



**Government Post Graduate College, New Tehri ( Uttarakhand )**

**राजकीय स्नातकोत्तर महाविद्यालय, नई टिहरी, उत्तराखण्ड**

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**1.3.2. SYLLABUS OF  
COURSES THAT INCLUDE  
EXPERIENTIAL LEARNING  
THROUGH PROJECT  
WORK/FIELD  
WORK/INTERNSHIP DURING  
AY 2023-24**

(Group-B):

Anth-PG-E-15(B) Tribal India

20+80=100

### Fourth Semester

#### Compulsory Courses:

##### Group A & B

Anth-PG-C-16 Indian Anthropology

20+80=100

Anth-PG-C-17 Ecological Anthropology

20+80=100

Anth-PG- 18 Anthropology of Development

20+80=100

Anth-PG-19 Dissertation

20+80=100

#### Elective Courses:

##### (Group-A)

Anth-PG-E-20 (A) Human Growth and Development

20+80=100

#### Elective Courses:

##### (Group - B)

Anth-PG- E-20 (B) Theory of Social Anthropology

20+80=100

### First Semester

**National Education Policy-2020  
Common Minimum Syllabus  
For  
All Uttarakhand State Universities  
and Colleges**

**B.Com.  
B.Com. (Research)  
M.Com.  
&  
Post Graduate Degree in Research  
(PGDR-Commerce)**

## Expert Committee:

S.N.	Name	Designation	Department	Affiliation
1.	Prof. Atul Joshi	Dean, Head Faculty of Commerce	Department of Commerce	D.S.B Campus, Kumaun University, Nainital
2.	Prof. B.D Kavidyal	Professor	Department of Commerce	D.S.B Campus, Kumaun University, Nainital
3.	Prof H.C Purohit	Professor	Department of Commerce	Doon University, Dehradun
4.	Prof K.C Joshi	Professor	Department of Commerce	S.S.J Campus, S.S.J University, Almora
5.	Prof. C S Joshi	Professor	Department of Commerce	Govt. P.G College, Haldwani Kumaun University, Nainital
6.	Prof M.M Jinnah	Professor	Department of Commerce	S.S.J Campus, S.S.J University, Almora
7.	Dr. Dharmendra Tiwari	Associate Professor	Department of Commerce	D.S.B Campus, Kumaun University, Nainital
8.	Dr. Vijay Kumar	Assistant Director	Department of Commerce	D.S.B Campus, Kumaun University, Nainital
9.	Dr. Jeevan Ch. Upadhyay	Assistant Professor	Department of Commerce	D.S.B Campus, Kumaun University, Nainital
10.	Dr. Manoj K.Pandey	Assistant Professor	Department of Commerce	D.S.B Campus, Kumaun University, Nainital
11.	Dr Susmita Tripathi	Assistant Professor	Department of Commerce	Doon University, Dehradun

## Syllabus Preparation Committee:

S.N.	Name	Designation	Department	Affiliation
1.	Prof Atul Joshi	Dean, Head Faculty of Commerce	Department of Commerce	D.S.B Campus, Kumaun University, Nainital
2.	Prof H.C Purohit	Professor	Department of Commerce	Doon University, Dehradun
3.	Prof K.C Joshi	Professor	Department of Commerce	S.S.J Campus, S.S.J University, Almora
4.	Dr. Jeevan Ch. Upadhyay	Assistant Professor	Department of Commerce	D.S.B Campus, Kumaun University, Nainital
5.	Dr. Manoj K.Pandey	Assistant Professor	Department of Commerce	D.S.B Campus, Kumaun University, Nainital
6.	Dr Susmita Tripathi	Assistant Professor	Department of Commerce	Doon University, Dehradun
7.	Prof. M.C Pandey	Professor	Department of Commerce	Govt. P.G College, Ramnagar Kumaun University, Nainital
8.	Dr. Rekha Joshi	Assistant Professor	Department of Commerce	Govt. Girls P.G College, Haldwani Kumaun University, Nainital
9.	Dr. B.C Melkani	Assistant Professor	Department of Commerce	Govt. P.G College, Haldwani Kumaun University, Nainital
10.	Dr. Manpreet Singh	Assistant Professor	Department of Commerce	Govt. P.G College, Bajpur Kumaun University, Nainital
11.	Dr. Shakshi Tiwari	Assistant Professor	Department of Commerce	S.S.J Campus, S.S.J University, Almora
12.	Dr. Mamta Joshi	Assistant Professor	Department of Commerce	D.S.B Campus, Kumaun University, Nainital
13.	Dr. Gaganpreet Singh	Assistant Professor	Department of Commerce	Govt. P.G College, Khatima Kumaun University, Nainital
14.	Dr. Atish Verma	Assistant Professor	Department of Commerce	Govt. P.G College, Bajpur Kumaun University, Nainital

List of all Papers in First Three Years Semester-wise Titles of the Papers in B.Com.					
Year	Sem.	Course Code	Paper Title	Theory/ Practical	Credits
Certificate Course in <i>COMMERCE</i>					
FIRST YEAR	I	BC-101	Financial Accounting	Theory	6
		BC-102	Business Regulatory Framework	Theory	6
		BC-103 (A)	Business Organization and Management Or	Theory	6
		BC-103 (B)	Business Communication		
		BC-104	Inventory Management	Theory	4*
		BC-105	Vocational Course	-	3
		BC-106	Co-curricular	-	(Qualifying)
	II	BC-201	Basic Business Finance	Theory	6
		BC-202	Business Statistics	Theory	6
		BC-203 (A)	Entrepreneurship & Small Business Or	Theory	6
		BC-203 (B)	Economy of Uttarakhand		
		BC-204	Rural Marketing	Theory	4*
		BC-205	Vocational Course	-	3
		BC-206	Co-curricular	-	(Qualifying)
Diploma in <i>COMMERCE</i>					
SECOND YEAR	III	BC-301	Cost Accounting	Theory	6
		BC-302	Company Law	Theory	6
		BC-303 (A)	Business Economics Or	Theory	6
		BC-303 (B)	Business Environment		
		BC-304	E-Banking	Theory	4*
		BC-305	Vocational Course	-	3
		BC-306	Co-curricular	-	(Qualifying)
	IV	BC-401	Income Tax Law and Accounts	Theory	6
		BC-402	Public Finance	Theory	6
		BC-403 (A)	Tourism and Travel Management Or	Theory	6
		BC-403 (B)	Fundamentals of Marketing		
		BC-404	Indian Economy	Theory	4*
		BC-405	Vocational Course	-	3
		BC-406	Co-curricular	-	(Qualifying)
Bachelor of <i>COMMERCE</i>					
THIRD YEAR	V	BC-501	Corporate Accounting	Theory	5
		BC-502	Auditing	Theory	5
		BC-503	<b>Any two of the following-</b> Business ethics and Corporate Governance Principles and Practices of Insurance Monetary Theory and Banking in India	Theory	5 5
		BC-504			
		BC-505			
		BC-506	Industrial Training/ Survey/ Project/viva-voce	Theory	4
		BC-507	Co-curricular	-	(Qualifying)
	VI	BC-601	Goods and Services Tax	Theory	5
		BC-602	Accounting for Managerial Decision	Theory	5
		BC-603	<b>Any two of the following-</b> Financial Institutions & Markets Human Resource Management Advertising & Sales Management	Theory	5 5
		BC-604			
		BC-605			
		BC-606	Industrial Training/ Survey/ Project/Viva-voce	Theory	4
		BC-607	Co-curricular	-	(Qualifying)



List of all Papers in 4 <sup>th</sup> , 5 <sup>th</sup> & 6 <sup>th</sup> Year Semester-wise Titles of the Papers in B.Com. (Research), M.Com. & Post Graduate Degree in Research (PGDR-Commerce)					
Year	Sem.	Course Code	Paper Title	Theory/ Practical	Credits
Bachelor (Research) of <i>COMMERCE</i>					
FOURTH YEAR	VII	MC-701	Managerial Economics	Theory	5
		MC-702	Organisation theory	Theory	5
		MC-703	Marketing Research	Theory	5
		MC-704	Advanced Statistics	Theory	5
		MC-705	Other faculty/MOOC/NPTEL etc.	Theory	4*
		MC-706	Survey/Seminar/ Project/Viva-voce etc.	-	4
	VIII	MC-801	Behavioral Sciences	Theory	5
		MC-802	Business Research Method	Theory	5
		MC-803	International Business	Theory	5
		MC-804	Business Statistics & Analytics	Theory	5
		MC-805	Other faculty/MOOC/NPTEL etc.	Theory	4*
		MC-806	Survey/Seminar/ Project/Viva-voce etc.	-	4
Master of <i>COMMERCE</i>					
FIFTH YEAR	IX	MC-901	Working Capital Management	Theory	5
		MC-902	Strategic Management	Theory	5
		Choose any one group from the following (903 to 907):			
		MC-903 (I)	Accounting Theory	Theory	5 5
		MC-903 (II)	Managerial Accounting		
		MC-904 (I)	Financial System in India	Theory	
		MC-904 (II)	International financial management		
		MC-905 (I)	Consumer Behavior	Theory	
		MC-905 (II)	International Marketing Management		
		MC-906 (I)	Human Resource Management	Theory	
		MC-906 (II)	Labour Legislation in India- I		
		MC-907 (I)	Money and Banking	Theory	
		MC-907 (II)	Customer Relationship Management in Banks		
		MC-908	Survey/Seminar/ Project/Viva-voce etc. (Based on the above selected group)	---	4
	X	Choose any one group from the following (which chosen above in IX semester):			
		MC-1001 (I)	Advance Cost Accounting	Theory Theory Theory Theory	5 5 5 5
		MC-1001 (II)	Advanced Auditing		
		MC-1001 (III)	Tax Planning and Management		
		MC-1001(IV)	Accounting for Planning and Control		
		MC-1002 (I)	Security Analysis and Portfolio Management		
		MC-1002 (II)	Project Management		
		MC-1002 (III)	Fee Based Financial Services		
		MC-1002(IV)	Securities Market Operations		
		MC-1003 (I)	Advertising and Promotion Management		
		MC-1003 (II)	Agricultural Marketing		
		MC-1003 (III)	Foreign Trade Management		
		MC-1003(IV)	Global Business Environment		
		MC-1004 (I)	Industrial Relations in India		
		MC-1004 (II)	Labour Legislation in India -II		
		MC-1004 (III)	Wage and Salary Administration		
		MC-1004(IV)	Industrial Sociology		
		MC-1005 (I)	Marketing Management of Insurance Companies		
	MC-1005 (II)	Retailing of Insurance			
	MC-1005 (III)	Retail Banking			
	MC-1005(IV)	Financial Management of Insurance			
	MC-1006	Survey/Seminar/ Project/Viva-voce etc. (Based on the above selected group)	---	4	
Post Graduate Degree in Research (Commerce) PGDR					
SIXTH YEAR	XI	PGDR-101	Research Methodology	Theory	4
		PGDR-102	Research and Publication Ethics (RPE)	Theory	Qualifying
		PGDR-103 (I) PGDR-103(II)	<b><u>Group A (Any one paper from the following)-</u></b> Contemporary Issues in Accounting and Finance Contemporary Issues in HRM	Theory	6
		PGDR-104 (I) PGDR-104(II)	<b><u>Group B (Any one paper from the following)-</u></b> Contemporary Issues in Marketing Contemporary Issues in International Business	Theory	6
		PGDR-105	Survey/Seminar/ Project/Viva-voce etc. (Based on the above selected group)	---	Qualifying

**DEPARTMENT OF COMMERCE**  
**Program Structure B.Com. (CBCS)**

Year	Semester	Major <sup>#</sup> (Own faculty)		Major* (Own/Other Faculty)		Minor Electives* (Own/Other Faculty)		Minor Vocational Course (Elective)		Minor Co-curricular (Qualifying)		Industrial Training/ Survey/ Project/ Viva-voce		Total Credits
		No. of Papers	Credits	No. of Papers	Credits	No. of Papers	Credits	No. of Papers	Credits	Minor	Credits	No. of Papers	Credits	
1	I	2	6	1	6	1	4	1	3	1	-	-	-	46
	II	2	6	1	6			1	3	1	-	-	-	
2	III	2	6	1	6	1	4	1	3	1	-	-	-	46
	IV	2	6	1	6			1	3	1	-	-	-	
3	V	4	5	-	-	-	-	-	-	1	-	1	4	48
	VI	4	5	-	-	-	-	-	-	1	-	1	4	
<b>Total (B.Com.)</b>		16	88	4	24	2	8	4	12	-	-	2	8	140

# **Major**- These can be taken by the students of Commerce Faculty only.

\***Major & Minor Electives** - These can be taken by the students of any Faculty including the students of Commerce. Students of commerce faculty must have to choose any one of these from other faculty/department. Equal Credit for such course/paper can also be obtained from any online platform i.e., MOOC/NPTEL etc.

\***Minor Electives**- Credit for this paper can be obtain by the student in any semester of the year (once in a year only i.e., either in I or II semester in First year and III or IV semester in second year) as per his/her convenience.

**Program Structure M.Com. (CBCS) & PGDR-Commerce**

Year	Semester	Major Course/Paper##		Major Course/Paper##		Minor Electives** (Chosen from any other faculty)		Industrial Training/ Survey/ Project/ Viva-voce		Total Credits
		No. of Papers	Credits	No. of Papers	Credits	No. of Papers	Credits	No. of Papers	Credits	
4	VII	4	5	-	-	1	4	1	4	52
	VIII	4	5	-	-			1	4	
5	IX	4	5	-	-	-	-	1	4	48
	X	4	5	-	-	-	-	1	4	
6	XI	2	6	1	4	-	-	1	Qualifying	16

## **Major**- These can be taken by the students of Commerce Faculty only.

\*\***Minor Electives** Chosen from any other faculty.

**Semester Wise Detail of the Course/Papers (B.Com.)**

SEMESTER-I				Credits	Maximum Marks		
					Internal	External	Total
BC-101	Financial Accounting	Major (For Own Faculty)	6	25	75	100	
BC-102	Business Regulatory Framework	Major (For Own Faculty)	6	25	75	100	
BC-103 (A)	Business Organization and Management Or	Major (For Own/Other Faculty)	6	25	75	100	
BC-103 (B)	Business Communication						
BC-104	Inventory Management	Minor (For Own/Other Faculty)	4*	25	75	100	
BC-105	Vocational Course	Minor Elective	3	-	-	-	
BC-106	Co-curricular	Minor Elective	(Qualifying)	-	-	-	
Total of Semester-I			21+4*				
SEMESTER-II				Credits	Maximum Marks		
					Internal	External	Total
BC-201	Basic Business Finance	Major (For Own Faculty)	6	25	75	100	
BC-202	Business Statistics	Major (For Own Faculty)	6	25	75	100	
BC-203 (A)	Entrepreneurship & Small Business Or	Major (For Own/Other Faculty)	6	25	75	100	
BC-203 (B)	Economy of Uttarakhand						
BC-204	Rural Marketing	Minor (For Own/Other Faculty)	4*	25	75	100	
BC-205	Vocational Course	Minor Elective	3	-	-	-	
BC-206	Co-curricular	Minor Elective	(Qualifying)	-	-	-	
Total of Semester-II			21+4*				
<b>Note:</b>							
1. *4 Credits of Minor elective can be obtained only once in a year.							
2. Minimum requirement for getting Certificate in Commerce (After Sem I and II) is 46 Credit							

SEMESTER-III			Credits	Maximum Marks		
				Internal	External	Total
BC-301	Cost Accounting	Major (For Own Faculty)	6	25	75	100
BC-302	Company Law	Major (For Own Faculty)	6	25	75	100
BC-303 (A)	Business Economics	Major (For Own/Other Faculty)	6	25	75	100
BC-303 (B)	Or Business Environment					
BC-304	E-Banking	Minor (For Own/Other Faculty)	4*	25	75	100
BC-305	Vocational Course	Minor Elective	3	-	-	-
BC-306	Co-curricular	Minor Elective	(Qualifying)	-	-	-
Total of Semester-II			21+4*			
SEMESTER-IV			Credits	Maximum Marks		
				Internal	External	Total
BC-401	Income Tax Law and Accounts	Major (For Own Faculty)	6	25	75	100
BC-402	Public Finance	Major (For Own Faculty)	6	25	75	100
BC-403 (A)	Tourism and Travel Management	Major (For Own/Other Faculty)	6	25	75	100
BC-403 (B)	Or Fundamentals of Marketing					
BC-404	Indian Economy	Minor (For Own/Other Faculty)	4*	25	75	100
BC-405	Vocational Course	Minor Elective	3	-	-	-
BC-406	Co-curricular	Minor Elective	(Qualifying)	-	-	-
Total of Semester-II			21+4*			
<b>Note:</b>						
1. *4 Credits of Minor elective can be obtained only once in a year.						
2. Minimum requirement for getting Diploma in Commerce (After Sem I, II, III and IV) is 46+46=92 Credit.						
SEMESTER-V			Credits	Maximum Marks		
				Internal	External	Total
BC-501	Corporate Accounting	Major (For Own Faculty)	5	25	75	100
BC-502	Auditing	Major (For Own Faculty)	5	25	75	100
BC-503	<b>Any two of the following-</b> Business ethics and Corporate Governance	Major (For Own Faculty)	5	25	75	100
BC-504	Principles and Practices of Insurance		5	25	75	100
BC-505	Monetary Theory and Banking in India					
BC-506	Industrial Training/ Survey/ Project/viva-voce	Major	4	-	-	-
BC- 507	Co-curricular	Minor	(Qualifying)	-	-	-
Total of Semester-V			24			
SEMESTER-VI			Credits	Maximum Marks		
				Internal	External	Total
BC-601	Goods and Services Tax	Major (For Own Faculty)	5	25	75	100
BC-602	Accounting for Managerial Decision	Major (For Own Faculty)	5	25	75	100
BC-603	<b>Any two of the following-</b> Financial Institutions & Markets	Major (For Own Faculty)	5	25	75	100
BC-604	Human Resource Management		5	25	75	100
BC-605	Advertising & Sales Management					
BC-606	Industrial Training/ Survey/ Project/Viva-voce	Major	4	-	-	-
BC- 607	Co-curricular	Minor	(Qualifying)	-	-	-
Total of Semester-VI			24			
<b>Note:</b>						
Minimum requirement for getting Bachelor’s Degree in Commerce (After Sem I, II, III, IV, V and VI) is 46+46+48=140 Credit.						

### Semester Wise Detail of the Course/Papers (M.Com.)

SEMESTER-VII			Credits	Maximum Marks		
				Internal	External	Total
MC-701	Managerial Economics	Major-1	5	25	75	100
MC-702	Organisation theory	Major-2	5	25	75	100
MC-703	Marketing Research	Major-3	5	25	75	100
MC-704	Advanced Statistics	Major-4	5	25	75	100
MC-705	Other faculty/MOOC/NPTEL etc.	Minor Elective	4*	-	-	-
MC-706	Survey/Seminar/ Project/Viva-voce etc.	Major-5	4	-	-	-
Total of Semester-VII			24+4*			
			Credits	Maximum Marks		



SEMESTER-VIII				Internal	External	Total					
MC-801	Behavioral Sciences	Major-1	5	25	75	100					
MC-802	Business Research Method	Major-2	5	25	75	100					
MC-803	International Business	Major-3	5	25	75	100					
MC-804	Business Statistics & Analytics	Major-4	5	25	75	100					
MC-805	Other faculty/MOOC/NPTEL etc.	Minor Elective	4*	-	-	-					
MC-806	Survey/Seminar/ Project/Viva-voce etc.	Major-5	4	-	-	-					
Total of Semester-VIII			24+4*								
<b>Note:</b>											
1. *4 Credits of Minor elective can be obtained only once in a year.											
2. Minimum requirement for getting Bachelor’s (Research) in Commerce (After Sem I, II, III, IV, V, VI, VII and VIII) is 140+52=192 Credit.											
SEMESTER-IX			Credits	Maximum Marks							
				Internal	External	Total					
MC-901	Working Capital Management	Major-1	5	25	75	100					
MC-902	Strategic Management	Major-2	5	25	75	100					
MC-903 (I) MC-903 (II)	<b>Select Any one Group (Both the papers of selected group are compulsory) from the following:</b>	Major-3 Major-4	5 5	25 25	75 75	100 100					
	<b>Accounting Group:</b> Accounting Theory Managerial Accounting										
MC-904 (I) MC-904 (II)	<b>Finance Group:</b> Financial System in India International financial management										
MC-905 (I) MC-905 (II)	<b>Marketing Group:</b> Consumer Behavior International Marketing Management										
MC-906 (I) MC-906 (II)	<b>Human Resource Management Group:</b> Human Resource Management Labour Legislation in India- I										
MC-907 (I) MC-907 (II)	<b>Banking &amp;Insurance Group:</b> Money and Banking Customer Relationship Management in Banks										
MC-908	Survey/Seminar/ Project/Viva-voce etc. (Based on the above selected group)						Major-5	4	-	-	-
Total of Semester-IX			24								
SEMESTER-X			Credits	Maximum Marks							
				Internal	External	Total					
MC-1001 (I) MC-1001 (II) MC-1001 (III) MC-1001 (IV)	<b>Choose the same Group which was selected in IX semester (All four papers of selected group are compulsory):</b>	Major-1 Major-2 Major-3 Major-4	5 5 5 5	25 25 25 25	75 75 75 75	100 100 100 100					
	<b>Accounting Group:</b> Advance Cost Accounting Advanced Auditing Tax Planning and Management Accounting for Planning and Control										
	MC-1002 (I) MC-1002 (II) MC-1002 (III) MC-1002 (IV)						<b>Finance Group:</b> Security Analysis and Portfolio Management Project Management Fee Based Financial Services Securities Market Operations				
	MC-1003 (I) MC-1003 (II) MC-1003 (III) MC-1003 (IV)						<b>Marketing Group:</b> Advertising and Promotion Management Agricultural Marketing Foreign Trade Management Global Business Environment				
MC-1004 (I) MC-1004 (II) MC-1004 (III) MC-1004 (IV)	<b>Human Resource Management Group:</b> Industrial Relations in India Labour Legislation in India -II Wage and Salary Administration Industrial Sociology										
MC-1005 (I) MC-1005 (II) MC-1005 (III) MC-1005 (IV)	<b>Banking &amp;Insurance Group:</b> Marketing Management of Insurance Companies Retailing of Insurance Retail Banking Financial Management of Insurance										
MC-1006	Survey/Seminar/ Project/Viva-voce etc. (Based on the above selected group)						Major-5	4	-	-	-
Total of Semester-X							24				
<b>Note:</b>											
Minimum requirement for getting Master in Commerce (After Sem I, II, III, IV, V, VI, VII, VIII, IX and X) is 192+48=240 Credit.											

<u>Post Graduate Degree in Research (Commerce)</u>						
SEMESTER-XI			Credits	Maximum Marks		
				Internal	External	Total
PGDR-101	Research Methodology	Major-1	4	25	75	100
PGDR-102	Research and Publication Ethics (RPE)	(Qualifying)	(Qualifying)	25	75	100
PGDR-103 (I) PGDR-103 (II)	<b><u>Group A (Any one paper from the following)-</u></b> Contemporary Issues in Accounting and Finance Contemporary Issues in HRM	Major-2	6	25	75	100
PGDR-104 (I) PGDR-104 (II)	<b><u>Group B (Any one paper from the following)-</u></b> Contemporary Issues in Marketing Contemporary Issues in International Business	Major-3	6	25	75	100
PGDR-105	Survey/Seminar/ Project/Viva-voce etc. (Based on the above selected group)	Major-4	Qualifying	-	-	-
Total of Semester-XI			16			
<b><u>Note:</u></b> Minimum requirement for getting PGDR in Commerce (After Sem I, II, III, IV, V, VI, VII, VIII, IX, X and XI) is 240+16= 256 Credit.						

<b>B.Com. First Year</b>			
<b>Certificate in Commerce (46 Credit)</b>	<b>SEMESTER-I</b>	<b>21+4* credit</b>	<b>46 credits</b>
	<b>SEMESTER-II</b>	<b>21+4* credit</b>	

Programme: B.Com.		Year: First	Semester: First
Subject: Commerce			
Course Code: BC-101		Course Title: Financial Accounting	
Course outcomes: The objective of this paper is to help students to acquire conceptual knowledge of fundamentals of accounting and to impart skills for recording various kinds of business transactions.			
Credits: 6		Core Compulsory / Elective: Compulsory	
Max. Marks: 25+75		Min. Passing Marks: 36	
Total No. of Lectures: 90			
Unit	Topics		No. of Lectures
I	Shri Kalyan Subramani Aiyar (K.S. Aiyar) 1859-1940 known as father of Accountancy in India. Nature and scope of Accounting, Generally Accepted Accounting Principles: Concepts and Conventions, Indian and International Accounting Standards. Accounting Mechanics: Double Entry System,		10
II	Preparation of Journal, Ledger and Trial Balance, Profit and Loss A/c, Balance Sheet, Concept of Income and its Measurement.		8
III	Royalty Accounts - Accounting Records for Royalty in the books of Landlords and Lessee, Recoupment of Short working, Sub - lease, Short working Reserve Account, Nazarana.		6
IV	Hire Purchase Account - Accounting Records in the Books of Hire Purchaser and Vendor, Different Methods of Calculation of Interest and Cash Price, Maintenance of Suspense Account, Payment of Premium, Default in Payment and Partial Returns of Goods. Installment Payment System - Difference between Hire Purchase and Installment Payment System. Accounting Records in the book of Purchaser & Vendor, Interest suspense account.		20
V	Departmental Accounts- Meaning, Objects and Importance, Advantage, Methods of Departmental Accounts, Final Accounts of Non-Corporate Departmental Business, Allocation of Indirect Expenses.		7
VI	Branch Accounts - Meaning and Objectives of Branch Account, Importance and Advantages, Classification of Branches, Accounting of Branch Accounts under various Methods.		10
VII	Insolvency Accounts- Meaning, Circumstances of Insolvency, Procedure of Declaring Insolvency, Preparation of Statement of Affairs and Deficiency Account.		15
VIII	Voyage Accounts - Meaning & Preparation of Voyage Accounts.		14
Suggested Readings: 1. Jain & Naranag, “Advanced Accounts”, 18th Edition, Reprint(2014) 2. Gupta, R. L. & Radhaswamy, M., Financial Accounting: Sultan Chand and sons. 3. Shukla, M.C., Grewal T.S. & Gupta, S.C., Advanced Accounts: S. Chand & Co. 4. Maheshwari S.N. & Maheshwari S. K, “A text book of Accounting for Management”, Vikas Publication, 10th Edition (2013) 5. Shukla, S.M., Financial Accounting, Edition: 55th, Sahitya Bhawan Publications, 2021 6. Gupta. R.L and Shukla, M.C., “Principles of Accountancy”, S. Chand & Company Ltd., (2011) 7. Arulanandam, M.A. & Raman, K.S., “Advanced Accounting”, Vikas Publishers, (2010).			
Note- Latest edition of the text books should be used.			
Suggested online link: www.ignou.ac.in, www.swayam.gov.in, www.inflibnet.ac.in			
Suggested Continuous Evaluation Methods: In addition to the theoretical inputs the course will be delivered through Assignments, Presentation, Group Discussions. Criteria for continuous evaluation may be Assignment or/and Presentation or/and unit test or/and Attendance etc.			

Programme: B.Com.		Year: First	Semester: First
Subject: Commerce			
Course Code: BC-102		Course Title: Business Regulatory Framework	
Course outcomes: The objective of this course is to provide a brief idea about the framework of Indian Contract Act,1872, Negotiable Instrument Act, Competition Act, 2002 and Sale of Goods Act,1930.			
Credits: 6		Core Compulsory / Elective: Compulsory	
Max. Marks: 25+75		Min. Passing Marks:36	
Total No. of Lectures: 90			
Unit	Topics		No. of Lectures
I	Indian Contract Act, 1872: Definition & Nature of Contract, Classification; Offer & Acceptance; Capacity of Parties; Free Consent; Consideration; Legality of Objects		20
II	Void Agreements; Performance of Contracts; Discharge of Contract; Contingent Contracts; Quasi Contracts; Remedies for Breach of Contract, Special Contracts: Indemnity & Guarantee; Bailment & Pledge; Contract of Agency.		20
III	Sale of Goods Act, 1930: Contract of Sale of Goods, Conditions & Warranties; Transfer of Ownership; Performance of the Contract: Remedial Measures; Auction able Claims.		20
IV	Negotiable Instrument Act: Cheque, Promissory Note, Bill of Exchange, Crossing of Cheque, Dishonor of Cheque, Payment in due Course.		12
V	Competition Act, 2002: History and Development of Competition Law, Salient features of the Competition Act 2002, Basic Concepts, Powers of Central Government under the Competition Act, Major Provisions of the Competition Act: Role and Working of Competition Commission of India.		18
<b>Suggested Readings:</b> 1. Kuchal M.C: Business Law; Vikas Publishing House, New Delhi. 2. Chandha P.R: Business Law; Galgotia, New Delhi. 3. Kapoor N.D: Business Law; Sultan Chand & Sons, New Delhi. (Hindi and English) 4. Desai T.R.: Indian Contract Act, Sale of Goods Act and Partnership Act; S.C.Sarkar & Sons Pvt. Ltd., Kolkata. 5. Tulsian, P.C., Business Law, New Delhi, Tata McGraw Hill. 6. Dr. S.M. Shukla: <b>Business Regulatory Framework</b> ; Sahitya Bhawan Publications, Agra (Hindi & English)			
<b>Note:- Latest edition of the text books should be used.</b>			
<b>Suggested online link:</b> www.ignou.ac.in, www.swayam.gov.in, www.inflibnet.ac.in			
<b>Suggested Continuous Evaluation Methods:</b> In addition to the theoretical inputs the course will be delivered through Assignments, Presentation, Group Discussions. Criteria for continuous evaluation may be Assignment or/and Presentation or/and unit test or/and Attendance etc.			

Programme: B.Com.		Year: First	Semester: First
Subject: Commerce			
Course Code: BC-103 (A)		Course Title: Business Organization and Management	
Course outcomes: After completing this course a student will have: Ability to understand the concept of Business Organization along with the basic laws and norms of Business Organization. Ability to understand the terminologies associated with the field of Business Organization along with their relevance. Ability to identify the appropriate types and functioning of Business Organization for solving different problems. Ability to apply basic Business Organization principles to solve business and industry related problems. Ability to understand the concept of Sole Proprietorship, Partnership and Joint Stock Company etc.			
Credits: 6		Core Compulsory / Elective: Elective	
Max. Marks: 25+75		Min. Passing Marks: 36	
Total No. of Lectures: 90			
Unit	Topics		No. of Lectures
I	Introduction: Business Concept & Objects, Social Responsibility of Business Establishment of New Business Meaning, Objectives Meaning, Objectives & Principles of Organization, Size of Business Unit, Factors determining Size, Measurement of Size, Concept of Optimum Size.		14
II	Forms of Business Organization: Sole Tradership, Partnership Firm, Business (Public and Private), Formation & Choice of Business Organization, Definition of Management, Its nature of purpose, Fayol's Principles & Elements of Management, Recent Developments of Management Thought.		8
III	Planning & Organising: Its nature & purpose, types of plans, Planning steps & process, Management by objectives (MBO), Decision-Making, Forecasting, Organisational Design & Organisational Structure, Power & Distribution of Authority.		10
IV	Motivation, Leadership & Direction: Maslow's Need Hierarchy Theory, Herzberg's Two Factor Theory, Job Enlargement, Special Motivation Techniques, Definition & Approaches to Leadership, The Principal Tasks of Leadership Role & Principles of Direction.		14
V	Controlling: meaning, definition & techniques of control, Principle of Controlling, Process of Control & Types of Controls, Human Aspect of Controls.		8
VI	Plant Location: Concept, Meaning, Importance, Factors Affecting Plant Location. Alfred Weber's and Sargent Florence's Theories of Location. Plant Layout –: Meaning, Objectives, Importance, Types and Principles of Layout. Factors Affecting Layout.		16
VII	Business Combination: Meaning, Characteristics, Objectives, Causes, Forms and Kinds of Business Combination.		10
VIII	Rationalisation: Meaning, Characteristics, Objectives, Principles, Merits and demerits, Difference between Rationalisation and Nationalisation		10
Suggested Readings: 1. Gupta, C.B., "Business Organisation", Mayur Publication, (2014). 2. Singh, B.P., Chhabra, T.N., "An Introduction to Business Organisation & Management", Kitab Mahal, (2014). 3. Sherlekar, S.A. & Sherlekar, V.S., "Modern Business Organization & Management Systems Approach Mumbai", Himalaya Publishing House, (2000). 4. Bhusan Y. K., "Business Organization", Sultan Chand & Sons. 5. Dr. S.C. Saksena : <b>Business Organisation and Management</b> ; Sahitya Bhawan Publications, Agra (Hindi & English). 6. Koontz and Weirich, Essentials of Management, Tata McGraw Hill, New Delhi. 7. Drucker, P F, Management Challenges for the 21st Century, Butterworth, Oxford. 8. Stoner and Freeman, Management, PHI, New Delhi. Note: Latest edition of the text books should be used.			
Suggested online link: www.ignou.ac.in, www.swayam.gov.in, www.inflibnet.ac.in			
Suggested Continuous Evaluation Methods: In addition to the theoretical inputs the course will be delivered through Assignments, Presentation, Group Discussions. Criteria for continuous evaluation may be Assignment or/and Presentation or/and unit test or/and Attendance etc.			



Programme: B.Com.		Year: First	Semester: First
Subject: Commerce			
Course Code: BC-103 (B)		Course Title: Business Communication	
Course outcomes: To acquire skills in reading, writing, comprehension and communication, and also to use electronic media for business communication.			
Credits: 6		Core Compulsory / Elective: Elective	
Max. Marks: 25+75		Min. Passing Marks:36	
Total No. of Lectures: 90			
Unit	Topics		No. of Lectures
I	Introduction Process and Importance of Communication, Types of Communication (verbal & Nonverbal), Different forms of Communication. Barriers to Communication: Linguistic Barriers, Psychological Barriers, Interpersonal Barriers, Cultural Barriers, Physical Barriers, Organizational Barriers. Role, effects and advantages of technology in Business Communication like email, text messaging, instant messaging and modern techniques like video conferencing, social networking. Strategic importance of e-communication, Principles of Effective Communication.		22
II	NON-Verbal Aspects of Communicating: Body Language, Kinesics, Proxemics, Paralanguage. Effective Listening: Principles of Effective listening, Factors affecting listening exercises, Oral, Written and video sessions,		16
III	Business language and presentation Writing skills: Planning business messages, Rewriting and editing, The first draft and Reconstructing the final draft. Office Correspondence: Official Letter, Semi Official Letter and Memorandum.		18
IV	Conducting Meetings: Procedure; Preparing agenda; Minutes and Resolutions; Conducting Seminars & Conferences; Procedure of Regulating Speech; Evaluating Oral Presentation; Group Discussion; Drafting Speech.		16
V	Report Writing Identify the types of reports, define the basic format of a report, identify the steps of report writing, write a report meeting the format requirements, determine the process of writing a report, importance of including visuals such as tables, diagrams and charts in writing report, apply citation rules (APA style documentation) in reports		18
<b>Suggested Readings:</b> 1. Lesikar, R.V. & Flatley, M.E.; Basic Business Communication Skills for Empowering the Internet Generation, Tata McGraw Hill Publishing Company Ltd. New Delhi. 2. Bovee, and Thill, Business Communication Today, Pearson Education 3. Shirley, Taylor, Communication for Business, Pearson Education 4. Locker and Kaczmarek, Business Communication: Building Critical Skills, TMH 5. Misra, A.K., Business Communication (Hindi), Sahitya Bhawan Publications Agra 6. N. Gupta & K. Jain: <b>Business Communication</b> ; Sahitya Bhawan Publications, Agra <b>Note- Latest edition of the text books should be used.</b>			
<b>Suggested online link:</b> www.ignou.ac.in, www.swayam.gov.in, www.inflibnet.ac.in			
<b>Suggested Continuous Evaluation Methods:</b> In addition to the theoretical inputs the course will be delivered through Assignments, Presentation, Group Discussions. Criteria for continuous evaluation may be Assignment or/and Presentation or/and unit test or/and Attendance etc.			

Programme: B.Com.		Year: First	Semester: First
Subject: Commerce			
BC-104		Course Title: Inventory Management	
Course outcomes: After completing this course a student will have: Ability to understand the concept of Inventory Management along with the basic laws and axioms of Inventory Management. Ability to understand the terminologies associated with the field of Inventory management and control along with their relevance. Ability to identify the appropriate method and techniques of Inventory management for solving different problems. Ability to apply basic Inventory management principles to solve business and industry related problems. Ability to understand the concept of Working Capital Management, Demand Analysis and Obsolescence.			
Credits: 4		Core Compulsory / Elective: Compulsory	
Max. Marks: 25+75		Min. Passing Marks: 36	
Total No. of Lectures: 60			
Unit	Topics		No. of Lectures
I	Inventory Management: Concept, meaning, Inventory Management Process, Why inventory management is important? Principles of Inventory Management, How to improve inventory management, perpetual inventory system, what are inventory costs, Role of Inventory Management, Methods of Inventory Management, Benefits of good Inventory Management.		14
II	Concept and Valuation of Inventory: Concept and Objectives of Inventory, Need for holding Inventory, Planning and controlling Inventory levels, Effects of excess inventory on business, Product Classification, Product Coding, Lead Time, Replenishment Methods.		16
III	Management of Working Capital: Concept, Meaning, Classification, Factors determining Working Capital requirements, Sources of Working Capital, Need of Working Capital, Working Capital Ratio- current ratio, quick ratio, absolute liquid ratio, cash ratio and working capital turnover ratio.		16
IV	Inventory Control: Concept and Meaning of Inventory Control, Objectives and Importance and Essentials of Inventory Control, Types of Inventory, Techniques of Inventory Control – EOQ, ROP, ABC, VED, JIT, Determination of Inventory levels, Impact of Inventory Inaccuracy, Disposal of Obsolete and Scrap items, Reasons for Obsolescence, Control of Obsolescence, Control of Scrap.		14
Suggested Readings: 1. Muller M. (2011), Essentials of Inventory Management, AMACON. 2. Narayan P. (2008), Inventory Management, Excel Books. 3. Gopalkrishnan P. (1977), Materials Management, PHI Learning Pvt. Ltd. 4. Chitale A.K. & Gupta R.C. (2014), Materials Management, PHI Learning Pvt. Ltd. 5. Chapman Stephen (2017), Introduction to Materials Management, Pearson Publishing. Note- Latest edition of the text books should be used.			
Suggested online link: www.ignou.ac.in, www.swayam.gov.in, www.inflibnet.ac.in			
Suggested Continuous Evaluation Methods: In addition to the theoretical inputs the course will be delivered through Assignments, Presentation, Group Discussions. Criteria for continuous evaluation may be Assignment or/and Presentation or/and unit test or/and Attendance etc.			

Programme: B.Com.		Year: First	Semester: Second
Subject: Commerce			
Course Code: BC-201		Course Title: Basic Business Finance	
Course outcomes: This course is to help students understand the conceptual framework of Business Finance.			
Credits: 6		Core Compulsory / Elective: Compulsory	
Max. Marks: 25+75		Min. Passing Marks:36	
Total No. of Lectures :90			
Unit	Topics		No. of Lectures
I	Business Finance: Meaning, Nature and Scope, Finance Function, Investment Function, Financing and Dividend Decisions, Financial Planning		10
II	Capitalization- Meaning, Over capitalization & Under Capitalization, Theories of Capitalization. Capital Structure: Concept and Planning, Theories and Determinants, Capitalization VS Capital Structure		16
III	Cost Of Capital: Meaning, Importance, CalculationOf Cost Of Debt, Preference Shares, Equity Shares and Retained Earnings, Combined (Weighted) Cost of Capital		16
IV	Capital Budgeting: Meaning Nature and Importance of Investment Decisions, Evaluation Criteria.		14
V	Dividend Policies: Issues In Dividend Policies, Dividend Models, Sources Of Funds: Long Term Funds, Short Term Funds, Nature Significance And Determinants Of Working Capital.		16
VI	Time value of Money, Uses of simple and Compound interest in business finance. Capital Market: (A) New Issue Market (B) SecondaryMarket Functions And Role Of Stock Exchange (BSE, NSE,) Money Market: Indian Money Markets- Composition and Structure.		18
Suggested Readings: 1. Avadhani V A Financial System 2. Bhalla VK Modern Working Capital Management 3. Chandra Prasanna Financial Management Theory And Practices 4. Khan NY And Jain PK Financial Management Tax And Problems 5. Pandey I M Financial Management 6. Dr. S.P. Gupta : <b>Basic Business Finance</b> ; Sahitya Bhawan Publications, Agra (Hindi & English).			
Note- Latest edition of the text books should be used.			
Suggested online link: www.ignou.ac.in, www.swayam.gov.in, www.inflibnet.ac.in			
Suggested Continuous Evaluation Methods: In addition to the theoretical inputs the course will be delivered through Assignments, Presentation, Group Discussions. Criteria for continuous evaluation may be Assignment or/and Presentation or/and unit test or/and Attendance etc.			

Programme: B.Com.		Year: First	Semester: Second
Subject: Commerce			
Course Code: BC-202		Course Title: Business Statistics	
Course outcomes: The purpose of this paper is to inculcate and analytical ability among the students.			
Credits: 6		Core Compulsory / Elective: Compulsory	
Max. Marks: 25+75		Min. Passing Marks:36	
Total No. of Lectures: 90			
Unit	Topics		No. of Lectures
I	Indian Statistics: Meaning, About father of Indian Statistics (Prof. Prasanta Chandra Mahalanobis). Introduction to Statistics: Meaning, Scope, Importance and Limitation, Statistical Investigation- Planning and organization,		08
II	Statistical units, Methods of Investigation, Census and Sampling. Collection of Data- Primary and Secondary Data, Editing of Data Classification of data, Frequency Distribution and Statistical Series, Tabulation of Data Diagrammatical and Graphical Presentation of Data.		12
III	Measures of Central Tendency – Mean, Median, Mode, Geometric and Harmonic Mean; Dispersion – Range, Quartile, Percentile, Quartile Deviation,		10
IV	Mean Deviation, Standard Deviation and its Co-efficient, Co-efficient of Variation and Variance, Test of Skewness and Dispersion, Its Importance, Co-efficient of Skewness.		15
V	Correlation- Meaning, application, types and degree of correlation, Methods- Scatter Diagram, Karl Pearson's Coefficient of Correlation, Spearman's Rank Coefficient of Correlation.		25
VI	Index Number: - Meaning, Types and Uses, Methods of constructing Price Index Number, Fixed – Base Method, Chain-Base Method, Base conversion, Base shifting deflating and splicing. Consumer Price Index Number, Fisher's Ideal Index Number, Reversibility		10
VII	Test- Time and Factor; Analysis of Time Series: -Meaning, Importance and Components of a Time Series. Decomposition of Time Series: - Moving Average Method and Method of Least square.		10
Suggested Readings: 1. Heinz, Kohler: Statistics for Business & Economics, HarperCollins; 2. Gupta, S.C. Fundamental of Statistics, Himalaya Publication. 3. Sharma J.K., Business Statistics, Pearson Education. 4. Gupta S.P. & Gupta Archana, Elementary Statistics, (English and Hindi) Sultan Chand & Sons, New Delhi. 5. Dr. S.M. Shukla & Dr. S.P. Sahai: <b>Business Statistics</b> ; Sahitya Bhawan Publications, Agra (Hindi & English).			
Note: Latest edition of the text books should be used.			
Suggested online link: www.ignou.ac.in, www.swayam.gov.in, www.inflibnet.ac.in			
Suggested Continuous Evaluation Methods: In addition to the theoretical inputs the course will be delivered through Assignments, Presentation, Group Discussions. Criteria for continuous evaluation may be Assignment or/and Presentation or/and unit test or/and Attendance etc.			

<b>Programme: B.Com.</b>		<b>Year: First</b>	<b>Semester: Second</b>
<b>Subject: Commerce</b>			
<b>Course Code: BC-203 (A)</b>		<b>Course Title: Entrepreneurship &amp; Small Business</b>	
Course outcomes: After completing this course a student will have: Ability to understand the concept of Entrepreneurship & Small Business Management. Ability to understand the terminologies associated Entrepreneurship & Small Business Ability to identify the appropriate method and techniques of Entrepreneurship & Small Business			
<b>Credits: 6</b>		<b>Core Compulsory / Elective: Elective</b>	
<b>Max. Marks: 25+75</b>		<b>Min. Passing Marks:36</b>	
<b>Total No. of Lectures: 90</b>			
<b>Unit</b>	<b>Topics</b>		<b>No. of Lectures</b>
<b>I</b>	Entrepreneur, Concept, Characteristics, Functions and Types of an Entrepreneur, Entrepreneurship, Concept, Characteristics and Importance of Entrepreneurship, Entrepreneurial Process, Entrepreneurship Development Programme (EDPS), Need, Characteristics, Phases and Evaluation of EDPS		<b>20</b>
<b>II</b>	Entrepreneurship: Entrepreneur, Entrepreneurship, Enterprise, Entrepreneurial personality qualities, Entrepreneurship as a career option, Types of Entrepreneurs. Entrepreneurial Environment, Role of Government and Institutional Support, Development of Women Entrepreneurs, Problems of women entrepreneurs, Institutional support for women entrepreneurs.		<b>24</b>
<b>III</b>	Creativity, Innovation and Entrepreneurship: Creative thinking, Techniques of developing creative thinking. Setting up of New Business Venture: Planning for Establishing Small Scale Enterprises, Opportunity Scanning and Identification, Assessment of Markets, Selection of a business idea, Preparation of Business Plan, Government Rules and Regulations		<b>24</b>
<b>IV</b>	Small Business Management: Management of Small Enterprises; Marketing concepts for Entrepreneurs; Issues in Financial Management, Operations Management and Human Resource Management.		<b>22</b>
<b>Suggested Readings:</b> 1. Management and Entrepreneurship, Veer bhadra Havinal, New Age International Publishers 2. Entrepreneurship: New Venture Creation, David H. Holt 3. Entrepreneurship Development, Satish Taneja, Himalaya Publishing House 4. Entrepreneurship: Strategies and Resources, Marc J. Dollinger, Pearson Education 5. Entrepreneurship Theory and Practice, Raj Shankar, Tata McGraw-Hill Education 6. Entrepreneurship Development, C. B. Gupta, Srinivasan, Sultan Chand & son <b>Note: Latest edition of the text books should be used.</b>			
<b>Suggested online link:</b> www.ignou.ac.in, www.swayam.gov.in, www.inflibnet.ac.in			
<b>Suggested Continuous Evaluation Methods:</b> In addition to the theoretical inputs the course will be delivered through Assignments, Presentation, Group Discussions. Criteria for continuous evaluation may be Assignment or/and Presentation or/and unit test or/and Attendance etc.			

<b>Programme: B.Com.</b>		<b>Year: First</b>	<b>Semester: Second</b>
<b>Subject: Commerce</b>			
<b>Course Code: : BC-203 (B)</b>		<b>Course Title: Economy of Uttarakhand</b>	
Course outcomes: This course is to help students in understanding the Economy of Uttarakhand To identify the Problems of Economic Development in Uttarakhand To analyze the Role of Government in the Economic Development of Uttarakhand			
<b>Credits: 6</b>		<b>Core Compulsory / Elective: Elective</b>	
<b>Max. Marks: 25+75</b>		<b>Min. Passing Marks:36</b>	
<b>Total No. of Lectures: 90</b>			
<b>Unit</b>	<b>Topics</b>		<b>No. of Lectures</b>
<b>I</b>	Economy of Uttarakhand: Salient features- Geographical features, Land types, Land use, Forest resources and Energy resources; Agriculture and Industrial pattern in Uttarakhand; Role of Service Sector in the Economy of Uttarakhand.		<b>18</b>
<b>II</b>	Human resource in Uttarakhand: Demographic profile; Education, Health and other infrastructural facilities; Role of women in the Economy of Uttarakhand; Panchyati Raj and people’s participation		<b>18</b>
<b>III</b>	Economic development and regional disparities in Uttarakhand; Backwardness and Indicators of regional disparities in Uttarakhand.		<b>18</b>
<b>IV</b>	Problems of Economic Development in Uttarakhand; Difficult & inaccessible Geography; Unemployment, Migration, Poverty and Natural Calamities etc. in Uttarakhand.		<b>18</b>
<b>V</b>	Role of Government in the Economic Development of Uttarakhand: Agriculture, Industrial, Education, Health, Infrastructure, Environment Sector & Skill Development		<b>18</b>
<b>Suggested Readings:</b> 1. Bisht N.S: Regional Economics (Hindi) 2. Dewan M.L and Jagdish Bahadur: Uttaranchal vision and Action programme 3. G.P Mishra: Regional Dimensions of development 4. Tolia, R.S: Uttarakhand Today Winsar publication: Uttarakhand year book (Hindi and English) 5. Bhatt, K.N; Uttarakhand: Ecology, Economy & Society; 6. Kafaltia, Himanshu & Kafaltia, Gunjan; A Comprehensive Study of Uttarakhand; Notion Press Media Pvt. Ltd			
<b>Note: Latest edition of the text books should be used.</b>			
<b>Suggested online link:</b> www.ignou.ac.in, www.swayam.gov.in, www.inflibnet.ac.in			
<b>Suggested Continuous Evaluation Methods:</b> In addition to the theoretical inputs the course will be delivered through Assignments, Presentation, Group Discussions. Criteria for continuous evaluation may be Assignment or/and Presentation or/and unit test or/and Attendance etc.			



Programme: B.Com.		Year: First	Semester: Second
Subject: Commerce			
BC-204		Course Title: Rural Marketing	
Course outcomes: After completing this course a student will have: Ability to understand the concept of Rural Marketing. Ability to understand the terminologies associated with the field of Rural Marketing Ability to identify the appropriate method and techniques of Rural Marketing			
Credits: 4		Core Compulsory / Elective: Compulsory	
Max. Marks: 25+75		Min. Passing Marks:36	
Total No. of Lectures: 60			
Unit	Topics		No. of Lectures
I	Conceptual Framework, Nature & Characteristics of Rural Market; An Overview of Indian Rural Market; Challenges & Opportunities in Rural Market; Rural Marketing Models and Environment.		12
II	Rural Consumer Behaviour, Characteristics of Rural Consumer, Consumer Behaviour Roles, Factors influencing Purchase of Products in Rural Market; Role of Government & NGOs in Rural Marketing; Similarities and Differences in Consumer Behaviour in Rural & Urban Markets.		12
III	Rural Marketing Research, Process of Research in Rural Markets, Sources and Methods of Data Collection, Data Collection Approaches in Rural Markets; Principles of Innovation for Rural Market, Need for Innovation in Rural Market,		12
IV	Rural Market Segmentation; Targeting and Positioning, Conditions for Effective Market Segmentation, Approaches for Segmenting the Rural Market, Rural Market Segmentation Tools; Promotion & Distribution Strategies for Rural Markets; A Comparative Analysis of Rural and Urban Markets.		12
V	Marketing of Agricultural Produce and Inputs, Regulated markets, Cooperative Marketing & Processing Societies, Corporate Sector in Agri-Business: Cultivation, Processing & Retailing, Rural Marketing of FMCGs, Durables & Financial Services		12
Suggested Readings: 1. S.S. Acharaya, N.L. Agrawal Agriculture Marketing in India Oxford IBH. New Delhi- 1992 2. L. P. Singh Cooperative marketing in India and Abroad; Himalaya 2005 3. Sukpal Singh Rural Marketing Management; Sage 2002 4. H.C. Purohit Rural Marketing - Challenges and Opportunities; Shale Publications, New Delhi- 2006 5. Anil Saxena, Samiuddin, Harsh Rural Marketing opportunities and challenges; National Publishing House, New Delhi 2004 6. Mishra and Puri Development Issues of Indian Economy; Himalaya Publishing House 7. Acharya S.S. and Agrawal N.L; Agricultural Marketing in India 8. Beri, G.C, ‘Marketing Research: Tata McGraw Hill Publishing Company, Ltd., 2000. Cooper Schindler, ‘Marketing Research, Concept & Cases’			
Note- Latest edition of the text books should be used.			
Suggested online link: www.ignou.ac.in, www.swayam.gov.in, www.inflibnet.ac.in			
Suggested Continuous Evaluation Methods: In addition to the theoretical inputs the course will be delivered through Assignments, Presentation, Group Discussions. Criteria for continuous evaluation may be Assignment or/and Presentation or/and unit test or/and Attendance etc.			

<b>B.Com. Second Year</b>			
<b>Diploma in Commerce (92 Credit)</b>	<b>SEMESTER-I</b>	<b>21+4* credit</b>	<b>46 credits</b>
	<b>SEMESTER-II</b>	<b>21+4* credit</b>	
	<b>SEMESTER-III</b>	<b>21+4* credit</b>	<b>46 credits</b>
	<b>SEMESTER-IV</b>	<b>21+4* credit</b>	

Programme: B.Com.		Year: Second	Semester: Third
Subject: Commerce			
Course Code: BC-301		Course Title: Cost Accounting	
Course outcomes: This course exposes the students to the basic concepts and the tools used in cost accounting.			
Credits: 6		Core Compulsory / Elective: Compulsory	
Max. Marks: 25+75		Min. Passing Marks: 36	
Total No. of Lectures: 90			
Unit	Topics		No. of Lectures
I	Introduction: Nature, Scope and Advantages of Cost Accounting, Installation of Costing System, Difference between Cost and Financial Accounting,		8
II	Classification of Costs. Material: Purchase, Storage and Control of Material, Stock Levels, Inventory, Control Techniques. Methods of Pricing Material Issues.		12
III	Labour: Meaning and Components of Labour Cost. Concept, Accounting and Control of Idle time and Overtime. Methods of Wage Payment and Incentive Plans, Labour Turnover.		10
IV	Overheads: Collection, Classification, Allocation, Apportionment and Absorption of Overheads (Primary and Secondary Distribution), Machine Hour Rate.		10
V	Unit Output Costing: Concept of and Need for Unit Output Costing; Preparation of Cost Sheet and Tender Price; Preparation of Reconciliation Statement.		22
VI	Process Costing: Preparation of Process Accounts; Treatment of Normal and Abnormal Wastage; Treatment of Joint Product and By-product;		14
VII	Contract Costing: Preparation of Contract Account, Determination of Profit on Completed and Uncompleted Contracts; Operating Costing.		14
Suggested Readings: 1. Jain S.P. and Narang K.L: Cost Accounting; Kalyani New Delhi. 2. Maheshwari S.N: Advanced Problems and Solutions in Cost Accounting; SultanChand, New Delhi. (Hindi and English) 3. Garg A. K.; Cost Accounting: An Analytical Study, Swati Publication, Meerut. 4. Horngren, Charles, Foster and Datar: Cost Accounting - A Managerial Emphasis; Prentice-Hall of India, New Delhi. 5. M.L. Agarwal, Sahitya bhawan publications Agra (Hindi & English) Note- Latest edition of the text books should be used.			
Suggested online link: www.ignou.ac.in, www.swayam.gov.in, www.inflibnet.ac.in			
Suggested Continuous Evaluation Methods: In addition to the theoretical inputs the course will be delivered through Assignments, Presentation, Group Discussions. Criteria for continuous evaluation may be Assignment or/and Presentation or/and unit test or/and Attendance etc.			

Programme: B.Com.		Year: Second	Semester: Third
Subject: Commerce			
Course Code: BC-302		Course Title: Company Law	
Course outcomes: The objective of this course is to provide basic knowledge of the provisions of the Companies Act 2013 along with relevant cases.			
Credits: 6		Core Compulsory / Elective: Compulsory	
Max. Marks: 25+75		Min. Passing Marks:36	
Total No. of Lectures: 90			
Unit	Topics		No. of Lectures
I	Indian Companies Act 2513: Nature And Types Of Companies, Conversion Of Public Companies Into Private Company's And Vice Versa.		10
II	Formation,Promotion And Incorporation Of Companies, Memorandum Of Association; Article Of Association; Prospectus.		12
III	Shares: Types, Share Capital-Kinds; Allotment Of Shares; Members – Categories, Modes Of Acquiring Membership, Rights And Liabilities; Transfer And Transmission- Difference,		13
IV	Methods Of Borrowing, Debentures, Mortgages And Charges - Fixed And Floating.		09
V	Management: Directors, Types And Number Of Directors, Managing Director, Whole Time Director – Appointment, Qualifications And Disqualification, Duties, Vacation, Resignation And Removal,		15
VI	Company Meetings- Kinds, Quorum, Voting, Resolution, Minutes.		10
VII	Majority Powers And Minority Rights: Protection Of Minority Rights; Prevention Of Oppression And Management. Mismanagement.		12
VIII	WindingUp-Kinds And Conduct-Petition For Winding Up, Appointment Of Official Liquidator And Duties.		09
Suggested Readings: 1. Kapoor GK A Dhamija Sanjay Company Law Comprehensive Textbook on Companies Act 2013 Taxmann Publication 2. Singh Avtar Company Law Delhi India Eastern Book Company Bharat LawHouse 3. Gupta Company Adhiniyam Sahitya Bhawan Publication (Hindi andEnglish) 4. Maheshwari SN And SK Maheshwari A Manual of Business Law 2 <sup>nd</sup> Edition Himalaya Publishing House 5. Dr. S.M. Shukla & K. Jain : <b>Company Law</b> ; Sahitya Bhawan Publications, Agra (English). 6. Dr. S.M. Shukla & Dr. I.M. Sahai : कंपनी अधिनियम Sahitya Bhawan Publications, Agra.			
Note- Latest edition of the text books should be used.			
Suggested online link: www.ignou.ac.in, www.swayam.gov.in, www.inflibnet.ac.in			
Suggested Continuous Evaluation Methods: In addition to the theoretical inputs the course will be delivered through Assignments, Presentation, Group Discussions. Criteria for continuous evaluation may be Assignment or/and Presentation or/and unit test or/and Attendance etc.			

Programme: B.Com.		Year: Second	Semester: Third
Subject: Commerce			
Course Code: BC-303 (A)		Course Title: Business Economics	
Course outcomes: The objective of this paper is to introduce students with broad range of economic concepts, theories and analytical techniques which help the management in decision making.			
Credits: 06		Core Compulsory / Elective: Elective	
Max. Marks: 25+75		Min. Passing Marks: 36	
Total No. of Lectures: 90			
Unit	Topics		No. of Lectures
I	Introduction: Definition and nature of economics, Scope and methodology of economics, Micro and macro economics		10
II	Consumption: Measurements of Utility, Law of Diminishing Marginal Utility, Law of Equi-marginal Utility.		10
III	Law of Demand: Demand Schedules and Curves, Elasticity of Demand, methods of measurement of elasticity of demand, measurement of cross elasticity, Law of Supply, Measurement of Elasticity of Supply		15
IV	Consumer's surplus, Study of Consumer Behaviour through indifference curve technique.		10
V	Production: The Factors of Production and their characteristics, Factors affecting productivity of labour and capital, Theories of Population. Law of variable proportion, The laws of return, economy of scale, law of return to scale, different concepts of cost of production. SAC curve, LAC curve.		18
VI	Exchange: The theory of exchange, Definition and extent of market, Determination of price under conditions of perfect competition, imperfect competition and monopoly. Effect of monopoly in economic life, monopolistic competition, oligopoly		17
VII	Concept and theories of profit and wages		10
<b>Suggested Readings:</b> 1. D.N. Dwivedi, Managerial Economics, 7th Edition, Vikas Publishing House. 2. D. Salvatore, Managerial Economics in a Global Economy, 6th Edition, Oxford University Press. 3. L. Peterson and Jain Managerial Eco., 4th Edition, Pearson Education. 4. Kontsoyianis, Modern Micro-Economics. 5. M. Adhikary, Business Economics. 6. Dr. J.P. Mishra: <i>Business Economics</i> ; Sahitya Bhawan Publications, Agra (Hindi & English).			
Note- <b>Latest edition of the text books should be used.</b>			
<b>Suggested online link:</b> www.ignou.ac.in, www.swayam.gov.in, www.inflibnet.ac.in			
<b>Suggested Continuous Evaluation Methods:</b> In addition to the theoretical inputs the course will be delivered through Assignments, Presentation, Group Discussions. Criteria for continuous evaluation may be Assignment or/and Presentation or/and unit test or/and Attendance etc.			

Programme: B.Com.		Year: Second	Semester: Third
Subject: Commerce			
Course Code: BC-303 (B)		Course Title: Business Environment	
Course outcomes: The objective of this paper is to introduce students with broad range of economic concepts, theories and analytical techniques which help the management in decision making.			
Credits: 06		Core Compulsory / Elective: Elective	
Max. Marks: 25+75		Min. Passing Marks: 36	
Total No. of Lectures: 90			
Unit	Topics		No. of Lectures
I	Business Environment: Meaning, Nature and Dimensions of Business Environment, Analysis of Business Environment- Framework of Analysis, Scanning, Monitoring, Forecasting & Assessment of Business Environment.		14
II	Economic Environment with Reference to India's Economy: Growth Strategy, Economic Planning, Analysis of Economic Environment- Scanning, Monitoring, Forecasting and Assessing Economic Environment; Economic Markets, Economic Reforms & their Consequences.		18
III	Technological Environment: Nature of Technology, Interface Between Technology and Business, Management of Technology Transfers; Analysis, Forecasting and Assessment of Technological Environment.		18
IV	Global Environment: Why Firms go Global, Routes of Globalization, Active Players in Global Business. FDI- India's Experience, WTO– Benefits and Problems for India. Analysis of Global Environment- Scanning, Monitoring, Forecasting and Assessing Global Environment.		22
V	Political and Legal Environment of Business: Monopoly and Restrictive Trade Practices (MRTP) Act, Foreign Exchange Management Act (FEMA).		18
<b>Suggested Readings:</b> 1. Sinha, V.C. and Sinha Ritika, Business Environment, Sahitya Bhawan Agra 2. Cherunilam, Francis, Business Environment, Himalaya Publishing House, New Delhi 3. Aswathappa, K.Essentials of Business Environment, Himalaya Publishing House, New Delhi 4. Aswathappa, K.Business Environment for Strategic Management, HPH. 5. Dr. Amit Kumar : <i>Business Environment</i> ; Sahitya Bhawan Publications, Agra. 6. सिन्हा,वी.सी. एवं सिंह, पुष्पा,व्यावसायिक पर्यावरण, साहित्य भवन आगरा। 7. जे पी मिश्रा, व्यावसायिक पर्यावरण, साहित्य भवन आगरा।			
Note- Latest edition of the text books should be used.			
Suggested online link: www.ignou.ac.in, www.swayam.gov.in, www.inflibnet.ac.in			
<b>Suggested Continuous Evaluation Methods:</b> In addition to the theoretical inputs the course will be delivered through Assignments, Presentation, Group Discussions. Criteria for continuous evaluation may be Assignment or/and Presentation or/and unit test or/and Attendance etc.			



Programme: B.Com.		Year: Second	Semester: Third
Subject: Commerce			
Course Code: BC-304		Course Title: E-Banking	
Course outcomes: The Objective of this paper is to acquaint the students with the understanding of E-banking system with the risks, evaluation and concepts of E-payment involved therein.			
Credits: 4		Core Compulsory / Elective: Compulsory	
Max. Marks: 25+75		Min. Passing Marks:36	
Total No. of Lectures: 60			
Unit	Topics		No. of Lectures
I	Introduction: Concept and definition of E- Banking, nature and scope of E- Banking, E-Banking components, E-Banking: Indian perspectives, traditional banking internet banking portals, challenges in E-Banking, Online banking and its benefits.		10
II	E-Banking System: Mobile Banking Internet Banking, Secure, Hypertext, Transfer Protocol (SHTTP). Online delivery of financial products: Secure electronic Transaction (SET); Indian Payment Models.		15
III	E-Banking Risks: Infrastructure problem; Lack of Skilled Manpower; Legal Framework, Socio Cultural Aspects; Money Laundering; Banking Frauds.		15
IV	Electronic Payment System: RTGS, Electronic Fund Transfer, Electronic Money; ATM; Credit Card; Smart Cards. Electronic Payment Systems: E-Banking and digital signatures.		10
V	Evaluation of E-Banking System: Advantages of E-Banking system, Limitations of E-Banking, Pre-requisites of E-Banking Future of E-Banking		10
Suggested Reading:			
1. Agrawal Kamlesh, N.: Internet Banking, Mac-Millan India Ltd. New Delhi. 2. Armor, Daniel.: E-Business Evolution, The Living and Working in an Interconnected World; Prentice Hall, US. 3. E-Banking : Indian Banking Association, India. 4. Kenneth C. Laudon and Carlo Guercio Traver, E-Commerce, Pearson Education. 5. Bhaskar Bharat, Electronic Commerce: Framework, Technology and Application, McGraw Hill Education 6. Joseph PT, E-Commerce: An Indian Perspective, PHI Learning 7. Bajaj KK and Debjani Nag, E-commerce, McGraw Hill Education 8. Chhabra TN, E-Commerce, Dhanpat Rai & Co. 9. Madan Sushila, E-Commerce, Taxmann 10. Chhabra TN, Hem Chand Jain, and Aruna Jain, An Introduction to HTML, Dhanpat Rai & Co.			
Note- Latest edition of the text books should be used.			
Suggested online link: www.ignou.ac.in, www.swayam.gov.in, www.inflibnet.ac.in			
Suggested Continuous Evaluation Methods: In addition to the theoretical inputs the course will be delivered through Assignments, Presentation, Group Discussions. Criteria for continuous evaluation may be Assignment or/and Presentation or/and unit test or/and Attendance etc.			

Programme: B.Com.		Year: Second	Semester: Fourth
Subject: Commerce			
Course Code: BC-401		Course Title: Income Tax Law and Accounts	
Course outcomes: It enables the students to know the basics of Income Tax Act and its implications.			
Credits: 6		Core Compulsory / Elective: Compulsory	
Max. Marks: 25+75		Min. Passing Marks: 36	
Total No. of Lectures: 90			
Unit	Topics		No. of Lectures
I	Taxation Policy of Raja Todarmal. Introduction, Important Definitions: Assessee, Person, Income, Total Income, Assessment Year & Previous Year. Agricultural Income & its assessment.		10
II	Residence & Tax Liability (Basis of Charge). Capital & Revenue. Exempted Incomes.		10
III	Income from Salaries		15
IV	Income from House Property.		10
V	Profits and Gains of Business and Profession, Depreciation.		15
VI	Capital gains, Income from Other Sources,		12
VII	Set off and carry forward of losses and Clubbing of Income Deductions from Gross Total Income, Computation of Tax Liability of an Individual.		12
VIII	Procedure of Assessment and Income Tax Authorities, Advance Payment of Tax and Deduction of Tax at Source.		6
<b>Suggested Readings:</b> 1. Singhanai V.K: Students' Guide to Income Tax; Taxmann, Delhi. 2. Girish Ahuja and Ravi Gupta: Systematic approach to income tax; Sahitya Bhawan Publications, New Delhi. (Hindi and English) 3. H C Mehrotra; C S Joshi, Income Tax Law and Accounts (Hindi/English), Sahitya Bhawan publications Agra 4. Jain, R.K., Income Tax Law and Accounts (Hindi and English), SBPD Publications, Agra Note- Latest edition of the text books should be used.			
<b>Suggested online link:</b> www.ignou.ac.in, www.swayam.gov.in, www.inflibnet.ac.in			
<b>Suggested Continuous Evaluation Methods:</b> In addition to the theoretical inputs the course will be delivered through Assignments, Presentation, Group Discussions. Criteria for continuous evaluation may be Assignment or/and Presentation or/and unit test or/and Attendance etc.			

Programme: B.Com.		Year: Second	Semester: Fourth
Subject: Commerce			
Course Code: BC-402		Course Title: Public Finance	
Course outcomes: It enables the students to know the basics of Public Finance and its implications.			
Credits: 6		Core Compulsory / Elective: Compulsory	
Max. Marks: 25+75		Min. Passing Marks: 36	
Total No. of Lectures: 90			
Unit	Topics		No. of Lectures
I	Introduction: Definition, Nature and Scope, Importance and Role of Public Finance in National Economy, Principle of Maximum Social Advantage		16
II	Public Revenue; Meaning of tax, Canons of taxation, types of taxation (Direct and Indirect), incidence of taxation.		18
III	Public Debt: Meaning, types, effect of debt on production and distribution and public debts in India.		18
IV	Public Expenditure: Meaning, aims, classification, principles of public expenditure, economic stability, effects of public expenditure, The Public Budget.		20
V	Fiscal Policy: Meaning, objectives, tools and limitations of fiscal policy, Finance Commission in India, Indian Tax Systems. Federal Finance in India; Central Finance, State finance, local finance, Deficit financing in India.		18
Suggested Readings:			
1. Mithani, D.M., Money Banking. International Trade & Public Finance Himalaya Publishing House, Pvt. Led. New Delhi			
2. Bhatia, H.L. Public Finance, Vikash Publishing House, Pvt. Ltd., New Delhi			
3. दत्त एवं सुन्दम्, भारतीय अर्थव्यवस्था, एस0 चॉद एंड कम्पनी, प्रा0 लि0, दिल्ली			
4. Dr. J.P. Mishra: <b>Public Finance</b> ; Sahitya Bhawan Publications, Agra (English).			
5. Dr. K.L. Gupta : राजस्व; Sahitya Bhawan Publications, Agra.			
Note- Latest edition of the text books should be used.			
Suggested online link: www.ignou.ac.in, www.swayam.gov.in, www.inflibnet.ac.in			
Suggested Continuous Evaluation Methods: In addition to the theoretical inputs the course will be delivered through Assignments, Presentation, Group Discussions. Criteria for continuous evaluation may be Assignment or/and Presentation or/and unit test or/and Attendance etc.			

Programme: B.Com.		Year: Second	Semester: Fourth
Subject: Commerce			
Course Code: BC-403 (A)		Course Title: Tourism and Travel Management	
Course outcomes: The objective of this course is to understand the fundamentalconcept of Tourism and to familiarize with the significance and emerging trends in tourism.			
Credits: 6		Core Compulsory / Elective: Elective	
Max. Marks: 25+75		Min. Passing Marks:36	
Total No. of Lectures: 90			
Unit	Topics		No. of Lectures
I	Introduction to Travel: Meaning and definitions of tourism, traveler, excursionist, tourists- objectives, nature and classification of tourism and tourists, Growth and Development of Tourism, Forms of Tourism: Inbound Outbound, Domestic and International.		15
II	The Modern Tour Industry: Package Tours- CustomTours- Tour wholesalers- Types of Package tours: Independent Package, Hosted Tour, Escorted Tour, Sightseeing Tour Group, Incentive and ConventionTour- Man Market Package Holidays- Types of Tour Operations: Specialist Tour Operators: Specialist Tour Operators, Tour Operators reliance on other organization.		25
III	Tour Operations and Documentation: Functions-Sources of Income, How to set up a Travel Agency: Procedures for approval of a Travel Agency and Tour Operator, Travel Documentation: Passports- various types and requirements- Procedure to apply for Passports: VISA- various types and requirements- Documents required for Foreigners to visit India, Health Check Documents and Process for Encashment of Foreign Currency.		30
IV	Impact of Tourism and Tourism Organizations: Tourism Impacts: Economic impact, Social Impact, Cultural Impact and Environmental Impact- Strategies to overcome or reduce the negative Impact of Tourism. Objectives, Functions of- United Nations World Tourism Organization (UNWTO), World Travel and Tourism Council (WTC), Pacific Asia Travel Association (PATA), International Air Transport Association (IATA), Travel Agents Association of India(TAAI), Indian Association of Tour Operators (IATO) and Federation of Hotel and Restaurant Associations of India (FHRAI).		20
Suggested Readings: 1. Bhatia A.K (2003) International Tourism, Sterling Publishers Pvt Ltd, New Delhi. 2. Pran Nath Seth(1997),Successful Tourism Management, Sterling Publishers Pvt Ltd,New Delhi, 3. Ghosh Bishwanth (2000), Tourism & Travel Management, Second Revised EditionVikas Publishing House Pvt Ltd, New Delhi.			
Note- Latest edition of the text books should be used.			
Suggested online link: www.ignou.ac.in, www.swayam.gov.in, www.inflibnet.ac.in			
Suggested Continuous Evaluation Methods: In addition to the theoretical inputs the course will be delivered through Assignments, Presentation, Group Discussions. Criteria for continuous evaluation may be Assignment or/and Presentation or/and unit test or/and Attendance etc.			

Programme: B.Com.		Year: Second	Semester: Fourth
Subject: Commerce			
Course Code: BC-403 (B)		Course Title: Fundamentals of Marketing	
Course outcomes: The objective of this course is to provide basic knowledge of concepts, principles, tools and techniques of marketing.			
Credits: 6		Core Compulsory / Elective: Elective	
Max. Marks: 25+75		Min. Passing Marks:36	
Total No. of Lectures: 90			
Unit	Topics		No. of Lectures
I	Introduction: Nature, scope and importance of marketing; Evolution of marketing concepts; Marketing mix; Marketing environment. Micro and Macro environmental factors.		10
II	Consumer Behaviour– An Overview: Consumer buying process; Factors influencing consumer buying decisions.		10
III	Market Selection: Market segmentation – concept, importance and bases; Target market selection; Positioning concept, importance and bases; Product differentiation vs. market segmentation.		12
IV	Product: Meaning and importance. Product classifications; Concept of product mix; Branding, packaging and labelling; After-sales services; Product life-cycle; New Product Development.		8
V	Pricing: Significance; Factors affecting price of a product; Major pricing methods; Pricing policies and strategies.		7
VI	Promotion: Nature and importance of promotion; Promotion Tools: advertising, personal selling, public relations; sales promotion and publicity – concept and their distinctive characteristics; Promotion mix; Factors affecting promotion mix decisions; and Integrated Marketing Communication Approach.		13
VII	Distribution: Channels of distribution - meaning and importance; Types of distribution channels; Wholesaling and retailing; Factors affecting choice of distribution channel; Distribution Logistics; Meaning, importance and decisions.		10
VIII	Retailing: Types of retailing – store based and non- store based retailing, chain stores, specialty stores, supermarkets, retail vending machines, mail order houses, retail cooperatives; Management of retailing operations: an overview; Retailing in India: changing scenario.		10
IX	Recent developments in marketing: Social Marketing, Online Marketing, Direct Marketing, Services Marketing, Green Marketing, Relationship Marketing, Rural marketing.		10
<b>Suggested Readings:</b> 1. Kotler, Philip; Keller, Kevin Lane; Koshy, Abraham, and Mithileshwar Jha,Marketing Management: A South Asian Perspective, Pearson Education. 2. Palmer, Adrian, Introduction to Marketing, Oxford University Press, UK 3. Lamb, Charles W.; Hair, Joseph F., and Carl McDaniel, Principles of Marketing,South Western Publishing, Ohio 4. Chhabra, T.N., Principles of Marketing, Sun India Publication. 5. Pride, William M., and D.C. Ferell, Marketing: Planning, Implementation &Control, Cengage Learning. 6. Majaro, Simon, The Essence of Marketing, Prentice Hall, New Delhi. 7. Zikmund, William G. and Michael D’Amico, Marketing: Creating and KeepingCustomers in an E-Commerce World, Thomson Learning. 8. Dr. Amit Kumar : <b>Fundamental of Marketing</b> ; Sahitya Bhawan Publications, Agra (English). 9. Dr. S.C. Jain : <b>Principles of Marketing</b> ; Sahitya Bhawan Publications, Agra (Hindi). Note- Latest edition of the text books should be used. <b>Suggested online link:</b> www.ignou.ac.in, www.swayam.gov.in, www.inflibnet.ac.in			
<b>Suggested Continuous Evaluation Methods:</b> In addition to the theoretical inputs the course will be delivered through Assignments, Presentation, Group Discussions. Criteria for continuous evaluation may be Assignment or/and Presentation or/and unit test or/and Attendance etc.			

Programme: B.Com.		Year: Second	Semester: Fourth
Subject: Commerce			
Course Code: BC-404		Course Title: Indian Economy	
Course outcomes: Objective of this paper is to enable the student to grasp the major economic problems in India and their solutions. It also seeks to provide an understanding of modern tools of macro-economic analysis and policy framework.			
Credits: 4		Core Compulsory / Elective: Compulsory	
Max. Marks: 25+75		Min. Passing Marks: 36	
Total No. of Lectures:60			
Unit	Topics		No. of Lectures
I	Basic Issues and features of Indian Economy Concept and Measures of Development and Underdevelopment; Human Development; Composition of national income and occupational structure		11
II	Policy Regimes a) The evolution of planning and import substituting industrialization. b) Economic Reforms since 1991. c) Monetary and Fiscal policies with their implications on economy		10
III	Growth, Development and Structural Change a) The experience of Growth, Development and Structural Change in different phases of growth and policy regimes across sectors and regions. b) The Institutional Framework: Patterns of assets ownership in agriculture and industry; Policies for restructuring agrarian relations and for regulating concentration of economic power; c) Changes in policy perspectives on the role of institutional framework after 1991. d) Growth and Distribution; Unemployment and Poverty; Human Development; Environmental concerns. e) Demographic Constraints: Interaction between population change and economic development.		13
IV	Sectoral Trends and Issues Agriculture Sector: Agrarian growth and performance in different phases of policy regimes i.e. pre green revolution and the two phases of green revolution; Factors influencing productivity and growth; the role of technology and institutions; price policy, the public distribution system and food security. Industry and Services Sector: Phases of Industrialization – the rate and pattern of industrial growth across alternative policy regimes; Public sector – its role, performance and reforms; the small scale sector; Role of Foreign capital. Financial Sector: Structure, Performance and Reforms. Foreign Trade and balance of Payments: Structural Changes and Performance of India’s Foreign Trade and Balance of Payments; Trade Policy Debate; Export policies and performance; Macro Economic Stabilization and Structural Adjustment; India and the WTO, Role of FDI, Capital account convertibility		13
V	Inflation, Unemployment and Labour market Inflation: Causes of rising and falling inflation, inflation and interest rates, social costs of inflation; Unemployment – natural rate of unemployment, frictional and wait unemployment. Labour market and its interaction with production system; Phillips curve, the trade-off between inflation and unemployment, sacrifice ratio, role of expectations adaptive and rational.		13
Suggested Readings: 1. Mishra and Puri, Indian Economy, Himalaya Publishing House. 2. IC Dhingra, Indian Economy, Sultan Chand & Sons. 3. Gaurav Dutt and KPM Sundarum, Indian Economy, S. Chand & Company. 4. Uma Kapila (ed), “Indian Economy since Independence”, Relevant articles. 5. Bhagwati, J. and Desai, P. India: Planning for industrialization, OUP, Ch 2. 6. Dr. Mamoria & Jain : Indian Economy; Sahitya Bhawan Publications, Agra (Hindi). 7. Dr. Anoop Kumar Singh & Priya Dwivedi : Indian Economy; Sahitya Bhawan Publications, Agra (English).			
Note: Latest edition of the text books should be used.			
Suggested online link: www.ignou.ac.in, www.swayam.gov.in, www.inflibnet.ac.in			
Suggested Continuous Evaluation Methods: In addition to the theoretical inputs the course will be delivered through Assignments, Presentation, Group Discussions. Criteria for continuous evaluation may be Assignment or/and Presentation or/and unit test or/and Attendance etc.			

## B.Com. Third Year

<b>Bachelor's Degree in Commerce (140 Credit)</b>	SEMESTER-I	21+4* credits	46
	SEMESTER-II	21+4* credits	
	SEMESTER-III	21+4* credits	46
	SEMESTER-IV	21+4* credits	
	SEMESTER-V	24 credits	48
	SEMESTER-VI	24 credits	



Programme: B.Com.		Year: Third	Semester: Fifth
Subject: Commerce			
Course Code: BC-501		Course Title: Corporate Accounting	
Course outcomes: This course enables the student to develop awareness about corporate accounting in conformity with the provisions of company act.			
Credits: 5		Core Compulsory / Elective: Compulsory	
Max. Marks: 25+75		Min. Passing Marks:36	
Total No. of Lectures:75			
Unit	Topics		No. of Lectures
I	Shares: Features, Types of Shares, Difference Between Preference Shares And Equity Shares, Share Capital And Its Types. Issues, Forfeiture And Re Issue Of Shares, Redemption Of Preference Shares. Debentures: Features & Types, Issue And Redemption of Debentures		15
II	Final Accounts, General Instruction For Preparation Of Balance Sheet And Statement Of Profit And Loss.		15
III	Valuation Of Goodwill: Meaning And Nature Of Goodwill, Needs and Methods Of Valuation Of Goodwill,		15
IV	Valuation Of Shares, Need And Methods Of Valuation Of Shares, Profit Prior To Incorporation, Use Of Profit And Loss Prior To Incorporation, Methods Of Computing Profit And Loss Prior To Incorporation.		15
V	Accounting For Amalgamation Of Companies As Per Indian Accounting Standard 14. Meaning, Characteristics And Objectives Of Amalgamation, Kinds Of Amalgamation, Accounting For Internal Reconstruction Internal And External		15
<b>Suggested Readings:</b> 1. Gupta RL Radhaswami M, Company Accounts Sultan Chand and company (Hindi and English) 2. Maheshwari SN And Maheshwari SK Corporate Accounting Vikas Publishing (Hindi/English) 3. Shukla SM And Gupta SP Corporate Accounting, Sahitya Bhawan Publication agra, (Hindi and English) 4. Jaiswal K S Corporate Accounting Both English And Hindi Shukla MC Grewal 5. PS And Gupta SC Advanced Accounts S Chand And Company			
<b>Note- Latest edition of the text books should be used.</b>			
<b>Suggested online link:</b> www.ignou.ac.in, www.swayam.gov.in, www.inflibnet.ac.in			
<b>Suggested Continuous Evaluation Methods:</b> In addition to the theoretical inputs the course will be delivered through Assignments, Presentation, Group Discussions. Criteria for continuous evaluation may be Assignment or/and Presentation or/and unit test or/and Attendance etc.			

Programme: B.Com.		Year: Third	Semester: Fifth
Subject: Commerce			
Course Code: BC-502		Course Title: Auditing	
Course outcomes: This course aims at imparting knowledge about the principles and methods of auditing and their application.			
Credits: 5		Core Compulsory / Elective: Compulsory	
Max. Marks: 25+75		Min. Passing Marks:36	
Total No. of Lectures: 75			
Unit	Topics		No. of Lectures
I	Methodology of Accounting, Auditing and Fraud risk management in <b>Kautilya's Arthshastra</b> . <b>Audit and Audit Process:</b> Meaning, Nature, Objectives and Various Classes of Auditing, Standard of Auditing, Pronouncements on accepted Auditing practices, Internal Control and the need for its evaluation by the Auditor.		17
II	<b>Audit Procedures:</b> Verification programme-selective verification, Audit in depth, test checking, Auditor's Approach to statistical sampling, Routine checking, vouchers, verification and valuation of assets and liabilities, Auditor's Report on Profit and Loss Account and Balance Sheet.		18
III	<b>Audit of Limited Companies:</b> Qualifications and Appointment of Company Auditors, their powers, duties and liabilities as per Company Act 1956, Enquiries under Section 227 (IA), Audit of share capital, share transfer and managerial remuneration, Additional matters in the Auditor's Report (Manufacturing and other companies), Auditor's Report Order 1988.		20
IV	<b>Audit of Public Sector Undertaking and Banks:</b> Special features concerning Audit of departmental undertakings, Statutory Corporations and Government Companies, Procedure of appointment of Auditors, Special features relating to the audit of Banks, Audit of Insurance Companies and audit of non-profit companies. <b>Cost Audit:</b> Importance of cost audit, Provisions regarding cost audit, Cost Audit report, Tax and Social Audit. <b>Internal Audit:</b> Objective and scope of Internal Audit, Responsibilities and Authority of Internal Auditors, Relationship between internal auditor and statutory auditor.		20
<b>Suggested Readings:</b> 1. Gupta Kamal : Contemporary Auditing, TATA Mc Graw, New Delhi. 2. Tandon, B.N. : Principles of Auditing, S. Chand & Company, New Delhi. 3. Pargare Dinkar : Principles and practices of Auditing, Sultan Chand, New Delhi. 4. Sharma, T.R. : Auditing Principles and Problems, Sahitya Bhawan, Agra. (Hindi and English) 5. Yadav, Pankaj, Auditing, Neel Kamal Prakashan, Delhi (Hindi and English)			
Note- Latest edition of the text books should be used.			
Suggested online link: www.ignou.ac.in, www.swayam.gov.in, www.inflibnet.ac.in			
Suggested Continuous Evaluation Methods: In addition to the theoretical inputs the course will be delivered through Assignments, Presentation, Group Discussions. Criteria for continuous evaluation may be Assignment or/and Presentation or/and unit test or/and Attendance etc.			

<b>Programme: B. Com</b>		<b>Year: Third</b>	<b>Semester: Fifth</b>
<b>Subject: Commerce</b>			
<b>Course Code: BC-503</b>		<b>Course Title: Business Ethics and Corporate Governance</b>	
Course outcomes: This course seeks to provide knowledge about the concepts, tools, techniques, and relevance of Business Ethics and Corporate Governance in the present changing scenario.			
<b>Credits: 5</b>		<b>Core Compulsory / Elective: Elective</b>	
<b>Max. Marks: 25+75</b>		<b>Min. Passing Marks:36</b>	
<b>Total No. of Lectures: 75</b>			
<b>Unit</b>	<b>Topics</b>		<b>No. of Lectures</b>
<b>I</b>	Values – Importance, Sources of Value Systems, Types, Values, Loyalty and Ethical Behaviour, Values across Cultures; Business Ethics – Nature, Characteristics and Needs, Ethical Practices in Management.		<b>17</b>
<b>II</b>	The Ethical Value System – Universalism, Utilitarianism, Distributive Justice, Social Contracts, Individual Freedom of Choice, Professional Codes; Culture and Ethics – Ethical Values in different Cultures, Culture and Individual Ethics.		<b>26</b>
<b>III</b>	Law and Ethics – Relationship between Law and Ethics, Other Bodies in enforcing Ethical Business Behaviour, Impact of Laws on Business Ethics; Social Responsibilities of Business – Environmental Protection, Fair Trade Practices, Fulfilling all National obligations under various Laws, Safeguarding Health and well- being of Customers.		<b>16</b>
<b>IV</b>	Corporate Governance: Issues, need, corporate governance code, transparency & disclosure, role of auditors, board of directors and shareholders; Global issues of governance, accounting and regulatory framework, corporate scams, committees in India and abroad, corporate social responsibility.		<b>16</b>
<b>Suggested Readings:</b> 1. Kitson Alan- Ethical Organisation, Palgrave 2. L. T. Hosmer : The Ethics of Management, Universal Book. 3. D. Murray : Ethics in Organizational, Kogan Page. 4. S. K. Chakraborty : Values and Ethics in Organisation, OUP			
<b>Note- Latest edition of the text books should be used.</b>			
<b>Suggested online link:</b> www.ignou.ac.in, www.swayam.gov.in, www.inflibnet.ac.in			
<b>Suggested Continuous Evaluation Methods:</b> In addition to the theoretical inputs the course will be delivered through Assignments, Presentation, Group Discussions. Criteria for continuous evaluation may be Assignment or/and Presentation or/and unit test or/and Attendance etc.			

<b>Programme:</b> B.Com.	<b>Year:</b> Third	<b>Semester:</b> Fifth
<b>Subject:</b> Commerce		
<b>Course Code:</b> BC-504	<b>Course Title:</b> Principles and Practices of Insurance	
Course outcomes: After completing this course, a student will have: Ability to understand the concept of Insurance along with the basic laws and practices of Insurance. Ability to understand the terminologies associated with the field of Insurance and control along with their relevance. Ability to identify the appropriate method and types of Insurance for solving different problems. Ability to apply basic Insurance principles to solve business and industry related problems. Ability to understand the concept of Life, Marine and Fire Insurance.		
<b>Credits:</b> 5	<b>Core Compulsory / Elective:</b> Elective	
<b>Max. Marks:</b> 25+75	<b>Min. Passing Marks :</b> 36	
<b>Total No. of Lectures:</b> 75		
<b>Unit</b>	<b>Topics</b>	<b>No. of Lectures</b>
<b>I</b>	Risk: Meaning, Types, Causes, Methods of Handling Risks. Insurance: Meaning, Origin & Development, Functions, Types, Principles, Advantages, Reinsurance, Double-Insurance.	<b>17</b>
<b>II</b>	Life Insurance: Meaning, Importance, Essentials of Life Insurance Contract, Procedure of Life Insurance. Life Insurance Policies, Nomination & Assignment, Surrender Value. Life Insurance Corporation: Functions & Organization.	<b>20</b>
<b>III</b>	Marine Insurance: Meaning, Significance, Scope and Insurable Risk, Characteristics of Marine Insurance, Contract, Types of Marine Policies, Main Clauses in Marine Policies and Marine Losses.	<b>18</b>
<b>IV</b>	Fire Insurance: Meaning, Hazards in Fire Insurance, Scope, importance, Fire Insurance Contract, Conditions of Fire Insurance Policy & Procedure. Miscellaneous Insurance: Motor Insurance, Burglary, Live-stock, Crop and Health Insurance	<b>20</b>
<b>Suggested Readings:</b> 1-Mishra M.N., Insurance- Principles & Practice. 2- Gupta O.S., Life Insurance. 3- Vinayakam, M. Radhaswami & Vasudevam, Insurance- Principles & Practice. 4- Kothari & Bhall, Principles & Practice of Insurance. 5- Balchand Srivastava : <b>Insurance</b> ; Sahitya Bhawan Publications, Agra (Hindi). 6- M. Eswari Karthikeyan : <b>Fundamental Principles of Insurance</b> ; Sahitya Bhawan Publications, Agra (English). Note- <b>Latest edition of the text books should be used.</b>		
<b>Suggested online link:</b> www.ignou.ac.in, www.swayam.gov.in, www.inflibnet.ac.in		
<b>Suggested Continuous Evaluation Methods:</b> In addition to the theoretical inputs the course will be delivered through Assignments, Presentation, Group Discussions. Criteria for continuous evaluation may be Assignment or/and Presentation or/and unit test or/and Attendance etc.		

Programme: B.Com.		Year: Third	Semester: Fifth
Subject: Commerce			
Course Code: BC-505		Course Title: Monetary Theory and Banking in India	
Course outcomes: The Objective of this paper is to expose the students to the working for money and financial system prevailing in India.			
Credits: 5		Core Compulsory / Elective: Elective	
Max. Marks: 25+75		Min. Passing Marks:36	
Total No. of Lectures: 75			
Unit	Topics		No. of Lectures
I	Money: Functions, Alternative Measures To Money Supply In India And Their Different Components, Meaning And Changing Relative Importance Of Each Component, High Powered Money- Meaning And Uses, Sources Of Changes In High Powered Money. Financial System: Components, Financial Intermediaries.		17
II	Indian Banking System: Definition Of Bank, Commercial Banks, Importance And Functions, Structure Of Commercial Banking System In India. Regional Rural Banks, Cooperative Bank In India. Process Of Credit Creation By Banks; Determination of Money Supply And Total Bank Credit.		17
III	Development Banks And Other Non-Banking Financial Institution: Main Features, Problems And Policies For Allocation Of Institutional Credit, Problem Between The Government And TheCommercial Sector, Inter-Sectoral And Inter-RegionalProblems, Problem Between Large And Small Borrowers.		25
IV	The Reserve Bank of India: Functions, Instruments OfMonetary And Credit Control; Main Features Of Monetary Policy Since Independence, Interest Rates; Various Rates In India (As Bond Rate, Bill Rate, Deposit Rate, etc.) Impact Of Inflation And InflationaryExpectations.		16
Suggested Readings: 1. Saha SK Indian Banking System SBPD Publication (Hindi and English) 2. Deshmukh And Indian Banking System Chandralok Prakashan(Hindi and English) 3. Gupta SB Monetary Planning Of India 4. Khan M Y Indian Financial System Theory And Practice 5. Sengupta A K & Agarwal K Money Market Operations In India Note- Latest edition of the text books should be used.			
Suggested online link: www.ignou.ac.in, www.swayam.gov.in, www.inflibnet.ac.in			
Suggested Continuous Evaluation Methods: In addition to the theoretical inputs the course will be delivered through Assignments, Presentation, Group Discussions. Criteria for continuous evaluation may be Assignment or/and Presentation or/and unit test or/and Attendance etc.			

Programme: B.Com.		Year: Third	Semester: Sixth
Subject: Commerce			
Course Code: BC-601		Course Title: Goods and Services Tax	
Course outcomes: To provide students with the working knowledge of principles and provisions of GST to understand the relevance of GST in the present Indian tax in scenario and its contribution for economic development.			
Credits: 5		Core Compulsory / Elective: Compulsory	
Max. Marks: 25+75		Min. Passing Marks: 36	
Total No. of Lectures: 75			
Unit	Topics		No. of Lectures
I	Indirect Tax: Meaning, Features, Difference Between Direct And Indirect Tax, Types Of Indirect Tax Before GST, Shortcoming Of Indirect Tax System During PreGST Era. GST Meaning Advantages, Disadvantages Of Evaluation Of GST, Structure Of GST, CGST, SGST, IGST UTGST, And Important Definition Under GST Act.		12
II	Time Of Supply: Meaning Of Goods And Services, TOS Under Reverse Charge Mechanism, Invoicing Provisions, Provisions Related With Change Changes In GST Rate.		8
III	Place Of Supply: POS Meaning, POS Of Goods And Services, Intra state And Interstate Supply. Value Of Supply: Meaning, Provisions Related With Determination Of Value Of Supply Of Goods And Services, Determination Of GST Liability.		12
IV	Input Tax Credit ITC: Meaning Of Utilization Of ITC, Block Credit, Supply Not Eligible For ITC, Matching, Reversal And Reclaim Of ITC. Payment Under GST: Manner Of Payment Of GST Liability, Concept Of Electronic, Cash Credit And Liability Ledger, Refund Of Excess GST.		10
V	Return: Meaning, Purpose And Importance, Different Types Of Return, Due Date Of Filing Return, Assessment Under GST: Meaning, Types Sales Assessment, Provisional Assessment, Summary Assessment, Best Judgment Assessment.		10
VI	Registration: Meaning Of Final Registration, Compulsory Registration, and Procedure For New Registration, Amendment And Cancellation Of Registration.		17
VII	Accounts And Records: Manner Of Maintenance Of Accounts, Period Of Retention Of Relevant Records. Invoice: Format, Types Debit And Credit Note, Voucher Audit: Meaning, Types Mandatory, Departmental And Specific Audit, Penalty And Under GST, E -Way Bill.		6
Suggested Readings: 1. Malhotra HC and Agarwal VP, goods and services tax sahitya bhawan publications Agra, English and Hindi 2. Bansal K. M. GST Customer law taxman Publication private limited University edition 3. RK Singh PK a bird's eye view of GST Asia law house 4. Singhanian VK student's guide to GST and customs law taxman Publication private limited University edition 5. Gupta & Maheshwari, Tyagi Goods and Services Tax, SBPD PUBLISHINGHOUSE, AGRA			
Note- Latest edition of the text books should be used.			
Suggested online link: www.ignou.ac.in, www.swayam.gov.in, www.inflibnet.ac.in			
Suggested Continuous Evaluation Methods: In addition to the theoretical inputs the course will be delivered through Assignments, Presentation, Group Discussions. Criteria for continuous evaluation may be Assignment or/and Presentation or/and unit test or/and Attendance etc.			



Programme: B.Com.		Year: Third	Semester: Sixth
Subject: Commerce			
Course Code: BC-602		Course Title: Accounting for Managerial Decision	
Course outcomes: After completing this course a student will have: Ability to understand the concept of Managerial Accounting along with the basic forms and norms of Managerial Accounting. Ability to understand the terminologies associated with the field of Managerial Accounting and control along with their relevance. Ability to identify the appropriate method and techniques of Managerial Accounting for solving different problems. Ability to apply basic Managerial Accounting principles to solve business and industry related issues and problems. Ability to understand the concept of Budgetary Control, Cash Flow Statement, Fund Flow Statement, Break Even Analysis etc.			
Credits: 5		Core Compulsory / Elective: Compulsory	
Max. Marks: 25+75		Min. Passing Marks: 36	
Total No. of Lectures: 75			
Unit	Topics		No. of Lectures
I	Management Accounting- Concept, Meaning, Characteristics, Difference between Financial Accounting Management Accounting, Difference between Cost Accounting and Management Accounting, Techniques, Objectives and Importance. Management Accountant- Duties, Status, Functions and Responsibility. Financial Statement Analysis and Interpretation - Meaning, Objectives, Characteristics of an Ideal Financial Statement, Parties Interested in Financial Statement, Types of Financial Analysis - Horizontal, Vertical and Trend Analysis.		17
II	Ratio Analysis: meaning, Utility, Classification of Ratios - Profitability Ratio, Activity Ratio and Financial Position Ratios. Fund Flow and Cash Flow Statement-Concept, Meaning of the term Fund and Preparation of Fund Flow Statement and Cash Flow Statement (As-3).		16
III	Business Budgeting: Meaning of Budget and Budgeting, Objectives, Limitations and importance, Essentials of effective Budgeting, Classification of Budgets- Flexible budget and Zero Based Budget. Marginal Costing: Meaning, Determination of Profit under Marginal Costing, Pricing of Product, make or by Decision, Selection of most profitable channel. Break Even Analysis: Concept and Practical Applications of Break even Analysis.		22
IV	Standard Costing and Variance Analysis: Meaning and Objectives of Standard Costing Setting of Standard, Variance Analysis: Material and Labour Variance. Reporting to Management: Meaning, Objectives, Principles of Reporting, Importance of Reports, Classification of Reports, Reporting at different Levels of Management.		20
Suggested Readings: 1. Homgren, C.T., Gary L. Sundem and William O. Stratton: Introduction to Management Accounting, Prentice Hall of India, Delhi. 2. Dr. K.L. Gupta : <i>Accounting for Managerial Decisions</i> ; Sahitya Bhawan Publications, Agra (Hindi and English). 3. Lall, B.M. and I.C. Jain: Cost Accounting: Principles and Practice, Prentice Hall of India, Delhi. 4. Welsch Glenn A., Ronald W. Hilton and Paul N. Gordon Budgeting, Profit Planning and Control, Prentice hall of India, Delhi. 5. Baig Nafees: Cost Accounting, Rajat Publications, New Delhi. Baig Nafees: Management Accounting & Control, Ashish Publishing Home, New Delhi. 6. Lal Jawahar; Managerial Accounting, Himalya Publishing House, New Delhi. 7. Misra, A.K., Management Accounting, (Hindi and English) Navneet Prakashan, Nazibabad.			
Note- Latest edition of the text books should be used.			
Suggested online link: www.ignou.ac.in, www.swayam.gov.in, www.inflibnet.ac.in			
Suggested Continuous Evaluation Methods: In addition to the theoretical inputs the course will be delivered through Assignments, Presentation, Group Discussions. Criteria for continuous evaluation may be Assignment or/and Presentation or/and unit test or/and Attendance etc.			



Programme: B.Com.	Year: Third	Semester: Sixth
Subject: Commerce		
Course Code: BC-603	Course Title: Financial Institutions & Markets	
Course outcomes:After completing this course a student will have: Ability to understand the concept of Financial Market along with the basic formand norms of Financial Market. Ability to understand the terminologies associated with the field of Financial and control along with their relevance. Ability to identify the appropriate method and techniques of Financial Market for solving different problems. Ability to apply basic Financial Market principles to solve business and industryrelated problems. Ability to understand the concept of Primary and Secondary Market, StockExchange, SEBI etc.		
Credits: 5		Core Compulsory / Elective: Elective
Max. Marks: 25+75		Min. Passing Marks: 36
Total No. of Lectures: 75		
Unit	Topics	No. of Lectures
I	Financial Markets an Overview: Meaning of Financial Market and its Significance in the Financial System. Financial Markets in the Organized Sector - Industrial Securities Market, Government Securities Market, Long-term Loans Market, Mortgages Market, Financial Guarantee Market, Meaning and Structure of Money Market in India, Characteristics of a DevelopedMoney Market, Significance and Defects of Indian	17
II	Capital Market: New issue market - Meaning and Functions of New Issue Market, Instruments of New Issues, Players and their role in the New Issue Market, issue-pricing and marketing. Defects and Remedies of New Issue Market.	26
III	Secondary market: Functions and role of stock exchange; Listing procedure and legal requirements; Public Stock Exchanges-NSE, BSE and OTCEI. Functionaries on Stock Exchanges: Brokers, Sub brokers, market makers, jobbers, portfolio consultants, institutional investors.	16
IV	Investor Protection: Grievances concerning stock exchange dealings and their removal, Demat Trading. SEBI Guidelines - Primary Market, Secondary Market and the Protection of investor’s interest, NCLT &NCLAT.	16
<b>Suggested Readings:</b> 1. Machiraju, ‘Indian Financial System’ – Vikas Publishing House. 2. Varshney P.N., & Mittal D.K., ‘Indian Financial System’, Sultan Chand & SonsNew Delhi. 3. Avadhani V.A Capital Market, Himalaya Publishing House, New Delhi 4. Mulay, M. A., “New Issues Capital Market in India” 5. Gordon & Natarajan, “Indian Financial System” Himalaya Publishing House. 6. Avdhani, V. A., “Investment Management” Himalaya Publishing House. 7. Dr. Bimal Jaiswal, Bhuvana Venkantraman and Richa Banerjee : <i>Financial Markets, Institutions and Financial Services</i> ; Sahitya Bhawan Publications, Agra.		
<b>Note- Latest edition of the text books should be used.</b>		
<b>Suggested online link:</b> www.ignou.ac.in, www.swayam.gov.in, www.inflibnet.ac.in		
<b>Suggested Continuous Evaluation Methods:</b> In addition to the theoretical inputs the course will be delivered through Assignments, Presentation, Group Discussions. Criteria for continuous evaluation may be Assignment or/and Presentation or/and unit test or/and Attendance etc.		

<b>Programme:</b> B.Com.	<b>Year:</b> Third	<b>Semester:</b> Sixth
<b>Subject:</b> Commerce		
<b>Course Code:</b> BC-604	<b>Course Title:</b> Human Resource Management	
Course outcomes: The paper aims to develop in the students a proper understanding about human resource management.		
<b>Credits:</b> 5	<b>Core Compulsory / Elective:</b> Elective	
<b>Max. Marks:</b> 25+75	<b>Min. Passing Marks:</b> 36	
Total No. of Lectures: 75		
<b>Unit</b>	<b>Topics</b>	<b>No. of Lectures</b>
<b>I</b>	<b>Human Resource Management</b> concept and function,role of competencies of HR manager at our policies evolution of HRM emerging challenges of Human Resource Management workforce diversityempowerment VRS work life balance downsizing	<b>15</b>
<b>II</b>	<b>Recruitment &amp; Selection:</b> Recruitment, factors affecting recruitment, sources of recruitment, Selection – Process, selection test, Interview, Orientation, Placement. <b>Training &amp; Development:</b> Training-Objectives & Importance of training, Training Methods-On job training and off- the job training.	<b>25</b>
<b>III</b>	<b>Employee Compensation:</b> Compensation & Welfare, Job Evaluation. <b>Performance Appraisal:</b> Techniques, Job Enlargement & Job Enrichment, Quality of Work Life, Worker’s Participation in Management.	<b>20</b>
<b>IV</b>	<b>EMPLOYEE WELFARE:</b> Various welfare schemes & Safety Measures. Employee Benefits – Meaning andits types, Fringe Benefits; Remuneration – Salary, Bonus, Commission, Long Term Incentives, Perquisites. Grievance Handling & Discipline – Meaning, Importance. Collective Bargaining – Meaning and Importance, Process.	<b>15</b>
<b>Suggested Readings:</b> 1. Aswathappa K Maine resource management Tata McGraw Hill 2. Verma Pramod SaviBagiyaprabandhan Rao VSP human resource managementExcel books 3. Tripathi PC personnel management and Industrial Relations Sultan Chand andsons 4. Dr. Gaurav Sankalp : <b>Human Resouce Management</b> ; Sahitya Bhawan Publications, Agra (English). 5. Dr. Chaturbhuj Mamoria, Kameshwar Pandit and Priti Raina : <b>Human Resouce Management</b> ; Sahitya Bhawan Publications, Agra (Hindi).		
Note- <b>Latest edition of the text books should be used.</b>		
<b>Suggested online link:</b> www.ignou.ac.in, www.swayam.gov.in, www.inflibnet.ac.in		
<b>Suggested Continuous Evaluation Methods:</b> In addition to the theoretical inputs the course will be delivered through Assignments, Presentation, Group Discussions. Criteria for continuous evaluation may be Assignment or/and Presentation or/and unit test or/and Attendance etc.		

Programme: B.Com.		Year: Third	Semester: Sixth
Subject: Commerce			
Course Code: BC-605		Course Title: Advertising & Sales Management	
Course outcomes: The objective of this paper is to familiarize the students with the basic concepts, tools and techniques of advertising used in marketing.			
Credits: 5		Core Compulsory / Elective: Elective	
Max. Marks: 25+75		Min. Passing Marks: 36	
Total No. of Lectures: 75			
Unit	Topics		No. of Lectures
I	Introduction Advertising- meaning, nature and importance of advertising, types and objectives. Audience selection; Setting of advertising budget: determinants and major methods.		15
II	Media Decisions Major media types- their merits and demerits; Advertising through internet and interactive media- Issues and considerations; factors influencing media choice; media selection, media scheduling.		15
III	Organisational Arrangements a) Advertising agency: Role, types and selection of advertising agency; Reasons for evaluating advertising agencies. b) Social, ethical and legal aspects of advertising in India; recent developments and issues in advertising.		15
IV	Sales Management: Definition & Objective, Theories of Selling, Personal Selling Process the Sales Organization: Purpose & types, Techniques for setting up a Sales Organization, Role & Responsibilities of a Sales Manager		15
V	Sales Force Management: Recruitment, Selection & Training Controlling using Territories & Quotas, Sales Meetings & Contests, Evaluation & Supervision of Salesperson		15
Suggested Readings: 1. Belch and Belch. <i>Advertising and Promotion</i> . Tata McGraw Hill Co. 2. Sharma, kavita. <i>Advertising: Planning and Decision Making</i> . Taxmann publication Pvt. Ltd. 3. Mahajan, J.P.‘ and Ramki. <i>Advertising and Brand management</i> . New Delhi: Ane Books Pvt Ltd. 4. Burnett, Wells and Moriatty. <i>Advertising: Principles and Practice</i> . Pearson Education 5. Shimp, Terence A. <i>Advertising and Promotion: An IMC Approach</i> . South Western, Cengage Learning. 6. O’Guinn. <i>Advertising and Promotion: An Integrated Brand approach</i> , Cengage Learning. Belch, MA & Belch GE – Advertising and Promotion, An Integrated Marketing Communications Perspective, Sixth Edition, Tata McGraw Hill 6. Manendra Mohan, Advertising Management, Concept and Cases, Tata McGraw Hill Publication. 7. Rajeev Batra, John G. Myers & David A. Aaker, Advertising Management, Pearson Publication 8. जैन डॉ. एस.सी., विपणन प्रबंध, साहित्य भवन पब्लिकेशन, आगरा 9. Dr. S.C. Jain and Neeraj Kumar Singh : <i>Selling and Advertising</i> ; Sahitya Bhawan Publications, Agra (Hindi). 10. K. Jain and P. Mahajan : <i>Selling and Advertising</i> ; Sahitya Bhawan Publications, Agra (English).			
Note: Latest edition of text books may be used.			
Suggested online link: www.ignou.ac.in, www.swayam.gov.in, www.inflibnet.ac.in			
Suggested Continuous Evaluation Methods: In addition to the theoretical inputs the course will be delivered through Assignments, Presentation, Group Discussions. Criteria for continuous evaluation may be Assignment or/and Presentation or/and unit test or/and Attendance etc.			

<b>M.Com. First Year</b>			
<b>Bachelor's (Research) Degree in Commerce (192 Credit)</b>	<b>SEMESTER-I</b>	<b>21+4* credits</b>	<b>46</b>
	<b>SEMESTER-II</b>	<b>21+4* credits</b>	
	<b>SEMESTER-III</b>	<b>21+4* credits</b>	<b>46</b>
	<b>SEMESTER-IV</b>	<b>21+4* credits</b>	
	<b>SEMESTER-V</b>	<b>24 credits</b>	<b>48</b>
	<b>SEMESTER-VI</b>	<b>24 credits</b>	
	<b>SEMESTER-VII</b>	<b>24+4* credits</b>	<b>52</b>
	<b>SEMESTER-VIII</b>	<b>24+4* credits</b>	

Programme: M.Com.		Year: IV	Semester: Seventh
Subject: Commerce			
Course Code: MC-701		Course Title: Managerial Economics	
Course outcomes: To develop managerial perspective on economic fundamentals as aids to decision making under given environmental constraints.			
Credits: 5		Core Compulsory/Elective: Compulsory	
Max. Marks: 25+75		Min.PassingMarks:36	
Total No. of Lectures: 75			
Unit	Topics		No. of Lectures
I	Nature and Scope of Managerial Economics: Managerial Economist's Roles and Responsibilities; Relation with Economics and other Disciplines; Business Objective Models – Profit Maximization, Sales Maximisation, Managerial Discretion and Behavioural Models; Fundamental Economic Concepts – Incremental, Opportunity Cost, Discounting and Equi-Marginal or Substitution Concepts.		13
II	Theory of Consumer Demand: Cardinal Utility Analysis of Demand; Ordinal Utility Analysis of Demand; Revealed Preference and Logical Ordering Analyses of Demand; Consumer's Choice; Individual and Market Demand Functions; Demand Distinctions; Law of Demand - Price, Income and Substitution Effects, Bandwagon Effects and Snob/Veblen Effects, Giffen's Paradox.		15
III	Demand Elasticity and Forecasting: Elasticity of Demand - Determinants and Distinctions, Degrees and Measurements of Price, Income, Cross Advertising and Expectation Elasticities and Applications in Business; Decisions, Demand Estimation- Functional Forms, Demand Forecasting, Need for and Steps in Demand Forecasting and Demand Forecasting Techniques for Established as well as New Products.		14
IV	Production Theory: Production Function; Laws of Variable Proportions; Producer's Equilibrium - Traditional Analysis, Isoquant, Iso-cost and Ridge Lines and Modern Analysis of Producer's Equilibrium-Expansion Path and Returns to Scale as per Isoquants; Economies and Diseconomies of Scale – Internal and External.		17
V	Cost Theory : Implications of Costs – Real, Alternative and Money Costs; Cost Distinctions and Functions; Cost Behaviour in Short-Run and Economic Capacity; Derivation of Long Run Costs; Modern Analysis of Costs - Average Fixed and Average Variable Costs and Reserve Capacity; Real and Pecuniary Economies; Relevance of Costs in Business Decisions.		16
Suggested Readings: 1. Dr. Vijay Prakash Srivastava, Economics For Managers, Navyug Books International Publications. 2. Baumal, William J. Economic theory and operations analysis, Prentice-Hall, Landon. 3. Baya, Michail R. Managerial economics and business strategy, McGraw hill New York. 4. Chopra O.P. Managerial economic, Tata McGraw hill Delhi. 5. Dean, Joel. Managerial economic, prentice hall Delhi. 6. Crag W. Peterson. W. Cris Lewis and Sudhir K.Jain managerial Economics, Prentice-Hall of India/Pearson, New Delhi,2004 7. H.L. Ahuja, Managerial Economics, S.Chand,2004 8. DN Dwivedi, Managerial Economics, 4 <sup>th</sup> ed. Vikas Publishing House, New Delhi, 9. Paul Samuelson and Nordhaus, Economics,19 <sup>th</sup> ed. Tata McGraw-Hill, New Delhi			

Programme: M.Com.		Year: IV	Semester: Seventh
Subject: Commerce			
CourseCode:MC-702		Course Title: Organisation Theory	
Course outcomes:			
Credits: 5		Core Compulsory/Elective: Compulsory	
Max.Marks: 25+75		Min.PassingMarks:36	
Total No. of Lectures: 75			
Unit	Topics		No. of Lectures
I	Organisation : Concept, Features, Types, Forms and Significance; Organisational Vs. Individual Goals and their Integration; Role of Positive Thinking in Organisations.		13
II	Theories of Organisation: Classical Theories-Scientific Management; Process Management; Bureaucratic Model; Neo Classical Theories-Human Relations and Behavioral Science; Modern Theories -System, Contingency and Quantitative.		15
III	Organisation Structure, Culture and Conflict: Organisational Structure- Concept and Factors Influencing Organisational Structure; Departmentalisation; Span of Management; Centralisation and Decentralisation; Delegation of Authority; Organisational Culture – Impact of Organisational Culture; Socio-Cultural Features of India and Its Impact; Organisational Conflicts-Positive and Negative Impact; Level of Organisational Conflicts-Individual Group and Organisational; Measures to Minimise Conflict.		17
IV	Organisational Change and Development: Managing Change-Nature, Causes, Process and Chain Effect of Change; Resistance to Change-Individual and Organisational; Overcoming Resistance to Change; Change Models - Lewin’s Three Step Model; Change Agents.		16
V	Organisational Development: Meaning and Nature; OD Interventions – Sensitivity Training; Survey Feedback; Process Consultation; Team Building; MBO; Problems in OD; Organisational Effectiveness- Concept and Approaches; Organisational Vs. Managerial Effectiveness; Factors Causing Ineffectiveness.		14
Suggested Readings:			
1. Luthans, Fred; Organizational Behavior; Tata McGraw Hill.			
2. Robbins, S.P. Judge, T.A., Vohra, Niharika; Organizational Behavior, Pearson Education.			
3. Dr. Vijay Prakash Srivastava, Principles of Management, Kumud Publications, Delhi.			
4. Prateek, Udai; Understanding Organizational Behavior; Oxford University Press.			
5. Newstorm, John; Human Behavior at Work; Tata McGraw Hill.			
6. McShane, Steven L.,Mary, Von Glinow and Radha, R. Sharma; Organizational Behavior, Tata McGraw Hill.			
7. Singh, Kavita; Organization Behavior; Text and Cases; Pearson Education.			



Programme: M.Com.		Year: IV	Semester: Seventh
Subject: Commerce			
CourseCode:MC-703		Course Title: Marketing Research	
Course outcomes: The main objectives of the course are to familiarize the students with the concept of Marketing Research, which is used to define the basic concepts related to marketing research process.			
Credits: 5		Core Compulsory/Elective: Compulsory	
Max. Marks: 25+75		Min. Passing Marks: 36	
Total No. of Lectures: 75			
Unit	Topics		No. of Lectures
I	Introduction Importance and Role of research in Marketing; the marketing research industry; Approaches to Marketing intelligence. Types of Market research; research approaches; significance of Market research, Market research process, criteria of good marketing research, problems encountered by marketing research in India.		15
II	Marketing Research Design Research design- Pre-test, Post-test, Control group and Solomon four group design, Causal Research; observation techniques, experiments and test markets.		15
III	Data Collection Primary and secondary data; Questionnaire Design and issues; Interviews; Comparative and noncomparative attitude measurement scaling techniques, sampling design: Sampling procedure, types of sampling, sample size determination.		15
IV	Data Analysis and Interpretation, Analyzing qualitative data collected through interviews and open-ended questions – salient features of different methods, Multidimensional Scaling, Discriminant analysis.		15
V	Reporting the Results and Ethical Issues in Marketing Research Preparing Marketing research report and presentation: written report, format of report, common problems in preparing report, the critical nature of report, Graphical presentation of reports. Ethical Issues: Ethical issues related clients, respondents, sampling, questionnaire design, reporting.		15
Suggested Readings: 1. Naresh K Malhotra, Satyabhushan Dash, (2009). Marketing Research- An Applied Orientation, 5/e, Pearson Education, New Delhi. 2. Donald S. Tull, Del I. Hawkins, (2009). Marketing research –Measurement & Method, PHI Private Limited, New Delhi. 3. Donald R. Cooper, Pamela S Schindler, (2007). Marketing Research-Concepts and Cases. Tata McGraw-Hill Publishing Company Limited, New Delhi. 4. Hair, Bush, Ortinau, (2006). Marketing Research, 3/e, Tata McGraw-Hill Publishing Company Limited, New Delhi. 5. Nigel Bradley, (2007). Marketing research –Tools and Techniques. Oxford University Press, New Delhi.			



Programme: M.Com.		Year: IV	Semester: Seventh
Subject: Commerce			
Course Code: MC-704		Course Title: Advanced Statistics	
Course outcomes: This course will help students to design and carry out research, as well as, the application of statistical tools and techniques for decision making in different areas of Business.			
Credits: 5		Core Compulsory/Elective: Compulsory	
Max. Marks: 25+75		Min. Passing Marks:36	
Total No. of Lectures: 75			
Unit	Topics		No. of Lectures
I	Introduction: Meaning and Definition of Statistics-Role of Statistical Techniques in Decision Making Measures of Central Tendency: Mean, Median & Mode, Measurement of Dispersion: Quartiles, Range, Inter quartile range, Mean Deviation & Standard Deviation, Variance, Coefficient of Variation, Skewness and Kurtosis.		20
II	Association of Attributes: Classification of attributes, determination of unknown class frequencies, Consistency of data, methods of determining association.		12
III	Index Numbers: Meaning, Types of index numbers, uses of index numbers, Construction of Price, Quantity and Volume indices: Fixed base and Chain base methods, Weighted Aggregative Methods.		12
IV	Time series analysis: Concept & Components of Time Series, Models of Time Series: Additive, Multiplicative and Mixed models, Trend analysis: Free hand curve, Semi averages, Moving averages, Least Square method- Linear and Non- Linear equations, Applications in business decision-making.		16
V	Statistical System in India and its Shortcomings: Population Statistics, Agriculture Statistics, National Income, Agricultural, Industrial, Trade, Price & Labour Statistics etc. Source of Indian Statistics-Central Statistical Organization, National Sample Survey.		15
Suggested Readings:			
1. Levin R.I., Rubin S. David, Statistics for Management, 7th Ed, Pearson, 2000.			
2. Gupta S.P, Statistical Methods, Sultan Chand & Sons.			
3. Keller, G, Statistics for Management, 1st Ed, Cengage Learning, 2009.			
4. Dr. Shukla S.M., Dr. Sahai Shiv Pujan., Practical Problems in Business Statistics			
5. S. C.Gupta – Fundamentals of Statistics, Himalaya Publishing			
6. Gupta, C.B. Statistical Method- Sultan Chand, Delhi.			
7. Gupta, S.C. and Indra Gupta Business Statistical- Himalaya Publication House, New Delhi.			

<b>Programme:</b> M.Com.	<b>Year:</b> IV	<b>Semester:</b> Seventh
<b>Subject:</b> Commerce		
<b>Course Code:</b> MC-706	<b>Course Title:</b> Seminar & Survey Report	
Course outcomes: The objective is to help and develop the art of public speaking among the students. The students shall be required to attend several presentations during the semester. The student will give two seminar presentations in the department.		
<b>Credits:</b> 4	<b>Core Compulsory/Elective:</b> Compulsory	
<b>Max. Marks:</b> 100	<b>Min.PassingMarks:</b> 40	

Programme: M.Com.		Year: IV	Semester: Eighth
Subject: Commerce			
Course Code: MC-801		Course Title: Behavioral Sciences	
Course outcomes:			
Credits: 5		Core Compulsory/Elective: Compulsory	
Max. Marks: 25+75		Min. Passing Marks: 36	
Total No. of Lectures: 75			
Unit	Topics		No. of Lectures
I	Introduction: Organisational Behaviour-Concept; Contributing Disciplines; Foundation; Challenges and Opportunities; Human Behaviour-Nature, Process and Models.		10
II	Individual Behaviour: Personality-Determinants; Theories; Organisational Implications; Perception – Process; Factors Influencing; Managerial Utility; Sensation Vs. Perception; Learning-Nature, Process, Factors Affecting, Importance for Managers; Motivation-Need, Theories and Types of Incentives and Precautions in their Use; Special Issues in Motivation-Employees Recognition Programmes and Employees Involvement Programmes; Skill-based Pay Plans; Flexible Benefits etc.		20
III	Group Behaviour: Transactional Analysis-Levels of Self Awareness; Ego States; Life Positions; Transactions; Stroking; Uses of T.A.; Group Dynamics-Meaning and Nature of Group; Formal Groups – Committee, Task Force and Quality Circle; Informal Groups-Causes of Formation; Managing Informal Groups; Individual Vs. Group Decision Making.		18
IV	Leadership, Power and Authority: Leadership-Nature, Significance and Styles; Theories; Providing Effective Leadership; Power and Authority Bases of Power and Sources of Authority; Authority Limits; Increasing Power.		13
V	Morale and Stress Management: Morale- Nature, Factors Influencing and Methods of Measurement; Morale Building; Productivity and Morale; Stress Management-Sources, Consequences and Coping Strategies.		14
Suggested Readings:			
1. Luthans, Fred; Organizational Behavior; Tata McGraw Hill.			
2. Robbins, S.P. Judge, T.A. ,Vohra, Niharika; Organizational Behavior, Pearson Education.			
3. Prateek, Udai; Understanding Organizational Behavior; Oxford University Press.			
4. Newstorm, John; Human Behavior at Work; Tata McGraw Hill.			
5. McShane, Steven L.,Mary, Von Glinow and Radha, R. Sharma; Organizational Behavior, Tata McGraw Hill.			
6. Singh, Kavita; Organization Behavior; Text and Cases; Pearson Education.			
7. Dr. S.S Khanna ; Organizational Behaviour, S.Chand Publications			
8. L.M. Prasad; Organizational Behaviour, S.Chand Publications			

Programme: M.Com.		Year: IV	Semester: Eighth
Subject: Commerce			
Course Code: MC-802		Course Title: Business Research Method	
Course outcomes: The objective this course is to help students design and carry out research, as well as, the application of statistical tools and techniques for decision making.			
Credits: 5		Core Compulsory/Elective: Compulsory	
Max. Marks: 25+75		Min.PassingMarks:36	
Total No. of Lectures: 75			
Unit	Topics		No. of Lectures
I	Introduction to Business Research, Meaning, Concept, Nature, Scope, Need and Role of Business Research, Characteristic of Research, Types of Business Research, Research Process: An overview, Stages of Research process, Business Research in 21st century, Ethical issues in Business Research.		12
II	Research design: Concept, features of a good research design, Use of a good research design; Research Design Process, Types of Research Design, Concept of Independent & Dependent variables, concomitant variable, extraneous variable, Treatment, Control group.		18
III	Sampling Theory: Basic Concept, Defining the Universe, Concepts of Statistical Population, Need and Importance of Sampling, Types of Sampling, Characteristics of a good sample, Sampling and Non-Sampling Errors, Methods to reduce the errors, Sample Design, Determinants of Sample Size, Steps in Designing the Sample.		18
IV	Scaling & measurement techniques: Concept of Measurement, Need of Measurement; Problems in measurement, research– Validity and Reliability. Levels of measurement – Nominal, Ordinal, Interval, Ratio. Attitude Scaling Techniques: Concept of Scale– Rating Scales viz. Likert Scales, Semantic Differential Scales etc.		15
V	Mechanism of Report Writing: Structure and Components of Research Report, Types of Report, Characteristics of Good Research Report, Pictures and Graphs, Introduction to Computerized Statistical Packages i.e., SPSS etc.		12
Suggested Reading: 1. Zikmund: Business Research Methods, Cengage Learning 2011-12 2. Cooper and Schindler (2010). Business Research Methods, 10th edition. Tata McGraw Hill, New Delhi. 3. Kothari, C.R. (2004). Research Methodology – Methods, 2nd edition. New Age Publications, New Delhi. 4. Mishra, Anil K. (2012).A Hand Book of Research in SPSS, 1st edition. Himalayan Publishing House, Mumbai. 5. Field, A.(2013). Discovering Statistics using IBM SPSS. 4th edition. Sage Publications London. 6. Sekaran Uma , Bolgie Roger , Research Methods for Business , Wiley publications			

Programme: M.Com.		Year: IV	Semester: Eighth
Subject: Commerce			
Course Code: MC-803		Course Title: International Business	
Course outcomes: Students should be able to explain business expansion abroad and key issues related to their operations in other countries. They will Compare and contrast cultures and societies globally using socioeconomic and cultural frameworks.			
Credits: 5		Core Compulsory/Elective: Compulsory	
Max. Marks: 25+75		Min.PassingMarks:36	
Total No. of Lectures: 75			
Unit	Topics		No. of Lectures
I	Management of International Trade: Introduction, Meaning, Need, Difference between Domestic and International trade, International Business (Trade) Theories- classical, Neoclassical, Modern and need for separate Theory of International Trade, The Balance of Payment Gains from Trade and Terms of trade Policies- Free vs Protection.		13
II	Mechanism of International Payments and Control: Instruments of External Payments, Foreign Exchange Market, causes of fluctuations in exchange rates, Needs for Exchange Control, Techniques and methods of Exchange Control.		15
III	Management Process and Control of International Trade/ Business: Management of Human Resources in MNCs, International Production and Logistic system, Multinational Corporate Culture, Information and Control System, Measurement Methods and Evaluation of Performance.		17
IV	International Trade and Investment Theories: Mercantilism; Absolute Cost theory, Comparative Cost theory, Opportunity Cost theory, Factor endowment theory, Complimentary trade theories; International Business Strategies.		16
V	International Financial Institutions: IMF, IBRD, IDA, IFC, Organization of European Union and its Impact, Euro- Dollar Exchange Market.		14
Suggested Readings: 1. . Charles W.L. Hill and Arun Kumar Jain, International Business, McGraw Hill Education New Delhi 2. 2. Daniels John, D. Lee H. Radenbaugh and David P. Sullivan. International Business, Pearson Education 3. 3. Sumati Varma, International Business, Pearson Education. 4. 4. Cherunilam, Francis. International Business: Text and Cases. PHI Learning 5. 5. Bennett, Roger. International Business. Pearson Education. 6. 6. Jaiswal, Bimal; International Business, Himalaya Publication 7. 7. Hill, C.W.; International Business, TMH, 5th Ed.			

Programme: M.Com.		Year: IV	Semester: Eighth
Subject: Commerce			
Course Code: MC-804		Course Title: Business Statistics & Analytics	
Course outcomes: To Understand the different basic concept / fundamentals of business statistics and understand the practical application of Descriptive and Inferential Statistics concepts and their uses for Business Analytics			
Credits: 5		Core Compulsory/Elective: Compulsory	
Max. Marks: 25+75		Min. Passing Marks:36	
Total No. of Lectures: 75			
Unit	Topics		No. of Lectures
I	Application of Statistics in Business– Introduction, Descriptive Statistics: Meaning, Scope, types, functions and limitations of statistics. Concept of Business Analytics- Meaning types and application of Business Analytics, Use of Spread Sheet to anlayze data-Descriptive analytics and Predictive analytics.		12
II	Interpolation and Extrapolation: Meaning, importance, Graphic method, Algebraic method- Direct Binomial expansion method, Newton’s method of Advances differences, Lagrange method, parabolic curve method.		12
III	Correlation Analysis: Positive and Negative Correlation, Karl Pearson’s Coefficient of Correlation, Spearman’s Rank Correlation, Concept of Multiple and Partial Correlation, First order, Second order Coefficient of correlation		16
IV	Regression Analysis: Concept, Least Square fit of a Linear Regression, Two lines of Regression, Properties of Regression Coefficients and Relationship between Regression and Correlation, Standard error of estimate, Multiple Regression Analysis.		20
V	Probability Theory and Distribution Probability: Concepts of Probability - Additive and Multiplicative Laws- Bayes’s Decision Rule, Theoretical Distributions: Concept and application of Binomial; Poisson and Normal Probability distributions.		15
Suggested Readings: 1. G C Beri – Business Statistics, latest ed, TATA McGraw Hill 2. Chandrasekaran & Umaparvathi-Statistics for Managers, PHI Learning 3. Levin R.I., Rubin S. David, Statistics for Management, 7th Ed, Pearson, 2000. 4. Gupta S.P, Statistical Methods, Sultan Chand & Sons. 5. Newbold, Carlson, Thorne – Statistics for Business and Economics, 6th ed., Pearson 6. Keller, G, Statistics for Management, 1st Ed, Cengage Learning, 2009. 7. J. K Sharma, Business Statistics, 2nd Ed. Pearson, 2010. 8. Black Ken, Business Statistics for Contemporary Decision Making, 4th Ed, Wiley, 2006			

<b>Programme:</b> M.Com.	<b>Year:</b> IV	<b>Semester:</b> Eighth
<b>Subject:</b> Commerce		
<b>Course Code:</b> MC-806	<b>Course Title:</b> Seminar & Survey Report	
Course outcomes: The objective is to help and develop the art of public speaking among the students. The students shall be required to attend several presentations during the semester. The student will give two seminar presentations in the department.		
<b>Credits:</b> 4	<b>Core Compulsory/Elective:</b> Compulsory	
<b>Max. Marks:</b> 100	<b>Min. Passing Marks:</b> 40	



<b>M.Com. Final Year</b>			
<b>Master's Degree in Commerce (240 Credit)</b>	<b>SEMESTER-I</b>	<b>21+4* credits</b>	<b>46</b>
	<b>SEMESTER-II</b>	<b>21+4* credits</b>	
	<b>SEMESTER-III</b>	<b>21+4* credits</b>	<b>46</b>
	<b>SEMESTER-IV</b>	<b>21+4* credits</b>	
	<b>SEMESTER-V</b>	<b>24 credits</b>	<b>48</b>
	<b>SEMESTER-VI</b>	<b>24 credits</b>	
	<b>SEMESTER-VII</b>	<b>24+4* credits</b>	<b>52</b>
	<b>SEMESTER-VIII</b>	<b>24+4* credits</b>	
	<b>SEMESTER-IX</b>	<b>24 credits</b>	<b>48</b>
	<b>SEMESTER-X</b>	<b>24 credits</b>	

Programme: M.Com.		Year: V	Semester: Ninth
Subject: Commerce			
Course Code: MC-901		Course Title: Working Capital Management	
Course outcomes: Students will be able to evaluate comparative working capital management policies and their impact on the firm's profitability, liquidity, risk and operating flexibility. They will understand the importance of effective working capital management and its role in meeting the firm's strategic objectives and its impact in value creation.			
Credits: 5		Core Compulsory/Elective: Compulsory	
Max. Marks: 25+75		Min. Passing Marks:36	
Total No. of Lectures: 75			
Unit	Topics		No. of Lectures
I	Introduction: Concept of Working Capital; Components of Working Capital; Interdependence among Components of Working Capital; Estimating Working Capital Needs; Factors Affecting the Need for Working Capital; Managing Working Capital; Objectives of Working Capital Management; Working Capital Analysis – Fund Flow.		12
II	Financing Working Capital: Sources of Working Capital Finance – A Brief Overview of Long-term and Short-term Sources of Finance; Long-term Vs. Short-term Sources-Speed, Flexibility, Cost, Risk, Liquidity, and Profitability; Alternative Current Assets and Financing Policies— Maturity Matching Self Liquidating Policy, Aggressive Policy, Conservative Policy; The Concept of Zero Working Capital.		15
III	Management of Cash: Motives for Holding Cash; Need for and Objectives of Cash Management; Cash Forecasting and Cash Budgets; Cash Cycle; Cash Float; Control of Float – Managing Collections and Disbursements; Near-Cash-Marketable Securities – Concepts, Types, Need For and Investment Strategy.		15
IV	Management of Receivables: Concept and Nature of Receivables; Purpose of Receivables; Costs and Benefits of Receivables; Factors Affecting Size of Receivables; Managing Receivables – The Profit Decision and Optimum Size Determination; Sound Credit Policy – Credit Standard and Credit Limit, Credit Period, Cash Discounts and Collections.		18
V	Management of Inventory : Concept, Nature, and Components of Inventory; Benefits of Holding Inventory; Risks and Costs of Inventory; Managing Inventory – Minimising Costs and Optimum Size Determination; Inventory Management System- Economic Order Quantity Subsystem, Reorder-Point Subsystem, Stock-Level Subsystem, and Tying Together the Subsystems into a Total Inventory Management System; ABC Analysis of Stock; Just in Time Concept of Inventory Management.		15
Suggested Readings: 1. Dr. Vijay Prakash Srivastava, Working Capital Management, Kumud Publications Delhi. 2. V.K. Bhalla, Working Capital Management, S.chand Publications. 3. I.M. Pandey, Financial Management, Pearson Publications. 4. Khan & Jain, Financial Management, Tata Mc-Graw Hill. Brealey R.A. and S.C. Myers: Principles of Corporate Finance, McGraw Hill,. 5. V.Saran, Financial Management, PHI 6. G. Sudarsana Reddy, Financial Management Principles and Practice, Himalaya Publishing House, New Delhi 7. आर० एस० कुलश्रेष्ठ, वित्तीय प्रबन्ध, साहित्य भवन पब्लिशर्स एवं डिस्ट्रीब्यूटर्स आगरा। 8. एम० डी० अग्रवाल एवं एन० पी० अग्रवाल, वित्तीय प्रबन्ध के तत्व, रमेश बुक डिपो, जयपुर।			

Programme: M. Com.	Year: V	Semester: Ninth
Subject: Commerce		
Course Code: MC-902	Course Title: Strategic Management	
Course outcomes: The Strategic Management course is designed to explore vision, mission, examine principles, techniques and models of organisational and environmental analysis, discuss the theory and practice of strategy formulation and implementation.		
Credits: 5	Core Compulsory/Elective: Compulsory	
Max. Marks: 25+75	Min. Passing Marks:36	
Total No. of Lectures: 75		
Unit	Topics	No. of Lectures
I	Concept of Strategy: Concept of Strategy and Strategic Management; Strategic Management Process; Levels of Strategy; Approaches to Strategic Decision Making; Organisational Mission and Purpose; Objectives and Goals; Importance of Strategic Management.	20
II	Environmental Analysis and Diagnosis: Concept of Environment and its Components; Organisational Appraisal; Industry Analysis; Competitors Analysis; SWOT Analysis.	15
III	Strategy Intent: Grand Strategies – Turnaround, Divestment and Liquidation Strategies; Growth Strategies-Merger, Take-over and Joint Strategies, Integration and Diversifications.	15
IV	Functional Strategies: Marketing, Production/Operations and R & D plans and Policies; Personnel and Financial Plans and Policies.	10
V	Strategy Implementation and Evaluation: Strategic Implementation – Concept, Relationship between Strategic Formulation and Implementation; Strategic Evaluation and Control – Concept, Types of Strategic Control, Techniques of Strategic Evaluation and Control – Strategic and Operational Control.	15
Suggested Readings: 1. Ravi M. Kishore, Strategic Management; Taxmann Publications 2. Richard Lynch, Strategic Management; Pearson Education. 8 <sup>th</sup> Edition 3. Management Policy & Strategic Management – R.M.Shivastava, Himalaya Publishing House, Mumbai. 4. Business Policy and Strategic Management - Sukul Lomash and P. K. Mishra, Vikas Publishing House Pvt. Ltd., New Delhi. 5. Business Policy and Strategic Management - Dr. Azhar Kazmi, Published by Tata McGraw Hill Publications 6. Strategic Management by Prof N. H. Mulick, Enkay Publishing House New Delhi		

<b>Programme:</b> M. Com.		<b>Year:</b> V	<b>Semester:</b> Ninth
<b>Subject:</b> Commerce			
<b>CourseCode:</b> MC-903 (I)		<b>Group A: Accounting</b> <b>Course Title: Accounting Theory</b>	
Course outcomes: Students will able to apply knowledge of accounting techniques, concepts, principles and theories to solve financial reporting problems. And will understand structured decision model to exercise judgement in the application of accounting standards.			
<b>Credits:</b> 5		<b>Core Compulsory/Elective:</b> Compulsory	
<b>Max. Marks:</b> 25+75		<b>Min. Passing Marks:</b> 36	
<b>Total No. of Lectures:</b> 75			
<b>Unit</b>	<b>Topics</b>		<b>No. of Lectures</b>
<b>I</b>	<b>Introduction:</b> Concept of Accounting and its Changing Role; Users of Accounting Information and their Informational Need; Accounting and other Disciplines; Financial Accounting Vs. Management Accounting and Cost Accounting; Concept and Necessity of Accounting Theory; Relation between Accounting Theory and Accounting Practice; Accounting Theory Vs. Accounting Practice.		<b>12</b>
<b>II</b>	<b>Structure of Accounting Theory:</b> Elements of Accounting Structure; Basic Concepts, Principles, Postulates and Conventions of Accounting; Generally Accepted Accounting Principles; Financial Statements – Essentials, Nature, Uses, Functions and Limitations; Financial Statement Analysis – Objectives, Process and Types; Procedure for Analysis and Interpretation.		<b>18</b>
<b>III</b>	<b>Establishment of Accounting Standards:</b> The International Accounting Standards Committee (IASC) and International Accounting Standards Board (IASB) – Objectives, Organization, Standard Setting Procedure and a brief Reference of International Accounting Standards; India’s Standing Committee on International Financial Standards and Codes; Advisory Groups in India; Accounting Standards Board (ASB) of Institute of Chartered Accountants of India.		<b>20</b>
<b>IV</b>	<b>Accounting Standards in India:</b> A Detailed Discussion on – Disclosure of Accounting Policies, Valuation of Inventory, Cash Flow Statements, Depreciation Accounting, Revenue Recognition, Accounting for Investments, Accounting for Amalgamations, Segment Reporting, Consolidated Financial Statements, Provisions, Contingent Liabilities and Contingent Assets.		<b>12</b>
<b>V</b>	<b>Accounting for Depreciation and Inventory:</b> Concept and Methods of Depreciation; Depreciation on Replacement Cost; Factors Influencing the Choice of Depreciation Methods; Developing Depreciation Policy; Accounting Policies for Inventory – Concept, Need, Significance, Inventory Systems and Inventory Valuation Methods.		<b>13</b>
<b>Suggested Readings:</b> 1. Jawaharlal: Accounting Theory & Practice, Himalya; 2. Jain S.P & Narang K.L: Accounting Theory & Management Accounting, Kalyani; 3. Rawat D.S: Accounting Standards, Taxmann; 4. Ghosh T.P: Accounting Standards and Corporate Accounting Practices, Taxmann;			

<b>Programme:</b> M.Com.	<b>Year:</b> IV	<b>Semester:</b> Seventh
<b>Subject:</b> Commerce		
<b>CourseCode:</b> MC-903 (II)	<b>Group A: Accounting</b> <b>Course Title: Managerial Accounting</b>	
Course outcomes: Students will able to critically analyse and provide recommendations to improve the operations of any organisation through the application of management accounting techniques; demonstrate mastery of costing systems, cost management systems, budgeting systems and performance measurement systems.		
<b>Credits:</b> 5		<b>Core Compulsory/Elective:</b> Compulsory
<b>Max. Marks:</b> 25+75		<b>Min. Passing Marks:</b> 36
<b>Total No. of Lectures:</b> 75		
<b>Unit</b>	<b>Topics</b>	<b>No. of Lectures</b>
<b>I</b>	Introductory: Generally Accepted Accounting Principles; Managerial Accounting–Concept and Distinction with Financial Accounting; Controllership Functions.	<b>10</b>
<b>II</b>	Financial Analysis: Reclassification of Balance Sheet and Profit and Loss Account items; Ratio Analysis – Limitations and Types of Accounting Ratios and Preparation of Performa Balance Sheet on the Basis of Accounting Ratios. Comparative Financial Statements	<b>14</b>
<b>III</b>	Inflation Accounting: Statement of the Problem, Methods of Inflation Accounting, Practical Difficulties in Inflation Accounting and Merits and Demerits.	<b>12</b>
<b>IV</b>	Responsibility Accounting: Concept, Steps in responsibility Accounting, Responsibility Centers, Advantages and Limitations of Responsibility Accounting.	<b>15</b>
<b>V</b>	Other Contemporary Issues in Managerial Accounting: Target Costing; Activity Based Costing; Human Resource Accounting; Value Added Accounting; Product Life Cycle Costing, Project Life Cycle Costing	<b>14</b>
<b>VI</b>	Reporting to Management: Significance and Essentials of a Good Reports, Types of Accounting Reports; Levels of Management and Report.	<b>10</b>
<b>Suggested Reading:</b> 1. Man Mohan and Goyal, Management Accounting, Sahitya Bhawan, Agra 2. Jagdish Prasad, Management Accounting, Kalyani Publishers, Ludhiana. 3. P.N. Reddy and H.R. Appannaiah, Essentials of Management Accounting, Himalaya Publishing House, New Delhi 4. Dr. R. R. Rustagi, Management Accounting, Taxmann, New Delhi 5. M.N. Arora, Accounting for Management, Himalaya Publishing House, New Delhi 6. Ravi M. Kishore, Advanced Management Accoounting, Taxmann, New Delhi 7. Ravi M. Kishore, Management Accoounting, Taxmann, New Delhi 8. I.M. Pandey, Management Accounting, Vikas Publishing House, New Delhi 9. S.P. Gupta, Management Accounting, Sahitya Bhawan, Agra		

Programme: M.Com.	Year: V	Semester: Ninth
Subject: Commerce		
CourseCode:MC-904 (I)	Group B: Finance Course Title: Financial System in India	
Course outcomes: Students are able to analyse the financial market processes and their factors, and make successful financial decisions at an individual as well as company level. Students are able to analyse different credit instruments and ownership instruments o use statistical reasoning for research projects undertaken later.		
Credits: 5		Core Compulsory/Elective: Compulsory
Max. Marks: 25+75		Min. Passing Marks: 36
Total No. of Lectures: 75		
Unit	Topics	No. of Lectures
I	Introduction: Concept of Financial System; Economic Development and Financial System; Growth of Indian Financial System – Pre-1951 Scenario, 1951 to Mid-Eighties Scenario, After Mid-Eighties Scenario and Present Composition.	12
II	Money Market: Emerging Structure of Indian Money Market; Instruments of Money Market; Money Market Mutual Funds – An Overview and RBI’s Regulatory Guidelines; Commercial Banks – Role in Industrial Finance and Working Capital Finance.	15
III	Capital Market: Concept, Structure and Functions of Capital Market; Primary Market – Concept, Instruments of Issue and Methods of Floatation; Secondary Market – Concept, Market Players, Trading System and Settlement	15
IV	Institutional Structure-Indian Financial Institutions: Development Banks - IFCI, ICICI, SFCs and IDBI; Investment Institution – UTI and other Mutual Funds; Insurance Organisations – Life Insurance Corporation of India and General Insurance Corporation of India.	15
V	Institutional Structure-International Financial Institutions: Organisation, Management; Functions and Working of International Financial Institutions – International Monetary Fund (IMF), International Bank for Reconstruction and Development (IBRD), International Development Agency (IDA) and Asian Development Bank (ADB).	18
Suggested Readings: 1. Bharati Pathak, Indian Financial System, Pearson Publications. 2. Dr. Dharmendra Kumar, Financial Market and Institution, Jagdamba Publishing House, New Delhi 3. Advani, Investment and Securities Market in India, Himalaya Publishing House, New Delhi 4. L.M. Bhole, Financial Markets and Institutions, Tata McGraw Hill, New Delhi 5. sGhose, Banking Policy in India, Allied Publications, Delhi 6. M.U. Khan, Indian Financial System, Tata Mc Graw Hill, New Delhi 7. R.M. Srivastava, Management of Indian Financial Institutions, Himalaya Publishing House, New sDelhi		

Programme: M.Com.		Year: V	Semester: Ninth
Subject: Commerce			
CourseCode:MC-904 (II)		Group B: Finance Course Title: International Financial Management	
Course outcomes: After learning International financial management students will be able to understand the exchange rates, compare inflation rates, get an idea about investing in international debt securities, ascertain the economic status of other countries and judge the foreign markets.			
Credits: 5		Core Compulsory/Elective: Compulsory	
Max. Marks: 25+75		Min. Passing Marks: 36	
Total No. of Lectures: 75			
Unit	Topics		No. of Lectures
I	Global financial environment: Overview: IMF: objectives, functions. Euro currency market. Money market, capital market: Relationship with domestic markets. Role of Finance Manager in the Global context. Balance of Payments: understanding, analysis and interpretation.		14
II	Foreign exchange Market: Nature, structure, types of transactions, exchange rate quotations, spot and forward; Arbitrage. Foreign exchange market in India: nature, structure, operations, and limitations. Exchange rate determination, forecasting, theories: Purchasing power parity, Interest rate parity etc.		16
III	Foreign Exchange risk exposure: Types of risk: Economic and translations. Accounting treatment: tax treatment of gains and losses. Exchange Risk reduction: techniques: applications and their limitations. The Risk Management Process: Hedging, Swaps, Futures, Options, Types of Derivatives, Role of SEBI. Relationship of Money market and foreign exchange market.		16
IV	Financial structure and international financing: Optimal financial structure and MNE and their foreign subsidiaries; Eurocurrency markets; International debt markets; Management of interest rate risk: interest rate options, currency options etc.		16
V	Foreign investment decisions: Multinational capital budgeting; International portfolio theory and diversification; Repositioning of funds; Working capital management in MNE. FDI and FII in India.		13
Suggested Readings:			
1. S.P.Srinivasan, B.Janakiram, International Financial Management, Wiley India, New Delhi. 2. V.Sharan, International Financial Management, 3rd Edition, Prentice Hall of India. 3. A.K.Seth, International Financial Management, Galgothia Publishing Company. 4. P.G.Apte, International Financial Management, Tata McGrw Hill. 5. Bhalla, V.K., International Financial Management, 2nd Edition, New Delhi, Anmol. 6. V.A.Avadhani, International Financial Management, Himalaya Publishing House. 7. Bhalla, V.K., Managing International Investment and Finance, New Delhi, Anmol 8. Sharan, International Financial Management, Prentice-Hall 9. Gupta, S.L.; Financial Derivatives: Theory, Concept and Problems, PHI.			



Programme: M.Com.		Year: V	Semester: Ninth
Subject: Commerce			
Course Code: MC-905 (I)		Group C: Marketing Course Title: Consumer Behaviour	
Course outcomes: The course helps students to develop basic understanding of the concepts and theories of consumer behaviour and their applications in marketing decision making.			
Credits: 5		Core Compulsory /Elective: Compulsory	
Max. Marks: 25+75		Min. Passing Marks: 36	
Total No. of Lectures: 75			
Unit	Topics		No. of Lectures
I	Introduction: Concept and Need for Study of Consumer Behaviour. Application of Consumer Behaviour; Factors Affecting Consumer Behavior; Individual Consumer – Features of Individual Consumers; Consumer Decision-making Process; Organizational Consumer–Concept, Characteristics and Types of Organisational Consumer; Organizational Consumer Decision -making Process; Consumer Research.		20
II	Consumer Behaviour Models: Economic, Learning, Psychoanalytical and Sociological Models; Howard Sheth Model; Nicosia Model; Engel-Kollat-Blackwell Model; Sheth Model of Industrial Buying.		15
III	Consumer Motivation and Personality: Motivation –Concept of Motivation, Needs and Goals; Dynamic Nature of Motivation; Hierarchy of Needs; A Trio of Needs; Major Aspects of Motivation Research; Personality – Concept and Characteristics; Stages in the Development of Personality; Self and Self-image		15
IV	Consumer Perception, Learning and Attitude: Concept and Elements of Perception; Factors Influencing Perception; Dynamics of Perception; Consumer Imagery; Concept, Process and Theories of Learning; Concept and Characteristics of Attitude; Factors Involved in Attitude Formation; Models of Attitude; Cognitive Dissonance and Attribution Theories.		13
V	Consumer in Scio-Cultural Settings: Reference Groups; Family Influences and Life Cycle; Social Class and its Measurement; Cultural Influence on Consumer Behaviour; Subcultures and Consumer Behaviour; Diffusion Process; Adoption Process.		12
Suggested Reading: 1. Schiffman and Kanuk ;Consumer Behaviour 2. Engle, Blackwell and Miniard ;Consumer Behaviour 3. Zaltman and Wallendorf ;Consumer Behaviour 4. Dr. Dharmendra Kumar, Basics of Consumer Behaviour, Sahitya Bhawan Publications,Agra. 4. Mellot, Douglas W. ;Tr.Consumer Behaviour 5. Loudon and Della Bitta ;Consumer Behaviour 6. Benneton; Consumer Behaviour			

<b>Programme:</b> M.Com.		<b>Year:</b> V	<b>Semester:</b> Ninth
<b>Subject:</b> Commerce			
<b>Course Code: MC-905 (II)</b>		<b>Group C: Marketing</b> <b>Course Title: International Marketing Management</b>	
Course outcomes: To enable the students to understand the concept, implications and procedures of International Marketing and to be able to apply those in management of International Business.			
<b>Credits:</b> 5		<b>Core Compulsory/Elective:</b> Compulsory	
<b>Max. Marks:</b> 25+75		<b>Min. Passing Marks:</b> 36	
<b>Total No. of Lectures:</b> 75			
<b>Unit</b>	<b>Topics</b>		<b>No. of Lectures</b>
<b>I</b>	<b>Introduction:</b> Concept, Scope and Significance of International Marketing; International Marketing Vs. Domestic Marketing; Factors Affecting International Marketing Tasks; Stages of International Marketing Involvement; Multinational Corporations and their Role in International Marketing.		<b>10</b>
<b>II</b>	<b>Assessing International Market Opportunities:</b> International Marketing Information System – Concept, Scope and Significance; Establishing Information System; International Marketing Research – Concept, Scope and Significance; Process of International Marketing Research; Collection of Primary and Secondary Data; Problems of Gathering Primary Data; International Marketing Research in Developing Countries.		<b>17</b>
<b>III</b>	<b>International Marketing Decisions:</b> Market Selection and Entry Decisions; Product Strategy for International Markets – Standardization Vs. Adoption; Branding Decisions; Developing New Products for International Market; International Pricing – Concept, Significance, Factors and Methods; Counter-trade as a Pricing Tool – Types of Counter-trade Problems; Involved in Counter-trading; Dumping.		<b>15</b>
<b>IV</b>	<b>International Distribution System:</b> Channel of Distribution Structures; Distribution Patterns; International Channel of Distribution Alternatives; Factors Affecting Choice of Channels; Locating, Selecting and Motivating Channel Members; International Logistics; Foreign Freight Forwarder; International Advertising – Challenges Involved in International Advertising; Media Planning and Factors Considered in it; International Communication Process; International Advertising and Internet.		<b>17</b>
<b>V</b>	<b>International Organisation Structure and Control:</b> Structures and Alternatives of Organisation Structure; Choice Criteria; Financial Requirements for International Marketing; Coordination and Control of International Marketing Operations; Cooperative International Marketing– Main Features, Objectives, Advantages and Limitations.		<b>16</b>
<b>Suggested Reading:</b> 1. Vern Terpestra, Internation Marketing, Southwest Publication, 2005 2. Varshney RL and B. Bhattacharya, International Marketing- Indian Perspective, Sultan chand publication 2006. 3. Fayerweather, J, International Marketing Management, Sage Publication, 2006 4. Cateroa, R, Phylip, International Marketing, Tata Mc Graw Hill, 2006 5. Jain Subash, International Marketing Management, Southwest Publication, 2005			

Programme: M.Com.		Year: V	Semester: Ninth
Subject: Commerce			
Course Code:MC-906 (I)		Group D: Human Resource Management Course Title: Human Resource Management	
Course outcomes: To enable students to understand procedures, processes and techniques applied in the management of Human Resource in an organization.			
Credits: 5		Core Compulsory/Elective: Compulsory	
Max. Marks: 25+75		Min. Passing Marks: 36	
Total No. of Lectures: 75			
Unit	Topics		No. of Lectures
I	Introduction: Human Resources as Sustainable Competitive Advantage in the Globalisation Era; Concept, Scope, Objectives and Importance of Human Resource Management; Challenges Faced by a Modern Human Resource Manager; Broad Functions of an HRM Department.		15
II	HR Policies, Planning and Procurement: Need and Types of HR Policies; Indian Labour Policy; Steps in HR Planning; Determination of HR Requirements; Job Analysis; Recruitment and Selection Process; Placement and Orientation.		10
III	Training and developing the HR: Modern Concept of Training; Training Needs and Objectives; New Roles/Holds of Training Types and Methods of Training; Evaluating Effectiveness of Training; HRD Concept and Components; Training and Development Facilities in India; Methods of Performance Appraisal Including 360 Degree Performance Appraisal; Exit of HRS, VRS/Golden Handshake.		20
IV	HR Compensation and Motivation: Significant Factors Affecting Compensation Policy; Monetary and Non-monetary Rewards; Incentive Systems of Payment; Wage Policy and Wage Fixation in India, Pre-requisites of a Sound Motivational Programme; Motivating Factors and Morale-Building.		15
V	Maintenance of Discipline, Communication and HR Records:Causes of Indisciplinary Action; Model Grievance Procedure; Channels of Communication; Maintaining HR Records and Statistics.		15
Suggested Readings: 1. Khanka, S.S.: Human Resource Planning 2. Decenzo,: Hunan resource management/personnel management. 3. Mamoria, C,B.: Human Resource Management and Planning. 4. Rao,VSP.: Human Resource management-text and case. 5. Desslir: Human Resource management. 6.Gupta C.B: Human Resource management. 7. V.S.P Rao, Human Resource Management, Text and Cases, Excel Books, New Delhi.			

Programme: M.Com.		Year: V	Semester: Ninth
Subject: Commerce			
Course Code: MC-906 (II)		Group D: Human Resource Management Course Title: Labour Legislation in India- I	
Course outcomes: Students will know the development and the judicial setup of Labour Laws. They will learn the salient features of welfare and wage Legislations also to integrate the knowledge of Labour Law in General HRD Practice.			
Credits: 5		Core Compulsory /Elective: Compulsory	
Max. Marks: 25+75		Min. Passing Marks: 36	
Total No. of Lectures: 75			
Unit	Topics		No. of Lectures
I	Introduction: Objectives, Need and Principles of Labour Legislation; Historical Development of Labour Legislation in India; Labour Laws Awareness among Workers in India.		10
II	Factories Act, 1948: Object and Scope of the Act; Key Definitions; Rights of Workers; Provisions Regarding Health, Safety and Welfare of the Workers; Working Hours, Leave, Penalties and Procedures.		20
III	Industrial Disputes Act, 1947: Object and Scope of the Act; Key Definitions; Authorities for Prevention and Settlement of Disputes; Strikes and Lock-outs; Unfair Labour Practices and Penalties.		20
IV	Payment of Wages Act, 1936: Object of the Act; Key Definitions; Rules for Payment of Wages; Deductions from Wages; Enforcement of the Act.		10
V	Minimum Wages Act, 1948: Object and Scope of the Act; Key Definitions; Fixation and Revision of Minimum Rates of Wages; Fixing Hours of Normal Working Day; Enforcement of the Act. The Apprentices Act, 1961: Salient Features and Main Provisions.		15
Suggested Readings:			
1. R.C. Agarwal, Industrial Law, Sahitya Bhawan Publishers & Distributors, 2. R.L. Naulakha, Industrial Laws 3. Personnel & Human Resource Management – Text & Cases by P. SubbaRao 4. Human Resource Management and Personnel Management - Aswathappa, Tata McGraw Hill, New 5. Human Resource Management - S. S. Khanka, S. Chand & co., New Delhi			

Programme: M.Com.		Year: V	Semester: Ninth
Subject: Commerce			
Course Code: MC-907 (I)		Group E: Banking & Insurance Course Title: Money and Banking	
Course outcomes: Students will understand the role of money and banks in the broader economy. Specially, students should understand the unique role of banks in the financial system. They will also learn the relevance of the Federal Reserve and related central banking topics			
Credits: 5		Core Compulsory/Elective: Compulsory	
Max. Marks: 25+75		Min. Passing Marks:36	
Total No. of Lectures: 75			
Unit	Topics		No. of Lectures
I	Introduction to Money: Meaning, Nature and functions; Barter system and Monetary standards		10
II	Indian Banking System, Banking and Non-Banking Financial Intermediaries in India;		15
III	Central Banking—Central Banking Systems, RBI — Functions, Credit Creation and Credit Control		10
IV	Financial System; Financial Markets – Functions and Types; Money Market and Capital Market – nature, functions and instrument; Structure of Indian money and capital markets.		25
V	Foreign Banks and Changing Dimensions of Regulatory framework in Indian Banking system.		15
<b>Suggested Readings:</b> 1. Bhole, L. M. (2004). Financial Institutions and Markets: Structure, Growth and Innovations. India: Tata McGraw-Hill Education 2. Gautam, S.K. (2012): Money, banking and finance. Mumbai, Vakratund publishers. 3. Hajela, T.N (2009): Money and banking: Theory with Indian banking. New Delhi, Ane books Pvt. Ltd. 4. Hajela, T.N. (2015): Money banking and public finance, New Delhi, Ane Books Pvt. Ltd. Iyenagar (2011): Money matters: Macroeconomics and financial markets, New Delhi, Sage publications 5. Mithani, D.M. (2013): Money, Banking, international trade and public finance, New Delhi, Himalaya publishing house 6. Poonia, V. (2012): Money banking in India. New Delhi, Srishti books distributors. 7. Uppal, R.K (2011): Money banking and finance: evolution and present structure, New Delhi, new century publications Note: Latest Edition of books are recommended.			

<b>Programme:</b> M.Com.	<b>Year:</b> V	<b>Semester:</b> Ninth
<b>Subject:</b> Commerce		
<b>Course Code: MC-907 (II)</b>	<b>Group E: Banking &amp; Insurance</b> <b>Course Title: Customer Relationship Management in Banks</b>	
Course outcomes: Learners will understand the basic concepts of Customer relationship management with marketing aspects of Customer relationship management. They also Learn basics of analytical Customer relationship management.		
<b>Credits:</b> 5	<b>Core Compulsory/Elective:</b> Compulsory	
<b>Max. Marks:</b> 25+75	<b>Min. Passing Marks:</b> 36	
<b>Total No. of Lectures:</b> 75		
<b>Unit</b>	<b>Topics</b>	<b>No. of Lectures</b>
<b>I</b>	<b>CRM and Banks:</b> Concepts; Automations; Process and Technology of CRM; Area of CRM.	<b>10</b>
<b>II</b>	<b>Components of CRM on Banks:</b> CRM Architecture; Architectural Solutions of CRM Problems; Time Schedules Projections in Banks; Grouping of Beneficiaries and Customers.	<b>20</b>
<b>III</b>	<b>Electronic CRM in Banks:</b> Need for Electronic CRM; Goal Satisfying Customers; Electronic CRM Application; CRM Suppliers and Customer Information Convergence.	<b>10</b>
<b>IV</b>	<b>Customer Relationship Management Demystified:</b> E-CRM Architecture; E-CRM-Global Scenarios ATM; Home Services-CRM; Customer Relationship Management Buzz.	<b>15</b>
<b>V</b>	<b>CRM in Indian Banking:</b> CRM Concept Understanding the Process; CRM in Interactive; Networking Vectors; Continue Invasions of CRM Market; Customer Relationship; Portal Quality Management in Banks.	<b>20</b>
<b>Suggested Readings:</b> 1. R.K. Uppal , Customer Relationship Management in Indian Banking Industry 2. A.R. Malipatel, Ravi Shukla, CRM Practices in Banking Sector, Lambert Academic Publishing. 3. Judith W. Kincaid, Customer Relationship Management Getting it Right, Pearson Education 4. H.Peeru Mohamed , A Sagadevan, Custmer Relationship Management, A Step by Step Approach, Vikas Publishing House 5. Customer Centricity –Focus on right customer for strategic advantage, by Peter Fader, Wharton Digital Press, 2012 6. G. Shainesh, Jagdish, N.Sheth, Atul Parvatiyar, Customer Relationship Management: Emerging Concepts, Tools and Applications, Macmillan 2005. 7. Ekta Rastogi, Customer Relation Management: Text and Cases, Excel Books, 2011 8.		



<b>Programme:</b> M.Com.	<b>Year:</b> V	<b>Semester:</b> Ninth
<b>Subject:</b> Commerce		
<b>Course Code:</b> MC-908	<b>Group:</b> A/B/C/D/E <b>Course Title:</b> Dissertation/ Project/ Survey/Seminar/Viva-voce	
Course outcomes: Project report writing trains a student to communicate information in an effective and convincing way, thus, contributing to the organizational planning and decision making. (PR) in itself is a complete and compact training programme. As part of the M.Com curriculum students are required to undertake the Project Report (PR) in their major specialization. For this purpose the student would be assigned a Faculty member as his/her Project Guide. The PR would commence at the beginning of the respective semester. To carry out the study students can associate themselves with any business organization or can do the study independently. The student would choose a topic of his/her choice, conduct investigative research into the nature, reasons, causes, effect of the problem on different aspects of business and carry out a detailed research based on the current literature and collected data and compile a comprehensive report on the topic. The essential aspect shall be to analyze the existing knowledge and data to present new findings or propose a new model.		
<b>Credits:</b> 4	<b>Core Compulsory/Elective:</b> Compulsory	
<b>Max. Marks:</b> 100	<b>Min. Passing Marks:</b> 40	
<b>(Project Report activity and format)</b> <b>The following activity schedule has been developed to facilitate the process.</b>		
<b>Important dates</b>		
<b>Activity</b>	<b>Last Date (tentative)</b>	
Topic finalization with mentor	31 <sup>st</sup> August	
Synopsis submission to mentor	1 <sup>st</sup> October	
Approval by Mentor	10 <sup>th</sup> October	
Preliminary Report submission	20 <sup>th</sup> November	
Viva-voce for Report I (by internal panel)	30 <sup>th</sup> November (tentative date)	
Final report submission	10 <sup>th</sup> December	
Viva-voce (by external panel)	After end semester examination	
<b>Final Report Submission:</b> This part would involve data collection, tabulation, data analysis, findings, suggestions, limitations, conclusion, and scope for further studies. Students should use appropriate data analysis tools and software. Every report must be hard bounded with Black Leatherette cover duly embossed in Golden in BOLD letters with the Project Title, Student's name & roll no., class, batch and year and must be submitted to the Department. Copy of Synopsis should also be submitted. Following should be the chapterization scheme of the report. The list of chapters is indicative in nature and can be modified by the Faculty guide if required.		
<b>Indicative chapters for Final Research Report</b>		
<ul style="list-style-type: none"><li>○ Introduction (Background and significance)</li><li>○ Literature Review &amp; Theoretical background</li><li>○ Objectives</li><li>○ Hypothesis</li><li>○ Research Design and sampling design &amp; Theoretical model</li><li>○ Data Analysis</li><li>○ Findings</li><li>○ Suggestion &amp; Limitations</li><li>○ Conclusion</li><li>○ Appendix, Bibliography &amp; Reference, Questionnaires, Scales</li></ul>		
<b>Plagiarism/ Cheating/ Unfair Means in Projects/ Assignments</b>		
Plagiarism is when you steal the thoughts or writing of others and offer them as your own. Everyone repeats someone else's ideas at some point in their academic career but when doing so, it is important to acknowledge it. You can avoid plagiarism by quoting within inverted commas and acknowledging the source. But mostly the reference must be in your own words. Maximum % of Plagiarism cannot exceed 20 %		
<b>Final Submission of the Project:</b> Hard copy and soft copy of the Project Report along with the Synopsis shall be submitted to the College for evaluation.		



<b>Programme:</b> M.Com.	<b>Year:</b> IV	<b>Semester:</b> Eighth
<b>Subject:</b> Commerce		
<b>Course Code:</b> MC-1001 (I)	<b>Group A: Accounting</b> <b>Course Title: Advance Cost Accounting</b>	
Course outcomes: This course exposes the students to the basic concepts and advance problems of cost Accounting along with the tools used in cost accounting.		
<b>Credits:</b> 5	<b>Core Compulsory/Elective:</b> Compulsory	
<b>Max. Marks:</b> 25+75	<b>Min.PassingMarks:</b> 36	
<b>Total No. of Lectures:</b> 75		
<b>Unit</b>	<b>Topics</b>	<b>No. of Lectures</b>
<b>I</b>	Introduction to Cost Accounting: Introduction, Important Cost Accounting Terms, Elements of Cost, Classification of Cost, Cost Accounting Standards	<b>12</b>
<b>II</b>	Cost Book Keeping, Preparation of Cost Sheet and Ascertainment of Profit, Reconciliation of Costing and Financial Profit	<b>16</b>
<b>III</b>	Methods of Costing: Job Costing, Batch Costing, Contract Costing	<b>14</b>
<b>IV</b>	Methods of Costing: Process Costing, Operating Costing – Transport, Hotel and Healthcare	<b>18</b>
<b>V</b>	Cost Accounting Techniques: Marginal Costing, Standard Costing, Budget and Budgetary Control	<b>15</b>
<b>Suggested Reading:</b> 1. Ravi M. Kishore, Cost Management, Taxmann Allied Services Pvt. Ltd., New Delhi 2. M. N. Arora, Advanced Cost Accounting, Vikas Publishing House, New Delhi 3. J. Madegowda, Advanced Cost Accounting, Himalaya Publishing House, New Delhi 4. S.P. Iyengar, Cost & Management Accounting, Sultan Chand & Sons, New Delhi 5. C.S. Rayudu, Cost Accounting, Tata McGraw Hill, New Delhi 6. Shukla and Grewal, Cost Accounting, Sultan Chand and Co., New Delhi		

Programme: M.Com.		Year: V	Semester: Tenth
Subject: Commerce			
Course Code: MC-1001 (II)		Group A: Accounting Course Title: Advanced Auditing	
Course outcomes: students will be able to Demonstrate an ability to plan an audit and appropriately select, design and apply specific audit evidence gathering techniques. They will understand the broader role of auditing in commerce and society.			
Credits: 5		Core Compulsory/Elective: Compulsory	
Max. Marks: 25+75		Min. Passing Marks: 36	
Total No. of Lectures: 75			
Unit	Topics		No. of Lectures
I	Introduction: Definition, Scope and Objectives of Auditing; Basic Principles Governing an Audit; Audit Evidence; Audit Planning and Programming; Audit Sampling; Analytical Procedure; Introduction to Statements on Standard Auditing Practices.		12
II	Company Audit: Provisions of the Companies Act, 1956 as Regards Maintenance of Books of Accounts and Registers; Audit of Share Capital; Audit of Reserves and Surplus; Audit of Debentures; Audit of Public Deposits; Audit of Investment.		15
III	Cost Audit: Definition and Objective; Cost Audit vis-à-vis Financial Audit; Advantages and Criticism against Cost Audit; Cost Auditor–Qualifications and Appointment Cost Audit Procedure – Material, Labour, Overheads, Depreciation, Work-in-progress and Stores and Spare Parts; Cost Audit Report.		15
IV	Management Audit: Definition, Objectives, Need and Importance of Management Audit; Management Auditor – Qualifications and Appointment; Techniques of Management Audit; Management Audit Vs. Financial Audit; Audit of Management Functions – Production, Personnel, Finance and Accounts, Selling and Distribution, General Management and Management Information System; Management Audit Report.		20
V	Current Issues in Auditing: Audit of Members of Stock Exchange; Non-Banking Financial Company; Mutual Funds; Depositories; Environmental Audit; Quality Audit		13
Suggested Readings: 1. Gupta Kamal : Contemporary Auditing, TATA Mc Graw, New Delhi. 2. Tandon, B.N. : Principles of Auditing, S. Chand & Company, New Delhi. 3. Pargare Dinkar : Principles and practices of Auditing, Sultan Chand, New Delhi. 4. Sharma, T.R. : Auditing Principles and Problems, Sahitya Bhawan, Agra. (Hindi andEnglish) 5. Yadav, Pankaj, Auditing, Neel Kamal Prakashan, Delhi(Hindi and English) 6. Sharma, Sanjeev, Auditing: MK Publications , Agra (Hindi and English) Note- Latest edition of the text books should be used.			

Programme: M.Com.	Year: V	Semester: Tenth
Subject: Commerce		
Course Code:MC-1001 (III)	Group A: Accounting Course Title: Tax Planning and Management	
Course outcomes: Students will get expert knowledge regarding the legitimate way of Tax Planning and Management under different Financial and managerial decisions after considering the impact of Direct Tax Laws.		
Credits: 5	Core Compulsory/Elective: Compulsory	
Max. Marks: 25+75	Min. Passing Marks:36	
Total No. of Lectures: 75		
Unit	Topics	No. of Lectures
I	Introduction to Tax Management: Concept of Tax Planning; Tax Avoidance and Tax Evasion; Corporate Taxation and Dividend Tax; Tax Planning with Reference to Location, Nature and Form of Organization of New Business.	15
II	Tax Planning and Financial Management Decisions: Tax Planning Relating to Capital Structure Decision, Dividend Policy, Inter-Corporate Dividends and Bonus Shares.	12
III	Tax Planning and Managerial Decisions: Tax Planning in Respect of Own or Lease; Sale of Assets Used for Scientific Research; Make or Buy Decisions, Repair, Replacement, Renewal or Renovation and Shutdown or Continue Decisions.	13
IV	Special Tax Provisions: Tax Provisions Relating to Free Trade Zones, Special Economic Zones, Infrastructure Sector and Backward Areas; Tax Incentives for Exporters; 100% Export Oriented Units; Carry Forward and Set Off of Losses and Depreciation.	18
V	Tax Payment and Issues Related to Amalgamation: Tax Deductions and Collection at Source; Advance Payment of Tax; Tax Planning with reference to Merger, Demerger, Reversemerger etc.	17
Suggested readings:		
1. Singhania, Vinod K. and Monica Singhania. Students' Guide to Income Tax, University Edition. Taxmann Publications Pvt. Ltd., New Delhi. 2. Ahuja, Girish and Ravi Gupta. Systematic Approach to Income Tax. Bharat Law House, Delhi. 3. S.P. Goyal, Direct Tax Planning, Sahitya Bhawan, Agra 4. Lakhotia, R.N., Corporate Tax Planning, Vision Publications, New Delhi 5. Agarwal, B.K., Direct Tax Law and Accounts (Hindi and English) 6. Mehrotra, H.C. & Joshi C.S., Income Tax law and Accounts (Part-I), Sahitya Bhawan, Agra (Hindi &English)		

Programme: M.Com.		Year: IV	Semester: Tenth
Subject: Commerce			
CourseCode:MC-1001 (IV)		Group A: Accounting Course Title: Accounting for Planning and Control	
Course outcomes: Students will able to critically analyse and provide recommendations to improve the operations of organisations through the application of management accounting techniques; demonstrate mastery of costing systems, budgeting systems and performance measurement systems.			
Credits: 5		Core Compulsory/Elective: Compulsory	
Max. Marks: 25+75		Min. Passing Marks:36	
Total No. of Lectures: 75			
Unit	Topics		No. of Lectures
I	Budgetary Control: Budget and Budgetary Control; Essentials for Effective Budgeting; Advantages; Types of Budgets; Flexible Budgeting and Zero –base Budgeting.		15
II	Standard Costing and Variance Analysis: Concept and Objects of Standard Costing; Setting of Standards; Variance Analysis- Material, Labour and Overhead Variances.		15
III	Break-even Analysis: Assumptions and Limitations; Break-even chart; P/V ratio; Practical Application of Break-even Analysis.		10
IV	Marginal Costing: Concept and Distinction with Absorption Costing; Uses of Marginal Costing in Profitability Decisions, Pricing Decisions, Make or Buy Decisions and Decisions Relating to Suspension of Activities.		20
V	Responsibility Accounting: Concept; Responsibility Centres – Cost, Profit, and Investment Centres; Advantages; Transfer Pricing - Market-based Price and Cost-based Price.		15
Suggested Reading: 1. Horngreen : Management Accounting. PHI 2. Homgreen Charies T., and Gary L. Sundem and William O. Stration, Introduction to Management Accounting, Prentice Hall of In dia, 2006. 3. Dury Colin, Management and Cost Accounting, Thomson Learning, 4. Jawahar Lal, Advanced Management Accounting, Text Problems and Cases, S. Chand & Co., New Delhi, 2 5. S.N. Maheswari: Management Accounting. 6. Management Accounting : Dr. A.K. Garg and Dr. V.P. Srivastava, Swati Prakashan.			

Programme: M.Com.		Year: V	Semester: Tenth
Subject: Commerce			
Course Code: MC-1002 (I)		Group B: Finance Course Title: Security Analysis and Portfolio Management	
Courseoutcomes:: Security Analysis & Portfolio Management, as an academic discipline, is constantly changing and stimulating. The man objective op paper is to explain the investment decision making and investment process. It focuses on the investment analyses.			
Credits: 5		Core Compulsory/Elective: Compulsory	
Max. Marks: 100		Min. Passing Marks: 36	
Total No. of Lectures: 75			
Unit	Topics		No. of Lectures
I	Introduction: Meaning, Nature and Scope of Security Investment; Various Approaches for Investment Decisions; Investment Process; Various Attributes of Investment; Investment Environment - Instruments, Markets, Regulations etc.		10
II	Fundamental Security Analysis: Meaning and Scope of Fundamental Analysis; Features and Impact of Economic Indicators and Industry Level Factors; Company Analysis – Financial Performance and Forecasting; Intrinsic Value of Shares.		15
III	Technical Security Analysis: Meaning and Significance of Technical Analysis; Technical Analysis Vs. Fundamental Analysis; Traditional and Modern Tools of Technical Analysis; Various Forms of Efficient Market Hypothesis.		15
IV	Portfolio Analysis: Security Risk and Return Vs. Portfolio Risk and Return; Various Components of Risks-Market Risk, Inflation Risk, Management Risk, Liquidity Risk, Business Risk, Financing Risk etc.; Systematic Vs. Unsystematic Risks.		15
V	Portfolio Management: Selection and Management of Optimum Portfolio Under Markowitz Model; Sharpe Model, Capital Asset Pricing Model (CAPM) and Arbitrage Pricing Model; Portfolio Selection Under Risk-free Lending and Borrowing Assumptions; Portfolio Appraisal and Revision.		20
Suggested Readings:  1. Fisher & Jordon : Security Analysis and Portfolio Management. 2. Apte : International Financial Management. 3. V.K. : BhallaInvestment Management. 4. Avadhani : Security analysis and portfolio management.			

Programme: M.Com.	Year: V	Semester: Tenth
Subject: Commerce		
Course Code: MC-1002 (II)	Group B: Finance Course Title: Project Management	
Course outcomes: To provide adequate knowledge to the students for formulating and handling of project.		
Credits: 5	Core Compulsory/Elective: Compulsory	
Max. Marks: 25+75	Min. Passing Marks:36	
Total No. of Lectures: 75		
Unit	Topics	No. of Lectures
I	Conceptual Framework to Project and Project Management; Topologies of Projects, Phases of a Project Life-cycle; Stages of a Project; Project Management Team.	10
II	Project Ideas; Screening of Ideas; Pre-feasibility Study; Support Study; Feasibility Study; Detailed Project Report; Project Appraisal.	10
III	Major Cost Components of the Project; Sources of Project Financing; Planning Capital Structure; Cost of Production and Profitability Estimate; Cash Flow Estimates; Projected Balance Sheet; Break-even Analysis.	20
IV	Investment Evaluation under Certainty; Risk and Uncertainty; Project Evaluation Techniques-Pay-Back Period, Profitability Index, Net Present Value, Internal Rate of Return, Certainty Equivalent Approach and Sensitivity Analysis.	20
V	Project Organisation; Project Planning and Scheduling; GANTT Charts; Critical Path Method; Programme Evaluation Review Technique.	15
Suggested Readings:		
1. Prasanna Chandra: Project: Preparation, Appraisal, Budgeting and Implementation. 2. P.K. Matto: Project Formulation in Developing Countries 3. Dass Gupta & Sen: Guideline for Project Evaluation 4. D.K. Jain: Project Planning and Appraisal in Planned Economy		

<b>Programme:</b> M. Com.	<b>Year:</b> V	<b>Semester:</b> Tenth
<b>Subject:</b> Commerce		
<b>Course Code: MC-1002 (III)</b>	<b>Group B: Finance</b> <b>Course Title: Fee Based Financial Services</b>	
Course outcomes: Learners will understand the operations of different financial services. Students will able to describe clients’ dispositions toward risk and identify appropriate strategies to pursue they will Identify the factors that affect various financial services and evaluate relationships between the prices of securities and interest rates.		
<b>Credits:</b> 5		<b>Core Compulsory/Elective:</b> Compulsory
<b>Max. Marks:</b> 25+75		<b>Min.PassingMarks:</b> 36
<b>Total No. of Lectures:</b> 75		
<b>Unit</b>	<b>Topics</b>	<b>No. of Lectures</b>
<b>I</b>	<b>Merchant Banking:</b> Meaning; Origin; Merchant Banks and Commercial Banks; Services of Merchant Banks; Regulation By SEBI; Merchant Banking in India.	<b>15</b>
<b>II</b>	<b>Underwriting:</b> Meaning and Nature of Underwriting; Forms of Underwriting; Need and Significance of Underwriting; Underwriting of Capital Issues in India; SEBI’s Guidelines on Underwriting.	<b>15</b>
<b>III</b>	<b>Credit Rating:</b> Meaning and Functions of Credit Rating; Significance of Credit Rating; Credit Rating in India; Rating Process and Methodology; Credit Rating Agencies in India; Limitations of Rating; Future of Credit Rating in India.	<b>20</b>
<b>IV</b>	<b>Stock Broking:</b> Introduction; Stock Brokers; Sub-Brokers; Foreign Brokers; Stock Market Trading.	<b>10</b>
<b>V</b>	<b>Depository Services:</b> Meaning and Objectives of Depository Services; Depository Process; Trading in a Depository System; Depository System in India; Depository Institution in India; SEBI Regulations.	<b>15</b>
<b>Suggested Readings:</b>  1. M.Y. Khan, Financial Services, 6 <sup>th</sup> edition, Mc- Graw Hill Educations 2. Mary Rowland, Best Practices for Financial Advisors, Bloomberg Publications.		



<b>Programme:</b> M.Com.	<b>Year:</b> V	<b>Semester:</b> Tenth
<b>Subject:</b> Commerce		
<b>Course Code: MC-1002 (IV)</b>	<b>Group B: Finance</b> <b>Course Title: Securities Market Operations</b>	
Course outcomes: Learners will understand the role and importance of Indian Stock market Operations. They will Apply and analyze the Concepts relevant to Indian Stock markets. And will understand and analyze the mechanism and regulation of financial instruments and determine how the value of stocks, bonds, and securities.		
<b>Credits:</b> 5		<b>Core Compulsory/Elective:</b> Compulsory
<b>Max. Marks:</b> 25+75		<b>Min. Passing Marks:</b> 36
<b>Total No. of Lectures:</b> 75		
<b>Unit</b>	<b>Topics</b>	<b>No. of Lectures</b>
<b>I</b>	<b>Securities Markets:</b> Primary and Secondary Markets; Role and Functions of New Issue Market; Methods of Floatation; Pricing of Issues; Offer Documents; Appointment and Role of Merchant Bankers, Underwriters, Brokers, Registrars, Lead Managers and Bankers; Underwriting of Capital Issues.	<b>20</b>
<b>II</b>	<b>Stock Market in India:</b> Meaning, Functions and Importance; Mechanics of Stock Market Trading-Different Types of Orders, Screen Based Trading, Internet-Based Trading and Settlement Procedure; Types of Brokers.	<b>13</b>
<b>III</b>	<b>Legal Framework of Securities Market:</b> SEBI Guidelines Relating to the Functioning of the New Issue Market; Stock Exchanges and Intermediaries; SEBI and Investor Protection; Securities Contract Regulation Act and Listing of Securities; Regulations and Guidelines for FIIs.	<b>17</b>
<b>IV</b>	<b>Trading Pattern in OTCEI:</b> Meaning, Significance and Functions; Procedure of Listing and Trading on OTC; NSE-Functioning and Trading Pattern in NSE-Capital Market Segment and Wholesale Market Segment;Security Market Indicators-Need and Importance; BSE Sensex, NSE, NIFTY and other Index Numbers.	<b>15</b>
<b>V</b>	<b>Demat Trading:</b> Meaning and Significance; Role of Depositories and Custodian of Securities in Demat Trading; SEBI Guidelines and other Regulations Relating to DematTrading; Procedure of Demat Trading.	<b>10</b>
<b>Suggested Readings:</b> 1. Keith Dickinson, Financial Markets Operation Management, Wiley Finance Series. 2. National Institute of Securities Markets, Securities Operations and Risk Management, Taxmann Publications		

Programme: M.Com.		Year: V	Semester: Tenth
Subject: Commerce			
Course Code: MC-1003 (I)		Group C: Marketing Course Title: Advertising and Promotion Management	
Course outcomes: Students will able to distinguish among marketing and advertising terms and categorize business activities, such as production, management, and finance, and describe how these activities relate to marketing.			
Credits: 5		Core Compulsory/Elective: Compulsory	
Max. Marks: 25+75		Min. Passing Marks:36	
Total No. of Lectures: 75			
Unit	Topics		No. of Lectures
I	Introduction: Concept, Functions and Significance of Advertising; Advertising Communication System and Perception Process; Setting Advertising Objectives; The DAGMAR Approach.		12
II	Advertising Strategy Planning: Need for Advertising Strategy Planning; Steps Involved in Developing Advertising Strategy; Considerations in Developing Advertising Strategy; Advertising Organisation – Factors Considered and Organisational Approaches; Advertising Agency – Role and Functions; Organization of Agency; Advertiser and Agency Relationship; Agency Compensation.		18
III	Creation of Advertisements: Advertising Appeals – Concept, Classification and Essentials; Advertising Copy – Copywriting and Structure of Copy; Advertising Layout – Concept, Functions and Principles.		15
IV	Advertising Media and Budget: Advertising Media – Principal Media; Media Selection Problems; Considerations in Media Selection; Media Scheduling; Advertising Budget – Approaches to Advertising Budget and Factors Influencing Budget; Measuring Advertising Effectiveness – Rationale and Techniques of Measurement.		20
V	Sales Promotion and Public Relations: Concept and Types of Sales Promotion; Concept and Tools of Public Relations; Social and Economic Effects of Advertising; Advertising and Competition; Advertising Regulations in India.		10
Suggested Readings:			
1. Kotler, Keller, Koshy And Jha “Marketing Management” 13th edition Pearson Education 2. Trehan Mukesh, Trehan Ranju, Advertising & Sales Management, Vikas Publishing House 3. Chunnawalla S.A., Advertising, Sales & Promotion Management, Himalaya Publisng House 4. Belch, MA & Belch GE – Advertising and Promotion, An Integrated Marketing Communications Perspective, Sixth Edition, Tata McGraw Hill 5. Manendra Mohan, Advertising Management, Concept and Cases, Tata McGraw Hill Publication. 6. Rajeev Batra, John G. Myers & David A. Aaker, Advertising Management, Pearson Publication			

Programme: M.Com.		Year: V	Semester: Tenth
Subject: Commerce			
Course Code: MC-1003 (II)		Group C: Marketing Course Title: Agricultural Marketing	
Course outcomes: Students will understand and appreciate the structure and working of the agricultural marketing system and they will Learn how agriculture marketing system affects the farmers, consumers and intermediaries.			
Credits: 5		Core Compulsory/Elective: Compulsory	
Max. Marks: 25+75		Min. Passing Marks:36	
Total No. of Lectures: 75			
Unit	Topics		No. of Lectures
I	Introduction: Concept and Significance of Agricultural Marketing; Functions of Agricultural Marketing; Agricultural Marketing Planning Process; Agricultural Marketing Costs; Problems of Agricultural Marketing; Agricultural Marketing and Credit.		10
II	Agricultural Consumers and Markets: Nature and Types of Agricultural Consumers; Buying Behaviour of Agricultural Consumers; Types of Agricultural Markets; Classification of Agricultural Products; Development in the Area of Agricultural Products.		15
III	Pricing and Distribution of Agricultural Products: Factors Affecting the Pricing of Agricultural Products; Problems Involved in Pricing of Agricultural Products; Retail Prices and Farm Prices; Fluctuation in the Prices of Agricultural Products; Prices in Competitive Markets; Channels of Distribution for Agricultural Products; Whole Selling and Retailing; Transportation and Storage.		20
IV	Creating Demand for Agricultural Products: The Role of Promotion in Increasing Demand; Advertising of Agricultural Products; Agricultural Cooperatives and their Problems; Government and Agricultural Marketing.		15
V	Commodity Marketing: Dairy Marketing; Grain Marketing; Herbs Marketing; Live Stock Marketing; Cotton Marketing; Marketing of Processed Food; Recent Developments in Agricultural Marketing in India.		15
Suggested Reading: 1. S.S. Acharaya, N.L. Agrawal Agriculture Marketing in India Oxford IBH. New Delhi- 1992 2. L. P. Singh Cooperative marketing in India and Abroad; Himalaya 2005 3. Sukpal Singh Rural Marketing Management; Sage 2002 4. H.C. Purohit Rural Marketing - Challenges and Opportunities; Shale Publications, New Delhi- 2006 5. Anil Saxena, Samiuddin, Harsh Rural Marketing opportunities and challenges; National Publishing House, New Delhi 2004 6. Mishra and Puri Development Issues of Indian Economy; Himalaya Publishing House 7. Acharya S.S. and Agrawal N.L; Agricultural Marketing in India 8. Beri, G.C, ‘Marketing Research: Tata McGraw Hill Publishing Company, Ltd., 2000. Cooper Schindler, ‘Marketing Research, Concept & Cases’			

Programme: M.Com.		Year: V	Semester: Tenth
Subject: Commerce			
Course Code: MC-1003 (III)		Group C: Marketing Course Title: Foreign Trade Management	
Course outcomes: Students will understand the pattern and direction of India’s external trade Comprehend the export promotional infrastructure in India and learn functions of export promotional organizations and also able to evaluate current Foreign Trade Policy of India			
Credits: 5		Core Compulsory/Elective: Compulsory	
Max. Marks: 25+75		Min. Passing Marks: 36	
Total No. of Lectures: 75			
Unit	Topics		No. of Lectures
I	Introduction: Concept, Features and Importance of Foreign Trade; Types, Advantages and Limitations of Foreign Trade; Foreign Trade Vs. Home Trade; Problems Involved in Foreign Trade; Tariff and Non-Tariff Barriers; Trade Agreements; Important Classical and Modern Trade Theories.		10
II	Foreign Exchange Management: Concept and Importance of Foreign Exchange; Determination of Foreign Exchange Rate-its Theories; Foreign Exchange Market-Functions and Means of Settlement of International Transactions; Types of Foreign Exchange Rates; Factors Influencing Foreign Exchange Rates; Foreign Exchange Control; Balance of Payments-Concept, Components and Importance of Balance of Payments.		20
III	Foreign Trade Procedure and Documentation: Export Trade Procedure; Import Trade Procedure; Documents Involved in Export and Import Trade; Import and Export Duties; Custom Formalities; Organisation of Foreign Trade; Mercantile Agents in Foreign Trade; Export and Import Houses.		15
IV	Credit and Financing of Foreign Trade: Need for and Importance of Financing of Foreign Trade; Kinds of Credit; Institutional Set-up for Financing of Foreign Trade in India; Modes of Payment under Foreign Trade; Risk Management in Foreign Trade and ECGC.		15
V	India’s Foreign Trade: Broad Features, Composition and Direction of India’s Foreign Trade; Broad Features of Foreign Trade Policy; Organisational Set-up for Promotion of Foreign Trade; Export Assistance and Incentives; Government Agencies in Foreign Trade-STC, MMTC, etc.		15
Suggested Readings:  1. Adhikari Manab – Global Business Management Mac Millan New Delhi. 2. Black and Sundram- International business Environment prentice hall New Delhi 3. Sodersten-B.O. : International Economics Mac Millan London 4. Tayeb, Monis H: The Global Business Environment-An introduction sage publication New Delhi 5. Charles, W.L. Hill and Arun K. Jain, International Business- Themes and issues in the Modern Global Economy London: Roulledge, 6. Cherunilam, Francis, International Business: Text and cases, Prentice- Hall of India Ltd. 7. Justin, Paul, International Business, Prentice-Hall of India Ltd			

Programme: M.Com.		Year: V	Semester: Tenth
Subject: Commerce			
Course Code: MC-1003 (IV)		Group C: Marketing Course Title: Global Business Environment	
Course outcomes: Students will able to explain the concept of the various constituents of environment and their impact on global businesses. Students will be able to evaluate the legal, social and economic environments of business. Integrate the concept and opening economies of developing countries like India through multilateral route (WTO).			
Credits: 5		Core Compulsory/Elective: Compulsory	
Max. Marks: 25+75		Min. Passing Marks: 36	
Total No. of Lectures: 75			
Unit	Topics		No. of Lectures
I	Introduction: Nature and Significance of Global Business Environment; Structure of Global Business Environment; Globalisation and Global Business Environment; Impact of Protectionism on Global Business Environment; Technological Innovations and Global Business Environment.		15
II	Geographical and Cultural Global Environment: Need for and Significance of its Study; Climate and Topography; Population and its Structure; Physical and Human Resources; World Trade Routes; Culture and its Elements; Characteristics of Culture; Cultural Knowledge and Values; Business Customs and Ethics.		15
III	Political and Legal Global Environment: Political Systems and Stability of Government Policies; Nationalism; Political Risks in Global Business; Assessing Political Vulnerability; Reducing Political Vulnerability; Legal Systems; Jurisdiction in International Legal Disputes; Protection of Intellectual Property Rights; Commercial Laws within Countries; Grey Market; Money Laundering; Antidumping; Counterfeiting.		15
IV	Economic Global Environment: The World Economy-A Brief Study Only; Economic Systems; Levels of Economic Growth; Economic Groups and Business Environment; Economic Policies-A Brief Discussion Only.		15
V	Multinational Organisations and Institutions: IMF and World Bank in Global Business-Role, Functions and Structure; GATT and UNCTAD; World Trade Organisation (WTO) – Objectives, Functions and Structure; Implications of WTO on International Business Environment.		15
Suggested Reading : 1. Adhikary, M.: Economic Environment of Business Sultan Chand & sons New Delhi. 2. Ashwathappa, K.: Legal Environment of Business Himalaya Publication New Delhi. 3. Cherunilam, Francis: Business Environment Himalaya Publishing House New Delhi. 4. Rajvaid: Business Environment. 5. I.C. Dhingra, Indian Economy : Environmental Policy, Sultan Chand & Sons New Delhi. 6. S.K. Mishra and V.K. Puri : Economic Environment of Business.			

Programme: M.Com.		Year: V	Semester: Tenth
Subject: Commerce			
Course Code: MC-1004 (I)		Group D: Human Resource Management Course Title: Industrial Relations in India	
Course outcomes: Students should able to elaborate the concept of Industrial Relations, illustrate the role of trade union in the industrial setup. Learner will able to outline the important causes & impact of industrial disputes and able to elaborate Industrial Dispute settlement procedures.			
Credits: 5		Core Compulsory/Elective: Compulsory	
Max. Marks: 25+75		Min. Passing Marks: 36	
Total No. of Lectures: 75			
Unit	Topics		No. of Lectures
I	Industrial Relation in India and Emerging Challenges: Industrial Relation in India -Evolution of Industrial Relations; Approaches to Industrial Relations; Contextual and Constitutional Framework; Industrial Relations Strategy; Future of Industrial Relations in India; Emerging Challenges-Emerging Trends in Industrial Relations in an Era of Globalization.		15
II	Trade Unionism and Collective Bargaining:Trade Unions-Historical Evolution and Types of Unions; Growth and Development of Unions; Functions of Unions; National Level Federations; Trade Unions Act, 1926 and Recent Amendments; Collective Bargaining-Perspective, Concept, Stages and Prerequisites for Collective Bargaining Process; Types of Collective Bargaining Contracts.		15
III	Grievance Redressal and Discipline Mechanisms: Discipline Mechanisms-Judicial Approach to Discipline; Misconduct; Disciplinary Proceedings; Domestic Enquiries; Charge-sheets; Conduct of Enquiry and Award of Punishments; Grievance and Redressal-Approaches and Nature of Grievances; Causes; Procedure and Grievance Redressal Mechanisms.		15
IV	Industrial Conflict and Regulations of Industrial Disputes: Industrial Conflict-Nature of Conflicts and its Manifestations; Data Analysis; Labour Administration Machinery; Instruments of Economic Coercion; Strikes; Lockouts Inter Industry Propensity for Strikes; Strike Patterns; Arbitration; Conciliation; Adjudication; Regulations of Industrial Disputes-Contextual Framework, Object, Scheme, Industrial and Individual Disputes; Participants in Industrial Dispute; Settlement of Disputes.		15
V	Workers Participation and International Labor Organization: Workers Participation-Evolution and Nature of Participation; Forms of Participation; Impact of Participation; Prerequisites for Success-full Participation; Limitation of Participation; Current Trends in Participation in Indian Industries; International Labor Organization-Genesis of ILO; the Philadelphia Charter; Membership and Organization; Major Activities of the ILO; Convention and Recommendation; ILO and India-Impact; Difficulties in the Adoption of Convention and Recommendations.		15
Suggested Readings: 1. R.C. Agarwal, Industrial Law, Sahitya Bhawan Publishers & Distributors, 2. R.L. Naulakha, Industrial Laws 3. Personnel & Human Resource Management – Text & Cases by P. Subba Rao 4. Human Resource Management and Personnel Management - Aswathappa, Tata McGraw Hill, New 5. Human Resource Management - S. S. Khanka, S. Chand & co., New Delhi			



Programme: M.Com.	Year: V	Semester: Tenth
Subject:Commerce		
Course Code: MC-1004 (II)	Group D: Human Resource Management Course Title: Labour Legislation in India- II	
Course outcomes: Students will know the development and the judicial setup of Labour Laws. They will learn the salient features of welfare and wage Legislations also to integrate the knowledge of Labour Law in General HRD Practice.		
Credits: 5	Core Compulsory/Elective: Compulsory	
Max. Marks: 25+75	Min. Passing Marks:36	
Total No. of Lectures: 75		
Unit	Topics	No. of Lectures
I	Workmen’s Compensation Act, 1923: Object and Scope of the Act; Key Definitions; Rules Regarding Workmen’s Compensation; Theory of Notional Extension; Occupational Diseases; Commissioners and Appeals.	10
II	Employees’ Provident Fund and Miscellaneous Provisions Act, 1952: Key Definitions; Employees’ Provident Fund Contributions; Employees’ Family Pension Scheme; Employees’ Deposit Linked Insurance Scheme; Mode of Recovery of Amount Due from Employers; Special Provisions Relating to Existing Provident Funds.	20
III	Employees’ State Insurance Act, 1948: Object and Key Definitions, Employees’ State Insurance Corporation, Medical Benefit Council; Employees’ State Insurance Fund; Contributions; Benefits, Employees’ Insurance Court and Penalties.	15
IV	Payment of Bonus Act, 1965: Key Definitions; Calculation of Bonus; Qualification and Disqualification for Bonus; Minimum and Maximum Bonus; Set-on and Set-off of Allocable Surplus; Administration of the Act; Penalty and Offences.	15
V	Payment of Gratuity Act, 1972: Scope and Application; Key Definitions; Payment of Gratuity; Determination of the Amount of Gratuity; Recovery; Penalties.	15
Suggested Readings:		
1. P.RN. Sinha, Indu Bala Sinha, S.P. Shekhar, Industrial Relations, Trade Unions and Labour Legislation, Person Education . 2. P.L. Malik’s, Industrial Law, Eastern Book Company.		



Programme: M.Com.	Year: V	Semester: Tenth
Subject: Commerce		
Course Code: MC-1004 (III)	Group D: Human Resource Management Course Title: Wage and Salary Administration	
Course outcomes: This course will provide an understanding of the basic logic and design characteristics of a competitively sound compensation program.		
Credits: 5		Core Compulsory/Elective: Compulsory
Max. Marks: 25+75		Min. Passing Marks:36
Total No. of Lectures: 75		
Unit	Topics	No. of Lectures
I	Compensation: Concept, Role and Parts of Compensation; Objectives of Compensation; Planning; Economic and Behavioural Issues in Compensation.	10
II	Compensation Structure: Components of Pay Structure in India; Wage Policy in India-Minimum Wage; Fair Wage and Living Wage; Pay Commissions and Wage Boards; Job Evaluation and Internal Equity.	20
III	Methods of Wage Payment: Tune; Piece and Incentive Systems of Wage Payment; Stock Options; Fringe Benefits and Bonus System.	18
IV	Profit Sharing and Co-partnership: Concepts; Objectives; Forms/Levels; Merits and Demerits.	15
V	Emerging Issues: Tax Planning for Salaried/Wage Earners; Job Related; Performance Related and Competency Related Compensation; Comparative International Compensation.	12
Suggested Readings: 1. R.C. Agarwal, Industrial Law, Sahitya Bhawan Publishers & Distributors, 2. R.L. Naulakha, Industrial Laws 3. Personnel & Human Resource Management – Text & Cases by P. Subba Rao 4. Human Resource Management and Personnel Management - Aswathappa, Tata McGraw Hill, New 5. Human Resource Management - S. S. Khanka, S. Chand & co., New Delhi		

Programme: M.Com.	Year: V	Semester: Tenth
Subject: Commerce		
Course Code: MC-1004 (IV)	Group D: Human Resource Management Course Title: Industrial Sociology	
Course outcomes: The learners will be to understand the influence of the wider societal context on the operations within their organizations. Students will get acquainted with the structure and changing nature of Indian society.		
Credits: 5		Core Compulsory/Elective: Compulsory
Max. Marks: 25+75		Min. Passing Marks:36
Total No. of Lectures: 75		
Unit	Topics	No. of Lectures
I	Conceptual Framework: Definition, Scope and Importance; Relationship with Other Social Sciences; Effect on Social Welfare; Gandhian Approach to Industrialisation; Role of Scientific Management in Industry; Formal and Informal Organisation and Communication Process.	15
II	Labour Movement and Industrial Democracy: Labour Movement and its Role in Industrial Relations System; Emergence of Industrial Relations Machinery and its Impact on Industrial Society; Industrial Democracy as a Social System; Structure of Industrial Democracy in India.	20
III	Work Motivation and Morale Development in Social Organisation: Concept and Theories of Work Motivation; Satisfaction and Motivation; Motivation and Performance; Industrial Morale-Concept, Determination and Method of Increasing Industrial Morale.	15
IV	Leadership: General and Environmental Considerations; Leadership Styles and Theories of Leadership.	12
V	Group Dynamics: Why People Join Groups; Group Composition; Nature and Requirements of Efficient; Group Performance; Group Cohesiveness.	13
Suggested Readings:  1. Hirszowicz, Maria, Industrial Sociology: An Introduction, Palgrave Macmillan Publlishers. 2. G. Subramanya, Principles of Industrial Sociology, Sapna Publications.		

Programme: M.Com.	Year: V	Semester: Tenth
Subject: Commerce		
Course Code: MC-1005 (I)	Group E: Banking & Insurance Course Title: Marketing Management of Insurance Companies	
Course outcomes: Learners will Acquire knowledge, evaluate and scrutinize the concepts of marketing management and environment so as to become a successful professional in insurance segment.		
Credits: 5		Core Compulsory/Elective: Compulsory
Max. Marks: 25+75		Min. Passing Marks: 36
Total No. of Lectures: 75		
Unit	Topics	No. of Lectures
I	Organisational Setup of Insurance Companies: Organisational Setup of LIC, GIC and Private Insurers.	12
II	Organisation of Field Force: Direct; General and Branch Agency; Comparison of General Agencies and Branch Office Systems; Major Tasks of the Agency or Branch Manager; Organisation of Field Force in India.	15
III	Developing Field Force: Executive Body of Field Force; Functions of a Branch Manager; Development Officer; Agents; Specific Qualities of a Good Manager; Development Officer and Agent.	15
IV	Recruitment of Agents and Development Officers: Methods of Recruitment; Selection of Agents and Development Officer; Legal Provisions of IRDA in this Regards; Intermediaries and Corporate Channels.	18
V	Training and Supervision: Purpose; Job Profile; Difficulties in Developing Agents and Development Officers; Types and Process of Training.	15
Suggested Readings:		
1. Girish S., Chetna M.R. & Darshan C, Marketing of Insurance Products, Himalaya Publishing House. 2. Jarnail Singh Banga, Marketing Strategies of General Insurance Companies.		

<b>Programme:</b> M.Com.	<b>Year:</b> V	<b>Semester:</b> Tenth
<b>Subject:</b> Commerce		
<b>Course Code: MC-1005 (II)</b>	<b>Group E: Banking &amp; Insurance</b> <b>Course Title: Retailing of Insurance</b>	
Course outcomes: Learners will be able to summarize the need and significance of retailing in Insurance segment.		
<b>Credits:</b> 5		<b>Core Compulsory/Elective:</b> Compulsory
<b>Max. Marks:</b> 25+75		<b>Min. Passing Marks:</b> 36
<b>Total No. of Lectures:</b> 75		
<b>Unit</b>	<b>Topics</b>	<b>No. of Lectures</b>
<b>I</b>	<b>Selling Process:</b> Planned Prospecting; Methods of Prospecting; Analysis of Human Needs and Property Protection; Classification of prospects and Approach.	<b>15</b>
<b>II</b>	<b>Meeting Objections of Prospects:</b> Interview; Canvassing and Arguments; Objections and their Replies; Varieties of Objections; Methods of Meeting Objections.	<b>15</b>
<b>III</b>	<b>Insurance Lapses:</b> Disadvantages of Lapses; Methods of Reducing Lapses.	<b>15</b>
<b>IV</b>	<b>Office Support of Retailing:</b> Office Layout; mechanizations; Techniques of Offices Support to Retailing.	<b>15</b>
<b>V</b>	<b>Office Management:</b> Process; Form; Processing of Training; Types of Employees Training.	<b>15</b>
<b>Suggested Readings:</b>  1. Jyoti Prakash Rath, Regulations of Insurance Business, Kalyani Publishers. 2. Indian Institute of Banking & Finance, Retail Liability Products and other Related Services, Macmilan Education.		

Programme: M.Com.		Year: V	Semester: Tenth
Subject: Commerce			
Course Code: MC-1005 (III)		Group E: Banking & Insurance Course Title: Retail Banking	
Course outcomes: Learners will able to Summarizes the fundamentals of retail banking, Classify retail banking products, Analyses the importance of plastic money and understand retail strategies and discuss the methods in recovering of stressed assets			
Credits: 5		Core Compulsory/Elective: Compulsory	
Max. Marks: 25+75		Min. Passing Marks: 36	
Total No. of Lectures: 75			
Unit	Topics		No. of Lectures
I	Concept of Retail Banking: History and definition, Distinction between Retail and Corporate/Wholesale Banking; Need and Importance of Retail Banking. Retail Products Overview- Customer requirements, products development process, Liabilities and Assets Products, Approval process for retail loans, credit scoring.		12
II	Important Retail asset products: Home loans, Auto/vehicle loans, Personal loans, educational loans; Study of these products in terms of Eligibility, Purpose, Amounts, Margin, Security, Disbursement, Moratorium, Prepayment issues, Repayments/Collection; Credit/Debit Cards- Eligibility, Purpose, Amounts, Margin, Security, Process of using the cards, Billing Cycle, Credit Points; Other products/Remittances/Funds Transfer		15
III	Marketing of Retail banking Products: MIS and Accounting Retail Strategies; Tie-up with Institutions for Personal loans / Credit cards / Educational loans etc., Tie-up with Authorised Dealers for Auto / Vehicle loans and with Builders / Developers for Home loans; Delivery Channels - Branch, Extension counters, ATMs, POS, Internet Banking, M-Banking etc.		15
IV	Regulatory Framework of Retail Banking: Regulations and compliance Technology for Retail Banking - Static information, Account opening, basic loan origination data etc. Updated information like income details at different frequencies. Recovery of Retail Loans- Defaults, Rescheduling, recovery process. SARAFAESI Act, DRT Act, RBI guidelines for Recovery Agents.		18
V	Recent Developments in Retail Banking- new products like Insurance, Demat services, online/Phone Banking, Property services, Investment advisory/ Wealth management, Reverse Mortgage- Growth of e-banking, Cross selling opportunities.		15
Suggested Readings:			
1. Khan, M.Y. Indian Financial System, Tata McGraw Hill Publishing Company Ltd., New Delhi 2. Uppal, RK, Banking Services and IT, New Century Publications, New Delhi 3. Guruswamy,S., Banking in the New Millenium, New Century Publications, New Delhi 4. Indian Institute of Banking & Finance, Retail Banking, Mumbai 5. John Henderson - Retail and Digital Banking: Principles and Practice, Kogan Page Publishers. 6. Anna Omarini - Retail Banking: Business Transformation and Competitive Strategies for the Future, Palgrave Macmillan Publications			

Programme: M.Com.	Year: V	Semester: Tenth
Subject: Commerce		
Course Code: MC-1005 (IV)	Group E: Banking & Insurance Course Title: Financial Management of Insurance	
Course outcomes:		
Credits: 5		Core Compulsory/Elective: Compulsory
Max. Marks: 25+75		Min. Passing Marks:36
Total No. of Lectures: 75		
Unit	Topics	No. of Lectures
I	Management of Funds: Inflow and Out Flow; Sources of Revenues; Premium Income; Interest Income and other Income; Claims Payment; Surrender Value and Amenities; Office Expenses and Commission Agents.	15
II	Valuations Process: Purpose of Valuations; Determinants of Surplus; Division of Surplus; Net Liabilities; Reserves and Funds; Solvency Requirements as Prescribed by IRDA.	15
III	Investment of Funds: Needs and Principles of investment; Safety; Profitability; Liquidity; Diversification; Social Benefits; Investment Portfolio.	15
IV	Cost Control: Analysis of Income and Outgo; Analysis of Premium Income; Comparison with Insurance Business; Economic Conditions; Expenses of Management; Managing Agency Cost.	15
V	Audit and Inspection: Statutory Audit; Duties of Statutory Auditors; Internal Audit; Functions of Internal Auditors; On and Off Inspection.	15
Suggested Readings:		
1. M.N. Mishra & S.B. Mishra, Insurance Principles and Practice, S.Chand Publications. 2. Balchand Srivastav, Elements of Insurance, Sahitya Bhawan Publications.		

Programme: M.Com.	Year: V	Semester: Tenth
Subject: Commerce		
Course Code: MC- 1006	Group: A/B/C/D/E Course Title: Dissertation/ Project/ Survey/Seminar/Viva-voce	
Course outcomes: Project report writing trains a student to communicate information in an effective and convincing way, thus, contributing to the organizational planning and decision making. (PR) in itself is a complete and compact training programme. As part of the M.Com curriculum students are required to undertake the Project Report (PR) in their major specialization. For this purpose the student would be assigned a Faculty member as his/her Project Guide. The PR would commence at the beginning of the respective semester. To carry out the study students can associate themselves with any business organization or can do the study independently. The student would choose a topic of his/her choice, conduct investigative research into the nature, reasons, causes, effect of the problem on different aspects of business and carry out a detailed research based on the current literature and collected data and compile a comprehensive report on the topic. The essential aspect shall be to analyze the existing knowledge and data to present new findings or propose a new model.		
Credits: 4	Core Compulsory/Elective: Compulsory	
Max. Marks: 100	Min. Passing Marks: 40	
(Project Report activity and format) The following activity schedule has been developed to facilitate the process.		
Important dates		
Activity	Last Date (tentative)	
Topic finalization with mentor	31 <sup>st</sup> Jan	
Synopsis submission to mentor	1 <sup>st</sup> March	
Approval by Mentor	10 <sup>th</sup> March	
Preliminary Report submission	20 <sup>th</sup> April	
Viva-voce for Report I (by internal panel)	30 <sup>th</sup> April (tentative date)	
Final report submission	10 <sup>th</sup> May	
Viva-voce (by external panel)	After end semester examination	
<b>Final Report Submission:</b> This part would involve data collection, tabulation, data analysis, findings, suggestions, limitations, conclusion, and scope for further studies. Students should use appropriate data analysis tools and software. Every report must be hard bounded with Black Leatherette cover duly embossed in Golden in BOLD letters with the Project Title, Student's name & roll no., class, batch and year and must be submitted to the Department. Copy of Synopsis should also be submitted. Following should be the chapterization scheme of the report. The list of chapters is indicative in nature and can be modified by the Faculty guide if required.		
<b>Indicative chapters for Final Research Report</b>		
<ul style="list-style-type: none"><li>○ Introduction (Background and significance)</li><li>○ Literature Review &amp; Theoretical background</li><li>○ Objectives</li><li>○ Hypothesis</li><li>○ Research Design and sampling design &amp; Theoretical model</li><li>○ Data Analysis</li><li>○ Findings</li><li>○ Suggestion &amp; Limitations</li><li>○ Conclusion</li><li>○ Appendix, Bibliography &amp; Reference, Questionnaires, Scales</li></ul>		
<b>Plagiarism/ Cheating/ Unfair Means in Projects/ Assignments</b>		
Plagiarism is when you steal the thoughts or writing of others and offer them as your own. Everyone repeats someone else's ideas at some point in their academic career but when doing so, it is important to acknowledge it. You can avoid plagiarism by quoting within inverted commas and acknowledging the source. But mostly the reference must be in your own words. Maximum % of Plagiarism cannot exceed 20 %		
<b>Final Submission of the Project:</b> Hard copy and soft copy of the Project Report along with the Synopsis shall be submitted to the College for evaluation.		



<b>Post Graduate Degree in Research (Commerce)</b> <b>(PGDR-Commerce)</b>			
<b>PGDR in Commerce</b> <b>(256 Credit)</b>	<b>SEMESTER-I</b>	<b>21+4* credits</b>	<b>46</b>
	<b>SEMESTER-II</b>	<b>21+4* credits</b>	
	<b>SEMESTER-III</b>	<b>21+4* credits</b>	<b>46</b>
	<b>SEMESTER-IV</b>	<b>21+4* credits</b>	
	<b>SEMESTER-V</b>	<b>24 credits</b>	<b>48</b>
	<b>SEMESTER-VI</b>	<b>24 credits</b>	
	<b>SEMESTER-VII</b>	<b>24+4* credits</b>	<b>52</b>
	<b>SEMESTER-VIII</b>	<b>24+4* credits</b>	
	<b>SEMESTER-IX</b>	<b>24 credits</b>	<b>48</b>
	<b>SEMESTER-X</b>	<b>24 credits</b>	
	<b>SEMESTER-XI</b>	<b>16 credits</b>	<b>16</b>

**Post Graduate Degree in Research (Commerce)**

**SEMESTER XI**

Programme: PGDR-Commerce		Year: VI	Semester: Eleventh
Subject: Commerce			
Course Code: PGDR-101		Course Title: Research Methodology	
Course outcomes: The objective this course is to help students design and carry out research, as well as, the application of statistical tools and techniques for decision making.			
Credits:4		Core Compulsory/Elective: Compulsory	
Max. Marks: 25+75		Min. Passing Marks:36	
Total No. of Lectures:60			
Unit	Topics		No. of Lectures
I	Overview of Research in Commerce: Meaning and Objectives of Research; Process of Research; Types of Research; Research Approaches; Selection and Formulation of a Research Problem; Criteria of a Good Research Problem. Significance of research in social sciences.		8
II	Hypothesis and Research Design: Concept, Sources and Types of Hypotheses; Formulation of Hypothesis; Qualities of a Workable Hypothesis; Usefulness of Hypothesis in Research; Uses of Research Design; Steps in Preparing a Research Design; Exploratory or Formulative Design; Descriptive and Diagnostic Design; Experimental Research Design.		12
III	Sampling Technique: Sampling theory- Types of sampling-Steps in sampling-Sampling and Non-sampling error-Sample size –Advantages and limitations of sampling.		8
IV	Measurement and Basic Scaling Techniques: Normal, ordinal, interval, ratio scales, measuring attitudes – Summated rating scale (Likert scale), semantic differential scale, Reliability-Split-half test and retest. Cronbach alpha, Validity, Content/face, construct validity – Convergent discriminant.		10
V	Statistical Inference: Estimation-Point and Interval Estimation, Qualities of a Good Estimator; Theory of Testing of Hypothesis-Statistics and Parameter, Statistical Hypothesis, Tests of Significance, Types of Errors in Testing of Hypothesis, Level of Significance-Confidence Interval and Confidence Limits, Two tailed and One tailed Tests, Standard Error and its Utility, Degrees of Freedom, Test Statistics, Critical Values, Acceptance and Rejection Regions; Procedure for Hypothesis Testing		12
VI	Interpretation and Report Writing: Meaning and Importance of Interpretation; Pre-requisites of Interpretation; Errors in Interpretation; Essentials of a Good Research Report; Types of Reports; Layout of a Research Report; Writing up of the Report; Evaluating a Research Report.		10
References: 1. Donald R.Cooper, Pamela S.Schindler, Business Research Methods, Tata McGraw Hill Publishing 2009 2. Uma Sekaran, Research Methods for Business Wiley India2007 3. Nandagopal, Arul Rajan Vivek, Research Methods in Business Excel Book 2007 4. Wiliam G Zikmud, Business Research Methods, Cengage Learning 2008 5. Paneerselvam, Research Methodology, Prentice Hall of India 2009 6. Dipak Kumar Batacharyya, Research Methodology Excel Book 2006 7. Krishnaswamy, Sivakumar, Marthirajan, Management Research Methodology, Pearson, 2009 8. Murthy, Business Research Methods for Business Excel Books 2008 9. Hair et.al. Multivariate Data Analysis, Pearson Education			

<b>Programme:</b> PGDR		<b>Year:</b> VI	<b>Semester:</b> Eleventh
<b>Subject:</b> Commerce			
<b>Course Code:</b> PGDR-102		<b>Course Title:</b> Research and Publication Ethics (Qualifying)	
Course outcomes: The objective of this course is to acquaint the scholars for awareness about the publication ethics and publication misconducts. This course has total 6 units focusing on basics of philosophy of science and ethics, research integrity, publication ethics. Hands-on-session are designed to identify research misconduct and predatory publications. Indexing and citation databases, open access publications, research metrics (citations, h-index, Impact Factor, etc) and plagiarism tools will be introduced in this course.			
<b>Credits:</b> Qualifying		<b>Core Compulsory/Elective:</b> Compulsory	
<b>Max. Marks:</b> 25+75		<b>Min. Passing Marks:</b> 36	
<b>Unit</b>	<b>Topics</b>		
<b>I</b>	<b>PHILOSOPHY AND ETHICS</b> 1. Introduction to philosophy: definition, nature and scope, concept, branches 2. Ethics: definition, moral philosophy, nature of moral judgments and reactions		
<b>II</b>	<b>SCIENTIFIC CONDUCT</b> 1. Ethics with respect to science and research 2. Intellectual honesty and research integrity 3. Scientific misconducts: Falsification, Fabrication, and Plagiarism (FFP) 4. Redundant publications: duplicate and overlapping publications, salami slicing 5. Selective reporting and misrepresentation of data		
<b>III</b>	<b>PUBLICATION ETHICS</b> 1. Publication ethics: definition, introduction and importance 2. Best practices / standards setting initiatives and guidelines: COPE, WAME, etc. 3. Conflicts of interest 4. Publication misconduct: definition, concept, problems that lead to unethical behavior 5. Violation of publication ethics, authorship and contributorship 6. Identification of publication misconduct, complaints and appeals 7. Predatory publishers and journals		
<b>IV</b>	<b>OPEN ACCESS PUBLISHING</b> 1. Open access publications and initiatives 2. SHERPA/ RoMEO online resource to check publisher copyright & self-archiving policies 3. Software tool to identify predatory publications developed by SPPU Journal finder/ journal suggestion tools viz. JANE, Elsevier Journal Finder, Springer Journal Suggester, etc.		
<b>V</b>	<b>PUBLICATION MISCONDUCT</b> <b>A.</b> Group Discussions 1. Subject specific ethical issues, FFP, authorship 2. Conflicts of interest 3. Complains and appeals: examples and fraud from India and abroad <b>B.</b> Software tools Use of plagiarism software like Turnitin, Urkund and other open-source software tools		
<b>VI</b>	<b>DATABASES AND RESEARCH METRICS</b> <b>A.</b> Databases 1. Indexing databases 2. Citation databases: Web of Science, Scopus, etc. <b>B.</b> Research Metrics 1. Impact factor of journal as per Journal Citation Report, SNIP, SJR, IPP, Cite Score Metrics: h-index, g-index, i10 index, altmetrics		
<b>Course Overview:</b> How to formulate a viable research proposal? To develop analytical skills among the business students. How to write a research paper? How to write a research dissertation?			
<b>Course Outline:</b>			
<b>Monthly Assignments</b> Each student will be given two assignments on the subject relating to major area of study. Each student is expected to work individually on the research assignments to be evaluated by the department.			
<b>Research Paper Writing and Research Proposal</b> This is the main requirement of the course. This paper will serve as an important requirement as how to design a research paper, research proposal and project. For those who plan to conduct research, this paper should form the basis of their research dissertation proposal and final dissertation. The student should submit one term paper maximum of 25 pages on their specialized area of research.			

**GROUP-A (Select any one Paper)**

Programme: PGDR	Year: VI	Semester: Eleventh
Subject: Commerce		
Course Code: PGDR-103 (I)	GROUP-A Course Title: Contemporary Issues in Accounting and Finance	
Course outcomes: The objective of this course is to acquaint the students of PGDR with the advanced knowledge of finance and accounting function. This course also highlights the emerging issues of corporate restructuring and contemporary accounting.		
Credits:6		Core Compulsory /Elective: Elective
Max. Marks: 25+75		Min. Passing Marks:36
Total No. of Lectures: 90		
Unit	Topics	No. of Lectures
I	Emerging Trends in Financial Markets: An Overview of Global Financial environment, Capital Market and Money Market., Sub-prime crisis- Reasons, impact, remedies and lessons to be learnt.	14
II	Pricing of IPOs: Conceptual and research issues.	12
III	Issues in Corporate Restructuring: Need, Methods of restructuring, Mergers and Acquisitions, Divestiture, Contracting Out, Outright Sale, Disinvestments, Leveraged buyout	16
IV	Financial Risk Management-Rationale, Significance, types of financial risks. Role of derivatives in managing financial risk	10
V	Contemporary Accounting: Human Resource Accounting, Environment Accounting, Social Accounting and Value-added Accounting	14
VI	Behavioral finance; Conceptual and research Issues, Micro Financing in India; Financial inclusion and role of banks.	12
VII	Financial Reporting: Indian GAAP, An overview of International Financial Reporting Standards, Convergence of Accounting Standards and IFRSs. Need for online reporting. Balanced Score Card as Performance Measurement Tool.	12
References:  1. J.J. Hamton, <i>Financial Decision Making: Concepts, Problems and Cases</i> , Prentice-Hall of India, New Delhi, 4 <sup>th</sup> Edition. 2. Khan and Jain, <i>Financial Management</i> , Tata McGraw-Hill Publishing Co. Ltd., New Delhi, 4 <sup>th</sup> Edition. 3. Stephan A. Ross, Randolph W. Waterfield and Jeffery Jaffe, <i>Corporate Finance</i> , Tata McGraw-Hill Publishing Co. Ltd., New Delhi, 7 <sup>th</sup> Edition. 4. Richard A. Brealey and Stewart C. Meyers, <i>Principles of Corporate Finance</i> , Tata McGraw-Hill Publishing Co. Ltd., New Delhi, 6 <sup>th</sup> Edition. 5. Cost and Management Accounting- Horngren		

Programme: PGDR	Year: VI	Semester: Eleventh
Subject: Commerce		
Course Code: PGDR-103 (II)	GROUP-A Course Title: Contemporary Issues in Human Resource Management	
Course outcomes: The student should be able to critically analyze organizational situations, prescribe courses of action necessary for problem solving, and integrating the steps necessary for effective implementation. Upon completion, the Ph.D. student should be able to indicate and explain various research issues in HR interventions that may be required when dealing with the work environment, people, and problems.		
Credits:6	Core Compulsory/Elective: Elective	
Max. Marks: 25+75	Min. Passing Marks:36	
Total No. of Lectures: 90		
Unit	Topics	No. of Lectures
I	An overview of Human Resource Management: Framework of HRM in the present-day corporate sector; environmental scanning, building up skills for effective HR manager. HRM in the Global Context	15
II	Human Resource Planning: Factors affecting, process, and barriers. Stock taking, Work Force Flow Mapping, Age and Grade Distribution Mapping; Behavioural factors in Human Resource Planning	20
III	Analyzing Work and Designing Jobs: Induction, Placement, Socializing, Promotion and Succession. Job Analysis, Evaluation and Job description	18
IV	Retention Strategies: Need for Retention, Causes of attrition of managerial personnel in modern day service and manufacturing organizations. Managing Separations and Rightsizing. Managing Change in Organisations.	15
V	Emerging Issues in Performance Management: Rationale, Methods of Performance Appraisal and Potential Evaluation.	12
VI	Ethical Issues in Human Resource Management: Need and Implications of Ethics for Human Resource Management, Cross cultural issues in HRM	10
References:  • Garry Desseler, <i>Human Resource Management</i> , Prentice-Hall of India Pvt. Ltd., New Delhi, 10 <sup>th</sup> Edition. • Edwin B. Flippo, <i>Personnel Management</i> , McGraw-Hill Book Company, 6 <sup>th</sup> Edition. • Raymond Noe, Wright, Gerhart & Hollenbeck, <i>Human Resource Management – Gaining A Competitive Advantage</i> , Tata McGraw –Hill Publishing Company Ltd., New Delhi, 5 <sup>th</sup> Edition.		

GROUP B (Select any one paper)		
Programme: PGDR	Year: VI	Semester: Eleventh
Subject: Commerce		
Course Code: PGDR-104 (I)	GROUP-B Course Title: Contemporary Issues in Marketing	
Course outcomes: To develop knowledge and understanding of PGDR students on the various aspects of modern marketing management.		
Credits: 6		Core Compulsory/ Elective: Elective
Max. Marks: 25+75		Min. Passing Marks:36
Total No. of Lectures: 90		
Unit	Topics	No. of Lectures
I	Orientation of Modern Marketing and Analyzing Market Opportunities: Marketing Tasks and Approaches to Modern Marketing, Marketing Environment and Environment Scanning, Analyzing Market Environmen	10
II	Consumer Behaviour: Factors Influencing, Consumer Buying Behaviour Process, Models and Scaling Techniques; Market Segmentation, Targeting and Positioning.	10
III	Measurement Process in Marketing Research: Measurement in Marketing, Difficulties in Measurement, Attitude Measurement: Importance of Attitude in Marketing, Nature of Attitudes and their Measurement	10
IV	Applied Marketing Research: Demand Measurement and Forecasting, Product Research, Advertising Research, Distribution Research, Sales Control Research, Pricing Research, Motivation Research.	10
V	Customer Evaluation of Service Quality: Gaps Model for improving the Quality of Service - knowledge gap, standards gap, delivery gap, communications gap. Service Recovery.	10
VI	Supply Chain Management: Components of SCM, Physical Distribution System; Distribution Channels, Types & Functions, Selection, Cooperation and Conflict Management	10
VI	Retail Marketing: Forms of Retail organization – levels of organization. Retail Organization Structures; Demographic Analysis in Retailing - Age distribution population, Income Urbanization, shrinking household, working women, diversified minorities. Emerging Trends and research Issues in Retailing.	10
VIII	Global Marketing: Rationale, India and World trade, Foreign Trade policy in Indian context, Constraints in Global marketing, Destination wise and Commodity Wise Trends; Outsourcing and its marketing Implications for home and host countries.	10
IX	Emerging Issues in Marketing: Green Marketing, Holistic Marketing, Network Marketing, Event Marketing, Nucleus Marketing; Mergers and Acquisitions: Regulatory Framework, Marketing Issues and Relevance in 21st century business Enterprises	10
References: <ul style="list-style-type: none"><li>Kotler Philip &amp; Armstrong, G., <i>Principles of Marketing</i>, Prentice-Hall of India, , 2008. Kotler Philip, <i>Marketing Management</i>, Prentice-Hall of India, 2007.</li><li>Kotler Philip &amp; Keller, <i>Principles of Marketing</i>, Prentice-Hall of India, 2007.</li><li>Saxena Rajan, <i>Marketing Management</i>, Tata McGraw-Hill Publishing Co. Ltd., 3<sup>rd</sup> Edition.</li></ul>		



<b>Programme:</b> PGDR	<b>Year:</b> VI	<b>Semester:</b> Eleventh
<b>Subject:</b> Commerce		
<b>Course Code: PGDR-104 (II)</b>	<b>GROUP-B</b> <b>Course Title: Contemporary Issues in International Business</b>	
Course outcomes: To develop knowledge and understanding of PGDR students on the various aspects of modern business and factors affecting business decisions and also to develop insight of students as to the area and topic in the area that they may work up to develop their PGDR proposals.		
<b>Credits:</b> 6	<b>Core Compulsory /Elective:</b> Elective	
<b>Max. Marks:</b> 25+75	<b>Min.PassingMarks:</b> 36	
<b>Total No. of Lectures:</b> 90		
<b>Unit</b>	<b>Topics</b>	<b>No. of Lectures</b>
<b>I</b>	<b>International Business:</b> Concept, Importance, Rationale; Globalization and its Phases.	14
<b>II</b>	<b>International Trade Theories:</b> Absolute Advantages, Comparative Advantages, Factor Proportions Theory; The Product Life Cycle Theory and ModernTheories.Government Influences on Trade: Economic and Non-Economic Rationale for Govt. Intervention; Instruments of Trade Control: Tariffs and Non-TariffBarriers	18
<b>III</b>	<b>Regional Integration and Economic Blocks:</b> Levels of Regional Economic Integration; Leading Economic Blocks: European Union (EU): North America Free Trade Agreement (NAFTA); South Asian Association of Regional Cooperation (SAARC); Association of South East Asian Nations (ASEAN).	20
<b>IV</b>	<b>Foreign Investments:</b> Portfolios Vs Foreign Direct Investments (FDI); Role and Impact on Developing Countries. Development in International Monetary Systems: Foreign Exchange Mechanism and its Determinants.	18
<b>V</b>	<b>Evolution of World Trade Organization (WTO):</b> General Agreement on Tariffs And Trade (GATT,1994): Trade Related Investment Measures (TRIMs); Agreement on Subsidies and Countervailing Measures; Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS); and General Agreement On Trade And Services (GATS) Impact of WTO on Developing Countries.	20
<b>References:</b> 1. Cavusgil, S. Knight Gary and Riesenberger, John R(2009), <i>International Business- Strategy Management and the New Realities</i> , Person Education, Dorling Kindersley (India) Pvt. Ltd, Delhi. 2. Rao, M.B and guru Manjula(1998), <i>WTO and International Trade</i> , Vikas Publishing House Pvt. Ltd, New Delhi. 3. All India Management Association (1998), <i>Global Trends in Finance and –Opportunity for India</i> , Excell books, New Delhi. 4. Rao, P. Subba (2008), <i>International Business, Text and Cases</i> , IInd edition, Himalaya Publishing House Pvt. Ltd. New Delhi. 5. Shailaja G, (2008), <i>International Finance</i> , University Press (India), Pvt. Ltd, Hyderabad India. 6. Daniel, John D., Radebangh, Lee H. and Sulivan Daniel P., <i>International Business – Environment and Operations</i> , 19 <sup>th</sup> ed., New Delhi. 7. Czinkota Michael R., Ronbibenlikka A. Ronkainen A. and Moffet Micheal H., <i>International Business</i> , 6 <sup>th</sup> Edition, Thomson, South Western, Bangalore, 2005. 8. C. Paul Hallwood and Ronald Macdonald, <i>International Money and Finance</i> , Blackwell, Oxford U.K., 1995. 9. Sharan Vyuptakesh, <i>International Business – Concept, Environment and Strategy</i> , 2 <sup>nd</sup> Edition, Pearson Education, Delhi,2006. 10. Hill, Charles W.L. and Jain, Arun Kumar, <i>International Business – Competing in the Global Market Place</i> , 5 <sup>th</sup> Edition, The McGraw Hill Publishing Co. Ltd., New Delhi,2006. 11. Oatley, Thomas, <i>International Political Economy</i> , Pearson Education,2004. 12. Eiteman David K, Stonehill Arthur and Micheal H.Moffett, <i>Multinational Business Finance</i> , Addison Wesley, Pearson Education Asia, Ninth Edition, 2001. 13. World Trade Centre (ed. Arun Goyal), <i>WTO in the New Millennium</i> , Academy of Business Studies, 2000.		



**SRIDEV SUMAN UTTARAKHAND UNIVERSITY, BADSHAHITHAUL, TEHRI,  
GARHWAL**

**SYLLABUS: BOTANY COURSE FOR B.Sc. STUDENTS (3 Years)**

**UNDER ANNUAL SYSTEM**

To teach the fundamental concept of Botany and there applications the syllabus pertaining to B.Sc (3 year degree course) in the subject of Botany has been prepared as per provision of UGC module and demand of academic environment. The syllabus concepts are duly arranged unit wise and contents are included in a such manner so that due importance is given to requisite intellectual and laboratory skills. This B.Sc course of Botany consists of 3 year course (Annual System). Total marks 600(200per year).

**B.Sc Ist Year**

S.NO.	TITLE	PAPER CODE	MAX. MARKS
I	Fungi, Elementary Microbiology and Plant Pathology	BBO-101	50
II	Algae and Bryophytes	BBO-102	50
III	Pteridophytes, Gymnosperm and Elementary Palaeobotany	BBO-103	50
	Lab Course	BBO-10P	50

**B.Sc IInd Year**

S.NO.	TITLE	PAPER CODE	MAX. MARKS
I	Taxonomy of Angiosperms and Economic Botany	BBO-201	50
II	Anatomy, Embryology and Elementary Morphogenesis	BBO-202	50
III	Ecology and Remote Sensing	BBO-203	50
	Lab Course	BBO-20P	50

**B.Sc IIIrd Year**

S.NO.	TITLE	PAPER CODE	MAX. MARKS
I	Cytogenetics, Molecular Biology and Biotechnology	BBO-301	50
II	Plant Physiology and Elementary Biochemistry	BBO-302	50
III	Plant Breeding and Biostatistics	BBO-303	50
	Lab Course	BBO-30P	50

Note : Examiner should follow the bellow given pattern covering all the unit for each section compulsory :

- Twelve Compulsory subject objective type questions of one mark each,  $12 \times 1 = 12$ .
- Examinees to solve 6 short answer questions out of 10 questions (3 marks each)  $3 \times 6 = 18$  marks.
- Examinees to solve 4 long answer questions out of seven (5 marks each)  $4 \times 5 = 20$  Marks.

## **B.Sc Ist Year**

### **PAPER I: (BBO-101) FUNGI, ELEMENTARY MICROBIOLOGY AND PLANT PATHOLOGY**

#### **UNIT I**

1. Brief history and salient features of Fungi.
2. A broad outline of classification of Fungi (Ainsworth) and salient features of the important groups.
3. Structure, methods of reproduction and life history of following Genera:  
*Synchytrium, Saprolegnia, Albugo, Rhizopus, Penicillium, Saccharomyces, Phyllactinia, Erysiphe, Puccinia, Ustilago, Agaricus and Alternaria.*
4. Heterothallism, Parasexuality and Economic importance of Fungi.

#### **UNIT II**

1. Lichens: Habitats, characteristics, general structure and classification.
2. Physiology (Symbiotic relationship) and reproduction in Lichens.
3. Economic importance of Lichens.

#### **UNIT III**

1. General account of diversity of microorganisms.
2. Elementary principles of isolation and purification of microorganisms.
3. Role of microorganisms in carbon and nitrogen cycles in nature.

#### **UNIT IV**

1. Bacteria: Structure, classification, nutrition, reproduction, gram positive and gram negative bacteria; Economic importance of bacteria.
2. Viruses: Structure, transmission and multiplication. Economic importance of viruses. Brief idea of Bacteriophages.
3. General account of Mycoplasma.

#### **UNIT V**

1. General symptoms of plant diseases and principles of infection and resistance.
2. General methods of chemical and biological control of the plant diseases.
3. The symptoms, morphology of the causal organism, disease cycle and control measures of the following diseases : Wart disease of Potato, White rust of Crucifers, Powdery mildew of Shisham, Black rust of Wheat, Red rot of Sugarcane.

#### **Suggested Readings**

Vashistha, B.R., Sinha, A.K. 2014. Botany for degree students: Fungi. S. Chand Publication, New Delhi

Singh, V., Pandey, P.C. and Jain, D.K. 1998. A text book of Botany. Rastogi Publication Meerut  
Gangulee, H.C. and Kar, A.K. 1992. College Botany. Vol 2, Kolkatta

Dubey, R.C. and Maheshwari, D.K. 2014. A text book of Microbiology. S. Chand Publication, New Delhi. Matthews, R.E. 2013. Fundamentals of Plant Virology, Elsevier India

## **PAPER II (BBO-102): ALGAE AND BRYOPHYTES**

### **UNIT I**

1. General characteristics of the group (Algae) and its position in Plant Kingdom.
2. Classification of algae, basic outlines of Fritsch's and Smith's classification.
3. Elementary knowledge of organisation of thallus in algae.

### **UNIT II**

1. Structure, reproduction and life cycles of the following Genera:  
*Chlamydomonas, Volvox, Oedogonium, Vaucheria, Chara, Sargassum, Ectocarpus, Batrachospermum and Polysiphonia.*
2. General account of Bacillariophyceae.
3. Cyanobacteria : General account of *Nostoc*.

### **UNIT III**

1. Types of life cycles – Haplontic, Diplontic, Diplohaplontic, Haplodiplontic and Diplobiontic; Alternation of generation in Algae.
2. Ecology of Algae: Brief idea of freshwater and marine, terrestrial, epiphytic, parasitic, symbiotic algae and phytoplanktons.
3. Economic importance of algae as food, fodder, in agriculture, industry and public health.

### **UNIT IV**

1. Outlines and basic principles of classification of the Bryophytes in accordance with the International Code of Botanical Nomenclature.
2. Comparative account of the gross morphology, anatomy, vegetative and sexual reproduction, development and structure of the sporophyte and mechanism of spore dispersal based on *Riccia* and *Marchantia*.
3. Habitat, distribution and economic importance of Bryophytes.

### **UNIT V**

1. Comparative account of the gross morphology and anatomy of the gametophytes, vegetative and sexual reproduction, development and structure of the sporophyte and mechanism of spore dispersal in *Anthoceros* and Mosses (*Funaria*).
2. General account of Jungermanniales (*Porella*).
3. A brief account of the alternation of generation in Bryophytes.

### **Suggested readings**

Kumar, H.D. 1999. Introductory Phycology, Affiliated East West Press, New Delhi  
Vashistha, B.R., Sinha, A.K. and Singh, V.P. 2014. Botany for degree students: Algae. S. Chand Publication, New Delhi  
Vashistha, B.R., Sinha, A.K. and Kumar, Adarsh 2014. Botany for degree students: Bryophyta. S. Chand Publication, New Delhi  
Parihar, N.S. 1991. An Introduction to Bryophyta. Vol 1&2. Central Book Depot, Allahabad  
Puri, P.1980. Bryophytes. Atma Ram and Sons, New Delhi

**PAPER III: (BBO-103) PTERIDOPHYTES, GYMNOSPERMS AND ELEMENTARY PALAEOBOTANY**

**UNIT I**

1. General characters of the Pteridophytes and classification as proposed by Pichi-Sermolli.
2. A comparative study of *Rhynia*, *Selaginella*, *Lycopodium*, *Equisetum*, *Adiantum*, and *Marsilea* on the basis of following features:
3. Morphology and anatomy of the vegetative plant body and spore production organs (strobilus, sporocarp, sporophyll, sporangium and spores), sexual reproduction, male and female gametophytes, fertilization.

**UNIT II**

1. A brief account of Telome theory, Stelar system and its evolution.
2. Heterospory and seed habit in Pteridophytes.
3. Apogamy, agamospory and apospory in ferns.

**UNIT III**

1. Outlines of classification as proposed by D D Pant and distinguishing features of Gymnosperms.
2. Comparative account of the structure, life history and evolutionary trends based on the following Genera:  
*Cycas*, *Pinus* and *Ephedra*
3. General anatomy- Types of wood thickening, tracheids, medullary rays, pitting and resin canals, mesarch and pseudomesarch, foliar bundles and types of stomata.

**UNIT IV**

1. Distribution of Gymnosperms in India.
2. Economic importance of the Gymnosperms.

**UNIT V**

1. Fossils: Types of fossils and process of fossilization.
2. A general idea about Geological era.
3. Living fossils.

**Suggested Readings**

Parihar, N.S.1996. Biology and Morphology of Pteridophytes. Central Book Depot, Allahabad

Vashistha, P.C., Sinha, A.K and Kumar, Anil 2012. Botany for degree students: Pteridophyta. S. Chand Publication, New Delhi

Bhatnagar, S.P. and Moitra, A.1996, Gymnosperms, New Age International Pvt. Ltd, New Delhi

Vashistha, P.C., Sinha, A.K and Kumar, Anil 2012. Botany for degree students: Gymnosperms. S. Chand Publication, New Delhi

## **Lab Course (BBO-10P)**

Prepared slides and specimens should be shown to the students for demonstration of the general features. The students are required to make temporary slide preparation of the important plant material themselves. They are also required to submit a collection of plant species studied by them either on herbarium sheets or as specimen or live planted material as directed by the department.

### **FUNGI, ELEMENTARY MICROBIOLOGY & PLANT PATHOLOGY**

1. To study identify and comment upon the following fungal materials by preparing the temporary slides/ specimens: *Saprolegnia*, *Albugo*, *Rhizopus*, *Saccharomyces*, *Phyllactinia*, *Morchella*, *Agaricus*, *Puccinia*, *Ustilago*, and *Alternaria*.
2. Study of morphology and structure of different types of lichens: Foliose, Fruticose, and Crustose.
3. Symptoms, morphology of pathogen and host parasite relationship of plant diseases: White rust of crucifers, Wart disease of potato, Loose smut of wheat, Black rust of wheat, Red rot of sugar cane and Powdery mildew of shisham
4. Different methods of isolation of microbes.
5. Staining of bacteria with gram stain.
6. Morphological features of viral infected plants; study of bacterial infections in plants.

### **ALGAE AND BRYOPHYTES**

1. To study, identify and comment upon the following algal materials by preparing temporary slides/specimens: *Nostoc*, *Chlamydomonas*, *Volvox*, *Oedogonium*, *Vaucheria*, *Chara*, *Sargassum*, *Batrachospermum* And *Polysiphonia*.
2. To study the morphological and anatomical features of the following material and identify them by preparing temporary slides: *Riccia*, *Marchantia*, *Anthoceros*, *Jungermanniales* and *Funaria*.

### **PTERIDOPHYTES, GYMNOSPERMS AND ELEMENTARY PALAEOBOTANY**

1. Study of the external features, internal structures, rhizome, leaves, roots, sporangia and strobili of *Selaginella* and *Equisetum*, sporocarp of *Marsellia* and prothallus of *Selaginella*, *Equisetum*, *Adiantum* and *Marselia*.
2. Study of the morphological features and anatomical structures of vegetative and reproductive parts of *Cycas*, *Pinus* and *Ephedra*.
3. Study the fossil specimen: Impression, Casts and Petrification.

## Second Year

### **PAPER I (BBO-201) TAXONOMY OF ANGIOSPERMS AND ECONOMIC BOTANY**

#### **UNIT I**

1. Angiosperms origin and evolution. Some examples of primitive angiosperms. Angiosperm taxonomy- fundamental components.
2. Comparasion and evolution of the system of classification as proposed by Linnaeus, Betham and Hooker and Hutchinson.
3. Nomenclature: International Code of Botanical Nomenclature (ICBN), History, scientific naming of plants, priority, types, validity, *nomina conservanda*.
4. Collection and preservation techniques of specimens for Herbarium and Museum, Botanical gardens and Herbaria, Botanical Survey of India (BSI).

#### **UNIT II**

1. Taxonomy, important distinguishing characters, classification and economics importance of the following families:

Dicotyledonae

Polypetalae : Ranunculaceae, Brassicaceae, Caryophyllaceae, Rutaceae, Malvaceae, Rosaceae and Apiaceae

#### **UNIT III**

1. Gamopetalae: Solanaceae, Apocynaceae, Acanthaceae, Lamiaceae
2. Monochlamydae: Euphorbiaceae, Polygonaceae
3. Monocotyledonae: Orchidaceae, Liliaceae, and Poaceae

#### **UNIT IV**

1. Origin of cultivated plants, monophyletic and polyphyletic origin, centres of origin of some important crop plants.
2. Origin, history, botanical features and cultivation of cereals and millets: Wheat, Rice, Maize and Bajra.
3. Legumes: An introduction to the economically important legumes.
4. Oils: Castor oil, linseed oil and mustard oil.

#### **UNIT V**

1. General account of fruits (Apple, Banana, Citrus, Mango) and Vegetables (Root, stem, leaf, and fruit vegetables).
2. Fibres (Cair, Cotton, Flax, Jute) and Medicinal plants (*Aconitum*, *Atropa*, *Cinchona*, *Rauwolfia*, *Ephedra*).
3. Common Timber yielding plants of Western Himalayas (Chir, Deodar, Sal Shisham and Teak).

#### **Suggested Readings**

Singh, V. And Jain, D.K.2012. Taxonomy of Angiosperms. Rastogi Publications,, Meerut

Singh, G.2012. Plant Systematic: Theory and Practice. Oxford and IBH Pvt Ltd, New Delhi

Pandey, B.P.2001. A text book of Angiosperms. S. Chand Publication, New Delhi

Sharma, O.P.2016. Plants and Human Welfare, Pragati Prakshan, Meerut

Sharma, A.K. and Sharma, R. Taxonomy of Angiosperms and Utilization of Plants

## **PAPER II: (BBO-202) ANATOMY, EMBRYOLOGY AND ELEMENTARY MORPHOGENESIS**

### **UNIT I**

1. The techniques for the study of plant anatomy.
2. Meristems: Primary and secondary meristems, characteristics and functions. Various types of permanent tissues- Simple and complex tissues.
3. Structure of dicot and monocot root, stem and leaf.

### **UNIT II**

1. Secretory structures
2. Origin structure and function of vascular cambium including anomalous behaviour with special reference to the following taxa: *Bougainvillea*, *Salvadora*, *Nyctanthus*, *Dracaena*, *Orchids* and *Tinospora*.
3. Structure of xylem and phloem.

### **UNIT III**

1. Structure of anther, micro sporogenesis and development of male gametophyte in angiosperms.  
Structure of ovule, mega sporogenesis and development of the female gametophyte with reference to the *Polygonum* type. Comparison with the bio sporic and tetra sporic types
2. Pollination, fertilization and life history of a typical angiosperm.

### **UNIT IV**

1. Endosperm and embryo development with special reference to the onagrad type.
2. Polyembryony and apomixis.
3. Seed germination and dormancy, elementary plant movements.

### **UNIT V**

1. Basic body plan of a flowering plant- modular type of growth.
2. Diversity in plant forms in annuals, biennials and perennials. Development of tree habit in higher plants
3. Plant growth regulators: Auxin, Gibberellin, Cytokinin and Abscissic acid.
4. Physiology of flowering: Photoperiodism and vernalization.

### **Suggested Readings**

Pandey, S.N. 1992, Plant Anatomy, Rastogi Publication, Meerut  
Tayal, M.S. 1996, Plant Anatomy, Rastogi Publication, Meerut  
Bhojwani, S.S. and Bhatnagar, S.P.1994. Embryology of Angiosperms  
Maheshwari, P. An Introduction to Embryology of Angiosperms



### **PAPER III: (BBO-203) ECOLOGY AND REMOTE SENSING**

#### **UNIT I**

1. Definition and scope of ecology, Principles of environment, atmosphere, light, temperature, water and soil.
2. Ecosystem: Types , biotic and abiotic components, food chain, food web, ecological pyramids and ecological niche.
3. Productivity, type, measurement of primary productivity, energy flow and ecological energetics, Lindeman's concept of Energy Flow.

#### **UNIT II**

1. Biogeochemical cycles: A brief discussion of concept by citing examples of carbon, nitrogen and phosphorous cycles.
2. Population ecology: Definition, population characteristics, growth curves, carrying capacity and population fluctuation.
3. Community ecology: Structure and community characteristics, quantitative, qualitative and synthetic features, life forms, biological spectrum and ecological succession.

#### **UNIT III**

1. Pollution of air, water and soil, noise incidence, thermal and radioactive pollution; prevention and control of pollution.
2. Global warming, desertification and ozone depletion.
3. Biogeographical regions of India ; Vegetation types in Uttarakhand

#### **UNIT IV**

1. Biodiversity: Basic concept, types, causes and loss of biodiversity.
2. Biodiversity conservation: In situ and ex situ conservation, gene bank, introductory account of Biosphere reserves, National parks and Sanctuaries
3. Soil erosion and conservation, conservation and management of some natural resources: forest and rangeland management.

#### **UNIT V**

1. Definition of remote sensing, aerial photography, principles and fundamentals of aerial photo interpretation.
2. Electromagnetic spectrum, satellite and sensors, remote sensing data acquisition, physical basis of remote sensing, aerial and space platforms.
3. Image interpretation, role of remote sensing in ecology.

#### **Suggested Readings**

Odum, E.P. 1983, Basics of Ecology, Saunders College Publication, New York

Tiwari, S.C.2005. Concepts of Modern Ecology, Bishen Singh Mahendra Pal Singh, Dehradun

Sharma, P. D, 2014.Ecology and Environment, Rastogi Publications, Meerut

Shukla, R.S. and Chandel. P.S. 2014. Plant Ecology. S Chand Publications, New Delhi

Shukla, R.S. and Chandel. P.S. Biostatistics. S Chand Publications, New Delhi

## **LAB COURSE (BBO-20P)**

### **TAXONOMY OF ANGIOSPERMS AND ECONOMIC BOTANY**

1. Identification of locally available plants belonging to the families mentioned in the syllabus, their description in semi technical language.
2. Collection of plant specimens: Herbarium and/live specimens. Excursions should be organised to acquaint the students with the local flora.
3. To identify study and comment upon the economically important plants and their economic products mentioned in the syllabus.

### **ANATOMY, EMBRYOLOGY AND ELEMENTARY MORPHOGENESIS**

1. Demonstration of usual techniques of plant anatomy, section cutting, TS, LS of dicot and monocot leaf, stem and root.
2. Normal and abnormal secondary growth in *Boerhavia*, *Bougainvillia*, *Nyctanthes*, , *Dracaena*, *Orchid* and *Tinospora*.
3. TS of anther.
4. Study of various types of pollen grains, placentations, embryo sacs, ovules and stages of embryo development using temporary and permanent preparations.
5. Influence of growth regulators on root formation, senescence and pollen germination (hanging drop method).
6. Structure and organization of the shoot apex/ root apex.

### **ECOLOGY AND REMOTE SENSING**

1. To determine the minimum size of quadrat by species area curve method.
2. To determine the minimum number of quadrats to be laid down for the vegetation analysis of the given area.
3. To determine the frequency, density and abundance of each species in a community by quadrat method.
4. To prepare frequency diagram and compare it with that o the Raunkiaer's normal frequency diagram.
5. To determine the mean basal cover and total basal cover.
6. To study the physical characters of soil in terms of temperature, colour, texture and pH.
7. To find out bulk density and porosity of different soils.
8. To estimate the moisture percentage of various soil samples.
9. Statistical problems of central tendencies, standard deviation, Correlation and  $X^2$  test.
10. Study of types of aerial photographs and satellite data products.
11. Study of types of stereoscopes

### THIRD YEAR

#### Paper I (BBO– 301) CYTOGENETICS, MOLECULAR BIOLOGY AND BIOTECHNOLOGY

##### UNIT 1

1. Structure and functions of Nucleus: Ultra structure, nuclear membrane, nucleolus, structure and functions of other cell organelles: Golgi body, endoplasmic reticulum, peroxysomes and vacuoles. The cell envelope: Plasma membrane, bilayer lipid structure and functions of cell wall.
2. Cell division: Comparasion of mitosis and meiosis.
3. Chromosome organization: Morphology, centromere and telomere, chromosome alteration in chromosome numbers, aneuploidy, polyploidy and sex chromosomes.
4. Extra nuclear genome: Presence and functions of mitochondrial and plastid DNA, plasmids.

##### UNIT II

1. Genetic Inheritance: Mendelism: Law of segregation and independent assortment, incomplete dominance.
2. Interaction of genes: Linkage- complete and incomplete linkage and crossing over.
3. Sex linked inheritance: Determination of sex.
4. Genetic variation: Mutations, transposable genetic elements, DNA damage and repair.

##### UNIT III

1. DNA,-the genetic material: DNA structure, replication, DNA- protein interaction, the nucleosome model, satellite and repetitive DNA.
2. RNA: Structure and types.
3. Gene concept: Classical and modern concept of gene, operon concept.

##### UNIT IV

1. Protein Structure: 1D, 2D and 3D structure.
2. Genetic code and protein synthesis.
3. Regulation and gene expression in prokaryotes and eukaryotes.

##### UNIT V

1. Introduction to Biotechnology: Functional definition, role in modern life, history and ethical issues connected with biotechnology.
2. Genetic engineering: Tools and techniques of DNA technology, cloning vectors, genome, cDNA libraries, transposable elements and techniques of gene mapping.
3. Basic concept of tissue culture, cryopreservation, differentiation and morphogenesis, biology of *Agrobacterium*, vectors for gene delivery and marker genes.
4. A brief account of Industrial biotechnology (fermentation and alcohol production), Agricultural biotechnology (biofertilizers and biopesticides) and Nutritional biotechnology (Mycotoxins and health hazards, control of mycotoxin production, single cell protein).

##### Suggested Readings

Gupta P.K. 2000. Cytology, Genetics And Evolution. Rastogi Publication, Meerut

Gupta P.K. 2012. Genetics. Rastogi Publication, Meerut

Gupta P.K. 2001.Elements of Biotechnology. Rastogi Publication, Meerut

Power, C.B. 1994. Cell Biology. Himalaya Publishing House, New Delhi

## **PAPER II (BBO– 302): PLANT PHYSIOLOGY AND ELEMENTARY BIOCHEMISTRY**

### **UNIT I**

1. Cell physiology, diffusion, permeability, plasmolysis, imbibition, water potential and osmotic potential.
2. Types of soil water, water holding capacity, water requirement, wilting coefficient.
3. Active and passive absorption, anatomical features of xylem in relation to path of water transport and ascent of sap.

### **UNIT II**

1. Loss of water from plants, transpiration, factors affecting transpiration, Guttation, anatomy of the leaf with special reference to the loss of water.
2. Structure of stomata, mechanism of stomatal
3. Movement and diffusion capacity of the stomata.
4. Mechanism of absorption of mineral salts.
5. Translocation of solutes, theories and mechanism of translocation. Anatomical features of the phloem tissue with reference to the translocation of solutes.

### **UNIT III**

1. Elementary knowledge of macro and micro nutrients.
2. Symptoms on mineral deficiency, techniques of water and sand culture.
3. Nitrogen cycle and nitrogen fixation, importance of nitrate reductase and its regulation, ammonium assimilation.

### **UNIT IV**

1. Photosynthesis: Historical background and importance of the process, role of primary pigments, concept of two photosystems, Z-scheme, photophosphorylation, Calvin cycle, factors affecting photosynthesis, chemosynthesis.
2. Respiration, glycolysis, Krebs's cycle, Electron transport mechanism (Chemiosmotic theory), ATP- the biological energy currency, redox potential, oxidative phosphorylation, pentose phosphate pathway, CAM plants, factors affecting respiration, fermentation.

### **UNIT V**

1. Types and strength of solutions, acid base and salts, pH, buffer solutions and their importance.
2. Enzyme action, active sites, Michaelis-Menten constant, classification of enzymes, factors affecting the enzyme activity, coenzymes and co factors.
3. Carbohydrates: Classification, properties, structure and biological role.
4. Protein and amino acids: Classification, structure and chemical bonds in protein structure and properties.
5. Lipids: Structure and functions, fatty acid biosynthesis, beta-oxidation, saturated and unsaturated fatty acids, storage and mobilization of fatty acids.

### **Suggested Readings**

Jain, V.K. 2014. Fundamentals of Plant Physiology. S. Chand Publications, New Delhi  
Verma, S.K. and Verma M. 2014. A text book of Plant Physiology and Biochemistry. S. Chand Publications, New Delhi  
Devlin, R.M. 1996, Plant Physiology. Indian Print New Delhi  
Pandey, S.N. 2000. Plant Physiology.  
Srivastava, H.S. Biochemistry. Rastogi Publication, Meerut

## **PAPER III: (BBO– 303) PLANT BREEDING AND BIOSTATISTICS**

### **UNIT 1**

1. Plant breeding: Aims and objectives, basic techniques of plant breeding.
2. Methods of plant breeding in relation to self pollinated and cross pollinated plants.

### **UNIT 2**

1. Crop improvement methods: Plant introduction, selection, acclimatization and hybridization, vegetative propagation and grafting.
2. Heterosis: Genetic and physiological basis
3. Mutational breeding and breeding for disease resistance.

### **UNIT 3**

1. Improved seed production, multiplication and distribution.
2. Maintenance and seed testing.
3. National Seed Corporation (NSC), seed testing laboratories, International and National Centre for plant breeding.

### **UNIT IV**

1. Bio-statistics and its applications.
2. Methods of representation of statistical data diagrams.
3. Measurements of Central tendencies: Mean, Median and Mode

### **UNIT V**

1. Measures of dispersion: Range, mean deviation, standard deviation and standard error.
2. Coefficient of correlation.
3. Test of significance: Chi-square test.

### **Suggested Readings**

Singh, B.D. 2002. Plant Breeding: Principles and Methods. Kalyani Publishers, New Delhi

Chaudhary, H.C. Plant Breeding

Banerjee, P.K. 2007. Introduction to Biostatistics

Prasad, Satguru, 1992. Fundamentals of Biostatistics

**LAB COURSE (BBO30P)**  
**CYTOGENETICS, MOLECULAR BIOLOGY AND BIOTECHNOLOGY**

1. To study Prokaryotic cells (Bacteria) and Eukaryotic cells with the help of light and electron micrographs.
2. To study cell structure from onion leaf peels, demonstration of staining and mounting methods.
3. Study of mitosis and meiosis (temporary mounts and permanent slides).
4. Exercises on genetical problems out of the following : Mendel's Law Of Inheritance, Incomplete Dominance, Sex Linked Inheritance, Sex Determination, Cytoplasmic Inheritance.
5. To study the working of following instruments: Incubator, Water Bath, Spectrophotometer, Oven and Centrifuge.
6. To study about life history of various scientists and their contribution in the field of molecular biology.
7. To study the working of the following instruments PCR, Laminar Airflow, Autoclave, etc
8. Culture media preparation.
9. Comment upon the given photograph, specimens, slides etc.

**PLANT PHYSIOLOGY AND ELEMENTARY BIOCHEMISTRY**

1. To perform endosmosis and exosmosis using potato tuber and egg osmoscope. Demonstration of imbibition, plasmolysis and deplasmolysis.
2. To study the effects of temperature on the permeability of plasma membrane.
3. Structure of stomata, their opening and closing, stomatal frequency.
4. Comparison of the rate of transpiration using four leaf method, cobalt chloride paper or by different types of potometers under different climatic conditions.
5. Separation of photosynthetic pigments by circular paper and strip chromatography.
6. To study the effect of light and darkness on starch synthesis.
7. To study the effect of intensity and quality of light on the rate of photosynthesis by Wilmott's bubbler.
8. Study of R.Q by Ganong's respirometer in different seeds.
9. Comparison of the rate of respiration of various plants.
10. Demonstration of colour tests and micro- chemical tests for carbohydrates, proteins and lipids.

**PLANT BREEDING AND BIOSTATISTICS**

1. Study of the floral biology of some of the locally available crops such as Wheat, Pea, Bean, Mustard, Brinjal, Orka, Tomato etc.
2. Emasculation techniques in the field along with bagging and labelling.
3. Estimation of dockage percentage in seed samples.
4. Estimation of moisture content in seed samples.
5. National and International Institutes of crop research and improvement, their abbreviations.
6. Representation of data through graphs and diagrams.
7. Comment upon given graphs and diagrams.
8. Statistical problems of Central Tendencies, Standard Deviation, Correlation and Chi Square Test.





SRIDEV SUMAN UTTARAKHAND UNIVERSITY, BADSHAHITHAUL, TEHRI  
GARHWAL

SYLLABUS: BOTANY COURSE FOR M.Sc. STUDENTS (4 SEMESTERS)

OBJECTIVES OF THE COURSE

To teach the fundamental concepts of Botany and their applications, the syllabus pertaining to M.Sc. (2 Year Degree Course) in the subject of Botany has been prepared as per provision of UGC module and the demand of the academic environment. The syllabus contents are duly arranged unit-wise and contents are included in such a manner that due importance is given to requisite intellectual and laboratory skill. The M.Sc. course of Botany consists of 2 year course with semester system – in all 4 semesters (Two semesters in each year).

Total Marks : 2000 (1000 per year and 500 per semester) of core and elective disciplines

M.Sc. Semester I

Paper No.	Title	Paper Code	Max. Marks (100)	
			Ext.	Int.
I	Microbiology (Bacteria, Viruses and Lichens)	BOT101	80	20
II	Mycology and Plant Pathology	BOT102	80	20
III	Phycology and Bryology	BOT103	80	20
IV	Pteridophyta, Gymnosperms and Palaeobotany	BOT104	80	20
	Lab Course	BOT10P	80	20

M.Sc. Semester II

Paper No.	Title	Paper Code	Max. Marks (100)	
			Ext.	Int.
I	Taxonomy of Angiosperms	BOT201	80	20
II	Cytogenetics and Molecular Biology	BOT202	80	20
III	Economic Botany	BOT203	80	20
IV	Plant Morphology, Anatomy and Embryology	BOT204	80	20
	Lab Course	BOT20P	80	20

M.Sc. Semester III

Paper No.	Title	Paper Code	Max. Marks (100)	
			Ext.	Int.
I	Plant Physiology and Biochemistry	BOT301	80	20
II	Plant Ecology and Remote Sensing	BOT302	80	20
III	Plant Biotechnology	BOT303	80	20
IV	Elective (Any one of the following) (a) Plant Health Management (b) Diversity and Cultivation of	BOT304/EI	80	20

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	Mushrooms: (c) Applied Plant Anatomy (d) Ecosystem Analysis, GIS and Remote Sensing (e) Environmental Management with Reference to Western Himalaya.	BOT304/E2 BOT304/E3 BOT305/E4 BOT305/E5		
	Lab Course	BOT30P	80	20

#### M.Sc. Semester IV

Paper No.	Title	Paper Code	Max. Marks (100)	
			Ext.	Int.
I	Plant Breeding and Biostatistics	BOT401	80	20
II	Conservation Biology	BOT402	80	20
III	In-vitro Technologies and Industrial Applications	BOT403	80	20
IV	Elective Paper(Any one of the following) (a) Forest Ecology (b) Industrial Microbiology (c) Ethnobotany (d) Palynology and pollination Biology (e) Seed Pathology	BOT404/E1 BOT404/E2 BOT404/E3 BOT404/E4 BOT404/E5	80	20
	Lab Course	BOT40P	80	20

### SYLLABUS

#### SEMESTER I

##### Paper I (BOT101): Microbiology (Bacteria, Viruses and Lichens)

###### Unit 1:

1. General account of Microorganisms: History of microbiology, classification of microorganisms- five kingdom classification, characteristic features of bacteria and actinomycetes,
2. Culture Study of Microorganisms: Methods of isolation and culture of microorganisms; measurement of microbial growth; microbial genetics.

###### Unit 2:

1. Morphology and structure of Bacterial cells: Morphology of Bacterial cells based on size, shape and arrangement, fine structure of bacterial cells (of both Gram-negative and Gram-positive Bacteria) - capsule cell wall, cell appendages (flagella, fimbriae and pilli).
2. Structure of plasma membrane, cytoplasmic inclusions- mesosomes, chlorosome.

###### Unit 3:

1. Morphology and structure of viruses: History, morphology, fine structure, shape and classification of viruses.

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2. Microphages and Prions, Tobacco mosaic virus (TMV), T<sub>4</sub>.
3. Bacteriophage and HIV- their fine structure, genome organization and multiplication, bacteriophage therapy.

#### Unit 4

1. Role of microorganism: Root nodules, *nif* gene organization, role of microorganisms in soil (decomposition and nutrient cycling), water and air; role in industry- production of antibiotics, bio-fertilizers and bio-pesticides.
2. General account of lichens: Occurrence, classification, morphology, anatomy, reproduction and their importance.

#### SUGGESTED READINGS:

1. Doelle, H.W. and C.G. Heden 1986. Applied Microbiology, Kluwer Academic Press, London
2. Pelczar, M.J., Chan, ECS and Kreig, N.R. 1993. Microbiology, Concept and Applications. Mc Graw Hill, New York.
3. Ross, F.C. 1983. Introductory Microbiology. Charles E. Merrill. Publ. Co. Columbus, Ohio.
4. Alexander, M. 1991. Microbial Ecology. John Wiley and Sons, New York.
5. APHA. 1971. Standard Methods for the Examination of water and Waste Water. Washington DC
6. Atlas, R. M. Principle of Microbiology.
7. Board, R.G. and D.W., Lovelock 1975. Some Method for Microbiological Assay. Academic Press, New York
8. Casida, L.E. 1968. Industrial Microbiology. John Wiley and Sons, New York.
9. Clifford, H.T. and W. Stephenson 1975. An Introduction to Numerical Classification, Academic press, New York.
10. Doelle, H.W. and C.G., Heden 1986. Applied Microbiology. Kluwer Acad. Press, London.
11. Kaushik, P. 1996. Introductory Microbiology. Emkay Publ, Delhi.
12. Miller, B.M. and W. Litsky 1976. Industrial Microbiology. Mc Graw Hill New York.
13. Mukherjee, K.G. and Ved Pal Singh, 1997. Frontiers in Applied Microbiology. Rastogi Publ. Meerut.
14. Norris, J.R. and D.W. Ribbons 1970. Methods in Microbiology. Academic Press, London.
15. Power, C.B. and H.F. Dagainawala 1996. General Microbiology 2 Vols. Himalaya Pub. House, New Delhi.
16. Ross, F.C. 1983. Introductory Microbiology. Charles E. Merrill Publ. Co. Columbus. Ohio.

#### Paper II (BOT102): Mycology and Plant Pathology

##### MYCOLOGY

#### Unit 1

1. History of Mycology; India and abroad.
2. General characters of Fungi: Substrate relationship in fungi; Cell ultra-structure; unicellular and multicellular organization, nutrition (saprobic, biotrophic, symbiotic); reproduction (vegetative, asexual, sexual).
3. Recent trends in the classification.

#### Unit 2

1. Phylogeny of Fungi; General account of *Mastigomycotina*, *Zygomycotina*, *Ascomycotina*, *Basidiomycotina*, *Deuteromycotina*; Fungi in industry, medicine and as food.
2. Mycorrhizae; Fungi as bio-control agents.

3. Symptoms, causal organisms of plant pathogens belonging to various fungal classes i.e. *Mastigomycotina*, *Zygomycotina*, *Acomycotina*, *Basidiomycotina* and *Deuteromycotina*.

#### PLANT PATHOLOGY

##### Unit 3

1. History of plant pathology in India: Losses caused by pathogens and pests; types of pathogens; symptoms of different diseases.
2. Plant-microbe interaction: pathogenesis: prepenetration, penetration and post penetration events, and factors affecting disease development (host factors, environmental factors, virulence and susceptibility).
3. Dissemination of pathogens: Means of dissemination (active and passive dissemination)

##### Unit 4

1. Disease control: Cultural practices, chemical methods (insecticides, systemic and nonsystemic chemical), biological control: introduction, biological control of insects and pests, use of resistant varieties, integrated management for disease control, quarantine.
2. Brief account, structure, importance, disease cycle and control of the following:  
(i) Damping off, (ii) Wilt, (iii) Root rot, stem rot and fruit rot, (iv) Mildews (powdery and downy), (v) Rusts, (vi) Smuts, (vii) Leaf spots and leaf blights.
3. General characteristics, importance, disease cycle and control of the following:  
(i) Bacterial disease, (ii) viral disease, (iii) mycoplasma disease, (iv) phytoplasma disease.

#### SUGGESTED READINGS:

1. Ainsworth, G.C. 1971. Ainsworth and Bisby's Dictionary of Genera of Fungi. Central Myco. Inst. Kew, Surrey.UK.
2. Alexopoulos, C.J., Mims, C.W. and Blackwell, M. 1996. Introductory Mycology. John Wiley & Sons Inc.
3. Bilgrami, K.S. 1982. Physiology of Fungi. Bishen Singh Mahendrapal Singh, Dehradun.
4. Clifton, A. 1958. Introduction to the Bacteria. McGraw-Hill book Co., New York.
5. Mandahar, C.L. 1978. Introduction to Plant Viruses. Chand & Co. Ltd., Delhi.
6. Mehrotra, R.S. and Aneja, R.S. 1998. An Introduction to Mycology. New Age Intermediate Press.
7. Webster, J. 1985. Introduction to Fungi. Cambridge University Press.

#### Paper III (BOT103): Phycology and Bryology

#### PHYCOLOGY

##### Unit 1

1. Algal habitats.
2. Thallus organization, cell structure and reproduction (vegetative, asexual and sexual).
3. Algal Classification, Criteria for classification of algae: pigments, reserve food and flagella.
4. Phylogeny and interrelationships of algae.

##### Unit 2

1. Classification and salient features of Chlorophyta, Charophyta, Xanthophyta, Bacillariophyta, Phaeophyta, Rhodophyta and Cyanophyta.
2. A knowledge of algal life cycles; alternation of generations in algae; cytology and sexuality; physiology and biochemistry of algae; nitrogen fixation; parasitic algae.



3. Economic importance of Algae, Algal blooms, algal biofertilizers, algae as food and feed; uses of algae in industry.

#### **BRYOLOGY**

##### **Unit 3**

1. Morphology, structure reproduction and life history.
2. Classification and Phylogeny of various groups.
3. General account of Marchantiales, Jungermanniales, Calobryales, Sphaerocarpaceae, and Anthocerotales.

##### **Unit 4**

1. General account of Sphagnales, Andreales, Funariales, and Polytrichales.
2. Knowledge of the distribution of bryophytes in the Himalaya.
3. Ecology of bryophytes, their association with other organisms.
4. Fossil bryophytes: General account.

#### **SUGGESTED READINGS:**

1. Cavers, F. 1979. The Interrelationships of the Bryophytes Reprint. Bishen Singh Mahendrapal Singh, Dehradun.
2. Fritsch, F.E. 1979. The Structure and Reproduction of Algae. Reprint. Bishen Singh Mahendrapal Singh, Dehradun.
3. Kashyap, S.R. 1968. Liverworts of the Western Himalayas and Punjab Plains. The Chronica Botanica Co. Delhi.
4. Kumar, H.D. 1988. Introductory Phycology, Affiliated East-West Press Ltd., New Delhi.
5. Morris, I. 1986. An Introduction to the Algae. Cambridge University Press, U.K.
6. Parihar, N.S. 1991. Bryophyta. Central Book Depot, Allahabad.
7. Prescott, G.W. Algae: A Review. Bishen Singh Mahendrapal Singh.
8. Puri, P. 1980. Bryophytes. Atma Ram & Sons, Delhi.
9. Ram Udar. Fifty years of Bryology in India. Golden Jubilee Series, IBS, New Delhi
10. Round, F.E. 1986. The Biology of Algae. Cambridge University Press, Cambridge.
11. Smith, G.M. 1955. Cryptogamic Botany. Vol. I and II. Tata Mc Graw Hill, New Delhi.
12. Stewart, W.N. and Rathwell, G.W. 1993. Paleobotany and the Evolution of Plants. Cambridge University Press.

#### **Paper IV (BOT104): Pteridophyta, Gymnosperms and Palaeobotany**

##### **PTERIDOPHYTA**

##### **Unit 1**

1. History, origin, classification, present and past distribution, morphology and life history of the following types.
  - a. Psilophyta: Psilophytales (*Psilophyton*) and Psilotales (*Psilotum*).
  - b. Lycophyta: Lepidodendrales (*Lepidodendron*), Lycopodiales (*Phylloglossum*), Lepidospermales (*Lepidocarpon*) and Isoetales (*Isoetes*).
  - c. Sphenophyta: Salient features of order Hyeniales, Sphenophyllales and Calamitales.
  - d. Pterophyta: A general account of Ophioglossales Osmundales Filicales, and Salviniaceae.

##### **GYMNOSPERMS**

##### **Unit 2**

1. Classification and distribution of Gymnosperms in India with special reference to Himalaya.
2. Study of morphology, structure and life-history as illustrated by the following and indicated in the practical work:



Pteridospermales: Palaeozoic and Mesozoic groups with references to Lyginopteridaceae (*Lyginopteris*) and Medullosaceae (*Trigonocarpus*). A general account of Glossopteridaceae.  
3. Bennettitales: A general account of Cycadeoidaceae, Williamsoniaceae and Wielandiellaceae.

#### Unit 3

1. Cycadales: A detailed account including distribution of living Cycads.
2. A general account of Pentoxylales and Cordaitales.
3. Ginkgoales: *Ginkgo*.
4. A general account of fossil and living Coniferales and Taxales.
5. Ephedrales, Welwitschiales and Gnetales: A general account.
6. Economic importance of Gymnosperms.

#### PALAEOBOTANY

##### Unit 4

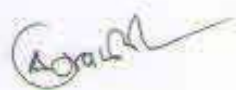
1. Definition of fossil, different types of plant fossils as per their mode of preservation, concept of form genus.
2. Indian Gondwana Sequence, a general account.
3. Introductory idea of Continental Drift Hypothesis.

#### SUGGESTED READINGS:

1. Andrews, H.N. 1961. Studies in Palaeobotany. New York.
2. Baker, J.G. 1995. Handbook of the Fern Allies. Reprint. Bishen Singh Mahendra Pal Singh, Dehradun.
3. Bhatnagar, S.P. and Mitra, A. 1996. Gymnosperms. New Age International Pvt. Ltd., New Delhi.
4. Beddome, R.H. 1966. The Ferns of British India. 2 Vols. Oxford and IBH, New Delhi.
5. Chamberlain, C.J. 1955. Gymnosperms: Structure and Evolution. Chicago.
6. Eams, A.J. 1969. Morphology of Lower Vascular Plants.
7. Parihar, N.S. 1996. Biology & Morphology of Pteridophytes. Central Book Depot Allahabad.
8. Raizada, M.B and Sahni, K.C. 1958. Living Indian Gymnosperms.
9. Sahni, K.C. 1996. Gymnosperms of India and Adjacent Countries. Bishen Singh Mahendrapal Singh, Dehradun.
10. Seward, A.C. 1919. Fossil Plants for Students of Botany and Geology. 4 Vols. Cambridge.
11. Sporne, K.R. 1991. The Morphology of Pteridophytes. Hutchinson Library Series London.

#### Lab Course (BOT10P):

1. Study of representative genera of Zygomycotina, Ascomycotina, Basidiomycotina and Deuteromycotina.
2. Symptomatology of at least one diseased specimen of plant pathogens belonging to various fungal classes i.e. *Mastigomycotina*, Zygomycotina, ascomycotina, basidiomycotina and deuteromycotina, bacteria and viruses.
3. Aseptic methods and demonstration of instruments viz., autoclave, hot air oven, incubator, laminar air flow.
4. Direct examination of root nodule bacteria under microscope and isolation of *Rhizobium* in root nodules.
5. Isolation and enumeration of microbes from natural samples (soil and water) by agar plate technique.
6. Morphological study of representative members of algae: *Microcystis*, *Lyngbya*.





*Cylindrospermum, Gloeotrichia, Scytonema, Pandorina, Eudorina, Scendesmus, Pediatrum, Hydrodictyon, Ulva, Enteromorpha, Draparnaldiopsis, Stigeoclonium, Frittschiella, Coleochaete, Bulbochaete, Cosmarium, Caulerpa, Nitella, Dictyota, Gelidium, Gracillaria, Batrachospermum and Polysiphonia.*

7. Study and identification with suitable preparations of *Ricciocarpus, Targionia, Cyathodium, Plagiochasma, Asterella (Fimbriaria), Dumortiera, Sewardiella, Peltia, Fossombronia, Porella, Calobryum, Notothylas, Sphagnum, Polytrichum* and *Funaria*.

8. *Psilotum, Isoetes, Ophioglossum, Osmunda, Polypodium, Azolla, Salvinia* and important fossil types.

9. *Cycas, Ginkgo, Abies, Cedrus, Cryptomeria, Cupressus, Podocarpus, Cephalotaxus, Araucaria, Taxus, and Gnetum*

10. Study of available fossil flora through specimens and slides, etc.

## SEMESTER II

### Paper I (BOT201): Taxonomy of Angiosperms

#### Unit 1

1. Origin of intra-population variation: Population and the environment; ecads and ecotypes; evolution and differentiation of species- various models.

2. The species concepts; taxonomic hierarchy; species, genus, family and other categories; principles used in assessing relationship, delimitation of taxa and attribution of rank.

#### Unit 2

3. Salient features of the International Code of Nomenclature for Algae, Fungi and Plants (ICN)

4. Taxonomic evidences and Taxonomic tools: anatomy, palynology, embryology, phytochemistry, histological, cytological, phytochemical, serological, biochemical and molecular techniques.

#### Unit 3

5. Systems of angiosperm classification: Phenetic versus phylogenetic systems; cladistics in taxonomy; major systems of classification (Bentham and Hooker, Hutchinson, Cronquist) and their relative merits and demerits.

6. Herbaria and Botanical gardens: General account.

7. Plant exploration in India with reference to North-West Himalaya.

8. Status of flowering plant diversity in Garhwal Himalaya.

#### Unit 4

Distinguishing features and economic importance of Dicot families of

- (i) Polypetalae- Magnoliaceae, Violaceae, Linaceae, Rutaceae, Rhamnaceae, Sapindaceae, Anacardiaceae, Myrtaceae.
- (ii) Gamopetalae- Dipterocarpaceae, Ericaceae, Oleaceae, Rubiaceae, Asteraceae, Acanthaceae.
- (iii) Monochlamydeae- Chenopodiaceae, Amaranthaceae, Urticaceae.
- (iv) Monocots- Orchidaceae, Arecaceae, Liliaceae, Amaryllidaceae, Zingiberaceae, Dioscoreaceae, Cyperaceae, Poaceae.

## SUGGESTED READINGS

1. Babu, C.R. 1976. Herbaceous Flora of Dehradun, CSIR, New Delhi.
2. Cole, A.J. 1969. Numerical Taxonomy, Academic Press, London.

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3. Cronquist, A. 1981. An Integrated System of Classification of Flowering Plants. Columbia University Press, New York.
4. Davis, P.H. and Heywood, V.H. 1973. Principles of angiosperms Taxonomy. Robert E. Kreiger Pub. Co., New York.
5. Gaur, R.D. 1999. Flora of District Garhwal: NW Himalaya. Transmedia, Srinagar, Garhwal.
6. Grant, V. 1971. Plant Speciation. Columbia University Press, New York.
7. Grant, W.F. 1984. Plant Biosystematics. Academic Press, London.
8. Harrison, H.J. 1971. New Concepts in Flowering Plant Taxonomy. Hieman Educationnal Books Ltd., London.
9. Heywood, V.H. and Moore, D.M. 1984. Current Concepts in Plant Taxonomy. Academic Press, London.
10. Hutchinson, J. 1973. The Families of Flowering Plants. 2 Vols. Oxford University Press, Oxford.
11. Jain, S.K. and Rao, R.R. 1977. A handbook of Field and Herbarium methods. Today and Tomorrow, New Delhi.
12. Jones, A.D. and Wilkins, A.D. 1971. Variations and Adaptations in Plant Species. Hieman & Co. Educational Books Ltd., London.
13. Jones, S.B., Jr. and Luchsing, A.E. 1986. Plant Systematic (2nd edition). McGraw- Hill Book Co., New York.
14. Lawrence, H.W. 1951. Taxonomy of Vascular Plants. Reprint Oxford and IBH, New Delhi.
15. Naithani, B.D. 1985. Flora of Chamoli. 2 Vols, BSI, Calcutta. Nordenstam, B., El Gazaly, G. and Kassas, M. 2000. Plant Systematic for 21st Century. Portlant Press Ltd., London.
16. Radford, A.E. 1986. Fundamentals of Plant Systematics. Harper & Row Publications, USA.
17. Singh, H. 1978. Embryology of Gymnosperms. Encyclopaedia of Plant Anatomy X. Gebruder Borntraeger, Berlin.

## **Paper II (BOT202): Cytogenetics and Molecular Biology**

### **Unit 1**

1. The dynamic cell: Structural organization of the plant cell; specialized plant cell.
2. Cell wall: structure and functions; biogenesis, growth.
3. Plasma membrane: structure, models and functions; sites for ATPases, ion carriers, channels and pumps, receptors.
4. Mitochondria and chloroplast: Structure, genome organization, gene expression.

### **Unit 2**

1. Nucleus: structure, nuclear pores, nucleosome organization.
2. Ribosomes: Structure, cytoprotein synthesis.
3. Chromatin organization: Chromosome structure and packaging of DNA, molecular organization of centromere and telomere, euchromatin and heterochromatin, specialized types of chromosomes; polytene, lampbrush, B-chromosomes and sex chromosomes.

### **Unit 3**

1. Principles of inheritance: Mendelian laws along with molecular explanations, Exceptions to Mendelian laws, lethal alleles and Gene Interactions.
2. Structural and numerical alterations in chromosomes: Origin, occurrence, production and meiosis of haploids, aneuploids and euploids, induction and characterization of trisomics and monosomies.

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3. Genetics of prokaryotes and eukaryotic organelles: genetic recombination of phage; genetic transportation, conjugation and transduction in bacteria, cytoplasmic male sterility.

#### Unit 4

1. Gene structure and expression: Genetic fine structure, cis-trans test; fine structure analysis of eukaryotes, introns and their significance, regulation of gene expression in prokaryotes and eukaryotes. DNA damage and repair mechanism, defects in DNA repair; Initiation of cancer at cellular level, proto-oncogenes and oncogenes.

2. Genetic recombination and genetic mapping: Recombination; independent assortment and crossing over, linkage groups, genetic markers, construction of molecular maps.

3. Mutations: Spontaneous and induced mutations; physical and chemical mutation, molecular basis of gene mutation; mutations induced by transposons.

4. Nuclear DNA content; C-value paradox; Cot curves.

#### SUGGESTED READINGS:

1. Alberts, B., Bray, D., Lewis, J., Raff, M., Roberts, K. and Watson, J.D. 1989. Molecular Biology of the Cell (2nd edition). Garland Publishing Inc., New York.
2. Atherly, A.G., Girton, J.R. and McDonald, J.F. 1999. The Science of Genetics. Saunders College Publishing, Fort Worth, USA.
3. Burnham, C.R. 1962. Discussions in Cytogenetics. Burgess Publishing Co., Minnesota.
4. Busch, H. and Rothblum, L. 1982. Volume X. The Cell Nucleus rDNA Part A. Academic Press.
5. Barry, J.M. and Barry, B.M. 1973. Molecular Biology. Prentice Hall Of India New Delhi.
6. Buchanan, B.B., Gruissem, W. and Jones, R.L. 2000. Biochemistry and Molecular Biology of Plants. American Society of Plant Physiologists, Maryland, USA.
7. De, D.N. 2000. Plant Cell Vacuoles: An Introduction. CSIRO Publication, Collingwood, Australia.
8. Gupta, P.K. 1998. Cytogenetics. Rastogi Publications. Meerut.
9. Hartl, D.L. and Jones, E.W. 1998. Genetics: Principles and Analysis (4th edition). Jones & Bartlett Publishers, Massachusetts, USA.
10. Kleinsmith, L.J. and Kish, V.M. 1995. Principles of cell and Molecular Biology (2nd Edition). Harper Collins College Publishers, New York, USA.
11. Krishnamurthy, K.V. 2000. Methods in Cell wall Cytochemistry. CRC Press, Boca Raton, Florida.
12. Lewin, B. 2000. Genes VII. Oxford University Press, New York.
13. Lodish, H., Berk, A., Zipursky, S.L., Matsudaira, P., Baltimore, D. and Darnell, J. 2000. Molecular Cell Biology (4th Edition). W.H. Freeman and Co., New York, USA.
14. Malacinski, G.M. and Freifelder, D. 1998. Essentials of Molecular Biology (3rd edition). Jones and Bartlett Publishers, Inc., London.

#### Paper III (BOT203): Economic Botany

##### ECONOMIC BOTANY

#### Unit I

1. Plant resources: Concept, status, utilization and concerns.
2. World Centers of Primary Diversity of domesticated plants





3. Origin, evolution, botany, cultivation, cytotaxonomy and uses of (i) Cereals and millets (wheat, paddy, maize), (ii) Legumes (soybean, black gram and cowpeas), (iii) Sugar cane and starches (sugarcane, beetroot, potato, sweet potato, cassava), (iv) Forage and fodder crops.

#### Unit 2

1. Fiber crops, medicinal and aromatic.  
2. Important firewood and timber yielding plants and non-wood forest products (NWFPs) such as bamboos, gums, tannins, dyes, resins, beverages.

#### INTELLECTUAL PROPERTY RIGHTS

#### Unit 3

1. Intellectual Property Rights, Concept, History, Protection of IPR;  
2. Patent- requirements, procedures and limitations: International convention on Biological Diversity.

#### ETHNOBOTANY

#### Unit 4

1. Concept, linkage with other sciences, tools of ethnobotanical studies, world and Indian perspective with special reference to the Himalayas.  
2. Green revolution: Benefits and adverse consequences.  
3. Plants used as ornamentals and avenue trees.  
4. Principles of conservation: Extinction; Status of plants based on International Union for Conservation of Nature (IUCN).

#### SUGGESTED READINGS:

1. Ayensu, E.S., Heywood, V.H. and Lucas G.L. 1984. Our green and living world: The wisdom to save it. Cambridge Univ. Press. Cambridge.
2. Baenzinger, S.P., Kleese, R.A. and Barns, R.F. 1993. Intellectual Property Rights, Protection of plant materials; executive summary and work group reports. CSSA Publication No. 21. Crop Science Soc. of America, Wisconsin, Madison.
3. Bellamy, R. 1993. Ethnobotany in Tropical forests: expedition in field techniques, Royal Geographic Society of London.
4. Berlin, B. 1992. Ethnobiological Classification: Principles and categorization of plants and animals in traditional societies. Princeton Univ. Press, Princeton.
5. Chandel, K.P.S., Shukla, G. and Sharma, N. 1996. Biodiversity in Medicinal and Aromatic Plants in India: Conservation and Utilization. National Bureau of Plant Genetic Resources, New Delhi.
6. Conway, G. and Barbier, E. 1994. Plants, Genes and Agriculture. Jones and Bartlett Publishers, Boston.
7. Council of Scientific & Industrial Research 1986. The Useful Plants of India. Publications and Information Directorate, CSIR, New Delhi.
8. Council of Scientific & Industrial Research (1948-1976). The Wealth of India: A Dictionary of Indian Raw Materials and Industrial Products. New Delhi. Raw Materials I-XII, Revised Volume I-III (1985-1992) Supplement (2000).
9. Densmore, F. 1974. How Indians use wild plants for food, medicine and crafts, Dover Publication Inc. New York.
10. WWF INDIA 1993. Directory of Indian Wetlands, New Delhi and AWB, Kuala Lumpur.
11. Falk, D.A., Olwell, M. and Millan, C. 1996. Restoring Diversity. Island Press, Columbia, USA.
12. Frankel, O.H., Brown, A.H.D. & Burdon, J.J. 1995. The Conservation of Plant Diversity.

Cambridge University Press, Cambridge, U.K.

13. Gadgil, M. and Guha, R. 1996. Ecology and Equity: Use and Abuse of Nature in Contemporary India. Penguin, New Delhi.

14. Gangulee, P. 1998. Gearing up for patents- the Indians Scenario. Univ. Press. Hyderabad.

15. Hill, A.F. 1952. Economic Botany. McGraw Hill., New York.

16. Kochhar, S.L. 1998. Economic Botany in the Tropics. Mac Millan India Ltd. Delhi

17. Kothari, A. 1997. Understanding Biodiversity: Life Sustainability and Equity. Orient Longman.

18. Kohli, R., Arya, K.S., Singh, P.H. and Dhillon, H.S. 1994. Tree Directory of Chandigarh. Lovedale Educational, New Delhi.

19. Nair, M.N.B. *et al.* (Eds) 1998. Sustainable Management of Non-Wood forest Products. Faculty of Forestry, Universiti Putra Malaysia. 434004 PM Serdang, Selangor, Malaysia

20. Paroda, R.S. and Arora, R.K. 1991. Plant Genetic resources conservation and Management. IPGRI (Publication) South Asia Office, C/o NBPGR, Pusa Campus. New Delhi.

21. Rodgers, N.A. and Panwar, H.S. 1988. Planning a Wildlife Protected Area Network in India. Vol. 1, The Report. Wildlife Institute of India, Dehradun.

22. Sahni, K.C. 2000. The Book of Indian Trees, 2nd edition. Oxford University Press Mumbai.

23. Sharma, O.P. 1996. Hill's economic Botany (Late Dr. A.F. Hill, adapted by O.P. Sharma). Tata McGraw Hill Co. Ltd., new Delhi.

24. Swaminathan, M.S. and Kocchar, S.L. (Eds.) 1989. Plants and Society. Macmillan Publication Ltd., London.

25. Thakur, R.S., Puri, H.S. and Husain, A. 1989. Major Medicinal Plants of India. Central Institute of Medicinal and Aromatic Plants, CSIR, Lucknow.

26. Walter, K.S. and Gillet, H.J. 1998. IUCN Red List of Threatened Plants. IUCN The World Conservation Union. IUCN, Gland, Switzerland, and Cambridge, U.K.

#### **Paper IV (BOT204): Plant Morphology, Anatomy and Embryology**

##### **PLANT MORPHOLOGY**

###### **Unit 1**

1. Shoot Development: Organization of the shoot apical meristem (SAM); control of cell division and tissue differentiation especially xylem and phloem; secretory ducts and laticifers; wood development in relation to environmental factors and wood anatomy. Leaf growth and differentiation (structural development and classification of stomata and trichomes).

2. Root development: Organisation of root apical meristem (RAM); vascular tissue differentiation; lateral roots; root hairs.

3. Morphology of flower, stamen and carpel. Plant adaptations and their morphological nature.

##### **EMBRYOLOGY**

###### **Unit 2**

1. Male gametophyte: Structure of anther; microsporogenesis; pollen germination, pollen allergy; pollen embryos.

2. Female gametophyte: Ovule development; megasporogenesis; development and organization of the embryo sac.

3. Pollination, Pollen-pistil interaction and fertilization: Floral characteristics, pollination mechanism and vectors; commercial consideration; structure of the pistil; pollen stigma interactions, sporophytic and gametophytic self-incompatibility (cytological, biochemical and molecular aspects); double fertilization; in vitro fertilization.

###### **Unit 3**





1. Seed development and fruit growth: Endosperm development during early, maturation and desiccation stages; embryogenesis, cell lineages during late embryo development;
2. Polyembryony; apomixis, embryo culture;
3. Latent Life-dormancy: Importance and types of dormancy; bud dormancy.

#### ANATOMY

##### Unit 4

1. Tissue - General account
2. Stem anatomy - Dicot and Monocot
3. Root anatomy - Dicot and Monocot
4. Anamalous Secondary Growth - *Boerhaavia*, *Draceena*, *Nyctanthes*, *Mirabilis*, *Salvadora*, Periderm formation

##### Suggested Readings:

1. Bhojwani, S. S. and Bhatnagar, S. P. 2000. The embryology of Angiosperms. Vikas Publ. House, New Delhi.
2. Aghwan, V. 1997. Molecular embryology of flowering plants. Cambridge Univ. Press, Camp.
3. Shivanna, K. R. and Sawhney, V. K. 1997. Pollen biotechnology for crop production and improvement Cambridge Univ. Press.
4. Shivanna, K. R. and Sawhney, V. K. Pollen Biology.
5. Fonkot De. 1994. Plant growth and Development. A molecular approach, Academic Press, San Diego.
6. Howell, S. H. 1998. Molecular genetics of plant Development. Cambridge Univ. Press.
7. Leins, P., Tucker, Sc & Endress, P. K. 1988. Aspects of floral development, J. Cramer. Germany.
8. Lyndon, R. F. 1990. Plant development: The cellular basis. Unnin Hyman, London.
9. Raghavan V. 1999. Developmental Biology of flowering plants. Springer velag, New York.
10. Singh, S.P. A Textbook of Plant Anatomy.
11. Tayal, M.S. 1996. Plant Anatomy. Rastogi Publ. Meerut.

##### Lab Course (BOT20P):

1. Identification and description of locally available plants belonging to families included in the syllabus from fresh specimens, herbarium or preserved materials. After identification up to family level any suitable regional Flora may be provided for generic identification if required.
2. Description of a species based on various specimens to study intra specific variation.
3. Studies to find out the location of key characters and preparation of keys at generic level.
4. Field trips, compilation of field notes, the preparation of herbarium sheets and submission of herbarium and museum specimens and/or live potted specimens of taxonomic interest and submission of the excursion report.
5. Study of alternate and distichous, alternate and superposed, opposite and superposed opposite and decussate leaf arrangement. Examination of rosette plants (*Launaea*, *Mollugo*, *Raphanus*, *Hyoscyamus*, etc.) and induction of bolting under natural conditions as well as GA treatment.
6. Microscopical examination of vertical section of leaves, such as that of *Camabis*, *Nicotiana*, *Zea mays* and *Triticum* to understand the internal structure of the tissue and trichomes, glands, etc. Also to study the anatomy of  $C_3$  and  $C_4$  plants.
7. Study of epidermal peels of leaves to study the development and final structure of stomata and

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prepare stomatal index.

8. Study of microsporogenesis and gametogenesis in sections of anthers.

9. Examination of modes of anther dehiscence and collection of pollen grains for microscopic examination (maize, grasses, *Cannabis sativa*, *Crotolaria*, *Tradescantia*, *Brassica*, *Petunia*, *Solanum melongena*, and locally available flowers).

10. Tests for pollen viability using stains and *in vitro* germination. Pollen germination using hanging drop and sitting drop cultures.

11. Pollen storage, pollen-pistil interaction, self-incompatibility, *in vitro* pollination.

12. Food crops: wheat, rice, maize, chickpea, potato, tapioca, sweet potato, sugarcane; morphology, anatomy and micro chemical tests for stored food materials.

13. Forage/fodder plants: Study of ten important fodder crops of the locality.

14. Plant fibers: Textiles fibers (cotton, jute, sun hemp, cannabis, *Grewia*, etc.), Cordage fibers (coir), Stuffing fibers (silk cotton). Morphology, anatomy, microscopic study of whole fibers using appropriate, staining procedures.

15. Medicinal and aromatic plants including narcotics and antibiotics.

16. Vegetable oils: Mustard, groundnut, soybean, coconut, sunflower and castor. Morphology, microscopic structure of oil yielding tissues, test for oil and iodine number.

17. To prepare a water extract of vegetable tannins (*Acacia*, *Terminalia*, *Camellia*, *Cassia*) and dyes (*Curcuma longa*, *Bixa orellana*, *Indigofera*, *Butea monosperma*, *Lawsonia inermis*, etc.).

18. Study of mitotic chromosomes in root tips and leaf buds and meiotic chromosomes in floral buds.

19. Isolation of chloroplasts and SDS-PAGE profile of proteins to demarcate the two subunits of Rubisco.

20. Restriction digestion of plant DNA, its separation by agarose gel electrophoresis and visualization by ethidium bromide staining.

21. Isolation of RNA and quantitation by spectrophotometric method.

22. Southern blot analysis using a gene specific probe.

23. Northern blot analysis using a gene specific probe.

24. Western blotting and ELISA.

25. Genetical problems on Mendelian and post-Mendelian ratios, gene interactions, sex-linked inheritance, chromosomal mapping, etc.

### SEMESTER III

#### Paper I (BOT301): Plant Physiology and Biochemistry

##### Unit 1

1. Functional aspects of plant cell structure: colloidal systems, concept of water potential, diffusion, osmosis and imbibition. Life giving unique properties of water.

2. Energy flow; Principles of thermodynamics, free energy and chemical potential, redox reactions, structure and functions of ATP.

##### Unit 2

1. Biologically important molecules: Carbohydrates, Amino acids, Proteins and Lipids.

Fundamentals of enzymology: General aspects of enzymes, allosteric mechanism, regulatory and active sites, isozymes, kinetic catalysis, Michaelis-Menton equation and its significance.

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2. Membrane transport and translocation of water and solutes: Plant-water relations, mechanism of water transport through xylem and transport in cells. Absorption and transpiration of water.

### Unit 3

1. Photophysiology and photosynthesis: General concepts and historical background, evolution of photosynthetic apparatus, photosynthetic pigments and light harvesting complexes, photo-oxidation of water, light reaction, Z scheme and photophosphorylation, mechanism of electron transport, carbon assimilation – the Calvin cycle, photorespiration and its significance, the C4 cycle, the CAM pathway, factors of photosynthesis.

2. Respiration and lipid metabolism: Overview of plant respiration, glycolysis, the TCA cycle, electron transport and ATP synthesis, pentose phosphate pathway, glyoxylate cycle, alternative oxidation system, photorespiration.

### Unit 4

1. Nitrogen fixation, nitrogen and sulphur metabolism: Overview, biological nitrogen fixation, nodule formation and nod factors, mechanism of nitrate uptake and assimilation, sulfur uptake, transport and assimilation.

2. Phytohormones and Sensory photobiology: History of discovery of phytochromes and cryptochromes, and their photochemical and biochemical properties, photophysiology of light-induced responses, molecular mechanism of action of photomorphogenic receptors, signaling and gene expression.

### SUGGESTED READINGS:

1. Buchanan, B.B., Gruissem, W. and Jones, R.L. 2000. Biochemistry and Molecular Biology of Plants. American Society of Plant Physiologists, Maryland, USA.
2. Dennis, D.T., Turpin, D.H., Lefebvre, D.D. and Layzell, D.B. (eds) 1997. Plant Metabolism (Second edition). Longman, Essex, England.
3. Hooykaas, P.J.J., Hall, M.A. and Libbenga, K.R. (eds) 1999. Biochemistry and Molecular Biology of Plant Hormones. Elsevier, Amsterdam, The Netherlands.
4. Hopkins, W.G. 1995. Introduction to Plant Physiology. John Wiley & Sons, Inc., New York, USA.
5. Lodish, H., Berk, A., Zipursky, S.L., Matsudaira, P., Baltimore, D. and Darnell, J. 2000. Molecular Cell Biology (4th edition). W.H. Freeman and Company, New York, USA.
6. Moore, T.C. 1989. Biochemistry and Physiology of Plant Hormones (second edition). Springer-Verlag, New York USA.
7. Nobel, P.S. 1999. Physiochemical and Environmental Plant Physiology (Second edition). Academic Press, San Diego, USA.
8. Noggle, G.R. and Fritz, G.F. 1977. Introductory Plant Physiology. Prentice Hall, New Delhi.
9. Salisbury, F.B. and Ross, C.W. 1992. Plant Physiology (4th edition). Wadsworth Publishing Co., California, USA.
10. Singhal, G.S., Renger, G., Sopory, S.K., Irrgang, K.D. and Govindjee 1999. Concepts in Photobiology: Photosynthesis and Photomorphogenesis, Narosa Publishing House, New Delhi.
11. Taiz, L. and Zeiger, E. 1998. Plant Physiology (2nd edition). Sinauer Associates, Inc., Publishers, Massachusetts, USA.
12. Thomas, B. and Vince-Prue, D. (1997) Photoperiodism in Plants (Second edition). Academic Press, San Diego, USA.

*Coran*

*Pragya*

*Pratik*



## **Paper II (BOT 302): Plant Ecology and Remote Sensing**

### **PLANT ECOLOGY**

#### **Unit 1**

1. Climate, soil and vegetation patterns of the world: Major biomes and vegetation types and environmental factors.
2. Population dynamics: Characters, r- and k- strategies.
3. Vegetation organization: Concepts of community and continuum; community characteristics, concept of ecological niche, ordination.
4. Ecological succession: Causes, mechanism and types, concepts of climax.

#### **Unit 2**

1. Ecosystem: Structure and functions; primary production (methods of measurement, global pattern, controlling factors); energy dynamics (Trophic organization, energy flow pathways, ecological efficiencies); litter fall and decomposition (mechanism, substrate quality and climatic factors);
  2. Global biogeochemical cycles of C, N, P and S: (pathways, processes, in terrestrial and aquatic ecosystems; nutrient use efficiency, hydrological cycle.
  3. Ecosystem stability: Concept (resistance and resilience); ecological perturbation (natural and anthropogenic) and their impact on plants and ecosystems; ecology of plant invasion; environmental impact assessment; ecosystem restoration.
  4. Biological diversity: Concept and levels; species richness, diversity indices, concept of  $\alpha$  and  $\beta$  diversity, phytogeographical regions of India, role and application of biodiversity in ecosystem function; speciation and extinction; IUCN categories of threat; distribution and global patterns of biodiversity, hot spots; inventory.
- Environmental pollution: Kinds; sources, quality parameters; effects on plants and ecosystems and remedies.

#### **Unit 3**

1. Climate change: Greenhouse gases sources, trends and role; ozone layer and ozone hole; consequences of climate change (CO<sub>2</sub> sequestration, global warming, sea level rise, UV radiation).
2. Fire as an ecological factor: Types, role of fire, extent and causes of fire in forest, grasslands and in tropical savanna, fuel load, controlled burning, fire in different forest types in Uttaranchal; fire as management tool

### **REMOTE SENSING**

#### **Unit 4**

1. Remote Sensing: Concepts and stages in the acquisition of remote sensing data; Spectral signature
2. Photographic and non-photographic sensors, Space Platforms.
3. Basic principles of Photogrammetry and Photo-interpretation.
4. Application of remote sensing in ecological research.

### **SUGGESTED READINGS:**

1. Barbour, M.G., Burk, J.H. and Pitts, W.D. 1987. Terrestrial Plant Ecology, Benjamin/Cummings Publication Company, California
2. Begon, M., Harpor, J.L. and Townsend, C.R. 1996. Ecology. Blackwell Science, Cambridge, U.S.A.
3. Chapman, J.L. and Reiss, M.J. 1988. Ecology: Principles and Applications. Cambridge University Press, Cambridge, U.K.

4. Heywood, V.H. and Watson, R.T. 1995. Global Biodiversity Assessment. Cambridge University Press.
5. Kershaw, K.A. Quantitative and Dynamic Ecology. Oxford and IBH. Kormondy, E.J. 1996. Concepts of Ecology. Prentice-Hall of India Pvt. Ltd., New Delhi.
6. Odum, E.P. 1983. Basic Ecology. Saunders, Philadelphia
7. Smith, R.L. 1996. Ecology and Field Biology. Harper Collins, New York.

### **Paper III (BOT303): Plant Biotechnology**

#### **Unit 1**

1. Biotechnology: Principle and scope, bio-safety guidelines.
2. Plant cell and tissue culture: Concept of cellular differentiation and totipotency, principle of root and shoot generation in vitro, applications of cell and tissue culture.
3. Callus culture, cell suspension culture, cryopreservation, clonal propagation, organ culture, protoplast culture, organogenesis, somatic embryogenesis, somatic hybridization, artificial seed, hybrids and cybrids; somaclonal variation.

#### **Unit 2**

1. Recombinant DNA technology: Tools of genetic engineering: enzyme, vectors; plasmids, cosmids, lambda phage vectors, shuttle vectors. BACs and YACs. Cloning strategies, genomic libraries, cDNA libraries, single gene cloning.
2. Detection and characterization of transformants: Screening and selection for transformants:

#### **Unit 3**

1. Hybridizations - colony, Southern, Northern, Western. DNA sequencing techniques, expression vectors in bacteria and eukaryotes; expression of industrially important products.
2. Genetic engineering of plants: Aims, tools, strategies for development of transgenic plant with suitable example, alien gene transfer and applications.

#### **Unit 4**

1. Elementary Knowledge of next generation sequencing, intellectual property rights, genomics and proteomics.
2. Biological databases (gene and protein). DNA restriction map analysis, DNA and protein sequence alignment. BLAST and FASTA.

#### **Suggested Readings:**

1. Bhojwani, S.S. and Razdan, M. K. (1996). Plant Tissue Culture: Theory and Practice. Elsevier Science Publisher, New York (U.S.A).
2. Bhojwani, S.S. (1990). Plant Tissue Culture: Applications and Limitations. Elsevier Science Publisher, New York (U.S.A).
3. Collins, H.A and Edwards, S. (1998). Plant Cell Culture. Bios Scientific Publisher, Oxford (UK).
4. Glazer, A.N. and Nikido, H. (1995). Microbial Biotechnology. W.H. Freeman and Company, New York (USA).
5. Shantharam, S. and Montgo Mery, J.F. (1999). Biotechnology, Biosafety and biodiversity. Oxford and IBH Publishing Company. Pvt. Ltd. New Delhi.
6. S.B. Primrose and R. M. Twyman. Principles of Gene Manipulation and Genomics.
7. Brown T.A; Gene Cloning and DNA Analysis 5th Ed, 2006.
8. Sambrook & Russel Cold Spring Harbour Laboratory press N 2001. Molecular Cloning; 3rd Ed; D. W. Mount Bioinformatics; 2nd Ed; Cold Spring Harbor Laboratory Press; 2004.



9. Arthur Lesk. Introduction to Bioinformatics.

#### **ELECTIVE PAPERS:**

##### **Paper IV (a) (BOT304/E1): Plant Health Management**

###### **Unit 1**

1. Basic procedure in diagnosis of plant diseases: Significance of plant diseases.
2. Seed Pathology: Seed borne fungi. Disease transmitted through seeds. Bio-deterioration of seed in storage. Control of seed borne fungi.

###### **Unit 2**

1. Nursery disease: Important disease of nursery plants.
2. Plantation disease: Plantation disease of *Chir pine*, *Eucalyptus*, *Sal*, *Teak*, *Shisam*, *Populus*, *Acacia*.

###### **Unit 3**

1. Important disease of cash crops: Sugarcane, Potato and Ginger. How plants defend themselves against pathogen. Control of crop and forest disease. Treatment of wounds.
2. Introduction and various forms of Mycorrhiza. Role of Mycorrhiza in Forestry.

###### **Unit 4**

1. Diseases of cereals and Millets.
2. Diseases of vegetables and fruit trees.

#### **Lab Course**

1. Isolation and inoculation of mycorrhiza.
2. Study of seed borne pathogen. Description of pathogen, symptoms and section cutting.
3. Isolation of some important pathogens.
4. Procedure of equipments uses.
5. To establish a plant disease clinic in the department for advise to local people.

#### **SUGGESTED READINGS:**

1. Bilgrami, K.S. 1985. Text Book of Modern Plant Pathology. Bishen Singh Mahendra Pal
2. Singh Dehradun.
3. Butler, E.J. 1973. Fungi and Disease in Plants, Intern, Book Distributers. Dehradun.
4. Singh, R.S. 1983. Plants Diseases. Oxford and IBH Publ. Co. New Delhi.
5. Singh, R.S. Principle of Plants Pathology. Oxford and IBH Publ. Co. New Delhi
6. Strobel, G.A. and D.E., Mathre 1970. Outlines of Plant Pathology. Van Nostrand
7. Reinhold Co. New York.
8. Tarr, S.A.J. 1972. The Principle of Plants Pathology. Winchester Press, New York.
9. Western, J.H. 1971. Diseases of Crop Plants. Mc Millan Press London

##### **Paper IV (b) (BOT304/E2): Diversity and Cultivation of Mushrooms**

###### **Unit 1**

1. General characteristics and life history: Reproduction, spore print, dissemination, growth size, colour and surface textures, odour, taste, Exudation and fairy rings; Bioluminescence and economic importance.
2. Biodiversity of Mushrooms.
3. Status of Mushroom research in India.
4. Ethnomycological approach of mushrooms. especially in Uttarakhand Himalaya.



5. Edible and poisonous mushrooms. Mushroom recipes, mushroom toxins, disease and pests of mushrooms.

#### Unit 2

1. Introduction to mushroom groups.
2. Taxonomic study of order Agaricales: Systematics of dark spored families viz., Boletaceae, Bolbitaceae, Boudarzewiaceae, Cortinariaceae, Coprinaceae, Crepidotaceae, Entomataceae, Gomphideaceae, Paxillaceae, Russulaceae; Systematics of light spored families. Agaricaceae, Amanitaceae, Hygrophoraceae, Pluteaceae, Tricholomataceae.
3. Order Aphyllophorales: Introduction and Systematics of Cantharelloid forms, Thelephoroid forms, Cupuloid forms, Clavarioid forms, hydroid forms and poroid forms.
4. Gasteromycetes: Introduction and Systematics of order Hymenogasterales, Lycoperdales, Nidulariales, Phallales, Podaxales and Sclerodermatales.

#### Unit 3

1. DNA isolation, amplification and ITS, RELP, RAPD Analysis; DNA Primers and markers; PCR machine and working knowledge; Gel Electrophoresis, Use of Geldoc, Sequence and Phylogenetic data analysis.
2. Computer application in Mushroom Science, Formation of clade, dendrograms and sequence alignment; Knowledge to submit mushroom sequence data online, NCBI, MEGA4 and Muttalign.
3. Ecology of mushrooms. Role of mushrooms in forest ecosystem.
4. Mycorrhiza : endomycorrhiza (arbuscular mycorrhiza), Ectendomycorrhiza (arbutoid mycorrhiza), Ericoid mycorrhiza, Monotropoid mycorrhiza and orchid mycorrhiza.

#### Unit 4

1. Tissue culture in wild mushrooms.
2. Preparation of compost- paddy straw, saw dust.
3. Cultivation of edible and medicinal mushrooms: *Agaricus*, *Calocybe*, *Flammulina*, *Ganoderma*, *Hericium*, *Lentinus*, *Pleurotus*.

#### Lab Course

1. Collection, preservation and identification of wild mushrooms
2. Morphological features: field notes, chemical spot tests, photography, sporeprint, colour change, smell, taste, etc.
3. Anatomical features: Microscopic studies, Mycorrhizal studies.
4. Ecological Observation.
5. Tissue culture techniques: Media preparation, solid and liquid culture media preparation. Pure culture techniques, Sub culturing, Lyophilization, Maintenance of mushroom culture.
6. Cultivation of *Agaricus*, *Calocybe*, *Flammulina*, *Ganoderma*, *Lentinus* and *Volvartella*.
7. DNA Isolation, amplification and ITS, RELP, RAPD analysis, DNA primers and markers. PCR and Gel electrophoresis.

#### SUGGESTED READINGS:

1. Allen, M.F. 1991. The Ecology of Mycorrhiza. Cambridge Univ. Press, Cambridge.
2. Bakshi, B.K. 1974. Mycorrhiza and its role in forestry, FRI, Dehradun.
3. Chang, S.T. and W.A. Hayes. 1978. *The Biology and Cultivation of Edible Mushrooms*. Academic Press.
4. Hacskeylo, E. 1971. Mycorrhizae, USDA Forest Service Publ. No. 1189. US Govt. Printing Office, Washington, DC.

*Garab*

*Agaricus*

*Ant*



5. Hawksworth, D.L.; Sutton, B.C. and Ainsworth G.C. 1983. Dictionary of the Fungi. Kew, Surrey, England.
6. Krieger, L.C. 1967. The Mushroom Handbook. Dover Publications, INC New York.
7. Largent, D.L. 1977. How to identify Mushrooms to genus? I Macroscopic features. Mad River Press, Inc. Eureka.
8. Miller, O.K. Jr. 1981. Mushrooms of North America. EP Dutton, New York.
9. Singer, R. 1986. The Agaricales in Modern Taxonomy. BSMPS, Dehradun.
10. Stamets, P. and J.S. Chilton 1983. The Mushroom Cultivator, Agarikon Press, Olympia, Washington.

#### **Paper IV (c) (BOT304/E3): Applied Plant Anatomy**

##### **Unit 1**

1. Different types of microscopes, their principles, working and utility.
2. Sources of Timber. Importance of knowledge of wood structure.
3. How wood is formed: Cambium and its derivations, secondary growth, juvenile wood and mature wood.

##### **Unit 2**

1. Physical features of wood visible on the cross surface of log, sapwood and heart wood, growth rings and growth marks, colour, luster, odour and taste, weight, grain, texture.
2. Gross features of wood visible on longitudinal surface of wood.

##### **Unit 3**

1. Ultra structure of wood and techniques: Electron microscope, ultra structure of cell wall, microfibril angle.
2. Natural defects of wood: Reaction wood, Knots, Silica content and other defects due to stress.

##### **Unit 4**

1. Defects of timbers to utilization.
2. Wood structure in relation to properties and uses.
3. Criteria and methods of assessment of wood quality in plantation grown timbers, viz: *Eucalyptus* and *Populus* for pulp and timber.

##### **Lab Course**

1. Different types of Microscopes, their working and utility, Research, Polarized and Electron Microscopes.
2. Juvenile wood and mature wood: Maceration techniques.
3. Section cutting and mounting of different types soft and hard woods (locally available). Microscopic and anatomical features of wood viz: bamboo, canes and coconut.
4. Ultra structure of the wood and techniques. Study of cell wall, microfibril angle and proportion of tissues.
5. All physical features visible on cross surface of log.
6. Gross features of wood visible on longitudinal surface.

##### **SUGGESTED READING**

1. Wilson and Whyte Text Book of Wood Technology. HP Brown, McGraw Hill, New York.
2. Indian Forest Utilization. FRI Vol. I and II. Comparative Wood Anatomy. Sherwin Carlquist.
3. Ramesh Rao, K and Junja, Field Identification of 50 important timbers of India, FRI.
4. Tieman Pitman. Wood Technology, New York.
5. Foster, AS, Nostrand, D Van. Practical Plant Anatomy. New York.

6. Gupta, S. Atlas of Indian Heartwoods- their anatomical features and photomicrographs.
7. Fahn, A. Plant Anatomy. Pergamon Press.

#### **Paper IV (d) (BOT304/E4): Ecosystem Analysis, GIS and Remote Sensing**

##### **Unit 1**

##### **Aerial Photography and Photogrammetry (AP&P):**

1. Fundamentals of Aerial Photography, History, Aerial film processing, Procurement, and Security of Aerial photographs, Energy source and atmospheric effects in aerial photography. Principles of Aerial Photos (flight planning).
2. Introduction to Photogrammetry, Geometry of Aerial photos, Stereoscopic photography, Measurement of Height, Aerial Triangulation.
3. Principles and fundamentals of Aerial photo interpretation, Basics of Cartography.

##### **Unit 2**

##### **Remote Sensing (RS):**

1. Introduction to Remote Sensing, The electromagnetic spectrum, Energy interaction with atmosphere and earth surface, satellite and sensors, Remote sensing data acquisition.
2. Principles and basic concepts of Multispectral, Thermal and hyperspectral Scanning: Across-track and Along Track multispectral Scanning, History of Space Imaging
3. Image Interpretation: Type of Imagery, elements of Interpretation, Techniques of Visual Interpretation, Role of remote sensing in ecological research.

##### **Unit 3**

##### **Digital Image Processing (DIP):**

1. Fundamentals of digital image processing, Image rectification, Restoration and Enhancement.
2. Image classification: Supervised classification, unsupervised classification; Hybrid classification, Post-classification smoothing and Classification accuracy assessment.
3. Principles of microwave sensing, Geometric characteristics, Spatial resolution. Space-borne Radar System, Application of passive microwave sensing.

##### **Unit 4**

##### **Geoinformatics (GIS):**

1. Basics of Computer, Hardware and software.
2. Principles and basics of Geographic Information System: Raster and Vector GIS, Database creation and management, Network Analysis, Spatial data integration and Modelling.
3. Basics of Global Positioning System, GPS Satellites and GPS utility.

##### **Lab Course**

1. Stereo test and study of different types of aerial photos, Orientation of Stereo model for interpretation and mapping.
2. Determination of Scale, Determination of Height and Slope.
3. Visual interpretation of aerial photos and satellite data on different scales, Study of different types of satellite data products.
4. Study of Multispectral data, Study of Image Processing Systems, Display of raw data, Histogram analysis.
5. Digital classification and Enhancement of satellite data, Information extraction using DIP techniques.
6. Study of Geographic Information System, Geo-referencing, designing GIS database, Editing spatial and attribute, data output presentation.



**Suggested Readings:**

1. Lillesand & Kieffer, Remote Sensing and Image Interpretation. John Wiley & Sons, New York.
2. Sabins, F.F., Jr. Remote Sensing: Principles and interpretation.
3. Bhatia, S.C. Fundamentals of Remote Sensing.
4. Chanda, Datta, Majumdar. Digital Image Processing & Analysis.
5. Chang, K.T. Introduction to Geographic Information Systems.
6. Rao, et al., Geographic Information System.
7. Johnston C.A. Geographic Information Systems in ecology.
8. Ahmed, E. I & Rabbany. Introduction to Global Positioning System.
9. Aronoff, S. 1991. Geographic Information Systems: A Management Perspective. Ottawa WDL Publ.
10. Barrett, E.C. 1982. Introduction of Environmental Remote Sensing. Chapman and Hall.
11. Burrough, P.A. 1986. Principle of Geographic Information System for Land Resources Assessment. Oxford University Press.
12. Colwell, R.N. 1983. Manual of Remote Sensing. Vol. I, II American Society of Photogrammetry.
13. Curran, P.J. 1985. Principle of Remote Sensing. Longman Group.
14. Dury, S.A. 1990. A Guide to Sensing. Interpreting Image of Earth. Wiley and Sons.
15. Hord, R.M. 1986. Remote Sensing: Method and Application, John Wiley and Sons.
16. Jenson, J.R. 1996 Introductory Digital Image Processing, Prentice Hall, New Delhi.
17. Johnson, P.I. 1969. Remote Sensing in Ecology. Univ. Georgia Press, Athens.
18. Rampal, K.K. 1982. Text Book of Photogrammetry. Oxford and IBH Press.
19. Rees, W.G. 1990. Physical Principles of Remote Sensing, Cambridge University Press.
20. Schander, E. 1976, Remote Sensing for Environmental Sciences. Springer Verlag.
21. Ulaby, F.T. Moor, R.K. and Fung, A.K. 1982. Microwave Remote Sensing Active and Passive. Vol. I and II Wesley Pub.

**Paper IV (c) (BOT304/E5): Environment Management with Reference to Western Himalaya.****Unit 1**

1. Introduction to the Environmental Management, Major Environmental Problems, Environmental ethics; Resource and conflicts, Environmental Laws; Stockholm Conference, The Earth summit, The Copenhagen Conference, Environmental Protection and Fundamental rights, Environmental Governance in India, Man and Environment, Trade and Environment; the WTO, and GATS, Environment Concerns and WTO.
2. Introduction to the Environmental Impact Assessment; Planning and Significance, EIA practices and future trends in India; Legal frame work for EIA. Impact of forest fires, Forest Fire

**Unit 2**

1. Assessment and Risk Zonation. Thermal power stations, Power line and roads, River valley projects, Urbanization and Industrialization, Mining activities, GHGs, CFCs, fossil fuels etc., Flood monitoring, Snow melt and Glaciers, Ozone Layer Depletion. Principles of Environmental Analysis, Role of remote sensing in EIA.
2. Environmental Management and Natural Resources, Air Pollution, Water Pollution and its



Management, Environmental Pollution Act; Waste disposal and management, Integrated solid waste management, Recycling, Incineration, Sanitary landfill, Sewage disposal and sewage treatment; Hazardous wastes.

#### Unit 3

1. Environmental policy and environmental management system, Audit items and audit procedures, ISO Certification.
2. Watershed management: Definition and basic concepts, Aims and Principles, Importance of integrated watershed management, Principal watershed problems of India.

#### Unit 4

1. Basic concept of ecosystem and community, Biological populations and communities, Ecological niches, interaction among species, Key stone species, Species diversity and edge effects, Major terrestrial and aquatic biomes, Energy Flow, Food webs and trophic levels, Ecosystem diversity, Climate shifts, Species movements.
2. Biodiversity and conservation, *In-situ* and *ex-situ* conservation, Indigenous knowledge and biodiversity conservation, Loss of biodiversity- causes and its impact; Convention on biodiversity, Major Biodiversity resources. Global trends of invasive species, threats and managing invasive plants.
3. Biofuel plants- *Jatropha*, sugarcane and oil crops, Biofuel plantation, energy criteria for species selection, achievement of sustainable Biofuel production; Bioconversion, utilization of biomass sources, Incineration of organic wastes for energy. Alien invasive species and bioenergy production; Bioenergy and food production controversies. Carbon sequestration and carbon pools.

#### Lab Course

1. Field surveys to study various types of natural resources in Uttarakhand Himalaya.
2. Study on the pressures impinging on the natural resources.
3. Observations on the Environment Impact Assessment of Hydroelectric Power Project in Uttarakhand Himalaya.
3. Observations on Natural disasters viz., floods, landslides, forest fires frequent in Himalayas
4. Visits to National Parks, Wild life Sanctuaries and Biosphere Reserves.

#### SUGGESTED READINGS

1. FAO Conservation Guide Nos. 12, 13/1, 13/3, 13/4, 13/6, 14. Rome.
2. Heywood, H.V. 1995. Global Biodiversity Assessment.
3. Lochwood, M., Worboys, G.L. and Ashish, K. 2006. Managing Protected Areas: A Global Guide.
4. Ramakrishnan, P.S., Saxena, K.G. and Chandrashekara, U.M. 1998. Conserving the sacred for Biodiversity Management. Oxford and IBH Publ. Co. New Delhi
5. Richard, P.P. 1998. Essentials of Conservation Biology. Boston University.

#### Lab Course: BOT30P\*

##### Plant Physiology and Biochemistry

1. To study the effect of temperature upon the permeability of the cytoplasmic membrane.
2. To determine the osmotic pressure (potential) of cell saps of living cells by plasmolytic method  
and also by using KNO<sub>3</sub> and sugar solution and to calculate the isotonic coefficient of sugar.

3. To determine the diffusion pressure deficit of plant cells.
4. To set up a Wilmott's bubbler and to study the effect of the following on the rate of photosynthesis  
(a) varying CO<sub>2</sub> concentration and (b) different wavelengths of light.
5. To extract the four pigments i.e. chlorophyll a & b, carotene and xanthophylls from the green leaves and preparation of their absorption spectrum.
6. To separate the four pigments i.e. chlorophyll a & b, carotene and xanthophylls from the green leaves by paper chromatography and column chromatography.
7. To separate the amino acids by paper chromatography.
8. Principles of colorimetry, spectrophotometry and fluorimetry.

#### **Plant Ecology and Remote Sensing**

1. To determine the minimum size of the quadrat by species area curve method and minimum number of quadrats to be laid down in the field under study.
2. To determine the frequency, density and abundance of each species present in community.
3. To calculate relative frequency and relative density of each species in a given area.
4. To calculate mean basal cover and total basal cover of each species in a given area.
5. To compute the relative dominance and IVI (Importance Value Index) of each species in a given area.
6. To calculate the Alpha ( $\alpha$ ) diversity, Beta ( $\beta$ ) diversity and total diversity of given community.
7. To calculate water holding capacity of three samples of various soil types and to find the percolation percentage of water in the given soil.
8. To find out the bulk density and porosity of different soil types.
9. To test the pH and the buffering properties of soils.
10. Study of types of aerial photos and satellite data products.
11. Orientation of stereo model under mirror stereoscope.

#### **Biotechnology:**

1. Tissue culture activities
2. Growth characteristics of *E. coli* using plating and turbidimetric methods.
3. Isolation of plasmid of *E. coli* by alkaline lysis method and its quantitation spectrophotometrically.
4. Restriction digestion of plasmid and estimation of the size of different DNA fragments.
5. Cloning of a DNA fragment in a plasmid vector, transformation of the given bacterial population and selection of recombinants.
6. Demonstration of DNA sequencing by Sanger's dideoxy method.
7. Demonstration of protoplast fusion employing PEG.
8. Organogenesis and somatic embryogenesis using appropriate explants and preparation of artificial seed.
9. Co-cultivation of the plant material (e.g. leaf discs) with *Agro bacterium* and study GUS activity histo-chemically.

\*Additional Lab course of selected elective paper.

*Amal*

*Pravin*

*Santh*



## SEMESTER IV

### Paper I (BOT401): Plant Breeding and Biostatistics

#### PLANT BREEDING

##### Unit 1

1. The role of plant breeding – historical aspects and genetic basis; mode of reproduction in relation to breeding methods, breeding techniques; method of plant breeding in relation to self-pollinated and cross pollinated plants.
2. Hybridization: Interspecific and inter generic; pure line; back cross hybridization; self incompatibility system.
3. Heterosis: Its genetic and physiological basis.

##### Unit 2

1. Breeding for resistance to diseases, physiological races.
2. Role of mutation in crop improving and evolution.
3. Plant breeding work done in India with special reference to potato, paddy, wheat and sugarcane.
4. Maintenance of collection, registration of varieties, seed production, testing, certification and distribution.

#### BIOSTATISTICS

##### Unit 3

1. Biostatistics and its application in life sciences.
2. Methods of representation of statistical data and measurements of central tendencies.

##### Unit 4

1. Correlation, regression, curve fitting and ratio of variation.
2. Probability and use of binomial trials.
3. Test of significance,  $\chi^2$ , 't' and 'F' tests.

#### SUGGESTED READINGS:

##### Plant Breeding:

1. Harihar, Ram, 1997. Vegetable Breeding: Principles and Practices. Jagminder Book Agency, New Delhi.
2. Hill, J. 1997. Quantitative and Ecological Aspects of Plant Breeding, Jagminder Book Agency, New Delhi.
3. Kapoor, R.L. 1997. Plant Breeding and Crop Improvement. 2 Vols
4. Mc Donald, M.B. 1997. Seed Production: Principles and Practices.
5. Poehlman, J.M and D. Borthakur, 1969. Asian Field Crops. Oxford and IBH Publ. New Delhi.
6. Poehlman, J.M and Sleeper, D.R. 1995. Breeding Field Crops. Panima Publ. House, New Delhi.
7. Sharma, J.R. 1994. Principles and Practice of Plant Breeding. Tata McGraw Hill Publ. Co. Ltd., New Delhi.
8. Singh, B.D. 2002. Plant Breeding Principles and Methods. Kalyani Publ. New Delhi.

##### Biostatistics:

1. Bliss, C.I. 1967. Statistics in Biology. 2 Vols. Mc Graw Hill, New York.
2. Downey, N.M and Heath, R.W. 1960. Basic Statistical Methods, Harper International.
3. Rayner, A.A. 1969. A first Course in Biometry for Agriculture Students. Peiternaritzburg. University of Natal Press.
4. Singh, R.K. 1994. Biometrical Techniques in Breeding and Genetics. Bishen Singh Mahendra

Pal Singh, Dehradun.

5. Watt, T. 1993. Introductory Statistics for Biology Students. Narosa, New Delhi.

6. Winer, B.J. 1962. Statistical Principles in Experimental Design. Mc Graw Hill, New York.

## **Paper II (BOT402): Conservation Biology**

### **Unit 1**

1. Conservation: The basic concept, History of conservation biology.
2. The origin and evolution of organism; genetic plasticity a factor in evolution; the invasion of unoccupied ecological niches.
3. Patterns of biodiversity: Global and regional patterns of biodiversity, Distribution, Gradients, Magnitude of biodiversity, Hotspots, keystone species, effects of species deletion and addition on maintenance of biodiversity.
4. Uses of biodiversity: food, fodder, timber, fibre, medicine, etc.; biodiversity based products and industries; wild relatives of cultivated plants; scientific role of biodiversity.

### **Unit 2**

1. Threats to biodiversity: Habitat loss and fragmentation, Genetic drift, Inbreeding, Disturbance, Pollution, Climate Change, Overexploitation, Invasive Species, Disease.
2. Global environmental problems: Global warming, ozone depletion, desertification.
3. Extinction to species: Susceptibility to extinction causes of species extinction, endangered species, Red and Green Data Books.

### **Unit 3**

1. Environmental Impact Assessment (EIA) origin and development, development in India, Purpose and aims of EIA, Core values and principles, EIA process, components of EIA, Participants in EIA process, Impact identification methods.
2. Conservation of Biological diversity: Genetic principles in conservation, biodiversity assessment and inventory.
3. Survey and monitoring of biological resources: sampling population for biological conservation; Collection and analysis of inventory data, criteria on choice of species for conservation. People participation, biodiversity registers and their maintenance.

### **Unit 4**

1. Conservation of energy resources; conservation and maintenance of non-renewable fossil fuel resources; Conservation of biodiversity based renewable energy resources.
2. Protected Area Network, PAN with special reference to Uttarakhand and India.
3. Indian biodiversity and its conservation: International efforts for conserving biodiversity viz., CITES, CBD, IUCN, MAB, UNEP, UPOV (Union for the Protection of New Plant Varieties), WTO etc.), International treaty on Plant Genetic Resources, International Agreement for conserving marine biodiversity, Wetland conservation, Rangeland management.
4. Ecosystem restoration, Strategies and plans for restoration, Passive restoration (natural recovery) and active restoration.
5. Wildlife (Protection) act 1975, Forest (Conservation) Act 1980, Environment (Protection) Act 1986, Wildlife (Protection) Amendment Act 1991, Biodiversity Act 2003, etc.

## **SUGGESTED READINGS**

1. Cain, M.L., Bowman, W.D. & Hacker, S.D. 2008. Ecology. Sinauer Associates, Inc.
2. Dhar, U. 1993 (Ed.), Himalayan Biodiversity: Conservation Strategies, Gyanodaya Prakashan, Nainital



3. Groombridge, B. and Jenkins, M.D. 2000. Global Biodiversity. Earth's living resources in the 21st century, UK. World conservation Monitoring Center. Pp 246.
4. Hunter, M.L.J. 1990. Wildlife, forest and forestry: Principals of Managing forests for biological diversity. Prentice Hall, Englewood, Cliffs, New Jersey. 370 pp.
5. Hunter, Jr, M.L. & Gibbs, J.P. 2006. Fundamentals of Conservation Biology. Wiley Blackwell.
6. Pullin, A Conservation Biology. Cambridge University Press, The Edinberg Building, Cambridge CB22RU, UK.
7. Primack, R.B. 2006. Essentials of Conservation Biology. Sinauer Associates, Inc.
8. Primack, R.B. 2008. A Primer of Conservation Biology. Sinauer Associates, Inc.
9. Singh, J.S., Singh, S.P. & Gupta, S.R. 2007. Ecology, Environment and Resource Conservation. Anamaya Publishers, New Delhi.
10. Western, D. and Pearl, M.C. 1989. Conservation for twenty-first century. Oxford University Press, Oxford UK. Pp 109-120.

### **Paper III (BOT403): In-vitro technologies and industrial applications**

#### **Unit 1**

1. Micropropagation (via organogenesis and embryogenesis) of floricultural, agricultural and pharmaceutical crops: Orchids, Chrysanthemum, Gerbera, Carnation, Anthurium, Bamboos, Spilanthes, Stevia, Psoralea, Chickpea and elite tree species of national importance.
2. Production of virus free plants through meristem culture in orchids and fruit trees.
3. Germplasm conservation in vitro.

#### **Unit 2**

1. Variations: Somaclonal and gametoclonal variations; spontaneous, genetic and epigenetic variations.
2. Culture systems: Differentiated, undifferentiated, physiological, biochemical and molecular role of minerals and growth regulators in understanding differentiation of organs under in vitro conditions.
3. Problems in Plant Tissue Culture: contamination, phenolics, recalcitrance.
4. Problems in establishment of regenerated plants in nature: hardening, association of mycorrhiza and rhizobia.

#### **Unit 3**

1. Factors responsible for in vitro and ex vitro hardening.
2. Use of bioreactors in secondary metabolite production and scale up automation of plant tissue culture.

#### **Unit 4**

1. Recent applications of tissue culture techniques and biotechnology in the introduction of economically important traits in horticultural, agricultural and medicinal plants.
2. Interactions, training and workshops in Biotech industries and placements.

### **SUGGESTED READINGS:**

1. Herman EB (2008) Media and Techniques for Growth, Regeneration and Storage 2005-2008; Agritech Publications, New York, USA.
2. Pierik RLM (1999) In Vitro Culture of Higher Plants. Kluwer Academic Publishers.
3. Prakash J & Pierik RLM (1991) Horticulture - New Technologies and Applications (Current Plant Science and Biotechnology in Agriculture). Kluwer Academic Publishers.

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4. George EF, Hall MA and Geert-Jan De Klerk (2008), Plant Propagation by Tissue Culture (3rd Edition), Springer, Netherlands.
5. Journals: Plant Cell, Tissue and Organ Culture, Plant Cell

**Lab Course:**

1. Development of regeneration protocols employing direct and indirect organogenesis / somatic embryogenesis in economically important horticultural and/or medicinal plants.
2. Control of phenolics in recalcitrant tissues under culture conditions.
3. Study of various physico-chemical factors (pH, light, hormones, etc.) on invitro growth and development of tissues or organs, rooting of regenerants, in vitro and ex vitro hardening, potting and acclimatization in natural conditions.
4. Shoot-tip meristem culture for raising virus-free plants in tomato / tobacco.
5. Agrobacterium rhizogenes mediated development of hairy root cultures.
6. Isolation of bioactive compounds from medicinal plants using column chromatography and TLC.
7. Preparation of synthetic seeds for germplasm conservation using somatic embryos or other propagules.

**ELECTIVE PAPERS**

**Paper IV (a) (BOT404/E1): Forest Ecology**

**Unit 1**

1. Forests, forestry and man: Definition, forests in geological ages, forests in prehistoric era, shifting cultivation, forests in historical time, scientific forestry, forest policy, natural forest policy, private forest policy, planned forest development, forestry education in India.
2. Essential elements of forest ecology: Extent and boundaries, physical features, geology, river system, soil, land-use pattern, role in country's economy, forests and wild land.

**Unit 2**

1. Forests and trees: Locality factors of the forests, forest influences, forest composition, stand structure, dynamics and growth, classification, forest types and their distribution, species diversity
2. Wild Life: Species and distribution, Sanctuaries, Biosphere reserves, wild life and recreation.
3. Forest conservancy and Potential Productivity: Soil, Water relation and nutrition, soil erosion and conservation, potential productivity of forests, site quality evaluation.

**Unit 3**

1. Forest Conservation and Management:
  - i) Impact of deforestation on soil and water, Role of fire: type, extent and cause of fire, fuel load, fire and different forest types of Himalaya.
  - ii) Forest resource management and forest resource information system.

**Unit 4**

1. Forest cover in India-State of Art, Ground inventory, Application of Remote Sensing and Geographic Information System (GIS) in Land cover mapping, Vegetation and forest type maps.
2. Environmental Impact Assessment: Maintenance and conservational policies such as Joint Forest Management (JFM) and Agroforestry in the region.

**Lab Course:**

1. To undertake studies on stand analysis, dominance, diversity and similarity coefficient.

2. To make studies on gradient analysis.
3. To identify different forest types of the locale.
4. Calculate the Pateron week index of any natural forest stand.
5. Study ordination and continuum of different forest stands.
6. Study interspecific Association in forest stands using Plot less technique.
7. Calculate analytical and synthetic characters of different forest stands.
8. Prepare profile diagram of forest stands using Single Plot Method.

#### SUGGESTED READINGS:

1. Bir, S.S. and Chatha, G.S. 1988. Forest Vegetation Characteristics of Indian Hills. Today and Tomorrow's Printers & Publ., New Delhi.
2. Dwivedi, A.P. Forestry in India. Jugal Kishor and Company, Dehradun.
3. Misra, R. Ecology Work Book. Oxford & IBH Publishing Co. New Delhi.
4. Mishra, R. and Gopal, B. Recent Advances in Tropical Ecology: Part I & II. International Society for Tropical ecology, Varanasi.
5. Negi, S.S. 1983. Forest Ecology. Bishen Singh Mahendra Pal Singh, Dehradun.
6. Puri, G.S., Gupta, R.K., Meher-Homji, V.M. and Puri, S. 1989. Forest Ecology: Plant Form, Diversity, Communities and Succession. Oxford and IBH Publishing Co. Pvt. Ltd. New Delhi.
7. Puri, G.S., Meher-Homji, V.M., Gupta, R.K. and Puri, S. Forest Ecology: Vol I & II. Oxford and IBH Publishing Co. Pvt. Ltd. New Delhi.
8. Singh, G. 1987. Forest Ecology of India. Rawat Publications, Jaipur
9. Singh, J.S. and Singh, S.P. 1992. Forests of Himalaya. Consul Book Depot. Gyanodaya Prakashan, Nainital, India.
10. Singh, J.S. Singh, S.P. and Gupta, S.R. 2005. Ecology, Environment and Resource Conservation. Anamaya Publ., F-154/2 Ladosarai, New Delhi- 110 030
11. Singh, M.P. and Vishwakarma, V. 1997. Forest Environment and Biodiversity. Daya Publ. House, Delhi.
12. Wareing, R.H. and Schlesinger, W.H. 1985. Forest Ecosystems: Concepts and Management. Academic Press, New York.

#### Paper IV (b) (BOT404/E2): Industrial Microbiology

##### Unit 1

1. Introduction to industrial microbiology-Range of fermentation processes, microbial biomass, microbial enzymes, microbial metabolites and transformation processes.
2. Selection and strain improvement strategies - Isolation of industrially important microorganisms - primary and secondary screening. Detection and assay of fermentation products - physical-chemical, biological assays. Preservation of microbes -storage at reduced temperature, storage in dehydrated forms.

##### Unit 2

1. Types of fermentation - Solid state fermentation and submerged fermentation; batch, continuous and fed batch fermentation. Homo- and heterofermentation. Aerobic and anaerobic fermentation. Static and stirred fermentations. Media for microbial growth and fermentation - Typical media, media formulation; water, energy and carbon source, nitrogen sources, minerals and vitamins, buffers, precursors, metabolic regulators, oxygen requirement.
2. Bioreactors - Brief study on stirred tank fermenter, air-lift fermenter, packed tower fermenter, tray fermenter, rotary drum fermenter. Microbial fermentation- Sterilization -

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media, fermenter, air. Inoculum preparation, inoculation. Aeration, agitation, pH control, temperature control, antifoam agents. Process parameter optimization: One factor at a time and statistical optimizations (brief study only). Scale up of fermentation (lab scale, pilot plant, industrial scale).

#### Unit 3

1. Downstream processing- Separation of microbial cells - Filtration, precipitation, centrifugation.
2. Cell disruption - liquid shear, freezing-thawing, ultrasonication, osmotic shock, enzyme treatment. Concentrating and purifying the products - ultrafiltration, crystallization, solvent precipitation, reverse osmosis, chromatography. Production of industrially important products

#### Unit 4

1. Antibiotics - Penicillin, Streptomycin. Amino acids - Lysine, Glutamic acid. Enzymes - Amylase, Cellulase, Pectinase. Organic acids - Lactic acid, Acetic acid, Gluconic acid. Biofuels - Bio-ethanol, Bio-butanol. Biopolymers - PHB, PLA. Alcoholic beverages - Wine, Beer. Microbial cells - SCP.
2. Baker's yeast. Immobilization of cells and enzymes- Methods of cell and enzyme immobilization. Applications of immobilized cells and enzymes.

#### Lab Course

1. Screening and isolation of microbes for production of organic acids and enzymes.
2. Preparation and maintenance of stock cultures (Bacteria and Fungi).
3. Preparation of bacterial inoculum by measuring OD and enumeration of bacterial cells by serial dilution and pour plate (or spread plate) method.
4. Solid state and Submerged fermentation for amylase (or any other enzyme) production and quantification of product by suitable assay methods.
5. Optimization of process parameters for enzyme production in submerged fermentation.
6. Partial purification of amylase (or any other enzyme) produced by microbial fermentation using acetone precipitation.
7. Immobilization of yeast cells and sugar fermentation using immobilized cells.

#### Suggested readings:

1. Madigan, M.T., J.M. Martink and J. Parker (1997). Brock Biology of Microorganism, Printice hall International, Inc., New, Jersey.
2. Prescott (2000). Microbiology.
3. Cruzeir, W. and A. Cruzeir (1990). A Textbook of Industrial Microbiology.
4. Alexander, M. (1977). Soil Microbiology. John Wiley and Sons, New York.
5. Dubey, R.C. and D.K. Maheshwari (2010). A Textbook of Microbiology. S. Chand and Co. Pvt. Ltd. New Delhi.

#### Paper IV (c) (BOT404/E3): Ethnobotany

##### Unit 1

1. Introduction, concept, scope and objectives. Linkage of Ethnobotany with other sciences and disciplines in biology - food and nutrition, medicine, sociological and cultural practices, religions and social costumes and economic relations.
2. Ethnic groups and Ethnobotany: Major and minor ethnic groups of Uttarakhand and their life styles. Forest v/s Ethnic groups.

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#### Unit 2

1. Methodology of Ethnobotanical studies: Field work, Herbarium, Ancient Literature, Archaeological findings, Temples and sacred places. Protocols. Plants and Tribal medicine: Significance of *Curculigo orchoides*, *Costus speciosus*, *Gloriosa superba*, *Butea monosperma*, *Wrightia tinctoria* and *Pongamia pinnata* in Ethno-medical practices along with a brief note on their habitat and morphology.
2. Medico-ethnobotanical research in Uttarakhand.

#### Unit 3

1. Different systems of indigenous medicine (Traditional medicine, Ayurveda, Siddha, Unani), Homeopathy and Allopathy. Role of Phytomedicine in modern systems of medicine.
2. Classification of drugs: analytical methods – drug adulteration, drug evaluation, anatomical and phytochemical analysis of crude drugs; preliminary screening, fractionation and separation of different groups of biodynamic compounds and biological evaluation.

#### Unit 4

1. Phytopharmaceuticals: Drugs of alkaloids, coumarins, volatile oils, tannins, resins and gums. Natural pesticides, antibiotics, allergens and poisonous plants. Economic potential of phytomedicine; potential drug yielding plants and their marketing avenues. IPR and patenting of active principles.
2. Ethnobotany and conservation of plants with special reference to Uttarakhand – mythology and conservation of ecosystems, conservation of selected plant species: sacred groves, forestry and unique ecosystems and their ethnobiological values, plants and animals in art, tradition and ethnography: methodologies in ethno-botanical research

#### Lab Course:

1. Preparation of the herbarium specimen medicinally important plants.
2. Listing of plants used by villagers and on the basis of their local use to place them in the field of the study of ethnobotanical research.
3. Study of Economic potential of Phytomedicine and role of phytomedicine in modern system of medicine.

#### Suggested Readings:

1. S.K. Jain, Manual of ethnobotany, scientific publishers, Jodhpur, 1995.
2. S.K. Jain (ed.) Glimpses of Indian Ethnobotany, Oxford and I B H, New Delhi, 1981.
3. S.K. Jain, (ed.) Methods and approaches in ethnobotany. Society of Ethnobotanists, Lucknow, India, 1989.
4. S.K. Jain, Contributions of Indian ethnobotany. Scientific Publishers, Jodhpur, 1990.
5. Colton C.M. Ethnobotany-Principles and applications. John Wiley and sons-Chichester, 1997.
6. Rama R. N. and A.N. Henry, The ethnobotany of Eastern Ghats in Andhra Pradesh, India. Botanical Survey of India, Howrah, 1996.
7. Rajiv K. Sinha, Ethnobotany-the renaissance of traditional Herbal Medicine-I N A- Shree publishers, Jaipur, 1996.

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**Paper IV (d) (BOT404/E4): PALYNOLOGY AND POLLINATION BIOLOGY**

**Unit 1**

1. General Introduction, microsporogenesis, microspore tetrads and polarity of spores and pollen grains.
2. Pollen wall development and pollen chemistry, Chemical nature of sporopollenin, development of pollen wall, Ubisch body, pollen wall proteins, origin and formation exineless pollen grains; pollen expressed and pollen specific genes.

**Unit 2**

1. Spore-pollen morphology: Symmetry, shape, size, aperture patterns, NPC System for numerical expression of apertural details, exine stratification, surface structures and sculptures of sporoderm; LO-analysis and edge-analysis.
2. Paynotaxonomy: Systematic palynology, identification key and evolutionary trends among pollen grains based on palynotaxonomical works.
3. Aeropalynology with reference to allergy: Aeroallergens, introductory idea of Immune System with special reference to IgE. Study of airspora, identification of allergic taxa by *in-vivo* and *in-vitro* tests with spore-pollen extracts, chemical nature of exine-borne allergens, allergic taxa of North-West Himalaya.

**Unit 3**

1. **Melissopalynology:** Indian species of honey bees, importance of pollen grains as constituent of bee-bread, pollen-collecting mechanism of honey bees, analysis of pollen load and honey sample in understanding bee forage, objectives of melissopalynological studies, important bee plants of North- West Himalaya.
2. **Palaeopalynology:** Introductory idea about palaeopalynological remains, significance of palaeopalynology.

**Unit 4**

1. Forensic palynology: Definition and significance, a few well-known case studies.
2. Pollination Biology: Pollen dispersal units; pollination types, contrivances for cross- and self-pollination; pollen vectors, pollination modes and flora organization, Pollen viability and storage, evolutionary trends in pollination modes. Breeding systems, incompatibility and compatibility control with reference to pollen-pistil interactions and pollen biotechnology.

**Lab Course**

1. Pollen morphological studies of some pterodophytes, gymnosperms, and angiosperms representing different morphological types using acetolysis / alkali maceration method.
2. Extraction of pollen grains from honey sample and study of the frequency of different morpho-types.
3. Study of *in vivo* and *in vitro* germination of pollen grains.
4. Morpho-anatomical study of stigma and style.
5. Study of the growth of pollen tube through stigma and style.
6. Study of allergy producing pollen morpho-types.

**SUGGESTED READINGS:**

1. Crane, Eva; Walker, Penelope and Day Rosemary.1984. Directory of Important World Honey Sources: International Bee Research Association, London.
2. Erdtman, G. 1952. Pollen Morphology and Plant Taxonomy, Angiosperms; Almquist and Wiksell, Stockholm.

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3. Knut Segril, Johansen Iverson. 1975. Text book of pollen analysis 3rd edition. Blackwell Publ.
4. Nair, P.K.K. 1966. Essentials of Palynology; Asia Publication House Lucknow.
5. Woodhouse, R.P. 1935. Pollen Grains: Hafner Publication Co.

#### **Paper IV (c) (BOT404/E5): Seed Pathology**

##### **Unit 1**

1. Introduction, terminology and historical development, seed health and its importance.
2. Kinds of seed borne pathogens: fungi, bacteria, viruses, viroides and nematodes.
3. Types of damage caused by the seed borne fungi to seeds and crops.

##### **Unit 2**

1. Nature of seed infection. Systemic infection through flower, fruit and seed stock. Penetration through seed coat, natural openings and inflicted openings.
2. Longevity of seed borne pathogens. Factors influencing longevity.

##### **Unit 3**

1. Epiphytology of seed borne diseases, monocyclic and polycyclic diseases
2. Detection of seed borne pathogens, objectives of seed health testing. Testing methods for seed borne fungi, seed borne bacteria, seed borne viruses and seed borne nematodes.

##### **Unit 4**

1. Study of seed borne diseases of certain specific crops, cereals, millets, pulses, oil crops, fibre crops, and vegetable and timber crops
2. Control of seed borne pathogens: selection of seed production areas, crop management, seed treatment, certification, plant quarantine and disease resistance.

##### **Lab Course**

1. Isolation and inoculation of mycorrhiza.
2. Study of seed borne pathogen. Description of pathogen, symptoms and section cutting.
3. Isolation of some important pathogens.
4. Procedure of equipments uses.
5. To establish a plant disease clinic in the department for advise to local people.

##### **SUGGESTED READINGS**

1. Neegard P. 1977. Seed Pathology Vol I and II. MacMillan Press, London
2. Suryanarayan, D. 1978. Seed Pathology. Vikas Publ. House, Pvt. Ltd. New Delhi.
3. Jha, D.K. 1995. A Text Book of Seed Pathology. Vikas Publ. House. Pvt. Ltd. New Delhi.
4. Agarwal, V.K. 1978. Principles of Seed Pathology. In (ed.) James B.S. Sindair. CRC Press, II Edition.
5. Desai, B.B. Seed Handbook. CRC Press.
6. Singh, Gurnam, Seed Pathology. Pointer Publisher, Jaipur.
7. Singh, T. Seed Technology and Seed Pathology. Pointer Publisher, Jaipur.
8. Nene, Y.L. and Agarwal, V.K. 1978. Some seed borne diseases and their control. ICAR, New Delhi

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**Lab Course : BOT40P\***

1. Emasculation, bagging and hand pollination techniques to study pollen germination.

Application of common plant breeding techniques

2. Floral biology of local food, pulse, vegetable and horticultural crop

3. To test the goodness of fit and independent assortment using Chi-square method.

4. To study the pattern of regional biodiversity.

5. To study the Hot spots and key stone species.

6. Survey of biological resources.

7. Study of habitat loss with respect to plant species. To observe factors expediting habitat loss viz., floods, forest fires, landslides, natural and anthropological activities.

8. Visits to national parks, sanctuaries and biosphere reserves of Uttarakhand.

9. Visit to ecosystem restoration sites in mined areas in Uttarakhand Himalayas.

10. PTC – Laboratory organization, different sterilization/aseptic technique.

11. Preparation and sterilization of media

12. Callus culture (morphological and internal structure) and suspension cultures (growth curve)

13. Shoot tip, axillary bud, nodal explant culture.

14. Root tip and leaf culture.

15. Protoplast isolation and fusion

16. Somatic embryogenesis and production of artificial seeds.

17. Anther, pollen, ovule culture.

\*Additional lab course of selected elective paper.

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04-07-2018