>	<b>Attitude Scaling Techniques</b> Concept of Scale – Rating Scales viz. Likert Scales, Semantic Differential Scales, Constant Sum Scales, Graphic Rating Scales – Ranking Scales – Paired Comparison & Forced Ranking.	<b>05</b>
<b>9.</b>	<b>Types of Data</b> Secondary Data - Definition, Sources, Characteristics. Primary Data - Definition, Advantages and disadvantages over secondary data, Observation method, Questionnaire Construction, Personal Interviews, Telephonic Interview, Mail Survey, Email/Internet survey.	<b>07</b>
<b>10.</b>	<b>Sampling</b> Concepts of Statistical Population, Sample, Sampling Frame, Sampling Error, Sample Size, Non Response. Characteristics of a good sample. Probability Sample – Simple Random Sample, Systematic Sample, Stratified Random Sample & Multi-stage sampling. Non Probability Sample – Judgment, Convenience, Quota & Snowballing methods. Determining size of the sample - Practical considerations in sampling and sample size.	<b>10</b>
<b>11.</b>	<b>Data Analysis</b> Data Preparation – Univariate analysis (frequency tables, bar charts, pie charts, percentages), Bivariate analysis – Cross tabulations and Chi-square test including testing hypothesis of association. Interpretation of Data and Report Writing - Layout of a Research Paper	<b>10</b>
<b>12.</b>	<b>Problems on Research Methodology</b>	<b>4</b>
	<b>Books Recommended:-</b> 1. Business Research Methods - Donald Cooper & Pamela Schindler, TMGH, 9th edition. 2. Business Research Methods – Alan Bryman & Emma Bell, Oxford University Press. 3. Research Methodology - C.R.Kothari	

<b>205- BUSINESS POLICIES AND STRATEGIC MANAGEMENT</b>
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1.	<b>Strategy and the Quest for Competitive Advantage:</b> Military origins of strategy – Evolution - Concept and Characteristics of strategic management – Defining strategy – Mintzerbg’s 5Ps of strategy – Corporate, Business and Functional Levels of strategy - Strategic Management Process.	4
2.	<b>Strategic Intent &amp; Strategy Formulation:</b> Vision, mission and purpose – Business definition, objectives and goals – Stakeholders in business and their roles in strategic management - Corporate Social Responsibility, Ethical and Social Considerations in Strategy Development.	4
3.	<b>Strategic analysis:</b> Analyzing Company’s Resources and Competitive Position -Organizational Capability Profile – Strategic Advantage Profile – Core Competence - Distinctive competitiveness.	4
4.	<b>Analyzing Company’s External Environment:</b> Environmental appraisal – Scenario planning – Preparing an Environmental Threat and Opportunity Profile (ETOP) – Industry Analysis - Porter’s Five Forces Model of competition.	4
5.	<b>Corporate Portfolio Analysis:</b> Business Portfolio Analysis - Synergy and Dysergy - BCG Matrix – GE 9 Cell Model - Concept of Stretch, Leverage and fit	3
6.	<b>Generic Competitive Strategies:</b> Low cost, Differentiation, Focus.	3
7.	<b>Grand Strategies:</b> Stability, Growth (Diversification Strategies, Vertical Integration Strategies, Mergers, Acquisition & Takeover Strategies, Strategic Alliances & Collaborative Partnerships), Retrenchment, Outsourcing Strategies.	8
8.	<b>Tailoring strategy to fit specific industry</b> – Life Cycle Analysis - Emerging, Growing, Mature & Declining Industries.	4
9.	<b>New Business Models and strategies for Internet Economy:</b> Shaping Characteristics of E-Commerce environment – E-Commerce Business Model and Strategies – Internet Strategies for Traditional Business – Key success factors in E-Commerce – Virtual Value Chain.	6
10.	<b>Strategy implementation</b> - Project implementation – Procedural implementation – Resource Allocation – Organization Structure – Matching structure and strategy.	3
11.	<b>Behavioral issues in implementation</b> – Corporate culture – Mc Kinsey’s 7s Framework - Concepts of Learning Organization	3
12.	<b>Functional issues</b> – Functional plans and policies – Financial, Marketing, Operations, Personnel, IT.	2

13.	<b>Strategy Evaluation</b> – Operations Control and Strategic Control - Symptoms of malfunctioning of strategy — Balanced Scorecard.	2
14.	<b>Case Studies</b>	10
	<p><b>Books Recommended: -</b></p> <ol style="list-style-type: none"> <li>1. A A Thompson Jr., A J Strickland III, J E Gamble, Crafting &amp; Executing Strategy – The Quest for Competitive Advantage, Tata McGraw Hill, 4th ed., 2005.</li> <li>2. Ranjan Das, Crafting the Strategy: Concepts and Case in Strategic Management, Tata McGraw Hill, 2004.</li> <li>3. Henry, Mintzberg, Bruce, Ahlstrand and Joseph, Lampel (1998). Strategy Safari. Free Press, New York.</li> <li>4. Gary, Hamel and Prahalad, C. K. (1999). Competing for the Future. HBS Press.</li> <li>5. Ed. C.A. Montgomery, M.E. Porter, Strategy – Seeking and Securing Competitive Advantage, Harvard Business Review Publications, 1991.</li> <li>6. Peter F. Drucker, Managing in a Time of Great Change, Truman Talley Books /Plume Penguin Group, 1998.</li> </ol>	

<b>206-PRACTICAL'S WITH INDUSTRIAL APPLICATIONS (P)</b>		
<b>1.</b>	<b>Basic Microbiological Procedures</b>	<b>23</b>
	1. Media Preparation 2. Obtaining pure culture. (e.g. Streak, Spread & Pose Method) 3. Cultivation bacteria and fungi 4. Growth curve 5. Antibiotic Assay 6. Air sampling test 7. Material testing: raw material, finished products 8. Quantitative analysis of milk by standard plate count (SPC) method 9. Sterility testing 10. Laminar Air Flow validation, Heating Ventilation and Air Conditioning validation	
<b>2.</b>	<b>Biochemistry Practical's</b>	<b>20</b>
	1. Extraction of Proteins from living organism 2. Protein estimation by lawry & Spectrophotometer 3. Estimation of reducing sugar by DNSA method 4. Determination of specific activity of enzyme 5. Protein purification by Ammonium Sulphate precipitation 6. SDS-PAGE Electrophoresis	
<b>3.</b>	<b>Physico-Chemical Methods</b>	<b>15</b>
	Refractometry LOD method Titration Specific gravity estimation Stability testing Dissolution test	
<b>4.</b>	<b>SOP preparations</b>	<b>02</b>
<b>5.</b>	<b>Industrial visit</b>	

<b>207-CRISIS MANAGEMENT</b>		
<b>1.</b>	Definition & Meaning-Crisis, Risk, Disasters.	3
<b>2.</b>	Crisis Management-Definition, Introduction & related concepts	4
<b>3.</b>	Management of crisis –principals, tactics and commutation methods	6
<b>4.</b>	Biotech product related crisis	4
<b>5.</b>	Work plan –its analysis and development	4
<b>6.</b>	Interaction with media	3
<b>7.</b>	<b>Case in Crisis Management:</b> A minimum of 5 Case encompassing the related to biotech, food, agri, pharma products to be analyzed and discussed in the class.	6
	<b>Books Recommended:</b> 1. Crisis Management Harward Business essentials	

<b>301-MANAGEMENT INFORMATION SYSTEM</b>		
<b>1.</b>	<b>Management Information Systems</b> - Need, Purpose and Objectives - Contemporary Approaches to MIS - Information as a strategic resource - Use of information for competitive advantage - MIS as an instrument for the organizational change	<b>6</b>
<b>2.</b>	<b>Information, Management and Decision Making</b> - Models of Decision Making - Classical, Administrative and Herbert Simon's Models – Attributes of information and its relevance to Decision Making - Types of information	<b>6</b>
<b>3.</b>	<b>Information Technology</b> - Definition, IT Capabilities and their organizational impact -Telecommunication and Networks - Types and Topologies of Networks - IT enabled services such as Call Centers, Geographical Information Systems etc.	<b>6</b>
<b>4.</b>	<b>Data Base Management Systems</b> - Data Warehousing and Data Mining	<b>6</b>
<b>5.</b>	<b>Systems Analysis and Design</b> - Systems Development Life Cycle – Alternative System Building Approaches - Prototyping - Rapid Development Tools – CASE Tools – Object Oriented Systems (Only introduction to these tools & techniques)	<b>6</b>
<b>6.</b>	<b>Decision Support Systems</b> - Group Decision Support Systems - Executive Information Systems - Executive Support Systems - Expert Systems and Knowledge Based Expert Systems - Artificial Intelligence	<b>6</b>
<b>7.</b>	<b>Management Issues in MIS</b> - Information Security and Control - Quality Assurance -Ethical and Social Dimensions - Intellectual Property Rights as related to IT Services / IT Products - Managing Global Information Systems	<b>6</b>
<b>8.</b>	<b>Enterprise Resource Planning</b> –Introduction, What is ERP?, Need of ERP Advantages of ERP, Growth of ERP <b>ERP and Related Technologies:</b> Supply Chain Management (SCM), Customer Relationship Management (CRM), Business process Reengineering (BPR)	<b>8</b>
<b>9.</b>	<b>Applications of MIS</b> in functional areas as well as in the service sector should be covered with the help of minimum 5 case studies. Emphasis should be given on management oriented problems and Case as compared to technical problems expected from computer science/ computer management students.	<b>10</b>
	<b>Books Recommended:-</b> 1. Management Information Systems, Laudon and Laudon, 7th Edition, Pearson Education Asia 2. Management Information Systems, Jawadekar, Tata McGraw Hill 3. Management Information Systems, Davis and Olson, Tata McGraw Hill 4. Analysis and Design of Information Systems, Rajaraman, Prentice Hall 5. Decision Support Systems and Intelligent Systems, Turban and Aronson, PearsonEducation Asia 6. Management Information Systems, Schulthesis, Tata McGraw Hill 7. Management Information Systems - Sadagopan, Prentice Hall 8. Management Information Systems - Jayant Oke 9. Enterprise Resource Planning - Alexis Leon 10. ERP Ware: ERP Implementation Framework – 11. V.K. Garg & N.K. Venkitakrishnan 12. ERP: By Leon, ERP Concepts and Planning - Garg & Venkitakrishnan	

<b>302- INDUSTRIAL SAFETY MANAGEMENT</b>		
<b>1.</b>	<b>Safety Management</b> - Concept of Safety, Applicable areas, unsafe actions & Conditions. Responsibility of Safety - Society, Govt., Management, Union & employees.	<b>6</b>
<b>2.</b>	<b>Safety Officer</b> - Appointment, Qualification, Duties of safety officer. Safety Committee - Membership, Functions & Scope of Safety committee. Motivation & Training of employees for safety in Industrial operations.	<b>6</b>
<b>3.</b>	<b>Disaster Management</b> - Designing, Importance & implementation of Disaster Control Action Plan.	<b>6</b>
<b>4.</b>	<b>Industrial Accidents</b> - Causes & effects of Industrial accidents. Accident Radio Theory, Cost of Accidents, Impact of Accidents on employees, Union, Management & Society & their role & responsibility in the prevention of accidents.	<b>6</b>
<b>5.</b>	<b>Legal Provisions regarding safety</b> , Accident prevention & Compensation to affected employees as under Factories Act-1948, Factories Act (Amendment) 1987, Maharashtra Factories Rule-1963, The Mines Act-1952, Maharashtra Safety Officers Rule-1982, The Workmen Compensation Act-1923, ESI Act, Public Liabilities Insurance Act-1991, Fatal Accident Act, Functions of National Safety Council. Accidents, recording, Investigation analysis & reporting.	<b>7</b>
<b>6.</b>	<b>Fire-</b> basic Chemistry/ Mechanism, Reasons, prevention & types of fire, extinction of fire, Loss prevention Association-Objective, formation, scope & significance.	<b>5</b>
<b>7.</b>	<b>Environment Management</b> Environment Protection Act, 1986 - Definitions, Occupier, Environmental pollution, handling of hazardous substance, offences by companies, penalties for contravention of the Act.	<b>4</b>
<b>8.</b>	<b>Air Pollution Act, 1982</b> - Definition, Occupier, Air Pollution, Chimney, Approval Fuel, Emission, Powers & functions of Central & State Boards, role of approved laboratories, offences by companies, penalties & procedures.	<b>5</b>
<b>9.</b>	<b>Water Pollution Act, 1974</b> - Definitions, sewage effluent, trade effluent, outlet, stream. Powers & functions of Central State Boards, role of approved laboratories, Offences by Companies, Penalties & Procedures.	<b>5</b>
<b>10.</b>	<b>Noise Pollution</b> - Definition of sound & noise, sources of noise, measurement of noise, effect of noise, Physiological, Psychological & behavioral, noise control.	<b>5</b>
<b>11.</b>	<b>Case Studies</b>	<b>6</b>
	<b>Books Recommended</b> 1. Factories Act, 1948 2. Cost Accounting: Methods and Problems- B.K.Bhar 3. Health in Industry-Donald Hanter 4. Pollution Management in Industries-R.K.Trivedi 5. Industrial Engineering- O.P.Khanna.	

	<b>303- PROJECT REPORT &amp; VIVA VOCE</b>	
	<p><b>Practical Training and Project Work-</b></p> <p>Each student shall have to undergo a practical training for a period of not less than 50 days during the vacation at the end of Second Semester. Based on the actual training during the vacation, the student shall write a project report on the topic selected under the guidance of a faculty and submit two copies of the same to the Director of the institute. The project Report shall be assessed both internally (30 marks) and externally (70 marks) For external evaluation there will be a viva voce at the end of third semester. A panel of two referees appointed by the University shall conduct such viva-voce.</p>	

<b>304A- MARKETING ENVIRONMENT</b>		
<b>1.</b>	<b>Marketing Environment &amp; Marketing research</b> Introduction, Importance, Tasks involved in Environment analysis, Mega environment factors, Environmental factors specific to business, Importance of Marketing research. – Meaning, scope, steps of technologies of. Marketing research, Info. System, marketing intelligent system & its components	9
<b>2.</b>	<b>Contract Manufacturing Market:</b> Introduction, Meaning, Scope & Importance	4
<b>3.</b>	<b>Competition analysis:</b> Purpose & Importance of industry analysis, Stages of Competition, Forces driving / shaping competition, Regulation & market opportunity, Forms of competition, Analyzing the competitors strength & weakness, Gaps left by competitors, Types, Acquiring competitive advantage	9
<b>4.</b>	<b>Marketing Strategy:</b> Meaning significance, Strategy & tactics , formulating the marketing. Strategy, Types – Principals of marketing. Strategy Conditions for Success of marketing strategy	8
<b>5.</b>	<b>Marketing planning:</b> Meaning definition nature scope, Main concern of marketing Planning, Need & importance, Steps involved in marketing Planning process.	7
<b>6.</b>	<b>Marketing performance &amp; control</b> Introduction Tools of measuring marketing performance, Annual plan control, Profitability control, Efficiency control, Strategic control Scope of marketing Control, The marketing Control process	7
<b>7.</b>	<b>The strategic planning process:</b> Nature, importance, Scope of strategic planning, Concern of strategic planning, Clarifying the mission, Surveying the environment, Internal appraisal of the firm, Strength weakness analysis, Appraisal of individual Business, Analytical models used in Appraising Business portfolios <ol style="list-style-type: none"> <li>1. The BCG model</li> <li>2. G.E. model</li> </ol> Setting corporate objectives, formulating the corporate strategy	7
<b>8.</b>	<b>Case Studies</b>	9
	<b>Books Recommended –</b> <ol style="list-style-type: none"> <li>1. Marketing management – Philip Kotler</li> <li>2. Marketing management – Ramaswamy</li> <li>3. Marketing management – Rajan Saxena</li> <li>4. Basics of Marketing – P.C.Pardesi</li> <li>5. Marketing strategy – Walker Mullin</li> <li>6. Basics of Marketing – William Perreault Jr.</li> <li>7. Case studies in marketing –Indian context – R.Srinivas</li> </ol>	

305A- CONSUMER BEHAVIOUR		
1.	<b>Basics of Bio-Product Marketing</b> Pharmaceuticals, Agriculture, Cosmetics, Wine, Food, Biotech etc.	7
2.	<b>Introduction to consumer behaviour</b> Definition of consumer behaviour applications of consumer behaviour -Consumer behaviour and marketing strategy behaviour.	9
3.	<b>Consumer research</b> Primary and secondary methods-tools used-survey, focus groups, personal interviews, projective techniques	8
4.	<b>Consumer segmentation</b> Bases of segmentation-demographic, behavioural benefit	3
5.	<b>External influences</b> Culture-subculture-social class-family lifecycle stages and its Marketing implications. Influence of social class -Definition and meaning of social stratification-factors responsible for social stratification-characteristic features of social classes- social influence on consumer behaviour	7
6.	<b>Individual determinants</b> Perception-factors in perception- meaning of perception, perceptual Process-factors responsible for perceptual distortion, Learning- Weber's law-Classical conditioning-operant conditioning-marketing Implications- Components of learning process, Personality and emotion Personality –meaning and nature – characteristics of personality- stages in the development of personality- personality influences and consumer behaviour	7
7.	<b>Consumer decision</b> Consumer decision making process	3
8.	<b>Consumption and post purchase behaviour:</b> Rural Consumer behavior, Consumer satisfaction concept, cognitive dissonance, consumer delight, Consumer Value, Consumer Value Delivery Strategies, Competitive advantage through customer value Information Customer value determination process - Measuring customer satisfaction.	7
9.	<b>Case Studies</b>	9
	<b>Books Recommended:-</b> 1. Marketing management – Philip Kotler 2. Marketing management – Ramaswamy 3. Marketing management – Rajan Saxena 4 Consumer behaviour -Schickman Kanuk 5. Consumer market demographics in India - Edited by S.L.Rao 6. Consumer behaviour -Walker 7. Understanding your customer -R. Woodruff and S.F.Gardial 8. Consumer behaviour -Davis Loudon ,Albert Della Bitta 9. Consumer Behaviour – Hawkins, Best, Coney – TMH, 9/e, 2004 10. Consumer Behaviour – Leon Schiffman, Leslie Lazar Kanuk – Pearson / PHI, 8/e 11. Consumer Behaviour In Indian Perspective – Suja Nair – Himalaya Publishers, 2004	

<b>306A-PRODUCT &amp; BRAND MANAGEMENT</b>		
1.	<b>Product Management-</b> introduction, product-meaning- Product Personality, Types of Products- Product Line, Product Mix	6
2.	<b>Product Development-</b> What is a Product- Factors influencing design of the product- Changes affecting product management- Developing Product Strategy; Setting objectives & alternatives, Product strategy over the lifecycle, Customer analysis, Competitor analysis,	8
3.	<b>New product development-</b> Product Differentiation and Positioning strategies	4
4.	<b>Market Potential &amp; Sales Forecasting</b> -Forecasting target market potential and sales- Methods of estimating market and sales potential, Sales forecasting, planning for involvement in international market.	7
5.	<b>Brand Management-</b> What is a Brand- Brand Development: Extension, Rejuvenation, Re launch- Product Vs Brands, Goods and services, Retailer and distributors, People and organization, Brand challenges and opportunities, The brand equity concept, Identity and image.	7
6.	<b>Brand Leveraging &amp; Brand Performance-</b> Establishing a brand equity management system, measuring sources of brand equity and consumer mindset, Co-branding, celebrity endorsement	7
7.	<b>Brand Positioning &amp; Brand Building-</b> Brand knowledge, Brand portfolios and market segmentation- Steps of brand building, Identifying and establishing brand positioning, Defining and establishing brand values.	6
8.	<b>Designing &amp; Sustaining Branding Strategies-</b> Brand hierarchy, Branding strategy, Brand extension and brand transfer- Managing brand over time.	6
9.	<b>Case Studies</b>	9
	<b>Books Recommended:-</b> 1. Branding Concepts- Pati, Debashish 2. Brand Positioning Strategies for Competitive Advantage- Subrato Sengupta 3. The New Strategic Brand Management- Kapfere, Jean-Noel 4. Brand Management Perspectives and Practices- Das, Naveen 5. Total Brand Management: An Introduction- Chaturvedi, B.M 6. Brand Management Financial Perspectives- Ray 7. Marketing management – Philip Kotler 8. Marketing management – Ramaswamy 9. Marketing management – Rajan Saxena	

<b>307A-SALES PROMOTIONS</b>		
<b>1.</b>	<b>Advertising Management</b> Introduction, The media, Advertising, Decision, objectives, Budget, Copy decision, copy testing, Media selection, Sales effect research, Online advertising.	5
<b>2.</b>	<b>Personal Selling</b> Introduction, Personality traits required by good salesperson, Role of salesperson, Selling process, Role & function of sales manager	5
<b>3.</b>	<b>Brand Management</b> Brand meaning, Significance, Selecting brand name & logo, Brand equity, Brand loyalty, Role of Brand ambassador	5
<b>4.</b>	<b>Integrated Marketing Communication</b> - Introduction, Marketing communication process, AIDA model, Message consideration, Content, Appeal, Message format, Source of the message, the promotion mix	5
<b>5.</b>	<b>Sales promotions</b> -Introduction, significance, Tools & techniques of sales promotion, Organizing sales promotion campaigns	5
<b>6.</b>	<b>Case Studies</b>	5
	<b>Books Recommended:-</b> 1.Marketing management – Philip Kotler 2.Marketing management – Ramaswamy 3.Marketing management – Rajan Saxena 4.Marketing – Gandhi 5.Basics of Marketing – P.C.Pardesi 6 Marketing strategy – Walker Mullin 7. Basics of Marketing – William Perreault Jr. 8. Case studies in marketing –Indian context – R.Srinivas 9. Case study solutions- H.Kaushal	

<b>304B-LABOUR LAWS-I</b>		
<b>1</b>	<b>The Factories Act, 1948</b> Approval, Licensing and Registration- Inspecting Staff – Health – Welfare Working Hours - Annual Leave with wages - Periodical Returns- Registers and Records.	<b>15</b>
<b>2.</b>	<b>The Bombay Shops and Establishments Act, 1948</b> Registration of Establishments –Shops and Commercial Establishments – Residential Hotels, Restaurants and Eating Houses –Theatres or other places of Public Amusement or Entertainment – Leave with pay and payment of wages –Health and Safety – Maintenance of Registers, Records and Annual Report	<b>8</b>
<b>3.</b>	<b>The Contract Labour (Regulation and Abolition) Act, 1970</b> Advisory Boards – Registration of Establishments – Licensing of Contractors – Welfare and Health of Contract Labour – Registers and other Records to be maintained.	<b>8</b>
<b>4</b>	<b>The Minimum Wages Act, 1948</b> Fixing of Minimum Rates of Wages –Minimum Rates of Wages – Procedure for Fixing and Revising Minimum Wages – Advisory Boards and Committees – Wages in Kind –Wages for worker who works for less than normal working day – Wages for two or more classes of work – Minimum time rate wages for piece rate work – Maintenance of Registers and Records	<b>8</b>
<b>5.</b>	<b>The Payment of Wages Act, 1936</b> Fixation of Wage Periods – Time of Payment of Wages – Deductions which may be made from wages –Maintenance of Registers and Records.	<b>8</b>
<b>6.</b>	<b>The Payment of Bonus Act, 1965</b> Computation of Gross Profit and Available Surplus – Eligibility and Disqualification for Bonus – Payment of Minimum and Maximum Bonus – Calculation of Bonus with respect to certain employees – Proportionate deduction in bonus in certain Case – Computation of number of working days – Set on and Set off of allocable surplus – Special provisions with respect to certain establishments – Deduction of certain amounts from bonus payable – Time limit for payment of bonus – Presumption about accuracy of balance sheet and profit and loss account – Maintenance of Registers and Records.	<b>8</b>
<b>7.</b>	<b>The Payment of Gratuity Act, 1972</b> Entire Act	<b>5</b>
	<b>Books Recommended: -</b> 1. Bare Acts 2. Industrial Law – J K Bareja 3. Industrial Law – P L Malik 4. Industrial & Labour Laws – S P Jain 5. Labour Laws for managers – B D Singh	

<b>305B– PERSONNEL ADMINISTRATION - APPLICATION &amp; PROCEDURE</b>
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1.	<b>Personnel Administration</b> – Definition, Nature, Objectives, Principles.	9
2.	<b>Personnel Policy</b> – Definition, Scope, Process, Objectives, Contents of Personnel file & Personnel audit, Personnel Department Structure, proper Environment around factory.	9
3.	<b>General Communication</b> – Drafting of appointment orders, Interview Letters, Promotion, Transfer & Appreciation Letters, Notices & Circulars (All Types)	10
4.	<b>Wage &amp; Salary Administration</b> – General consideration in wage & Salary administration – Objectives & principles, Time keeping, Attendance, Statutory Returns – TDS, Professional Tax, Form 16 (A) PF & ESI Returns.	10
5.	<b>Disciplinary Action Communication</b> – Suspension Orders, show cause, Notices, memo, charge sheet, warning, letter of termination & dismissal.	10
6.	<b>Calculations</b> – Calculation for superannuation, gratuity & bonus	10
7.	<b>Challenges of modern personnel manager.</b>	2
	<b>Books Recommended:-</b> 1. Guide on Labour Management forms and precedents (Law, Practice & Procedure) by S.D. Puri (Snow white publications) 2. Personnel Management by Edwin Flippo 3. Personnel Management by C.B. Mamoria 4. Dynamics of personnel Administration by Rudrabaswaraj.	

<b>306B–INDUSTRIAL RELATIONS IN BIO-INDUSTRY</b>		
<b>1.</b>	<b>Industrial Relation</b> :-Origin, Definition, Scope, Determinant, Socio-Economic, Technical, Political factors affecting IR in changing Environment, Approaches to the study of IR –Psychological, Human Relation, Socio,Gandhian approach &It’s Effect on Management	<b>10</b>
<b>2.</b>	<b>Trade Union</b> : - Function of Trade Union, Types & structure of Trade Union, Impact of Globalization on Trade union movement.	<b>10</b>
<b>3.</b>	<b>Industrial Dispute</b> -Meaning, Causes	<b>5</b>
<b>4.</b>	<b>Industrial Relation Machinery to solve Industrial Dispute</b> : - Negotiation, Mediator. Arbitration- Work Committees, Conciliation, Board of Conciliation, Court of enquiry, Labour Court, Industrial Tribunal, National Tribunal, Role of Judiciary & its impact on industrial relation.	<b>8</b>
<b>5.</b>	<b>Collective Bargaining</b> -Meaning, Characteristics, Need, Importance, Essential Conditions for Success of Collective Bargaining, Process of Collective Bargaining, Causes for Failure of Collective Bargaining, Options in Case of Collective Bargaining.	<b>8</b>
<b>6.</b>	<b>Workers Participation in Management</b> -Concept, Pre-Requisites, Levels Of Participation, Benefits of Participation.	<b>5</b>
<b>7.</b>	<b>Impact of Globalization &amp;Information Technology on IR.</b>	<b>4</b>
<b>8.</b>	Role of Human Resource Development in Developing Industrial Relation- Industrial Relation Democracy, Industrial peace	<b>5</b>
<b>9.</b>	Salient features of Industrial Employment (Standing order) Act1946.	<b>5</b>
	<b>Books Recommended:-</b> 1. Dynamic Personnel Administration - Prof. M.N.Rudrabasavraj. 2. Personnel Management and Industrial Relations –P.C.Shejwalkar andS.B.Malegaonkar 3. Labour Management Relations in India – K.M.Subramanian 4. Trade Unionism. Myth and Reality, New Delhi, Oxford University Press, 1982. Mamkoottam 5. Management of Industrial Relations – Pramod Verma 6. The Future of Industrial Relations. New Delhi Sage, 1994. Niland JR. 7. Collective Bargaining and Industrial. -Kochan, T.A. & Katz Henry. 2 <sup>nd</sup> ed.Homewood, Illinois, Richard D Irish, 1988. 8. Industrial Relations – Arun Monappa 9 Human Developments –Diane E.Papalia, Sally Wendkos Olds. 10 Industrial & Labour Law- S.P. JainDhanpat rai & Co. 11. Elements Of Mercantile Law- N.D.Kapoor	

<b>307B-EMERGING TRENDS IN HR PRACTICES</b>		
<b>1</b>	<b>The changed role of HR in organizations</b> with respect to leading the change and operating from the “Board Room “level; challenges of sustainability with reference to Retention and Talent Management for competitive Advantages; Learning organizations and organizational learning, collective learning	<b>8</b>
<b>2</b>	<b>HR in International Context:</b> Issues that change the context, differences between HRM Domestic and International perspectives, linking hr to international expansion, international recruitment at different levels, issues in staff selection and retention, Performance Management – Criteria’s used, factors associated, evaluation systems. Training and Development, Expatriate Training, Developing International teams, managing virtual teams, Compensation Management, Objectives and Approaches, Repatriation Process, Labor Relations – Key Issues	<b>10</b>
<b>3</b>	<b>Re-Engineering HR</b> – Functions and Processes, implementing re-engineering changes	<b>6</b>
<b>4</b>	<b>HRD Accounting and Audit:</b> HRA Introduction, need and objectives, methods and valuation models, benefits of HRA. HRD Audit: Meaning, methodology, issues, audit instruments, HRD Scorecard, Report.	<b>6</b>
	<b>Books Recommended:-</b> 1) Personnel Management, Text and Case, Author: C B Mamoria and S V Gankar, Pub:Himalaya Publications 2) HRD Audit; Author: T. V. RaoPub: “Response Books” Leading HR, 3) Delivering Competitive Advantages Author: Clive Morton, Andrew Newall, Jon Sparkes Pub: Jaico Publishing House 1st edition 4) Re-engineering of Human Resources Author: Lyle Spencer (Jr) Pub: John Wiley and Sons 5) International HRM – Managing People in International Context, Author: Dowling, Welch Pub: Thompson Learning, South Western Publications	

304C- PRINCIPLES OF OPERATIONS MANAGEMENT		
1	<b>Introduction</b> . Introduction of operational functions of management, transformation/ conversion processes, inputs transforming resources to services and manufacturing units, using operations as strategic support & competitive advantage.	12
2	<b>Strategic Decisions</b> . Planning and Designing the products/services, Designing the facility location and layout, Selection and Management of Product Technology, Long-range Capacity Planning.	10
3	<b>Operating Decisions</b> . Planning Production Schedules, Aggregate Planning and Master Production Scheduling, Inventory Planning, Materials and Capacity Requirement Planning, JIT Manufacturing, Planning and Scheduling Services Operations.	12
4	<b>Controlling and Improvement Decision</b> . Controlling the Operations for Productivity, Quality and Reliability, Quality Control, Total Quality Management, Maintenance Management, Improving the Operations Process.	11
5	<b>Case Studies</b> .	15
	<b>Text &amp; References:</b> <b>Text :</b> Adam E.E., Jr and Ebert R.J. 1997, Production and Operations Management: Concepts, Models and Behaviour, 5th Ed. Prentice Hall of India. Buffa E.S. and Sarin R.K. 1994, Modern Production Operations Management, 8th Ed. John Wiley & Sons. <b>References:</b> Brown S., Lamming R., Bessant J. and Jones P. 2000, Strategic Operations Management, 1st Ed. Butterworth Heinmann Krajewski L.J. & Ritzman L.P. 1996, Operations Management: Strategy and Analysis, 4th Ed. Addison- Wesley Slack, Chambers, Hardland, Harrison, Johnston 1995, Operations Management, Pitman Publishing Waters D. 1996, Operations Management: Producing goods and services, Addison- Wesley Dilworth J.B. 1992, Operations Management, McGraw-Hill International Editors Lee S.M. & Schniederzans M.J. 1997, Operations Management, 1st Ed. All India Publishers & Distributers Haksever, Render, Russell & Murdick 1990, Service Management and Operations, 2nd Ed. Prentice Hall International, Inc.	

305C-TOTAL QUALITY MANAGEMENT		
1	<b>Introduction</b> . Basic concepts of TQM, History of Quality Revolution, Leadership policy, External leadership, Strategic Planning – Strategic development process, Company Strategy, Customer & market Integration, Customer Satisfaction Enhancement	12
2	<b>Process Management</b> . Management of product process, service process & support process, Supplier & partnering process, Managing Change, Human Resource Development & Management, Work Systems, Training, education & development, Employee well-being & satisfaction	12
3	<b>Measurement &amp; Continuous Improvement</b> . Measurement of Quality, Performance Measures, Cost of Quality, Basic tools of continuous improvement, Statistical application, Advanced improvement tools, House of Quality/QFD, Six-Sigma – Concept & understanding, problem resolution, Six-sigma Organization	12
4	<b>Quality Systems &amp; Benchmarking</b> . ISO 9000-2000, Malcolm Bridge Examination, Quality Audit, Re-engineering, Benchmarks & Landmarks, Best practices	9
5	<b>Case Studies</b> .	15
	<b>Text &amp; References:</b> <b>Text:</b> Principles and Management of Total Quality, Evans & Lindsay, Thompson Oakland, J. S. 1997, TQM: Text with Case, Butterworth – Heinmann <b>References:</b> Wankulu C.A., 1994, TQM: A Road Map, Tata-McGraw Hill India Ahluwalia J.S. Lt. Gen. – Editor, 1997, Total Quality Management, Tata-McGraw Hill India Crosby P., 1990, Let us Talk Quality, Penguin Publications Davenport S., Kimberly & Others, 1996, Focused Quality, John Wiley Sons Inc.	

<b>306C-PROCESS AND PRODUCTIVITY ANALYSIS AND IMPROVEMENT</b>		
<b>1.</b>	<b>Operating Processes and Interface</b> Processes and their functions, importance, objectives of analysis, methods, Interface with other disciplines Manufacturing cycle, stages and the criteria	<b>06</b>
<b>2.</b>	<b>Process Selection</b> Product-process matrix; Flow process, Continuous process, Batch process. Job-shop, Project; Service Process structures. Cost, Delivery, Flexibility and Quality Measures of Process Capability	<b>07</b>
<b>3.</b>	<b>Productivity Models and Application</b> Concept of Productivity, Productivity defined; Efficiency and Effectiveness Interface between Quality and Productivity; Productivity and Production; Productivity and Profitability Classic Models on Productivity Measurement Productivity of Service Sector	<b>12</b>
<b>4.</b>	<b>Productivity Measurements &amp; Improvements</b> Changing paradigm of performance expectations; Productivity Analysis; Quick Productivity Appraisal (QPA) Approach; Gold's Approach. Improvement Approaches: Industrial Engineering; Behavioral; Capital resources	<b>10</b>
<b>5.</b>	<b>Business Excellence Systems &amp; Contemporary Practices</b> JIT; Kanban System; Lean Production, Agile Manufacturing Cellular Manufacturing, Flexible manufacturing systems; Group Technology; Business Process Reengineering, Balanced Score Card: Kaplan & Norton BSC, Carl Thors' Family of Measures; Malcom Bald ridge System; EFQM System	<b>15</b>
<b>6.</b>	<b>Case Studies</b>	<b>10</b>
	<p><b>Text &amp; References:</b></p> <p><b>Text:</b></p> <p>Productivity Management: A Systems Approach, Prem Vrat; G.D. Sardana and B.S. Sahay; Narosa Publishing House, New Delhi</p> <p>Competitive Manufacturing Management, John M Nicholas, Tata McGraw Hill</p> <p><b>References:</b></p> <p>Fundamentals of Operations Management, Aquilano, Chase, Davis, Irwin McGraw Hill</p> <p>International Operations Management, Gerhard J Plenert, Copenhagen Business School Press</p> <p>Restructuring the Manufacturing Process, Gideon Halevi, APICS Series on Resource Management</p> <p>Productivity Engineering and Management, David J. Sumanth; McGraw Hill Book Company, New York, Planning, Measurement and Examination Control and Improvement, D. Scott, Sink, John Wiley &amp; Sons, New York.</p>	

<b>307C-WORLD CLASS MANUFACTURING AND TECHNOLOGY</b>		
<b>1.</b>	<b>WCM Introduction and Models</b> The evolution of WCM; First principles of WCM; Hall's framework of Value added Engineering; Schonbergers' framework of WCM; Gunn's model of WCM; Maskells' model of WCM	<b>6</b>
<b>2.</b>	<b>Practices and Systems for WCM</b> Information Management Tools: Kanban; Bar Code; Materials Processing Tools: Flexible Manufacturing Systems; Lean Production, Poka Yoke; Rapid Prototyping; Customer Interface; Supplier Interface; Quality in WCM – Deming's Approach; Shingo's Approach; Knowledge Management	<b>7</b>
<b>3.</b>	<b>WCM in Practice</b> Real corporate world examples & exposure of WCM practices	<b>2</b>
<b>4.</b>	<b>Product &amp; Technology Management</b> Market research, brand strategy and market entry, new product development and market support, Managing product development teams, Management of research & development, Strategic alliances and intellectual property; Competition and Technology, Concurrent Engineering, Dimensions of technology; Technology Strategy, Back office v/s Front office technology, Technology for manufacturing units, types of technology; Degree of Automation, Process of adoption & integration of technology; degree of integration; Feedback Jsystems, control systems, Reliability, Technology comparison, tools of technology control, Replacement of obsolete technology	<b>10</b>
<b>5.</b>	<b>Case Studies</b>	<b>5</b>
	<b>Text &amp; References:</b> The Goal, Nuts, Toyota Production Systems	

<b>304D-QUALITY ASSURANCE AND MANAGEMENT</b>		
<b>1.</b>	<b>Concept of Quality Assurance and Quality Control in pharma industries:</b> Introduction -Total Quality Management, Philosophy of Good Manufacturing Practices(GMP's) and Good Laboratory Practices GLP's, ISO9000.	<b>8</b>
<b>2.</b>	<b>Organization and personnel:</b> responsibilities, training, hygiene, records. Equipment - selection purchase specifications, maintenance, clean in place and sterilize in place methods	<b>8</b>
<b>3.</b>	<b>Premises :</b> Location, design, plant layout, construction maintenance & sanitation, environmental control, utilities and services like gas, water, maintenance of sterile areas, control of contamination.	<b>7</b>
<b>4.</b>	<b>Raw materials :</b> Purchase specifications, stores, control and selection of vendors, Manufacture of and controls on dosage forms, Manufacturing documents, master formula, batch formula records, Standard Operating Procedures(SOPs,) Quality audits of manufacturing processes and facilities.	<b>7</b>
<b>5.</b>	<b>In process quality controls on various dosage forms sterile and nonsterile:</b> Standard Operation Producers for various operation like cleaning, filling,drying compression, coating, disinfection, fumigation, sterilization, membrane filtration etc.	<b>7</b>
<b>6.</b>	<b>Finished product controls:</b> Finished product release, Quality review, Quality audit. Batch release documents	<b>7</b>
<b>7.</b>	<b>Packaging &amp; Labeling controls:</b> Lime clearance, reconciliation of labels, cartons and other packing material. Good ware housing practices & material management. Waste and scrap disposal procedures and their records, Distribution and its records, Handling of returned goods and recovered materials.	<b>7</b>
<b>8.</b>	<b>Complaints &amp; Recalls:</b> Evaluation of complaints, Recall procedure, Related records &documents	<b>4</b>
<b>9.</b>	<b>Change Control Management:</b> Deviation management, self inspection & corrective and preventive action	<b>5</b>
	<b>Books Recommended:</b> 1. ISO 9000 Quality Systems Handbook - updated for the ISO 9001:2008 standard, SixthEdition: Using the standards as a framework for business improvement by David Hoyle (Paperback - July 10, 2009) 2. Total Quality Management: Strategies and Techniques Proven at Today's MostSuccessful Companies (Portable Mba Series) by Stephen George and ArnoldWeimerskirch (Hardcover - Feb. 1998) 3. Cleaning Validation Manual: A Comprehensive Guide for the Pharmaceutical And Biotechnology Industries by Syed Imtiaz Haider and Erfan Syed Asif 4. Quality planning and analysis: Vth Edition J. M . Juran & FM Gryna 5. Juran's Quality handbook : Vth Edition J. M . Juran 6. Improving Quality Through planned experimentation: Moen	

<b>305D-BASICS OF REGULATORY AFFAIR</b>		
<b>1.</b>	<b>Pharma Regulatory Affairs</b> -Objectives and issues. -Introduction, history of drug regulation. -Rational for drug regulation -Present scenario -The drug regulatory system in India.	7
<b>2.</b>	<b>Drug Regulatory Authorities</b> -Role of drug regulatory authorities. -Drug regulatory authorities world wide [World Health Organization(WHO), Food & Drug Administration(FDA), Pan American Health Organization (PAHO), agencies of UK, Australia, Japan And Other countries]	5
<b>3.</b>	<b>Overview of Drug Development and FDA</b>	5
<b>4.</b>	<b>Regulatory strategy</b> , Investigational New Drug (IND), submission of NDA (New Drug Application), Abbreviated New Drug Application(ANDA)	5
<b>5.</b>	<b>Regulatory framework for GMO regulation in India.</b> (Role of Institutional Bio safety Committee IBSC, Genetically Engineering Approval Committee(GEAC), State Bio Safety Committee(SBCC), Recombinant DNA Advisory Committee(RDAC), District Level Committee(DLC), Review Committee on Genetic Manipulation(RCGM)	5
<b>6.</b>	<b>Biologics &amp; Bio-Similar (Animal, Plant And Bacterial origin)</b>	5
<b>7.</b>	<b>Drug Policy In India.</b>	6
<b>8.</b>	<b>Regulatory affairs profession.</b>	6
<b>9.</b>	<b>Regulation Of Pharmaceutical Devices</b>	6
<b>10.</b>	<b>Regulation of Alternative system of medicine.</b>	5
<b>11.</b>	<b>Preclinical Studies, Bioavailability studies, Bioethics</b>	5
	<b>Books Recommended</b> 1.ICH guidelines 2.Company specific regulations 3.FDA Regulatory Affairs: A guide for prescription drugs, Medical devices, and Biologics (Hardcover-2008/08/07) by Douglas J. Pisano(Editor), David S.Mantus 4. <a href="http://www.fda.gov">www.fda.gov</a> . 5.Medical product regulatory affairs: Pharmaceuticals, Diagnostics,Medical Devices(Hardcover-2008/09/09) by John J. Tobin Gary Walsh	

<b>306D-QUALITY ASSURANCE AND VALIDATION</b>		
<b>1.</b>	<b>Basics and Concepts</b> -Introduction to Validation -Validation life cycle	6
<b>2.</b>	<b>Validation Master Plan.</b> -Introduction, content & format.	6
<b>3.</b>	<b>Qualification Phases</b> -Design qualification, Installation qualification, Operational qualification, Performance qualification, re-qualification	7
<b>4.</b>	<b>Process Validation</b> -Introduction to basic concepts of process validation -Phases in Process Validation 1.Prospective Validation 2.Concurrent Validation 3.Retrospective Validation 4.Re- Validation	8
<b>5.</b>	<b>Cleaning Validation</b> -Introduction & Objectives -Regulatory requirements governing the cleaning validation. -Validation of water & thermal systems, including Heating Ventilation Air Conditioning(HVAC), facilities & cleaning validation	8
<b>6.</b>	<b>Product Validation</b> -Validation of active pharmaceutical ingredients & aseptic processing. -Validation of non-sterile process (used in the manufacture of solids, liquids & Semisolid Dosage form)	7
<b>7.</b>	<b>Process Validation</b> -Validation of Biotechnology process. -Validation for medical devices.	6
<b>8.</b>	<b>Validation of analytical methods,;</b> computerized & automated systems under 21 Code of Federal Regulations (CFR)part 211 & the influence of good manufacturing practice	6
<b>9.</b>	<b>Packaging</b> - Scale Up Post Approval Changes (SUPAC) -Project Integration & risk management	6
	<b>Books Recommended: -</b> 1. Pharma Pathway – By – D. A. Sawant 2. Bio Separation and bioprocessing – By- Ganpati Subramanyam 3. Method Validation in Pharmaceutical Analysis. – By – Joachimermer 4. Pharmaceutical Process Validation – By – Robert A Nash 5. SOP Guidelines – By – D. H. Shah 6. The Theory and practices of Industrial Pharmacy – By – Leon Lachman 7. Pharmaceutical Quality Assurance: By M. A. Potdar 8. Current Goods Manufacturing Practices : By M. A. Potdar	

<b>307D-FOOD AND DRUG LAW</b>		
<b>1.</b>	<b>Administrative Bodies(Allopathic &amp; Ayurvedic)</b> Drug Technical advisory board(DTAB), Drug Consultative Committee(DTC), Central Drug Laboratories(CDL), Constitution, functions and role	4
<b>2.</b>	<b>Manufacture, Sale, Distribution of drugs, Power of Drug &amp; food Inspectors</b> Manufacturing licenses, Loan licenses, repacking licenses,	4
<b>3.</b>	<b>Spurious, misbranded &amp; Adulterated drugs and cosmetics</b> Definition and case studies	4
<b>4.</b>	<b>Objectives &amp; Schedules of Drugs &amp; Cosmetic Act 1940 &amp; rules 1945</b>	4
<b>5.</b>	<b>Labeling&amp; Packaging of drugs and FDA guidelines</b>	4
<b>6.</b>	<b>Provisions for biological &amp; other special products</b> Detail schedule C, C1 & Part X of D & C Act	3
<b>7.</b>	<b>Food safety and Standards</b> -Adulteration-Approval process Various Acts & Schedules: What is Generally regarded as Safe (GRAS)	4
<b>8.</b>	<b>Narcotic &amp; psycotropic substances Act – 1985 with rules 1985</b>	3
	<b>Books Recommended:</b> 1. Food safety and Standard act 2006 2. The drugs and cosmetic act 1940 3. The prevention of food adulteration act 1954	

<b>401- INTERNATIONAL BUSINESS MANAGEMENT</b>		
<b>1.</b>	<b>International Business Environment</b> – Globalization – Forces, Meaning, Dimensions and stages in Globalization – Introduction to theories of International Trade by Adam Smith, Ricardo and Ohlin & Heckler – Trading Environment of International Trade – Tariff and Non-tariff Barriers – Trade Blocks – Rise of new economies like Japan, South East Asia and China as compared to India.	<b>20</b>
<b>2.</b>	<b>Country Risk Analysis</b> – Political, Social and Economic – Cultural and Ethical practices – Halsteade model - Responsibilities of International Business	<b>10</b>
<b>3.</b>	<b>Managing Multinational Enterprises</b> – Problems and Potential – Multinational Service Organizations – Indian companies becoming Multinationals – Potential, Need and Problems	<b>4</b>
<b>4.</b>	<b>Introduction to International Financial Management</b> – Balance of Trade and Balance of Payment – International Monetary Fund, Asian Development Bank and World Bank – Financial Markets and Instruments – Introduction to Export and Import Finance – Methods of payment in International Trade – Introduction to current Export and Import policy.	<b>8</b>
<b>5.</b>	<b>Bilateral and Multilateral Trade Laws</b> – General Agreement on Trade and Tariffs, (GATT), World Trade Organization – Intellectual Property Rights(IPR), Trade Related Aspects of Intellectual Property Rights(TRIPS), Trade Related Investment Measures(TRIMS), GATS – Ministerial Conferences	<b>3</b>
<b>6.</b>	<b>International Marketing</b> – Entry strategies – Market selection – Barriers	<b>2</b>
<b>7.</b>	<b>Global sourcing and its impact on Indian Industry</b> – Globalization and internal reform process – India’s competitive advantage in Bio-industries like Pharma, Food, Biotech, Wine, Cosmetics & Agriculture – Potential and threats	<b>3</b>
<b>8.</b>	<b>Case Studies:</b> Country Risk Analysis Case on theories of International Trade Case on WTO related to topic 5 Case on International Marketing	<b>10</b>
	<b>Books Recommended: -</b> 1. International Business Environment – Sundaram and Black 2. International Business Environment – Bhalla and Raju 3. International Financial Management – P.G.Apte 4. International Business – Francis Cherulinam 5. International Business – Rao and Rangachari 6. Export Management – Rathod 7. International Business – Rao and Rangachari 8. Global Business Today – Charles Hill 9. International Business – Charles Hill 10. International Business Environment & Operations – John D.Daniels	

<b>402 – ENTREPRENEURSHIP DEVELOPMENT IN BIO-INDUSTRIES</b>		
<b>1.</b>	<b>Foundations of Entrepreneurship Development:</b> Concept and Need of Entrepreneurship Development Definition of Entrepreneur, Entrepreneurship, Innovation, Invention, Creativity, Business Idea, Opportunities through change. Concepts of Entrepreneur, Manager, Intrapreneur / Corporate Entrepreneur – comparative study - Roles, Responsibilities, Career opportunities. Entrepreneurship as a career, Entrepreneurship as a style of management, The changing role of the entrepreneur: mid career dilemmas – Closing the window: Sustaining Competitiveness - Maintaining competitive advantage.	<b>8</b>
<b>2.</b>	<b>Theories of Entrepreneurship:</b> 1. Innovation Theory by Schumpeter & Imitating 2. Theory of High Achievement by McClelland 3. X-Efficiency Theory by Leibenstein 4. Theory of Profit by Knight 5. Theory of Social change by Everett Hagen	<b>9</b>
<b>3.</b>	<b>Influences on Entrepreneurship Development:</b> a. Entrepreneurial Traits b. External Influences on Entrepreneurship Development: Socio-Cultural, Political, Economical, Personal. Entrepreneurial culture with special reference to Intrapreneurship / Corporate Entrepreneurship. c. Entrepreneurial Success and Failure: Reasons and Remedies.	<b>8</b>
<b>4.</b>	<b>Women Entrepreneurs:</b> Challenges to Woman Entrepreneurs, Achievements of Woman Entrepreneurs, Role Models of Woman Entrepreneurs.	<b>4</b>
<b>5.</b>	<b>Creating Entrepreneurial Venture – Entrepreneurship Development Cycle</b>	<b>2</b>
<b>6.</b>	<b>Business Planning Process –</b> The business plan as an entrepreneurial tool Elements of Business Plan, Objectives, Market Analysis, Development of product / idea, Marketing, Finance, Organization & Management, Ownership, Critical risk contingencies of the proposal, Scheduling and milestones.	<b>6</b>
<b>7.</b>	<b>Project Management</b> Technical, Financial, Marketing Personnel and Management feasibility Reports Financial schemes offered by various financial institutions like Commercial Banks, IDBI, ICICI, SIDBI, SFCs, Venture Capital Funding, Angel Capitalist	<b>6</b>
<b>8.</b>	<b>Entrepreneurship Development and Government</b> Role of Central Government and State Government in promoting Entrepreneurship with various incentives, subsidies, grants etc. – with special reference to ‘Export oriented unites’ Role of the following agencies in the Entrepreneurship Development 1. DIC – District Industrial Center 2. SISI – Small Industries Services Institute 3. EDII – Entrepreneurship Development Institute of India 4. NIESBUD – National Institute of Entrepreneurship and Small Business Development	<b>9</b>

	5. NEDB – National Entrepreneurship Development Board	
<b>9</b>	<b>Case Studies</b>	<b>8</b>
	<p><b>Books Recommended: -</b></p> <ol style="list-style-type: none"> <li>1. Dynamics of Entrepreneurship Development – Vasant Desai.</li> <li>2. Entrepreneurship: New Venture Creation – David H. Holt</li> <li>3. Entrepreneurship Development New Venture Creation – Satish Taneja, S.L.Gupta</li> <li>4. Project management – K. Nagarajan.</li> <li>5. Entrepreneurship: Strategies and Resources – Marc J. Dollinger</li> <li>6. The Culture of Entrepreneurship – Brigitte Berger.</li> <li>7. Innovation and Entrepreneurship – Peter F. Drucker</li> <li>8. Entrepreneurship – Robert D. Hisrich, Michael P. Peters, Dean A. Shepherd</li> <li>9. Entrepreneurship As Strategy – G. Dale Meyer, Kurt A. Heppard</li> <li>10. New Vistas of Entrepreneurship: Challenges &amp; Opportunities – A. Sahay, M.S.Chhikara</li> <li>11. Entrepreneurship and Small Business Management – Siropolis</li> <li>12. The Entrepreneurial Connection - Gurmeet Naroola</li> <li>13. Thought Leaders – Steven Brandt.</li> <li>14. Corporate Entrepreneurship – Vijay Sathe</li> <li>15. Corporate Entrepreneurship: Entrepreneurial Development Inside Organizations – Michael H.Morris, Donald F.Kuratko</li> <li>16. Entrepreneurship: Gifford Pinchot III</li> <li>17. Lead like an Entrepreneur – Neal Thornberry</li> <li>18. You Too Can Become an Entrepreneur – Nalinaksha Mutsuddi</li> <li>19. Make The Move: Demystifying Entrepreneurship – Ishan Gupta, Rajat Khare</li> </ol>	

<b>403 – IMPORT AND EXPORT MANAGEMENT</b>		
<b>1.</b>	<b>Basics of imports &amp; exports</b> <b>International Commercial Terms</b> – Need, Groups, Ex-works, Free on Board(FOB), Free Alongside Ship(FAS), Cost and Freight(CFR), Cost Insurance and Freight(CIF).	<b>4</b>
<b>2.</b>	<b>Quality Systems</b> – ISO 9000 series, Patenting, Project, Import and Export (Contract, Trunkey, Civil Construction, Services), Export Processing Zones(EPZs), Export Oriented Units(EOUs), Target Plus Scheme(TPs) & Special Economic Zones(SEZs.)	<b>5</b>
<b>3.</b>	<b>Export Documentation-</b> Customs Act., Ware housing, Tariffs, Refund and Recoveries of customs, Rebates and Special facilities.	<b>6</b>
<b>4.</b>	<b>Air and Sea Shipments</b> – Procedure, Liner Freight, Containerization, Cargo claims.	<b>5</b>
<b>5.</b>	<b>Export of software,</b> Fruits and vegetables, Floricultural products.	<b>4</b>
<b>6.</b>	<b>Provision and restrictions for import and export in India</b> {Starting an export Business and Export Pricing, Location Prospective buyers and selecting overseas agents. Developing Export Strategy Marketing Plan and Export Marketing Mix, IS/ISO9000 and new ISO 14000 series International standards for quality system and role export Import (EXIM) Bank of India. General Provision of Import , Import restrictions Import Pricing ,Supplier Selection or Identification General Provisions Form exchange control or Exchange Control formalities, Letter of Credit, Import Document and customers clearance procedure for imported goods and customers tariff act 1975 and the customer’s valuation rules.}	<b>15</b>
<b>7.</b>	<b>Governing Bodies:</b> Directorate of foreign trade, export credit guarantee corporation, export promotion councils, customs and excise policies, Pharmexcil, Types of letter of credit	<b>5</b>
<b>8.</b>	<b>Case Studies</b>	<b>11</b>
	<b>Books Recommended: -</b> (1) Nabhi’s How to import – (2) Ministry, Commerce and Industry, Hand Book of Procedures, Volume I & II, GOI, New Delhi, (3) Guide to Export Policy, Procedures and Documentation - Mahajan (4) Business Logistics Management - Ballun, R.H (5) The New Export Marketer -Young G. (6) Practical Guide to the Foreign Trade of India -Arora R.S.	

<b>404A- SALES MANAGEMENT &amp; PERSONAL SELLING</b>		
<b>1.</b>	<b>Sales Management:</b> Definition and meaning, Objectives, Sales Research, Sales forecasting, Sales Forecasting methods, Sales Planning and control: Goal setting, Performance measurement, diagnosis and corrective actions.	6
<b>2.</b>	<b>Sales Organization:</b> Need for Sales Organizations, its structure, sale managers Functions and responsibilities, Planning for major customers and sales budget, Specific Characteristics of a successful salesman.	6
<b>3.</b>	<b>Developing the Sales Force:</b> Developing the Sales Force for Industrial Customers and Consumer products	6
<b>4.</b>	<b>Recruiting, Selection and Training of Sales force:</b> Procedures and criteria extensively used as selection tools for recruiting and testing sales ability	6
<b>5.</b>	<b>Areas of sales Training:</b> Company Specific Knowledge, product knowledge Industry and Market Trend Knowledge, and Customer education.	6
<b>6.</b>	<b>Motivating the Sales Team :</b> Motivation Programs - Sales Meetings, Sales contests, Sales Compensation, (Monetary compensation, incentive programs as motivators, Non-Monetary compensation – fine tuning of compensation package, supervising,	6
<b>7.</b>	<b>Sales Force Performance:</b> Evaluating Sales Force Performance and Controlling, Sales activities (Sales Records and Reporting Systems), Improving Sales Productivity	5
<b>8.</b>	<b>Personal Selling:</b> Introduction, Basics, Salesmanship-definition- prospecting, resistance selling process	4
<b>9.</b>	<b>Skills for effective salesmanship:</b> Sales leads, Sales presentations, Types of calls, effective selling techniques,	4
<b>10.</b>	<b>Role of relationship marketing in personal selling:</b> tools for personal selling, Value added selling	3
<b>11.</b>	<b>Case Studies</b>	8
	<b>Books Recommended</b> 1. Building a Winning Sales Team – Gini Graham & Scott 2. Sales Management Handbook – Forsyth P. Trick 3. Professional Sales Management – Anderson, Hair and Bush 4. Motivation and Job Satisfaction – M. D. Pestonjee 5. Sales Management - Richard R. Still Edward W. Cundiff 6. Sales Management – Thomas 7. International Marketing – Robert Reed..... 8. Industrial Marketing – Richard M. Hill 9. Strategies for selling-Gerald A. Michaelson 10. Value added selling-Tom Reilly 11. Sales Management with Personal Selling Salesmanship 12. Marketing management – Philip Kotler 13. Marketing management – Ramaswamy 14. Marketing management – Rajan Saxena	

<b>405A- SERVICES MARKETING</b>		
<b>1.</b>	<b>Foundation of services marketing:</b> Introduction - The services concept- Service Industry –Nature of Services, Characteristics of Services, Classification of Services – Importance of Services Marketing - The Growth in Services – Global & Indian Scenarios	7
<b>2.</b>	<b>Distinctive Characteristics of Services:</b> Introduction, Four I's of services - Intangibility, Inconsistency, Inseparability and Inventory	6
<b>3.</b>	<b>Services Market Segmentation:</b> Market Segmentation, Positioning and Differentiation of Services	6
<b>4.</b>	<b>Issues in Marketing of services:</b> Issues in Marketing of services, Extended Services Marketing Mix: Going Beyond the 4 Ps. (7 Ps of Services Marketing)	5
<b>5.</b>	<b>Service Delivery Process:</b> Service Delivery Process, Service Blueprints – Service Mapping – Managing Employees for service orientation	4
<b>6.</b>	<b>Distribution Strategies for Services:</b> Introduction, Distribution Strategies for Services, Challenges in Distribution of Services	5
<b>7.</b>	<b>Personal Selling in service industries</b> Introduction, Personal Selling Advertising and Sales Promotion in Service Industry	5
<b>8.</b>	<b>Customer Satisfaction &amp; Service Quality in Service Marketing:</b> Service Encounter -Role of HR & Internal Marketing - Monitoring and Measuring customer satisfaction –SERVQUAL & GAP model - Handling complaints effectively - Service Failure – Recovery	5
<b>9.</b>	<b>E- services:</b> Introduction, Types of E- services, Online Consumer Behaviour, Self service technologies	5
<b>10.</b>	<b>Marketing of Social Services:</b> Introduction, Marketing of Social Services of Non Profit Organizations	5
<b>11.</b>	<b>Case Studies</b>	7
	<b>Books Recommended</b> 1.Essence of Services Marketing – Payne Adrian 2. Services Marketing: Integrating Customer Focus Across the Firm - Valarie A Zeithaml 3. Services Marketing : People, Technology & Strategy - Christopher Lovelock 4. Services Marketing – Ravi Shanker 5. Strategic Services Management – Boyle 6. Strategic Planning for Public Service and non profit organizations-Pergamon. 7. 12 Steps to success through service – Barrier Hopsor & Mike Scallig. 8. Excellence in Services – Balachandram 9. Services Marketing – S M Jha 10.Services Marketing-Valarie.A.Zeithaml,Mary Jo Bitner	

<b>406A-INTERNATIONAL MARKETING</b>		
<b>1.</b>	<b>International Marketing:</b> Concept of International Marketing and its scope, objectives of International Marketing Challenges and opportunities in International Marketing, Underlying forces of International Marketing, Motives behind going International	7
<b>2.</b>	<b>Global Marketing Environment:</b> Economic Environment, Socio cultural environment, Legal and statutory framework, Need for Environmental analysis, Country Risk Analysis	7
<b>3.</b>	<b>Global Marketing Research and information System:</b> Challenges in International Marketing, Research Process of International Marketing, Research Significance of Desk Research (Secondary Data) in International Marketing Research	7
<b>4.</b>	<b>Foreign Market Entry strategies:</b> Introduction, Foreign Market Entry strategies their merits and demerits	6
<b>5.</b>	<b>Multi National Companies:</b> Introduction, Multi National Companies and lifecycle of its products Basic product strategies Global product designing-factors involved	5
<b>6.</b>	<b>International Pricing:</b> Introduction, International Pricing Decisions and factors influencing these decisions, Uniform pricing V/s Market by market pricing	5
<b>7.</b>	<b>Physical Channels of Distribution for International Market:</b> Introduction to physical channels of distribution for International Markets. difficulties in designing International Distribution channels	5
<b>8.</b>	<b>Global Advertising:</b> Issues and challenges, Merits & demerits of standardized global advertising theme	5
<b>9.</b>	<b>Push V/s Pull Strategies for International Markets</b> Introduction, Push V/s Pull Strategies	5
<b>10.</b>	<b>Case Studies</b>	9
	<b>Books Recommended</b> 1. International Marketing by Cateora 2. Global Marketing Management by Warren Keegan 3. Global Marketing Strategies by Jeannet 4. International Marketing Management by Subhash Jain 5. International marketing-Cateora Graham(Tata ) 6. International Business Environment-Francis Cherunilam 7.Global Marketing-Foreign Entry,Local Marketing and Global Management- Johny K.Johanson 8.Marketing management – Philip Kotler 9. Marketing management – Ramaswamy 10. Marketing management – Rajan Saxena	

<b>407A-RURAL MARKETING</b>		
<b>1.</b>	<b>Rural Marketing:</b> Introduction, Features, Significance, Scope and Limitations	3
<b>2.</b>	<b>Segmentation in Rural Marketing:</b> Classification of products and services in Rural marketing – Marketing Mix for rural products	4
<b>3.</b>	<b>Distribution Channels:</b> Introduction, Innovative Distribution Channels like ITC, E-choupal, Godrej Adhar, Hindustan Unilever Limited, Shakti	3
<b>4.</b>	<b>Bio-Product Marketing:</b> Definition, Scope, Concept and Objectives, Differences in Pharmaceutical, Agricultural, Food, Cosmetics, Wine, Biotech, Constraints in Bio-Product Marketing	4
<b>5.</b>	<b>Agribusiness:</b> Emerging Branches, Non Conventional forms of Agribusiness, Export potential for farm products -Supporting Services	4
<b>6.</b>	<b>Cooperative Marketing:</b> Concept, History, Functions – Reasons for slow progress of cooperative sector	4
<b>7.</b>	<b>Case Studies</b>	8
	<b>Books Recommended</b> 1. Agricultural Marketing in India – S. S Acharya and N L Agarwal -Oxford & IBH Publishing Co Pvt Ltd Calcutta 2. Agribusiness Management in India –Text & Case - Dr. Subhash Bhawe 3. Marketing management – Ramaswamy 4. Marketing management – Rajan Saxena	

<b>404B - LABOUR LAWS-II</b>		
<b>1</b>	<b>The Industrial Disputes Act, 1947</b> Definitions of Industry, Workman and Industrial Dispute - Authorities under the Act –Procedure, Powers and Duties of Authorities – Strikes and Lock outs – Lay off and Retrenchment – Special Provisions relating to Layoff, Retrenchment and Closure in certain establishments	<b>12</b>
<b>2.</b>	<b>The Industrial Employment (Standing Orders) Act, 1946</b> Entire Act – Principles of Natural Justice	<b>10</b>
<b>3.</b>	<b>The Maharashtra Recognition of Trade Unions &amp; Prevention of Unfair Labour Practices Act, 1971</b> Entire Act	<b>12</b>
<b>4</b>	<b>The Employees’ State Insurance Act, 1948</b> Corporation, Standing Committee and Medical Benefit Council– Contributions – Benefits – General	<b>6</b>
<b>5.</b>	<b>The Employees’ Provident Funds and Miscellaneous Provisions Act, 1952</b> Entire Act	<b>8</b>
<b>6.</b>	<b>The Maternity Benefit Act, 1961</b> Entire Act	<b>6</b>
<b>7.</b>	<b>The Workmen’s Compensation Act, 1923</b> Entire Act	<b>6</b>
	<b>Books Recommended: -</b> 1. Bare Acts 2. Industrial Law – J K Bareja 3. Industrial Law – P L Malik 4. Industrial & Labour Laws – S P Jain 5. Labour Laws for managers – B D Singh	

<b>405B - LABOUR WELFARE</b>		
<b>1</b>	<b>Labour Welfare</b> – Introduction, History, Definition, Scope, Objectives, Principles and Theories.	<b>3</b>
<b>2</b>	<b>Labour Welfare Officer</b> – Role, Qualifications, Functions, Duties.	<b>2</b>
<b>3</b>	Productivity and Labour welfare.	<b>3</b>
<b>4</b>	<b>Workers Participation in Management</b> – Role of WPM in Labour Welfare and Industrial Hygiene.	<b>3</b>
<b>5</b>	<b>Workers Education Scheme</b> – History and programs.	<b>4</b>
<b>6</b>	<b>Statutory Welfare Amenities</b> – as per Factories Act, 1948, Plantation Act, 1951, Motor Act 1952, Motor Transport Act.	<b>10</b>
<b>7</b>	<b>Non-statutory welfare Agencies</b> – Role of Trade Unions, NGOs and Local-self Govt.	<b>8</b>
<b>8</b>	<b>ILO - &amp; ILC</b> – Introduction, History, Scope, Objectives and Structure.	<b>8</b>
<b>9</b>	Corporate Social responsibility, Industrial Social work.	<b>8</b>
<b>10</b>	<b>Impact of Industrialization on Developing countries like India</b> - Pollution, Urbanization, Social Health.	<b>3</b>
<b>11</b>	Relationship between Mental, Physical, Social and Industrial Health.	<b>4</b>
<b>12</b>	<b>Social Security</b> – concepts and components.	<b>4</b>
	<b>Books Recommended:-</b> 1. Aspects of Labour Welfare and Social Security - A.M.Sharma 2. Labour Welfare, Trade Unionism – S.D. Punekar 3. Labour Problems and Social Welfare - R.C. Saxena 4. Labour economics and social welfare - Dr. B.P. Tyagi.	

<b>406B – STRATEGIC HUMAN RESOURCE MANAGEMENT</b>		
<b>1</b>	<b>Introduction To Strategic HRM</b> Definition, need and importance; Introduction to business and corporate strategies; Integrating HR strategies with business strategies; Developing HR plans and policies	<b>6</b>
<b>2.</b>	<b>Human Resource Environment</b> Technology and structure; Workforce diversity; Demographic changes Temporary and contract labour; Global environment; Global competition Global sourcing of labour; WTO and labour standards	<b>6</b>
<b>3.</b>	<b>Recruitment And Retention Strategies</b> Online recruitment; Employee referrals; Recruitment process outsourcing Head hunting; Executive education; Flexi timing; Telecommuting Quality of work life; Work - life balance; Employee empowerment Employee involvement; Autonomous work teams	<b>8</b>
<b>4</b>	<b>Training And Development Strategies</b> Creating a learning organization; Competency mapping; Multi-Skilling Succession planning; Cross cultural training	<b>8</b>
<b>5.</b>	<b>Performance Management Strategies</b> Defining key result areas (KRA); Result based performance Linking performance to pay; Merit based promotions	<b>8</b>
<b>6.</b>	<b>Reward And Compensation Strategies</b> Performance based pay; Skill based pay; Team based pay Broad banding; Profit sharing; Executive Compensation; Variable pay	<b>6</b>
<b>7.</b>	<b>Retrenchment Strategies</b> Downsizing; Voluntary retirement schemes (VRS) HR outsourcing; Early retirement plans; Project based employment	<b>6</b>
<b>8.</b>	<b>Human Aspects Of Strategy Implementation</b> Behavioral issues in strategy implementation; Matching culture with strategy Human side of mergers and acquisitions; Leadership, power and politics; Employee morale; Personal values and business ethics	<b>8</b>
<b>9.</b>	<b>Global HR Strategies</b> Introduction to global HR strategies; Developing HR as a value added function	<b>4</b>
	<b>Books Recommended: -</b> 1. Strategic HRM – Jeffery Mello, Thompson publication, New Delhi 2 .Strategic HRM – Charles Greer, Pearson education Asia, New Delhi 3 .Strategic HRM - Michael Armstrong, Kogan page, London 4 .Strategic HRM – Agarwal, Oxford university press, New Delhi 5. Human resource management – Garry Dessler, PHI, New Delhi	

<b>407B – ORGANIZATIONAL DEVELOPMENT</b>		
<b>1</b>	<b>Basics of OD</b> Definition, Values and Assumptions, Importance, Evolution: Kurt Lewin, Robert Tanenbaum, McGregor, Herbert Shepard, Robert Blake.	<b>6</b>
<b>2.</b>	<b>Foundations of OD:</b> Action Research, Survey Feedback, Systems Theory, Teams And Teamwork, Participation And Empowerment, Applied Behavioural Science, Parallel Learning Structures.	<b>6</b>
<b>3.</b>	<b>Process Of OD</b> –Model Of Change, Six Box Model.	<b>6</b>
<b>4.</b>	<b>OD Intervention:</b> Meaning, Importance, Team Intervention: Role Analysis, Interdependency, Appreciation and Concern Inter group: Walton, Principled Negotiation Structural: Sts, Work Redesign, Self-Managed Teams. Individual: T-Group, Behaviour Modeling	<b>6</b>
<b>5.</b>	Client And Consultant Relationship	<b>3</b>
<b>6.</b>	<b>Caselets:</b> Action Research Intervention Exercises	<b>3</b>
	<b>Books Recommended</b> 1) Organisational Development By S Ramnarayan, T V Rao. 2) Organizational Development And Change By Cummings And Worley (7th Edition) 3) Organisational Development By French And Bell (6th Edition)	

<b>404C- OPERATIONS STRATEGY</b>		
<b>1.</b>	<b>Introduction,</b> Role and Objectives of Operations Strategy, Incorporating Operations Strategy in the Corporate Strategy, Dynamics of process-product life cycles, Defining a Operations Strategy in Overall Environment, Manufacturing Implications of Corporate Marketing Decisions.	<b>10</b>
<b>2.</b>	<b>Developing Operations Strategy</b> Principles and Concepts of Developing a Operations Strategy, Process of Operations Strategy Formulation, Methodology of Developing Operations Strategy, Business Implication of Process Choice, Product Profiling, Manufacturing Audit Approach, Manufacturing Restructuring, Infrastructure Development.	<b>12</b>
<b>3.</b>	<b>Implementation of Operations Strategy</b> Principles and Concepts of Focused Manufacturing, Involvement of Human Aspects, Effect of Technology Advancement and Technology Management, Integration of Operations Strategy Planning and Technology Planning, Pre-requisites of Organized and Focused Manufacturing Strategy & Unit.	<b>12</b>
<b>4.</b>	<b>Redefining Operations Strategy</b> Value of Response Time and Product Variety in Operations Strategy, Management of Quality, Planning and Controlling System, Accounting & Financial Perspectives and Manufacturing System, Improving Manufacturing Process by Redefining & Restructuring Process Positioning	<b>12</b>
<b>5.</b>	<b>Case Studies</b>	<b>14</b>
	<p><b>Text &amp; References:</b></p> <p><b>Text:</b> Hill T., Manufacturing Strategy: The Strategic Management of Manufacturing Function, 2nd Ed. McMillan</p> <p><b>References:</b> Voss C.A. 1992, Manufacturing Strategy: Process and Contents, Chapman &amp; Hall Samson D. 1991, Manufacturing and Operations Strategy, Prentice Hall Harrison M. 1993, Operations Management &amp; Strategy, Pitman Publishing Slack, Chambers, Hardland, Harrison, Johnston 1995, Operations Management, Pitman Publishing Harvard Business Review Articles on Manufacturing Strategy, HBR</p>	

<b>405C- INNOVATION AND TECHNOLOGY MANAGEMENT</b>		
<b>1.</b>	<b>Innovation Management</b> Introduction: Concept, significance and organizational context. Models of Innovation, Innovation as a management process. Managing Innovation, Theories, Dilemmas, and uncertainties. Organizational structure and environment	<b>9</b>
<b>2.</b>	<b>Innovation as a Strategy</b> Product Strategy, market research, Brand strategy and market entry. New product development and market support. Managing product and development teams. Technology Management, Management of research and development, Role of technology transfer, strategic alliances and intellectual property.	<b>13</b>
<b>3.</b>	<b>Basic Precepts of Technology Management</b> Competition and Technology, Concurrent Engineering, Dimensions of technology	<b>5</b>
<b>4.</b>	<b>Technologies used in various business processes of an Organization</b> Procurement, Manufacturing, Logistics, Customer Relationship Management (CRM), and HR processes. Concept of Enterprise Resource Planning System and its Implementation challenges. The opportunities and business benefits of smart tags in the Pharmaceutical and Medical Equipment sector.	<b>12</b>
<b>5.</b>	<b>Role of Technology Management is B-Technology</b> E-Business Enterprise, Information Security Challenges in E-enterprises. Business Intelligence, Data warehouse and Data mining concepts.	<b>7</b>
<b>6.</b>	<b>Case Studies</b>	<b>14</b>
	<p><b>Text &amp; References:</b></p> <p><b>Text:</b></p> <p>Holt, David H. Entrepreneurship by PHI</p> <p>Gupta S.L. and Taneja Satish , Galgotia Publication</p> <p><b>References:</b></p> <p>Journal for Entrepreneurial Development, Published by Entrepreneurial Development Institute of India</p> <p>Porter Michael, Techniques for analyzing the Industries and Competitors, Forseman Publication</p> <p>Bird Barabara, Entrepreneurial Behaviour, Harper Publication</p> <p>Henderson James, Obtaining Venture Financing, Lexington Publication</p>	

	<b>406C-PRODUCTION PLANNING AND CONTROL: BIOTECHNOLOGY INDUSTRY ISSUES</b>	
1	<b>Process and Product Validation:</b> Scope and importance. Interpretation and implementation of FDA Guidance, process knowledge and life cycle management, continuous verification, challenges in process and product validation	5
2.	<b>Technology Transfer:</b> Risk management in technology transfer, ensuring partnership success in technology transfer,	3
3.	<b>Outsourcing</b> Compliance Audit & Quality Oversight, Co-Development with CMOs for Enhanced Technology or Innovation, Modeling/Simulation Tools for Plant Optimization, Supply Chain Risk Management, strategies for external manufacturing and evaluating its KPI,	7
4	<b>Raw Materials</b> Strategies for Raw Material Variability Testing, Characterization & Control, Evaluation and Quality Management of Supplier-Derived Raw Materials, importance in Process Development and Manufacturing, Raw Material Contamination by Adventitious Agents and its management, Strategies for Single Use & Disposable Raw Materials	10
5.	<b>Viral Safety:</b> Regulatory aspects, Developing a Viral Safety Action Plan, Establishing Effective Viral Barriers, Nano-filtration & Pre-Filtration Strategies & Technologies to Prevent Contaminations in Upstream & Downstream Development	7
6.	<b>Antibody Development:</b> Impact of Antibody Engineering on Development and Production, Cell Line Selection, Development and Engineering, Harvest and Capture Developing and Delivering High Concentration Formulations, Product Quality Control and Bioreactor Characterization in Process Development, Novel Antibody Formats and Drug Conjugates	10
7.	<b>Recombinant proteins:</b> Scale Up and Transfer of Complex Biologics, Upstream and Downstream Processing <b>Biosimilars:</b> Biosimilars and Novel Biologics, Extending Half-Life and Reducing Dosing Frequency, Enhancing Efficacy, Improving Delivery through Enhanced Formulations/Reducing Immunogenicity, Quality Testing and Assay Development of Biosimilars	10
	<p><b>Books Recommended</b></p> <ol style="list-style-type: none"> <li>1. Contract Research and Development Organizations: Their Role in Global Product Development by <b>Shayne C. Gad, Charles B. Spainhour</b></li> <li>2. Technology Transfer in Biotechnology: A Global Perspective <b>edited by Prabuddha Ganguli, Ben Prickril, Rita Khanna</b> 2009 - 232 pages</li> <li>3. Evolutionary Innovations: The Business of Biotechnology by Maureen McKelvey</li> <li>4. Biosimilars by <u>Sunil Kumar Dubey</u> (Author), <u>R. R. Shrivastava</u> (Author) Lambert Publication</li> <li>5 www.fda.gov</li> </ol>	

<b>407C-SUPPLY CHAIN MANAGEMENT AND LOGISTICS</b>		
<b>1.</b>	<b>Introduction of Logistics &amp; SCM</b> Evolution of Logistics and Importance of Supply Chain Management in the overall organization functioning, Customer Focus in Supply Chain, Developing Supply Chain as a Competitive Focus by customer satisfaction and corporate profitability, Role, Objectives & Policies of Purchasing and Supply Chain.	<b>6</b>
<b>2.</b>	<b>Strategic Issues in Supply Chain Management</b> Value chain and value delivery system, Facilities Decisions, Transportation Choices, Vendor Relationships, Distribution Channel Design, Strategic Alliances, Communication Flow of Supply Chain, Inter-functional coordination, Inter-corporate cooperation	<b>6</b>
<b>3.</b>	<b>Managing the Supply Chain</b> Benchmarking, Reengineering, IT Enabled Supply Chain Management, Application of ERP, JIT and Quality Management, Vendor Management & Development, Value Engineering/Analysis, Optimization of Supply Chain, Organization Design, Retailing Management	<b>7</b>
<b>4.</b>	<b>Global Perspective</b> Motives and Development of Global Markets, Managing the International Supply Chain Operations, Supply Chain Reconsideration- to suit the Global Environment, Risk Involved in International Markets, Benchmarking Global Supply Chains.	<b>6</b>
<b>5.</b>	<b>Case Studies</b>	<b>5</b>
	<p><b>Text &amp; References:</b> <i>Text:</i> Gattorna J.L. &amp; Walters D.W. 1996, Managing The Supply: A Strategy Perspective, McMillan Business</p> <p><i>References:</i> Bowersox D.J. &amp; Closs D.J. 1996, Logistics Management, McGraw-Hill International Editors Sahay B.S. 1999, Supply Chain Management: For Global Competitiveness, 1st Ed. McMillan India Pvt. Ltd. Dobler D.W. &amp; Burt D.N. 1996, Purchasing and Supply Management: Text and Case, 6th Ed. Tata McGraw-Hill Mentzer John T., Supply Chain Management</p>	

<b>404D-INTERNATIONAL REGULATORY AFFAIRS</b>		
<b>1.</b>	<b>Historical development of regulatory bodies.</b>	<b>3</b>
<b>2.</b>	<b>Introduction and EU overview</b> Basic elements and approaches in regulation: Centralized, Mutual recognition, Decentralized, National	<b>2</b>
<b>3.</b>	<b>US and International Overview</b> -USFDA, US Administrative Procedure -FDA Good Guidance Practices. -Import Of Drugs in USA -Export of drugs /devices from USA.	<b>10</b>
<b>4.</b>	<b>Licensing in European Union.</b>	<b>3</b>
<b>5.</b>	<b>Import And Registration of drugs in India</b>	<b>3</b>
<b>6.</b>	<b>Regulations on export &amp; manufacture of drugs in India</b>	<b>3</b>
<b>7.</b>	<b>Other Drug Regulatory Authorities</b> <ul style="list-style-type: none"> <li>• Drug Control General of India (DCGI), Indian Council of Medical Research(ICMR), International Conference On Harmonization (ICH-GCP), SCHEDULE-Y, IPR, Management of Clinical Trials, Data Analysis Issues in Clinical Trials</li> <li>• Pre and post drug approval, Inspection and Audits-Regulatory Overview</li> </ul>	<b>8</b>
<b>8.</b>	<b>Pharmacovigilance - In USA, EU And India.</b> <b>EU clinical trial directives, EU privacy legislation,</b> <b>FDA clinical trial regulation</b>	<b>10</b>
<b>9.</b>	<b>Labeling overview, Inspections and Enforcement in US/EU</b>	<b>4</b>
<b>10.</b>	<b>Preparation of successful submission</b> (Recombinant drugs, vaccines, food extract based products)	<b>6</b>
<b>11.</b>	<b>Application for Market Authorization: General approach</b> -ICH common technical documents -EU And FDA similarities & differences. -Quality (chemistry, manufacturing control) - <b>Safety and Efficacy.</b>	<b>4</b>
<b>12.</b>	<b>Licensing And Technology transfer.</b>	<b>4</b>
	<b>Books Recommended:</b> 1. ICH guidelines 2. Company specific regulations 3. FDA Regulatory Affairs: A guide for prescription drugs, Medical devices, and Biologics (Hardcover-2008/08/07) by Douglas J. Pisano(Editor), David S.Mantus 4. <a href="http://www.fda.gov">www.fda.gov</a> . 5. Medical product regulatory affairs: Pharmaceuticals, Diagnostics, Medical Devices(Hardcover-2008/09/09) by John J. Tobin Gary Walsh	

<b>405D-REGULATORY COMPLIANCES IN BIO-INDUSTRIES</b>		
1.	<b>Regulatory compliances in USA.</b>	4
2.	<b>Regulatory compliances in India and other countries</b>	6
3.	<b>Orphan drugs.</b> -Introduction, -FDA office of Orphan products development -The designation process, -Tax credits. -PDUFA & Orphan products development -Orphan drug regulation.	9
4.	<b>Regulation of generics &amp; innovator rights.</b> -Abridged application for generics. -Overview of IPR, -Bolar issue -Supplementary protection certificate -US patent term restoration-EU/US regulatory exclusivity periods	8
5.	<b>OTCs, Herbal medicines &amp; homeopathic.</b> -Homeopathic, herbals, Radiopharmaceuticals, Influenza, Vaccines, Narcotics/Controlled drugs.	5
6.	<b>Biologics, Novel Therapies &amp; Other special categories</b> -Biological & Biosimilars, -Blood & Blood Products. -Cells, Tissues, organs, Gene Therapy, Cloning -Renewals, Variation, -Product Master Files.	8
7.	<b>Advertising &amp; Marketing Practices.</b> -Role of pharma & biotech industry in both promotion and medical education. -EU community code on medicinal products -EFPIA & ABPI codes & national codes. -Leading US & EU Case -Compliances strategies	10
8.	<b>Other EU &amp; US regulation</b> -EU price, reimbursement, cost benefit review. -US Medicare/Medicaid. -US drug Enforcement Administration. -US Federal Trade Commission.	10
	<b>Books Recommended: -</b> 1.ICH guidelines 2.Company specific regulations 3.FDA Regulatory Affairs: A guide for prescription drugs, Medical devices, and Biologics(Hardcover-2008/08/07) by Douglas J. Pisano(Editor), David S.Mantus 4. <a href="http://www.fda.gov">www.fda.gov</a> . 5. Medical product regulatory affairs: Pharmaveuticals, Diagnostics,Medical Devices(Hardcover-2008/09/09) by John J. Tobin Gary Walsh	

<b>406D- QUALITY TESTING OF BIO-PRODUCTS (P)</b>		
<b>1.</b>	<b>Applied Bioscience Practical's</b>	15
	-Fertilizer production -Production of alcohol -Mushroom cultivation -Production and analysis of food products jam/squash/ spices/ butter/ Ghee	
<b>2.</b>	<b>Microbiology of water</b>	15
	a) Presumptive test for coliform group of bacteria or determination of most probable number. b) Confirmed test for coliform bacteria. c) Completed test for coliform bacteria	
<b>3.</b>	<b>Biotech practicals</b>	15
	1. Demonstration of Cell lines culture 2. Gel electrophoresis	
<b>4.</b>	<b>QA/QC Practical's</b>	15
	1. <b>Bio Instrumentation</b> A) Calibration of U.V. spectrophotometer B) Calibration of Autoclave C) Calibration of Hot air oven D) Calibration of pH meter 2. <b>Documentation</b> A) Preparation of Master formula record and Batch Manufacturing Record B) Preparation of Master Packing Record C) Preparation and submission of dossier as per CTD format.	

<b>407D-INTEGRATED QUALITY ASSURANCE OF BIO-INDUSTRIES</b>		
<b>1.</b>	<b>Overview of TQM (Total Quality Management)</b> -Introduction to the TQM concept -Quality Assurance, Components of Q.A. , Good Manufacturing Practice and Quality Control	5
<b>2.</b>	<b>Standards in Bio pharma Industry</b> -Quality Standards, Auditing by FDA, CDSCO,ISO Standards, Exposure to USFDA/cGMP/GLP/GCP, ICH guidelines	5
<b>3.</b>	<b>Quality Standards of Food Industry</b> -Quality Control concepts as applied to the food industry -Standard tests for quality assessment: Micro analytical tests, Microbiological tests, Histological tests Standard test methods -Overview of Food Safety and Standards Act (PFA, FPO, MMPO, MPO, AGMARK), HACCP -Voluntary Standards and compulsory standard. -Management Systems for Quality and Food Safety- ISO 9000, -International food standards	5
<b>4.</b>	<b>Standards to improve the Agricultural products</b> - <a href="#">International quality standards on agricultural products</a> -Quality standards for Indian fertilizers -quality standards for canned food & processed food -Good Agricultural Practices	5
<b>5.</b>	<b>Quality Management of cosmetics</b> Quality assurance for cosmetics, GMP Guidelines/Checklist as per FDA Comparative view on cosmetic regulations: USA, EU and INDIA	5
<b>6.</b>	<b>Waste Management</b> Product Recycling, Advantages and disadvantages of recycled products	5
	<b>Books Recommended:-</b> 1.Early R.1995.Guide to Quality Management Systems for Food Industries. Blackie Academic. 2.Krammer A & Twigg BA.1973. Quality Control in Food Industry. Vol. I, II. AVI Publ. 3.Drug & Cosmetics Act 1945 Rules (Govt. of India) 4. Preparations & evaluation of cosmetics by P. P. Sharm 5.ICH Guidelines available at <a href="http://www.ich.org">www.ich.org</a> 6. Kher, C.P. Quality control for the food industry. ITC Publishers, Geneva. ? 2000.	