NABIRA MAHAVIDYALAYA KATOL

Criterion 1 - Curricular Aspects

1.2- Academic Flexibility

1.2.1- Number of Programmes in which CBCS/Elective course system implemented

Minutes of the Boards of Studies/ Academic Council meetings with approvals for these courses

NABIRA MAHAVIDYALAYA, KATOL

Distt. Nagpur (M.S.) Pin - 441 302

Graduation & Post Graduation in Arts, Commerce, Science & Management

Phone : 07112 - 222004 / 222164 Fax : 07112-222004

Email : nmv.college@rediffmail.com Website : www.nabiramahavidyalayakatol.com

NAAC'S B++ Accredited College

Ref. No. :

Date : 16.11.2023

DECLARATION

This is to declare that the information, reports, true copies and numerical data etc. furnished in this file as supporting documents is verified by IQAC and found correct.

Hence this is certificate.

Dr. Punit Raut
Co-Ordinator
IQAC, NMV Katol

Dr. S. K. Navin
Principal
Nabira Mahavidyalaya,
Katol

राष्ट्रसंततुकडोजी महाराज नागपूर विद्यापीठ, नागपूर

'' (सेंट्रल प्रोव्हिन्सेस शासन शिक्षण विभागाची अधिसूचना क्रमांक ५१३ दिनांक १ ऑगस्ट, १९२३ द्वारा स्थापित व
महाराष्ट्र विद्यापीठ अधिनियम, १९९४ द्वारा संचालित राज्य विद्यापीठ)''

(विद्या विभाग)

छत्रपती शिवाजी महाराज प्रशासकीय परिसर, रविन्द्रनाथ टागोर मार्ग, नागपूर – ४४० ००१.
दूरध्वनी क्रमांक: कार्यालय: ०७१२–२५३२०६३ फॅक्स : ०७१२–२५५५७०१

क्र. रातुमनावि/विद्या/१५/२१७ दिनांक १५जुन, २०१५

अधिसूचना

सर्व संबंधीताच्या माहितीकरीता सुचित करण्यात येते की, प्राणिशास्त्र अभ्यासमंडळाने शिफारशीत केलेल्या बी. एस.सी. आणि एम. एस. सी. (प्राणिशास्त्र) प्रात्याक्षिक अभ्यासक्रमीकेमध्ये विद्यापीठ अनुदान आयोगाचे प्राप्त पत्रानुसार काहि किरकोळ दरूस्तीला दिनांक २०.०५.२०१५ रोजी संपन्न झालेली विज्ञान विद्या शाख. ाने सत्र २०१५–२०१६ पासुन लागु करण्यास मान्यता प्रदान केलेली आहे. विज्ञान विद्याशाखेच्या शिफारशीला मा. कुलगुरू महोदयांनी महाराष्ट् विद्यापीठ अधिनियम १९९४ च्या कलम १४ (७) अंतर्गत विद्वत परिषद आणि व्यवस्थापन परिषदच्या वतीने मान्यता दिलेली आहे. प्राणिशास्त्र अभ्यासमंडळांनी निर्देशित केल्याप्रमाणे सदर अभ्यासक्रमिकेत किरकोळ बदल सत्र २०१५–२०१६ या शैक्षणिक सत्रापासुन लागु करण्यात येत आहे. वरील अभ्याक्रमाची प्रत सोबत संलग्न केली आहे.

स्वाक्षरीस/–

सहपत्र वरील प्रमाणे **(पुरणचंद्र मेश्राम)**

कुलसचिव
राष्ट्रसंत तुकडोजी महाराज
नागपूर विद्यापीठ

प्रतिलिपी माहिती व पुढील कार्यवाहीसाठी अग्रेषित:

१.राष्ट्संत तुकडोजी महाराज नागपुर विद्यापीठाशीी संनग्नीत विज्ञान विद्याशाखेतील सर्व संबंधित महाविद्यालयांचे प्राचार्य
२.मा. अधिष्ठाता, विज्ञान विद्याशाखा
३. .मा. परिक्षा नियंत्रक,
४.उपकुलसचिव (पुर्वपरीक्षा /परिक्षा उपरांत)
५सहायककुलसचिव (सा.परीक्षा/सा परीक्षा व चौकशी)
६.सहायककुलसचिव (गोपनीय)
७.सहायककुलसचिव (व्यावयायीक परिक्षा)
८.अधिक्षक(अध्यादेश विभाग)
९.अधिक्षक(निकाल विभाग)
१०.प्रभारी अधिकारी (प्रकाशन विभाग)
११.मा.कुलगुरूंचे स्वीय सहायक,
१२.मा.प्र–कुलगुरूंचे स्वीय सहायक,
१३.मा. कुलसचिवांचेस्वीय सहायक,
१४.श्रीमती विना प्रकाशे, माहिताशास्त्र

स्वाक्षरीस/–
(मनिष झोडपे)
उपकुलसचिव (विद्या)

राष्टसंत तुकडोजी महाराज नागपूर विद्यापीठ, नागपूर

'' (सेंट्रल प्रोव्हिन्सेस शासन शिक्षण विभागाची अधिसूचना क्रमांक ५१३ दिनांक १ ऑगस्ट, १९२३ द्वारा स्थापित व
महाराष्ट्र विद्यापीठ अधिनियम, १९९४ द्वारा संचालित राज्य विद्यापीठ)''

(विद्या विभाग)

छत्रपती शिवाजी महाराज प्रशासकीय परिसर, रविन्द्रनाथ टागोर मार्ग, नागपूर – ४४० ००१.

दूरध्वनी क्रमांक: कार्यालय: ०७१२–२५३२०६३ फॅक्स : ०७१२–२५५५७०१

क्र. रातुमनावि/विद्या/१५/२१६ दिनांक १५ जुन, २०१५

अधिसूचना

सर्व संबंधीताच्या माहितीकरीता सुचित करण्यात येते की, विज्ञान विद्याशाखेअंतर्गत येणारे खालील पदव्युत्तर अभ्यासक्रम सत्र २०१५–२०१६ पासुन निव्वळ आधारोत श्रेयांक प्रणाली (CBCS) क्रेडीट बेसड् सत्र पद्धतीसह) लागु करण्यात येत आहे. सदर अभ्यासक्रमांच्या परिक्षा योजना व अभ्यासक्रमींकांना दिनांक २०.०५. २०१५ रोजी संपन्न झालेल्या विज्ञान विद्या शाखेने मान्यता प्रदान केलेली आहे. मा. कुलगुरूंनी सदर अभ्यासक्रमांना २०१५–२०१६ पासुन निव्वळ आधारीत श्रेयांक प्रणाली (CBCS) क्रेडीट बेसड् सत्र पद्धतीसह) कार्यान्वीत करण्याकरीता म.वि. अधिनियम १९९४ च्या कलम १४ (७) अंतर्गत विद्वत परिषद व व्यवस्थापन परिषदेच्या वतीने तसच कलम १४ (८) अंतर्गत निर्देश क्रमांक १०/२०१५, दिनांक १५.०६.२०१५ रोजी निर्गमित केला आहे.

विज्ञान विद्याशाखा, पदव्युत्तर अभ्यासक्रम

M.Sc.- Physics, Chemistry, Mathematics, Statistics, Computer Science, Electronics Information Technology, Botany, Zoology, Sericulture, Microbiology, Biochemistry, Biotechnology, Environmental Science, Geology, M.Sc. Tech. Applied Geology.

उपरोक्त सर्व पदव्युत्तर सत्र अभ्यासक्रमांचे निर्देश, परिक्षा व अभ्यासक्रमीका राष्ट्संत तुकडोजी महाराज नागपूर विद्यापीठ, नागपूर.www.naguniversity.org या संकेतस्थळावर उपलब्ध करण्यात आलेली आहे.

कृपया संबंधीतानी नोंद घ्यावी

स्वाक्षरीत/–
(पुरणचंद्र मेश्राम)
कुलसचिव
राष्ट्रसंत तुकडोजी महाराज
नागपूर विद्यापीठ.

प्रतिलिपी माहिती व पुढील कार्यवाहीसाठी अग्रेषित:

१.राष्ट्संत तुकडोजी महाराज नागपुर विद्यापीठाशीं संनग्नीत विज्ञान विद्याशाखेतील सर्व संबंधित महाविद्यालयांचे प्राचार्य
२. मा. अधिष्ठाता, विज्ञान विद्याशाखा
३. .मा. परिक्षा नियंत्रक,
४.उपकुलसचिव (पुर्वपरीक्षा / परिक्षा उपरांत)
५सहायक कुलसचिव (सा.परीक्षा/ सा परीक्षा व चौकशी)
६.सहायक कुलसचिव (गोपनीय)
७.सहायक कुलसचिव (व्यावयायीक परिक्षा)
८.अधिक्षक(अध्यादेश विभाग)
९.अधिक्षक(निकाल विभाग)
१०.प्रभारी अधिकारी (प्रकाशन विभाग)
११.मा.कुलगुरूंचे स्वीय सहायक,
१२.मा.प्र–कुलगुरूंचे स्वीय सहायक,
१३.मा. कुलसचिवांचे स्वीय सहायक,
१४श्रीमती विना प्रकाशे, माहिताशास्त्र

स्वाक्षरीत/–
सहायक कुलसचिव (विद्या)

RASHTRASANT TUKADOJI MAHARAJ NAGPUR UNIVERSITY, NAGPUR

NOTIFICATION

No. Acad/215. Date : 15th June, 2015

To,

The Principal
of all the affiliated Science Colleges
of Rashtrasant Tukadoji Maharaj
NagpurUniversity, Nagpur

Subject:- Direction No. 10 of 2015.

Sir/Madam,

I am forwarding herewith a copy of the Direction No. 10 of 2015 issued by the Hon'ble Vice-Chancellor under Section 14(8) of Maharashtra Universities Act, 1994 **"DIRECTION RELATING TO THE EXAMINATION LEADING TO THE DEGREE OF MASTER OF SCIENCE, SEMESTER PATTERN (CHOICE BASED CREDIT SYSTEM) AND DEGREE OF MASTER OF SCIENCE AND TECHNOLOGY (APPLIED GEOLOGY). SEMESTER PATTERN, (CHOICE BASED CREDIT SYSTEM) "**along with theexamination scheme andSyllabi to be implemented from Academic Session **2015-2016**.

You are requested to kindly bring it to the notice of all teachers and students of your college.

Thanking you,

Direction and Syllabi available on the Rashtrasant Tukadoji Maharaj Nagpur University.(www.nagpur university. org.)

Yours faithfully,

Encl: As above. Sd/-

(Puran Meshram)
Registrar,
Rashtrasant Tukadoji Maharaj
Nagpur University, Nagpur.

Copy for information and necessary action along with the Direction,Examination Schemeand Syllabi as mentioned above to :-

1) The Dean Faculty of Science, Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur.
2) The Controller of Examinations, Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur
3) The Director, B.C.U.D., Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur
4) The Deputy Registrar (Examinations) Rashtrasant Tukadoji Maharaj Nagpur University,
5) The Deputy Registrar (Coll. Sec.) Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur
6) The Asstt. Registrar (Prof. Exam.), Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur
7) The Asstt. Registrar (Conf.), Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur.
8) The Asstt. Registrar (Exams & Enqury.), Rashtrasant Tukadoji Maharaj Nagpur University,
9) The Officer-in-Charge, Publication Section, R.T.M. Nagpur University, Nagpur.
10) The Asstt. Registrar, Ordinance Section, R.T.M. Nagpur University, Nagpur
11) The P. A. to the Hon'ble Vice-Chancellor, R.T.M. Nagpur University, Nagpur
12) The P. A. to the Hon'ble Pro-Vice-Chancellor, R.T.M. Nagpur University, Nagpur
13) The P. A. to the Registar, R.T.M. Nagpur University, Nagpur
14) Mrs. Veena Prakashe, Information Scientist, R.T.M. Nagpur University, Nagpur

Sd/-

(Manish Zodpey)
Deputy Registrar(Acad.)

SYLLABUS for M. Sc. Physics

Choice Based Credit System (Semester Pattern)

Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur

Effective from 2015-2016

Scheme of teaching and examination under semester pattern Choice Based Credit System (CBCS) for M.Sc. Program in Physics

M. Sc. (Physics) Semester I											
Code	Th./Pr.	Teaching Scheme (hrs/week)			CREDITS	Examination Scheme					
		Th.	Pr.	Tot.		Time (hrs)	Max. Marks		Tot. Marks	Min. Passing Marks	
							Ext. Marks	Int. Marks		Th.	Pr.
Core 1	Paper 1 **Mathematical Physics**	4	-	4	4	3	80	20	100	40	
Core 2	Paper 2 **Complex Analysis and Numerical Methods**	4	-	4	4	3	80	20	100	40	
Core 3	Paper 3 **Electronics**	4	-	4	4	3	80	20	100	40	
Core 4	Paper 4 **Electrodynamics I**	4	-	4	4	3	80	20	100	40	
Pract. Core 1 &2	Practical 1 **(Paper 1 & 2)**	-	8	8	4	3-8*	100**	-	100	-	40
Pract. Core 3 &4	Practical 2 **(Paper 3 & 4)**	-	8	8	4	3-8*	100**	-	100	-	40
Seminar 1	Seminar 1	2	-	2	2			50	50	20	
	Total	**18**	**16**	**34**	**26**		**520**	**130**	**650**	**180**	**80**

M. Sc. (Physics) Semester II											
Code	Th./Pr.	Teaching Scheme (hrs./week)			CREDITS	Examination Scheme					
		Th.	Pr.	Tot.		Time (hrs)	Max. Marks		Tot. Marks	Min. Passing Marks	
							Ext. Marks	Int. Marks		Th.	Pr.
Core 5	Paper 5 **Quantum Mechanics I**	4	-	4	4	3	80	20	100	40	
Core 6	Paper 6 **Statistical Physics**	4	-	4	4	3	80	20	100	40	
Core 7	Paper 7 **Classical Mechanics**	4	-	4	4	3	80	20	100	40	
Core 8	Paper 8 **Electrodynamics II**	4	-	4	4	3	80	20	100	40	
Pract. Core 5 &6	Practical 3 **(Paper 5 &6)**	-	8	8	4	3-8*	100**	-	100		40
Pract. Core 7 &8	Practical 4 **(Paper 7 & 8)**	-	8	8	4	3-8*	100**	-	100		40
Seminar 2	Seminar 2	2		2	2			50	50	20	
	Total	**18**	**16**	**34**	**26**		**520**	**130**	**650**	**180**	**80**

M. Sc. (Physics) Semester III											
Code	Th./Pr.	Teaching Scheme (hrs./week)			CREDITS	Examination Scheme					
		Th.	Pr.	Tot.		Time (hrs)	Max. Marks		Tot. Marks	Min. Passing Marks	
							Ext. Marks	Int. Marks		Th.	Pr.
Core 9	Paper 9 **Quantum Mechanics II**	4	-	4	4	3	80	20	100	40	
Core 10	Paper 10 **Solid State Physics and Spectroscopy**	4	-	4	4	3	80	20	100	40	
Core ele. 1	Paper 11 **Any one from subjects below** **E1.1: Materials Science I** **E1.2 X-ray I** **E1.3 : Nanoscience and Nanotechnology I** **E1.4 : Atomic and Molecular Physics I** **E1.5: Applied Electronics I** **E1.6: Methods of Theoretical Physics I** **E1.7 Nonlinear Dynamics I**	4	-	4	4	3	80	20	100	40	
Foundation Course 1	Paper 12 **F1.1 Fundamentals of Spectroscopy OR** **F1.2 Fundamentals**	4	-	4	4	3	80	20	100	40	

	of Nanoscience and Nanotechnology										
Pract.Core 9 &10	Practical 5 **(Paper 9 & 10)**	-	8	8	4	3-8*	100**		100		40
Pract. Core ele. 1	Practical 6 **(Paper 11)**	-	8	8	4	3-8*	100**		100		40
Seminar 3	Seminar 3	2		2	2			50	50	20	
	Total	**18**	**16**	**34**	**26**		**520**	**130**	**650**	**180**	**80**

M. Sc. (Physics) Semester IV											
Code	Th./Pr.	Teaching Scheme (hrs./week)			CREDITS	Examination Scheme					
		Th.	Pr,	Tot.		Time (hrs)	Max. Marks		Tot. Marks	Min. Passing Marks	
							Ext. Marks	Int. Marks		Th.	Pr.
Core 11	Paper 13 **Nuclear and Particle Physics**	4	-	4	4	3	80	20	100	40	
Core 12	Paper 14 **Solid State Physics**	4	-	4	4	3	80	20	100	40	
Core ele. 2	Paper 15 **Part II of subject chosen in Sem. III** **E2.1: Materials Science II** **E2.2 X-ray II** **E2.3 : Nanoscience and Nanotechnology II** **E2.4 : Atomic and Molecular Physics II** **E2.5: Applied Electronics II** **E2.6: Methods of Theoretical Physics II** **E2.7 Nonlinear Dynamics II**	4	-	4	4	3	80	20	100	40	
Foundation Course 2	Paper 16 **F2.1: Spectroscopic Applications OR** **F2.2: Optics and Optical**	4	-	4	4	3	80	20	100	40	

	Instruments										
Pract.Core 11 &12 & ele. 2	Practical 7	-	8	8	4	3-8*	100**		100		40
Project	Project	-	8	8	4		100**		100		40
Seminar 4	Seminar 4	2		2	2			50	50	20	
	Total	**18**	**16**	**34**	**26**		**520**	**130**	**650**	**180**	**80**

Note: Th: =Theory; Pr:=Practical/lab, ele.=elective • = If required, for two days. **= The Practical and Project shall be evaluated by both External and Internal Examiner in the respective Department / Center / Affiliated College as per guidelines appended with this direction.

Table of Contents

Revised Syllabus to be implemented from 2015-16
Choice Based Credit System(CBCS)

Subject Scheme of Revised Syllabus 2015-2016 Semester Pattern
Syllabus for Each theory paper is based on 60 clock hours of teaching.

M.Sc. Physics Semester I
1. (Core 1)Paper 1: Mathematical Physics
2. (Core 2) Paper 2: Complex Analysis and Numerical Methods
3. (Core 3) Paper 3: Electronics
4. (Core 4)Paper 4: Electrodynamics I

M.Sc. Physics Semester II
1. (Core 5) Paper 5: Quantum Mechanics-I
2. (Core 6) Paper 6: Statistical Physics
3. (Core 7) Paper 7: Classical Mechanics
4. (Core 8) Paper 8: Electrodynamics II

M.Sc. Physics Semester III
1. (Core 9) Paper 9: Quantum Mechanics-II
2. (Core 10) Paper 10: Solid State Physics and Spectroscopy
3. Any one of the Elective papers from the following list. Paper 11 (Core Elective 1)
E1.1 Materials Science I **E1.2. X-ray I**
E1.3Nanoscience and Nanotechnology I **E1.4. Atomic and Molecular Physics I**
E1.5Applied Electronics I **E1.6. Methods of Theoretical Physics I**
E1.7 Nonlinear Dynamics I

4. Foundation course 1
Any one of following courses: Paper 12 (Not for Physics Students)

F1.1 Fundamentals of Spectroscopy
F1.2 Fundamentals of Nanoscience and Nanotechnology

M.Sc. Physics Semester IV
1. (Core 11) Paper 13: Nuclear and Particle Physics
2. (Core 12) Paper 14: Solid State Physics
3. One of the elective papers from list below Paper 15 (Core Elective 2)
E2.1 Materials Science II **E2.2 X-ray II**
E2.3 Nanoscience and Nanotechnology II **E2.4 Atomic and Molecular Physics II**
E2.5 Applied Electronics II **E2.6 Methods of Theoretical Physics II**
E2.7 Nonlinear Dynamics II

4. Foundation course 2
Any one of the following courses: Paper 16 (Not for Physics students)

F2.1Spectroscopic Applications
F2.2Optics and Optical Instruments.

Scheme of teaching and examination under CBCS.

Sem.	core	Pract. core	Core ele.	Pra. Core Ele.	Fou. course	Project./ Review writing	seminar	Total
I	16	8					2	
II	16	8					2	
III	8	4	4	4	4		2	104
IV	8	4	4		4	4	2	
Total	48	24	8	4	8	4	8	104

Explanatory terms:

I. Core: Main theory papers in the concerned subject.

2. Core Elective: These papers will be specialization in the concerned subject
3. Foundation Course: Student can choose this paper from any subject other than his main subject for post graduation
4. Project **/** Review writing: Project **/** Review writing is in semester IV
5. Seminar: The seminar in each semester shall be presented by the candidate in his **/**her parent department only.

Credits:

It is a unit by which the course work is measured. It determines the number of hours of instructions required per week. One credit is equivalent to one hour of teaching (lecture or tutorial) or two hours of practical work **/** field work per week. If a student is declared pass in a subject, then he/she gets the credits associated with that subject. Depending on the marks scored in a subject, student is given a Grade. Each grade has got certain grade points as follows:

Letter Grade	O	A+	A	B+	B	C	P	F	Ab
Grade Point	10	09	08	07	06	05	04	0	0

A student obtaining Grade F shall be considered failed and will be required to reappear for the examination.

Valuation pattern:

Every credit is for 25 marks and valuation and grade points will be given as per following pattern

Marks obtained in Th./pr. Of 100 Marks	Marks obtained in Th./pr. Of 50 Marks	Letter Grade	Grade Point
91-100	46-50	**O**	10
81-90	41-45	A+	09
71-80	36-40	A	08
61-70	31-35	B+	07
51-60	26-30	B	06
41-50	21-25	C	05
=40	=20	P	04
<40	<20	F	0
Ab	Ab	Ab	0

Computation of SGPA and CGP A

Following is the procedure to compute the Semester Grade Point Average (SGPA) and

Cumulative Grade Point Average (CGPA):

I. The SGPA is the ratio of sum of the product of the number of credits with the grade points scored by a student in all the courses taken by a student and the sum of th number of credits of all the courses undergone by a student, i.e

SGPA (Si) = $\sum$(Ci x Gi) / $\sum$ Ci

where Ci is the number of credits of the ith course and Gi is the grade point scored by the student in the ith course.

II. The CGPA IS also calculated In the same manner takmg Into account all the courses undergone by a student over all the semesters of a program, i.e.

CGPA = $\sum$(Ci x Si) /$\sum$Ci

where Si is the SGPA of the ith semester and Ci is the total number of credits in that semester. The SGPA and CGPA shall be rounded off to 2 decimal points and reported in the transcripts. Ex. 7.0765 = 7.08 or 6.5168 = 6.52 etc

Transcript (Format): Based on the above recommendations on Letter grades, grade points and SGPA and CCPA, the HEls may issue the transcript for each semester and a consolidated transcript indicating the performance in all semesters.

Scheme of teaching and examination under semester pattern Choice Based Credit System (CBCS) for M.Sc

Semester I											
Code	Th./Pr.	Teaching Scheme (hrs/week)			CREDITS	Examination Scheme					
		Th.	Pr,	Tot.		Time (hrs)	Max. Marks		Tot. Marks	Min. Passing Marks	
							Ext. Marks	Int. Marks		Th.	Pr.
Core 1	Paper 1	4	-	4	4	3	80	20	100	40	
Core 2	Paper 2	4	-	4	4	3	80	20	100	40	
Core 3	Paper 3	4	-	4	4	3	80	20	100	40	
Core 4	Paper 4	4	-	4	4	3	80	20	100	40	
Pract. Core 1 &2	Practical 1	-	8	8	4	3-8*	100**	-	100	-	40
Pract. Core 3 &4	Practical 2	-	8	8	4	3-8*	100**	-	100	-	40
Seminar 1	Seminar 1	2	-	2	2			50	50	20	
	Total	**18**	**16**	**34**	**26**		**520**	**130**	**650**	**180**	**80**

Semester II											
Code	Th./Pr.	Teaching Scheme (hrs./week)			CREDITS	Examination Scheme					
		Th.	Pr,	Tot.		Time (hrs)	Max. Marks		Tot. Marks	Min. Passing Marks	
							Ext. Marks	Int. Marks		Th.	Pr.
Core 5	Paper 5	4	-	4	4	3	80	20	100	40	
Core 6	Paper 6	4	-	4	4	3	80	20	100	40	
Core 7	Paper 7	4	-	4	4	3	80	20	100	40	
Core 8	Paper 8	4	-	4	4	3	80	20	100	40	
Pract. Core 5 &6	Practical 3	-	8	8	4	3-8*	100**	-	100		40
Pract. Core 7 &8	Practical 4	-	8	8	4	3-8*	100**	-	100		40
Seminar 2	Seminar 2	2		2	2			50	50	20	
	Total	**18**	**16**	**34**	**26**		**520**	**130**	**650**	**180**	**80**

Semester III											
Code	Th./Pr.	Teaching Scheme (hrs./week)			CREDITS	Examination Scheme					
		Th.	Pr,	Tot.		Time (hrs)	Max. Marks		Tot. Marks	Min. Passing Marks	
							Ext. Marks	Int. Marks		Th.	Pr.
Core 9	Paper 9	4	-	4	4	3	80	20	100	40	
Core 10	Paper 10	4	-	4	4	3	80	20	100	40	
Core ele. 1	Paper 11	4	-	4	4	3	80	20	100	40	
Fou. Course 1	Paper 12	4	-	4	4	3	80	20	100	40	
Pract.Core 9 &10	Practical 5	-	8	8	4	3-8*	100**		100		40
Pract. Core ele. 1	Practical 6	-	8	8	4	3-8*	100**		100		40
Seminar 3	Seminar 3	2		2	2			50	50	20	
	Total	**18**	**16**	**34**	**26**		**520**	**130**	**650**	**180**	**80**

Semester IV												
Code	Th./Pr.	Teaching Scheme (hrs./week)			CREDITS	Examination Scheme						
		Th.	Pr,	Tot.		Time (hrs)	Max. Marks		Tot. Marks	Min. Passing Marks		
							Ext. Marks	Int. Marks		Th.	Pr.	
Core 11	Paper 13	4	-	4	4	3	80	20	100	40		
Core 12	Paper 14	4	-	4	4	3	80	20	100	40		
Core ele. 2	Paper 15	4	-	4	4	3	80	20	100	40		
Fou. Course 2	Paper 16	4	-	4	4	3	80	20	100	40		
Pract.Core 11 &12 & ele. 2	Practical 7	-	8	8	4	3-8*	100**		100		40	
Project	Project	-	8	8	4		100**		100		40	
Seminar 4	Seminar 4	2		2	2			50	50	20		
	Total	**18**	**16**	**34**	**26**		**520**	**130**	**650**	**180**	**80**	

Note: Th: =Theory; Pr:=Practical/lab, • = If required, for two days. **= The Practical and Project shall be evaluated by both External and Internal Examiner in the respective Department / Center / Affiliated College as per guidelines appended with this direction.

Absorption scheme for failure students of Credit Based Semester Pattern:

a)While switching over to Choice Based Credit System, the failure students of previous credit based semester pattern will be given **Five** chances to clear the examination.

b)The candidates who have cleared first and second semester of Part I of the Credit Based Semester Pattern examination in the concerned subject shall get admission to Third Semester of Part II of the Choice Based Credit System directly. However, candidates who are allowed to keep term will not be eligible for admission to third semester of part II of the Choice BasedCredit System unless they clear all the papers and practical of first and second semester of Part I of the Credit Based Semester Pattern examination.

c)The candidates who have cleared Second and Third semester of Part II of the Credit Based Semester Pattern examination in the concerned subject shall get admission to Fifth Semester of Part III of the Choice Based Credit System directly. However, candidates who are allowed to keep term will not be eligible for admission to Fifth Semester of Part III of the Choice Based Credit System unless they clear all the papers and practical of Third and Fourth semester of Part II of the Credit Based Semester Pattern examination.

Project Work Scheme / Guidelines for the Students, Supervisors and Examiners Every student is required to carry out a project (In lieu of one practical of semester IV of on related topic of the subject / course. The project can be of following types.A) Experimental Project Work; B) Field Based Project Work; C) Review writing based Project Work.

Experimental Project Work and Field Based Project Work:
Student can carry out Experimental/Field Based Project Work on a related research topic of the subject /course. It must be an original work and must indicate some degree of experimental work / Field work. On the basis of this work, student must submit the Project Report (typed and properly bound) in two copies at least one month prior to commencement of the final Practical/lab Examination of Semester IV.The project report shall comprise of Introduction, Material and Methods, Results, Discussion, Summary, Conclusions and, References along with the declaration by the candidate that the work is original and not submitted to any University or Organization for award of the degree and certificate by the supervisor and forwarded through Head / Course-coordinator / Director of the Department / Centre or the Principal of the College

Review writing based Project Work.
Student can carry out review writing Based Project Work on a related topic of the subject / course. It must be a review of topic based on research publications. Student shall refer peer reviewed original research publications and based on findings, write a summary of the same. The pattern of review writing shall be based on reputed review publications like :Nature Reviews'. On the basis of this work, student must submit the Project Report (typed and properly bound) in two copies at least one month prior to commencement of the final Practical/lab Examination of Semester IV. The project report shall comprise of Abstract, Introduction, Discussion, Summary, Conclusions and, References along with the declaration by the candidate that the work is original and not submitted to any University or Organization for award of the degree and certificate by the supervisor and forwarded through Head / Course-coordinator / Director of the Department / Centre or the Principal of the College.
The supervisors for the Project Work shall be from the following.
A person selected by the duly constituted Selection Committee in the relevant subject and approved by the University, exclusively for P.G. course.
OR
A person selected by the duly constituted Selection Committee in the relevant subject and approved by the University as a full time regular teacher at U.G. level in the relevant subject and having at least 5 years teaching experience with Ph. D. or at least 10 years teaching experience.
OR
Scientists of National Laboratories / Regional Research Laboratories who are approved by dint of their appointments in such facilities by the Union Government / the State Government / Nagpur University / Other Universities recognized by UGC. The topic for the project work shall be assigned to the student by supervisor at the beginning of third semester. The Project Work will carry total 100 marks and will be evaluated by both external and internal examiner in the respective Department / Center / Affiliated College. The examiners will evaluate the Experimental Project Work taking into account the I) Coverage of subject matter, 2) Arrangement and presentation, and 3) References

For written Project work : 40 Marks - Evaluated jointly by External &Internal
Presentation : 20 Marks - Evaluated jointly by External &Internal
For Viva-Voce ,', _ : 20 Marks - Evaluated by External examiner
Internal Assessment : 20 Marks - Evaluated by Internal examiner
Total : 100 Marks –

General Rules and Regulations regarding pattern of question paper, absorption scheme and choice based credit system

A) Pattern of Question Paper

I. There will be four units in each paper.
2. Question paper will consist of five questions.
3. Four questions will be on four units with internal choice (One question on each unit).

4. Fifth question will be compulsory with questions from each of the four units having equal weightage and there will be no internal choice.
5. Maximum marks of each paper will be 80 (In M. Sc. Mathematics, each paper will be of 100 marks)
6. Each paper will be of 3 hours duration.
7. Projects shall be evaluated by both internal and external examiners.
8. Practical/laboratory examination of 100 marks. Distribution of marks shall be 20 internal and 80 external.
9. Minimum passing marks in each head (theory, practical &project) will be 40%.

Practical Examination

I. Each practical carries 100 marks. For the examination, the distribution of the marks shall be as follows:

a)Record/Journal/Internal assessment : 20 marks - Evaluated by Internal
b)Practical Performance : 60 marks - Evaluated jointly by External &Internal
c)Viva-voce : 20 marks - Evaluated by External

NOTE: Practical performance shall be jointly evaluated by the External and Internal Examiner. In case of discrepancy, The External Examiner's decision shall be final

Internal Assessment:

1.The internal assessment shall be done by the College / University at least 15 days prior to the final examination of each semester. The Marks shall be sent to the University immediately after the Assessment in the prescribed format.

2.For the purpose of internal assessment the University Department / College shall conduct one to three assignments described below. Best two scores of a student in these tests shall be considered to obtain the internal assessment score of that student.

3.General guidelines for Internal Assessment are appended herewith.

a) The internal assessment marks assigned to each theory paper as mentioned in Appendix - A shall be awarded on the basis of assignments like class test, attendance, home assignments, study tour, industrial visits, visit to educational institutions and research organizations, field work, group discussions or any other innovative practice / activity.
b) There shall be one to three assignments (as described above) per Theory paper.
c) There shall be no separate / extra allotment of work load to the teacher concerned. He/ She shall conduct the Internal assessment activity during the regular teaching days / periods as a part of regular teaching activity.
d) The concerned teacher / department / college shall have to keep the record of all the above activities until six months after the declaration of the results of that semester.
e) At the beginning of each semester, every teacher / department / college shall inform his / her students unambiguously the method he / she propose to adopt and the scheme of marking for internal assessment.
f) Teacher shall announce the schedule of activity for. internal assessment in advance in consultation with HOD / Principal.
g) Final submission of internal marks to the University shall be before the commencement of the University Theory / Practical examinations whichever is later.

Appendix 6

Core Elective Paper:

Candidate can opt for anyone core elective paper as shown below in the semester III from anyone core group / specialization group. The same core group / specialization group paper shall be opted in sem IV.

Semester I Paper 1 (Core 1) Mathematical Physics

Unit I

Curvilinear co-ordinate Systems, Physical ideas about gradient, divergence and Curl, Fourier Series : Definition, Dirichlet's condition, Convergence, Fourier Integral and Fourier transform, Convolution theorem, Parseval's identity, Applications to the solution of differential equations,

Unit II

Elementary ideas about tensors, Cartesian tensors, differential of Cartesian tensors, gradient, divergence and curl , Laplacian of Cartesian tensors. Non-Cartesian tensors.Tensor densities and capacities. Differentiation of Non-Cartesian tensors, Chrisoffel symbols. gradient, divergence and curl , Laplacian of Non-Cartesian tensors

Laplace transform of elementary functions – Inverse Laplace transforms – Methods of finding Inverse Laplace transforms – Heaviside expansion formula – Solutions of simple differential equations

Unit III

Linear vector spaces - linear independent bases, Dimensionality, inner product, matrices, linear transformation, Matrices- Inverse, Orthogonal and Unitary matrices, Cayley Hamilton theorem, eigen vectors and eigen value problem, Diagonalization, Complete orthonormal sets of function.

Unit-IV

Linear differential equations, Special Function- Laguerre, Hermite, Legendre polynomials, Special Bessel's function, Spherical harmonics, Generating Function and recursion relations, differential and integral form.

1.Matrices and Tensor in Physics: A.W.Joshi
2. Mathematical Physics: H.K.Dass
3. Vector analysis – Newell
4. Rajput B S, Mathematical Physics, PragatiPrakashan (Meerat) 1999

Semester I Paper 2 (Core 2) Complex Analysis and Numerical Methods

Unit I

Definition of Complex Numbers, Equality of Complex Number, Complex Algebra, Conjugate Complex Numbers, Geometrical representation of Complex Number, Geometrical representations of the sum, difference, product and quotient of Complex Number, Cauchy-Rieman Conditions, Analytic functions, Multiply connected regions, Cauchy Theorem, Cauchy Integration formula, Derivatives, problems (Rajput – 283 – 314).

Unit II

Singularities- Poles, Branch Points, Calculus of Residues-Residues Theorem, Cauchy Principle value, Pole Expansion of Meromorphic Functions, Product expansion of entire Functions, problems (Rajput 326 – 384).

UNIT III

Methods for determination of zeros and linear and non-linear single variable algebraic and transcendental equations, (Bisection method, false position method, iteration method, Newton-Raphson method, secant method), Finite differences. Newton's formulae (no proofs)

Unit IV

Lagrange's interpolation, Divided differences. Numerical integration, trapezoid rule, simpson's $1/3^{rd}$ rule, Simpson's $3/8^{th}$ rule, Linear least squares.

Euler and RungeKutta methods for solving ordinary differential equations. (No proofs)

References:

1. Rajput B S, Mathematical Physics, PragatiPrakashan (Meerat) 1999
2. Introductory Methods of Numerical Analysis: S SSastry
3. Computer Oriented Numerical Methods: V Rajaraman
4. R. V. Churchill, Complex variables and Applications, 7th Edition McGraw Hill
5. Computer oriented Numerical Methods: R.S.Salaria
6. Mathematical Physics: H.K.Dass
7. Higher Engineering Mathematics : B. S. Grewal

Semester I Paper 3 (Core 3) Electronics

Unit I

Electronics Semiconductor discrete devices (characteristic curves and physics of p-n junction), Schottky, Tunnel and MOS diodes, Bipolar junction transistor, junction field effect transistor (JFET),Metal-oxide-Semiconductor Field effect transistor (MOSFET), unijunction transistor(UJT) and sillicon controlled rectifier (SCR), Opto-electronic devices (Photo-diode, solar cell, LED, LCD and photo transistor), Diffusion of impurities insillicon, growth of oxide.

Unit II

Applications of semiconductor devices in linear and digital circuits- Zener regulated power supply, Transistor (bipolar, MOSFFT, JFET) as amplifier, coupling of amplifier stages (DC, RC and Transformer coupling), RC-coupled amplifier, dc and power amplifier Feedback in amplifiers and oscillators (phase shift, Hartley, Colpitts and crystal controlled) clipping and clamping circuits. Transistor as a switch OR, AND and NOT gates (TIL and CMOS gates).

Unit III

Digital integrated circuits- NAND and NOR gates building block, X-OR gate, simple combinational Circuits -Half and full address, Flip-Flops, Multivibrators (using transistor) and sweep geneator (using transistors, UJT and SCR). shift registers, counters, A/D and D/A coverters, semiconductor memories (ROM, RAM, and EPROM, basic, architecture of 8 bit microprocessor (INTEL 8085). Linear integrated circuits-Operational amplifier and its applications-Inverting and noninverting amplifier, adder, integrator, differentiator, waveform generator, comparator and Schmittrigger, Butterwoth active filter, phase shifter,

Unit IV

Communication Electronics-Basic principle of amplitude frequency and phase modulation. Simple circuits for amplitude modulation and demodulation, digital (PCM) modulation and demodulation. Fundamentals of optical communication, Microwave Oscillators (reflex, klystron, megnetron and Gunn diode), Cavity resonaters. Standing wave detector.

Textbooks:

1. A. Malvino and D. J. Bates: Electronic Principles (Mc Graw Hill Education, India)
2. Boylstad&Neshishkey, “Electronic devices & circuits” , PHI
3. Milliman, J. Halkias, “integrated elctronics”, Tata McGraw Hill
4. J. J. CatheySchaum’s Outlines “Electronic Devices & Circuits” Tata McGraw Hill.
5. J. D. Ryder,” Electronics Fundamentals and Applications”, John Wiley-Eastern Publications.
6. A. P. Malvino, D.P. Leach, “Digital Principles and Applications”, McGraw Hill Book Co., 4th Edition (1986).
7. Ramakant A. Gayakwad, “Op-amps and Linear Integrated Circuits” PHI
8. Anil Maini, Varsha Agrawal, “ Electronic Devices and acircuits” Wiley
9. George Kennedy, “ Electronic Communication Systems”, Tata McGraw Hill.
10. Dennis Roddy, John Coolen, “Electronic Communication Systems ”, Pearson.

Semester I Paper 4 (Core 4) Electrodynamics I

Unit I

Electrostatics: Coloumb's law, Electric field, Charge distribution, Dirac delta function, Field lines, Gauss's law and applications, Differential form of Gauss's law, Electric potential, Poisson and Laplace's equations, Electrostatic potential energy.

Unit II

Electrostatics: Boundary value problems, Uniqueness theorems, Green's theorem, Method of images, Method of separation of variables (Cartesian Coordinates, Spherical and Cylindrical Coordinates), Multipole expansion.

Unit III

Magnetostatics: Biot-Savart law, Ampere's law, Differential form of Ampere's law, Vector potential, Magnetic field of a localized current distribution, magnetic moment, Magnetostatics boundary conditions, Magnetic Shielding.

Unit IV

Time varying fields: Faraday's law, Maxwell's displacement current, Maxwell's equations, Maxwell's equations in matter, Scalar and vector potentials, Gauge Transformation, Wave equations, Poynting's theorem, Conservation laws.

Text Books:

1.Introduction to Electrodynamics, David J. Griffith, Prentice Hall of India Private Limited.
2. Classical Electrodynamics, John D. Jackson, Wiley Eastern Limited.
3. Classical Electrodynamics, Tung Tsang, World Scientific Publishing Private Limited.

Semester I Practical 1 and 2

Practical 1 (core 1 and 2)

1. To find the largest or smallest of a given set of numbers.
2. Bubble sort.
3. To generate and print first hundred prime numbers.
4. Matrix multiplication.
5. To generate and print an odd ordered magic square.
6. Other exercises involving conditions, loop and array
7. Lagrange Interpolation.
8. Method of successive approximation
9. Bisection Method
10. Newton-Raphson Method.
11. Gaussian Elimination
12. Linear Least Squares Fit.
13. Simpson's rule integration.
14. Computation of special functions

Practical 2 (Core 3 and 4)

1. Design of a regulated power supply.
2. Characteristics and applications of silicon controlled rectifier.
3. Design of common emitter Power transistor amplifier.
4. Experiments on bias stability.
5. Negative feedback (Voltage series / shunt and current series / shunt).
6. Astable, Monostable and Bistablemultivibrator.
7. Experiment on FET and MOSFET characterization and application as an
8. amplifier.
9. Experiment on Uni-junction transistor and its application.
10. Digital – I: Basic, TTL, NAND and NOR.
11. Digital – II: Combinational logic.
12. Flip-Flops.
13. Study of modulation (FM, AM, etc.).
14. Operational Amplifier.
15. Differential Amplifier.
16. Microprocessor.
17. Verification of Biot-Savart law.
18. Verification of Faraday's Law

Semester II Paper 5 (Core 5) Quantum Mechanics I

Unit- I

Time dependent and time-independent Schrodinger equation, continuity equation, wave packet, admissible wave functions, stationary states.

Formalism of wave mechanics, expectation values, quantum mechanical operators for position and momentum in the coordinate representation, Construction of quantum mechanical operators for other dynamical variables from those of position and momentum, Ehrenfest's theorem, momentum eigen functions in the coordinate representation, box normalization and Dirac delta function.

Coordinate and momentum representations, Schrodinger equation in momentum representation,

Unit-II

Brief revision of linear vector spaces, inner or scalar product, Schwarz inequality, state vectors, general formalism of operator mechanics vector, operator algebra, commutation relations, eigen values and eigen vectors, hermitian operators degeneracy, orthogonality eigenvectors of Hermitian operators, noncommutativity of two operators and uncertainty in the simultaneous measurements of the corresponding dynamical variables, the fundamental expansion postulate, representation of state vector, Dirac's bra-ket notations.

Matrix representation of operators, change of basis, unitary transformations,

quantum dynamics, Schrodinger, Heisenberg and interaction picture.

Unit-III

Solution of Schrodinger equation for simple problems, 1-D Square well, step and barrier potentials, 1-D harmonic oscillator, zero point energy. harmonic oscillator problem by operator method.

Angular momentum operator, commutation relations, expression for L^2 operator in spherical polar coordinates, Role of L^2 operators in central force problem, eigen value problem for L^2 , separation of Schrodinger equation in radial and angular parts, solution of radial equation for hydrogen atom, 3-d square well potential, parity of wave function, parity operator.

Unit-IV

Generalized angular momentum, raising and lowering operators, matrices for J^2, Jx, Jy, Jzoperators,Pauli spin matrices, Addition of angular momenta, Clebich-Gordon Co-efficient, spin angular momentum, spin momentum functions.

Text and Reference Books:

1. Quantum mechanics: E. Merzbacher
2. Quantum mechanics: L.I.Schiff
3. Quantum mechanics: Mathews and Venkatesan
4. Quantum mechanics :Ghatak and Loknathan
5. Quantum mechanics: B.Craseman and J.D.Powell
6. Modern quantum mechanics: J.J.Sakurai
7. Quantum Theory D. Bohm, (Asia Publishing House)
8. Quantum Mechanics: 500 problems with Solutions: Aruldhas (PHI)

Semester II Paper 6 (Core 6) Statistical Physics

Unit I

Fundamentals of classical statistical mechanics, microstate and macrostate, distribution function, Liouville's theorem, Gibbs Paradox, ensembles (micro-canonical, canonical and grand-canonical), partition function, free energy and connection with thermodynamic quantities, energy and density fluctuations

Unit II

Fundamentals of quantum statistical mechanics, BE and FD Statistics, Symmetry of wave functions, Boltzmann limit of Bosons and Fermions, Ideal Bose system: Bose-Einstein condensation, Behaviour of ideal Bose gas below and above Bose temperature, Photons and liquid helium as bosons.

Unit III

Ideal Fermi system: Weak and strong degeneracy, Fermi function, Fermi energy, Behaviour of ideal Fermi gas at absolute zero and below Fermi temperature, Fermionic condensation, Free electrons in metals as fermions, Electronic specific heat,
Cluster expansion for classical gas, Virial equations of states.

Unit IV

Phase transition: Phase transition of first and second order, Landau theory of phase transition, Ising model, Order parameter, Critical exponents, Scaling hypothesis, Random walk, Brownian motion, Langevin theory, Correlation function and fluctuation-dissipation theorem, Fokker-Planck equation. Weiss theory of ferromagnetism.

Text and Reference Books:

1. Fundamentals of Statistical Physics: B. B. Laud
2. Statistical Mechanics: R. K. Pathria
3. Statistical Mechanics: S. K. Sinha
4. Statistical and Thermal Physics: F. Reif
5. Statistical Mechanics: K. Huang
6. Statistical Mechanics: Loknathan and Gambhir
7. Statistical mechanics: R. Kubo
8. Statistical Physics: Landau and Lifshitz

Semester II Paper 7 (Core 7) Classical Mechanics

Unit-I

Survey of elementary principles of mechanics of a particle, Dynamical systems, Phase space dynamics, stability analysis, constraints & their classifications, D'Alemberts Principle, Variational Principle, Lagrange's equation, Hamilton's Principle

Unit-II

Conservation theorems and symmetry properties, Hamiltonian formalism, Hamiltons equations, Routh's procedure for cyclic coordinates, conservation laws
Canonical transformations, Poisson brackets and Poisson theorems, Hamilton-Jacobi Theory

Unit-III

Central force motion, reduction to one body problem, equations of motions and first integrals , classification of orbits for inverse square central forces. Two body collisions, Rutherford scattering in laboratory and centre-of-mass frames;

Unit-IV

Rigid body dynamics, Euler's angles, Euler's theorem, moment of inertia tensor, eigen values and principal axis transformation, non-inertial frames and Pseudo forces, Periodic motion,: small oscillations, normal modes.

Text and Reference books:

1. Classical Mechanics: H. Goldstein
2. Classical Mechanics: N.C.Rana and P.S.Joag
3. Classical Mechanics : J. C. Upadhyaya (Himalaya Publishing House)

Semester II Paper 8 (Core 8) Electrodynamics II

Unit-I

Scalar waves : Plane waves, spherical waves, phase and group velocities and wave packets Vector waves : Electromagnetic plane waves, harmonic plane waves, elliptic linear and circular polarization, Stokes parameters (iii) Reflection and refraction of plane waves, Fresnel polarization on reflection and refraction, (iv) Propagation in dielectric films.

Unit-II

Symmetries of Maxwell equations : Lorentz transformations, Covariance of electrodynamics, Lorentz gauge condition, equation of continuity and Maxwell equations, electrodynamics field tensor and its transformation. Relativistic field theory, Lagrangian for EM field conservation laws, conformal invariance.

Unit-III

Motion of a charge in EM fields : Lorentz force, motion in uniform, static, electric and magnetic fields and combined static EM fields.

The wave equation : Electric dipole, electric quadrupole and magnetic dipole radiation, half wave and full wave antenna. Radiation by a moving charge :Lienard-Wiechert potentials of a point charge, Larmor's formula, Angular distribution of radiation.

Unit-IV

Wave guides : Cylindrical cavities, fields on the surface and within a hollow metallic conductor,TE, TM, TEM modes in a rectangular and cylindrical wave guide, fields and radiation of a localized oscillating source, electric dipole, magnetic dipole and electric quadrupole fields. Bremsstarhlung : virtual quanta, synchrotron radiation.

Reference Books

1.Introduction to Electrodynamics: David Griffiths (PHI)
2. Electrodyanamics J. D. Jackson
3. Introduction to Electrodynamics, A. Z. Capri and P. V. Panat (Narosa)
4. Classical theory of fields, Landau &Lifshitz
5. Electrodynamics, W. Panofsky and M. Phillips
6. Principles of Optics, M. Born & E. Wolf Pergamon Press
7. Electromagnetism and Classified Theory, A. D. Barut, Dover

Semester II Practical 3 and 4

Practical 3 (C5 and C6)

1. Study of B-H Curve
2. Determination of e/m of electron by normal Zeeman effect using Febry Perot Etalon.
3. Determination of Lande's factor of DPPH using ESR spectrometer
4. Determination of e/m by Thomson method.
5. Determination of e/m by Busch's helical beam method.
6. Study of paramagnetic to ferromagnetic phase transition.
7. Study of Paramagnetic salt by Guoy's balance
8. Differential scanning Calorimetry
9. Determination of Plank's constant.
10. Determination of Stephan's constant.
11. Simulation of Ising model.
12. Location of critical point in Ising model using Binder cumulant.
13. Simulation of random walk.
14. Simulation of mean field model of para-ferro transition.
15. Numerical solution of particle in a box.
16. Simulation of Maxwell's velocity distribution.

Practical 4 (core 7 and 8)

1.Study of Focault pendulum
2.Study of Bifilar pendulum
3.Fibre optics
4.Study of waveguide
5.Thickness of thin wire with lasers
6.Measurement of wavelength of He-ne laser light using ruler.
7.To study Faraday effect using He-Ne laser.
8.Simulation of simple pendulum
9.Simulation of compound pendulum
10. Simulation of planetary motion.

Semester III Paper 9 (Core 9) Quantum Mechanics II

Unit- I

Time independent perturbation theory, First order perturbation theory applied to non-degenerate states, second order perturbation extension to degenerate state, Application of perturbation theory to the ground state energy, He atom (calculation given in Pauling and Wilson), Normal and anomalous Zeeman effect, First order Stark effect in the ground and first excited states of H atom and second order Stark effect of H atom, an-harmonic oscillator.

Unit II

Time dependent perturbation theory, transition rate, Fermi Golden rule, constant perturbation harmonic in time, radiative transitions, absorption and induced emission, atomic radiation, dipole approximation, Einstein's atomic radiation, Einstein's A and b coefficients and their calculations.

Approximation methods: W. K. B. method and its application to barrier penetration.

Variational principle and its application to simple cases like ground state of He atom and deuteron in Yukawa potential.

Unit III

System of identical particles, exchange and transposition operators, totally symmetric and antisymmetric wave function and their expressions for a system of non-interacting particles, statistics of systems of identical particles, Relation of statistics with spin, Ortho and para states of the helium atom and their perturbation by Coulomb repulsion.

Hamiltonian of a molecule, Born-Oppenheimer approximation, outline of Heitler-London theory of the hydrogen molecule.

Scattering theory, scattering cross-section in laboratory and centre of mass system, scattering by a central potential, Partial wave method, phase shifts and their importance, scattering by a square well potential and a perfectly rigid sphere, resonance scattering.

Unit IV

Relativistic wave equation, the Klein-Gordon equation and initial difficulties in interpreting its solutions, Dirac's relativistic equation, Dirac's matrices, explanation of the spin of the electron, equation for an electron in an electromagnetic field and explanation of the magnetic moment due to the electron spin, spin-orbit interaction, solution for hydrogen atom in Dirac's theory, negative energy states and their qualitative explanations.

Text and References Books:

1. E. Merzbacher, Quantum Mechanics (Wiley and Sons-Toppon)
2. J. L. Powell and B. Crasemann, Quantum mechanics (B I Publications)
3. L. I. Schiff, Quantum Mechanics (McGraw-Hill)
4. Quantum Mechanics: Aruldhas
5. Pauling and Wilson, Introduction to Quantum Mechanics
6. A.K. Ghatak and Lokanathan, Quantum Mechanics (Macmillan, India)
7. Quantum Mechanics: 500 problems with Solutions: Aruldhas (PHI)

Semester III Paper 10 (Core 10) Solid State Physics and Sprectroscopy

Unit I: Order in Solids-Crystal classes and system, 2d and 3d lattices, Space groups, b Concept of point group, bonding of common crystal structure; reciprocal lattice, diffraction and structure factor, Miller and Bravais indices, Bonding, diffraction and structure factor in solids, short and long range order in liquids and solids, liquid crystals, quasicrystals and glasses

Unit II

Defects: Vacancies, Point defects, line defects and stacking faults, Burgers vector and Burger circuit, presence of dislocation, dislocation motion, perfect and imperfect dislocations, slip planes and slip directions, dislocation reactions

Dielectric Properties: -Polarization mechanisms, Clausius-Mossotti equation, piezo, pyro and ferroelectricity

Unit III

Atomic Structure and Atomic Spectra : Quantum states of an electron in an atom. Electron spin.Spectrum of helium and alkali atom. Some features of one-electron and two electron atoms, Relativistic corrections for energy levels of hydrogen atom, hyperfine structure and isotopic shift, width of spectrum lines, LS & JJ couplings. Inner shell vacancy, X-rays and Auger transitions.chemical shift. Frank-Condon principle.

Unit IV

Molecular Structure and Molecular Spectra : Types of molecules, Electronic, rotational, vibrational and Raman spectra of diatomic molecules, selection rules. Morse potential energy curve, Molecules as vibrating rotator, Vibration spectrum of diatomic molecule, PQR branches. Elementary discussion of Raman, ESR and NMR spectroscopy, chemical shift

Reference Books: 1. Physics of Atoms and Molecules: Bransden and Joachain.
2. Introduction to Atomic Spectra: H.E. White.
3. Solid State Physics, Charles Kittel, John Willey & Sons
4. Molecular Spectra and Molecular Spectroscopy (Vol. 1), G. Herzberg
5. Introduction to Atomic Spectra: HG Kuhn
6. Fundamentals of molecular spectroscopy, C.B. Banwell
7. Introduction to molecular Spectroscopy , G. M. Barrow
8. Introduction to Solid State Physics: C. Kittle
9. Materials Science and Engineering: V. Raghavan
10. Solid State Physics: S. O. Pillai (New Age International 2006)
11. Ferroelectricity Jona and Shirane

Semester III Practical 5

Practical 5 (Core 9 and Core 10).

1.Determination of ionization potential of lithium
2.X-ray diffraction by TELEXOMETER.
3.Study of emission spectra of iron (Iron arc).
4.Determination of Dissociation Energy of Iodine Molecule by photography of the absorption band of Iodine in the visible region.
5.Study of Stark effect
6.Study of Molecular Spectra
7.Determination of Rydberg's constant
8.Determination of Plank's constant
9. Study of Crystals
10. Study of line spectra

Semester III Paper 11 (Core Elective E1.1) Materials Science I

Unit- I

Equilibrium and kinetics: Stability and metastability, Basic thermodynamic functions, Statistical nature of entropy, Kinetics of thermally activated process.

Phase diagrams: The phase rule, free energy composition diagram, correlation between free energy and phase diagram, calculation of phase boundaries, thermodynamics of solutions, single component system (water), two component system containing two phases and three phases, Binary phase diagrams having intermediate phases, Binary phase diagrams with eutectic system. Lever principle, maximum, minimum, super lattice, miscibility gap, microstructure changes during cooling, application to zone refining.

Unit – II

Phase transformations: Time scale for phase changes, peritectic reaction, eutectoid and eutectic transformations, order disorder transformation, transformation diagrams, dendritic structure in alloys, transformation on heating and cooling, grain size effect on rate of transformation at constant temperature and on continuous cooling, grain size effect on rate of transformation, nucleation kinetics, growth kinetics, interface kinetics leading to the crystal growth.

Unit-III

Diffusion in solids: Fick's laws and their solutions, the Kirkendall effect, mechanism of diffusion, temperature dependence of diffusion co-efficient, self diffusion, interstitial diffusion, the Snoek effect in diffusion, diffusion in ionic crystals, diffusion path other than the crystal lattice, thermal vibrations and activation energy, diffusion of carbon in iron.

Solid State Ionics: Definition, classification and characteristic properties of solid electrolytes. Complex impedance spectroscopy, Arrhenius theory of ionic conductivity. Chemical sensors: Nernst equation, potentiometer and amperometric sensors for various gases, electrochemical redox-reaction, advantages of electrochemical sensors.

UNIT-IV

Solid state energy devices: Fundamental of Solar cells, Primary and secondary solid state cells, advantages of lithium batteries, ion intercalation compounds for secondary cell, open circuit voltage and short circuit current, intercalation compounds for secondary cell, open circuit voltage and short circuit current, Energy density, power density. Fuel cells –advantages and disadvantages, classification, efficiency- emf of fuel cells, hydrogen/oxygen fuel cell, criteria for the selection electrode and electrolyte, methanol fuel cell, solid oxide fuel cells, phosphoric acid fuel cells, molten carbonate fuel cell, proton exchange membrane fuel cell, biochemical fuel cell.

Text and Reference books:

1. Vanvellak: Materials Science.
2. V. Raghvan: Materials Science.
3. D. Kingery: Introduction to ceramics.
4. R. E. Reedhil: Physical metallurgy.
5. Martin Start Sharger: Introductory materials.
6. Sinnot: Solid state for engineers.
7. Kelly and Groves: Crystal and defects.
8. Kittel: Solid state physics, Vth edition.
9. M. A. Azaroff: Elements of crystallography
9. Introduction to solid state theory: Modelung.
10. Fuel Cells – A. Mcdougall, Macmillan 1976 Ch 3,5,7,8 and 11.

Semester III Paper 11 (Core Elective E1.2) X-ray I

Unit I

Production of X-rays: Continuous and characteristic X-ray spectra. X-ray emission from thick and thin targets. Efficiency of X-ray production.Various types of demountable and sealed X-ray tubes.

Basics of high-tension circuits and vacuum systems used for the operation of X-ray tubes. Synchrotron radiation: Production and properties of radiation from storage rings, Insertion devices.

Unit II

Absorption of X-rays: Physical process of X-ray absorption. Measurement of X-ray absorption coefficients.Units of dose and intensity.Radiography, Microradiography and their applications.

X–ray fluorescence: Fluorescence yield. Auger effect.X–ray fluorescence analysis and its applications.Techniques and applications of Photoelectron spectroscopy and Auger electron spectroscopy.

Unit III

X-ray spectroscopy: Experimental techniques of wavelength and energy dispersive x-ray spectroscopy.

Bragg and double crystal spectrographs.Focusing spectrographs.Dispersion and resolving power of spectrographs, Photographic and other methods of detection, resolving power of detectors.

X–ray emission and absorption spectra.Energy level diagram. Dipole and forbidden lines, Satellite lines and their origin, Regular and irregular doublets. Relative intensities of X-ray lines.

Unit IV

Chemical Effects in X-ray Spectra: Chemical effects in X-ray spectra. White line, Chemical Shifts of absorption edges, Fine structures (XANES and EXAFS) associated with the absorption edges and their applications.

Dispersion Theory: Dispersion theory applied to X-rays, Calculation of the dielectric constant, Significance of the complex dielectric constant, Refraction of X-rays, Methods for measurement of refractive index

Text and Reference Books:

1. A. H. Compton and S. K. Allison: X-rays in Theory and Experiment
2. J. A. Nielsen and D. Mc. Morrow: elements of Modern X-ray Physics.
3. M. A. Blokhin: X-ray Spectroscopy.
4. E. P. Bertin: Principles and Practice of X-ray Spectrometric Analysis.
5. C. Bonnelle and C. Mande: Advances in X-ray Spectroscopy.
6. D. C. Koningsberger and R. Prins: X-ray Absorption Principles, Applications, Techniques of EXAFS, SEXAFS and XANES.
7. C. Kunz: Synchrotron Radiation.

Semester III Paper 11 (Core Elective E1.3) Nanoscience and Nanotechnology I

Unit I:

Introduction to Nanoscience:

Free electron theory (qualitative idea) and its features, Idea of band structure, Density of states for zero, one, two and three dimensional materials, Quantum confinement, Quantum wells, wires, dots, Factors affecting to particle size, Structure property relation, Size dependence properties. Determination of particle size, Increase in width of XRD peaks of nano-particles, Shift in photoluminescence peaks, Variation on Raman spectra of nano-materials.

Unit II:

Synthesis of Nanomaterials:

Physical methods**:** High energy Ball Milling, Melt mixing, Physical vapour deposition, Ionised cluster beam deposition, Laser ablation, Laser pyrolysis, Sputter deposition, Electric arc deposition, Photolithography.

Chemical methods**:** Chemical vapour deposition, Synthesis of metal & semiconductor nanoparticles by colloidal route, Langmuir-Blodgett method, Microemulsions, Sol-gel method, Combustion method, Wet chemical method

Unit III:

Nanomaterials Characterizations:

X-ray diffraction, UV-VIS spectroscopy, Photoluminescence spectroscopy, Raman spectroscopy, Transmission Electron Microscopy, Scanning Electron Microscopy, Scanning Tunnelling Electron Microscopy, Atomic Force Microscopy, Vibration Sample Magnetometer, Spintronics

Unit IV:

Special Nanomaterials and Properties:

Carbon nanotubes, Porous silicon, Aerogels, Core shell structures. Self assembled nanomaterials. Metal and semiconductor nanoclusters

Mechanical, Thermal, Electrical, Optical, Magnetic, Structural properties of nanomaterials

Text and Reference books:

1. Nanotechnology: Principles &Practicals. Sulbha K. Kulkarni ,Capital Publishing Co.New Delhi.

2. Nanostructures & Nanomaterials Synthesis, Properties & Applications**.** Guozhong Cao, Imperials College Press London.

3.Nanomaterials: Synthesis, Properties & Applications**.** Edited by A.S. Edelstein &R.C.Commorata.Institute of Physics Publishing, Bristol & Philadelphia.

4. Introduction to Nanotechnology. C.P. Poole Jr. and F. J.Owens, Wiley Student ed.

5. Nano: The Essentials. T.Pradeep , McGraw Hill Education.

6. Handbook of Nanostructures: Materials and Nanotechnology. H. S. Nalwa Vol 1- 5, Academic Press, Bostan.

7. Hand Book of Nanotechnology, Bhushan

8. Nanoscience and Technology: Novel Structure and Phenomena. Ping and Sheng

Semester III Paper 11 (Core Elective E1.4) Atomic and Molecular Physics I

Unit I

Quantum states of an electron in an atomic Electron spin, spectrum of hydrogen, Helium and alkali atoms, Relativistic corrections for energy levels of hydrogen; Basic principles of interaction of spin and applied magnetic field.

Concepts of NMR spectroscopy concepts of spin-spin and spin-lattice relaxation, chemical shift; spin-spin coupling between two and more nuclei; chemical analysis using NMR.

Mossbauer effect-Recoil less emission of gamma rays, chemical shieft, magnetic hyperfine interaction,

Unit II

electron spin resonance, experimental setup, hyperfine structure and isotopic shift,width of spectral lines, LS & JJ coupling, Zeeman, Paschen Back & Stark effect. Spontaneous and Stimulated emission, Einstein A & B Coefficients; LASERS, optical pumping, population inversion, rate equation, modes of resonators and coherence length, Role of resonant cavity, three and four level systems, Ammonia MASER, ruby, He-Ne, CO_2, dye and diode lasers, Lasers applications

Unit III

Rotational, vibrational and Raman spectra of diatomic molecules, Quantum theory, Molecular polarizability, Intensity alteration in Raman spectra of diatomic molecules, Experimental setup for Raman spectroscopy in the structure determination of simple molecules. polyatomic molecules, symmetric top asymmetric top molecules. Hunds rule.

Unit IV

Electronic spectra of diatomic molecules, Born Oppenheimer approximation, Vibrational Coarse structure of electronic bands, intensity of electronic bonds, Franck Condon principle, and selection rules,dissociation and pre dissociation, dissociation energy, rotational fine structure of electronic bands. General treatment of molecular orbitals, Hund's coupling cases.

Text Book and References:

1. Molecular Spectroscopy: - Jeane L. McHale.
2. Mossbauer spectroscopy –M. R. Bhide.
3. NMR and Chemistry – J. W. Akitt.
4. Structural Methods in inorganic chemistry, E.A V.Ebsworth, D. W. H.Rankin, S.Crdock.
5. Introduction to Atomic Spectra – H. E. White.
6. Fundamental of Molecular Spectroscopy – C. B. Banwell.
7. Spectroscopy Vol. I, II and III, Walker and Straghen.
8. Introduction to Molecular Spectroscopy – G. M. Barrow.
9. Spectra of diatomic molecules – Herzberg.
10. Molecular spectroscopy – Jeanne L. McHale.
11. Molecular spectroscopy – J. M. Brown.
12. Spectra of Atoms and Molecules – P. F. Bemath.
13. Modern Spectroscopy – J. M. Holkas.
14. Laser spectroscopy and instrumentation- Demtroder

Semester III Paper 11 (Core Elective E1.5) Applied Electronics I

Unit – I

Operational Amplifiers, Block diagram of a typical operational amplifier, analysis, open loop configuration, inverting and non-inverting amplifiers, operational amplifier with negative feedback,voltage series feedback, effect of feedback on close loop gain, input resistance output resistance bandwidth and output offset voltage, voltage follower. Practical operational amplifier, input offset voltage, input bias current, input off set current, total output off set voltage, CMRR, frequency response, dc and ac amplifier, summing, scaling and averaging amplifier, instrumentation amplifier, integrator and differentiator.Application of Op-Amp as fixed and variable voltage regulator. Oscillators principles- Barkhausen criterion for oscillations, The phase shift oscillator, Weinbridge oscillator, LC tunable oscillator, multi-vibrators, mono-stable and astable, comparators, square wave and triangular wave generators

UNIT II

Communication electronics: Amplitude modulation , generation of AM waves, demodulation of AM waves, DS BSC modulation, generation of DSBSC waves, coherent detection DSBSC wave, SSB modulation, generation and detection of SSB waves, Vestigial sideband modulation, frequency division multiplexing (FDM).

Microwave communication: Advantage and disadvantage of microwave transmission, loss in free space propagation of microwaves, atmospheric effect on propagation, Fresnel zone problem, ground refection,fading sources, detector components, antennas used in microwave communication systems

Unit – III

Microprocessor: Introduction to microcomputers, Memory. Input-output devices, interfacing devices.8085 CPU, architecture, bus timing, de-multiplexing, the address bus, generating control signals,instruction set, addressing modes, illustrative programmes, assembly language programmes, looping, counting and indexing, counters and timing delay, stack and sub routings. read only memory (ROM) and applications. Random access memory (RAM) and applications,

Digital to analogue converters. Ladder and weighted register types, analog to digital converters, ,successive approximations and dual slop converters, application of DAC and ADC,

Unit – IV

Microwave devices: Klystrons, magnetrons, and travelling wave tubes, velocity modulation, basic principle of two cavity klystrons and reflex klystrons, principle of operation of magnetrons, Helix travelling wave tubes, wave modes, transferred electron devices, gunn effect, principle of operation,modes of operation, read diode, IMPATT diode, TRAPATT diode..

Text and Reference Books:

1. Electronic devices and circuit theory: RobortBoylested and L. Nashdsky (PHI, New Delhi).
2. OP-Amps and linear integrated circuits: Ramakanth A. Gayakwad (PHI 2nd Edn).
3. Digital principles and Applications: A. P. Malvino and D. P. Leach (Tata Ma-Graw Hill).
4. Microprocessor architecture, programming and Application with 8085/8086, Ramesh S. Gaonkar(Wiley-Estern).
5. Microelectronics: Jacob Millman (Mc-Graw Hill International).

6. Optoelectronics: Theory and Practices: Edited by Alien Chappal (Mc Graw Hill).
7. Microwaves: K. L. Gupta (Wiley Ester New Delhi).
8. Advanced electronics communication systems: Wayne Tomasi (Phi Edn).
9. Fundamentals of microprocessors and Micro-computers: B. Ram. (Dhanpat Rao and Sons.).

Semester III Paper 11 (Core Elective E1.6) Methods of Theoretical Physics I

Mathematical and Computational Methods:

Unit 1

Definition of groups, subgroups and conjugate classes - Symmetry elements, Transformation, Matrix representation - Point groups - representation of a group - Reducible and irreducible representations - Orthogonality theorem - character of a representation - character Table C2v and C3v - Application to Infrared and Raman active vibrations of XY3 type molecules - Projection operators applied to an equilateral triangle - Rotation group and angular momenta.

Unit 2

Elements of C Programming Language: Algorithms and flowchart; Structure of a high level language program; Features of C language; constants and variables; expressions; Input and output statements; conditional statements and loop statements; arrays; functions; character strings; structures; pointer data type; list and trees.

Unit 3

Partial Differential equations in Physics, Discretization of equation, matrix method relaxation method, groundwater dynamics, initial value problems, temperature field of nuclear waste rod (Peng)

Unit 4

Generation of uniformly distributed random integers, Statistical tests of randomness, Monte-Carlo evaluation of integrals and error analysis, Non-uniform probability distributions, Importance sampling, Rejection method, Metropolis algorithm, Brownian Motion and Ising model in 2 dimensions.

References

1. A Guide to Monte Carlo Simulations in Statistical Physics - D.P. Landau and K. Binder, (Cambridge University Press (2000))
2. Mathematical methods for physicists- G.B. Arfkenand ,H.T.Weber
3. A.W. Joshi, 1997, Elements of group Theory for Physicists, 4th Edition, New Age International, New Delhi.
4. F.A. Cotton, Chemical Application of Group Theory 3rd Edition, John Wiley and Sons, New York.
5. Let us C : Y Kanetkar
6. A First Course in Computational Physics - P.L. DeVries (Wiley).
7. Computer Applications in Physics - S.Chandra (Narosa)
8. Computational Physics - R.C. Verma, P.K. Ahluwalia and K.C. Sharma (New Age)
9. Computational physics by S.F. Koonin (Addition – Wesley , NY) 1986
10. An introduction to computer simulationmethod PART – I (Addition – Wesley , NY) , 1998 by Gould and J. Tebochaik
11. An introduction to compulation physics by Tao Pang.(Cambridge Univ-Press, 1997)
12. A physicist's guide to Mathemetica by P.T. Tam (Academic Press, II Edition)

Semester III Paper 11 (Core Elective E1.7) Nonlinear Dynamics I

Unit I

Flows on a line, fixed points and their stability, Population growth, Linear Stability Analysis, Existence and Uniqueness, Impossibility of Oscillations, Potentials, Bifurcations, Saddlenode, Transcritical, Pitchfork, Examples, Imperfect Bifurcation. (Chapter 2 and 3 of Ref. 1)

Unit II

Flows on a circle, Uniform and Nonuniform Oscillator, Over damped Pendulum, Superconducting Josephson Junction, Fireflies, Examples of Linear System, Classification of Linear System. (Chapter 4 and 5 of Ref. 1)

Unit III

Phase portraits, Existence and Uniqueness, Fixed points and their Linearization, Conservative Systems, Reversible Systems, Index theory, Limit Cycles, Ruling out Closed Cycles, Poincare-Benedixon theorem, Lienard Systems, Relaxation Oscillations, Weakly Nonlinear Oscillators. (Chapter 6 and 7 Ref. 1)

Unit IV

Bifurcations in detail, Saddle-node, transcritical, pitchfork, Hopf, Global Bifurcations, Hysteresis in Driven pendulum, Coupled Oscillators and Quasiperiodicity (Chapter 8 of Ref. 1)

Reference books:

1. S. W. Strogatz : Nonlinear Dynamics with Applications to Physics, Biology, Chemistry and Engineering. (Perseus)
2. Edward Ott : Chaos in Dynamical Systems (Cambridge University Press)

Semester III Practical 6 and 7 for elective papers

Practical 6 (elective)

Materials Science

1. Crystal structure determination by powder diffraction.
2. Study of microstructures of metal alloys.
3. Dislocation in alkali halide crystals.
4. Crystal growth from slow cooling of the melt.
5. Thermal analysis of binary alloy.
6. Differential thermal analysis of $BaTiO_3$-$PbTiO_3$ solid solution.
7. To study electrochemical method of corrosion control.
8. Dielectric behaviour of $LiNbO_3$ and $BaTiO_3$ in crystals and ceramics.
9. Electrical conductivity of ionic solids.
10. To test hardness of a material by Brinell hardness tester.
11. Photo elasticity study.
12. Multiple beam interferromentric study of surfaces.
13. Thermal conductivity of bad conductor. 14. Thermal expansion coefficient of metals.
15. Study of transport property in solid electrolytes.
16. Verification Nernst law/Oxygen sensor.
17. Determination of Thermoelectricity Power.

X-Rays

1. Study of Crystal Models.
2. X-ray Diffraction Photograph of a Metal Foil by transmission (Hull Method).
3. X-ray Diffraction Photograph of a Metal Foil by Back Reflection.
4. Powder Photograph by Debye Scherrer Method, Computer Analysis.
5. Laue Photograph and Gnomonic Projection.
6. Rotation oscillation Photograph.
7. Diffraction of X-rays by Liquids.
8. Bragg's Spectrometer: Uhler and Cooksey's method. 55
9. Bent Crystal (Cauchois) Transmission Type Spectrograph: Study of K and L Absorption Edges.
10. Bent Crystal (Cauchois) Transmission Type Spectrograph: Study of K and L emission Spectra.
11. Measurement of Intensities of Emission Lines, Computer Analysis.
12. Study of Satellite Lines. 13. Analysis of XANES Spectrum, Computer Analysis.
14. Analysis of EXAFS Spectrum, Computer Analysis.
15. Determination of Planck's constant by X-rays.
16. X-ray Fluorescence Spectrum Analysis.
17. Absorption Coefficient for X-rays by G. M. / Scintillation Counter.
18. Characteristics of G. M. tube.
19. Compton Effect.
20. Operation of a Demountable X-ray Tube.

Nanoscience and Nanotechnology

1. Synthesis of metal oxide nanoparticles by wet chemical method.
2. Deposition of thin films by spray pyrolysis technique.
3. Synthesis of inorganic nanomaterials by combustion method.

4. Synthesis of nanomaterials by sol-gel method.
5. Synthesis of conducting polymer nanofibres by chemical oxidation method.
6. Study of optical absorption of nanoparticles.
7. Determination of particle size of nanomaterials from x-ray diffraction.
8. Study of photoluminescence of well known luminescent nanoparticles.
9. Deposition of thin films by spin coating method.
10. Thermoluminescence study of nanomaterials.
11. Deposition of thin films by dip coating technique.
12. Study of particle size effect on luminescence.
13. Electrical characterization of nanostructured materials.
14. Synthesis of metal oxide nanoparticles by hydro-thermal method.
15. Deposition of thin film in vacuum.
16. Electrical resistivity of nanomaterials using four probe method
17. Photoluminescence study of prepared red/blue/green luminescent nanomaterials.
18. Characterization of nanomaterials using SEM/TEM.
19. Computer modelling methods for studying materials on a wide variety of length and time scales.

Atomic and Molecular Physics

1. Study of line spectra on photographed plates/films and calculation of plate factor.
2. Verification of Hartman's dispersion formula.
3. Study of sharp and diffuse series of potassium atom and calculation of spin orbit interaction constant.
4. Determination of metallic element in a given inorganic salt.
5. To record the spectrum of CN violet bands and to perform vibrational analysis.
6. To record the visible bands of ALO and to perform vibrational analysis.
7. To photograph and analyse the reddish glow discharge in air under moderate pressure.
8. To photograph the analyse the whitish glow discharge in air under reduced pressure.
9. To perform vibrational analysis of a band system of N2.
10. To perform vibrational analysis of band system of C2
11. To photograph and analyse the line spectrum of Calcium atom.
12. To record/analyse the fluorescence spectrum of a sample.
13. To record/analyse the Raman spectrum of a sample.
14. Study of Hyperfine structure of the green line of mercury.
15. To photograph the (O, O) band of CuH and to perform rotational analysis.
16. Flashing & quenching in Neon Gas.
17. E/m of electron.
18. Experiments on Prism/Grating Spectrometer.
19. Wavelength of laser light.
20. Faraday effect with laser.
21. Michelson interferometer.
22. Analysis of ESR Spectra of transition metals.
23. Analysis of H-atom spectra in minerals.
24. Measurements of dielectric constant of polymer sheet at low frequency.
25. E.S.R. of DPPH.
26. To measure the dielectric constant and polarisation of unknown liquid.
27. To measure the dielectric constant of unknown wood at microwave frequency
28. To measure the ultrasonic velocity in unknown liquid.

29. He-Ne Layer
30. To study polarisation of sodium light
31. To study polarisation of light using Babinet compensator

Methods of Theoretical Physics

1.Solving Laplace's equation
2. Bench problem (Pang)
3. The relaxation scheme for one dimension
4. Ground water dynamics
5. The time-dependent temperature field
6. Ising Model
7. 2-d Percolation
8. Classical Scattering

Ref: T. Pang

Nonlinear Dynamics

1.Bifurcation Diagram of logistic map.
2.Feigenbaum constant for period-doubling systems.
3.Study of Hopf Bifurcations.
4.Finding lyapunov exponent.
5.Fractal dimension of strange attractor.
6.Simulation of Lorenz attractor
7.Simulation of Rossler attractor
8.Multifractal spectrum of strange attractor.
9. Study of quantum chaos

Semester III Paper 12 (Foundation course F1.1) Fundamentals of Spectroscopy

Unit I

Atomic Spectra: The hydrogen atom and the three quantum numbers *n*, *l* and *ml*. – electronspin -Vector atom model-electron spin-Stern-Grelach experiment spectroscopic terms. Spin-orbit interaction, fine structure in sodium atom, selection rules.Lande g-factor, normal and anomalous Zeeman effects, Paschen–Back effect,Stark effect in one electron system. L S and j j coupling schemes (vector diagram) – examples

Unit II

Molecular Spectra:MicrowaveSpectra: Rotational spectra of rigid diatomic molecules - effect of isotopic substitution. Non–rigid rotor –
rotational spectra ofpolyatomic molecules
IR Spectra: Vibrating diatomic molecule as anharmonic oscillator,
diatomic vibrating rotor – break down of Born-Oppenheimer approximation - vibrations of polyatomic molecules - overtone and combination frequencies - analysis by IR technique - Fourier transform IR spectroscopy.

Unit III

Raman Spectroscopy: Pure rotational Raman spectra - linear and symmetric top molecules - vibrational Raman spectra – Raman activity of vibrations - structure determination from Raman and IR spectroscopy.

Unit IV

Electronic Spectroscopy: Electronic spectra of diatomic molecules - progressions and sequences - intensity of spectral lines. Franck – Condon principle - dissociation energy Rotational fine structure of electronic-vibrational transition - Fortrat parabola – Pre dissociation energy-fluorescence and phosphorescence.

Reference Books:

1. Introduction of Atomic Spectra, H.E. White, McGraw Hill
2. Spectroscopy (Vol. 2 & 3), B.P. Straughan & S. Walker, Sciencepaperbacks 1976
3. Raman Spectroscopy, D.A. Long, McGraw Hill international, 1977
4. Introduction to Molecular Spectroscopy, G.M. Barrow, McGraw Hill
5. Molecular Spectra and Molecular Structure, Vol. 1, 2 & 3. G.Herzberg, Van Nostard, London.
6. Elements of Spectroscopy, Gupta, Kumar & Sharma, PragathiPrakshan
7. The Infra Red Spectra of Complex Molecules, L.J. Bellamy,Chapman& Hall. Vol. 1 &2
8. Laser Spectroscopy techniques and applications, E.R. Menzel, CRCPress, India

Semester III Paper 12 (Foundation course F1.2) Fundamentals of Nanoscience and Nanotechnology

Unit-I Basics of Nanoscience

Introduction to quantum physics, electron as waves, wave mechanics, Schrödinger equation and particle in a box, Heisenberg's uncertainty principle, exclusion principal, Free electron theory (qualitative idea) and its features, Idea of band structure, Density of states for zero, one, two and three dimensional materials, Quantum confinement, Quantum wells, wires, dots, Factors affecting to particle size

The p-n-junction and bipolar transistor, Metal semiconductor and metal insulator, semiconductor junction, field effect transistor.

Unit-II Properties of Nanomaterials

Mechanical, Thermal, Electrical, Optical, Magnetic and Structural.

Carbon nanostructures- Fabrication, structure, electrical properties and mechanical properties.

Unit-III Synthesis of Nonmaterial's

Physical methods**:** Bottom up-Ball Milling, Melt mixing, Physical vapour deposition, Ionised cluster beam deposition, Laser pyrolysis, Sputter deposition, Electric arc deposition, Gas evaporation.

Chemical methods**:** Hydrothermal combustion, bath deposition with capping techniques and top down,Chemical vapour deposition, Synthesis of metal & semiconductor nanoparticles by colloidal route, Microemulsions, Sol-gel method, Combustion method, Wet chemical method

Unit-IV Bionanotechnology

Biological building blocks, nanostructure, protein nanoparticles, DNA double nanowire. Bionanostructures- Micelles, vesicles, multilayer films, biological interactions, bilayers, bioelectronics and bioscensors.

Text and Reference Books:

1. Nanotechnology: Principles &Practicals. Sulbha K. Kulkarni, Capital Publishing Co.New Delhi.
2. Carbon nanotechnology..recent developments in Chemistry, Physics, materials science and device applications, -Elsevier Science
3.Nanostructures& Nanomaterials Synthesis, Properties & Applications. Guozhong Cao, Imperials College Press London
4. Physics, Chemistry and Application of Nanostructures, world scientific co.
5. Nanomaterials: Synthesis, Properties & Applications. Edited by A.S. Edelstein & R.C.Commorata. Institute of Physics Publishing, Bristol & Philadelphia.
6.Introduction to Nanotechnology. C.P. Poole Jr. and F. J.Owens, Wiley Student Edition.
7.Nano: The Essentials. T.Pradeep , McGraw Hill Education.
8. Handbook of Nanostructures: Materials and Nanotechnology. H. S. Nalwa Vol 1-5, Academic Press, Boston.
9.Nanoscience and Technology: Novel Structure and Phenomena. Ping and Sheng
10. Hand Book of Nanotechnology, Bhushan

Semester IV Paper 13 (Core 11) Nuclear and Particle Physics

UNIT 1 ;

Basic nuclear properties; size, radii, shape, and charge distribution, spin, parity, mass, binding energy, semi-empirical mass formula, liquid drop model, nuclear stability, laws of radioactive decay. Nature of nuclear force, elements of deuteron problem, n-n scattering, charge independence and charge symmetry of nuclear forces.Electric and magnetic moments of nuclei.Evidence for nuclear shell structure, single particle shell model-its validity and limitations.

UNIT 2 :

Elementary properties of alpha-, beta-, and gamma-, decay of nuclei, their classification, characteristics and selection rules. Elementary theories of alpha-, beta-, and gamma-, decay. Nuclear reactions- conservation laws, mechanism, and cross section. Nuclear reaction mechanism, compound nucleus, direct reactions. Fission and fusion reactions, nuclear energy, elements of nuclear power.

UNIT 3 :

Interaction of charged particles and electromagnetic radiation with matter. Principles of nuclear radiation detectors: G-M counter, proportional counter, Na(Tl) scintillation detector, semiconductor detectors. Elementary principles of particle accelerators: linear accelerators, Van de Graaf, cyclotron, betatron, synchrocyclotron, ion beam accelerators.

UNIT 4 :

Classification of elementary particles, strong, weak and electromagnetic interaction.Gellmann-Nishijima formula Properties of hadrons, baryons, mesons, leptons, and quarks- their quantum numbers, charge, mass, spin, parity, iso-spin, strangeness etc. Symmetry and conservation laws.Elements of quark model and standard model.Higgs boson.

Text-books recommended:

1) Introductory Nuclear Physics,: Kenneth S Krane, Wiley, New York ,1988.
2) Nuclear and Particle Physics: Brian Martin.
3) Atomic and Nuclear Physics: S.N. Ghoshal.
4) Introduction to Particle Physics : D. Griffiths.
5) Introduction to Nuclear Physics: F. A. Enge, Addison Wesley (1975)
6) Introductory Nuclear Physics: Burcham

Semester IV Paper 14 (Core 12) Solid State Physics

Unit I: Band Theory: Bloch theorem, the Kronig- Penney model, construction of Brillouin zones, extended and reduced zone schemes, effective mass of an electron, tight binding approximation. Fermi surface.

Magnetic Properties:

Quantum theory of paramagnetism, magnetism of iron group and rare earth ions,.exchange interactions. Pauli paramagnetic susceptibility

Unit II

Lattice Dynamics: Energy of atomic motions, adiabatic principle, harmonic approximation, cyclic boundary condition.Lattice vibrations of linear monoatomic and diatomic chains.Dispersion relations, acoustic and optical phonons.

Theories of lattice specific heat, Dulong and Petit'slaw, Einstein and Debye models, T^3 law, Born procedure, anharmonicity and thermal expansion.

Unit III: Free Electron Theory: Electrons moving in one and three dimensional potential wells, quantum state and degeneracy, density of states, electrical and thermal conductivity of metals, relaxation time and mean free path, the electrical resistivity of metals, thermonic emission. Seebeck effect, thermoelectric power.

Semiconductors: Free carrier concentration in semiconductors, Fermi level and carrier concentration in semiconductors, effect of temperature on mobility, electrical conductivity of semiconductors, Hall effect in conductors and semiconductors.

Unit IV

Superconductivity, Type I and II super conductors, Meissner effect, isotope effect, London equation, coherence length, elements of B. C. S. theory, tunnelling DC and AC Josephson effect, Ginzberg-Landau Theory macroscopic quantum interference. Josephson junction.high temperature superconductor (elementary).

Text and Reference books:

1. C. Kittle: Introduction to Solid State Physics (2nd and 4th Edition).
2. A. J. Dekker : Solid State Physics.
3. Kubo and Nagamiya : Solid State Physics.
4. Feynman Lectures: Vol. III.
5. Board and Huano : Dynamical Theory of Crystal Lattice.
6. N. W. Ashcroft and D. Mermin: Solid State Physics.

Semester IV Practical 7 for core papers

Practicals based on core 11 and core 12

1. Measurement of resistivity of a semiconductor by four probe method at two different temperatures and determination of band gap energy.
2. Measurement of Hall coefficient of given semiconductor: identification of type of semiconductor and estimation of charge carrier concentration.
3. Determination of Hall life of 'In".
4. Determination of range of Beta-rays from Ra and Cs.
5. G-M counter
6. Magnetoresistance by Hall effect
7. Determination of Dielectric constant
8. Random decay of nuclear disintegration using dice (or simulation)

In all 7 practicals, instructor can introduce new and relevant experiments which are not in the list.

Semester IV Paper 15 (Core Elective E2.1) Materials Science II

Unit –I

Mechanical response of Materials : Elasticity, model of elastic response, inelasticity, viscoelasticity, stress-strain curves, concept of various mechanical properties such as hardness, yield strength, toughness, ductility, yield toughness, ductility, brittleness, stiffness, young modulus, shear modulus, shear strength, Frenkel model, Peierls-Nabarro relation, Plastic deformation,

Corrosion and degradation of materials – electrochemical considerations – passivity forms of corrosion – corrosion inhibition.

Spintronics and Photonics: Spin glass, magnetic bubbles, domain walls, magnetic multilayers, magnenites, GMR and CMR, DMS materials. Photonic band gap materials.

Unit – II

Concept of Synthesis: Concept of equilibrium and nonequilibrium processing and their importance in materials science.

Synthesis of materials: Physical method – Bottom up: cluster beam evaporation, Ion beam deposition, Gas evaporation, Chemical method – Hydrothermal, combustion, bath deposition with capping techniques and top down: Ball milling. Solvated metal atom dispersion – thermal decomposition – reduction methods – colloidal and micellar approach.

Unit-III

Processing of materials: Metallic and non metallic, Ceramics and other materials. Only basic elements of powder technologies, compaction, sintering calcination, vitrification reactions, with different example, phenomenon of particle coalescence, porosity.Quenching : concept, glass formation

structural characterization:

Diffraction techniques: interpretation of x-ray powder diffraction patterns, Identification & quantitative estimation of unknown samples by X-ray powder diffraction technique Electron and neutron diffraction.

Unit –IV

Structural determination by fluorescent analysis. Theory and method of particle size analysis. Integral breadth method, Warren-Averbach's Fourier method, profile fitting method.

Microscopic techniques –TEM, SEM & STEM.AFM, EDX and XPS.

Text and Reference Books:

1. Basic Solid State Chemistry, 2nd Edition, Anthony R. West, John Wiley & Sons, 1996.

2. New Directions in Solid State Chemistry, C. N. R. Rao and J. Gopalkrishnan, Cambridge University Press, Cambridge, 1986.
3. Chemical approaches to the synthesis of inorganic materials, C. N. R. Rao Wiley Eastern Ltd.1994.
4. Materials Science and Engineering – An Introduction, W. D. Callister Jr. John Wiley & Sons,1991.
5. Materials Science, J. C. Anderson, K. D. Leaver, R. D. Rawlings and J. M. Alexander, 4^{th} Edition, Chapman & Hall (1994).
6. Nanostructured Materials and Nanotechnology, Hari Singh Nalwa, Academic Press (1998).

Semester IV Paper 15 (Core Elective E2.2) X-ray II

Unit I

Space lattice and unit cell of a crystal, Choice of a unit cell, Crystal systems, Bravais lattices, Crystal faces and internal arrangement, Miller indices, Law of rational indices, Indices of a direction. Point groups, Space groups.

Perspective projections: Gnomonic projection, Stereographic projection, Orthographic projection.

Reciprocal lattice concept: Graphical construction, Relation to interplanar spacing, Interpretation of Bragg's law.

Unit II

Scattering of X-rays: Thomson scattering, Compton scattering, Wave mechanical treatment of scattering, Scattering by a pair of electrons, Theory of scattering by a helium atom, Scattering by many electrons, Experiments on scattering by monatomic and polyatomic gases, liquids and amorphous solids.

Unit III

Physical Basis of X-ray Crystallography: Atomic and crystal structure factors, Structure factor calculations, The integrated intensity of reflection. Different factors affecting the intensity of diffraction lines in a powder pattern.Dynamical theory X-ray diffraction.

The Fourier Transform, electron density projections in crystals, Application to X-ray diffraction.

Unit IV

Experimental Methods of Structure Analysis: Laue method, Debye-Scherrer method, rotation Oscillation method, Weisenberg camera, The sources of systematic errors and methods of attaining precision.

Principles of energy dispersive and time analysis diffractometry.

Methods of detecting and recording diffraction patterns.

Structures of metals and alloys. Phase transformations, Order-disorder phenomenon. Super lattice lines.Determination of grain size.

Other Diffraction Techniques: Electron and neutron diffraction tsechniques and their applications. Comparison with X-ray diffraction.

Text and Reference Books:

1. A. H. Compton and S. K. Allison: X-rays in Theory and Experiment.
2. N. F.M. Henry, H. Lipson and W. A. Wooster: The interpretation of X-ray Diffraction Photographs.
3. K. Lonsdale: Crystals and X-rays.
4. B. D. Cullity: elements of X-ray Diffraction.
5. M. M. Woollfson: X-ray Crystallography.
6. M. J. Buerger: X-ray Crystallography.
7. Bacon: Neutron Physics.

Semester IV Paper 15 (Core Elective E2.3) NanoScience and Nanotechnology II

Unit – I:

Nanophotonics:

Fundamentals of photonics and photonic devices, Lasers, CFLs, LEDs, OLEDs, Wall paper lighting, Display devices, X-ray imaging nanophosphers, Photo therapy lamps and its applications, Nanomaterials for radiation, Dosimetery special for thermoluminescence. Optical stimulated luminescence, Luminescence solar concentration.

Unit – II:

Nanomagnetics:

Basics of Ferromagnetism, effect of bulk nanostructuring of magnetic properties, dynamics of nanomagnets, nanopore containment, giant and colossal magnetoresistance, applications in data storage, ferrofluids, Superparamagnetism, effect of grain size, magneto-transport, Magneto-electronics, magneto-optics, spintronics.

Unit – III:

Nanoelectronics:

Top down and bottom up approach, CMOS Scaling, Nanoscale MOSFETs, Limits to Scaling, System Integration, Interconnects;

NanoDevices: Nanowire Field Effect Transistors, FINFETs, Vertical MOSFETs, Other Nanowire Applications, Tunneling Devices, Single Electron Transistors, Carbon nanotube transistors, Memory Devices,

Unit – IV:

Nanocomposites:

Classification of nanocomposites, Metallic, ceramic and polymer nanocomposites, Tribology of polymeric nanocomposites, Nano ceramic for ultra high temperature MEMS, Optimizing nanofiller performance in polymers, Preparation techniques, Graphene/Fullerene/Carbon nanotube (CNT) polymer nanocomposites, One dimensional conducting polymer nanocomposites and their applications

Text and reference books:

1. H.S.Nalwa; Hand book of Nanostructure materials and nanotechnology; (Vol.1-5), Acad. Press, Boston, 2000
2. C.P.Poole Jr., F.J.Owens; Introduction to Nanotechnology, John Wiley and sons, 2003
3. C. Furetta; Hand book of thermoluminescence; World Scientific Publ.
4. S.W.S. McKEEVER; Thermoluminescence in solids; Cambridge Univ. Press.
5. Alex Ryer; Light measurement hand book; Int. light Publ.
6. M.J.Weber; Inorganic Phosphors; The CRC Press.
7. T.J.Deming; Nanotechnology; Springer Verrlag, Berlin, 1999
8. W.D.Kalister Jr., Materials Science and Engineering, 6th Eds, WSE Wiley, 2003
9. Gusev; Nanocrystalline Materials
10. C. Delerue, M.Lannoo; Nanostructures theory and Modelling
11. Fausto, Fiorillo ; Measurement and Characterization of Magnetic materials

12. Bhushan; Hand Book of Nanotechnology
13. Janos H., Fendler; Nanoparticles and Nanostructured Films
14. T.Pradip; Nano: The Essentials
15. Liu; Hand Book of Advanced Magnetic Materials (4 Vol.)
16. Lakhtakia; Nanometer Structure
17. Banwong, Anurag Mittal; Nano CMOS Circuit and Physical Design
18. G.W.Hanson: Fundamental of Nanoelectronics
19. Edward L. Wolf (2nd Ed.), *Nanophysics & Nanotechnology: An Introduction to Modern Concepts in Nanoscience*, WILEY-VCH, 2006
20. S. Sakka; Sol-gel science and technology processing, characterization and applications; Kluwer Acad. Publ.
21. Goser et al, "*Nanoelectronics&Nanosystems: From Transistor to Molecular & Quantum Devices"*
22. SupriyoDatta, "*From Atom to Transistor*"
23. John H. Davies, *The Physics of Low Dimensional Semiconductors: An Introduction",* Cambridge University Press, 1998.
24. Hari Singh Nalwa, "*Encyclopedia of Nanotechnology*"
25. A. A. Balandin and K. L. Wang, "*Handbook of Semiconductor Nanostructures &Nanodevices*"
26. Cao Guozhong, "*Nanostructures &Nanomaterials - Synthesis, Properties & Applications*

Semester IV Paper 15 (Core Elective E2.4) Atomic and Molecular Physics II

Unit I

Time dependence in quantum mechanics, Time dependent perturbation theory, rate expression for emission, perturbation theory, calculation of polarizability.Quantum mechanical expression for emission rate.

time correlation function and spectral Fourier transform pair, properties of time correlation functions and spectral time shape,

Fluctuation dissipation theorem rotational correlation function and pure rotational spectra,

Re-orientational spectroscopy of liquids.

Unit II

Saturation spectroscopy, Burning and detection of holes in Doppler broadened two level systems, Experimental methods of saturation spectroscopy in laser, Ramsey fringes, Saturation techniques for condensed matter application,

Laser optogalvanicspectroscopy.Two photon absorption spectroscopy, Selection rules, Expression for TPA cross section –photo acoustic spectroscopy, PAS in gaseous medium, Roseneweig and Greshow theory, Thermally thin, thick samples, Typical experimental set up, Application in Spectroscopy,

Unit III

Stimulated Raman scattering, Quantum mechanical treatment, Raman Oscillation Parametric instabilities, Electromagnetic theory of SRS.Vibronic interaction, Herzberg Teller theory,

Fluorescence spectroscopy, Kasha's rule, Quantum yield, Non-radioactive transitions, Jablonski diagram, Time resolved fluorescence and determination of excited state lifetime.Light detectors, Single photon counting technique, Phase sensitive detectors.

Unit IV

Matrix isolation spectroscopy, Fourier transforms spectroscopy, Laser cooling. Molecular symmetry and group theory, Matrix representation of symmetry elementsof a point group, Reducible and irreducible representations, and character tables specially for C_{2v} and C_3 point group molecules, Normal coordinates normal modes, Application of group theory to molecular vibrations.

Text Book and References:

1. Molecular Quantum Mechanics: P. W. Alkins and R. S., Fridman.
2. Quantum electron – A. Yariv.
3. Introduction to non-linear laser spectroscopy – M. D. Levenson.
4. Photoacoustics and its applications, Roseneweig.
5. J. M. Hollas, High resolution spectroscopy.
6. Cotton, Chemical Applications of Group Theory.
7. Herzberg, Molecular spectra and molecular structure II and III.
8. Demtroder, Laser spectroscopy and instrumentation.
9. King, Molecular spectroscopy.
10. Lakowicz, Principles of fluorescence spectroscopy.
11. Molecular Quantum Mechanics: P. W. Alkins and R. S., Fridman.

Semester IV Paper 15 (Core Elective E2.5) Applied Electronics II

Unit – I:

An Overview of Electronic Communication system ; block diagram of an digital electronic Communication system, Pulse modulation systems, sampling theorem, lowpass and band-pass signals,PAM channel bandwidth for a PAM signal, Natural sampling, flat top sampling, signal recovery throughholding, quantization of signals, quantization, differential PCM delta modulation, adoptive delta modulation CVSD. Digital modulation techniques: BPSK, DPSK, QPSK, PSK, QASK, BFSK, FSK, MSK. Mathematical representation of noise, sources of noise, frequency domain representation of noise, Noise in Pulse Code and Delta modulation system, PCM transmission, calculation of quantization of noise, out pit signal power effect of thermal noise, outr signal to noise ratio in PCM, DM, quantization noise in DM, out put signal power, DM oput-put, signal to quantization noise ratio, effect of thermal noise in delta modulation, output signal to noise ratio in DM.

Unit – II

Computer communication systems: Types of networks, design features of communication network,examples, TYMNET, ARPANET, ISDN, LAN.Mobile radio and satellite - time division multiplex access (TDMA) frequency division multiplex access(FDMA) ALOHA, Slotted ALOHA, Carrier sense multiple access (CSMA) Poisson distribution protocols.

Unit – III

Microprocessor and Micro-computers: Microprocessor and architecture, Pin out and pin functions of 8086/8088 Internal microprocessor architecture, bus buffering and latching ,Bus timings, ready and wait states, minimum mode versus and maximum mode. Real and protected mode of memory addressing, memory paging, addressing modes, data addressing modes, programme memory addressing mode, stack memory addressing modes, instruction sets, data movement instruction, arithmetic and logic instruction, programme control instruction, clock generator (8284A),

Unit –IV

Memory and I/O Interface : Memory devices, ROM,RAM.,DRAM, SRAM, Address decoding , 3 to 8 line decoder 74LS138, 8086, and 80386(16 bits) Memory interface, , Introduction to I/O interface , Interfacing using 8255, Introduction to PIT 8254, Basic Communication device(UART) pin diagram and functioning of 16550 Interrupts: Basic interrupt processing, Hardware interrupt, expanding the interrupt structure, 8259A PIC.

Text and Reference books.

1. Principles of communication systems :Taub and Schilling (ii Edn THM ,1994)
2. Principles of communication systems: Taub and Schilling GoutamSaha Third Edition
3. Communication systems : Simon Haykin (iii Edn John Wiley & Sons)
4. The intel microprocessors 8086/80188,80386,80486, Pentium and Pentium processor architecture, programming and interfacing : Barry B. Brey (PHI iv Edn, 1999)
5. Microprocessor and interfacing ,programming and hardware : Douglas V. Hall (ii Edn, Mc GrawHill International edn. 1992)
6. The 80x86 IBMPC compatible computer: Muhammad Ali Maxidi and J .G. Mazidi (ii Edn.Prentice –Hall International.)

Semester IV Paper 15 (Core Elective E2.6) Methods of Theoretical Physics II

Many Body theory

Unit I: Second Quantization / Occupation Number Formalism

Wave functions for identical particles, symmetrized basis for Fermions and Bosons, one-particle and two-particle operators and their matrix elements in symmetrized basis; Number space representations of the basis, creation and annihilation operators, commutation relations; Representation of operators in terms of creation and annihilation operators; Equation of motion for operators in number space.

Unit II: Simple Applications

Electron gas: Hartree-Fock approximation, ground state energy and single particle energy in paramagnetic and ferromagnetic states, role of exchange term; Ground state of interacting bosons, Bose-Einstein condensate; Spectrum of elementary excitations, superfuidity.

Unit III: Green's Functions and Linear Response Theory

One-particle and two-particle Green's functions; Ground state energy and linear response in terms of Green's functions; Analytic properties of Green's functions; Equations of motion for Green's functions

Unit IV: Perturbation Theory

Interaction representation; Gell-Mann-Low theorem for ground state energy; Perturbation expansion for Green's functions, Wick's theorem; Diagrammatic representation, Dyson's equation, self energy; Polarization; Application to interacting Fermi gas: Dilute Fermi gas, Landau theory, Screening of coulomb interaction, random phase approximation for electron gas.

Text and Reference Books :

1. Stanley Raimes: Many-Electron Theory, *North Holland Publishing Co.*, (1972)

2. F. Mandl : Introduction to Quantum Field theory, *Interscience Publishers Inc.*, 1961

3. Abrikosov: Quantum Field Theoretical Methods in Statistical Physics

4. Fretter &Walecha: Quantum Theory of Many particle Systems

5. March, Young and Sampantha : The Many Body problems in Quantum Mechanics

6. Mattuch: Feynman Diagram Techniques.

Semester IV Paper 15 (Core Elective E2.7) Nonlinear Dynamics II

Unit I

Lorenz equations, chaos on a strange attractor, chaotic cryptography**,** Lorenzmap, properties of Lorenz system (Ch. 7 of ref. 1)

One dimensional Maps: Piecewise linear maps, logistic map, smooth 1-d maps, applications (ch. 2 of ref. 2)

Unit 2

Strange attractors: What is fractal, box counting dimension, generalized Baker map, dimension spectrum, introduction to multifractal. Singularity spectrum, partition function formalism (Ch. 3 and 9.1 9.2 of ref. 2, ch. 11, 12 of ref. 1)

Unit 3

Chaos in Hamiltonian systems:

Hamiltonian systems, perturbation of integrable systems, chaos and KAM tori describable by 2-d maps, higher dimensional systems, strongly chaotic systems, succession of increasingly random systems (Ch. 7 of ref. 2)

UNIT IV:

Control and synchronization of chaos: controlling chaos, controlling steadily running chaotic process, synchronization, generalized synchronization, phase synchronization

Elementary idea of quantum chaos: Energy and wavefunctions of chaotic bounded time independent systems, periodic systems, chaotic scattering (ref. 10 and 11 of 2)

Reference books:

1. S. W. Strogatz : Nonlinear Dynamics with Applications to Physics, Biology, Chemistry and Engineering. (Perseus)

2. Edward Ott : Chaos in Dynamical Systems (Cambridge University Press)

3. Quantum Chaos - An Introduction, H. J. Stöckmann, (Cambridge Univ. Press), 1999

4.. Classical and Quantum Dynamics, Dittrich and Reuter, 3rd Edition, (Springer Verlay), 2003.

Semester IV Paper 16 (Foundation course F2.1) Spectroscopic applications

Unit-I

Principle of spectroscopic instruments, UV-VIS visible: Absorption of light, radiation sources, sample holder, monochromator, radiation detectors, samples holder, monochromator, radiation detector, single and double beam experiment.

Infrared and Raman spectroscopy, predicting number of active modes of vibration, analysis of representative spectra of metal complexs with various functional groups at the coordination sites, organic and inorganic functional group identification through IR spectroscopy.

Unit-II

NMR phenomenon, spin ½ nuclei, (^{1}H, ^{13}C, ^{31}p and ^{1}9F), ^{1}H NMR, Zeeman splitting, effect of magnetic field strength on sensitivity and resolution, chemical shift □, chemical and magnetic equivalence of spins, spin-spin coupling constant J.

Electronic spectroscopy, basic principle, electronic transitions in organic, inorganic and organometalic molecules and application to structure elucidation.

Unit-III

Electron paramagnetic resonance (EPR) spectroscopy of inorganic and organic compounds with unpaired electrons, determination of electronic structure, Zeeman splitting, g values hyoerfine and superhyperfime coupling constant.

Mossebauer spectroscopy-Mossebauer effect, recoilless emission and absorption, hyperfine interaction, chemical isomer shift, magnetic hyperfine and quadrupole interaction and interpretation of spectra.

Unit-IV

Mass spectroscopy, basic principles, ionization techniques, isotope abundance, molecular ion, high resolution MS, soft ionization methods, ESI-MS and MALDI-MS, illustrative example from macromolecules and supramolecules studies of inorganic/coordination and organometallic representative compounds.

Text books

1 Electronic paramagnetic transitions of metal ions, A Abragam, B Bleaney, Oxford University Press, 1970.

2. Physical methods for chemist, R S Drago, Saundevis 1992.

3.Fundamentals of molecular spectroscopy, C. N. Bawell and E.M. Mc cash, 4thed, MCGRAW-Hill, 1994.

4.NMR spectroscopy, H. Gunther, 2nd edition John Wileny and Sons, 1995.

Semester IV Paper 16 (Foundation course F2.2) Optics and Optical Instruments

Unit-1

General theory of image formation, Cardinal points of an optical system, thick lens and lens combination, telescopic combinations, telephoto lens and eyepieces, Abration in images; chromatic aberration, monochromatic aberration and their reductions, aspherical mirrors and correction plates, meniscus lens, entrance and exit pupil, need for multiple eyepiece, Ramsden and Huygens eyepiece, microscope and telescope, astronomical telescope.

Unit-2

Principal of superposition, coherence optical path retardation, fringes in thin film, localized fringes, two slit interference, Newton's rings and applications, Michelson interferometer and its applications,

Diffraction; Fresenel type- half period zone, rectilinear propogation, straight edge, Fraunhofer type-Diffraction at a slit, half period zone, circular aperature , plane transmission, reflection, blazed and concave grating, resolving power of grating, Raileigh criterion of resolution, resolving power of prism and grating.

Refraction- refraction in uniaxial crystal, double image prism, plane, circular and elliptical polarized light, Nicols prism, optical rotation in liquid crystals.

Unir-3

Optical instruments- magnifying glass, principal of pho camera, pinhole, lens and SLR camera, video camera, angular magnification, aperature, camera lucida, collimator and compound microscope, lens, periscope, binocular, field glass, jeweler's glass, projector, eyeglasses and its principal, prism spectroscope.

Unit-4

Holography: Importance of coherence, Principle of holography and characteristics, Recording and reconstruction, classification of hologram and application, non-destructive testing, optical fibre waveguides (step index, graded index, single mode), attenuation in fibre, couplers and connectors, LED,

X-ray –Principal and process of X-ray image (radiographs) production, factors affecting radiographs, Computed Tomography, principal and working of fluoroscopy, principal and working of CT-scanning, Ultrasound, working principal, imaging by us waves, Doppler ultrasound, magnetic resonance imaging, its working principal.

References;

1. Optics by Ajay Ghatak
2. Fundamental of optics by Jetkins and white
3.Optics and spectroscopy by R. Murugeshan, kiruthignsivaprakash.
4.Basic physics of X-ray imaging, Carl A Carlsson and Gudrun AlmCarlsson, 1996
5.Collaborative radiology by Chales De Kahn, 2013

RASHTRASANT TUKADOJI MAHARAJ NAGPUR UNIVERSITY, NAGPUR

NOTIFICATION

No. Acad/215. Date : 15th June, 2015

CBCS 15-16 and onwards

To,

The Principal
of all the affiliated Science Colleges
of Rashtrasant Tukadoji Maharaj
Nagpur University, Nagpur

Subject:- Direction No. 10 of 2015.

Sir/Madam,

I am forwarding herewith a copy of the Direction No. 10 of 2015 issued by the Hon'ble Vice-Chancellor under Section 14(8) of Maharashtra Universities Act, 1994 **"DIRECTION RELATING TO THE EXAMINATION LEADING TO THE DEGREE OF MASTER OF SCIENCE, SEMESTER PATTERN (CHOICE BASED CREDIT SYSTEM) AND DEGREE OF MASTER OF SCIENCE AND TECHNOLOGY (APPLIED GEOLOGY). SEMESTER PATTERN, (CHOICE BASED CREDIT SYSTEM) "**along with the examination scheme and Syllabi to be implemented from Academic Session **2015-2016**.

You are requested to kindly bring it to the notice of all teachers and students of your college.

Thanking you,

Direction and Syllabi available on the Rashtrasant Tukadoji Maharaj Nagpur University.

(www.nagpur university. org.)

Yours faithfully,

Encl: As above.

Sd/-
(Puran Meshram)
Registrar,
Rashtrasant Tukadoji Maharaj
Nagpur University, Nagpur.

No. Acad/-- Nagpur dated the 15th June, 2015

Copy for information and necessary action along with the Direction , Examination Scheme and Syllabi as mentioned above to :-

1) The Dean Faculty of Science, Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur.
2) The Controller of Examinations, Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur
3) The Director, B.C.U.D., Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur
4) The Deputy Registrar (Examinations) Rashtrasant Tukadoji Maharaj Nagpur University,
5) The Deputy Registrar (Coll. Sec.) Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur
6) The Asstt. Registrar (Prof. Exam.), Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur
7) The Asstt. Registrar (Conf.), Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur.

8) The Asstt. Registrar (Exams & Enqury.), Rashtrasant Tukadoji Maharaj Nagpur University,
9) The Officer-in-Charge, Publication Section, R.T.M. Nagpur University, Nagpur.
10) The Asstt. Registrar, Ordinance Section, R.T.M. Nagpur University, Nagpur
11) The P. A. to the Hon'ble Vice-Chancellor, R.T.M. Nagpur University, Nagpur
12) The P. A. to the Hon'ble Pro-Vice-Chancellor, R.T.M. Nagpur University, Nagpur
13) The P. A. to the Registar, R.T.M. Nagpur University, Nagpur
14) Mrs. Veena Prakashe, Information Scientist, R.T.M. Nagpur University, Nagpur

Sd/-
(Manish Zodpey)
Deputy Registrar(Acad.
Rashtrasant Tukadoji Maharaj
Nagpur University, Nagpur.

RASHTRASANT TUKADOJI MAHARAJ NAGPUR UNIVERSITY, NAGPUR
FACULTY OF SCIENCE
DIERCTION NO. 10 OF 2015

DIRECTION RELATING TO THE EXAMINATION LEADING TO THE DEGREE OF MASTER OF SCIENCE, SEMESTER PATTERN (CHOICE BASED CREDIT SYSTEM) AND DEGREE OF MASTER OF SCIENCE AND TECHNOLOGY (APPLIED GEOLOGY). SEMESTER PATTERN, (CHOICE BASED CREDIT SYSTEM) (FACULTY OF SCIENCE)

(Issued under Section 14(8) of the Maharashtra Universities Act, 1994)

Whereas, Maharashtra Universities Act, 1994 (hereinafter referred to as Act) has come into force from 22nd July, 1994 and was amended from time to time,

AND

Whereas, the University Grants Commission, New Delhi vide letter No.D.O.No.F-1-1/2015 (CM) dated 8th January 2015 regarding reforms pertaining to the introduction of Choice Based Credit System at the earliest from the academic session 2015-16 to provide option to students and also seamless mobility across the institutions.

AND

Whereas, the Board of Studies in all the Science subjects in their meeting held during 24.4.2015 prepared the syllabi and scheme of examination for the M. Sc. and M. Sc. (Tech) Applied Geology course and recommended for starting of the Choice Based Credit System in Faculty of Science from the academic session 2015-16,

AND

Whereas, the faculty of Science in its meeting held on 20.5.2015 vide item No. 16 , has considered, accepted and recommended to Academic Council, the policy decision regarding introduction of Choice Based Credit System and the draft syllabi of M. Sc. Semester-I to IV (Semester I to VI for M. Sc. (Tech) Applied Geology) with draft direction and other details.

AND

Whereas, the Academic Council in its meeting held on _ _ _ _ _ _ _ _ _ _ vide item No. _ _ has considered, accepted and recommended to Management Council, for M.Sc. along with draft direction and other details.

AND

Whereas, the Management Council in its meeting held on _ _ _ _ _ _ vide item No. _ _ , has considered, accepted the draft direction and other details.

AND

Whereas, the new draft direction and scheme of examination as per semester pattern is to be implemented from the Academic Session 2015-16 for M.Sc. semester I and onwards which is to be regulated by this direction and as such there is no existence and framing of an Ordinance for the above examination is a time consuming process.

AND

Whereas, the admission of students in the Choice Based Credit System at M.Sc. Semester I and onwards are to be made in the Academic Session 2015-16.

AND

Whereas, ordinance making is a time consuming process, therefore, I, Dr. S. P. Kane, Vice Chancellor Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur in exercise of powers vested under Section 14(8) of the Act do hereby issue the following Direction.

1. This Direction may be called "Direction relating to examinations leading to the Degree of Master of Science, Semester Pattern (Choice Based Credit System) and Degree of Master of Science and Technology (Applied Geology), Semester Pattern, (Choice Based Credit System)
2. The direction shall come into force from the date of its issue by Hon'ble Vice Chancellor and shall remain in force till the relevant ordinance comes into being in accordance with the provisions of the Act.
3. The duration of the M. Sc. course shall be of two academic years consisting of four semesters with the University examinations at the end of each semester namely:

M. Sc. Mathematics
Choice Base Credit Semester wise Syllabus

Total Marks: 2500
Each Paper: 100 marks theory + 25 marks sessional
Periods Allotted per week per paper: 05 Hrs.

M. Sc. Semester-I

CORE PAPERS

Paper I Algebra I
Paper II Real Analysis I
Paper III Topology I
Paper IV Linear Algebra and Differential Equations
Paper V Integral Equations

M. Sc. Semester-II

CORE PAPERS

Paper VI Algebra II
Paper VII Real Analysis II
Paper VIII Topology II
Paper-IX Differential geometry
Paper X Classical Mechanics

M. Sc. Semester-III

CORE PAPERS

Paper XI Complex Analysis
Paper XII Functional Analysis
Paper XIII Mathematical Methods

CORE ELECTIVE PAPER XIV (Opt any one of the following)

1. Fluid Dynamics I
2. General Relativity
3. Operations Research I

FOUNDATION PAPER- Paper XV (Opt any one of the following)
For Students other than Mathematics

1. Elementary Mathematics
2. Elementary Mathematical Methods
3. Elementary Numerical Methods
4. Fuzzy Mathematics I

M. Sc. Semester-IV

CORE PPAPERS

Paper-XVI Dynamical Systems
Paper-XVII Partial Differential Equations
Papers XVIII Advanced Numerical Methods

CORE ELECTIVE PAPER XIX (Opt any one of the following)

1. Fluid Dynamics II
2. Cosmology
3. Operations Research II

FOUNDATION PAPER- XX (Opt any one of the following)
For Students other than Mathematics

1. Elementary Discrete Mathematics
2. Fuzzy Mathematics II
3. Linear Programming

Detailed Syllabus

M. Sc. Mathematics Semester-I

Paper I (Algebra I)

Unit 1:
Permutation Group. Group of Symmetry. Dihedral group. Commutator group. Isomorphism Theorems. Automorphisms. Characteristic subgroup. Conjugacy and G-Sets.

Unit 2:
Normal Series. Solvable groups. Nilpotent groups. Cyclic decomposition of permutation group. Alternating groups. Simplicity of An.

Unit 3:
Direct product, semi-direct product of groups. Sylows theorems. Groups of order 2 p and pq.

Unit 4:
Ideals and Homomorphisms. Sum and direct sum of ideals. Maximal and prime ideals. Nilpotent and Nil ideals. Modules. Submodules. Direct sums. R-homomorphisms and quotient modules. Completely reducible modules. Free modules.

Text Book:
Basic Abstract Algebra :Bhattacharya, Jain, and Nagpal ,Second Edition, Cambridge University Press.

Reference Books:
1. Topics in Algebra, I. N. Herstein, Second Edition, John Wiley.
2. Abstract Algebra: David S.Dummit and Richard M. Foote, John Wiley.

Paper II (Real Analysis I)

Unit 1:
Uniform convergence. Uniform convergence and continuity. Uniform convergence and integration. Uniform convergence and differentiation. Equicontinuous families of functions. The Stone-Weierstrass theorem.

Unit 2:
Differentiation. The Contraction Principle. The Inverse Function Theorem. The Implicit Function Theorem. The Rank Theorem. Partitions of unity.

Unit 3:
The space of tangent vectors at a point of Rn. Another definition of Ta (Rn). Vector fields on open subsets of Rn. Topological manifolds. Differentiable manifolds. Real Projective space. Grassman manifolds. Differentiable functions and mappings.

Unit 4:
Rank of a mapping. Immersion. Sub manifolds. Lie groups. Examples of Lie groups.

Text Books:
1. Principles of Mathematical Analysis (Third Edition): Walter Rudin Mc GRAW – HILL Book Company.
2. An Introduction to Differentiable Manifolds and Riemannian Geometry: W. Boothby, Academic Press, 1975.

Reference Books:
1. Methods of Real Analysis: R.R. Goldberg, John Wiley.
2. Calculus of Several Variables: C Goffman, Harper and Row.

Paper-III (Topology I)

Unit 1:
Countable and Uncountable sets. Examples and related Theorems. Cardinal Numbers and related Theorems. Topological Spaces and Examples.

Unit 2:
Open sets and limit points. Derived Sets. Closed sets and closure operators. Interior, Exterior and boundary operators. Neighbourhoods, bases and relative topologies.

Unit 3:
Connected sets and components. Compact and countably compact spaces. Continuous functions and homeomorphisms.

Unit 4:
T_o and T_1-spaces, T_2-spaces and sequences. Axioms of countability. Separability. Regular and normal spaces.

Text Book:
Foundations of General Topology: W.J. Pervin, Academic press, 1964.

Reference Books:
1. Topology: J.R. Munkres, (second edition), Prentice Hall of India, 2002.
2. Introduction to Topology and Modern Analysis: G.F. Simmons, Mc Graw Hill 1963.
3. General Topology: J.L. Kelley, Van Nostrand, 1995.
4. Introduction to general Topology: K.D. Joshi, Wiley Eastern Ltd. 1983

Paper IV (Linear Algebra and differential equations)

Unit 1:
Matrices and operators, Subspaces, Bases and Dimension. Determinants, trace, and Rank. Direct sum decomposition. Real Eigen Values. Differential equations with Real Distinct Eigen values. Complex Eigen values.

Unit 2:
Complex vector spaces. Real operators with Complex Eigen values. Application of complex linear algebra to differential equations. Review of topology in Rn. New norms for old. Exponential of operators.

Unit 3:.
Homogeneous linear systems. A non-homogeneous equation. Higher order systems. The primary decomposition. The S+N decomposition. Nilpotent canonical forms.

Unit 4:
Jordan and real canonical forms. Canonical forms and differential equations. Higher order linear equations on function spaces. Sinks and sources. Hyperbolic flows. Generic properties of operators. Significance of genericity.

Text Book :
Differential equations, dynamical systems and linear algebra: M.W. Hirsch and S. Smale, Academic Press, 1975.

Reference Book :
Dynamical systems: V.I. Arnold, Springer Verlag, 1992.

Paper V (Integral Equations)

Unit 1:
Preliminary concepts of integral equations. Some problems which give rise to integral equations. Conversion of ordinary differential equations into integral equations. Classification of linear integral equations. Integro-differential equations.

Unit 2:
Fredholm equations. Degenerate kernels. Hermitian and symmetric kernels. The Hilbert- Schmidt theorem. Hermitization and symmetrization of kernels. Solutions of integral equations with Green's function type kernels.

Unit 3:
Types of Voltera equations. Resolvent kernel of Voltera equations, Convolution type kernels. Some miscellaneous types of Voltera equations. Non-linear Voltera equations. Fourier integral equations. Laplace integral equations.

Unit 4:
Hilbert transform. Finite Hilbert transforms. Miscellaneous integral transforms. Approximate methods of solutions for linear integral equations. Approximate evaluation of Eigen values and Eigen functions.

Text Book:
Integral Equations: A short course: LI. G Chambers: International text book company Ltd, 1976.

M. Sc. Mathematics Semester II

Paper VI (Algebra II)

Unit 1:
Unique factorization domains. Principal Ideal domains. Euclidean domains. Polynomial rings over unique factorization domains.

Unit 2:
Irreducible polynomials and Eisenstein criterion. Adjunction of roots. Algebraic extensions. Algebraically closed fields. Splitting fields. Normal extensions. Multiple roots.

Unit 3:
Finite fields. Separable extensions. Automorphism groups, and fixed fields. Fundamental theorem of Galois theory. Fundamental theorem of algebra.

Unit 4:
Roots of unity and Cyclotomic polynomials. Cyclic extensions. Polynomials solvable by radicals. Ruler and compass constructions.

Text Book :
Basic Abstract Algebra: Bhattacharya, Jain, Nagpaul; Second Edition, Cambridge University Press.

Reference Books :
1. Topics in Algebra, I. N. Herstein, Second Edition, John Wiley.
2. Abstract Algebra, David S.Dummit and Richard M.Foote, John Wiley.

Paper VII (Real Analysis II)

Unit 1:
Outer measure.Measurable sets and Lebesgue measure. Anon-measurable set, Measurable functions, Littlewood's three principles.

Unit 2:
The Riemann integral. Lebesgue integral of a bounded function over a set of finite measure. Integral of a non-negative function. General Lebesgue integral. Convergence in measure. Differentiation of monotone functions. Functions of bounded variation. Differentiation of an integral.

Unit 3:
Absolute continuity.Convex functions. Lp-spaces. Holder and Minkowski inequality. Riesz-Fischer theorem. Approximation in Lp. Bounded linear functionals on Lp-spaces.

Unit 4:
Compact metric spaces. Baire category theorem. Arzela Ascoli theorem. Locally compact spaces. Sigma compact spaces.

Text Book :
Real Analysis, H.L. Royden, Third edition, Prentice Hall, 1988.

Reference Books :
1. Measure theory and Integration, G. de Barra Wiley Eastern Limited, 1981.
2. An introduction to Measure & Integration, Inder K. Rana, Narosa Publishing House

Paper-VIII-Topology-II

Unit 1:
Urysohn's lemma. Tietze extension theorem. Completely regular spaces.Completely normal spaces. Compactness for metric spaces. Properties of metric spaces.

Unit 2:
Quotient topology. Nets and filters.

Unit3:
Product topology : Finite products, product invariant properties, metric products, Tichonov topology, Tichonov theorem.
Unit 4:
Locally finite and discrete families in topological spaces. Paracompact spaces, Urysohn's metrization theorem.

Text books:
1. Foundations of General Topology: W.J. Pervin, Academic press, 1964.
2. Introduction to general Topology: K.D. Joshi, Wiley Eastern Ltd. 1983.

Reference books:
1. Topology: J.R.. Munkres, second edition, Prentice Hall of India, 2002.
2. Introduction to topology and modern analysis :G.F. Simmons, Mc Graw Hill 1963.
3. General Topology: J.L. Kelley, Van Nostrand, 1995.

Paper IX (Differential Geometry)

Unit1:
Definition of surface. Curves on a surface. Surfaces of revolution. Helicoids. Metric. Direction coefficients. Families of curves. Isometric correspondence. Intrinsic properties. Geodesics. Canonical geodesic equations.

Unit2:
Normal property of geodesics. Existence theorems. Geodesic parallels. Geodesic curvature. Gauss Bonnet theorem. Gaussian curvature. Surfaces of constant curvature. Conformal mapping. Geodesic mapping.

Unit 3:
Second fundamental form. Principal curvatures. Lines of curvature. Developables. Developables associated with space curves. Developables associated with curves on surfaces. Minimal surfaces and ruled surfaces. Fundamental equations of Surface theory. Parallel surfaces.

Unit 4: Compact surfaces whose points are umbilics. Hilbert's lemma. Compact surfaces of constant Gaussian or mean curvature. Complete surfaces. Characterisation of complete surfaces. Hilbert's theorem. Conjugate points on geodesics. Intrinsically defined surfaces. Triangulation. Two dimensional Riemannian manifolds. Problem of metrization. Problem of continuation.

Text Book:
An introduction to Differential Geometry: T.J. Wilmore; Oxford University Press

Reference Book:
Geometry of curves and surfaces: do Carmo, Academic Press.

Paper X (Classical Mechanics)

Unit 1:
Variational Principle and Lagrange's equations; Hamilton's Principle, some techniques of calculus of variations, Derivation of Lagrange equations from Hamilton's principle. Extension of principle to nonholonomic systems. Conservation theorems and symmetry properties.

Unit 2: Legendre transformations and the Hamilton equations of motion. Cyclic coordinates and conservation theorems. Routh's procedure and oscillations about steady motion, The Hamiltonian formulation of relativistic mechanics, The Principle of least action.

Unit 3:
The equations of canonical transformation. Examples of canonical transformation. The symplectic approach to canonical transformations. Poisson brackets and other canonical invariants.

Unit 4:
Equations of motion. Infinitesimal canonical transformations and conservation theorems in the Poisson bracket formulation, the angular momentum, Poisson bracket relations, symmetry groups of mechanical systems. Liouville's theorem.

Text Book:
Classical Mechanics: By H. Goldstein, Second Edition Narosa publishing house, New Delhi.

References:
1. Lectures in Analytic Mechanics: F. Gantmacher, MIR Publishers, Moscow, 1975.
2. Classical Mechanics: Narayan Chandra Rana and Pramod Sharad Chandra Jog, Tata Mc Graw Hill.

M. Sc. Mathematics Semester-III

Paper XI (Complex Analysis)

Unit 1:
Impossibility of ordering Complex numbers. Extended complex plane and stereographic projection. Elementary properties and examples of analytic Functions: Power series, analytic functions.

Unit 2:
Analytic functions as mappings, Mobius transformations. Power series representation of analytic functions, zeros of an analytic function, index of a closed curve.

Unit 3:
Cauchy's theorem and integral formula, the homotopic version of cauchy's theorem and simple connectivity, counting zeros; the open mapping theorem, Goursat's theorem, Classification of singularities, residues, the argument principle.

Unit 4:
The maximum principle. Schwarz's lemma. convex functions and Hadamards three circles theorem. Phragmen-Lindelof theorem.

Text Book:
Functions of one complex variable: John B. Conway, Second edition, Springer international Student Edition.

Reference Book:
Complex Analysis, L.V. Ahlfors. Mc-Graw Hill, 1966.

Paper XII (Functional Analysis)

Unit 1:
Normed spaces, Banach spaces, Further properties of normed spaces. Finite dimensional normed spaces and subspaces. Compactness and finite dimension. Bounded and continuous linear operators.

Unit 2:
Linear functionals. Normed spaces of operators. Dual spaces. Inner product space. Hilbert space. Further properties of inner product spaces. Orthogonal complements and direct sums. Orthonormal sets and sequences. Total orthonormal sets and sequences.

Unit 3:
Representation of functionals on Hilbert spaces. Hilbert adjoint operators, self adjoint, unitary and normal operators. Hahn-Banach Theorem, Hahn-Banach Theorem for complex vector spaces and normed spaces. Reflexive spaces.

Unit 4:
Category theorem, Uniform boundedness theorem, strong and weak convergence, Convergence of sequences of operators and functionals. Open mapping theorem, Closed linear operators and closed graph theorem.

Text Book:
Introductory Functional Analysis with Applications by E. Kreyszig, John Wiley and Sons.

Reference Books:
1. Introduction to Functional Analysis by A.E. Taylor and D.C. Lay, John Wiley and Sons.
2. Introduction to Topology and Modern Analysis: G.F. Simmons, Mc Graw Hill

Paper XIII (Mathematical Methods)

Unit 1:
Fourier integral theorem. Fourier transform. Fourier cosine and sine transform. The convolution integral. Multiple Fourier transform. Solution of partial differential equation by means of Fourier transform.

Unit 2:
Calculations of the Laplace transform of some elementary functions. Laplace transform of derivatives. The convolution of two functions. Inverse formula for the Laplace transform. Solutions of ordinary differential equations by Laplace transform.

Unit 3:
Finite Fourier transform. Finite Sturm-Liouville transforms. Generalized finite Fourier transform.

Unit 4:
Finite Hankel transform. Finite Legendre transform. Finite Mellin transform.

Text Book:
The use of integral transforms: I N. Sneddon, Tata Mc Graw Hill Publishing Company Ltd.

References Books:
Modern Mathematics For Engineers: Edwin F Beckenbach, Second series, Mc Graw Hill Book Company.

CORE ELECTIVE PAPER XIV (Opt any one of the following)

Fluid Dynamics-I

Unit 1:
Real fluids and ideal fluids. Velocity of a fluid at a point. Stream lines and path lines. Steady and unsteady flows. Velocity potential. Velocity vector. Local and particle rate of change. Equation of continuity. Acceleration of a fluid. Condition at a rigid boundary. General analysis of fluid motion. Euler's equation of motion. Bernoulli's equation. Worked examples. Discussion of the case of steady motion under conservative body forces. Some further aspects of vortex motion.

Unit 2:
Sources, sinks and doublets. Images in a rigid infinite plane. Images in solid spheres. Axisymmetric flows. Stokes' stream function. The complex potential for two-dimensional irrotational, incompressible flow. Complex velocity potential for standard two dimensional flow. Uniform stream. Line source and line sink. Line doublets. Line vortices. Two dimensional image systems. The Milne-Thomson circle theorem. Circle Theorem. Some applications of circle theorem. Extension of circle theorem. The theorem of Blasius.

Unit 3:
The equations of state of a substance, the first law of thermodynamics, internal energy of a gas, functions of state, entropy, Maxwell's thermodynamic relation, Isothermal Adiabatic and Isentropic processes. Compressibility effects in real fluids, the elements of wave motion. One dimensional wave equation, wave equation in two and three dimensions, spherical waves, progressive and stationary waves.

Unit 4:
The speed of sound in a gas, equation of motion of a gas. Sonic, subsonic, supersonic flows; isentropic gas flow. Reservoir discharge through a channel of varying section, investigation of maximum mass flow through a nozzle, shock waves, formation of shock waves, elementary analysis of normal shock waves.

Text Book:
F. Chorlton, Text book of Fluid Dynamics, CBS Publishers, Delhi 1985.

Reference Books:
1. G.K. Batchelor, An Introduction to fluid Mechanics, Foundation Books, New Delhi 1994.
2. M.D. Raisinghania, fluid Mechanics, S. Chand and Company, Delhi.

General Relativity

Unit 1:
Tensor Algebra, Riemannian geometry, Curvature Tensor: Covariant Curvature tensor, Ricci tensor, Einstein Tensor, The Bianchi identity.

Unit 2:
The principle of covariance, The principle of equivalence, Geodesic principle, Newton's equations of motion as an approximation of geodesic equations, Poisson's equations as an approximation to Einstein field equations.

Unit 3:
Gravitational field equations in free space, Exterior Schwarzchild's solution and its isotropic form, Birkhoff's theorem, Schwarzchild singularity, planetary orbit, Advance of Perihelion of a planet, Bending of light rays in the gravitational filed, Gravitational Red shift in the spectral lines.

Unit 4: Gravitational field equations for non empty space, Linearization of the field equations, The Weyl's solution of linearized Field equations, Interior Schwarzchild's solution.

Text Book:
Introduction to General Relativity: Ronald Adler, Maurice Bezin and Manamen Schiffer, McGraw-Hill Kogakusha Ltd.

References Books:

1. Introduction to theory of relativity, Rosser W.G.V., ELBS(1972).
2. Relativity Special, General and Cosmology, Rindler W., Pub. Oxford University Press (2003).
3. The Classical Theory of Fields By Landau I.D. and Lifshitz E.M., Pub. Pergamon Press (1978).

Operational Research I

Unit 1:
Simplex method, Theory of Simplex method, duality, dual simplex method.

Unit 2:
Transportation and Assignment problems.

Unit 3:
Two-person Zero-sum games. Games with mixed strategies, graphical solution, solution by linear programming.

Unit 4:
Dynamic programming

Text book:
Operations Research: Kanti Swarup P.K. Gupta and Man Mohan: Sultan Chand and Sons New Delhi.

Reference books :

1. Linear programming: G. Hadley, Narosa Publishing House1995.

2. Introduction to operations Research: F.S. Hillier and G.J.Lieberman (Sixth Edition), Mc Graw Hill
3. International Edition 1995.
4. Operations Research – In Introduction: H.A Taha, Macmillan publishing company inc, New York

FOUNDATION PAPER
Paper XV (Opt any one of the following)
(For Students other than Mathematics)

Elementary Mathematics

Unit 1:
Differentiation: Derivative of a constant function, derivative of trigonometric functions, derivative of inverse trigonometric functions, derivative of $y = log_a x$, hyperbolic function, derivation of parametrically defined functions, logarithmic differentiation.

Unit 2:
Integration: Methods of integration, integration by substitution, three important forms of integrals, six important integrals, integration by parts, definite integrals, reduction formulae.

Unit 3:
Matrices & Determinant: Transpose of matrix, orthogonal matrices, unitary matrices, Hermitian and Skew-Hermitian matrices, idempotent matrix, Involutory matrix, minors and factors, properties of determinants, determinants-general treatment, symmetric & Skew-symmetric determinant.

Unit 4:
Complex Number: Definition, conjugate, modulus and argument, Algebra of complex number (Addition, Subtraction, Multiplication and Division), power and square root of complex number, properties of complex number, Argand diagram, solution of quadratic equation in complex number system.

Text Books:
1. Differential Calculus by Shanti Narayan (Unit 1 & Unit 2)
2. An Introduction to Matrices by S.C. Gupta (Unit 3 & Unit 4)

Elementary Mathematical Methods

Unit 1:
The Laplace Transform: Piece-wise or Sectional continuity, Functional of exponential order, Function of class A, The transform concept, Some Standard result.

Unit 2:

The Inverse Laplace Transform: Definition, Null function, Uniqueness of inverse Laplace Transform, partial Fractions, Heaviside's expansion formula, The complex inversion formula.

Unit 3:

Applications to Differential Equations, Hankel Transform, Mellin Transforms.

Unit 4: Fourier Transform

The Infinite Fourier Transform: Infinite Fourier sine transform of F(x), Infinite Fourier cosine transform of F(x), The Infinite Fourier transform of F(x), Relationship between Fourier and Laplace transform.

The finite Fourier Transform and Fourier Integral: : Finite Fourier sine transform of F(x), Finite Fourier cosine transform of F(x),Fourier Integral Theorem.

Text Book:

1. Integral Transforms by J.K.Goyal, K.P.Gupta, Pragati Prakashan (14^{th} Edition 2010).

Numerical Method

Unit 1:

Numerical Differentiation: Remainder or Error Committed in Computing Derivative, Differentiation formulae, Estimation of Error differentiation formula based on Newton's Forward, Backward and Stirling's formula.

Numerical Integration: Trapezoidal Rule, Simpson's 1/3 and 3/8 rules. Romberg's method. Two and Three point Gaussian quadrature formulae –Double integrals using trapezoidal and Simpsons's rules. Weddle's rule, Error in Integration Formulae.

Unit 2:

Solution of Algebraic and Transcendental: Bisection method, Newton Raphson's Methos, Regula-Falsi Method, The Secant method, The method of successive approximations, Comparison of Iterative method.

Unit 3:

System of Linear Algebraic Equations: Gauss-Elimination Method, Gauss-Jacobi Iteration Method, Gauss-Seidel Iteration Method, Matrix Inversion Method, Gauss-Jordon's Matrix Inversion Method.

Unit 4:

Numerical Solutions of Ordinary Differential Equation of First order: Euler method, Euler Modified method, Picard's Method, Picards Method of Successive approximation, Taylor series method, Runge-Kutta method. Multistep methods: Milne's and Adam's predictor and corrector methods.

Text Book:

1. Numerical Analysis and Computational Procedure by S A Molla, Books and Allied (P) Ltd.

2. Computer Orianted Numerical Method by V. Rajaraman Prentice Hall of India (P). Ltd.
3. Advanced Engineering Mathematics by Ervin Kreyszing, New Age International (P) Ltd.
4. Numerical methods with programming in C by Veerarjan, T and Ramachandran, T. Second Editiion, Tata McGraw-Hill Publishing. Co. Ltd, 2007.
5. Numerical Methods for Scientisits and Engineers by Sankara Rao K, 3rd Edition, Printice Hall of India Private Ltd, New Delhi, 2007.

Fuzzy Mathematics-I

Unit 1:
Crisp Sets. Fuzzy Sets. Fuzzy sets versus Crisp sets Operations on Fuzzy sets.

Unit 2:
Fuzzy Arithmetic.

Unit 3:
Fuzzy relations.

Unit 4:
Fuzzy relation equations.

Text Book:
Fuzzy Sets and Fuzzy Logic, theory and applications. George J. Klir and Bo Yuan, Prentice Hall India.

M. Sc. Mathematics Semester IV

Paper XVI Dynamical Systems

Unit 1:
Dynamical systems and vector fields. The fundamental theorem. Existence and uniqueness. Continuity of solutions in initial conditions. On extending solutions. Global solutions. The flow of a differential equation.

Unit 2:
Nonlinear sinks. Stability. Liapunov function. Gradient systems. Gradients and inner products.

Unit 3:
Limit sets, local sections and flow boxes, monotone sequences in planar dynamical systems. The Poincare Bendixson theorem, Applications of Poincare-Bendixson theorem; one species, predator and prey, competing species.

Unit 4:
Asymptotic stability of closed orbits, discrete dynamical systems. Stability and closed orbits. Non Autonomous equations and differentiability of flows. Persistence of equilibria, persistence of closed orbits. Structural stability.

Text Book:
Differential equations, dynamical systems & linear algebra: M.W. Hirsch & S. Smale, Academic Press, 1975.

Reference Book:
Dynamical systems: V.I. Arnold, Springer Verlag, 1992.

Paper XVII Partial Differential Equations

Unit 1:
First order partial differential equations in two independent variables and the Cauchy problem. Semilinear and quasi linear equations in two independent variables. First order non linear equations in two independent variables. Complete integral.

Unit 2:
Classification of second order partial differential equations. Potential theory and elliptic differential equations (sections 2.1-2.5).

Unit 3:
The diffusion equation and parabolic differential equations (sections 3.1-3.4).

Unit 4:
The Wave equation (sections 4.1, 4.2, 4.4, 4.8, 4.9)

Text Book:
Partial Differential Equations: Phoolan Prasad and Renuka Ravindran; New Age International (P) Limited.

Paper XVIII Numerical Analysis

Unit 1:
Simple enclosure methods, Secant method, Newton's method, general theory for one point iteration methods. Aitken extrapolation for linearly convergent sequences, Error tests, Numerical evaluation of multiple roots, roots of polynomials, Mullers method, Non-linear systems of equations, Newton's method for non- linear systems.

Unit 2:
Polynomial interpolation theory, Newton's divided differences, finite difference and table oriented interpolation formulas. Forward-differences. Hermite interpolation.

Unit 3: The Weierstrass theorem and Taylor's theorem. The minimax approximation problem, the least square approximation problem, orthogonal polynomial, economisation of Taylor series, minimax approximation.

Unit 4:
The trapezoidal rule and Simpson's rule, Newton- Cotes integration formulas.

Text book:
An Introduction to Numerical Analysis by K. E. Atkinson, Johan Wiley and sons, Inc.

CORE ELECTIVE PAPER XIX (Opt any one of the following)

Fluid Dynamics-II

Unit 1:
Stress components in a real fluid, relation between Cartesian components of stress translation motion of fluid elements, the rate of strain quadric and principal stresses, some further properties of the rate of the strain quadric, stress analysis in fluid motion, relation between stress and rate of strain, the coefficient of viscosity and laminar flow, the Navier-Stokes equations of motion of a viscous fluid, some solvable problems in viscous flow, diffusion of vorticity, energy dissipation due to viscosity, steady flow past a fixed sphere.

Unit 2:
Nature of magneto-hydrodynamics, Maxwell electromagnetic field equations; Motion at rest, Motion in medium , Equation of motion of conducting fluid, Rate of flow of charge, Simplification of electromagnetic field equation. Magnetic Reynold number; Alfven's theorem, The magnetic body force. Ferraro's Law of Isorotation.

Unit 3:
Dynamical similarity, Buckingham Theorem. Renold number. Prandtl's boundary layer, Boundary layer equation in two dimensions, Blasius solutions, Boundary layer thickness, Displacement thickness. Karman integral conditions, Separation of boundary layer flow.

Unit 4:
Turbulence: Definition of turbulence and introductory concepts. Equations of motion for turbulent flow. Reynolds Stresses Cylindrical coordinates. Equation for the conservation of a transferable scalar quantity in a turbulent flow. Double correlations between turbulence-velocity components. Change in double velocity correlation with time. Introduction to triple velocity correlations. Features of the double longitudinal and lateral correlations in a homogeneous turbulence. Integral scale of turbulence.

Text Books:
1. Text book of Fluid Dynamics: F. Chorlton; CBS Publishers, Delhi 1985.
2. Fluid Mechanics: Joseph Spurk; Springer.
3. Turbulence by J.O. Hinze, 2nd edition, Mc Graw-Hill, chapter 1 sections 1.1 to 1.7

4. Fluid Mechanics by M.D. Raisinghania, S. Chand and Company, Delhi.

Reference Books:

1. An Introduction to fluid Mechanics: G.K. Batchelor; Foundation Books, New Delhi, 1994.
2. Boundary Layer Theory: H. Schichting; Mc Graw Hill Book Company, New York 1971.

Cosmology

Unit 1:

Static cosmological models of Einstein and de Sitter and their derivation and its Properties: (i) The geometry of the Universe (ii) Density and pressure (iii) Motion of test particle (iv) Doppler shift (v) comparison with actual universe, Comparison between Einstein and de-Sitter models.

Unit 2:

Cosmological principle, Hubble law, Weyl's postulate,Derivation of Robertson Walker Metric and its properties, Motion of a particle and light rays in FRW model, Red shift, Deceleration parameter and Hubble's constant, Matter Dominated era.

Unit 3:

Friedman Model, Fundamental equation of dynamical cosmology, density and pressure of the present universe, Matter dominated era of the universe, critical density, flat, closed and open universe, age of the universe.

Unit 4:

Steady state cosmology, Distance measure in cosmology, Comoving distance, Apparent luminosity and luminosity distance, Angular diameter and Lookback time, Galaxy count

Text Books:

1. Relativity, Thermodynamics and Cosmology: Richard C. Tolman, Oxford Press
2. Gravitation and Cosmology : Principles and Applications of the General Theory of Relativity by Steven Weinberg.

References Books:

1. The Classical Theory of Fields, By Landau I.D. and Lifshitz E.M., Pub. Pergamon Press (1978).
2. The Theory of Relativity Moller C, Pub. Oxford University Press (1982).
3. Introduction to theory of relativity, Rosser W.G.V., ELBS (1972).
4. Relativity Special, General and Cosmology, Rindler W., Pub. Oxford University Press (2003).
5. Relativity: The General Theory, Synge J.L., North Holland Pub. Comp. (1971).

Operations Research–II

Unit 1:
Integer programming.

Unit 2:
Queuing theory and sequencing.

Unit 3:
Non- Linear programming- one and multi- Variable unconstrained optimization, Kuhn-Tuckerconditions for constrained optimization.

Unit 4:
Quadratic programming, fraction programming and goal programming.

Text book:
Kanti-Swarup P.K. Gupta and Man Mohan: Operations Research, Sultan Chand and Sons New Delhi.

Reference books :

1. G. Hadley: Linear programming, Narosa Publishing House1995.
2. 2.F.S. Hillier and G.J.Lieberman: Introduction to operations Research (Sixth Edition) Mc Graw Hill
3. International Edition 1995.
4. 3.H.A Taha: Operations Research – In Introduction, Macmillan publishing company inc, New York

FOUNDATION PAPER XX (Opt any one of the following)
(For Students other than Mathematics)

Discrete Mathematics

Unit 1:
Mathematical Logic: Introduction, Proposition, compound Proposition, Proposition and truth tables, logical equivalence, algebra of Proposition, conditional Proposition, converse, contra positive & inverse, bi conditional statement, negation of compound statements, tautologies & contradictions, normal forms, logic in proof.

Unit 2:
Lattice: Lattice as partially ordered sets, their properties, lattices as algebraic system, sub lattices, and some special lattices eg. Complete, complemented and distributive lattices.

Unit 3:
Boolean algebra and Logic Circuits: Boolean algebra, basic operations, Boolean functions, De-Morgan's theorem, logic gate, sum of products and product of sum forms, normal form, expression of Boolean function as a canonical form, simplification of Boolean expression by algebraic method, Boolean expression form logic & switching network.

Unit 4:

Graph Theory: Basic terminology, simple graph, multigraph, degree of a vertex, types of a graph, sub graphs of isomorphic graphs, matrix representation of graphs, Euler's theorem on the existence of Eulerian path & circuits, directed graph, weighted graphs, strong connectivity, chromatic number.

Text Book:

Discrete Mathematical structures with applications to computer science by J.P. Tremblay and R. Manohar, McGraw-Hill book company,1997.

Linear Programming

Unit 1:

Mathematical formulation of L.P.P. Graphical method for solution of LPP.

Unit 2:

Simplex method. Theory and problems. Computational procedure. Artificial variables inverse of a matrix using simplex method.

Unit 3:

Duality in L.P.P. Concept of duality, properties, dual simplex method, its algorithm

Unit 4:

Transportation and assignment problems, various methods.

Text Book:

Operations Research by R.K. Gupta, KRISHNA Prakashan Media (P) Ltd. (30^{th} Edition: 2012)

Fuzzy Mathematics-II

Unit 1:

Possibility theory

Unit 2:

Fuzzy Logic

Unit3:

Constructing Fuzzy sets and operations on Fuzzy sets. Approximate reasoning.

Unit4:

Fuzzy Systems. Pattern Recognition.

Text Book:

Fuzzy Sets and Fuzzy Logic, theory and applications by George J. Klir and Bo Yuan, Prentice Hall, India.

RASHTRASANT TUKADOJI MAHARAJ NAGPUR UNIVERSITY, NAGPUR

NOTIFICATION

No. Acad/215. Date : 15th June, 2015

CBCS 15-16 and onwards

To,

The Principal
of all the affiliated Science Colleges
of Rashtrasant Tukadoji Maharaj
Nagpur University, Nagpur

Subject:- Direction No. 10 of 2015.

Sir/Madam,

I am forwarding herewith a copy of the Direction No. 10 of 2015 issued by the Hon'ble Vice-Chancellor under Section 14(8) of Maharashtra Universities Act, 1994 **"DIRECTION RELATING TO THE EXAMINATION LEADING TO THE DEGREE OF MASTER OF SCIENCE, SEMESTER PATTERN (CHOICE BASED CREDIT SYSTEM) AND DEGREE OF MASTER OF SCIENCE AND TECHNOLOGY (APPLIED GEOLOGY). SEMESTER PATTERN, (CHOICE BASED CREDIT SYSTEM) "**along with the examination scheme and Syllabi to be implemented from Academic Session **2015-2016**.

You are requested to kindly bring it to the notice of all teachers and students of your college.

Thanking you,

Direction and Syllabi available on the Rashtrasant Tukadoji Maharaj Nagpur University.

(www.nagpur university. org.)

Yours faithfully,

Encl: As above.

Sd/-
(Puran Meshram)
Registrar,
Rashtrasant Tukadoji Maharaj
Nagpur University, Nagpur.

No. Acad/-- Nagpur dated the 15th June, 2015

Copy for information and necessary action along with the Direction , Examination Scheme and Syllabi as mentioned above to :-

1) The Dean Faculty of Science, Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur.
2) The Controller of Examinations, Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur
3) The Director, B.C.U.D., Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur
4) The Deputy Registrar (Examinations) Rashtrasant Tukadoji Maharaj Nagpur University,
5) The Deputy Registrar (Coll. Sec.) Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur
6) The Asstt. Registrar (Prof. Exam.), Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur
7) The Asstt. Registrar (Conf.), Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur.

8) The Asstt. Registrar (Exams & Enqury.), Rashtrasant Tukadoji Maharaj Nagpur University,
9) The Officer-in-Charge, Publication Section, R.T.M. Nagpur University, Nagpur.
10) The Asstt. Registrar, Ordinance Section, R.T.M. Nagpur University, Nagpur
11) The P. A. to the Hon'ble Vice-Chancellor, R.T.M. Nagpur University, Nagpur
12) The P. A. to the Hon'ble Pro-Vice-Chancellor, R.T.M. Nagpur University, Nagpur
13) The P. A. to the Registar, R.T.M. Nagpur University, Nagpur
14) Mrs. Veena Prakashe, Information Scientist, R.T.M. Nagpur University, Nagpur

Sd/-
(Manish Zodpey)
Deputy Registrar(Acad.
Rashtrasant Tukadoji Maharaj
Nagpur University, Nagpur.

RASHTRASANT TUKADOJI MAHARAJ NAGPUR UNIVERSITY, NAGPUR
FACULTY OF SCIENCE
DIERCTION NO. 10 OF 2015

DIRECTION RELATING TO THE EXAMINATION LEADING TO THE DEGREE OF MASTER OF SCIENCE, SEMESTER PATTERN (CHOICE BASED CREDIT SYSTEM) AND DEGREE OF MASTER OF SCIENCE AND TECHNOLOGY (APPLIED GEOLOGY). SEMESTER PATTERN, (CHOICE BASED CREDIT SYSTEM) (FACULTY OF SCIENCE)

(Issued under Section 14(8) of the Maharashtra Universities Act, 1994)

Whereas, Maharashtra Universities Act, 1994 (hereinafter referred to as Act) has come into force from 22nd July, 1994 and was amended from time to time,

AND

Whereas, the University Grants Commission, New Delhi vide letter No.D.O.No.F-1-1/2015 (CM) dated 8th January 2015 regarding reforms pertaining to the introduction of Choice Based Credit System at the earliest from the academic session 2015-16 to provide option to students and also seamless mobility across the institutions.

AND

Whereas, the Board of Studies in all the Science subjects in their meeting held during 24.4.2015 prepared the syllabi and scheme of examination for the M. Sc. and M. Sc. (Tech) Applied Geology course and recommended for starting of the Choice Based Credit System in Faculty of Science from the academic session 2015-16,

AND

Whereas, the faculty of Science in its meeting held on 20.5.2015 vide item No. 16 , has considered, accepted and recommended to Academic Council, the policy decision regarding introduction of Choice Based Credit System and the draft syllabi of M. Sc. Semester-I to IV (Semester I to VI for M. Sc. (Tech) Applied Geology) with draft direction and other details.

AND

Whereas, the Academic Council in its meeting held on _ _ _ _ _ _ _ _ _ _ vide item No. _ _ has considered, accepted and recommended to Management Council, for M.Sc. along with draft direction and other details.

AND

Whereas, the Management Council in its meeting held on _ _ _ _ _ _ vide item No. _ _ , has considered, accepted the draft direction and other details.

AND

Whereas, the new draft direction and scheme of examination as per semester pattern is to be implemented from the Academic Session 2015-16 for M.Sc. semester I and onwards which is to be regulated by this direction and as such there is no existence and framing of an Ordinance for the above examination is a time consuming process.

AND

Whereas, the admission of students in the Choice Based Credit System at M.Sc. Semester I and onwards are to be made in the Academic Session 2015-16.

AND

Whereas, ordinance making is a time consuming process, therefore, I, Dr. S. P. Kane, Vice Chancellor Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur in exercise of powers vested under Section 14(8) of the Act do hereby issue the following Direction.

1. This Direction may be called "Direction relating to examinations leading to the Degree of Master of Science, Semester Pattern (Choice Based Credit System) and Degree of Master of Science and Technology (Applied Geology), Semester Pattern, (Choice Based Credit System)
2. The direction shall come into force from the date of its issue by Hon'ble Vice Chancellor and shall remain in force till the relevant ordinance comes into being in accordance with the provisions of the Act.
3. The duration of the M. Sc. course shall be of two academic years consisting of four semesters with the University examinations at the end of each semester namely:

DIRECTION 15 OF 2016
FACULTY OF SOCIAL SCIENCE

DIRECTION RELATING TO THE EXAMINATION LEADING TO THE POST GRADUATE DEGREE OF MASTER OF ARTS IN SOCIAL SCIENCE, CHOICE BASED CREDIT SYSTEM SEMESTER PATTERN

(Issued under Section 14(8) of the Maharashtra Universities Act, 1994)

Whereas, Maharashtra Universities Act, 1994 (hereinafter referred to as Act) has come into force from 22nd July, 1994 and was amended from time to time,

AND

Whereas, the University Grants Commission, New Delhi vide letter No.D.O.No.F-1-1/2015 (CM) dated 8th January 2015 regarding reforms pertaining to the introduction of Choice Based Credit System at the earliest from the academic session 2015-16 to provide option to students and also seamless mobility across the institutions.

AND

Whereas, the Special Task Committee in all the Social Sciences under the subjects of HISTORY, ECONOMICS , POLITICAL SCIENCE, SOCIOLOGY, PHILOSOPHY, PSYCHOLOGY, GEOGRAPHY, HOME ECOMOMICS, WOMEN'S STUDIES & DEVELOPMENT, DR. AMBEDKAR THOUGHT, PUBLIC ADMINISTRATION, BUDDHIST STUDIES, ANCIENT INDIAN HISTORY CULTURE & ARCHAEOLOGY , GANDHIAN THOUGHT , TRAVEL & TOURISM , RASHTRASANT TUKADOJI MAHARAJ THOUGHT in their meeting held during 02nd March 2016 to 12th May.2016 prepared the syllabi and scheme of examination for the Master of Arts Post Graduate Degree course Choice Based Credit System Semester Pattern in Faculty of Social Science and recommended to the Hon'ble Vice-Chancellor for starting from the academic session 2016-17.

AND

Whereas The Hon'ble Vice Chancellor of Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur in exercise of powers vested under 14/7 of the Maharashtra University Act 1994 on behalf of the Board of Studies under the Faculty of Social Science and Faculty of Social Science has considered, accepted and recommended to Academic Council, the policy decision regarding introduction of Master of Arts Choice Based Credit System Semester Pattern draft syllabi with draft direction and Scheme of examination of Semester-I to IV

AND

Whereas, the Academic Council in its meeting held on 08th June, 2016 vide item No. 1(A) has considered, accepted and recommended to Management Council, for Master of Arts in Social Science Faculty Choice Based Credit System Semester Pattern draft syllabi with draft direction and Scheme of examination of Semester-I to IV

AND

Whereas, the Management Council in its meeting held on 14th June, 2016 vide item No. 96(A) has considered, accepted the Master of Arts in Social Science Faculty Choice Based Credit System Semester Pattern draft syllabi with draft direction and Scheme of examination of Semester-I to IV

AND

Whereas, the new draft direction and scheme of examination as per Choice Based Credit System Semester Pattern is to be implemented from the Academic Session 2016-17 for M.A. semester I and onwards which is to be regulated by this direction and as such there is no existence and framing of an Ordinance for the above examination is a time consuming process.

AND

Whereas, the admission of students in the Choice Based Credit System at M.A. Semester I and onwards are to be made in the Academic Session 2016-17.

AND

Whereas, ordinance making is a time consuming process, therefore, I, Dr. Pramod G. Yeole, Acting Vice Chancellor Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur in exercise of powers vested under Section 14(8) of the Maharashtra University Act 1994 do hereby issue the following Direction.

1. This Direction may be called "Direction relating to examinations leading to the Degree of Master of Arts in Social Science , Choice Based Credit System Semester Pattern.

2. The direction shall come into force from the date of its issue by Hon'ble Vice Chancellor and shall remain in force till the relevant ordinance comes into being in accordance with the provisions of the Act.
3. The duration of the M.A. course shall be of two academic years consisting of four semesters with the University examinations at the end of each semester namely: (HISTORY, ECONOMICS, POLITICAL SCIENCE, SOCIOLOGY, PHILOSOPHY, PSYCHOLOGY, GEOGRAPHY, HOME ECOMOMICS, WOMEN'S STUDIES & DEVELOPMENT, DR. AMBEDKAR THOUGHT, PUBLIC ADMINISTRATION, BUDDHIST STUDIES, ANCIENT INDIAN HISTORY CULTURE & ARCHAEOLOGY , GANDHIAN THOUGHT , TRAVEL & TOURISM , RASHTRASANT TUKADOJI MAHARAJ THOUGHT)
   a) M.A. Semester I Exam
   b) M.A. Semester II Exam
   c) M.A. Semester III Exam
   d) M.A. Semester IV Exam

4. The theory examination of Semester-I, II, III and IV shall be conducted by the University and shall be held separately at the end of each semester at such places and dates as may be decided and notified by the University and shall be held as per the schedule given in the Table below.

Sr. No.	Name of the examination	Regular Admitted,External & Ex Students Examination	Regular Admitted, External & Ex Students Examination
1	M.A.Semester I & III	Winter	Summer
2	M.A.Semester II & IV	Summer	Winter

5. Admission & Eligibility to the Course:

a) Subject to the compliance with the provisions of this Direction and of other ordinances in force from time to time an applicant for admission to Semester-I examination shall have passed the Bachelor Degree examination of this university or of any other statutory recognized university as equivalent to the Bachelor Degree of this university.

b) The applicant who has passed Semester-I shall be eligible for admission to Semester-II subject to ATKT rules.

c) The applicant who has passed Semester-II shall be eligible for admission to Semester-III subject to ATKT rules.

Whereas, the new draft direction and scheme of examination as per Choice Based Credit System Semester Pattern is to be implemented from the Academic Session 2016-17 for M.A. semester I and onwards which is to be regulated by this direction and as such there is no existence and framing of an Ordinance for the above examination is a time consuming process.

AND

Whereas, the admission of students in the Choice Based Credit System at M.A. Semester I and onwards are to be made in the Academic Session 2016-17.

AND

Whereas, ordinance making is a time consuming process, therefore, I, Dr. Pramod G. Yeole, Acting Vice Chancellor Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur in exercise of powers vested under Section 14(8) of the Maharashtra University Act 1994 do hereby issue the following Direction.

1. This Direction may be called "Direction relating to examinations leading to the Degree of Master of Arts in Social Science , Choice Based Credit System Semester Pattern.

2. The direction shall come into force from the date of its issue by Hon'ble Vice Chancellor and shall remain in force till the relevant ordinance comes into being in accordance with the provisions of the Act.
3. The duration of the M.A. course shall be of two academic years consisting of four semesters with the University examinations at the end of each semester namely: (HISTORY, ECONOMICS, POLITICAL SCIENCE, SOCIOLOGY, PHILOSOPHY, PSYCHOLOGY, GEOGRAPHY, HOME ECOMOMICS, WOMEN'S STUDIES & DEVELOPMENT, DR. AMBEDKAR THOUGHT, PUBLIC ADMINISTRATION, BUDDHIST STUDIES, ANCIENT INDIAN HISTORY CULTURE & ARCHAEOLOGY , GANDHIAN THOUGHT , TRAVEL & TOURISM , RASHTRASANT TUKADOJI MAHARAJ THOUGHT)
   a) M.A. Semester I Exam
   b) M.A. Semester II Exam
   c) M.A. Semester III Exam
   d) M.A. Semester IV Exam

4. The theory examination of Semester-I, II, III and IV shall be conducted by the University and shall be held separately at the end of each semester at such places and dates as may be decided and notified by the University and shall be held as per the schedule given in the Table below.

Sr. No.	Name of the examination	Regular Admitted,External & Ex Students Examination	Regular Admitted, External & Ex Students Examination
1	M.A.Semester I & III	Winter	Summer
2	M.A.Semester II & IV	Summer	Winter

5. Admission & Eligibility to the Course:

a) Subject to the compliance with the provisions of this Direction and of other ordinances in force from time to time an applicant for admission to Semester-I examination shall have passed the Bachelor Degree examination of this university or of any other statutory recognized university as equivalent to the Bachelor Degree of this university.

b) The applicant who has passed Semester-I shall be eligible for admission to Semester-II subject to ATKT rules.

c) The applicant who has passed Semester-II shall be eligible for admission to Semester-III subject to ATKT rules.

d) The applicant who has passed Semester-III shall be eligible for admission to Semester-IV subject to ATKT rules.

ATKT Rules: 6. The ATKT rules for admission for the M.A. Course (Theory and Internal Assessment as separate passing head and on calculation fraction, if any, shall be ignored) shall be as given in the following table

Admission to Semester	Candidate should have passed in following examinations	Candidate should have filled in the examination form of	Candidate should have passed at least 50% of following examinations
Semester-I	Bachelor Degree as per para no.5 (a)	-----	-----
Semester-II	-----	Semester-I	-----
Semester-III	-----	Semester-II	Candidate should have passed at least 50% subject of Semester-I & II taken together
Semester-IV	-----	Semester-III	Candidate should have passed Semester-I and at least 50% subject of Semester-II & III taken together

7) Without prejudice to other provisions of Ordinance no. 6 relating to the examination in general, provisions of Para 5, 8, 9, 10, 26, 31 and 32 of the said ordinance shall apply to every student admitted to this course.

08) The fees for the tuition, examination, laboratory and other fees shall be as prescribed by the university from time to time.

09) For the external candidate the internal marks shall be assigned in proportionate to the marks scored by the candidate in external examination conducted by the university.

10) (a) The scope of the subjects shall be as prescribed in the syllabus.

(b) The medium of instruction and examination shall be English/ Hindi/ Marathi except language subjects

11) The number of papers and maximum marks assigned to each paper and minimum marks / grade, an examinee must obtain in order to pass the examination shall be as prescribed in appendices appended with this direction. **(Appendix 1(A-B), 2(A-B), 3(A-D) AND Appendix 4,5 & 6)**

12) The examinee at each of the examination shall have option of not being declared successful at the examination in case he / she does not secure a minimum of grade equivalent to 55% marks at the examination. This option will have to be exercised every time the application is submitted to any of the examinations. Once this option is exercised, the option shall be binding on the examinee and it shall not be evoked in under any circumstances.

13) The classification of the examinee successful at the semester and examinations and at the end of final semester examination shall be as per the rules and regulations of Choice Based Credit System as prescribed in appendices, appended with this direction.

14) The provisions of direction no. 3 of 2007 for the award of grace marks for passing an examination, securing higher grade in subject(s) as updated from time to time shall apply to the examination under this direction.

15) The names of the successful examinee passing the examination as a whole in the minimum prescribed period and securing the grades equivalent to first and second division shall be arranged in order of merit as provided in ordinance 6 relating to examination in general.

16) Successful examinees at the end of M.A. Semester-IV Examination who obtained CGPA above 7.51 shall be placed in First Division with distinction, those obtaining CGPA from 6.00 to 7.50 shall be placed in First Division, those obtaining CGPA from 4.50 to 5.99 shall be placed in Second Division and those obtaining CGPA from 4.00 to 4.49 shall be placed in Third Division.

17) No candidate shall be admitted to an examination under this direction, if he / she has already passed the same examination of this university or of any other university.

18) Successful examinees at the M.A. Semester I, II, III, & IV Examinations shall be entitled to receive a Certificate signed by the Controller of Examination of University (COE) and successful examinees at the end of M.A. Semester IV examination shall, on payment of prescribed fees, receive a Degree in the prescribed format, signed by the Vice-Chancellor.

19) This course is based on Choice Based Credit System and therefore, it will be also regulated by guidelines and regulation given in appendices which are part of this direction.

20) **Absorption scheme for failure students of the credit based semester pattern:**

a) While switching over to Choice Based Credit System, the failure students of credit based semester pattern will be given **Five** chances to clear the examination form the Winter 2016 of 1st Semester, Summer 2017 2nd Semester, Winter 2017 3rd Semester and Summer 2018 4th Semester.

b) The candidates who have cleared first and second semester of Part I of the Credit Based Semester Pattern examination in the concerned subject shall get admission to Third Semester of the Choice Based Credit System Semester Pattern directly. However, candidates who are allowed to keep term will not be eligible for admission to Third Semester of the Choice Based Credit System unless they clear all the papers and practical (where applicable) of first and second semester of the Credit Based Semester Pattern examination.

21) **Absorption scheme for failure students of annual pattern:**

a.) The candidates who have cleared first year of annual pattern shall get admission to Semester III of the Choice Based Credit System directly. However, candidates who are allowed to keep term will not be eligible for admission to Third Semester of the Choice Based Credit System unless they clear all the papers and practical of First year of the annual pattern examination.

b.) MA-II all Ex and External failure students of annual examination to be last chance i.e. winter 2017 . Those who failed to clear the MA-I & II examinations as above shall have to opt Choice Based Credit System Semester Pattern right from Semester-I.

22) If an examinee failed to pass the M.A. Degree with five successive years from the date of his/her first admission to particular programme he/she shall be declared as 'Not fit for the Course' (NFC) and he/she will not be allowed to appear further for any exam of the same course.

Guidelines for Students, Supervisors and Examiners

In each semester the student will have to deliver a seminar on any topic relevant to the syllabus / subjec encompassing the recent trends and development in that field / subject. The topic of the seminar will be decided at the beginning of each semester in consultation with the supervising teachers. The student has to deliver the seminar which will be followed by discussion. The seminar will be open to all the teachers of the department, invitees, and students.

The students should submit the assignment properly bound in two copies to the head of the department. The said shall be evaluated by the concerned supervisor / head of the department.

The marks of the Internal Assessment shall be forwarded to the university within due period through head of the Department. The record of the seminar and assignment should be preserved till the declaration of the final result.

1. The internal assessment marks shall be awarded by the concerned teacher.
2. The internal assessment shall be completed by the College / University at least 15 days prior to the final examination of each semester. The Marks shall be sent to the University immediately after the Assessment in the prescribed format.

3. **General guidelines for Internal Assessment are:**

a) The internal assessment marks assigned to each theory paper as mentioned in Appendix 4 shall be awarded on the basis of assignments like class test, attendance, home assignments, study tour, visit to educational institutions and research organizations, field work, group discussions or any other innovative practice / activity.

b) There shall be one assignment (as described above) per Theory paper.

c) There shall be no separate / extra allotment of work load to the teacher concerned. He/ She shall conduct the internal assessment activity during the regular teaching days / periods as a part of regular teaching activity.

d) The concerned teacher / department / college shall have to keep the record of all the above activities until six months after the declaration of the results of that semester.

e) At the beginning of each semester, every teacher / department / college shall inform his / her students unambiguously the method he / she propose to adopt and the scheme of marking for internal assessment.

f) Teacher shall announce the schedule of activity for internal assessment in advance in consultation with HOD / Principal.

g) Final submission of internal marks to the University shall be before the commencement of the University Theory / Practical examinations whichever is later.

4. **Foundation Course:** Student can choose this paper from any other subject in any other Faculty other than his main subject for post graduation of their choice. For Example an M.A. Sociology student can take a foundation course paper from Political Science or Economics or History or Marathi or Commerce of M.sc. Math or any other subject as per available in the Subject list of the Foundation Course in the Direction of Faculty and which will be available at Nearest of other College/Department from his/her College/Department. They should earn the credits from the respective College/departments.

5. One credit course of theory will be of one clock hour per week of 25 marks running for 15 weeks and four credit course of theory will be of four clock hours per week of 100 marks running for 15 weeks.

6. One credit course of practical will consist of two clock hours of laboratory exercise of 25 marks running for 15 weeks and four credit course of practical will consist of eight hours of laboratory exercise of 100 marks running for 15 weeks.

Practical Examination

1. Each practical carries 100 marks. For the examination, the distribution of the marks shall be as follows:

a.	Record / Journal / Internal assessment	: 20 marks – Evaluated by Internal
b.	Practical Performance	: 60 marks – Evaluated jointly by External & Internal
c.	Viva-voce	: 20 marks - Evaluated by External

NOTE: Practical performance shall be jointly evaluated by the External and Internal Examiner. In case of discrepancy, the External Examiner's decision shall be final.

2. Practical exam shall be of 3 to 8 hours duration for one or two days, depending on subject and number of students.

3. The Practical Record of every student shall carry a certificate as shown below, duly signed by the teacher-in-charge and the Head of the Department.

4. If the student fails to submit his / her certified Practical Record duly signed by the Teacher-In-Charge and the Head of the Department, he / she shall not be allowed to appear for the Practical Examination and no Marks shall be allotted to the student.

5. The certificate template shall be as follows:

CERTIFICATE

Name of the college / institution _____

Name of the Department: _____

This is to certify that this Practical Record contains the bonafide record of the Practical work of Shri / Shrimati / Kumari _____ of M.A.. _____ _____ Semester _____ during the academic year _____. The candidate has satisfactorily completed the experiments prescribed by Rashtrasant Tukdoji Maharaj Nagpur University for the subject _____.

Dated ___ / ___ / _____

Signature of the teacher who taught the examinee

1._____

2._____

Head of the Department

General Rules and Regulations regarding pattern of question paper and choice based credit system:

A) Pattern of Question Paper

1. There will be four units in each paper.
2. Maximum marks of each theory paper will be 80
3. Question paper will consist of five questions, each of 16 marks.
4. Four questions will be on four units with internal choice (One question on each unit).
5. Fifth question will be compulsory with questions from each of the four units having equal weightage and there will be no internal choice.

B) Semester Grade Point Average (SGPA) and Cumulative Grade Point Average (CGPA)

M.A. Program shall consist of four semesters, wherein the student has to complete certain number of credits as indicated in Table 1. Each subject (or course) has fixed number of credits. The types of subject subheads are: Core, Electives, Foundation Course, Seminar and Assignment.

Among the 64 credits which candidate needs to complete and clear for M.A. in any concerned subjects, at least 56 credits must be taken from the parent department where he / she is registered for M.A. Course. The remaining 08 credits may be taken from any other department of university or affiliated colleges offering foundation courses of PG programs.

Table 1: Credit Requirements for Post Graduate Studies

Post Graduate	Semester	Core	Elective	Foundation	Total Credits
All Subject mention in this Direction Except Practical Subject.	I	08	08	----	16
	II	08	08	----	16
	III	08	04	04	16
	IV	08	04	04	16
		32	24	08	64

Explanatory terms:---

1.**Core:** Major theory papers in the concerned subject, as per respective Syllabus

2.**Elective:** These papers will be specialization in the concerned subject,as per respective Syllabus.

3.**Foundation Course:** Student can choose this paper from any other subject in any other Faculty other than his main subject for post graduation of their choice. For Example an M.A. Sociology student can take a foundation course paper from Political Science or Economics or History or Marathi or Commerce of M.sc. Math or any other subject as per available in the Subject list of the Foundation Course in the Direction of Faculty and which will be available at Nearest of other College/Department from his/her College/Department. They should earn the credits from the respective College/departments.

Subject wise List of M.A. CBCS Foundation Course
Faculty of Social Science

Sr. No.	Name of the Subject	Foundation I	Foundation II
1	HISTORY	A. India Under the Sultanate Period (1206-1525 A.D.) OR B. History of Science and Technology in Pre-Colonial India	A. India Under the Mughals (1526-1707 A.D.) OR B. History of Science and Technology in Colonial India
2	ECONOMICS	1. Basic Statistics 2. Issues in Indian Economy 3. Managerial Economics 4. Research in Social Science	1. Money & Banking 2. Economics of Maharashtra 3. Urban & Rural Economy 4. Entrepreneur Development
3	POLITICAL SCIENCE	1. Public Policy in India 2. Reservation Policy in India 3.Development and Human Rights 4. Human Rights and Indian Constitution	
4	SOCIOLOGY	a. Rural Society in India b. Urban Society in India c. Social Change in Contemporary India d. Introduction Sociology e. Sociology of Environmental	a. Rural Society in India Issues and Problems b. Urbanization in India c. Contemporary Sociology d. Political Sociology e. Sociology of Demography
5	PHILOSOPHY	General Philosophy	Philosophy of Conduct
6	PSYCHOLOGY	1. CLINICAL PSYCHOLOGY PRACTICUM 2.Organizational Psychology Practicum 3. COUNSELLING PSYCHOLOGY PRACTICUM	1. CLINICAL PSYCHOLOGY PRACTICUM 2.ORGANIZATIONAL PSYCHOLOGY PRACTICUM 3. COUNSELLING PSYCHOLOGY PRACTICUM
7	GEOGRAPHY	Geographic Information System And Computer Mapping	Remote Sensing Techniques
8	SOCIAL WORK	Introduction to Social Work Profession-I	Application in Social Work Practice -II
9	HOME ECONOMICS	(Choose any One of the following subject)	(Choose any One of the following

		a) CB1-Resource Management b) CB2-Human Development c) CB3- Food and Nutrition d) CB4-Textile and Clothing e) CB5-Home Science Extension Education.	subject) a) CB1-Resource Management b) CB2-Human Development c) CB3- Food and Nutrition d) CB4-Textile and Clothing e) CB5-Home Science Extension Education.
10	MASS COMMUNICATION	1. Introduction to Mass Communication 2. Public Relations & Advertising	1. Electronic Media (Radio T.V. & Films) 2. News Reporting, Feature Writing & Photojournalism
11	WOMEN STUDIES & DEVELOPMENT	Select nay one i. Women's Education in Indil ii. Issues in women's Empowerment iii. Women's Health Care in India	Select nay one i. Capacity Building of Women ii. Women's Movement in Vidarbha iii. Women in Politics and Governance
12	DR.AMBEDKAR THOUGHT	(Choice given to the students) Paper IV (a) :Research Methodology (A) (b) : Thought of Tathagat Buddha	(Choice given to the students) (a): Research Methodology (B) (b) : Social Movement
13	PUBLIC ADMINISTRATION	Select nay one 1.Introduction to Public Administration 2. Introduction to Indian Administration 3. E-Governance	Select nay one 1. Emerging Trends in Public Administration 2. Contemporary Issues in Indian Administration 3. Human Rights Administration
14	RASHTRASANT TUKADOJI MAHARAJ THOUGHT	अ. महाराष्ट्राबाहेरील संत आणि राष्ट्रसंत तुकडोजी किंवा ब. राष्ट्रसंताचे जीवन आणि साहित्य	अ. राष्ट्रसंताची कलासाधना किंवा ब. राष्ट्रसंताचे साहित्य आणि कार्य
15	BUDDHIST-STUDIES	Group—A—Dr. Ambedkar Thoughts Group – B – Basic Principle of Buddhism	Group – A—Basic Study of Buddhist Literature Group – B—Buddhist Psychology
16	ANCIENT INDIAN HISTORY CULTURE & ARCHAEOLOGY	Cultural Heritage of India	Principles of Museology
17	GANDHIAN THOUGHT	A. Gandhian Thought-I OR B. Gandhian Approach to Rural Development (For Gandhian Thought students)	A. Gandhian Thought-II OR B. Gandhian Approach to Rural Development-II (For Gandhian Thought students)
18	LIBRARY & INFORMATION SCIENCE	FUNDAMENTALS OF LIBRARY AND INFORMATION SCIENCE	FUNDAMENTALS OF INFORMATION SCIENCE
19	TRAVEL & TOURISM	1. Introduction to Travel & Tourism 2. Tourism Services	1. Tourism Resources 2. Tourism Retail Sales Business

4..**Internal Assessment:** The assessment in each semester shall be carried out in candidate's parent department only.

Credits:

It is a unit by which the course work is measured. It determines the number of hours of instructions required per week. One credit is equivalent to one hour of teaching (lecture or tutorial) or two hours of practical work / field work per week.

For example a subject with 6-2-6 (L-T-P) means it has 3 Lectures, 1 Tutorial and 6 Practical in a week. This subject will have ten credits (6x1 + 2x½ + 6x½ = 10). If a student is declared pass in a subject, then he/she gets the credits associated with that subject. Depending on the marks scored in a subject, student is given a Grade. Each grade has got certain grade points as follows:

Letter Grade	O	A+	A	B+	B	C	P	F	Ab
Grade Point	10	09	08	07	06	05	04	0	0

A student obtaining Grade F shall be considered failed and will be required to reappear for the examination.

Valuation pattern:

Every credit is for 25 marks and valuation and grade points will be given as per following pattern.

Marks obtained in Theory / Practical of 100 marks	Marks obtained in Theory / Practical of 50 marks	Letter Grade	Grade point
91-100	46-50	O	10
81-90	41-45	A+	09
71-80	36-40	A	08
61-70	31-35	B+	07
51-60	26-30	B	06
41-50	21-25	C	05
= 40	=20	P	04
<40	<20	F	0
Ab	Ab	Ab	0

- **Total marks obtained by the student will be mentioned on the mark sheet along with the grade.**

Computation of SGPA and CGPA

Following is the procedure to compute the Semester Grade Point Average (SGPA) and Cumulative Grade Point Average (CGPA):

i. The SGPA is the ratio of sum of the product of the number of credits with the grade points scored by a student in all the courses taken by a student and the sum of the number of credits of all the courses undergone by a student, i.e

$$SGPA\ (Si) = \Sigma(Ci \times Gi) / \Sigma\ Ci$$

where Ci is the number of credits of the ith course and Gi is the grade point scored by the student in the its course.

Illustration for SGPA

Code	Theory / Practical	Credits	Marks Obtained	Out of	Grade Point	Grade Letter	Credit Point (Credit x Grade Point)
Core	Paper 1	4	84	100	9	O	4x9=36
Core	Paper 2	4	68	100	7	B+	4x7=28
Elective	Paper 3	4	52	100	6	B	4x6=24
Foundation	Paper 4	4	47	100	5	C	4x5=20
	Total	**16**					108
Thus, **SGPA =108/16 = 6.75**							

ii. The CGPA is also calculated in the same manner taking into account all the courses undergone by a student over all the semesters of a program, i.e.

CGPA = Σ (Ci x Si) / Σ Ci

where Si is the SGPA of the ith semester and Ci is the total number of credits in that semester.

Illustration for CGPA

Semester 1	Semester 2	Semester 3	Semester 4
Credit : 16 SGPA: 6.50	Credit : 16 SGPA: 7.83	Credit : 16 SGPA: 5.69	Credit : 16 SGPA: 6.31

Thus,

$$\text{CGPA} = \frac{16 \times 6.50 + 16 \times 7.83 + 16 \times 5.69 + 16 \times 6.31}{64}$$

$$= 104.00 + \frac{125.28 + 91.04 + 100.96}{64} = \frac{421.28}{64} = 6.5825 \quad \text{i.e. } 6.58$$

The SGPA and CGPA shall be rounded off to 2 decimal points and reported in the transcripts. Ex. 7.0765 = 7.08 or 6.5168 = 6.52 etc.

Transcript (Format): Based on the above recommendations on Letter grades, grade points and SGPA and CCPA, the HEIs may issue the transcript for each semester and a consolidated transcript indicating the performance in all semesters.

23.) With the issuance of the Direction, the Direction No.8 & 9 of 2012 shall stand repealed

Nagpur
Dated : 16th June, 2016

Dr. Pramod Yeole
Acting Vice-Chancellor

Appendix-1 (A) to Appendix-6

Scheme of Examination of Social Science Faculty under the subject of HISTORY, ECONOMICS, POLITICAL SCIENCE, SOCIOLOGY, PHILOSOPHY, PSYCHOLOGY, GEOGRAPHY, HOME ECOMOMICS, WOMEN'S STUDIES & DEVELOPMENT, DR. AMBEDKAR THOUGHT, PUBLIC ADMINISTRATION, BUDDHIST STUDIES; ANCIENT INDIAN HISTORY CULTURE & ARCHAEOLOGY , GANDHIAN THOUGHT , TRAVEL & TOURISM , RASHTRASANT TUKADOJI MAHARAJ THOUGHT.

Appendix-1(A)

Semester I & II for M.A. Programme in all subjects except Practical Subject

Code	Theory	Teaching Scheme (Hours/Week)			Credits	Examination Scheme					
		Th	Int. Ass	Total		Duration in hrs,	Max. Marks		Total	Minimum Passing Marks	
	Paper						External marks	Internal Assmnt		Th	Int. Ass
Core	1	4	--	4	4	3	80	20	100	32	08
Core	2	4	--	4	4	3	80	20	100	32	08
Elective	3	4	--	4	4	3	80	20	100	32	08
Elective	4	4	--	4	4	3	80	20	100	32	08
Total		16	--	16	16		320	80	400	---	---

Note :- 1.Subject code and other details as per respective syllabus

2) In addition to the theory papers, students will be required to undertake Practical Work also (6 hours per week). They have to spin 500 grams of cotton during each Semester. Otherwise they will not be allowed to appear for the examination of Gandhian Thought Course.

Appendix-1(B)

Semester III & IV for M.A. Programme in all subjects except Practical Subject

Code	Theory	Teaching Scheme (Hours/Week)			Credits	Examination Scheme					
		Th	Int. Ass	Total		Duration in hrs,	Max. Marks		Total	Minimum Passing Marks	
	Paper						External marks	Internal Assmnt		Th	Int. Ass
Core	1	4	--	4	4	3	80	20	100	32	08
Core	2	4	--	4	4	3	80	20	100	32	08
Elective	3	4	--	4	4	3	80	20	100	32	08
Foundation	4	4	--	4	4	3	80	20	100	32	08
Total		16	--	16	16		320	80	400	---	---

Note :- 1.Subject code and other details as per respective syllabus

2) In addition to the theory papers, students will be required to undertake Practical Work also (6 hours per week). They have to spin 500 grams of cotton during each Semester. Otherwise they will not be allowed to appear for the examination of Gandhian Thought Course.

3) Students should filed work and Intern ship in any women's related NGO (Intern ship report) or Research Project for the M.A fourth semester is compulsory to the Women's Studies Course

Appendix-2 (A)

M.A. Psychology

Semester III & IV for M.A. Programme in all subjects except Psychology & Home Economics											
Code	Theory	Teaching Scheme (Hours/Week)			Credits	Examination Scheme					
		Th	Int. Ass	Total		Duration in hrs,	Max. Marks		Total	Minimum Passing Marks	
	Paper						External marks	Internal Assmnt		Th	Int. Ass
Core	1	4		4	4	4	80	20	100	32	08
Core	2	4		4	4	4	80	20	100	32	08
Elective	3	4		4	4	4	80	20	100	32	08
Elective	4	4		4	4	4	80	20	100	32	08
Pract			12	12	6	12	120	30	150	48	12
										176	44
Total		16	12	28	22	28	440	110	550	200	

Note :- 1.Subject code and other details as per respective syllabus

Appendix-2(B)

Semester III & IV for M.A. Programme in all subjects except Psychology & Home Economics											
Code	Theory	Teaching Scheme (Hours/Week)			Credits	Examination Scheme					
		Th	Int. Ass	Total		Duration in hrs,	Max. Marks		Total	Minimum Passing Marks	
	Paper						External marks	Internal Assmnt		Th	Int. Ass
Core	1	4	--	4	4	3	80	20	100	32	08
Core	2	4	--	4	4	3	80	20	100	32	08
Elective	3	4	--	4	4	3	80	20	100	32	08
Foundation	4	4	--	4	4	3	80	20	100	32	08
Pract			12	12	6	12	120	30	150	48	12
										176	44
Total		16	12	28	22	28	440	110	550	200	

Note :- 1.Subject code and other details as per respective syllabus

Appendix 3(A to D) Home Economics Scheme of Examination sheets attached

Appendix 4 (A to D) Geography Scheme of Examination sheets attached

Appendix 5(A to D) Travel Truism Scheme of Examination sheets attached

Appendix 6 :- Distribution of Internal Assessment 20 Marks

Maximum Marks	Presentation in Seminar	Assignment (On the Topic other than that of the presentation made in the seminar)	Viva Voce based on the submitted assignment	Attendance and Participation in departmental activities
20	05	05	05	05

Course of Study

Year /Sem	Subject	Paper	Title of the paper	Ins. Hrs/ Week	Credit	Maximum Marks		
						CIA	Uni. Exam	Total
I Year I Sem	Core	101	English Poetry from Chaucer to Milton	4	4	20	80	100
	Core	102	English Renaissance Theatre (1562-642)	4	4	20	80	100
	Elective	103(A)	Indian Writing in English-I	4	4	20	80	100
	Elective	103(B)	Indian Diasporic Fiction	4	4	20	80	100
	Elective	103(C)	Indian Writing In Translation	4	4	20	80	100
	Elective	103(D)	Indian Literary Criticism	4	4	20	80	100
	Elective	104(A)	The English Novel - I	4	4	20	80	100
	Elective	104(B)	Comparative Literature	4	4	20	80	100
	Elective	104(C)	History of English Language - I	4	4	20	80	100
	Elective	104(D)	The English Prose – I	4	4	20	80	100
				16	16	80	320	400
I Year II Sem	Core	201	Restoration and Eighteenth Century English Literature	4	4	20	80	100
	Core	202	Modern English Drama	4	4	20	80	100
	Elective	203(A)	Nineteenth Century American Literature	4	4	20	80	100
	Elective	203(B)	Post Colonialism and Literature-I	4	4	20	80	100
	Elective	203(C)	African Literature	4	4	20	80	100
	Elective	203(D)	Literature and Gender	4	4	20	80	100
	Elective	204(A)	The English Novel - II	4	4	20	80	100
	Elective	204(B)	Cultural Studies	4	4	20	80	100
	Elective	204(C)	History of English Language II	4	4	20	80	100
	Elective	204(D)	The English Prose – II	4	4	20	80	100
				16	16	80	320	400
II Year III Sem	Core	301	Literary Criticism and Theory-I	4	4	20	80	100
	Core	302	Romantic and Victorian Poetry	4	4	20	80	100
	Elective	303(A)	English Comedies	4	4	20	80	100
	Elective	303(B)	Twentieth Century American Literature	4	4	20	80	100
	Elective	303(C)	The English Novel - III	4	4	20	80	100
	Elective	303(D)	Post Colonialism and Literature II	4	4	20	80	100
	Foundation	304(A)	Modern Indian Thought	4	4	20	80	100
	Foundation	304(B)	History of English Literature - I	4	4	20	80	100

	Foundation	304(C)	English Language Teaching – I	4	4	20	80	100
	Foundation	304(D)	European Fiction and Drama	4	4	20	80	100
				16	16	80	320	400
II Year IV Sem	Core	401	Literary Criticism and Theory-II	4	4	20	80	100
	Core	402	Twentieth Century Poetry	4	4	20	80	100
	Elective	403(A)	African American Literature	4	4	20	80	100
	Elective	403(B)	Dalit Literature	4	4	20	80	100
	Elective	403(C)	Indian Writing in English – II	4	4	20	80	100
	Elective	403(D)	Film Studies	4	4	20	80	100
	Foundation	404(A)	Research Methodology	4	4	20	80	100
	Foundation	404(B)	History of English Literature – II	4	4	20	80	100
	Foundation	404(C)	English Language Teaching – II	4	4	20	80	100
	Foundation	404(D)	Environment and Ecocriticism	16	16	80	320	400

RASHTRASANT TUKDOJI MAHARAJ NAGPUR UNIVERSITY, NAGPUR

Direction No. 40 of 2016

DIRECTION GOVERNING THE EXAMINATION LEADING TO THE DEGREE OF MASTER OF COMMERCE (CREDIT BASE SEMISTER PATTERN) FACULTY OF COMMERCE

(Issued under section 14(8) of the Maharashtra University Act 1994)

WHEREAS, Maharashtra University act No. xxxv of 1994 has come into force with effect from 22nd July 1994 and has been amended from time to time,

AND

WHERAS, the University Grants Commission, New Delhi vide letter no. D.O. No. F-2/2008/(XI Plan), Dated 31st January 2008 regarding new initiatives under the XI Plan-Academic reforms in the University has suggested for improving quality of higher education and to initiate the Academic reform at the earliest.

AND

WHEREAS, faculty of commerce act its meeting held on 14.2.2012 has decided to update the existing syllabus for award of the degree of Master of Commerce commensurate with the curricula existing in the various universities in India and with a view to include the latest trends in the commerce stream as well as to design it to suit to the needs of the industries and corporate houses,

AND

WHEREAS, University Grants Commission, New Delhi has prescribed the Model Curriculum for award of the Postgraduate degree in the Faculty of commerce and directed to implement the same from the academic session 2012-2013,

AND

WHEREAS, Chairman of all the Board of Studies in the Faculty of Commerce in their meeting held on 24.2.2016 prepared the Scheme of Credit Based Semester pattern for conduct of the M.Com. Examination,

AND

WHEREAS, Board of Studies viz. (1) Business Administration and Business Management, (2) Commerce, (3) Accounts and Statistics, (4) Business Economics and (5) Ad-hoc Board in Computer Application in its meetings held on 24.2.2016 respectively updated the existing syllabi and recommended some modifications in the scheme of examination for post graduate courses,

AND

WHEREAS, Dean of Commerce has consented to the changes in the syllabus and the scheme of examination for the award of M.Com Degree,

AND

WHEREAS the Vice-Chancellor, Nagpur University, Nagpur approved the recommendations so made by the Special Task Committee in the Faculty of Commerce duly concurred by the Coordinator, Faculty of Commerce as required under Section 38 (a) of the Act on

AND

WHEREAS As per the Advice of the Vice Chancellor, Coordinator, Faculty of Commerce & Coordinator, Special Task Committee in the meeting held on 4.1.2016 constituted sub-committee for syllabus restructuring of M.Com with CBCS pattern.

The Sub-committee submitted the Draft Syllabus of M.Com with CBCS pattern in meeting held on 24.02.2016.

AND

WHEREAS, ordinance making involve a time consuming process, Now, therefore, I, Dr. S. P. Kane, Vice-Chancellor, Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur in exercise of the powers vested in me under Section 14(8) of the Maharashtra University Act of 1994 do hereby issue the following direction:

- This direction shall be called "DIRECTION GOVERNING THE EXAMINATION LEADING TO THE DEGREE OF MASTER OF COMMERCE (CREDIT BASED CHOICE SYSTEM) FACULTY OF COMMERCE RASHTRASANT TUKDOJI MAHARAJ NAGPUR UNIVERSITY NAGPUR".
- The Direction shall come in to force with effect from the date of its issuance by Honourable Vice-Chancellor.
- The duration of the course shall be of two academic years consisting of the four semesters with university examination at the end of each semester namely
    - M.ComSemesterI Examination
    - M.ComSemesterIIExamination
    - M.ComSemesterIIIExamination
    - M.ComSemesterIVExamination

  The examination shall be held at such places and on such dates which are notified by the University.

I. ELIGIBILITYTO THECOURSE

- The duration of M.Com. Course shall be of Two years consisting Semester-I &II in first year and Semester-III &IV in second year.

- Subject to compliance with the provisions of this direction and of other ordinances in force from time to time, an applicant for admission to this course shall have passed B.Com., B.Com.(ComputerApplication) or B.B.A .Degree examination of Rashtrasant Tukdoji Maharaj Nagpur University or equivalent of any other recognized University.

- TheExaminationsforSemestersI,II,IIIandIVshallbeheldtwiceayearat Suchplacesandonsuchdatesasnotified bythe University.

- The fees for examination shall be as prescribed by the Rashtrasant Tukdoji Maharaj Nagpur University from time to time.

- Applicant for the examination pursuing are regular course of study leading to the Master Degree in Commerce shall not be permitted to join any other course in this University or any other University simultaneously.

- **ATKT Rules** for Admission for the M.Com Course –An unsuccessful examinee at the any semester examination shall be **ALLOWEDTOKEEPTERM in accordance to**

The following table:

Admission to Semester	Candidate should have passed in all the subjects of the following examinations of R.T.M. Nagpur University	Candidate should have passed at least two third of the passing heads of following examinations
I Semester	As provided in Para5 of the direction.	-------
IISemester	---------	---------
IIISemester	----------	Semester I and II taken together i.e. 5 heads
IVSemester	----------	Semester I , II and III taken together i.e.8 heads

For providing teaching facility in the subjects of Foundation and Elective Groups minimum requirement of student is 5.

II. CREDIT SYSTEMOF EVALUATION

- The M.COM. programme shall consist of **Fifteen** Papers or Subjects in old terminology and a project in any of are a related to commerce as opted by the student.

With the issuance of this Direction, The Direction No 1 of 2014 (Credit based Semester Pattern)shall stand repealed.

Sd/-

Nagpur **Dr. S. P. Kane**

Date :21.6.2016 Vice-Chancellor

Subjects offered, contact hours, credits attached and allocation of marks shall be as follows:

APPENDIX-I

Scheme of teaching and examination under credit based semester system for M.Com Course.

Semester-I

CourseCode		Internal /University Exam.	Total Hours	Marks			Credits
				Semester End Exam.	InternalAssessment	Total	
C11	Advanced Financial Accounting	Uni.	60	80	20	100	4
C12	Indian Financial System	Uni.	60	80	20	100	4
C13	Managerial Economics	Uni.	60	80	20	100	4
C14	Marketing Management	Uni.	60	80	20	100	4
	Total		**240**	**320**	**80**	**400**	**16**

Semester-II

Course Code		Internal /University Exam.	Total Hours	Marks			Credits
				Semester End Exam.	Internal Assessment	Total	
C21	Research Methodology	Uni.	60	80	20	100	4
C22	Advanced Cost Accounting	Uni.	60	80	20	100	4
C23	Co-operation	Uni.	60	80	20	100	4
C24	Human Resource Management	Uni.	60	80	20	100	4
	Total		**240**	**320**	**80**	**400**	**16**

Semester-III

Course Code		Internal /University Examination	Total Hours	Marks			Credits
				Semester End Exam.	Internal Assessment	Total	
C31	**Core Group** 1. Advanced Management Accounting	Uni.	60	80	20	100	4
C 32	2. Statistical Techniques	Uni.	60	80	20	100	4
F 33	**Foundation Group- I** Direct Taxes **OR** Computer Application in Business	Uni.	60	80	20	100	4
E34	**Elective Group-I** Entrepreneurship Development **OR** Service Sector Management	Uni.	60	80	20	100	4
	Total		**240**	**320**	**80**	**400**	**16**

Semester-IV

Course Code		Instruction Hours	Marks			Credits
			Semester EndExam.	InternalAssessment	Total	
C41	**Core Group** International Business Environment	60	80	20	100	4
C42	Project	60	100	-	100	4
F43	**Foundation Group- II** Indirect Taxes **OR** Operations Research	60	80	20	100	4
E44	**Elective Group-II** E-Commerce **OR** Company Law	60	80	20	100	4
	Total	**240**	**340**	**60**	**400**	**16**

Summary of the Total Marks and Credits

Sr. No.		Instruction Hours	Marks			Credits
			Semester End Exam.	Internal Assessment	Total	
1	Semester–I	240	320	80	400	16
2	Semester–II	240	320	80	400	16
3	Semester–III	240	320	80	400	16
4	Semester–IV	240	340	60	400	16
Total		**960**	**1300**	**300**	**1600**	**64**

- The Semester End written examination of all subjects shall be conducted by the University.
- The performance of the learners will be evaluated in two components ,One component will be the continuous assessment by the College/Department (**Internal assessment**) carrying 20% marks and the second component will be the **Semester wise end Examination** carrying 80% marks. The allocation of marks for the Internal Assessment and Semester end Examination for all subjects except Project will be as shown below:

1a	Two periodical class tests	08 marks
1b	An assignment/ Viva/ Group Discussion /Seminar based on curriculum to be assessed by the teacher concerned	08 marks
1c	Over all conduct as a responsible learner	04 marks
1	**Internal assessment Total marks**	**20**
2	**Semester wise End Examination marks**	**80**
	Total marks per subject	**100**

M.COM. Examination Semester–I

Subject	Paper	Maximum Marks	Minimum Passing Marks
1. Advanced Financial Accounting	University Paper	80	
	Internal Assessment	20	
	Total	100	40
2. Indian Financial System	University Paper	80	
	Internal Assessment	20	
	Total	100	40
3.Managerial Economics	University Paper	80	
	Internal Assessment	20	
	Total	100	40
4. Marketing Management	University Paper	80	
	Internal Assessment	20	
	Total	100	40

M.COM. Examination Semester–II

Subject	Paper	Maximum Marks	Minimum Passing Marks
1. Research Methodology	University Paper	80	
	Internal Assessment	20	
	Total	100	40
2. Advanced Cost Accounting	University Paper	80	
	Internal Assessment	20	
	Total	100	40
3.Co-operation	University Paper	80	
	Internal Assessment	20	
	Total	100	40
4. Human Resource Management	University Paper	80	
	Internal Assessment	20	
	Total	100	40

M.COM. Examination Semester–III

Subject	Paper	Maximum Marks	Minimum Passing Marks
Core Group **1. Advanced Management Accounting**	University Paper	80	
	Internal Assessment	20	
	Total	100	40
2 Statistical Techniques	University Paper	80	
	Internal Assessment	20	
	Total	100	40
Foundation Group **3. Direct Taxes OR** **Computer Application in Commerce**	University Paper	80	
	Internal Assessment	20	
	Total	100	40
4.Entrepreneurship Development OR Service Sector Management	University Paper	80	
	Internal Assessment	20	
	Total	100	40

M.COM. Examination Semester–IV

Subject	Paper	Maximum Marks	MinimumPassing Marks
1. International Business Environment	University Paper	80	40
	Internal Assessment	20	
	Total	100	
2.Project	Project work (Evaluation by External Examiner)	50	20
	Project work (Evaluation by Internal Examiner)	50	20
3. Indirect Taxes **OR** **Operations Research**	UniversityPaper	80	40
	InternalAssessment	20	
	Total	100	
3.Entrepreneurship Development **OR** **Company Law**	UniversityPaper	80	40
	InternalAssessment	20	
	Total	100	

- Marks of internal assessment awarded on the basis of tests, assignment etc as determined by the teacher in the respective subject and moderated by the Head of the University Department/Principal and shall be communicated to the University before the commencement of the Semester End examinations.
- Project Work will be compulsory for each student appearing at the semester-IV(M.Com.) Examination.

Project shall carry 100 marks as follows:

	Marks
Project work	50
Viva-voce	50
TOTAL	100

- For Project work a batch of **TWENTY** students per guide /supervisor has to be allotted by the respective College/ University Department.

- A copy of Project work (Printed) shall be submitted to College/ University Department. Fifteen Days prior to the date of commencement of Semester-IV Examination, which will be retained by the college/Department for internal evaluation purpose.

- A Candidate shall submit with his/her project work, a certificate from the Guide to the effect that the candidate has satisfactorily completed the Project work and that the Project work is the result of the candidate's own work.

- Candidate shall submit his declaration that the Project is the result of his own research work and the same has not been previously submitted to any examination of this University or any other University. The Project shall be liable to be rejected and /or cancelled if found otherwise.

- The Project work shall be evaluated through seminar and Viva-voce at the College/ Department by one internal examiner appointed by the Principal/Head of the Department and one external examiner appointed by University.

Project shall carry 100 marks	**Marks**	
	Maximum	**Minimum Passing Marks**
Project work (Evaluation by External Examiner)	50	20
Project work (Evaluation by Internal Examiner)	50	20
Total	100	40

APPENDIX-II

I. GENERAL RULES AND REGULATIONS

The scope of the subject, percentage of passing in theory and project will be governed as per following rules:

- In order to pass at the Semester I, II, III & IV examinations an examinee shall obtain not less than 40% marks in each paper. This is to say that out of total 100 marks student should score 40 marks jointly in university examination (80 Marks) and internal examination (20 marks) except in project of IV Semester. The examinee shall have to obtain minimum 40 marks out of 100 in evaluation of project and 50% (200 out of 400 Marks) aggregate in each Semester wise End Examination.
- The results of successful candidates at the end of semester-IV shall be classified on the basis of aggregate marks obtained in all the four semesters.
- The candidates who pass all the semester examinations in the first attempt are eligible for ranks.
- The results of the candidates who have passed the Semester-IV examination but not passed the lower semester examinations shall be declared as NCL (not completed lower semester examinations). Such candidates shall be eligible for the Degree only after successful completion of all the lower semester examinations.
- Percentage of marks for declaring class:
  Distinction- 75%(and above.
  First Class- 60% and above but less than 75%.Second
  Class- 50% and above but less than 60%.
- An unsuccessful examinee at the any semester wise end examination shall be eligible for re-examination on payment of a fresh Examination fee prescribed by the University.

II.TEACHING NORMS FOR THEORY PAPERS AND PROJECT:

- .For all Theory Papers there shall be **FOUR Periods Per week per Subject of One Hourduration** each. Each Theory Paper must cover minimum 60 Clock Hours of Teaching and 240Clock Hours per Semester for all the 4 Papers. One Credit subject of Theory will be of 1 Clock Hour per week of 25 marks running for 15 weeks and 4 Credit Course of Theory will be of 4 Clock Hours per week of 100 Marks running for 15 weeks.
- For Project work/Research work a batch of Maximum 20 students per guide /supervisor has to be allotted by the College/ University Department. FOUR periods per week of one hour duration shall be the work load allotted for project guidance for 20 students.
- The Project guide /supervisor must possess M.Phil. or Ph.D. degree of Faculty of Commerce or should be a Full time approved Teacher
- No person shall be admitted to this Programme, if he has already passed the same Programme or an Programme of any other statutory University (which has been recognized as equivalent to this programme.)
- A candidate who fails in any of the semester examinations may be permitted to take the examinations again at a subsequent appearance as per the syllabus and scheme of examination in vogue at the time the candidate took the examination for the first time. This facility shall be limited to the following two years.
- Examinee successful at the Semester I, II, III and IV examinations shall, on payment of the prescribed fee, receive a Degree in the prescribed form signed by the Vice-Chancellor.
- Qualification of Teacher shall be as per U.G.C. and State Government norms.

APPENDIX- III

Rashtrasant Tukdoji Maharaj Nagpur University

I. SYLLABUS FORM.COM.EXAMINATION

Semester–I

Advanced Financial Accounting
Indian Financial System
Managerial Economics
Marketing Management

Semester–II

Research Methodology
Advanced Cost Accounting
Co-operation
Human Resource Management

Semester–III

Core Group	1. Advanced Management Accounting
	2. Statistical Techniques
Foundation Group I	3. Direct Taxes **OR** Computer Application in Commerce
Elective Group	4. Entrepreneurship Development **OR** Service Sector Management

Semester–IV

Core Group	1. International Business Environment
	2. Project
Foundation Group II	3. Indirect Taxes **OR** Operations Research
Elective Group	4. E - Commerce **OR** Company Law

II. CONVERSION OF MARKS TO GRADES AND CALCULATIONS OF GPA (GRADE POINT AVERAGE) AND CGPA (CUMULATIVE GRADE POINT AVERAGE) :

In the Credit and Grade Point System, the assessment of individual Subjects in the concerned examinations will be on the basis of marks only, but the marks shall later be converted into Grades by some mechanism wherein the overall performance of the Learners can be reflected after considering the Credit Points for any given course. However, the overall evaluation shall be designated in terms of Grade. There are some abbreviations used here that need understanding of each and every parameter involved in grade computation and the evaluation mechanism. The abbreviations and formulae used are as follows:-

Abbreviations and Formulae Used

G : Grade
GP : Grade Points
C : Credits
CP : Credit Points
CG : Credits X Grades (Product of credits & Grades)
SGPA = ΣCG: Sum of Product of Credits & Grades points / ΣC: Sum of Credits points
SGPA : Semester Grade Point Average shall be calculated for individual semesters. (It is also designated as GPA)
CGPA : Cumulative Grade Point Average shall be calculated for the entire Programme by considering all the semesters taken together.
While calculating the CG the value of Grade Point 1 shall be consider Zero (0) in case of learners who failed in the concerned course/s i.e. obtained the marks below 40. After calculating the SGPA for an individual semester and the CGPA for entire programme, the value can be matched with the grade in the Grade Point table as per the Five (05) Points Grading System and expressed as a single designated GRADE such as O,A,B,C,, F.(Fail).

Marks	Grade	Grade Points
75& above	O (Outstanding)	10
65-74	A (Very Good)	09
55-64	B (Good)	08
50-54	C (Average)	07
49 & Below	F (Fail)	0Failed

Note: -

- Consider Grade Points equal to Zero for (C x G) calculations of failed Learner/s in the concerned course/s.
- If the learner fails to score 200 out of 400 marks in aggregate then the subjects in which he/she has scored 50 or more marks shall be exempted. He/she shall have to appear for all subjects in which he/she has failed to score 50 or more marks. In such case his/her internal evaluation marks out of 20 shall be retained and he/she shall have to appear for Semester End examination of 80 marks and shall have to score-
    - More than 40% marks including internal marks scored in each of the subject in which he/she has failed to score 50 or more marks.

    AND

    - He /she shall have to score a total of 200 marks out of 400 in aggregate after adding up of the marks scored in exempted subject/subjects.

- Total marks (Internal + Semester End Examination) obtained by the student shall be converted into Grades and Five Point Grade points as above.

The illustration for the conversion of marks into grades in a course and semester
Illustrations of Calculation:- Pass

Subjects	Max.MarksSemester EndExam	Max.MarksInternal	TotalMaximumMarks	Total Minimum Marks	Marks Obtained Internal	TotalMarks Obtained	Grade(G)	Gradepoints(GP)	Credit oftheCourse(C)	(Credit) X (Grade points)(CX GP)	SGPA=ΣCG/ΣC
C-11	80	20	100	40	20	60	B	8	4	32	**SGPA** =136/16 =8**.5** **GradeA** **RESULT =PASS**
C-12	80	20	100	40	17	50	C	7	4	28	
C-13	80	20	100	40	15	75	O	10	4	40	
C-14	80	20	100	40	18	70	A	9	4	36	
Total	**320**	**80**	**400**	**160**	**70**	**255**	**--**	**34**	**16**	**136**	

Illustrations of Calculation:- Fail

Subjects	Max.MarksSemester EndExam	Max.MarksInternal	TotalMaximumMarks	Marks ObtainedSemesterEnd Exam	MarksObtained Internal	TotalMarks Obtained	Grade(G)	Gradepoints(GP)	Credit oftheCourse(C)	(Credit) X (Grade points)(CX GP)	SGPA=ΣCG/ΣC
C-31	80	20	100	28	12	40	F	0	4	00	**SGPA** =72/16 =4**.5** **GradeF** **RESULT =FAIL**
C-32	80	20	100	31	10	41	F	0	4	00	
C-33	80	20	100	40	20	60	B	8	4	32	
C-34	80	20	100	60	15	75	O	10	4	40	
Total	**320**	**80**	**400**	**159**	**57**	**216**	**--**	**18**	**16**	**72**	

Illustration for calculating CGPA

		MaximumSemester EndExam.	ObtainedatSemesterEnd Exam.	MaximumInternalAssessment	Obtainedat InternalAssessme	Total	ObtainedTotal	SGPA	TotalCreditPoints	SGPA X TotalCreditPoints	CGPA
1	Semester–I	320	185	80	70	400	255	9.12	16	146	**CGPA=596/64=9.3125 GRADE=O**
2	Semester–II	320	233	80	60	400	293	9.5	16	152	
3	Semester–III	320	185	80	70	400	255	9.12	16	146	
4	Semester–IV	320	233	80	60	400	293	9.5	16	152	
Total		1280	836	320	260	1600	1096	--	64	596	

Note:
According to traditional method the percentage would be = (1096/1600) x 100 = 68.5, and according to CGPA calculation Grade is O which is equivalent to 75-100 percent.

Provision of Direction No.44 of 2001 governing the award of grace marks for passing an examination, securing higher Grades shall apply to the examination

III. REJECTION OF RESULT:

- The candidate shall have an option of being NOT DECLARED SUCCESSFUL in either of the semester end examination if he/she fails to secure minimum 55% aggregate marks in that semester. This option can be opted only through prescribed format forming a part of Examination application form for semester end examination. It shall be applicable only to 80 marks Semester end examination and the internal evaluation marks out of 20 shall not be changed/ altered in any case. If the candidate opts for this option then it shall be irrevocable.
- The candidate who fails in one or more subjects of a semester may be permitted to reject the result of the whole examination of that semester. Rejection of result subject-wise shall not be permitted. A candidate who rejects the results shall appear in the examination of that semester in the subsequent examination.
- Rejection shall be exercised only once in each semester and the rejection once exercised cannot be revoked.
- Application for rejection along with payment of the prescribed fee shall be submitted to the University through the college along with the original statement of marks within 30 days from the date of publication of the result.
- The candidate who rejects the result is eligible for only class and not for ranking.

IV. IMPROVEMENT OF RESULT::

- The candidate who has passed in all the papers of a semester may be permitted to improve the result by reappearing for the whole examination of that semester.
- The reappearance shall be permitted only once in each semester.
- The reappearance for the examination of any semester is permitted during the subsequent examination of that semester.
- Application for reappearance along with payment of prescribed fee shall be submitted to the University through the college along with the original statement of marks within 30 days from the date of publication of the result.
- The candidate passes in all the subjects in the reappearance, higher of the two aggregate marks secured by the candidate shall be awarded to the candidate for that semester. In ease the candidate fails in the reappearance, candidate shall retain the first appearance result.
- A candidate who has appeared for improvement is eligible for class only and not for ranking.
- Internal assessment marks shall be shown separately in the marks card. A candidate who has rejected the result or who, having failed, takes the examination again or who has appeared for improvement shall retain the internal assessment marks already obtained.

V. GUIDELINES FOR SETTING QUESTION PAPERS:

- .The question paper should be set in such a manner so as to cover the complete syllabus as prescribed by the University.
- .The numerical questions in any of the subjects shall be set in ENGLISH only and the candidate shall have to answer such questions in ENGLISH only. The candidate may answer non-numerical questions in ENGLISH, MARATHI or HINDI.
- The duration of the Semester wise End Examination shall be 3.00 Hours per course.
- The Question paper for all subjects of all semesters except Project of semester IV shall comprise of 5 Questions of 16 marks each.
- The internal evaluation of all subjects shall be done at College/ Department by the respective subject teacher.

APPENDIXIV

I. SUBJECTS FOR M.Com. EXAMINATION

Semester –I

Advanced Financial Accounting
Indian Financial System
Managerial Economics
Marketing Management

Semester –II

Research Methodology
Advanced Cost Accounting
Co-operation
Human Resource Management

Semester–III

Core Group	1. Advanced Management Accounting
	2. Statistical Techniques
Foundation Group	3. Direct Taxes **OR** Computer Application in Commerce
Elective Group	4. Entrepreneurship Development **OR** Service Sector Management

Semester–IV

Core Group	1. International Business Environment
	2. Project
Foundation Group	3. Indirect Taxes **OR** Operations Research
Elective Group	4.E - Commerce **OR** Company Law

II.ABSORPTION SCHEME

Sr. No.	SUBJECT OF OLD COURSE BEFORE 2012-13	ALTERNATIVE SUBJECT OF NEW COURSE2012-13
1.	Management Concepts and Organizational Behavior	Human Resource Management
2	Advanced FinancialAccounting	Advanced Financial Accounting
3.	Managerial Economics	Managerial Economics
4.	Business Tax And Tax Planning	Tax Procedure And Practice
5.	E-Commerce	Computer Application In Commerce
6.	Marketing Management	Marketing Management
7.	Industrial Economics	Managerial Economics
8.	Agriculture Economics And Co-Operation	Co-Operation And Rural Development
9.	Public Finance	Managerial Economics
10.	Advanced Cost Accounting	Advanced Cost Accounting
11.	Financial Institutions and Markets	Indian Financial System
12	Securities Analysis And Portfolio Management	Indian Financial System
13.	Advertising And SalesManagement	Marketing Management and
14.	International Marketing	International Business Environment
15.	International Business Environment And Marketing	International Business Environment
16.	Foreign Trade Policy, Procedure	International Business Environment And Documentation
17.	Business Environment Domestic And International	International Business Environment
18.	Banking And Insurance Law And Practice	Service Sector Management
19.	Advanced Management Accounting	Advanced Management Accounting
20.	Computer Application In Business	Computer Application In Commerce
21.	Financial Management	Advanced Management Accounting
22.	Statistical Analysis	Statistical Techniques
23.	Applied Operations Research	Statistical Techniques
24.	Dissertation	Project
25.	Economics of Labor	Managerial Economics
26.	Advanced Banking	Service Sector Management

The studentsof old course shall be given 05 attempts to pass their examination with old course starting from implementation of New Course.

I. ABSORPTIONSCHEME FOR COURSE AFTER 2012-13

Sr. No.	**SUBJECT OF OLD COURSE AFTER 2012-13**	**ALTERNATIVE SUBJECT OF NEW COURSE OF 2016-17**
1.	Advanced Financial Accounting	Advanced Financial Accounting
2	Indian Financial System	Indian Financial System
3.	Managerial Economics	Managerial Economics
4.	Marketing Management	Marketing Management
5.	Research Methodology	Research Methodology
6.	Advanced Cost Accounting	Advanced Cost Accounting
7.	Co-operationand Rural Development	Co-operation
8.	Human Resource Management	Human Resource Management
9.	Advanced Management Accounting	Advanced Management Accounting
10.	TaxProcedures&Practice	Direct Taxes
11.	Computer Application in Commerce	Computer Application in Commerce
12	Service Sector Management	Service Sector Management
13.	Statistical Techniques	Statistical Techniques
14.	International Business Environment	International Business Environment
15.	Entrepreneurship Development	Entrepreneurship Development
16.	Project	Project

The students of old course shall be given 05 attempts to pass their examination with old course starting from implementation of New Course.

Bachelor of Commerce (OB & CBCS) Examination

Scheme of Examination for Bachelor of Commerce (B.Com.) Outcome Based & Choice Based Credit System (OB & CBCS) from Academic Session 2022-23

As approved by the Faculty of Commerce and Management and the Academic Council vide Item No. 24 in its meeting held on 8th July 2022

1. **Details of eligibility for B.Com. semester 1 examination**

A) For the **B.Com. 1st Semester,** Examinee shall have Passed the 12th Standard Examination of the Maharashtra State Board of Secondary and Higher Secondary Education/CBSE/ICSE, with English at Higher or Lower level and any Modern Indian Language at higher or lower level with any combination of optional subjects;

OR

B) XII Standard Examination of Maharashtra State Board of Secondary and Higher Secondary Education in Vocational Stream with one language only; OR any other examination recognized as equivalent thereto; in such subjects and with such standards of attainments as may be prescribed Minimum Competition vocation course (MCVC).

OR

C) Any other Equivalent Examination of any State in (10+2) pattern with any combination of subjects.

2. **Teaching and Examination Scheme**

Course Nomenclature:

CC – Core course
AEC - Ability Enhancement Course
SEC – Skill Enhancement Course
DSE – Discipline Specific Electives (Specialisations)
ODL – Open and Distance Learning

Bachelor of Commerce (B.Com.)
B.Com. – Semester I

Sr. No.	Course Type	Course/Subject Name	Course Code	Teaching Scheme	Examination Scheme				Total Marks	Credits
				Total Periods per Week	Max. Marks (TH) *	Max. Marks (IM)	Total Marks	Min. Passing Marks		
1	CC 1	Fundamentals of Accounting	1T1	5	80	20	100	40	100	4
2	CC 2	Business Economics - I	1T2	5	80	20	100	40	100	4
3	CC 3	Compulsory English	1T3	5	80	20	100	40	100	4
4	CC 4	Second language Supplementary English/ Marathi Hindi Other	1T4.1 1T4.2	5	80	20	100	40	100	4

		Languages # **OR** Vocational Courses	1T4.3							
5	AEC 1	Commercial Firms **OR** Digital Marketing (Any One) **OR** Vocational Courses	1T5-A 1T5-B	5	80	20	100	40	100	4
6	SEC 1	Business Skills **OR** MS-Office (Any One)	1T6-A 1T6-B	5	80	20	100	40	100	4
		Total		**30**	**480**	**120**	**600**	**240**	**600**	**24**

* Semester end examination

Note:

1. The duration of each theory class should be a minimum of 48 minutes.
2. TH = Theory, IM = Internal Marks.
3. One credit is equivalent to one hour of Teaching per week, that is to say, for each subject, 48 Minutes * 5 (weekly periods) = 240 Minutes = 4 Hours i.e. 4 Credits.
4. Each semester will consist of at least 15 weeks of Academic Work equivalent to 90 actual teaching days.
5. For Semesters I, II, III & IV, students shall opt for one subject from Ability Enhancement Courses (AEC) and one subject from Skill Enhancement Courses (SEC). The Core Courses will remain compulsory
6. The syllabus and question paper pattern of Second Language subject of B. Com. Semester; I, II, III & IV i.e. a) Supplementary English b) Marathi c) Hindi will be as per the Commerce Language Board.
7. # The syllabus and question paper pattern of other second languages like Sanskrit, Urdu, Guajrati, Telegu, Bengali, Persian, Arabic, Pali & Prakrit and Latin will be as per the Boards of the faculty of Arts for B.A. Semester- I, II, III & IV respectively

Vocational Courses – Semester I

Course Code	Subjects	Total Hours	Examination Scheme					Credits
			Theory (Uni)	Internal (College)	Practical (Uni)			
			Max Marks Theory Paper (TH)	Max Marks(IM)	Max Marks actical (PR)	Min Passing Mark	Total Mark (TH. + PR + IM)	
1T7	Entrepreneurship Development	60	80	20	-	40	100	4

1T8	1T8. 1- Computer Application-II **or** 1T8. 2- Principles and Practiceof Insurance-II **or** 1T8.3- Advertising, Sales Promotion & Sales Management-II	60	80	20	-	40	100	4

B.Com. – Semester - II

Sr. No.	Course Type	Course/Subject Name	Course Code	Teaching Scheme	Examination Scheme				Total Marks	Credits
				Total Periods per Week	Max. Marks (TH)*	Max. Marks (IM)	Total Marks	Min. Passing Marks		
1	CC 5	Statistics and Business Mathematics	2T1	5	80	20	100	40	100	4
2	CC 6	Business Economics - II	2T2	5	80	20	100	40	100	4
3	CC 7	Compulsory English	2T3	5	80	20	100	40	100	4
4	CC 8	Second language Supplementary English/ Marathi Hindi Other Languages # **OR** Vocational Courses	2T4.1 2T4.2 2T4.3	5	80	20	100	40	100	4
5	AEC 2	Commercial Services **OR** Fundamentals of Banking (Any One) **OR**	2T5-A 2T5-B	5	80	20	100	40	100	4

		Vocational Courses								
6	SEC 2	Financial Markets Operations OR Skill Development (Any one)	2T6-A 2T6-B	5	80	20	100	40	100	4
		Total		**30**	**480**	**120**	**600**	**240**	**600**	**24**

* Semester end examination

Note:

1. The duration of each theory class should be a minimum of 48 minutes.
2. TH = Theory, IM = Internal Marks.
3. One credit is equivalent to one hour of Teaching per week, that is to say, for each subject, 48 Minutes * 5 (weekly periods) = 240 Minutes = 4 Hours i.e. 4 Credits.
4. Each semester will consist of at least 15 weeks of Academic Work equivalent to 90 actual teaching days.
5. For Semesters I, II, III & IV, students shall opt for one subject from Ability Enhancement Courses (AEC) and one subject from Skill Enhancement Courses (SEC). The Core Courses will remain compulsory
6. The syllabus and question paper pattern of Second Language subject of B. Com. Semester; I, II, III & IV i.e. a) Supplementary English b) Marathi c) Hindi will be as per the Commerce Language Board.
7. # The syllabus and question paper pattern of other second languages like Sanskrit, Urdu, Guajrati, Telegu, Bengali, Persian, Arabic, Pali & Prakrit and Latin will be as per the Boards of the faculty of Arts for B.A. Semester- I, II, III & IV respectively

Vocational Courses: Semester II

Course Code	Subjects	Total Hours	Examination Scheme					Total Marks (TH. + PR + IM)	Credits
			Theory (Uni)		Internal (College)	Practical (Uni)			
			Marks Theory Paper		Max Marks (IM)	Marks Practical (PR)	Min Passing Marks		
2T7	Entrepreneurship Development	60	80		20	-	40	100	4

2T8	2T8.1- Computer Application-II **or** 2T8.2- Principles and Practice of Insurance-II **or** 2T8.3- Advertising, Sales Promotion & Sales Management-II	60	80	20	-	40	100	4

B.Com. – Semester - III

Sr. No.	Course Type	Course/Subject Name	Course Code	Teaching Scheme	Examination Scheme				Total Marks	Credits
				Total Periods per Week	Max. Marks (TH)*	Max. Marks (IM)	Total Marks	Min. Passing Marks		
1	CC 9	Financial Accounting - I	3T1	5	80	20	100	40	100	4
2	CC 10	Monetary Economics - I	3T2	5	80	20	100	40	100	4
3	CC 11	Compulsory English	3T3-A	5	80	20	100	40	100	4
4	CC 12	Second language Supplementary English/ Marathi Hindi Other Languages # **OR** Vocational Course	3T4.1 3T4.2 3T4.3	5	80	20	100	40	100	4
5	AEC 3	Company Law **OR** Income Tax (Any One) **OR** Vocational Course	3T5-A 3T4-B	5	80	20	100	40	100	4
6	SEC 3	Holistic Development **OR** Computerized Accounting	3T6-A 3T6-B	5	80	20	100	40	100	4

		(Any One)								
		Total		**30**	**480**	**100**	**600**	**240**	**600**	**24**

* Semester end examination

Note:

1. The duration of each theory class should be a minimum of 48 minutes.
2. TH = Theory, IM = Internal Marks.
3. One credit is equivalent to one hour of Teaching per week, that is to say, for each subject, 48 Minutes * 5 (weekly periods) = 240 Minutes = 4 Hours i.e. 4 Credits.
4. Each semester will consist of at least 15 weeks of Academic Work equivalent to 90 actual teaching days.
5. For Semesters I, II, III & IV, students shall opt for one subject from Ability Enhancement Courses (AEC) and one subject from Skill Enhancement Courses (SEC). The Core Courses will remain compulsory
6. The syllabus and question paper pattern of Second Language subject of B. Com. Semester; I, II, III & IV i.e. a) Supplementary English b) Marathi c) Hindi will be as per the Commerce Language Board.
7. # The syllabus and question paper pattern of other second languages like Sanskrit, Urdu, Guajrati, Telegu, Bengali, Persian, Arabic, Pali & Prakrit and Latin will be as per the Boards of the faculty of Arts for B.A. Semester- I, II, III & IV respectively

Vocational Courses: Semester III

Course Code	Subjects	Total Hours	Examination Scheme				Total Marks(TH. +PR + IM)	Credits
			Theory (Uni)	Internal (College)	Practical (Uni)			
			Max Marks Theory Paper (TH)	Max Marks (IM)	Max Marks Practical (PR)	Min Passing Marks		
3T7	Entrepreneurshi pDevelopment	60	80	20	-	40	100	4
3T8	3T8.1- Computer Application-II **or** 3T8.2- Principles and Practice of Insurance-II **or** 3T8.3- Advertising, Sales Promotion & Sales Management-II	60	80	20	-	40	100	4

B.Com. – Semester – IV

Sr. No.	Course Type	Course/Subject Name	Course Code	Teaching Scheme	Examination Scheme				Total Marks	Credits
				Total Periods per Week	Max. Marks (TH)*	Max. Marks (IM)	Total Marks	Min. Passing Marks		
1	CC 13	Financial Accounting - II	4T1	5	80	20	100	40	100	4
2	CC 14	Monetary Economics - II	4T2	5	80	20	100	40	100	4
3	CC 15	Compulsory English	4T3	5	80	20	100	40	100	4
4	CC 16	Second language Supplementary English/ Marathi Hindi Other Languages # **OR** Vocational Courses	4T4.1 4T4.2 4T4.3	5	80	20	100	40	100	4
5	AEC 4	Organizational Behaviour **OR** Banking Procedure & Practice (Any One) **OR** Vocational Course	4T5-A 4T5-B	5	80	20	100	40	100	4
6	SEC -4	Secretarial Practice **OR** Insurance Procedure & Practice (Any One)	4T6-A 4T6-B	5	80	20	100	40	100	4
		Total		**30**	**480**	**120**	**600**	**240**	**600**	**24**

* Semester end examination

Note:

1. The duration of each theory class should be a minimum of 48 minutes.
2. TH = Theory, IM = Internal Marks.
3. One credit is equivalent to one hour of Teaching per week, that is to say, for each subject, 48 Minutes * 5 (weekly periods) = 240 Minutes = 4 Hours i.e. 4 Credits.

4. Each semester will consist of at least 15 weeks of Academic Work equivalent to 90 actual teaching days.
5. For Semesters I, II, III & IV, students shall opt for one subject from Ability Enhancement Courses (AEC) and one subject from Skill Enhancement Courses (SEC). The Core Courses will remain compulsory
6. The syllabus and question paper pattern of Second Language subject of B. Com. Semester; I, II, III & IV i.e. a) Supplementary English b) Marathi c) Hindi will be as per the Commerce Language Board.
7. # The syllabus and question paper pattern of other second languages like Sanskrit, Urdu, Guajrati, Telegu, Bengali, Persian, Arabic, Pali & Prakrit and Latin will be as per the Boards of the faculty of Arts for B.A. Semester- I, II, III & IV respectively

Vocational Courses: Semester IV

Course Code	Subjects	Total Hours	Examination Scheme				Total Marks(TH.+PR+IM)	Credits
			Theory (Uni)	Internal (College)	Practical (Uni)			
			Max Marks Theory Paper(TH)	Max Marks	Max Marks Practical	Min Passing Marks		
4T7	Entrepreneurship Development-IV	60	80	20	-	40	100	4
4T8	4T8.1- Computer Application-IV **Or** 4T8.2- Principles and Practice of Insurance-IV **Or** 4T8.3- Advertising, Sales Promotion and Sales Management-IV	60	80	20	-	40	100	4

B.Com. – Semester - V

Sr. No.	Course Type	Course/Subject Name	Course Code	Teaching Scheme	Examination Scheme				Total Marks	Credits
				Total Periods per Week	Max. Marks (TH)	Max. Marks (IM)	Total Marks	Min. Passing Marks		
1	CC 17	Financial Accounting - III	5T1	5	80	20	100	40	100	4
2	CC 18	Tax Procedure and Practice	5T2	5	80	20	100	40	100	4
3	CC 19	Human Resource Management	5T3	5	80	20	100	40	100	4

4	CC 20	Agricultural Economics	5T4	5	100	20	100	40	100	4
5	DSE 1	Cost Accounting **OR** Commercial Psychology **OR** Mercantile Law I **OR** Business Entrepreneurship Development (Any One) **OR** Vocational Course	5T5-A 5T5-B 5T5-C 5T5-D	5	80	20	100	40	100	4
6	SEC 5	Company Audit **OR** Internship # **OR** Vocational Course	5T6-A 5I6-B	5 --	80 --	20 100 #	100 100 #	40 40 #	100 100 #	4 4 #
		Total		**30**	**480**	**120**	**600**	**240**	**600**	**24**

* Semester end examination

Note:

1. The duration of each theory class should be a minimum of 48 minutes.
2. TH = Theory, IM = Internal Marks.
3. One credit is equivalent to one hour of Teaching per week, that is to say, for each subject, 48 Minutes * 5 (weekly periods) = 240 Minutes = 4 Hours i.e. 4 Credits.
4. Each semester will consist of 15 to 18 weeks of Academic Work equivalent to 90 actual teaching days.
5. For Semester V & VI, students have to opt for one subject from Discipline Specific Electives (DSE). The Core Courses will remain compulsory.

Vocational Courses: Semester V

Course Code	Subjects	Total Hours	Examination Scheme				Total Marks (TH. + PR + IM)	Credits
			Theory (Uni)	Internal (College)	Practical (Uni)			
			Max Marks Theory Paper (TH)	Max Marks (IM)	Max Marks Practical (PR)	Min Passing Marks		
5T7	Entrepreneurshi pDevelopment-V	60	80	20	-	40	100	4
5T8	5T8.1 Computer Application-V **Or**							

	5T8.2 Principles and Practice of Insurance-V **Or** 5T8.3 Advertising, Sales Promotion and Sales Management-V	60	80	20	-	40	100	4

B.Com. – Semester - VI

Sr. No.	Course Type	Course/Subject Name	Course Code	Teaching Scheme	Examination Scheme				Total Marks	Credits
				Total Periods per Week	Max. Marks (TH)	Max. Marks (IM)	Total Marks	Min. Passing Marks		
1	CC 21	Financial Accounting - IV	6T1	5	80	20	100	40	100	4
2	CC 22	International Economics	6T2	5	80	20	100	40	100	4
3	CC 23	Advanced Statistics	6T3	5	80	20	100	40	100	4
4	CC 24	Financial Management	6T4	5	80	20	100	40	100	4
5	DSE 2	Managerial Accounting **OR** Hospitality and Health Care Management **OR** Mercantile Law II **OR** Commercial Geography of Vidarbha Region (Any One) **OR** Vocational Course	6T5-A 6T5-B 6T5-C 6T5-D	5	80	20	100	40	100	4
6	SEC 6	Marketing Process **OR**	6T6-A 6T6-B	5	80	20	100	40	100	4

		Advertising Skills **OR** Vocational Course								
			Total	**30**	**480**	**120**	**600**	**240**	**600**	**24**

Note:

1. The duration of each theory class should be a minimum of 48 minutes.
2. TH = Theory, IM = Internal Marks.
3. One credit is equivalent to one hour of Teaching per week, that is to say, for each subject, 48 Minutes * 5 (weekly periods) = 240 Minutes = 4 Hours i.e. 4 Credits.
4. Each semester will consist of 15 to 18 weeks of Academic Work equivalent to 90 actual teaching days.
5. For Semester V & VI, students have to opt for one subject from Discipline Specific Electives (DSE). The Core Courses will remain compulsory.

Vocational Courses: Semester - VI

Course Code	Subjects	Total Hours	Examination Scheme				Total Marks (TH. + PR + IM)	Credits
			Theory (Uni)	Internal (College)	Practical (Uni)			
			Max Marks Theory Paper (TH)	Max Marks (IM)	Max Marks Practical (PR)	Min Passing Marks		
6T7	Entrepreneurship Development-VI	60	80	20	-	40	100	4
6T8	6T8.1 Computer Application-VI **Or** 6T8.2 Principles and Practice of Insurance-VI **Or** 6T8.3 Advertising, Sales Promotion and Sales Management-VI	60	80	20	-	40	100	4

Course Composition Matrix:

	Sem I	Sem II	Sem III	Sem IV	Sem V	Sem VI	Total Courses
CC	4	4	4	4	4	4	24
AECC	1	1	1	1	1	1	6
SEC	1	1	1	1	*1*	*1*	4 + *2* = 6
DSE	-	-	-	-	*1*	*1*	*2*
Total Sem Credits	24	24	24	24	24	24	36
Total Credits	144						

Figures in Italics (in SEC & DSE) indicate optional course type selections

List of Core Courses, Ability Enhancement Compulsory Courses, Skill Enhancement Courses and Discipline Specific Elective

A) List of Core Courses (CC)*

SN	Semester	Paper / Subjects
1	Sem I	Fundamentals of Accounting
2		Business Economics – I
3		Compulsory English
4		Second language Supplementary English/ Marathi/ Hindi/Other Languages
5	Sem II	Statistics and Business Mathematics
6		Business Economics – II
7		Compulsory English
8		Second language Supplementary English/ Marathi/ Hindi/Other Languages
9	Sem III	Financial Accounting – I
10		Monetary Economics - I
11		Compulsory English
12		Second language Supplementary English/ Marathi/ Hindi/Other Languages
13	Sem IV	Financial Accounting – II
14		Monetary Economics – II
15		Compulsory English
16		Second language Supplementary English/ Marathi/ Hindi/Other Languages
17	Sem V	Financial Accounting – III
18		Tax Procedure and Practice
19		Human Resource Management
20		Agricultural Economics
21	Sem VI	Financial Accounting – IV
22		International Economics
23		Advanced Statistics
24		Financial Management

B) List of Ability Enhancement Courses (AEC)*

Semester	Paper / Subjects
Sem I (Any One)	Commercial Firms
	Digital Marketing
Sem II (Any One)	Commercial Services
	Fundamentals of Banking
Sem III	Company Law

(Any One)	Income Tax
Sem IV	Organizational Behaviour
(Any One)	Banking Procedure & Practice

C) List of Skill Enhancement Courses (SEC)*

Semester	Paper / Subjects
Sem I	Business Skills
(Any One)	MS-Office
Sem II	Financial Market Operations
(Any One)	Skill Development
Sem III	Holistic Development
(Any One)	Computerized Accounting
Sem IV	Secretarial Practice
(Any One)	Insurance Procedure & Practice
Sem V	Company Audit
(Any One)	Internship
Sem VI	Marketing Process
(Any One)	Advertising Skills

D) List of DSE (Discipline Specific Electives)*

Semester	Paper / Subjects
Sem V (Any One)	Mercantile Law I
	Business Entrepreneurship Development
	Cost Accounting
	Business Entrepreneurship Development
Sem VI (Any One)	Mercantile Law II
	Commercial Geography of Vidarbha Region
	Managerial Accounting
	Hospitality and Healthcare Management

If the student wishes to opt for any course, other than offered by the University, He / she can register for any other equivalent credit ODL (Open and Distance Learning) courses and submit the passing certificate.

***Detailed curriculum contents of courses in 1st and 2nd Semester are mentioned in Appendix A.**

3. Workload

Workload Chart (70 periods per week) (Odd Semesters)

B.Com. Semester I			
Sr. No.	Course Type	Course/ Subject	No. of Periods
1	CC	Fundamentals of Accounting	5
2	CC	Business Economics – I	5
3	AEC	Commercial Firms OR Digital Marketing	5
4	SEC	Business Skills OR MS-Office	5
Total Periods			20

B.Com. Semester III			
Sr. No.	Course Type	Subjects	No. of Periods
1	CC	Financial Accounting - I	5
2	CC	Monetary Economics - I	5
3	AEC	Company Law OR Income Tax	5
4	SEC	Holistic Development OR Computerized Accounting	5
			20

B.Com. Semester V			
Sr. No.	Course Type	Subjects	No. of Periods
1	CC	Financial Accounting - III	5
2	CC	Tax Procedure and Practice	5
3	CC	Human Resource Management	5
4	CC	Agricultural Economics	5
5	AEC DSE	Cost Accounting OR Commercial Psychology OR Mercantile Law I OR Business Entrepreneurship Development	5
6	SEC	Company Audit OR Internship	5
			30

Workload Chart (70 periods per week) (Even Semesters)

B.Com. Semester II			
Sr. No.	Course Type	Course/ Subject	No. of Periods
1	CC	Statistics and Business Mathematics	5
2	CC	Business Economics - II	5
3	AEC	Commercial Services OR Fundamentals of Banking	5
4	SEC	Financial Market Operations OR Skill Development	5
Total Periods			20

B.Com. Semester IV			
Sr. No.	Course Type	Subjects	No. of Periods
1	CC	Financial Accounting - II	5
2	CC	Monetary Economics - II	5
3	AEC	Organizational Behaviour OR Banking Procedure & Practice	5
4	SEC	Secretarial Practice OR Insurance Procedure & Practice	5
			20

B.Com. Semester VI			
Sr. No.	Course Type	Subjects	No. of Periods
1	CC	Financial Accounting - IV	5
2	CC	International Economics	5
3	CC	Advanced Statistics	5
4	CC	Financial Management	5
5	AEC DSE	Managerial Accounting OR Hospitality and Health Care Management OR Mercantile Law II OR Commercial Geography in Vidarbha Region	5
6	SEC	Marketing Process OR Advertising Skills	5
			30

Weekly Workload Chart (Languages) (For Semesters I,II, III & IV)

Sr. No.	Courses/ Subjects	Periods
1	Compulsory English	5 Periods of Theory + 1 Period of Tutorial for a Batch of 20 Students
2	Second language Supplementary English/ Marathi/ Hindi/Other Languages	5 Periods of Theory

4. Assessment

- The final total assessment of the candidates is made in terms of an internal assessment (Sessional) and an external assessment for each course/subject taken together.
- For each paper (other than Internship), 20 marks will be internal assessment and 80 marks for semester-end examination (external assessment) to be conducted at the college level (Odd semesters examinations) and RTM Nagpur University level (Even semester examinations)
- All subjects shall have a wokload of 5 periods per week, including 4 periods of theory and 1 period for classroom activity-based teaching per week. For Compulsory English 1 additional Tutorial period for a batch of 20 students is allotted.
- Expected classroom activities shall consist of the following: (a) Group Discussion (b) Seminars (c) Power Point Presentations (d) Elocution (e) Debate (f) Role Play (g) Case Studies (h) Educational Games. The teacher is expected to undertake a minimum of four of the aforesaid activity.

Internal Assessment

1a	Attendance of the student during a particular semester	05 Marks
1b	An assignment based on curriculum to be assessed by the teacher concerned	05 Marks
1c	Subject wise class test or activities conducted by the teacher concerned	10 Marks
1	**Internal assessment Total marks**	**20**
2	**Semester wise End Examination marks**	**80**
	Total Marks Per Course	**100**

- The internal marks will be communicated to the University at the end of each semester, but before the semester end examinations / as instructed by the university. These marks will be considered for the declaration of the results.
- The record of internal marks, evaluation & results should be maintained for a period of one year by the respective institute/college for verification by the competent authority.

Internship and its evaluation

During the fifth semester, those students who opt for SEC 5 as "Internship" will have to undergo an internship of 6-10 weeks (Minimum 120 hours) with industry, business, service or social organization. Article ship attended during the fifth semester of B.Com. for Professional Courses like CA/CS/ICWA/CMA/CFA, etc. will be considered as "Internship" provided appropriate documentary proofs are submitted by the student. Students should submit an authentic Internship Completion Certificate issued by the competent authority of the business/institution under whom the internship is undertaken. The respective college will assess and evaluate the same as per parameters (like PowerPoint Presentation, Brief Report, etc.) laid down by the college from time to time.

5. Standard of Passing

The scope of the subject, percentage of passing in Theory and Project and Internal Assessment will be governed as per following rules:

(i) In order to pass the Bachelor of Commerce (B.Com.) 1st, 2nd, 3rd, 4th, 5th and 6th Semester Examinations, and an examinee shall obtain not less than 40 % marks in each paper, that is to say combined in the written Examination conducted by the University and in internal assessment put together.

(ii) An examinee who is unsuccessful at the examination shall be eligible for admission to the subsequent examinations on payment of a fresh fee prescribed for the examination together with the conditions of the ordinance in force from time to time.

6. Credit and Grade Point System:

A) Conversion of Marks to Grades and Calculations of SGPA (Grade Point Average) and CGPA (Cumulative Grade Point Average): In the Credit and Grade Point System, the assessment of individual Courses in the concerned examinations will be on the basis of marks only, but the marks shall later be converted into Grades by some mechanism wherein the overall performance of the Learners can be reflected after considering the Credit Points for any given course. However, the overall evaluation shall be designated in terms of Grade. There are some abbreviations used here that need an understanding of each and every parameter involved in grade computation and the evaluation mechanism. The abbreviations and formulae used are as follows: -

Abbreviations and Formulae Used

G: Grade

GP: Grade Points

C: Credits

CP: Credit Points

CG: Credits X Grades (Product of credits & Grades)

SGPA = ΣCG: Sum of Product of Credits & Grades points / ΣC: Sum of Credits points

SGPA: Semester Grade Point Average shall be calculated for individual semesters. (It is also designated as GPA)

CGPA: Cumulative Grade Point Average shall be calculated for the entire Programme by considering all the semesters taken together.

CGPA to Percentage (%) conversion formula: Percentage (%) = (CGPA) * 10

After calculating the SGPA for an individual semester and the CGPA for entire program, the value can be matched with the grade in the Grade Point table as per the ten (10) Points Grading System and expressed as a single designated GRADE such as O, A, B, C, D, P and F

Sr. No.	Letter Grade	Grade Points	Mark Range	Performance
1	O	10	Above 90 upto 100	Outstanding
2	A+	9	Above 80 upto 90	Excellent
3	A	8	Above 70 upto 80	Very Good
4	B+	7	Above 60 upto 70	Good
5	B	6	Above 50 upto 60	Above Average
6	C	5	Above 45 upto 50	Average
7	P	4	40 to 45	Pass
8	F	0	Below 40	Fail
9	AB	0	Absent	Fail

A student obtaining Grade F shall be considered failed and will be required to reappear in the examination.

B) Division at the B.Com. semester VI examination shall be declared on the basis of the aggregate marks at the B.Com. semester I, semester II, semester III, semester IV, semester V and semester VI examinations taken together and the CGPA will be calculated and notified.

C) The successful examinees at the B.Com. semester VI examination shall be awarded division based on CGPA

7. **Promotion to Higher Semester (A.T.K.T.):**
The unsuccessful candidate of any semester examination shall be ALLOWED TO KEEP THE TERM (ATKT) in accordance with the following table: (Theory and Internal assessment of that theory subject shall be jointly considered as single passing head).

Admission to academic year	Candidate should have passed All courses of the following examination	Candidate should have filled the examination form and appeared for the following examinations	Candidate should have passed in Minimum **50% courses of** the following examination
1st Semester	**H.S.S.C./Equivalent**	-----	-----
2nd Semester	-----	**1st Semester**	-----
3rd Semester	-----	**2nd Semester**	**50% courses of 1st and 2nd Semesters taken together**
4th Semester	-----	**3rd Semester**	**As Above**
5th Semester	**1st and 2nd Semesters**	**4th Semester**	**50% courses of 3rd and 4th Semesters taken together**
6th Semester*	**As Above**	**5th Semester**	**As Above**

Note: (*) A candidate admitted to Final Semester can appear for Final Semester examination however the result of the Final Semester examination will be withheld unless the candidate clears all the lower examinations of the **B.Com. Course.**

8. **Provision for Multiple Exit and Multiple Entry**

The B.Com. program offered under this direction provides an opportunity to students for multiple exit from the program as per following conditions:

a. A student can exit the program after successful completion of 1st and 2nd Semester courses and obtaining 48 credits. Such a student is eligible to be awarded 'Certificate in Commerce' by the University provided that a student has successfully completed at least one 'Skill Based Course'.
b. A student can exit the program after successful completion of 1st, 2nd, 3rd and 4th Semester courses and obtaining 96 credits. Such a student is eligible to be awarded 'Diploma in Commerce' by the University provided that a student has successfully completed at least one 'Skill Based Course'.
c. A student who has completed the 3 years program and earned 144 credits will be considered eligible for award of 'Bachelor of Commerce' degree by the University.
d. A student who wishes to exit the program before completion of 3 years is required to apply to the university through the Principal.
e. A student who opted for exit from the program before completion of 3 years (a & b) above shall be eligible for admission to next year of the program in any subsequent academic session. However, if at the time of admission, if this scheme of examination is not in force, the student will have to complete the program according to the provisions made under the direction prevailing at the time of such admission.

9. Provision for Transfer of Credits

The B.Com. program offered under this direction provides enhanced academic flexibility to students in terms of selecting the courses they want to learn. A student can opt for any course from any statutory/recognized University or any recognized online learning platform such as SWAYAM/NPTEL/EdX/Coursera in lieu of a course (except Core Course and Discipline Specific Electives) mentioned in this scheme of examination. The mechanism for transfer of credits earned through these courses to be adhered is mentioned here:

1. Any Core Course or Discipline Specific Elective mentioned in this scheme of examination cannot be opted out by a student.
2. A student can opt out any course other than Core Course/Discipline Specific Elective and earn equal number of credits by completing any ODL or Online course/s from any statutory/recognized University or any recognized online learning platform such as SWAYAM/NPTEL/EdX/Coursera.
3. If a student is willing to opt out any such course, he/she will have to mention this while submitting the examination form to the University for respective semester.
4. A certificate of completion of such an ODL/Online course shall be submitted by the student to the University through college before end term evaluation.
5. Such a certificate shall mandatorily have the number of credits, duration of the course and grades/marks obtained by the student and shall preferably have a QR code for verification.
6. The college shall submit the grades and marks obtained by the student to the University along with Internal Assessment marks for the concerned examination.
7. If a student has opted for an ODL/Online course in a particular semester and failed to submit the certificate within prescribed time, the student will be marked for 'Absent' for a particular course in that examination. Such a student will be required to fill in the examination form in the consecutive attempt and submit the passing certificate in order to get his/her corrected result.

10. Eligibility for award of Degree:

In order to become eligible for award of 'Bachelor of Commerce (B.Com.)' degree, a student has to fulfil the following conditions:

a. A student has to earn minimum 144 credits in not less than 3 years.
b. A student has to successfully complete (pass) all Core Courses and Discipline Specific Electives mentioned in this direction.

NOTE: This scheme of teaching and examination for Bachelor of Commerce program shall be effective from the academic session 2022-23 and a comprehensive direction for other regulations in this connection shall be soon issued by the University.

Bachelor of Commerce (OB & CBCS) Examination

Academic Year 2022-23 onwards

Appendix 'A'

Detailed Syllabus for 1st and 2nd Semesters

Bachelor of Commerce
B.Com. (CBCS) – Sem I
B.Com. - First Year Semester-I
Course Type: Core Course
Course Name: Fundamentals of Accounting
Course Code: 1T1

Course Outcomes:

CO1	Given the information about the business transactions/ each student will be able to identify the nature of transaction/ events and will be able to record the financial transaction in the books of accounts i.e. Journal, Ledger, personal, Real, Nominal Account and Subsidiary Books etc. by applying double entry book system of accounting.
CO2	Given the Trial Balance of a Sole Trading concern along with the accompanied adjustments the students will be able to prepare the financial statement of a Sole Trader at the end of a financial year.
CO3	Given the detail business transactions between the Head office and Branches, students will be able to prepare Branch Account, cash and Credit sales, debtors & stock and debtor method of accounting.
CO4	Given the Trial Balance along with the adjustment of a Co-operative society a student would be able to prepare Trading Account, Profit & Loss Account, Profit & Appropriation Accounts and Balance Sheet of Co-operative Society As per State Co-operative Societies Act, 1960.
CO5	Given the information of business Receipts and Payments, student will be able to a simple cash book.

Unit - I Basic of Financial Accounting

An overview of basic of books keeping and accountancy. Objective, Importance, Advantages, Limitations and Functions of Accounting. Double Entry System, Branches of Accounting. Capital and Revenue Receipt & Expenditure. Preparation of Journal, Ledger's, Simple Cash book, Trial Balance.
(Theory & Numerical)

Unit - II Accounting Concepts:

Meaning, objectives and principles of Accounting, Accounting Concepts & Conventions, Indian Accounting Standards- AS 1 to AS 10. Basic concept of Profit & Loss A/c and Balance Sheet. Preparation Final accounts of Sole Traders (Excluding Manufacturing A/c)

(Theory & Numerical)

Unit - III Branch Accounting (Excluding Foreign Branch)

Meaning of Branch Objective of Branch Accounting, Type of Branches, Mentioned of Accounting Records, Transactions relating to Branch, Accounting procedure of Branch. (Theory & Numerical)

Unit - IV Final Accounts of Co - Operative Societies:

(As per Maharashtra Co-Operative Societies Act 1960)

Introduction, Types of Co-operative societies. Preparation of Trading A/c, Profit and Loss A/c, P & L Appropriation A/c and Balance Sheet. (Theory & Numerical)

Note: Activities for subject/Chapter related (Workshop, Seminar, Guest Lecture, Group Discussion, Visit to Business organisation)

The Financial year ends on 31st March.

Reference Books :

1. Dr. S. M. Shukla : Financial Accounting, Sahitya Bhawan Publication
2. Gupta R. L. - Advanced Financial Accounting - S. Chand & Sons
3. Kumar, Anil S. - Advanced Financial Accounting - Himalaya Publication House
4. Shukla and Grewal : Advanced Accounts (S. Chand & Ltd. New Delhi)
5. Jain and Narang : Advanced Accounts (Kalyani Publishers, Ludhiana)
6. Dr.S. K. Singh: Financial Accounting, S.B.P.D Publication, Agra
7. Dr. Vijay Bagde, Dr. Pramod Fating, Dr. Prashant Gulhane: Financial Accounting-I; Sir Sahitya Kendra, Nagpur.
8. Dr. P. Wath, Dr. R. Jadhao, Dr. R. Selukar :- Financial Accounting- Sai Jyoti Prakashan

Question Paper Pattern

B.Com. - First Year Semester-I

1T1: Financial Accounting-I

N.B. - 1) All questions are compulsory.

2) All questions carry equal marks.

Q. No. 1 - Unit I

a) Theory 08 Marks

b) Problem 08 Marks

OR

c) Problem 16Marks

Q. No. 2 - Unit II

a) Theory 08 Marks

b) Problem 08 Marks

OR

c) Problem 16Marks

Q. No. 3 - Unit III

a) Theory 08 Marks

b) Problem 08 Marks

OR

c) Problem 16Marks

Q. No. 4 - Unit IV

1. Theory 08 Marks
2. Problem 08 Marks

OR

3. Problem 16Marks

Q. No. 5 a) Unit –I Problem 04 Marks

b) Unit –II Problem 04 Marks

c) Unit –III Problem 04 Marks

d) Unit –IV Problem 04 Marks

BE

Bachelor of Commerce
B.Com (CBCS) – Sem I
Course Type: Core Course
Course Name: Business economics -I
Course Code: 1T2

Course outcomes

CO1	Students will be able to classify fundamental problems of an economy
CO2	Students will be able to use demand analysis & Indifference curves analysis in given situation
CO3	Students will be able to apply various demand forecasting techniques
CO 4	Students will be able to identify key elements in supply and isoquant curves
CO 5	Students will be able to measure and comment on elasticity of demand for given data

Unit 1:

Introduction to economics: Contents of economics, stages of economic evolution, essential processes of economy, fundamental problems of an economy, basic terms and concepts – goods, utility, value, price, wealth, income and equilibrium

Unit 2:

Demand Analysis: defining demand & Law of demand & Exceptions, utility analysis, indifference curves analysis, Types of demand – direct & Indirect demand, derived & Autonomous demand, durable and non-durable goods demand, firm & industry demand, total market and segment demand, , Determinants of Demand; Elasticity of Demand: Changes in demand, demand function, concept of elasticity, measurement of elasticity

Unit 3:

Demand Forecasting: forecasts and forecasting techniques, Qualitative techniques – expert opinion survey , consumers complete enumeration survey, sales force opinion survey, consumers end use survey , Quantitative techniques – trend projection technique, barometric method , Econometric techniques – regression method

Unit 4:

Supply- Meaning, Criticism, factors influencing factors of supply. Law of supply, movements and shifts in supply curve. Elasticity of supply, determinants of supply.

Production Analysis: Production function, returns to factor and returns to scale, Output elasticity Isoquant Curves definition, General Properties

References

1. Business Economics , V.G. Mankar, Himalaya Publication House
2. Modern Economics, H.L.Ahuja, S.Chand & Co Ltd.
3. Micro Economics P.N.Chopra, Kalyani Publishers.
4. Micro Economics, D.D.Chaturvedi, Galgotia Publishing Company.
5. Modern Economic Theory, K.K.Dewett, S.Chand & Co Ltd.

Com.

B. Com. (CBCS) Sem I
Course Type: Ability Enhancement Course
Course Name: Commercial Firms
Course Code: 1T5 – A

Course Outcomes:

CO1	Students will be able to relate the concepts of commercial firms
CO2	Students will be able to interpret the concept of sole trader into practice
CO3	Students will able to analyse partnership firm and will gain knowledge about starting a partnership firm.
CO4	Students will be gain knowledge about comp and it's various concept and will be able to gain knowledge about starting a company.
CO5	Students will relate to the concept of start ups and will be aware about starting a start ups and will be able to prepare project report

1) Commercial firms: Concept and importance. It's contribution in economic growth
2) Sole trader: meaning, definition, salient features, procedure to start a sole trade business. Activities included in sole trading, Partnership: concept, meaning, characteristics importance , procedure to be adopted for starting partnership. Activities involved in partnership business
3) Company: concept, meaning, characteristics, procedure to start a company, activities involved in company business
4) Start ups: concept and meaning, role in economic development, various Government schemes for start ups. Preparation of project report for start ups

QUESTION PAPER PATTERN

BCOM – I : SEMESTER I

1T2- Commercial Firms

TIME:- 3 Hours] [Full Marks:- 80

N.B. – 1) All questions are compulsory.

2) All questions carry equal marks.

Q.1.

(a) UNIT – I 08 Marks

(b) UNIT – I 08 Marks

OR

(c) UNIT – I 16Marks

Q.2.

(a) UNIT – II 08 Marks

(b) UNIT – II 08 Marks

OR

(c) UNIT – I 16Marks

Q.3.

(a) UNIT – III 08 Marks

(b) UNIT – III 08 Marks

OR

(c) UNIT – I 16Marks

Q.4.

(a) UNIT – IV 08 Marks

(b) UNIT – IV 08 Marks

OR

(c) UNIT – I 16Marks

Q.5.

a) UNIT – I 04 Marks

b) UNIT – II 04 Marks

c) UNIT – III 04Marks

d) UNIT – IV 04 Marks

B. Com (CBCS) Sem – I

Course Type: Ability Enhancement Course

Course Name: Digital Marketing

Course Code: 1T5 - B

Course Outcomes

CO1	The students will be able to understand the concept and develop the knowledge of Digital Marketing, E-Commerce and M-Commerce.
CO2	The students will be able to understand the concept & will be equipped with the practical knowledge of creating Electronic mail (Email), Websites, Brochure / Flyers.
CO3	The students will be able to develop the knowledge about usage and Procedures for handling various important Digital Marketing Platforms for Earning Income.
CO4	The students will be able to develop the knowledge about Recent Trends for Earning Income through Digital Marketing.
CO5	The students will be equipped with the practical knowledge of various important Digital Marketing Platforms.

Unit 1. Digital Marketing: Introduction, meaning, significance and benefits. Myths in Digital Marketing, Digital marketing process, Introduction to E-Commerce, M-Commerce, Traditional marketing Vs Digital Marketing.

Unit 2. Electronic mail (Email) and Websites: Meaning & Features of Email, Procedure for sign-up and sing-in in Email. Usage of BCC & CC in Email, procedure to send the attachment through email. Meaning & Features of Websites, Procedure for Creating Website, Domain name, uses of hyperlink. Procedure for Creating Brochure / Flyers.

Unit 3. Usage of Digital Marketing Platforms for Earning Income: Procedures for handling- Search Engine Optimisation (SEO), Search Engine Marketing (SEM), Social Media Optimisation (SMO), Social Media Marketing (SMM), Email Marketing, Mobile marketing, Pay Per Click (PPC) Advertising, Google AdSense, Content Marketing, Affiliate Marketing, Influencer Marketing.

Unit 4. Recent Trends for Earning Income through Digital Marketing: Procedures for - Creating Blog, Creating YouTube Channel, Setting up Facebook Advertising Account, Starting Freelancing Service, using Podcast for Selling Products. Procedure for Selling products on Instagram, Procedure for Creating seller account on various Digital Marketing Platforms- Amazon, Flipkart, etc.

References Books:

- *Fundamentals of Digital Marketing, Puneet Bhatia, Pearson Education; second edition (June 2019)*
- *Digital Marketing, Seema Gupta, McGraw Hill Education; Second edition (August 2020)*
- *Digital Marketing: Complete Digital Marketing Tutorial, Kailash Chandra Upadhyay, Notion Press; 1st edition (August 2021)*
- *Digital Marketing, Moutusy Maity, Oxford University Press (June 2022)*
- *Recent Trends in Digital Commerce, Dr. Medha Kanetkar, Dr. Manish Vyas, Mrs. Mrunmayee Khati, Sainath Prakashan (June 2021)*
- *The Essential Social Media Marketing Handbook, Gail Z. Martin, Rupa Publications India (20 June 2018)*
- *Social Media Marketing 2021, by Michael Branding, Notion Press; 1st edition (June 2021)*

QUESTION PAPER PATTERN
BCOM – I : SEMESTER I
1T2- Commercial Firms
TIME:- 3 Hours] [Full Marks:- 80
N.B. – 1) All questions are compulsory.
2) All questions carry equal marks.

Q.1.
(a) UNIT – I 08 Marks
(b) UNIT – I 08 Marks
OR
(c) UNIT – I 16Marks

Q.2.
(a) UNIT – II 08 Marks
(b) UNIT – II 08 Marks
OR
(c) UNIT – I 16Marks

Q.3.
(a) UNIT – III 08 Marks
(b) UNIT – III 08 Marks
OR
(c) UNIT – I 16Marks

Q.4.
(a) UNIT – IV 08 Marks
(b) UNIT – IV 08 Marks
OR
(c) UNIT – I 16Marks

Q.5.
a) UNIT – I 04 Marks
b) UNIT – II 04 Marks
c) UNIT – III 04Marks
d) UNIT – IV 04 Marks

BM

B. Com. (CBCS) Sem I

Course Type: Skill Enhancement Course

Course Name: Business Skills

Course Code: 1T6 – A

Course Outcomes:

CO1	The student will be able to **classify** different forms of business and business activities
CO2	The student will be able to **differentiate** between management and administration and also will be able to **formulate** a plan for a given activity
CO3	The student will be able to **distinguish** types of organisations and will also able to **decide** actions for a given situation
CO4	The student will be able to **select** leadership skills in a group and **demonstrate** direction skills to achieve objectives
CO5	The student will be able to **demonstrate** the roles, skills and functions of management required for a business activity

Unit-I: Nature and Scope of Business: Meaning and Definition of Business, Characteristics, Objectives of Business, Classification of Business Activities, Industry, Commerce & Trade, Social Responsibility of Business Towards Different Groups. Forms of Business Units: Sole Trader, Partnership, Joint Stock Company and Co-Operative Society – Meaning, Characteristics, Advantages & Disadvantages.

Unit-II: Management and Administration: Meaning and Definition of Management, Characteristics, Scope, Importance, Management and Administration, Management – A Science or Art. Planning: Meaning, Nature and Characteristics, Process, Importance, Types, Components.

Unit-III: Decision Making: Concept, Characteristics – Importance, Process, Types of Decisions. Organizing: Concept, Principles, Types – Line, Functional, Line and Staff, modern types of organizations-Projects, Matrix, Formal and Informal Organization, Advantages and Disadvantages.

Unit-IV: Direction: Meaning, Nature, Importance and Techniques. Co-Ordination: Meaning, Principles, Internal and External Co-Ordination, Methods of Achieving Effective Co-Ordination. Leadership: Leadership – Concept, Characteristics, Types and Qualities. Concept of Morale. Control: Meaning, Characteristics, Need, Procedure, Types, Essentials of Good Control System, Control Devices.

Reference Books

1. Ramaswamy, I. (2011). Principles of Business Management, (8th ed.), Himalaya Publishing House, New Delhi.
2. Principles of Management and Administration. Author, D. Chandra Bose. Publisher, PHI Learning, 2009

3. Robbins, S. (2017). Management, (13th ed.), Pearson Education, New Delhi
4. "The Practice of Management", Peter Drucker, Om Books India
5. Ghuman, K & Aswathapa, K, (2017). Management concepts and cases (10th ed.), Tata McGraw Hills, New Delhi
6. Koontz, H, & Weihrich, H (2016). Essentials of Management: An International Perspective (8th ed.), Tata McGraw Hills, New Delhi

QUESTION PAPER PATTERN

BCOM – I : SEMESTER I

1T6-A – Business Skills

TIME:- 3 Hours] [Full Marks:- 80

N.B. – 1) All questions are compulsory.

2) All questions carry equal marks.

Q.1.
(a) UNIT – I 08 Marks
(b) UNIT – I 08 Marks
OR
(c) UNIT – I 16Marks

Q.2.
(a) UNIT – II 08 Marks
(b) UNIT – II 08 Marks
OR
(c) UNIT – I 16Marks

Q.3.
(a) UNIT – III 08 Marks
(b) UNIT – III 08 Marks
OR
(c) UNIT – I 16Marks

Q.4.
(a) UNIT – IV 08 Marks
(b) UNIT – IV 08 Marks
OR
(c) UNIT – I 16Marks

Q.5.
a) UNIT – I 04 Marks
b) UNIT – II 04 Marks
c) UNIT – III 04Marks
d) UNIT – IV 04 Marks

CA

B.Com (CBCS) SEM –I

Course Type: Skill Enhancement Course

Course Name: MS-OFFICE

Course Code: 1T6-B

	Course Outcome
CO1	Student will be able to create and manage word documents with required formatting. Students will be able to compose word documents and operate relevant features and tools of MS Words.
CO2	Student will be able to perform operations like creating, storing, and formatting data using different Excel formatting tools and features.
CO3	Students will able to perform calculations using functions, and present the data visually using charts and graphs.
CO4	Student will be able to create and design professional presentation using different features & tools of PowerPoint.
CO5	Students will be able to prepare and appraise professional business data, document and presentation.

Unit I
Microsoft Word

Introduction ; Getting familiar with the interface of Word; Backstage View(File); Creating, Saving, Opening, Closing of document; Editing text Documents; Inserting & Deleting text, Toolbars; Inserting Tables, Pictures, Shapes, Icons, Smart Art, Drop Cap, Date and time, Object, Word Art, Special Symbols, Hyperlinks, Header and footer, Page Numbering, Charts; Use columns and breaks; Using step-by-step mail merge wizard; Review documents using - Spelling and Grammar check, word count; Different views of word document, Change the view of document ; Using format painter ;Creating styles; Using Page Setup Settings , Printing of the document; Sharing the document ;Exporting of word document

Unit II

Microsoft Excel – I

Introduction ; Getting familiar with the interface of Excel; Backstage View(File); Excel Toolbars; References-Absolute and Relative; Working with worksheet/workbook; Data Entry in Excel; Formatting of data –Formatting Cell, Rows, Columns , Sheet ; Different formatting - Number Formatting ,Text formatting ,Date Formatting ,Alignment Settings, Font Formatting, Border ,Shading , Format as Table; Changing Row /Height ,Using Hide /unhide options;

Moving or copying sheet; Renaming Sheet; Flash Fill ;Using find and select options-Go to, Go To Special ; Sharing the excel workbook; Exporting of worksheet

Unit III

Microsoft Excel – II

Outline -Group, Ungroup, Subtotal; Conditional Formatting; Performing Calculations with Functions and formulas, Function Library-Date and Time Functions, Mathematical Functions, Logical Functions, Text Functions, Statistical Functions, hlookup, vlookup; Converting data from text to columns, removing duplicates; Creating Effective Tables & Charts; Data analysis using Sort ,Filter and data validation feature in excel; Pivot table & Pivot charts; Page Setting & Printing

Unit IV

Microsoft PowerPoint

Introduction ; Getting familiar with the interface of PowerPoint; Backstage View (File); Slide Layout; Formatting in PowerPoint; Different Toolbars; Inserting Clip Art, Picture, Slide, Organization Chart, Smart art ,Table, Hyperlink; Presentation Views ; Master Slide; Working With Movies and Sounds; Using different design themes; Changing Slide Size and background ; Applying Animation and Slide Transition; Slideshow ; recording slide show; Page Setting & printing; Sharing the presentation ;Exporting the presentation to Video

Text Books

1. MS Office 2016 Quintessential Course –Vishnu P Singh, Asian Computer Books
2. Microsoft Office 2016 Step by Step, Joan Lambert, Curtis Frye, Microsoft Press
3. Information Technology, Vikrant Malviya, Himalaya Publishing House

Reference Books

1. Introduction to Information Technology, Renu Vashishth & Dr. Neeru Mudra, Himalaya Publishing House
2. Computer course –Prof. Satish Jain, Shashi Singh, M. Geetha, BPB Publication
3. Office 16 in easy steps, Michael Price Mike Mc Grath, BPB Publications
4. Office 2016 for beginners- Steven Weikler, Alpha Lifestyle Productions
5. Microsoft office 2016 Word, Excel, One Note Book - Vol 1-Lalit Mali, Notion Press

Bachelor of Commerce
B.Com. (CBCS) – Sem II
Course Type: Core Course
Course Name: Statistics and Business Mathematics
Course Code: 2T1

CO1	Given the information about a particular variables, Student will be demonstrate an understanding of statistics by creating frequency distribution as per the Statistical Series.
CO2	From the given data set student will be able to compute Mean, Median, Mode and other measure of central tendency as required.
CO3	From the given data, Students will be able to know dispersion and to calculate Standard Deviation, Quartiles, Quartile Deviation & Co-efficient of Variation.
CO4	From the given data set the student will be able to compute the Skewness & it's coefficient by using Karl Pearson's and Bowley's method.
CO5	From the given information student will able to calculate Percentage, Simple Interest, Compound Interest and also able to calculate Profit or Loss arising out a business transactions.

B.Com. - First Year Semester-II

2T1: Statistics and Business Mathematics

Unit - I Statistics & Measures of Central Tendency

Meaning, Scope, Importance, Functions and Limitations of Statistics. Collection of data, Tabulation and Classification, Frequency distribution. Mean, Median, Mode, Geometric Mean and Harmonic Mean (Theory & Numericals)

Unit -II Dispersion-

Meaning and significance of dispersion, Methods of measuring dispersion, Standard Deviation, Quartiles, Quartile Deviation, Co-efficient of variation (Theory & Numericals)

Unit - III Skewness-

Absolute Measures of Skewness, Relative Measures of Skewness, Karl Pearson's Coefficient of Skewness, Bowley's Coefficient of Skewness. (Numericals)

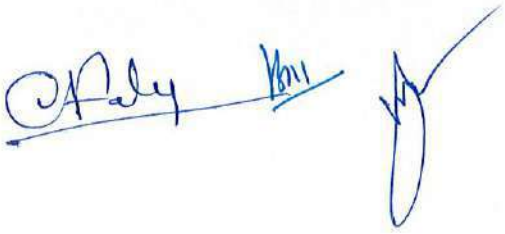
Unit - IV Business Mathematics:-

Percentages, Simple Interest, Compound Interest, Profit/ Loss. (Numericals)

Note: Activity for subject/Chapter related (Workshop, Seminar, Guest Lecture, Group Discussion)

Reference Books:

1. Fundamentals of statistics : D. V. Elhance & Veena Elhance.
2. Statistics : V. K. Kapoor : S. Chand & Sons.
3. Statistics : B. New Gupta: Sahitya Bhavan Agra.
4. Fundamental of Statistics : S. C. Gupta - Himalaya Publishing House.
5. Business Mathematics & Statistics : NEWK Nag & S.C. Chanda - Kalyani Publishers
6. Statistics and Business Mathematics: Dr. Pramod Fating, Dr. Milind Gulhane, Dr. Vijay Bagde, Sir Sahitya Kendra, Nagpur
7. Problem in Statistics : Y. R. Mahajan: Pimplapure Publisher Nagpur
8. Statistics and Business Mathematics: Dr. Gulhane, Dr. Chopde



with effect from S-2023

Question Paper Pattern
B.Com. – First Year Semester-II
2T1: Statistics and Business Mathematics

N.B. – 1) All questions are compulsory.
2) All questions carry equal marks.

Q. No. 1 – Unit I

a) Theory	08 Marks
b) Problem	08 Marks
OR	
c) Problem	16Marks

Q. No. 2 – Unit II

a) Theory	08 Marks
b) Problem	08 Marks
OR	
c) Problem	16 Marks

Q. No. 3 – Unit III

a) Problem	08 Marks
b) Problem	08 Marks
OR	
c) Problem	16 Marks

Q. No. 4 – Unit IV

a) Problem	08 Marks
b) Problem	08 Marks
OR	
c) Problem	08 Marks
d) Problem	08 Marks

Q. No. 5 a) Unit- I Problem	04 Marks
b) Unit –II Problem	04 Marks
c) Unit-III Problem	04Marks
d) Unit-IV Problem	04 Marks

Dr. R. Karmore
Chairman

18/03/23

18/03/23

18/03/23

BE

Bachelor of Commerce
B.Com (CBCS) – Sem II
Course Type: Core Course
Course Name: Business economics-II
Course Code: 2T2

Course outcomes

CO1	Students will be able to establish relationship between cost and Output in short / long run
CO2	Students will be able to differentiate between various Market structures
CO3	Students will be able to determine prices under different market structures
CO4	Students will be able to explain basic concepts of macroeconomics
CO5	Students will be measure national income using given data.

Unit 1:
Cost Analysis: Cost Concepts – Actual & Opportunity cost, fixed costs and Variable costs, explicit and implicit costs, total, average and marginal costs, historical costs and replacement costs, short run costs and long run costs, accounting costs and economic costs. Determinants of costs; Short run cost-output relationship; long run cost-output relationship; Economies and diseconomies of scale – factors causing, economies & dis-economies; estimating cost output relationship – accounting method, engineering method, econometric method
Unit 2:
Market Structures – Concept, meaning, Definition, Classification of market structures, Perfect Competition, Monopolistic Competition. Product Differentiation. Oligopoly: Homogeneous and Heterogeneous Oligopoly, Price Rigidity in Oligopoly. Kinked Demand Curve. Monopoly Features, Equilibrium. Difference between Perfect Competition and Monopoly.
Unit 3:
Pricing Concepts– demand, cost of production, objective of firm, government policy, nature of competition, Cournot's Model, Collusion Model, Leader- Follower Model; Price determination under perfect competition, Price determination under Monopolistic competition; price determination under monopoly
Unit 4:
Introductory Macroeconomics: Concept of inflation, employment, money supply, monetary policy, fiscal policy, Balance of payments, National income, consumption function. Savings and Investment – equality between savings and investments; Determinants of National income, Measurement of national income.

References:
1.Business Economics, H.L.Ahuja, S.Chand Publishing
2. Micro Economics, P.N.Chopra, Kalyani Publishers.
3.Micro Economics, D.D.Chaturvedi, Galgotia Publishing Company.
4.Principles of Economics, D.M.Mithani, Himalaya Publishing House.

B.Com. (Choice-Based Credit System)

Semester II

Course Type: Ability Enhancement Course

Course Name: Commercial Services

Course Code: 2T5 – A

Course Outcomes:

CO1	The Students will be able **to understand** the concept of commercial services and their practical importance
CO2	The students will be able **to evaluate** the current and emerging trends in Aviation and Hospitality services.
CO3	The students will be able **to interpret** the trends, role and importance of Information Technology Enabled Services (ITES).
CO4	The student will be able **to analyse** the effect of the new innovative services on the banking and insurance sector.
CO5	The students will be able **to apply** the concepts, functions and techniques of the Marketing Mix of Services.

Syllabus:

UNIT I

Commercial Services: Meaning, Characteristics, Scope and Classification of Services, Emerging Trends and Importance of the service sector in India.

Marketing Mix of Services: Product, Place, Price, Promotion, People, Process of Services delivery and Physical evidence.

Career Opportunities: Factors for growth of Service Sector in India and Career Opportunities in Commercial Services.

UNIT II

Aviation Services: Role and Importance, Current Trends, Challenges and Future Opportunities in India, Government initiatives towards the aviation industry.

Hospitality Services: Diversity of Hospitality Industry, Role and Importance, Emerging Trends, Challenges and Future Opportunities in the Indian Hospitality Industry

UNIT III

Information Technology Enabled Services (ITES): Overview and Current Trends of ITES, Role and Importance of ITES.

Concept and Scope of Business Process Outsourcing (BPO), Knowledge Process Outsourcing (KPO), Legal Process Outsourcing (LPO) and Enterprise Resource Planning (ERP).

Challenges and Future Opportunities for ITES in India.

UNIT IV

Banking Services: Overview and Importance of Banking Services with respect to recent developments in India. Concept of Credit Cards and its usage and No Cost EMI system. Effects of Privatization on Banking Services in India.

General Insurance Services: Concept and Role of General Insurance Services. Growth and development due to the emergence of Online platforms in Insurance services. Impact of the opening of the Insurance sector for private players.

Reference Books:

1. Service Sector in Indian Economy: Talluru Sreenivas, Discovery Publishing House
2. The Service Sector in India's Development: Gaurav Nayyar, Cambridge University Press
3. Service Marketing: S.M. Jha, Himalaya Publishing House
4. Service Sector Management: C. Bhattacharjee, Jaico Books
5. Service Sector Management: Sanjay Patankar, Himalaya Publishing House

QUESTION PAPER PATTERN
BCOM – I : SEMESTER I
1T2- Commercial Firms
TIME:- 3 Hours] [Full Marks:- 80
N.B. – 1) All questions are compulsory.
2) All questions carry equal marks.

Q.1.
(a) UNIT – I 08 Marks
(b) UNIT – I 08 Marks
OR
(c) UNIT – I 16Marks

Q.2.
(a) UNIT – II 08 Marks
(b) UNIT – II 08 Marks
OR
(c) UNIT – I 16Marks

Q.3.
(a) UNIT – III 08 Marks
(b) UNIT – III 08 Marks
OR
(c) UNIT – I 16Marks

Q.4.
(a) UNIT – IV 08 Marks
(b) UNIT – IV 08 Marks
OR
(c) UNIT – I 16Marks

Q.5.
a) UNIT – I 04 Marks
b) UNIT – II 04 Marks
c) UNIT – III 04Marks
d) UNIT – IV 04 Marks

Bachelor of Commerce
B. Com. (CBCS) – Semester II
Course Type: Ability Enhancement Course
Course Name: Fundamentals of Banking
Course Code: 2T5 – B

Course Outcomes:

CO1	The students will be able to Classify Banking Functions
CO2	The students will be aware of Types of Bank Accounts and its Eligibility.
CO3	The students will be aware of Bank Account Procedure for Opening, operating, Transfer and Closing
CO4	The students will be Know of Types of Bank services for the Customers .
CO5	The students will be enlightened regarding the new concepts introduced in the banking system.

Unit I: Evolution of Bank

1) **Evolution of Bank** , Nature, Meaning, Definition of Bank,
2) **Types of Bank** – Public Bank, Private Bank, Commercial Bank, Co-operative Bank, Postal Bank, Agricultural Bank,
3) **Functions of Banks** – Primary, Secondary
4) **Role of Banking in Economic Development of India.**

Unit II: Bank Accounts Types and Handling Procedure

1) **Saving Bank Account** – Meaning and Importance of SB Account , Eligibility for open SB Account
2) **Current Account**- Meaning and Importance of Current Account , Eligibility for open Current Account
3) **Fixed Deposit Account**- Meaning and Importance of FD Account , Eligibility for open FD Account
4) **Recurring Deposit Account** - Meaning and Importance of RD Account , Eligibility for open RD Account

Unit III: Procedure for opening and Operating transfer and closing of Accounts

1) **Procedure for opening of account**- Know your customers Norms (KYC Norms), Application forms, Introduction, Proof of residence, Specimen signature and Nomination.
2) **Procedure for operating accounts**- Pay-in-slips, Withdrawal Slips, Issue of Pass book, Issue of cheque book, Issue of fixed deposit receipt, premature encashment of fixed deposits . Procedure of F.D., Repayment of Term Deposit (F.D) on Due date with interest.
3) **Transfer of accounts** – Transfer of accounts to other branches, Other Person
4) **Closing of Accounts** - Dormant accounts, Zero Balance, Bounced cheque or overdrafts, Suspected Identity Theft, Criminal Conviction, Change at the bank, Death of account Holder.

Unit IV: Customer Services

1) **Fund Transfer**- Bank Draft, Meaning, Procedure of Issue and Encashment of Demand Draft.
2) **Online Banking**- Meaning, Procedure of IFSC systems, RTGS/NEFT
3) **Safe Custody and Safe Deposit Lockers** – Importance and Need, Procedure of Opening ,Operating, Closing . Documentation
4) **Handling Foreign Exchange Transaction** – Meaning and Importance of Foreign Trade, Banks role in foreign Trade, Foreign Exchange and Exchange Rates.

Recommended books

- **Practice and Law of Banking, G. S. Gill**
- **Banking: Law and Practice, P. N. Varshney**
- **Banking: Law and Practice in India, Tannan**
- **Banking: Law and Practice in India, Maheshwari**
- **Banking: Law and Practice, Prof. Mugle**
- **Banking and Financial System, Vasant Desai.**
- **Fundamentals of Banking, DR. R. S. S. Swami**
- **Report on trends and progress of banking in India- RBI Bulletin.**
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BM

Bachelor of Commerce
B. Com.(CBCS) - Semester -II
Course Type: Skill Enhancement Course
Course Name: Financial Markets operation
Course Code: 2T6 - A

Course Outcomes

CO1	The student will be able to explain the importance of financial Institutions
CO2	The student will be able to interpret the structure of Financial Regulations in India
CO3	The student will be able to explain the importance of Financial Markets
CO4	The student will be able to distinguish between primary and secondary capital markets
CO5	The student will be able to Identify the Components of money markets

UNIT 1: **Financial institutions and regulatory bodies:**

Institutions: (Meaning and functions) Merchant Banks, Investment companies, Management Investment companies, Development banks, Mutual Funds. **Regulators: (functions, scope, roles and responsibilities)** RBI, SEBI, IRDA, PFRDA (Functions, Scope, Roles and responsibilities)

UNIT 2: **Capital Markets- Primary Markets**

Meaning, Role and importance, Composition, instruments, New Issue Market: Features, objectives and functions, Constituents or players, Modes of procuring long term funds: Public issue, Rights issue, Bonus issue, Private placement.

UNIT 3 : Capital Markets - **Secondary Markets.:**

Meaning, Role and Importance. Functions of the stock exchange, Listing of securities and its benefits, Stock market indices, Types of dealings, types of securities traded on the Indian stock exchanges, Comparison of the three exchanges (BSE, NSE, OTCEI)

UNIT 4: **Money Markets:**

Meaning, features of organized and unorganised money markets Instruments: Treasury Bills, Certificate of Deposits, Commercial Paper, Call money Commercial bills, Inter-corporate deposits, Inter-bank participation certificates. **Credit Rating Agencies**: Meaning and role of such agencies. A brief idea about: CRISIL, ICRA.

Suggested Books

1. Financial Market Operations by Alok Goyal, Mridula Goyal; VK Global Publications
2. Financial Market Operation by Dr. I.M. Sahai; SBPD Publishing House.
3. Financial Institutions and Markets: Structure, Growth and Innovations by L M Bhole and Jitendra Mahakud; McGraw Hill Education

BM.

B.Com (CBCS)– Semester II

Course Type: Skill Enhancement Course

Course Name: Skill Development

Course Code:2T6-B

Course Outcomes

CO1	The Students will be able **to relate** the concept of skill development and its importance
CO2	The students will be able **to interpret** the problem solving technique and multiple approaches to creativity.
CO3	The students will be able **to relate** importance of communication skills for interpersonal communication
CO4	The student will be able **to analyse** team behavior and impact of empowerment and delegation
CO5	The students will be able to explore various skill development avenues.

Unit 1:

Introduction to skills & personal skills, developing self awareness on the issues of emotional intelligence, self learning styles, values, attitude towards change, learning of skills and applications of skills.

UNIT – 2:

Problem solving and building relationship: Problem solving, creativity, innovation, steps of analytical problem solving, limitations of analytical problem solving, impediments of creativity, multiple approaches to creativity, conceptual blocks, conceptual block bursting. Skills development and application for above areas.

UNIT – 3:

Building relationship Skills for developing positive interpersonal communication, importance of supportive communication, coaching and counseling, defensiveness and disconfirmation, principles of supportive communications. Personal interview management. Skill analysis and application on above areas.

UNIT – 4:

Team building: Developing teams and team work, advantages of team, leading team, team membership. Empowering and delegating: Meaning of empowerment, dimensions of empowerment, how to develop empowerment, inhibitors of empowerment, delegating works. Skills development and skill application on above areas.

Suggested Books:

V.S.P. Rao Managerial Skills Excel Books,2010, New Delhi

2. David A Whetten, Cameron Developing Management skills, PHI 2008

3. Ramnik Kapoor Managerial Skills Path Makers, Bangalore

4. Kevin Gallagher, Skills development for Business and Management Students,Oxford,2010

5. Monipally,Muttthukutty Business Communication Strategies Tata McGraw Hill.

6. McGrath E.H. (9th Ed., 2011), Basic Managerial Skills, Prentice Hall India Learning Private Limited

7. Whetten D. (8th Ed., 2011), Developing Management Skills, Prentice Hall India Learning Private Limited

8. Gulati S. (2001), Corporate Softskills, Rupa Publication Pvt Ltd

9.Gallagher (2010), Skills Development for Business & Management Students, Oxford University Press

राष्ट्रसंत तुकडोजी महाराज नागपूर विद्यापीठ

(सेंट्रल प्रोव्हिन्सेस हायर शिक्षण विभागाची अधिसूचना क्रमांक ५१३ दिनांक १ ऑगस्ट, १९२३ द्वारा स्थापित व
महाराष्ट्र सार्वजनिक विद्यापीठ अधिनियम, २०१६ (सन २०१७ चा महाराष्ट्र विद्यापीठ अधिनियम, क्रमांक ९) द्वारा संचालित राज्य विद्यापीठ)

(विद्या विभाग)

जगद्गुरु शिवाजी महाराज प्रशासकीय परिसर, रविन्द्रनाथ टागोर मार्ग, नागपूर – ४४० ००१.
दूरध्वनी क्रमांक: कार्यालय: ०७१२–२५३२०६३ फॅक्स : ०७१२–२५५५७०१

अधिसूचना क्र. /राटुमनावि/विद्या/१९/१३९ दिनांक: १३/०८/२०१९
१६

:: अधिसूचना ::

सर्व संबंधितांच्या माहितीकरीता सूचित करण्यात येते की, वाणिज्य व व्यवस्थापन विद्याशाखेअंतर्गत येणा–या व्यवस्थापन अभ्यासक्रमाच्या एम.बी.ए. या पदव्युत्तर विषयाची नविन अभ्यासक्रमिका, परीक्षा योजना, समायोजन योजना, व प्रारुप निदेश, व्यवसाय प्रशासन व व्यवसाय व्यवस्थापन अभ्यासकमाने तयार केली होती. यास दिनांक ३०/०५/२०१९ रोजी संपन्न झालेल्या वाणिज्य व व्यवस्थापन विद्याशाखेने स्विकृत करून पुढील कार्यवाहीस्तव सादर केले होते. यापैकि अभ्यासक्रमिका दिनांक १० जुन २०१९ रोजी विद्यापरिषदेने मान्य केली त्यानुसार दिनांक १७ जुलै २०१९ रोजी अधिसूचना क्रमांक N/120 निर्गमित करण्यात आलेली आहे तसेच प्रारुप निदेश विद्यापीठाच्या प्रारुप निदेश समितीने दिनांक २६.०७.२०१९ रोजी तयार करून मा. कुलगुरूकडे मान्यतेकरिता सादर केले होते. मा. कुलगुरू महोदयांनी सदर प्रारुपास दिनांक ०८.०८.२०१९ रोजी मान्यता प्रदान करुन महाराष्ट्र सार्वजनीक विद्यापीठ अधिनियम, २०१६ च्या कलम १२(८) अंतर्गत सर्व संबंधिताकरीता निदेश क्रमांक ३७/२०१९ सत्र २०१९–२० पासून पुढे लागु केलेले आहे. करिता हि अधिसूचना निर्गमित करण्यात येत आहे. कृपया याची संबंधितांनी नोंद घ्यावी.

(टिप– उपरोक्त निर्देश,व अभ्यासक्रमिका विद्यापीठाच्या, (www.nagpuruniversity.org) या संकेतस्थळावर उपलब्ध करण्यात आलेले आहेत. कृपया संबंधीतांनी नोंद घ्यावी)

मा. कुलगुरुंच्या आदेशान्वये

(डॉ. निरज खटी)
कुलसचिव (कार्यकारी)

प्रतिलिपी माहिती व पुढील कार्यवाहीसाठी अग्रेषित:

१. वाणिज्य व व्यवस्थापन महाविद्यालयाचे सर्व प्राचार्य
२. मा. अधिष्ठाता, वाणिज्य व व्यवस्थापन विद्याशाखा
३. वाणिज्य व व्यवस्थापन अभ्यासमंडळ सदस्य
४. मा. संचालक, परिक्षा व मूल्यमापन मंडळ
५. उपकुलसचिव (परिक्षा पूर्व व परिक्षा उपरांत),
६. उपकुलसचिव मा. कुलगुरुंचे कार्यालय
७. सहायक कुलसचिव (गोपनीय),
८. सहायक कुलसचिव (व्यावसायीक परिक्षा
९. अधिक्षक (निकाल विभाग),
१०. प्रभारी अधिकारी (प्रकाशन विभाग),
११. स्वीय सहाय्यक, मा. प्र– कुलगुरूंचे कार्यालय
१२. श्रीमती विणा प्रकाशे, माहितीशास्त्रज्ञ,

राष्ट्रसंत तुकडोजी महाराज
नागपूर विद्यापीठ, नागपूर.

(श्री प्रदीप मसराम)
उपकुलसचिव (विद्या)(अति.प्रभार)

RASHTRASANT TUKADOJI MAHARAJ NAGPUR UNIVERSITY

DIRECTION NO. 37 OF 2019

"ADMISSIONS AND EXAMINATIONS LEADING TO THE AWARD OF DEGREE OF MASTER OF BUSINESS ADMINISTRATION (OUTCOME BASED – CBCS), IN THE FACULTY OF COMMERCE & MANAGEMENT, DIRECTION, 2019".

(Issued by the Vice-Chancellor under section 12(8) of the Maharashtra Public Universities. Act, 2016)(Mah. Act No. VI of 2017)

WHEREAS, the Maharashtra Public Universities Act, 2016 (No. VI of 2017) (hereinafter the "Act") has come into force with effect from 1st March, 2017 and the same has been made applicable to Rashtrasant Tukdoji Maharaj Nagpur University ;

AND

WHEREAS, the Direction No. 22 of 2017 entitled "DIRECTION REGARDING CHOICE BASED CREDIT SYSTEM AND EXAMINATIONS LEADING TO THE MASTERS DEGREE OF BUSINESS ADMINISTRATION IN THE FACULTY OF COMMERCE AND MANAGEMENT, RASHTRASANT TUKADOJI MAHARAJ NAGPUR UNIVERSITY, NAGPUR", was issued under Section 12(8) of the Act;

AND

WHEREAS, the Board of Studies in Business Administration and Business Management (hereinafter the "Board of Studies") in its meeting held on 30th October 2018 decided to revise the curriculum for MBA course in accordance with the model curriculum prescribed by the Apex Body, AICTE and for that purpose constituted a Sub-Committee to prepare the draft of the new syllabus;

AND

WHEREAS, the Board of Studies in its meeting held on 9th May 2019 approved the revised scheme of examination and syllabus submitted by the Sub-Committee constituted for the said purpose;

AND

WHEREAS, the Faculty of Commerce and Management in its meeting held on 30th May 2019 approved the revised scheme of examination and syllabus suggested by the Board of Studies and the same was subsequently approved by the Academic Council of the university in its meeting held on 10th June 2019;

AND

WHEREAS, as per the provisions of sub section 1 of Section 73 of the act an ordinance is required to be made for regulating admission of the students to a course

of study leading to the award of a degree in a particular discipline of the study but the making of an ordinance is a time consuming process and there is an exigency in introduction of the new syllabus of the MBA course from the Academic Session 2019-20;

Now, therefore, I, Dr. Siddarthavinayak P. Kane the Vice-Chancellor of the university in exercise of my powers under Section 12(8) of the Act, do hereby issue the following direction:

1. This Direction shall be called: "ADMISSIONS AND EXAMINATIONS LEADING TO THE AWARD OF DEGREE OF MASTER OF BUSINESS ADMINISTRATION (OUTCOME BASED – CBCS), IN THE FACULTY OF COMMERCE & MANAGEMENT, DIRECTION, 2019".

2. This Direction shall come into the force from the date of its issuance.

3. In this Direction unless the context requires otherwise;
   a. "College" College means and includes all the colleges, institutes and departments conducted by or affiliated to the Rashtrasant Tukadoji Maharaj Nagpur University, offering the AICTE approved MBA program.

   b. "Competent Authority" means All India Counsil of Technical Education.

   c. "Course" means a subject (theory as well as practical) included in the curriculum of MBA program under this Direction.

   d. "Program" means a Master of Business Administration program.

   e. "University" means The Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur.

4. The duration of M.B.A. programme, under this Direction, shall be of Two years consisting of four semesters i.e Semesters-I & II in first year and Semesters-III & IV in second year.

5. Subject to compliance with the provisions of this direction and of other ordinances in force from time to time, an applicant for admission to this course shall have passed the degree examination of University or any other recognized University equivalent thereto with 50% aggregate marks for open category students and 45% aggregate marks for the Backward Class candidates or as notified by the State Government (Competent Authority) from time to time. Provided that Students who have passed the Common

Management Aptitude Test (CMAT) conducted by All India Council for Technical Education or the Common Entrance Test (CET) conducted by the Directorate of Technical Education or any other entrance examination conducted by any competent authority approved by the Directorate of Technical Education and fulfilling the other eligibility conditions, which may be prescribed by the University, alone shall be admitted to this programme.

6. The Examinations for Semesters I, II, III and IV shall be held twice in a year at such places and on such dates as may be fixed by the University.

7. The fees for examination shall be as prescribed by the University from time to time.

8. A student admitted to the MBA programme under this Direction, in pursuance of provisions of para 5 above or in pursuance of the absorption scheme hereunder, shall not be eligibible to join any other programme (under graduate or a post-graduate) in this university or any other university simultaneously.

9. In order to be eligible for appearing in the end semester examination conducted by the university the student must have pursued a regular course of study for not less than 90 days, to be certified by the Director/Head/Principal of the Institution/College/Department of the college or the University, in that semester.

10. Without prejudice to the other provisions of Ordinance No. 6 relating to the Examinations in General, the provisions of Paragraphs 5, 7, 8, 10, 26 and 31 of the said Ordinance shall apply to collegiate candidate, registered for the course governed by this Direction.

11. Outcome Based Student Centric Evaluation: The program and its all courses shall have well defined outcomes to be attained by the student on completion of the program/course. The question papers shall be set to assess the attainment of these outcomes.

12. Choice Based Credit System (CBCS): The MBA program shall consist of 30 courses including a project equivalent to 1 course in in any of the specialization area opted by the student and an Exit Seminar equivalent to 1 course. The courses in this program are of **two kinds: Core and Elective, as detailed below. The elective courses also include MOOCs.**

f. **Core Course**: - This is the course which is to be compulsorily studied by a student as a core requirement to complete the requirement of a program in a said discipline of study (Comprising of basic subjects of Business Management).

g. **Elective Course**: -It is a course which can be chosen from the pool of courses. The course may be specific/specialized/supportive or advanced to the discipline of study.

A student is required to Select ***Any Two*** Electives as follows-

- Either both the Electives from Core Group

OR

- One Elective each from Core Group and Complementary Group

Core Group	Financial Management
	Marketing Management
	Human Resource Management
Complementary Group	Operations Management
	Business Analytics
	Entrepreneurship Development
	International Business

Note: The affiliated Management Institutes / Colleges/ Department shall declare the Elective/Specialization it is offering before the commencement of admission process of Semester -I in their Information Brochure and website and communicate the same to the University well in advance. The Institute will offer the Specialization only if minimum **TEN** students opt for the same.

a. MOOCs : - Every student admitted to this program has to successfully complete TWO Massive Online Open Courses available on portal to become eligible for the award of MBA degree. The credit points of MOOCs earned by a student shall be transferred in the Mark list of Semester IV. The student has liberty to complete these two courses any time during the MBA program after his/her admission and it is not restricted to any specific semester/s. However, the student is advised to successfully complete these MOOCs before 4th Semester.

b. In compliance with the Choice Based Credit System, the student is free to opt for any course available on the SWAYAM/NPTEL portal during a particular semester provided the course has minimum **4 credits**. Following guidelines are to be followed by the concerned stakeholders such as students, University and Institute/College/ Department to enable student to opt for MOOC and the credit transfer of such MOOC completed by the student.

i. The Institute/College/Department shall provide the list of courses **(with minimum 4 Credits/minimum duration of 12 weeks)** available in the beginning of each semester to students on its website, college notice boards and through other medium of communication. Similarly, such a list shall also be published on the University's website.

ii. A student may select the course **(with minimum 4 Credits/minimum duration of 12 weeks)** of her/his choice from the available courses and register for the same.

iii. A student is also required to appear and successfully complete the online examination for the MOOC opted by him/her.

iv. The successful completion of TWO such MOOCs comprising of total **8 Credit Points** is mandatory for every student to become eligible for the award of degree.

v. If a student has completed a MOOC carrying more than 4 credits, then only 4 credits shall be considered and be shown in the mark list of 4th Semester against such course.

vi. In case, the MOOC certificate does not have a mention of Credits, the Principal/Director/Head shall certify the number of credits for which a course of minimum duration of 12 weeks shall be considered equivalent to 4 credits.

vii. A student is expected to fill the examination form for Semester IV along with the titles of courses (MOOC courses) he/she had completed or pursuing.

viii. The University shall provide an option as 'MOOC-1' and 'MOOC– 2' in the drop-down list while filling up the online examination form for IVth Semester.

ix. The marks/grade obtained by the student in such MOOCs shall be submitted by the Institute/College/Department (with copy of Certificate) to the University along with Internal Assessment Marks for Semester IV.

x. In case a student is not able to complete TWO MOOCs by the end of Semester IV, he/she shall be marked absent in MOOC – 1 and MOOC – 2 subjects in the Semester IV Mark list. Such students, on successful completion of MOOCs and submission of certificates to that effect, shall be declared successful and become eligible for award of degree.

xi. The Board of Studies in Business Administration and Business Management shall appoint a 'Steering Committee' to deal with the difficulties and problems of students/Institutes arising out of this scheme.

xii. The online examination of such courses (MOOC) is conducted by Host Institutions and not by the University and the dates of examination are declared at the beginning of the session. Hence, the University shall keep these days free from its MBA

Examination Time-Table and shall not schedule any End Semester Examination on such dates.

xiii. The examination fee of MOOCs is to be paid and borne by the student separately.

13. Credit Based Teaching and Evaluation Scheme:

Induction Cum Foundation Course:

This course is aimed at making the student ready to pursue higher education in business management. As a graduate of any stream/faculty is eligible to take admission to this program, the Institute/College/Department may have students from various streams such as Commerce, Humanities, Science, Engineering or any other Interdisciplinary studies. Hence, every institute shall organize an Induction Cum Foundation Course for First Year Students before commencement of academic session for First Semester. The desired contents of such Induction Course is provided in **Appendix No. 3**.

Guidelines for Induction Cum Foundation Course:

- The Induction Course shall have minimum 40 contact hours.
- The Induction Course does not carry any Credit and hence the evaluation of students is not mandatory at the end of this Course.
- The Institute/College/Department shall organize the Induction Course before commencement of classes for First Semester and ensure the attendance of all enrolled students for the same.
- The Institute/College/Department shall keep proper record of the Induction Course to be verified by the competent authority, if needed.
- The contents of Induction Course provided in **Appendix No.3** are minimum and the Institute/College/Department is free to add any relevant content as they deem fit.

14. Courses offered, contact hours, credits attached and allocation of marks shall be as follows:

Semester-I

Course Code	Course Name	Internal / University Examination	Instruction Hours	Tutorial Hours	Total Hours	Marks			Credits
						Semester End Exam.	Internal Assessment	Total	
1T1	Managerial	Uni.	20	10	30	80	20	100	3
1T2	Management Information Systems	Uni.	20	10	30	80	20	100	3
1T3	Business Research	Uni.	10	20	30	80	20	100	3
1T4	Organizational Behaviour	Uni.	25	05	30	80	20	100	3
1T5	Financial Reporting, Statements and Analysis	Uni.	20	10	30	80	20	100	3
1T6	Business Statistics and Analytics for Decision Making	Uni.	20	10	30	80	20	100	3
1T7	Legal and Business Environment	Uni.	25	05	30	80	20	100	3
1P8	Managerial Skills for Effectiveness	Internal	10	20	30	00	100	100	3
Total			**150**	**90**	**240**	**560**	**240**	**800**	**24**

Semester-II

Course Code	Course Name	Internal / University Examination	Instruction Hours	Tutorial Hours	Total Hours	Marks			Credits
						Semester End Exam.	Internal Assessment	Total	
2T1	Financial Management	Uni.	20	10	30	80	20	100	3
2T2	Marketing	Uni.	25	05	30	80	20	100	3
2T3	Human Resource Management	Uni.	25	05	30	80	20	100	3
2T4	Operations Management	Uni.	20	10	30	80	20	100	3
2T5	International Business	Uni.	25	05	30	80	20	100	3

2T6	CSR and Sustainability	Uni.	25	05	30	80	20	100	3
2T7	Cost Accounting	Uni.	20	10	30	80	20	100	3
2T8	Management Case Analysis	Internal	20	20	40	00	100	100	4
Total			**180**	**70**	**25**	**560**	**240**	**800**	**25**

Semester-III

Course Code	Course Name	Internal / University Examination	Instruction Hours	Tutorial Hours	Total Hours	Marks			Credits
						Semester End Exam.	Internal Assessment	Total	
3P1	Summer Internship Project Assessment	Internal	15	45	60	00	100	100	6
3T2	Elective I – Paper 1	Uni.	30	10	40	80	20	100	4
3T3	Elective I – Paper 2	Uni.	30	10	40	80	20	100	4
3T4	Elective I – Paper 3	Uni.	30	10	40	80	20	100	4
3T5	Elective II –Paper 1	Uni.	30	10	40	80	20	100	4
3T6	Elective II–Paper 2	Uni.	30	10	40	80	20	100	4
3T7	Elective II– Paper 3	Uni.	30	10	40	80	20	100	4
3T8	Strategic Management	Uni.	25	05	30	80	20	100	3
Total			**220**	**110**	**330**	**560**	**240**	**800**	**33**

Semester-IV

Course Code	Course Name	Internal / University Examination	Instruction Hours	Tutorial Hours	Total Hours	Marks			Credits
						Semester End Exam	Internal Assessment	Total	
4T1	Elective I – Paper 4	Uni.	30	10	40	80	20	100	4
4T2	Elective II – Paper 4	Uni.	30	10	40	80	20	100	4
4M3	MOOC 1	MOOC Assessment	20	20	40	00	100	100	4

4M4	MOOC 2	MOOC Assessment	20	20	40	00	100	100	4
4P5	Project Work and Viva Voce	Uni.	10	30	40	50	50	100	4
4S6	Exit Seminar and Open Defense	Uni.	10	30	40	100	00	100	4
Total			**120**	**120**	**240**	**310**	**290**	**600**	**24**

Summary of the Total Marks and Credits

Sr. No.		Instruction Hours	Tutorial Hours	Total Hours	Marks			Credits
					Semester End Exam	Internal Assessment	Total	
1	Semester – I	**150**	**90**	**240**	**560**	**240**	**800**	**24**
2	Semester – II	**180**	**70**	**250**	**560**	**240**	**800**	**25**
3	Semester – III	**220**	**110**	**330**	**560**	**240**	**800**	**33**
4	Semester – IV	**120**	**120**	**240**	**310**	**290**	**600**	**24**
Total		**670**	**390**	**1060**	**199**	**101**	**3000**	**106**

a. The End Semester written examination of all the courses shall be conducted by the University.

b. The performance of the learners will be evaluated in two Components, one component will be the continuous assessment by the Institute/College/Department (Internal Assessment) carrying 20% marks and the second component will be the End Semester Examination (conducted by the University) carrying 80% marks.

The allocation of Internal Assessment Marks

1a	Attendance of the student during a particular semester	05 marks
1b	An assignment based on curriculum to be assessed by the teacher concerned	05 marks
1c	Subject wise class test conducted by the teacher concerned	05 marks
1d	Subject presentation/viva-voce seminar conducted during the	05

	semester	marks
1	**Internal assessment Total marks**	**20**
2	**Semester wise End Examination marks**	**80**
Total Marks Per Course		**100**

- Marks for internal assessment, awarded on the basis of tests, assignment etc. as prescribed above by the teacher in the respective subject and moderated by the Director shall be ***notified on the college notice board and institute website for information of students*** and it shall be communicated to the University at least 5 days before the commencement of the End Semester examination.
- The college shall preserve the answer sheets and assignments submitted by the students and attendance record and evaluation sheets for at least ***five*** academic years, while the summary of the internal marks to be preserved as a permanent record.
- A student has to pass each course/subject ***jointly*** in University Assessment and Internal Assessment. There is no provision for reassessment of Internal Assessment marks.

c. **Summer Training**: At the end of second semester, all students will have to undergo summer training of 6-10weeks with an industrial, business or service organization by taking a project study. The condition of successfully completing the program shall not be deemed to have been satisfied unless a student undergoes summer training under the supervision of the department in organizations as approved by the Director/ Principal/ Head / Faculty from time to time. Alternatively Director/ Principal/ Head / Faculty of the Department/ College/ Institute may allocate the sector/ industry/ company specific project to the individual student. Each student will be required to submit a project report to the Department/ College/ Institute for the work undertaken during this period within ***three*** weeks of commencement of the third semester for the purpose of evaluation in the third semester. The detailed parameters for evaluation of SIP projects are provided in **Appendix No. 3.**

15. Credit and Grade Point System:

Conversion of Marks to Grades and Calculations of SGPA (Grade Point Average) and CGPA (Cumulative Grade Point Average): In the Credit and Grade Point System, the assessment of individual Courses in the concerned examinations will be on the basis of marks only, but the marks shall later be converted into Grades by the mechanism herein specified wherein the overall performance of the Learners can be reflected after considering the Credit Points for any given course. However, the overall evaluation shall be designated in terms of Grade. There are some abbreviations used here that need understanding of each and every parameter involved in grade

computation and the evaluation mechanism. The abbreviations and formulae for this purpose are as follows:-

Abbreviations and Formulae Used

G: Grade

GP: Grade Points

C: Credits

CP: Credit Points

CG: Credits X Grades (Product of credits & Grades)

SGPA = ΣCG: Sum of Product of Credits & Grades points / ΣC: Sum of Credits points

SGPA: Semester Grade Point Average shall be calculated for individual semesters. (It is also designated as GPA)

CGPA: Cumulative Grade Point Average shall be calculated for the entire Program by considering all the semesters taken together.

While calculating the CG the value of Grade Point 1 shall be consider Zero (0) in case of students who failed in the concerned course/s i.e. obtained the marks below 50.

After calculating the SGPA for an individual semester and the CGPA for entire program, the value can be matched with the grade in the Grade Point table as per the TEN (10) Points Grading System and expressed as a single designated GRADE such as O, A, B, etc….

Calculation of SGPA:

Illustration for Calculation of SGPA

Sr. No.	**Name of Subject**	**Credits**	**Marks obtained out of 80**	**Internal Assessment Marks (Out of 20)**	**Total Marks (Out of 100)**	**Grade Points**	**Credit Points (CreditsXGrade)**
1	Managerial Economics	3	43	17	60	7	21
2	Management Information Systems	3	52	18	70	8	24
3	Business Research	3	54	18	72	8	24
4	Organizatio	3	63	17	80	9	27

	nal Behaviour						
5	Financial Reporting, Statements and Analysis	3	54	18	72	8	24
6	Business Statistics and Analytics for Decision Making	3	43	17	60	7	21
7	Legal and Business Environment	3	63	17	80	9	27
8	Managerial Skills for Effectiveness	3	-	-	85	10	30
		24					**198**
	Thus, SGPA = 198/24						**8.25**

Calculation of CGPA:

$$CGPA = \frac{\sum SGPA\ X\ Credits}{\sum Credits}$$

Illustration for Calculation of CGPA

Semester	Total Credits	SGPA	SGPA X Credits
I	24	8.25	198
II	24	9	216
III	34	8.6	292.4
IV	24	8	192
TOTAL	**106**		**898.4**

Thus, CGPA = 898.4/106 = **8.48**

The SGPA and CGPA shall be rounded off to 2 decimal points and reported in the Mark list / Transcript.

After calculating the SGPA for an individual semester and the CGPA for entire program, the value can be matched with the grade in the Grade Point table as per the ten (10) Points Grading System and expressed as a single designated GRADE such as O, A+, A, B+, B, etc.

Marks	Grade	Grade Points
85 and Above	O	10
84-75	A	9
74-65	B	8
64-60	C	7
59-55	D	6
54-50	E	5
49 and Below	F (Fail)	0

Conversion of CGPA into Grades and Division shall be as follows:

CGPA	Grade	Division
9.0-10	O	Distinction
8.0-8.9	A	Distinction
7.0-7.9	B	Distinction
6.0-6.9	C	First
5.5-5.9	D	Second
5.0-5.4	E	Second
00-4.9	F (Fail)	Fail

Note: Final Mark List will only show the Grade, Grade points and Division and not the marks.

16. The award of grace marks for passing an examination and securing higher Grades shall be as per the governing Ordinance/Direction of the university.

17. Conversion of CGPA into Equivalent Percent Marks:
The CGPA obtained by an examinee shall be converted into the aggregate percent marks by using the following formula. This formula shall be printed on the Semester IV Mark list of the examinee.
Equivalent Aggregate Percentage Marks = 10(CGPA – 0.75)

18. Project Work and Exit Seminar: Project Work and Exit Seminar will be compulsory for each student appearing at the semester- IV Examination.

(i) Project Work shall carry 100 marks as follows-

Head of Passing	Marks

Project Report Evaluation and Viva-Voce by External Examiner	50
Project Report Evaluation and Viva-Voce by Internal Examiner	50
TOTAL	**100**

(ii) Exit Seminar shall carry 100 marks as follows –

Head of Passing	**Marks**
Exit Seminar and Open Defense to be conducted by External Examiner	100
TOTAL	**100**

(iii) For Project work a batch of Maximum **TWENTY** students per guide/supervisor has to be allotted by the Institute/College/Department. The Guide/Supervisor shall act as an internal examiner for project Examination.

(iv) The guide or the supervisor shall be appointed by the institute/college/department and should be teaching in the MBA Programme with minimum qualifications as prescribed by AICTE for Assistant Professor.

(v)The External examiner for Project Evaluation and Exit Seminar shall be appointed from the list of full time approved teaching faculty of the MBA programme by the University.

(vi) Each such External examiner shall examine a maximum of TWENTY students in the academic year.

(vii)**ONE copy** of Project work (Printed and hard bound) shall be submitted to the Institute/College/Department at least one month before commencement of MBA Semester IV Examination for evaluation purpose. The Institute/college/Department shall retain the copy of Project Work for evaluation and the list of 'Project Work Titles' of all students shall be submitted to the University.

A Candidate shall submit with his/her project work, a certificate from the Supervisor to the effect:-

- That the candidate has satisfactorily completed the Project work for not less than one session;
- That the Project work is the result of the candidate's own work and is of sufficiently high standard to warrant its presentation for examination.
- Candidate shall submit his declaration that the Project is the result of his own research work and the same has not been previously submitted for any examination of this University or any other University. The Project shall be liable to be rejected and /or cancelled if found otherwise.
- The Project work shall be evaluated through Seminar and Viva-voce at the Institute/College/ Department by internal examiner appointed by

Director/Principal/Head and external examiners appointed by University within 10 days of the completion of Semester IV examination.

- The Exit Seminar Presentation and Open Defence shall be evaluated through Seminar, Presentation and Open Defence at the Institute/college/department by external examiners appointed by the University within 15 days.
- A student appearing for the Semester IV Examination will have to pay additional fees as prescribed by the University from time to time.

(viii) **Exit Seminar**

Exit Seminar is a culmination and presentation of all the learning that has happened in all ***four*** semesters of MBA program. The idea is to check the key learnings of a student manager and to map them with the program outcomes so as to assess the attainment of program outcomes. The Viva-Voce should be targeted at assessment of following POs.

MBA Program Outcomes:

1. Apply knowledge of management theories and practices to solve business problems
2. Foster Analytical and Critical thinking abilities for data-based decision making
3. Ability to develop Value Based Leadership ability
4. Ability to understand, analyze and communicate global, economic, legal, and ethical areas of business
5. Ability to lead themselves and others in the achievement of organizational goals, contributing effectively to a team environment.

This will also present the student portfolio evaluation i.e. a systematic and organized collection of a student's work that exhibits the direct evidence of a student's efforts, achievements and progress over a period of MBA program including Theory Papers, SIP, Live Projects, MOOCs, etc.

Evaluation of Exit Seminar:

- The individual presentation should ideally last for 15-20 minutes followed by Open Defence Question-Answer session.
- The External Examiner (appointed by the University) should evaluate Maximum 20 (Maximum 10 at One Institute) Exit Seminars.

Exit Seminar and Open Defence:

Format for Presentation-

Presentation should include following-

1. Summary of Learning from core courses across semesters
2. Summary of Learning from elective 1 courses
3. Summary of Learning from elective 2 courses
4. Summary of Learning from MOOCs

5. Summary of Learning from Summer Internship Project
6. Summary of Learning from Project Work
7. Exhibition of student portfolio i.e. a systematic and organized collection of a student's work that exhibits the direct evidence of a student's efforts, achievements and progress over a period of time including Theory Papers, SIP, Live Projects, MOOCs, etc.
8. Level of Attainment of PO1 with justification
9. Level of Attainment of PO2 with justification
10. Level of Attainment of PO3 with justification
11. Level of Attainment of PO4 with justification
12. Level of Attainment of PO5with justification
13. Concluding Remark

Open Defense – The external examiner should ask questions to check the attainment of 5 POs

Evaluation of Exit Seminar:

- The individual presentation should ideally last for 15-20 minutes followed by Open Defence Question-Answer session (10-15 minutes).
- The External Examiner (appointed by the University) should evaluate Maximum 20 (Maximum 10 at One Institute) Exit Seminars.

Rubrics and detailed parameters for evaluation of Project Work and Exit Seminar are mentioned in Appendix 3.

19. The scope of the subject, percentage of passing in theory and project will be governed as per following rules:

1. There will be a combined passing of 50% marks to be secured by an examinee in internal and University written examination taken together for each course/subject/paper.
2. The results of successful candidates at the end of semester-IV shall be declared on the basis of CGPA obtained in all the four semesters. However, the formula for conversion of CGPA into equivalent marks should be printed on Semester IV Mark list.
3. The candidates who successfully clear all the semester examinations in the first attempt are eligible for ranks provided they secure Grade C and above.
4. The results of the candidates who have successfully cleared the Semester-IV examination but not cleared the lower semester examinations shall be declared as NCL (not completed lower semester examinations). Such candidates shall be eligible for the award of Degree only after successfully clearing all the lower semester examinations.
5. Student successfully clearing Semester I, II, III and IV examinations shall, on payment of the prescribed fee, be awarded a Degree in the prescribed form signed by the Vice-Chancellor.

6. An examinee failing to clear any end semester examination shall be eligible for re-examination on payment of a fresh Examination Fee as prescribed by the University.

20. Promotion to Higher Semester (ATKT)-

An examinee failing to clear any semester examination shall be ALLOWED TO KEEP TERM (ATKT) in accordance with the provisions of Clause No. 11 of Direction No. 10 of 2019 in following manner:-

Admission to Semester	**Eligibility for admission and taking University Examination**
Ist Semester	Candidate should have passed the qualifying examination as per the relevant Direction governing the course.
IInd Semester	Candidate should have completed the term of the Ist semester and filled examination form.
IIIrd Semester	Candidate should have completed the term of the IInd semester, filled the examination form of the same and has obtained exemption in 2/3rd passing heads of the Ist and IInd semesters taken together.
Ivth Semester	Candidate should have completed the term of the IIIrd semester and filled the examination form of the same.

21. Rejection of results:

i. A candidate who fails in one or more course(s) of a semester may be permitted to reject the result of the whole examination of that semester. Rejection of result course-wise shall not be permitted. A candidate who rejects the results shall appear in the examination of that semester in the subsequent examination.

ii. Rejection can be exercised only once in each semester and the rejection once exercised cannot be revoked.

iii. Application for rejection of result along with payment of the prescribed fee shall be submitted to the University through the Institute/College/Department along with the original statement of marks within 30 days from the date of publication of the result.

iv. A candidate who rejects the result is eligible for only class and not for ranking.

22. Improvement of results:-

The examinee of any of the semesters of MBA program shall be eligible for improvement of results in accordance with the governing law of the university.

23. Guidelines for Setting Question Papers of Semester I, II, III & IV End Examinations.

a. The question paper should be set in such a manner so as to cover the complete syllabus as prescribed by the University.
b. The duration of the Semester End Examination shall be 3.00 Hours per course/subject.
c. The evaluation of the Summer Internship Project should be conducted at the Institute/College/Department by the Examiner appointed by the Principal/Director/Head of the Institute/ Department.
d. The evaluation of Semester IV Project and Viva Voce should be conducted at Institute/College/Department by the Project Supervisor of the student and an External Examiner appointed for the same by the University.
e. The evaluation of Semester IV Exit Seminar and Open Defense should be conducted at Institute/College/Department by an External Examiner appointed for the same by the University.
f. The result for these examinations should be declared within time limit as per University norms and communicated to the University within stipulated time.
g. The record of conduct of such examination, evaluation and results should be maintained for a period of at least FIVE years by the respective Institute/Department for the verification by the competent authority.
h. The format for question papers for Semester End Examinations to be conducted by the University shall be as follows:

1. There shall be **FIVE** compulsory **questions** of **16 marks each**.
2. All the questions shall have internal choice within the questions, i.e. there shall be 2 questions from each module/unit of the curriculum with an internal option.
3. The concerned Board of Studies shall develop a question bank of 10questions for each module/unit of each course/subject.
4. The question bank shall be prepared on the following guidelines:
    a. The questions shall be framed to assess the attainment of Course Outcomes defined in Appendix - 3 for each module/unit of each course/subject. Taxonomy shall be referred while framing the questions.
    b. The competent authority shall prepare a panel of examiners for preparing a question bank.
    c. The remuneration to be paid for preparing a question bank shall be decided by the competent authority according to the prevailing norms.
    d. A question bank of 10 questions per module/unit (carrying 16 marks each) shall be submitted to the University before commencement of the academic session.
    e. The examiner shall also mandatorily submit a detailed scheme of evaluation (Memorandum of Instructions for both numerical and theory questions) along with the question bank to enhance the objectivity and maintain consistency in evaluation.

f. The Subject Examination Committee shall moderate the questions submitted by examiners and pick up the appropriate questions to set the question paper in the pattern detailed below:

ILLUSTRATIVE PATTERN OF QUESTION PAPER

Q.1 (A) ……..based on module/unit 1

OR

Q.1(B)…….based on module/unit 1

Q.2(A)……based on module/unit 2

OR

Q.2(B)……based on module/unit 2

Q.3(A)……..based on module/unit 3

OR

Q.3(B)……..based on module/unit 3

Q.4(A)……..based on module/unit 4

OR

Q.4(B)……..based on module/unit 4

Q.5(A)……..based on module/unit 5

OR

Q.5(B)……..based on module/unit 5

24. Not Fit for the Course:-

If a student fails to pass the M.B.A. programme within FIVE successive years from the date of his/her admission he/she shall be declared Not Fit for the Course (NFC), and shall not be allowed to appear for any examination of the programme.

25. Absorption Scheme:-

The failure students of the MBA programme as per Direction No. 22 of 2017 (Introduced in 2016 the old programme) immediately preceding the course under this Direction shall be given chance to appear for ***three*** more consecutive examinations according to old syllabus.

a. The University shall conduct the examination of old programme for three more consecutive examinations after the new scheme of examination is introduced as per following table:

Semester Examination	Attempt-1	Attempt-2	Attempt-3
Semester-I	Winter 2019	Summer 2020	Winter 2020

Semester-II	Summer 2020	Winter 2020	Summer 2021
Semester-III	Winter 2020	Summer 2021	Winter 2021
Semester-IV	Summer 2021	Winter 2021	Summer 2022

The students are required to clear all their papers/subjects/courses within the stipulated time. The students clearing all the papers/subject/courses of the old programme in permissible number of attempts shall be awarded degree according to the scheme of Examination for the old programme.

In case a student is not able to clear her/his papers in given attempts as per old scheme of examination, she/he shall be absorbed in the MBA programme under this Direction in the following manner:

I. A student who has passed Semester I and II in the given three attempts will be eligible for admission to Second Year of MBA.
   a. Such a student will be required to take a casual admission to First year by paying Rs. Five Hundred only.
   b. Such a student will be required to fill the examination form for Sem I and Sem II and appear and pass the subjects for which there was no equivalent paper in old MBA programme.
   c. The new mark list as per this Direction shall be generated for Sem I and Sem II wherein the marks of equivalent subjects (as mentioned in the table given hereunder) shall be mentioned.
   d. The marks for subject 'Business Communication and Information Systems' as per old programme shall be mentioned against two subjects i.e. 'Management Information Systems' and 'Managerial Skills for Effectiveness' as per this Direction.
   e. The marks for subject 'Research Methodology and Quantitative Techniques' as per old programme shall be mentioned against two subjects i.e. 'Business Statistics and Analytics for Decision Making' and 'Business Research' as per this Direction.
   f. The marks for 'Strategic Management' as per this Direction shall be mentioned if the student has passed 'Strategic Management' of MBA Sem III of old programme. If not, the student will have to appear for the same paper as per this Direction.
   g. Every such student will have to appear for the subject 'CSR and Sustainability', if she/he has not passed either 'Environment Management' or 'Business Ethics and Corporate Governance' as per old syllabus of the old programme.
   h. Such a student will have to appear for Sem III examination as per this Direction. However, the student will be entitled for the equivalent subjects she/he had passed as per the old MBA programme.

II. A student who has failed in one or more subjects of Semester I and II will be eligible for admission to Second Year if she/he satisfies the conditions mentioned in Clause No. 11 of Direction No. 10 of 2019.
    a. Such a student will be required to take a casual admission to First year by paying Rs. Five Hundred only.
    b. Such a student will be required to fill the examination form for Sem I and Sem II and appear for the subjects required to be passed as per this Direction. This includes the equivalent subjects of old programme which he could not pass and the subject 'CSR and Sustainability', if she/he has not passed either 'Environment Management' or 'Business Ethics and Corporate Governance' as per old syllabus.
    c. The new mark list as per this Direction shall be generated for Sem I and Sem II wherein the marks of equivalent subjects (as mentioned in the table given hereunder) shall be mentioned.
    d. The marks for subject 'Business Communication and Information Systems' as per old programme shall be mentioned against two subjects i.e. 'Management Information Systems' and 'Managerial Skills for Effectiveness' as per this Direction.
    e. The marks for subject 'Research Methodology and Quantitative Techniques' as per old programme shall be mentioned against two subjects i.e. 'Business Statistics and Analytics for Decision Making' and 'Business Research' as per this Direction.
    f. The marks for 'Strategic Management' as per this Direction shall be mentioned if the student has passed 'Strategic Management' of MBA Sem III of old programme. If not, the student will have to appear for the same paper as per this Direction.
    g. Such a student will have to appear for Sem III examination as per this Direction. However, the student will be entitled to exemption for the subjects she/he had passed as per the old programme.

III. A student who has passed Semesters I, II and III examinations as per old programme in the given attempts and eligible for MBA Sem IV as per this Direction.
    a. Such a student will be required to take a casual admission to First year and Second year by paying Rs. Five Hundred only per semester.
    b. Such a student will be required to fill the examination form for Sem I, Sem II and Sem III and appear for the subjects required to be passed as per this Direction. This includes the subjects 'CSR and Sustainability' and 'Management Case Analysis' if she/he has not passed either 'Environment Management' or 'Business Ethics and Corporate Governance' as per old syllabus.
    c. The new mark list as per this Direction shall be generated for Sem I, Sem II and Sem III wherein the marks of equivalent subjects (as mentioned in the table given hereunder) shall be mentioned.

d. The marks for subject 'Business Communication and Information Systems' as per old programme shall be mentioned against two subjects i.e. 'Management Information Systems' and 'Managerial Skills for Effectiveness' as per this Direction.
e. The marks for subject 'Research Methodology and Quantitative Techniques' as per old course shall be mentioned against two subjects i.e. 'Business Statistics and Analytics for Decision Making' and 'Business Research' as per this Direction.
f. If the student had opted for 'Service Sector Management' specialization as per old programme, she/he will be having a choice of selecting any other specialization offered in this Direction as the' Service Sector Management' specialization is not offered in this Direction. However, if the student has passed Paper 1 or 2 or both of 'Service Sector Management' marks of the same shall be mentioned against same papers in new mark list.

IV. Note on Specialization: This direction does not offer 'Service Sector Management' specialization which was offered in old programme. Hence, a student will have a choice to select new specialization area. However, the student shall be exempted from the papers of specialization that she/he had passed as per old direction in the following manner:

Specialization selected as per this Direction	Service Sector Management (Direction No. 22 of 017)	Status of Equivalence
Paper 1	Paper 1	Yes
Paper 2	Paper 2	Yes
Paper 3	Paper 3	Yes
Paper 4(To be Compulsorily passed by such a student)	--	No

V. MOOCs: Every student who was admitted to old MBA programme (under Direction No. 22 of 2017) but could not pass all subjects in given attempts and is now absorbed in the scheme of examination as per this Direction is required to successfully complete TWO MOOCs from SWAYAM/NPTEL portal to become eligible for the award of degree. The guidelines provided under Clause 9 (a) of this Direction is applicable to all such students also.

Table 1: List of Equivalent Subjects/Papers (Core)

Semester Examination under this Direction	Name of the Course under this Direction	Semester Examination under Old Course (2016)	Name of the Course under Old Direction (2016)	Status of Equivalence
I	Managerial Economics	I	Managerial Economics	Yes
	Management Information Systems	I	Business Communication and Information Systems	Yes
	Managerial Skills for Effectiveness	I	Business Communication and Information Systems	Yes
	Organizational Behaviour	I	Principles of Management	Yes
	Financial Reporting, Statements and Analysis	I	Accounting For Managers	Yes
	Business Statistics and Analytics for Decision Making	I	Research Methodology and Quantitative Techniques	Yes
	Legal and Business Environment	I	Business Laws	Yes
	Business Research	I	Research Methodology and Quantitative Techniques	Yes
II	Financial Management	II	Financial Management	Yes
	Marketing Management	II	Marketing Management	Yes
	Human Resource Management	II	Human Resource Management and	Yes

			Organizational Behaviour	
	Operations Management	II	Operations Management	Yes
		III	Project Management	Yes
	International Business	II	Economic Environment of Business	Yes
		IV	International Business Management	Yes
	CSR and Sustainability	III	Environment Management	Yes
		IV	Business Ethics and Corporate Governance	Yes
	Cost Accounting	II	Cost Accounting	Yes
	Management Case Analysis			NO
III	Elective I – Paper 1			Refer to Table 2
	Elective I – Paper 2			
	Elective I – Paper 3			
	Elective II – Paper 1			
	Elective II – Paper 2			
	Elective II – Paper 3			
	Strategic Management	III	Strategic Management	Yes
		IV	Business Ethics and Corporate Governance	Yes
IV	Elective I – Paper 4			Refer to Table 2
	Elective II – Paper 4			
	MOOC 1			NO
	MOOC 2			NO

Table 2: List of Equivalent Elective/Specialization Papers

Elective / Specialization Group	Semester Exam under this Direction	Paper	Name of the Course under this Direction	Semester Exam under old Direction	Name of the Course under old Direction	Status of Equivalence
Financial Management	III	Paper 1	Investment Analysis and Portfolio Management	III	Security, Portfolio and Risk Management	Yes
	III	Paper 2	Project Appraisal and Finance	III	Corporate Financial Management	Yes
	III	Paper 3	Financial Derivatives	IV	Investment Environment & Wealth Management	Yes
	IV	Paper 4	Managing Banks and Financial Institutions		Investment Environment & Wealth Management	Yes
Marketing Management	III	Paper 1	Sales and Distribution Management	III	Sales and Distribution Management	Yes
	III	Paper 2	Digital and Social Media Marketing	III	Consumer Buying Behaviour	Yes
	III	Paper 3	Integrated Marketing Communication and Brand Management	IV	Integrated Marketing Communication & Brand Management	Yes
	IV	Paper 4	Retail Sales Management and Services Marketing			NO
Human Resource	III	Pap	Manpower Planning,	III	Training & Developmen	Yes

Management		er 1	Recruitment and Selection		t Practices	
	III	Paper 2	Performance Management System	III	Performance and Compensation Management	Yes
	III	Paper 3	Compensation and Benefits Management	III	Performance & Compensation Management	Yes
	IV	Paper 4	Team Dynamics	IV	Industrial relations &Labour Laws	Yes
Operations Management	III	Paper 1	Logistics & Supply Chain Management	III	Logistics & Supply Chain Management	Yes
	III	Paper 2	Quality Toolkit for Managers	IV	Total Quality Management	Yes
	III	Paper 3	Operations Research	III	Operations Research	Yes
	IV	Paper 4	Sales and Operations Planning			
Business Analytics	III	Paper 1	Data Visualization for Managers			
	III	Paper 2	Data Mining			
	III	Paper 3	Data Science using R			
	IV	Paper 4	WEB and Social Media Analytics			

Entrepreneurship Development	III	Paper 1	Entrepreneurial Theory and Practices			
	III	Paper 2	Business Plan Formulation			
	III	Paper 3	Social Entrepreneurship			
	IV	Paper 4	Entrepreneurial Marketing			
International Business	III	Paper 1	International Marketing Management			
	III	Paper 2	Export Documentation and Procedures			
	III	Paper 3	International Finance			
	IV	Paper 4	International Human Resource Management			

g. The above absorption scheme of M.B.A. shall be effective till the introduction of new Syllabus with new absorption scheme.

26. Guidelines for Project Work :

Objective:-

Every student will be assigned a project in 4th Semester and it will be pursued by him/her under the supervision of an internal supervisor. The objective of the Project Work is to help the student develop his/her ability to apply multi-disciplinary concepts, tools and techniques to solve organizational problems and/or to evolve new/innovative theoretical frame work.

Types of Project:

The Project may take any one of the following forms:

i) Comprehensive case study (covering single organization/ multifunctional area problem, formulation, analysis and recommendations)

ii) Inter-organisational study aimed at inter-organisational comparison/ validation of theory/survey of management services.
iii) Evolution of any new conceptual / theoretical framework.
iv) Business Plan/Viability Studies
v) Field study (Empirical study).
vi) Software analysis, Design and solutions for organisational achievement (Applicable to IT)

Selection of Project Topic:-

- Project topic has to be selected with respect to the programme of study and area elected by the student.
- Title of the project should clearly specify the objective and scope of the study. It should be specific and neither too vague nor centralistic. The topics should be designed meticulously. It can be designed like "Employee Welfare Measures" – A case study of XYZ Ltd.
- Project selection has to be made in consultation with the supervisor who will act as a Project guide for the student.

Scope of Work:-

The student is expected to carry out following activities in the project:
1. Prepare a synopsis and get it approved by the supervisor as assigned by the respective Institutes. Approved synopsis shall be part of final report as appendix.
2. Undertake a detailed literature survey on the subject matter.
3. Make relevant data collection/observation.
4. Consult experts of the field.
5. Visit related organizations/institutions/industries.
6. Compile data in proper format.
7. Make proper conclusion/recommendations.
8. Prepare a Project Report.
9. The volume of the project-report should be ranging from 60-80 pages.
10. Obtain approval of Project Report by project supervisor.
11. Submit a hard bound copy of the Project Report at the Institute.
12. Submission of the Project Report shall be one month prior to the date of the commencement of the 4th Semester Examinations for MBA.

General Format of the Report:-

The project report should preferably be written in the following format:
a) Executive Summary
b) Introduction to topic
c) Research Methodology
d) Analysis and Findings of the study
e) Conclusions and Recommendations of the study
f) Bibliography

g) Appendices – to include questionnaire, if any

Examination and Evaluation:-

The Project is to be treated as a Course of study of the MBA-4th Semester comprising of 100 marks. The external assessment shall be done on the basis of the project report and Viva Voce. The Project shall be evaluated by an External faculty for 50 marks and by the Supervisor (Internal examiner) for 50 marks. The Project work shall be evaluated by internal and external examiners approved in the list of the University for 100 marks (as mentioned above) at the respective institute/college/department as per the schedule fixed by the university. No External Examiner shall be allow to examine/evaluate the project of more than 20 students in any academic year.

27. Industrial Tour:-
Industrial Tour: To make students understand the various aspects of business; college/Institute/Department may organize industrial visits to the industrial/business houses.

28. This direction shall come into force in a phase wise from the academic session 2019-20.

29. With the issuance of this Direction all the earlier Directions, if in existence,, shall stand repealed.

30 Notwithstanding the repeal of earlier directions by this directions any action taken by the university in pursuance of and in furtherance of those directions shall be valid and binding on all the persons.

(Dr. Siddharthavinayaka P.Kane)
Vice-Chancellor

Nagpur.
Dated: 8/8/2019

RASHTRASANT TUKADOJI MAHARAJ NAGPUR UNIVERSITY

"(Established by Government of Central Provinces Education Department by Notification No. 513 dated the 1st of August, 1923 & presently a State University governed by Maharashtra Public Universities Act, 2016 (Mah. Act No. VI of 2017).)"

DIRECTION NO.41 OF 2022

ADMISSIONS AND EXAMINATIONS LEADING TO THE AWARD OF THE CERTIFICATE, DIPLOMA OR DEGREE OF BACHELOR OF BUSSINESS ADMINISTARTION (BBA) (OUTCOME BASED) (CHOICE BASED CREDIT SYSTEM), DIRECTION, 2022

Whereas, Maharashtra Public Universities Act 2016(VI of 2017)(hereinafter the Act) has come into force from 1st March, 2017;

AND

Whereas, the University has issued Direction to 27 of 2022 dealing with composition of the four faculties created by the Act, where under the earlier different faculties of the University have been merged into the four new faculties created by the Act, by which the subject of Business Administration has been included in the faculty of Commerce and Management;

AND

WHEREAS Direction No. 23 of 2017 entitled 'DIRECTION GOVERNING THE EXAMINATION LEADING TO THE DEGREE OF Bachelor of Business Administration (BBA) (CHOICE BASED CREDIT SYSTEM) (FACULTY OF COMMERCE AND MANAGEMENT), was issued by the Vice-Chancellor on on 29th August 2017

AND

Whereas, MHRD, New Delhi & UGC issued the guidelines for implementation of NEP 2020 in all universities in UG & PG programs from academic session 2022-23. So it is necessary to restructure the complete scheme of examination incorporating curriculum features as mentioned in NEP 2020.

AND

Whereas, the Faculty of Commerce and Management in its meeting dated 24.6.22 has recommended to restructure the BBA programme so as to meet the expectations of new National Education Policy 2020, the said programme is to commence from academic year

2022-23, it was also resolve to empower the Hon'ble Vice Chancellor to accept the scheme once prepared and accepted by the Board of Studies for Business Management, on behalf of the Faculty of Commerce and Management;

AND

Whereas, the Academic Council in its meeting held on 8.7. 2022 vide item No. 22 has considered, accepted the recommendation of Faculty of Commerece and Management whereby authorized the Vice Chancellor to accept the Scheme of Examination and syllabi prepared by the Board of Studies in Business Management for the programme of Bachelor of Business Management in order to give effect to the provisions of National Education Policy 2020;

AND

Whereas, the Board of Studies in its meeting dated 13.7.22 has accepted the detailed scheme of examination and syllabus for the Bachelor of Business management with the option of award of Certificate and Diploma in between if the student so desires, as per the new National education Policy as prepared by the sub-committee with minor changes, the said programme is to commence from academic year 2022-23;

AND

Whereas, the Vice Chancellor has granted approval to the scheme of examination so prepared and accepted by the Board of Studies on behalf of the Faculty of Commerece and Management and the Academic Council as resolved by the Faculty of Commerce and Management and the Academic Council in their meetings dated 24.6.22 and 8.7.22 respectively;

AND

Whereas, Direction No. 23 of 2017 entitled "DIRECTION GOVERNING THE EXAMINATION LEADING TO THE DEGREE OF BACHELOR OF BUSINESS ADMINISTRATION (BBA) (CHOICE BASED CREDIT SYSTEM) (FACULTY OF COMMERCE AND MANAGEMENT),", has lapsed by virtue of proviso to subsection (8) of section 12 of the Act as the said Direction could not be converted in to an Ordinance within the prescribed time and since Ordinance making is a time consuming process and there is an urgency to regularized the admissions and examinations of BACHELOR OF BUSINESS ADMINISTRATION (BBA) (OUTCOME BASED)(CHOICE BASED CREDIT SYSTEM)

Now, therefore, I, **Dr. Subhash R. Chaudhari**, Vice-Chancellor Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur, in exercise of powers conferred upon me under provision of section 12(8) of the Maharashtra Public Universities Act, 2016, do hereby issue following Directions.

1. This Direction may be called **'ADMISSIONS AND EXAMINATIONS LEADING TO THE AWARD OF THE CERTIFICATE, DIPLOMA OR DEGREE OF BACHELOR OF BUSSINESS ADMINISTARTION (BBA) (OUTCOME BASED) (CHOICE BASED CREDIT SYSTEM), DIRECTION, 2022**

2. This Direction shall come into force from the academic year 2022-23.

3. INTERPRETATION CLAUSE:

In this Direction, unless the context requires otherwise the words, phrases and abbreviations shall have following meaning:-

a. **"AEC"** means the Ability Enhancement Course

b. **"Academic Council"** means Academic Council of R.T.M. Nagpur University.

c. **"ATKT"** refers to allowed to keep term in higher semester.

d. **"Board of Studies"** means Board of Studies for various subjects of commerce in the faculty of Commerce and Management in the University.

e. **"CC"** means Core Course.

f. **"CIE"** means Continuous Internal Evaluation which refers to the Internal Assessment done at concerned college.

g. **"Competent Authority"** (for admission purpose) means an "Authority" established or assigned the duty to regulate admissions in the course by the Government of Maharashtra or an authority constituted by the University, for this purpose.

h. **"Credit Points"** refer to the product of No. of credits multiplied by the Grade Point for a given course/paper.

i. **"Credit"** (C) for a course is dependent on the number of hours of instruction per week in that course, and is obtained by using a multiplier of one (1) for lecture and a multiplier of half (1/2) for practical (laboratory) hours.

j. **"Course"** means a paper/subject (theory or practical) prescribed for any semester of the programme.

k. **"Cumulative Grade Point Average (CGPA)"** refers to the Cumulative Grade Point Average weighted across all semesters (6 semesters)

l. **"DSE"** means Discipline Specific Elective Course

m. **"Degree"** means the Under Graduate Degree awarded after successful completion of the programme governed by this Direction.

n. **"Fees"** means the fees prescribed by the University/ Shikshan Shulka Samiti of Government of Maharashtra, for the Under Graduate programme under this Direction, from time to time.

o. **"GE"** means Generic Elective Course

p. **"Grade letter"** is an index to indicate the performance of a student in a particular course (Paper). It is the transformation of actual marks secured by a student in a course/paper. Grade letters are O, A, B, C, P, F and AB.

q. **"Grade Point"** is the weightage allotted to each grade letter depending on the range of marks awarded in a course/paper.

r. **"Graduate programme"** means Bachelors' degree programme in Commerce (Computer Application).

s. **"MOOC"** means Massive Open Online Course offered by SWAYAM/NPTEL or any other recognized University or Institution

t. **"SEC"** means Skill Enhancement Course

u. **"Semester Grade Point Average (SGPA)"** refers to the performance of the student in a given semester. SGPA is based on the total credit points earned by the student in all the courses and the total number of credits assigned to the courses/papers in a Semester.

v. **"Student"** means student admitted to Bachelors degree programme in commerce under this direction.

w. **"ODL"** means Online and Distance Learning

x. **"University"** means Rashtrasant Tukadoji Maharaj Nagpur University.

4. There shall be Six Examinations leading to the degree of Bachelor of Business Administration (BBA) namely:

(1) The **Bachelor of Business Administration (BBA)** – 1st Semester Examination,
(2) The **Bachelor of Business Administration (BBA)** – 2nd Semester Examination,
(3) The **Bachelor of Business Administration (BBA)** – 3rd Semester Examination,
(4) The **Bachelor of Business Administration (BBA)** – 4th Semester Examination,
(5) The **Bachelor of Business Administration (BBA)** – 5th Semester Examination and
(6) The **Bachelor of Business Administration (BBA)** – 6th Semester Examination.

5.The duration of the Degree Course under this shall be of three academic years divided into six semesters with the BBA 1st and 2nd Semester Examinations during the first academic year, the BBA 3rd and 4th Semester Examinations during the second year and the BBA 5th and 6th Semester Examinations during the third year.

6.The examinations specified in paragraph 3 above shall be held twice a year at such places and on such dates as may be fixed by the University.

7.The details of eligibility for **BBA Sem I** examination and admission:

(A) For the **BBA 1st Semester,** Examinee shall have Passed the 12th Standard Examination of the Maharashtra State Board of Secondary and Higher Secondary Education, with English at Higher or Lower level and any Modern Indian Language at higher or lower level with any combination of optional subjects.

OR

XII Standard Examination of Maharashtra State Board of Secondary and Higher Secondary Education in Vocational Stream with one language only; OR any other

examination recognized as equivalent thereto; in such subjects and with such standards of attainments as may be prescribed Minimum Competition vocation course (MCVC).

OR

Any other Equivalent Examination of any State / Central/ International Board in (10+2) pattern with any combination of subjects.

8. A collegiate candidate shall have pursued a regular course of study for not less than 90 days of the academic session before being examined for any semester examination of **BBA** in any recognized institution and or college affiliated to Rashtrasant Tukadoji Maharaj Nagpur University where the course is conducted.

9. An applicant for the Bachelor of Business Administration 1st, 2nd, 3rd, 4th, 5th or 6th Semester Examination shall have passed an examination specified in Clauses (A) of paragraph 6 not less than one academic year prior to his admission to the respective examination.

10. Without prejudice to the other provisions of Ordinance No. 6 relating to the Examinations in General, the provisions of Paragraphs 5, 7, 8, 10, 26 and 31 of the said Ordinance shall apply to every collegiate candidate.

11. The fees for the examination shall be as prescribed by the University from time to time and whenever any change is made in the fees prescribed for any examination that shall be notified through a notification for information of the examinees concerned.

12. Teaching and Examination Scheme for examinees of Bachelor of Business Administration 1st, 2nd, 3rd, 4th, 5th, and 6th Semester Examinations shall be as given below:

Teaching and Examination Scheme
Bachelor of Business Administration (BBA)
Three Year Degree Course (Outcome Based) (CBCS)
With effect from 2022-23

(A)

Bachelor of Business Administration (BBA)
BBA – Semester I

Sr. No.	Course Type	Subjects	Course Code	Teaching Scheme	Examination Scheme				Total Marks	Credits
				Total Periods per Week	Max. Marks (TH) *	Max. Marks (IM)	Total Marks	Min. Passing Marks		
1	CC 1	English 1	1T1	5	80	20	100	40	100	4
2	CC 2	Evolution of Business	1T2	5	80	20	100	40	100	4

3	SEC 1	Foreign Language (French / German / Japanese) **OR** Aptitude Development -1 (Anyone)	1T3-A 1T3-B 1T3-C 1T3-D	5	100	00	100	40	100	4
4	SEC - 2	Basics of MS – Excel **OR** Financial Accounting using Tally (Anyone)	1P4-A 1P4-B	5	100	00	100	40	100	4
5	AEC 1	Foundations of Managerial Effectiveness	1T5	5	80	20	100	40	100	4
		Total		**25**	**400**	**100**	**500**	**200**	**500**	**20**

* Semester end examination

Note : 1. Duration of each theory class should be a minimum 48 minutes.

2. TH = Theory, IM = Internal Marks.

3. Minimum marks for passing the subject will be 40.

4. There would be combined passing for theory and internal assessment taken together.

5. **In case of practical courses the total periods per week should be 10.**

6. One credit is equivalent to one hour of Teaching, that is to say,
For each subject, 48 Minutes * 5 = 240 Minutes = 4 Hours per week i.e. 4 Credits.

7. Each semester will consist of 15 to 18 weeks of Academic Work equivalent to 90 actual teaching days.

(B)

BBA – Semester - II

Sr. No.	Course Type	Subjects	Course Code	Teaching Scheme	Examination Scheme				Total Marks	Credits
				Total Periods per Week	Max. Marks (TH)	Max. Marks (IM)	Total Marks	Min. Passing Marks		
1	CC 3	English 2	2T1	5	80	20	100	40	100	4
2	CC 4	Fundamentals of Business Management	2T2	5	80	20	100	40	100	4
3	CC 5	Cost & Management Accounting	2T3	5	80	20	100	40	100	4
4	AEC 2	Environmental Studies	2T4	5	80	20	100	40	100	4
5	GE 1	Sociology **OR** Hospitality and Tourism (Anyone)	2T5-A 2T5-B	5	80	20	100	40	100	4
		Total		**25**	**400**	**100**	**500**	**200**	**500**	**20**

Note : 1. Duration of each theory class should be a minimum 48 minutes.

2. TH = Theory, IM = Internal Marks.

3. Minimum marks for passing the subject will be 40.

4. There would be combined passing for theory and internal assessment taken together.

5. **In case of practical courses the total periods per week should be 10.**

6. One credit is equivalent to one hour of Teaching, that is to say,
For each subject, 48 Minutes * 5 = 240 Minutes = 4 Hours per week i.e. 4 Credits.

7. Each semester will consist of 15 to 18 weeks of Academic Work equivalent to 90 actual teaching days.

A student must compulsorily complete **all the core courses** (CC-1 to CC-5) of first year and **total 40 credits** by end of 2nd semester to be eligible to obtain **Certificate** at the end of 1st year, in case he/she desires to exit the program.

(C)

BBA – Semester - III

Sr. No.	Course Type	Subjects	Course Code	Teaching Scheme	Examination Scheme				Total Marks	Credits
				Total Periods per Week	Max. Marks (TH)	Max. Marks (IM)	Total Marks	Min. Passing Marks		
1	CC 6	Organizational Behavior	3T1	5	80	20	100	40	100	4
2	CC 7	Managerial Economics	3T2	5	80	20	100	40	100	4
3	SEC 3	Aptitude Development -2 **OR** MS- Word and PowerPoint (Anyone)	3T3-A 3P3-B	5	100	00	100	40	100	4
4	SEC 4	Advance Excel **OR** Business Analytics (Anyone)	3P4-A 3T4-B	5	100	00	100	40	100	4
5	GE 2	Content Writing **OR** Healthy Living (Anyone)	3T5-A 3T5-B	5	80	20	100	400	100	4
		Total		**25**	**400**	**100**	**500**	**200**	**500**	**20**

Note : 1. Duration of each theory class should be a minimum 48 minutes.

2. TH = Theory, IM = Internal Marks.

3. Minimum marks for passing the subject will be 40.

4. There would be combined passing for theory and internal assessment taken together.

5.In case of practical courses the total periods per week should be 10.

6. One credit is equivalent to one hour of Teaching, that is to say,
For each subject, 48 Minutes * 5 = 240 Minutes = 4 Hours per week i.e. 4 Credits.

7. Each semester will consist of 15 to 18 weeks of Academic Work equivalent to 90 actual teaching days.

(D)

BBA – Semester – IV

Sr. No	Course Type	Subjects	Course Code	Teaching Scheme	Examination Scheme				Total Marks	Credits
				Total Periods per Week	Max. Marks (TH)	Max. Marks (IM)	Total Marks	Min. Passing Marks		
1	CC 8	Fundamentals of Marketing Management	4T1	5	80	20	100	40	100	4
2	CC 9	Fundamentals of Human Resource Management	4T2	5	80	20	100	40	100	4
3	CC 10	Fundamentals of Financial Management	4T3	5	80	20	100	40	100	4
4	GE 3	Financial Wellbeing **OR** Business Startup skills (Anyone)	4T4-A 4T4-B	5	80	20	100	40	100	4
5	GE 4	Business Psychology **OR** Indian Social Values and Business Ethics (Anyone)	4T5-A 4T5-B	5	80	20	100	400	100	4
		Total		**25**	**400**	**100**	**500**	**200**	**500**	**20**

Note : 1. Duration of each theory class should be a minimum 48 minutes.

2. TH = Theory, IM = Internal Marks.

3. Minimum marks for passing the subject will be 40.

4. There would be combined passing for theory and internal assessment taken together.

5.In case of practical courses the total periods per week should be 10.

6. One credit is equivalent to one hour of Teaching, that is to say,
For each subject, 48 Minutes * 5 = 240 Minutes = 4 Hours per week i.e. 4 Credits.

7. Each semester will consist of 15 to 18 weeks of Academic Work equivalent to 90 actual teaching days.

A student must compulsorily complete **all the core courses** (CC-1 to CC-10) of first and second year and total 80 credits by end of 4th Semester to be eligible to obtain **Diploma** at the end of 2nd year, if he/she desires to exit the program.

(E)

BBA – Semester - V

Sr. No.	Course Type	Subjects	Course Code	Teaching Scheme	Examination Scheme				Total Marks	Credits
				Total Periods per Week	Max. Marks (TH)	Max. Marks (IM)	Total Marks	Min. Passing Marks		
1	CC 11	Business Research Methods	5T1	5	80	20	100	40	100	4
2	DSE 1	Discipline Specific Elective (Specialization Paper 1)	5T2	5	80	20	100	40	100	4
3	DSE 2	Discipline Specific Elective (Specialization Paper 2)	5T3	5	80	20	100	40	100	4
4	CC 12	Internship	5P1	5	100	0	100	40	100	4
5	GE 5	Holistic Development **OR** International Business Management (Anyone)	5T4-A 5T4-B	5	80	20	100	40	100	4
		Total		**25**	**420**	**80**	**500**	**200**	**500**	**20**

Note : 1. Duration of each theory class should be a minimum 48 minutes.
2. TH = Theory, IM = Internal Marks.
3. Minimum marks for passing the subject will be 40.
4. There would be combined passing for theory and internal assessment taken together.
5.In case of practical courses the total periods per week should be 10.
6. One credit is equivalent to one hour of Teaching, that is to say,
For each subject, 48 Minutes * 5 = 240 Minutes = 4 Hours per week i.e. 4 Credits.
7. Each semester will consist of 15 to 18 weeks of Academic Work equivalent to 90 actual teaching days.

(F)

BBA – Semester - VI

Sr. No.	Course Type	Subjects	Course Code	Teaching Scheme	Examination Scheme				Total Marks	Credits
				Total Periods per Week	Max. Marks (TH)	Max. Marks (IM)	Total Marks	Min. Passing Marks		
1	CC 13	Business Legislation	6T1	5	80	20	100	40	100	4
2	CC 14	Corporate Social Responsibility	6T2	5	80	20	100	40	100	4
3	DSE 3	Discipline Specific Elective (Specialization Paper 3)	6T3	5	80	20	100	40	100	4
4	CC 15	Project Work	6P1	10	150	50	200	80	200	8
			Total	**25**	**390**	**110**	**400**	**200**	**500**	**20**

Note : 1. Duration of each theory class should be a minimum 48 minutes.

2. TH = Theory, IM = Internal Marks.

3. Minimum marks for passing the subject will be 40.

4. There would be combined passing for theory and internal assessment taken together.

5. In case of practical courses the total periods per week should be 10.

6. One credit is equivalent to one hour of Teaching, that is to say,
For each subject, 48 Minutes * 5 = 240 Minutes = 4 Hours per week i.e. 4 Credits.

7. Each semester will consist of 15 to 18 weeks of Academic Work equivalent to 90 actual teaching days.

A student must compulsorily complete **all the core courses** (CC-1 to CC-15) of first, second year and third year along with total 120 credits by end of Semester VI to be eligible to obtain **Degree** at the end of 3rd year.

Course Composition Matrix:

	Sem I	Sem II	Sem III	Sem IV	Sem V	Sem VI	Total Courses
CC	2	3	2	3	1	2	13
AEC	1	1	-	-	-	-	2

SEC	2	-	2	-	-	-	4
DSE	-	-	-	-	2	1	3
GE	-	1	1	2	1	-	5
Internship	-	-	-	-	1	-	1
Project Work	-	-	-	-	-	1 (8 Credits)	1
Total Sem Credits	20	20	20	20	20	20	30
Total Credits	120						

13. Assessment

- The final total assessment of the candidates is made in terms of an Continuous Internal Evaluation (CIE) and an external assessment for each course/subject taken together.
- For each paper (other than Practical, Internship and Project), 20 marks will be Continuous Internal Evaluation and 80 marks for semester end examination (external assessment) to be conducted at college level (Odd semesters examinations) and RTM Nagpur University level (Even semester examinations)

  - **Continuous Internal Evaluation**

1a	Attendance of the student during a particular semester	05 marks
1b	An assignment based on curriculum to be assessed by the teacher concerned	05 marks
1c	Activity and Practical based assessment as per activity / practical record document	10 marks
1	**Internal assessment Total marks**	**20**
2	**Semester wise End Examination marks**	**80**
Total Marks Per Course		**100**

- Each subject teacher must circulate the list of minimum ***5*** activities/practical of fields assignment/mini project/market surveys/research papers & research/live projects etc. to be done in group of maximum 4 students (based on 5 COs) at the beginning of course and evaluate the same for 10 marks as per 1c above.
- There shall be no separate / extra allotment of workload to the concerned teacher. He/ She shall conduct the CIE activity during the regular teaching days / periods as a part of regular teaching activity.
- The internal marks will be communicated to the University at the end of each semester, but before the semester end examinations / as instructed by university. These marks will be considered for the declaration of the results.
- The record of internal marks, evaluation & result should be maintained for a period of one year by respective institute/college for verification by competent authority.

14. (A) The scope of the subjects and pattern of examination shall be as indicated in the Syllabus (Appendix – II)

(B) The Medium of instructions and examinations shall be in ENGLISH only.

(C) The Maximum/minimum marks which each subject carries & workload in BBA 1st, 2nd, 3rd, 4th, 5th and 6th Semester Examination shall be as indicated in Examination & Teaching Scheme (item no 12) "A", "B", "C", "D", "E" and "F" respectively.

Internship and its evaluation (CC 12)

At the end of fourth semester, all students will have to undergo internship which may be a Field Survey/ Research Projects of 4-6 weeks (Minimum 120 hours) with an industrial, business, service, or social organization by taking a project study. The condition of successfully completing the program shall not be deemed to have been satisfied unless a student undergoes summer training under the supervision of the department in organizations as approved by the Director/ Principal/ Head / Faculty from time to time. Alternatively, the Director/ Principal/ Head / Faculty of the Department/ College/ Institute may allocate the sector/ industry/ company specific project to the individual student. Each student will be required to submit a **Internship** project report to the Department/ College/ Institute for the work undertaken during this period within three weeks of commencement of the **Fifth** semester for the purpose of evaluation in the **Fifth** semester. The evaluation will be of 100 marks. The evaluation will be internal at college level. The detailed parameters for evaluation of Internship will be provided by the colleges at the time of its assessment and evaluation.

Project and Evaluation of Project

Project Work shall carry 200 marks

Evaluation Pattern

Evaluation Type	Max. Marks
Project Report and Documentation Evaluation by External Examiner appointed by the University	100
Presentation and Open Defense Seminar (External Examiner)	50
Presentation and Open Defense Seminar (Internal Examiner)	50
Total	**200**

a. For Project work, **Maximum 10 groups (each group comprising maximum 4 students) per guide /supervisor** must be allotted by the Institute. The Guide/ Supervisor shall act as an internal examiner for project Examination **and award marks to individual students in these groups at the time of Presentation and Open Defense Seminar.**

b. The guide or the supervisor shall be appointed by the institute and should be full time approved faculty to BBA / MBA Programme or PhD supervisor in Business Management and Administration.

c. **The External examiner shall be appointed from the list of full-time approved teaching faculty of the BBA / MBA program or PhD supervisor in Business Management and Administration by the University.**

d. Each such External examiner shall examine a **maximum of 20 groups (Projects) of final SEMESTER students and award marks to individual students in these groups.**
e. One copy of Project work (Printed & Binded) shall be submitted to the College/Department, at least **One Month** prior to the date of commencement of Semester-VI Examination for evaluation purpose. The College/Department shall retain the copy of Project Work and the list of 'Project Work Titles' shall be submitted to the University.
f. A Candidate shall submit with his/her/their project work, a certificate from the Supervisor to the effect.
g. That the candidate has satisfactorily completed the Project work for not less than one session and
h. That the Project work is the result of the candidates own work and is of sufficiently high standard to warrant its presentation for examination.
i. Candidate shall submit his declaration that the Project is the result of his own research work and the same has not been previously submitted to any examination of this University or any other University. The Project shall be liable to be rejected and /or cancelled if found otherwise.
j. The Project work shall be evaluated through seminar and open defense and Viva-voce at the College/ Department by internal and external examiners appointed by university before Semester VI examination.
k. A student appearing for BBA Semester VI Examination will have to pay additional fees for evaluation of project as prescribed by the University from time to time.

15. Standard of Passing

The scope of the subject, percentage of passing in Theory and Project and CIE will be governed as per following rules:

(i) In order to pass the Bachelor of Business Administration (B.B.A.) 1st, 2nd, 3rd, 4th, 5th and 6th Semester Examinations, and an examinee shall obtain not less than 40 % marks in each paper, that is a student must obtain 40 marks in the written Examination conducted by the College/University and in internal assessment (CIE) put together.

(ii) An examinee who is unsuccessful at the examination shall be eligible for admission to the subsequent examinations on payment of a fresh fee prescribed for the examination together with the conditions of the ordinance in force from time to time.

16. Credit and Grade Point System:

A. <u>Conversion of Marks to Grades and Calculations of SGPA (Grade Point Average) and CGPA (Cumulative Grade Point Average):</u> In the Credit and Grade Point System, the assessment of individual Courses in the concerned examinations will be on the basis of marks only, but the marks shall later be converted into Grades by some mechanism wherein the overall performance of the Learners can be reflected after considering the Credit Points for any given course. However, the overall evaluation shall be designated in terms of Grade. There are some abbreviations used here that need understanding of each and every parameter involved in grade computation and the evaluation mechanism. The abbreviations and formulae used are as follows: -

shall be designated in terms of Grade. There are some abbreviations used here that need understanding of each and every parameter involved in grade computation and the evaluation mechanism. The abbreviations and formulae used are as follows: -

Abbreviations and Formulae Used

G: Grade
GP: Grade Points
C: Credits
CP: Credit Points
CG: Credits X Grades (Product of credits & Grades)
SGPA = ΣCG: Sum of Product of Credits & Grades points / ΣC: Sum of Credits points
SGPA: Semester Grade Point Average shall be calculated for individual semesters. (It is also designated as GPA)
CGPA: Cumulative Grade Point Average shall be calculated for the entire Programme by considering all the semesters taken together.

CGPA to Percentage (%) conversion formula: Percentage (%) = (CGPA) * 10

After calculating the SGPA for an individual semester and the CGPA for entire program, the value can be matched with the grade in the Grade Point table as per the ten (10) Points Grading System and expressed as a single designated GRADE such as O, A, B, C, D, P and F

Sr. No.	Letter Grade	Grade Points	Mark Range	Performance
1	O	10	Above 90 upto 100	Outstanding
2	A+	9	Above 80 upto 90	Excellent
3	A	8	Above 70 upto 80	Very Good
4	B+	7	Above 60 upto 70	Good
5	B	6	Above 50 upto 60	Above Average
6	C	5	Above 45 upto 50	Average
7	P	4	40 to 45	Pass
8	F	0	Below 40	Fail
9	AB	0	Absent	Fail

A student obtaining Grade F shall be considered failed and will be required to reappear in the examination.

B. Division at the BBA semester VI examination shall be declared on the basis of the aggregate marks at the BBA semester I, semester II, semester III, semester IV, semester V and semester VI examination taken together and the CGPA will be calculated and notified.

C. **The successful examinees at the BBA semester VI examination shall be awarded division based on CGPA**

D. The percentage of passing marks in each subject shall be as indicated in Examination Scheme (item no 12) "A", "B", "C", "D", "E" and "F" respectively.

E. Unsuccessful examinees at the above examinations can be readmitted to the same examination on payment of a fresh fee and such other fees as may be prescribed.

F. Provisions of **Ordinance No. 3 of 2007** relating to the award of Grace Marks for passing an examination, securing higher division / class and for securing distinction in subject(s) shall be applicable.

G. University guidelines & direction updated from time to time regarding Improvement of results, Revaluation/Reassessment and Incentive Marks shall be applicable to BBA program governed by this direction.

H. Notwithstanding anything to the contrary in this Direction, no person shall be admitted to an examination under this Ordinance, if he/ she has already passed the same examination or an equivalent examination of any other University.

I. Examinees passing all the **Bachelor of Business Administration (BBA)** Examination shall on payment of the prescribed fees shall receive a Degree in the prescribed form signed by the Vice-Chancellor.

J. The aforesaid Amendment shall come into force from the date of its issuance and shall remain in force till the relevant Ordinance comes into being in accordance with the provisions of the Maharashtra Public Universities. Act, 2016(Mah. Act No. VI of 2017).

K. The marks for internal assessment should be communicated to the University within the time limit as per university norms. The record of conduct of such examination, evaluation and marks for internal assessment should be maintained for a period of at least **one** year by the respective college / Department for the verification by the competent authority.

17. Promotion to Higher Semester (A.T.K.T.):

A. The unsuccessful candidate of any semester examination shall be ALLOWED TO KEEP THE TERM (ATKT) in accordance with the following table: (Theory and Internal assessment of that theory subject shall be jointly considered as single passing head).

Admission to academic year	Candidate should have passed All courses of the following examination	Candidate should have filled the examination form and appeared for the following examinations	Candidate should have passed in Minimum 50% courses of the following examination
1st Semester	H.S.S.C/equivalent	-----	-----
2nd Semester	-----	1st Semester	-----
3rd Semester	-----	2nd Semester	50% courses of 1st and 2nd Semesters taken together
4th Semester	-----	3rd Semester	As Above

B. **Note: (*)** A candidate admitted to Final Semester can appear for Final Semester examination however the result of the Final Semester examination will be withheld (NCL) (not completed lower semester examinations) unless the candidate clears all the lower examinations of the **BBA Program.**

*Note: For calculating the requirement of fifty percent passing heads fraction if any is to be ignored as per the provisions of Direction no. 10 of 2019.

C. Pattern of Question Papers of BBA year end Examination:

a. The question paper should be set in such a manner to cover the complete syllabus as prescribed by the University.
b. The Semester End examination shall be held as per the schedule notified by the University.
c. The question paper shall be of 80 marks & the time duration of the Semester End examination would be 3 hours.
d. Question Paper Pattern for the courses included in this syllabus will be as per Appendix – II
e. The paper setters /moderators shall submit the proposed marking scheme (Memorandum of Instructions) along with the question paper so that the students can be given due credit for precise answers.

18. Absorption Scheme for Examinees of BBA CBS Pattern Course (Introduced in 2016):

I. The students of the BBA CBS Syllabus (Introduced in 2016) immediately preceding the new course under this direction shall be given a chance to appear for **Five** more consecutive examinations according to old BBA CBS syllabus (Introduced in 2016). The College shall conduct the examinations of odd semesters whereas the University shall conduct the examination of even semester courses for **five** more consecutive examinations after the new scheme of examination is introduced as per following table:

BBA Examination	**Attempt 1**	**Attempt 2**	**Attempt 3**	**Attempt 4**	**Attempt 5**
BBA Sem I	Winter 2021	Summer 2022	Winter 2022	Summer 2023	Winter 2023
BBA Sem II	Summer 2022	Winter 2022	Summer 2023	Winter 2023	Summer 2024
BBA Sem III	Winter 2022	Summer 2023	Winter 2023	Summer 2024	Winter 2024
BBA Sem IV	Summer 2023	Winter 2023	Summer 2024	Winter 2024	Summer 2025

BBA Sem V	Winter 2023	Summer 2024	Winter 2024	Summer 2025	Winter 2025
BBA Sem VI	Summer 2024	Winter 2024	Summer 2025	Winter 2025	Summer 2026

The students are required to clear all their papers within the stipulated time. The students clearing all the papers of the old scheme of Examination (BBA CBS Syllabus Introduced in 2016) shall be awarded a Degree according to the old scheme of Examination. But the students who failed to clear their course/s in 5 consecutive attempts as per this clause, will be absorbed in the scheme of examination under this direction as per following guidelines:

A. The candidates who have cleared BBA 1st year (Semester I and II) of the old course (CBS Pattern - Introduced in 2016) examination shall be eligible for admission to BBA 2nd Year of the new course (CBCS) but in such case the student will have to clear all those subjects (BBA Sem I and II) which were not included in the previous CBS syllabus (introduced in 2016) but are part of new syllabus.

B. The candidates who have cleared BBA 2nd year (Semester I to IV) of the old course (CBS Pattern - Introduced in 2016) examination shall be eligible for admission to BBA 3rd Year of the new course (CBCS) but in such case the student will have to clear all those subjects (BBA Sem I, II, III and IV) which were not included in the previous CBS syllabus (introduced in 2016) but are part of new syllabus.

II. CLARIFICATION ON ABSORPTION SCHEME

The absorption of students of previous CBS course (Introduced in 2016) referred above shall be made to the new course in the following manner:

Situation I: A student had completed 1st year of BBA as per CBS syllabus (introduced in 2016) but due to some reasons the student is dropped out for subsequent years of the previous syllabus (BBA CBS Syllabus)

A student who has passed all courses of BBA 1st year CBS Pattern Programme (Introduced in 2016), shall be admitted to BBA 2nd Year but he/ she must complete those courses which are not considered to be equivalent with the previous CBS pattern examination. In such a case a student will be required to take nominal admission to BBA 1st year under this new direction by paying Rs. 500 and will fill and submit the exam form of BBA 1st and/or 2nd Semester of the new syllabus (as per this direction) for those courses only which are not considered to be equivalent courses with old syllabus (BBA CBS syllabus). The student will also be allowed to fill and submit the regular exam form semester III.

Situation II: A students has not completed 1st year of BBA as per CBS syllabus (introduced in 2016) but have cleared few of the courses of 1st year and is dropped out for subsequent years of the previous syllabus (BBA CBS Syllabus)

A student who has cleared 4 or more courses of BBA CBS syllabus (introduced in 2016) and has backlogs in remaining courses will be allowed to take admission into 2nd year of BBA under this direction, but he/she must complete those courses which are not considered to be equivalent with the previous CBS pattern examination. In such a case a student will be required to take nominal admission to BBA 1st year under this new direction by paying Rs. 500 and will fill and submit the exam form of BBA 1st and/or 2nd Semester of the new syllabus (as per this direction) for those courses only which are not considered to be equivalent courses with old syllabus (BBA CBS syllabus). The student will also be allowed to fill and submit the regular exam form semester III.

A student who has backlog in 5 or more courses of BBA CBS syllabus (introduced in 2016). In such a case a student will not be eligible for admission to BBA 2nd year and will be required to take nominal admission to BBA 1st year under this new direction by paying Rs. 500 and will fill and submit the exam form of BBA 1st and/or 2nd Semester of the new syllabus (as per this direction) for those courses only which are not considered to be equivalent courses with old syllabus (BBA CBS syllabus). The student will be able to take admission in 2nd year after successful completion of BBA 1st year under this new syllabus.

Situation III: A students has completed 2nd year of BBA as per CBS syllabus (introduced in 2016) and have cleared all the courses of 2nd Year and is drop out for subsequent years of the previous syllabus (BBA CBS Syllabus)

A student who has passed all courses of BBA 1st year and 2nd year under CBS Pattern Syllabus (Introduced in 2016), shall be admitted to BBA 3rd Year but he/she must complete those courses which are not considered to be equivalent with the previous CBS pattern examination. In such a case a student will be required to take nominal admission to BBA 1st and 2nd year under this new direction by paying Rs. 500 for each year and will fill and submit the exam form of BBA 1st to 4th semester of the new syllabus (as per this direction) for those courses only which are not considered to be equivalent courses with old syllabus (BBA CBS syllabus). The student will also be allowed to fill and submit the regular exam form semester V.

Situation IV: A students has not completed 2nd year of BBA as per CBS syllabus (introduced in 2016) but have cleared few of the courses of 2nd Year and is drop out for subsequent years of the previous syllabus (BBA CBS Syllabus)

A student who has passed 4 or more courses of BBA 2nd year under CBS Pattern Syllabus (Introduced in 2016) and has backlogs for remaining courses, shall be admitted to BBA 3rd Year but he/she must complete those courses which are not considered to be equivalent with the previous CBS pattern examination. In such a case a student will be required to take nominal admission to BBA 1st and 2nd year under this new direction by paying Rs. 500 for each year and will fill and submit the exam form of BBA 1st to 4th semester of the new syllabus (as per this direction) for those courses only which are not considered to be equivalent courses with old syllabus (BBA CBS syllabus). The student will also be allowed to fill and submit the regular exam form semester V.

A student has backlogs in 5 or more courses of BBA 2nd year under CBS Pattern Syllabus (Introduced in 2016) and has cleared the remaining courses. In such a

case a student will be required to take nominal admission to BBA 1st and 2nd year under this new direction by paying Rs. 500 for each year and will fill and submit the exam form of BBA 1st to 4th semester of the new syllabus (as per this direction) for those courses only which are not considered to be equivalent courses with old syllabus (BBA CBS syllabus). Such student shall be admitted to BBA 3rd Year only after successful completion of those courses which are not considered to be equivalent with the previous CBS pattern examination.

III. Equivalence of Subjects

The equivalence & eligibility for exemption of subjects for the students absorbed in the new course shall be as follows:

Name of Course in New Scheme (CBCS)	**Examination**	**Name of Equivalent Course in Old Scheme (2016)**	**Examination**
English – I	I	English	I
Evolution of Business	I	Evolution of Business and Commercial Geography	III
Foundation of Managerial Effectiveness*	I	NO	
MS Excel	I	Computer Applications for Business	I
Financial Accounting using Tally*	I	NO	
Foreign Language*	I	NO	
Aptitude Development I*	I	NO	
English – II	II	English	II
Fundamentals of Business Management	II	Fundamentals of Business Management	I
Cost and Management Accounting	II	Cost Accounting	I
Environmental Studies	II	Environment Management	III

Sociology*	II	NO	
Hospitality and Tourism*	II	NO	
Organizational Behaviour*	III	NO	
Managerial Economics	III	Micro-Economic Fundamentals	II
Business Analytics	III	Basic Statistical Techniques	III
Advanced Excel*	III	NO	
MS Word and Powerpoint*	III	NO	
Aptitude Development II*	III	NO	
Content Writing*	III	NO	
Healthy Living*	III	NO	
Fundamentals of Marketing Management	IV	Principles of Marketing Management	II
Fundamentals of Financial Management	IV	Principles of Financial Management	III
Fundamentals of HRM	IV	Principles of HRM	IV
Financial Wellbeing*	IV	NO	
Business Startup Skills	IV	Entrepreneurship Development	V
Business Psychology	IV	Introduction to Sociology and Psychology	IV
Indian Social Values and Business Ethics*	IV	NO	
Business Research Methods	V	Research Methodology	V
Holistic Development*	V	NO	

International Business Management	V	International Business Environment	V
Business Legislations	VI	Business Legislations	IV
Corporate Social Responsibility*	VI	NO	
Sales and Distribution Management	V	Fundamentals of Marketing Management	VI
Consumer Buying Behavior	V	Advanced Marketing Management	VI
IMC and Branding*	VI	NO	
Financial Mathematics	V	Fundamentals of Business Finance	VI
Financial Services Management	V	Advanced Financial Management	VI
Corporate Finance*	VI	NO	
Recruitment, Training and Development	V	Fundamentals of HRM	VI
Compensation and Benefit Management	V	Advanced HRM	VI
Job Analysis and PMS*	VI	NO	
Statistical Application and Analytics*	V	NO	
Data Visualization Techniques*	V	NO	
Data Warehousing and Mining*	VI	NO	

(*) All these subjects have no equivalent subjects in the BBA Previous Course (CBS Pattern) Examination (introduced in 2016). Hence, students desiring for absorption in New Course (CBCS Pattern) under this Direction are mandatorily required to appear for these subjects in respective semesters.

The above absorption scheme of B.B.A. shall be effective till the introduction of new Syllabus.

19. **Guidelines for Project Work:**

A. Objective

A Batch of maximum 4 students will be assigned a project in the 6th Semester of BBA and it will be pursued by them under the supervision of an internal supervisor. The objective of the Project Work is to help the students to develop their ability to apply multi-disciplinary concepts, tools and techniques to solve organizational problems and/or to evolve new/innovative theoretical framework.

B. Type of Project

The Project may take any one of the following forms:

i) Comprehensive case study (covering single organization/multifunctional area problem, formulation, analysis, and recommendations)

ii) Inter-organizational study aimed at inter-organizational comparison/ validation of theory/survey of management services.

iii) Evolution of any new conceptual / theoretical framework.

iv) Field study (Empirical study).

v) Software analysis, Design, and solutions for organizational achievement (Applicable to IT)

C. Selection of Project Topic:

- Project topic must be selected with respect to the programme of study and area selected by the student.
- Title of the project should clearly specify the objective and scope of the study. It should be specific and neither too vague nor centralistic. The topics should be designed meticulously. It can be designed like "Employee Welfare Measures" – A case study of XYZ Ltd.
- Project selection must be made in consultation with the supervisor who will act as a Project guide for the student.

D. Scope of Work

The student is expected to carry out following activities in the project:

1. Prepare a synopsis and get it approved by the supervisor as assigned by the respective Institutes.
2. Undertake a detailed literature survey on the subject matter.
3. Make relevant data collection/observation.
4. Consult experts in the field.
5. Visit related organizations/institutions/industries.
6. Compile data in proper format.
7. Make proper conclusions/recommendations.
8. Prepare a Project Report.
9. The volume of the project-report should be ranging from 60-80 pages.
10. Obtain approval of Project Report by project supervisor.
11. Submit ONE hard bound copies of the Project Report at the Institute.
12. Submission of the Project Report shall be one month prior to the date of the commencement of the 6th Semester Examinations for BBA.

E. General Format of the Report

The project report should preferably be written in the following format:

a) Executive Summary

b) Introduction to topic

c) Research Methodology
d) Analysis and Findings of the study
e) Conclusions and Recommendations of the study
f) Bibliography
g) Appendices – to include questionnaire if any

F. Examination and Evaluation

The Project is to be treated as a paper of study of the BBA-6th Semester comprising 200 marks. The external assessment shall be done based on the project report and Viva Voce. The Project shall be evaluated by an External examiner for 150 marks and of which 100 marks will be allocated to the Written Report Content and Presentation and 50 marks for Viva Voce. The Project work shall be evaluated by internal and external examiners for 100 marks (as mentioned above) at the respective institute / college as per the schedule fixed by the university. One such External Examiner shall not examine more than 20 Projects (groups) in one academic year.

20. Provision for Multiple Exit

The BBA program offered under this direction provides an opportunity to students for multiple exits from the program as per following conditions:

a. A student can exit the program after successful completion of 1st and 2nd Semester courses and obtaining 40 credits. Such a student is eligible to be awarded 'Certificate in Business Administration' by the University.
b. A student can exit the program after successful completion of 1st, 2nd, 3rd and 4th Semester courses and obtaining 80 credits. Such a student is eligible to be awarded 'Diploma in Business Administration' by the University.
c. A student who has completed the 3 years program and earned 120 credits will be considered eligible for award of 'Bachelor of Business Administration' degree by the University.
d. A student who wishes to exit the program before completion of 3 years is required to apply to the university through Principal.
e. A student who opted for exit from the program before completion of 3 years (a &b) above shall be eligible for admission to next year of the program in any subsequent academic session. However, if at the time of admission, if this scheme of examination is not in force, the student will have to complete the program according to the provisions made under the direction prevailing at the time of such admission.

21. Provision for Transfer of Credits

BBA program offered under this direction provides enhanced academic flexibility to students in terms of selecting the courses they want to learn. A student can opt for any course from any statutory/recognized University or any recognized online learning platform such as SWAYAM/NPTEL in lieu of a course (except Core Course and Discipline Specific Electives) mentioned in this scheme of examination. Similarly, a student can opt for transfer of credits by successfully completing the course recognized by the 'Department of Lifelong learning & Extension' of Rashtrasant Tukadoji Maharaj Nagpur University. The mechanism for transfer of credits earned through these courses to be adhered is mentioned here:

i. A student seeking for facility for transfer of credits earned from any other platform will have to mandatorily open an account with 'Academic Bank of Credits' and upload the credits so earned therein.

ii. Any Core Course or Discipline Specific Elective mentioned in this scheme of examination cannot be opted out by a student.

iii. A student can opt out any course other than Core Course/Discipline Specific Elective and earn equal number of credits by completing any ODL or Online course/s from any statutory/recognized University or any recognized online learning platform such as SWAYAM/NPTEL.

iv. A student can opt out any course other than Core Course/Discipline Specific Elective and earn equal number of credits by successfully completing the course recognized by the 'Department of Lifelong learning & Extension' of Rashtrasant Tukadoji Maharaj Nagpur University.

v. If a student is willing to opt out any such course, he/she will have to mention this while submitting the examination form to the University for respective semester.

vi. A certificate of completion of such an ODL/Online course shall be submitted by the student to the University through college before end term evaluation.

vii. Such a certificate shall mandatorily have the number of credits, duration of the course and grades/marks obtained by the student and shall preferably have a QR code for verification.

viii. The college shall submit the grades / marks obtained by the student to the University along with Internal Assessment marks for the concerned examination.

ix. If a student has opted for an ODL/Online course in a particular semester and failed to submit the certificate within prescribed time, the student will be marked for 'Absent' for a particular course in that examination. Such a student will be required to fill in the examination form in the consecutive attempt and submit the passing certificate to get his/her corrected result.

x. The procedure for transfer of credits mentioned under this direction is subject to the guidelines issued by the University in this regard and a separate direction for the same shall be issued by the University.

22. Eligibility for award of Degree:

To become eligible for award of 'Bachelor of Business Administration (BBA)' degree, a student must fulfil the following conditions:

a. A student must earn minimum 120 credits in not less than 3 years.
b. A student must successfully complete (pass) all Core Courses and Discipline Specific Electives mentioned in this direction.

23. This direction shall come into force phase wise from the academic session 2022-23

24. If any question of interpretation of any clause arises for this Direction & Appendix I & II the same shall be referred to the Dean, Faculty of Commerce and Management, whose decision shall be final and binding on all concerned.

Nagpur
Date: 20-10-22

(Dr. Subhash R. Chaudhari)
Vice-Chancellor

APPENDIX – 1

List of Core Courses, Ability Enhancement compulsory Courses, Skill Enhancement Courses, Discipline Specific Elective and Generic Electives

A) List of Core Courses

SN	Semester	Paper / Subjects
1	Sem I	English – 1
2		Evolution of Business
3	Sem II	English – 2
4		Fundamentals of Business Management
5		Cost & Management Accounting
6	Sem III	Organisational Behaviour
7		Managerial Economics
8	Sem IV	Fundamentals of Financial Management
9		Fundamentals of Marketing Management
10		Fundamentals of Human Resource Management
11	Sem V	Business Research Methods
12		Internship
13	Sem VI	Business Legislation
14		Corporate Social Responsibility
15		Project Work

B) List of Ability Enhancement Compulsory Courses and Skill Enhancement Courses:

AECC Ability Enhancement Compulsory Courses (Sem I)	Foundations of Managerial Effectiveness
AECC Ability Enhancement Compulsory Courses (Sem II)	Environmental Studies

C) List of Skill Enhancement Courses

SEC – Skill Enhancement Courses Any Two (Sem I)	Foreign Language – French, German, Japanese
	Basics of MS Excel
	Aptitude Development – 1
	Financial Accounting using Tally
SEC – Skill Enhancement Courses Any Two (Sem III)	Data Analytics
	MS Word and PowerPoint
	Aptitude Development -2
	Advanced MS Excel

D) List of DSE (Discipline Specific Electives) / Specializations: The student shall select **any one group** out of the four DSE

Group 1 – Marketing Management	Group 2- Financial Management	Group 3 – HRM	Group 4- Business Analytics
Sales & distribution Management	Financial Mathematics	Recruitment, Training & Development	Statistical Applications & Analytics
Consumer Buying Behaviour	Financial Services Management	Compensation & Benefit Management	Data Visualization Techniques
IMC & Branding	Corporate Finance	Job analysis & PMS	Data Warehousing & Mining

E) List of Generic Electives (GE):

SN	**Semester**	**Courses**
1	Sem I	-
2		-
3	Sem II	Sociology **OR**
4	**(Anyone)**	Hospitality and Tourism
5	Sem III	Content Writing **OR**
6	**(Anyone)**	Healthy Living
7	Sem IV	Financial Wellbeing **OR**
8	**(Anyone)**	Business Start-up skills
9	Sem IV	Business Psychology **OR**
10	**(Anyone)**	Indian Social Values and Business Ethics
11	Sem V	Holistic Development **OR**
12	**(Anyone)**	International Business Management
13	Sem VI	-
14		-

The Generic Elective Courses shall be offered as per table above. The student shall have an option to select any one course out of two courses offered by the university as mentioned in above table. While Semester I and Semester VI do not have any Generic Electives, Semester IV has 2 groups of Generic Electives on offer.

If the student wishes to opt for any course, other than offered by the University, He / she can register for any other equivalent credit ODL (Open and Distance Learning) courses and submit the passing certificate.

Appendix – 2
Detailed Syllabus and Question Paper Pattern
BBA – Semester – I

Course Type: Core Course

Course Name: Evolution of Business

Course Code: 1T2

Course Outcomes

CO1	The Students will be able to **relate** the reasons of World War and its effect on global business environment.
CO2	The Student will be able to **describe** Cold war and OPEC crises on International Business
CO3	The student will be able to **differentiate** the Indian Business structure between Pre and Post Independence
CO4	The student will be able to **analyse** the contribution of various sectors in Indian Business
CO5	The student will be able to **summarise** Global Business and Indian Business Scenarios

Unit I– Evolution of Business & Economy: Industrial revolution (1820-1850); Rise of European business (1850-1900); Impact of First World War on International Business; The Great Depression and its effect on International Business; Impact of Second World War on International Business.

Unit II – Evolution of Business in post WWII Scenario: Cold War and its impact on International Business; OPEC Crises and its impact on International Business; Gulf War and its impact on International Business; Dawn of IT era and its impact on business & economy

Unit – III – Evolution of Indian Business: Indian Business: Changes and Styles, East India Company's early ventures in India, Development of Banking and Railways in India, Indian Economy and Business during WW I and WW II, Independence & Industrial Planning, 1947-1960: Origin and evolution of PSUs, Liberalisation of the Indian Economy, 1990s

Unit IV –Industries : Role of industries in Economic development; Factors of industrial location - Raw material, power, market, transport and communication, land capital, technology; Webers theory of industrial location, Iron & steel industry - India & USA, Cotton textile industry - India & USA. Engineering industry in India - Major industrial regions of the world and India.

Reference Books:

1. Order and Disorder after the Cold War – Brad Roberts, MIT Press
2. Medha Kudaisya (ed) The Oxford India anthology of business history (Oxford University Press: 2011)
3. Atul Kohli, Democracy and development in India: from socialism to pro–business (OUP: 2010)
4. Claude Markovits, Merchants, traders, entrepreneurs: Indian business in the colonial era (Palgrave Macmillan: 2008)

Question Paper Pattern for Semester End Examination

Q1. Very Short Answer type questions (4-5 lines/ up to 30 words). 8 Questions of 2 marks each. 2 questions from each unit

A – 2 Marks
B – 2 Marks
C – 2 Marks
D – 2 Marks
E – 2 Marks
F – 2 Marks
G – 2 Marks
H – 2 Marks

Q2. Short Answer type questions (6-8 lines/ up to 50 words). 8 Questions of 3 marks each. 2 questions from each unit

A – 3 Marks
B – 3 Marks
C – 3 Marks
D – 3 Marks
E- – 3 Marks
F- – 3 Marks
G- – 3 Marks
H- – 3 Marks

Q3. Long Answer type question (up to 300 words for 5 marks question and up to 500 words for 10 marks question) from Unit 1 with internal Choice

A – 5 Marks
B – 5 Marks
OR
C – 10 Marks

Q4. Long Answer type question (up to 300 words for 5 marks question and up to 500 words for 10 marks question) from Unit 3 with internal Choice

A – 5 Marks
B – 5 Marks
OR
C – 10 Marks

Q5. Long Answer type question (up to 300 words for 5 marks question and up to 500 words for 10 marks question) from Unit 3 with internal Choice

A – 5 Marks
B – 5 Marks
OR
C – 10 Marks

Q6. Long Answer type question (up to 300 words for 5 marks question and up to 500 words for 10 marks question) from Unit 4 with internal Choice

A – 5 Marks
B – 5 Marks
OR
C – 10 Marks

Course Type: Skill Enhancement Course

Course Name: Foreign Language-French
Course Code: 1T3-A

Unit I: The alphabets, accents, numbers, articles- definite / indefinite

Unit II: Days of the week, months, date; Nouns and Prepositions; glossary of general communication, auxiliary verbs; Adjectives of professions/ nationality; time

Unit III: 1st group verbs –Feminine and Phralisation of nouns; Feminine and Pluralisation of Adjectives; 2nd group verb, Formules de politesse

Unit IV: Future and past tense; currency / weight and measures; Negation and interrogation; Adverbs and Pronouns; Basic French conversation with business delegates; IIIrd group verbs; Translation

Recommended books:

1. Le Nouveau Sans Frontiers 1 PB Paperback – 1 January 2012, by Francais M D (Author), Goyal Saab-delhi; 1992nd edition (1 January 2012)
2. Larousse Pocket Dictionary: Pocket French Dictionary Paperback – 1 September 2011, Packer : Goyal Publisher & Distributor Pvt Ltd

Question Paper Pattern

Q1. 16 questions of 1 mark each (4 questions per unit) 1 x 16 = 16
Q2. 16 questions of 2 marks each (4 questions per unit) 2 x 16 = 32
Q3. 8 questions out of 12 questions (internal choice) of 4 marks each (3 questions per unit)

A. 4 marks question from unit 1
B. 4 marks question from unit 1
C. 4 marks question from unit 1

Solve Any Two

D. 4 marks question from unit 2
E. 4 marks question from unit 2
F. 4 marks question from unit 2

Solve Any Two

G. 4 marks question from unit 3
H. 4 marks question from unit 3
I. 4 marks question from unit 3

Solve Any Two

J. 4 marks question from unit 4
K. 4 marks question from unit 4
L. 4 marks question from unit 4

Solve Any Two

Course Type: Skill Enhancement Course
Course Name: Foreign Language-German
Course Code: 1T3-B

Unit I: The alphabets, accents, numbers, articles- definite / indefinite, Days of the week, months, date; glossary of general communication, Grammar: articles, plural, the verbs to have and to be

Unit II: Everyday life, making appointments / Grammar: Nouns and Prepositions am, um, von..bis; modal verbs, possessive articles

Unit III: Auxiliary verbs; Adjectives of professions/ nationality; time; Grammar: separable verbs, the accusative, past tense of to have and to be

Unit IV: Comprehension of simple texts and précis writing including simple translation from German to English and vice-versa

Recommended books:

1. Sprachkurs Deutsch I, Verlag Moritz Diesterweg, Frankfurt am Main 1989 (available with Goyal Saab Publishers, New Delhi)
2. Lernziel Deutsch I, Max Hueber Verlag, 1991
3. NETZWERK Deutsch als Fremdsprache A1(Goyal, New Delhi, 2015)
4. Schulz-Griesbach: Deutsch als Fremdsprache. Grundstufe in einem Band (for Grammar)

Question Paper Pattern

Q1. 16 questions of 1 mark each (4 questions per unit) 1 x 16 = 16
Q2. 16 questions of 2 marks each (4 questions per unit) 2 x 16 = 32
Q3. 8 questions out of 12 questions (internal choice) of 4 marks each (3 questions per unit)

A. 4 marks question from unit 1
B. 4 marks question from unit 1
C. 4 marks question from unit 1

} **Solve Any Two**

D. 4 marks question from unit 2
E. 4 marks question from unit 2
F. 4 marks question from unit 2

} **Solve Any Two**

G. 4 marks question from unit 3
H. 4 marks question from unit 3
I. 4 marks question from unit 3

} **Solve Any Two**

J. 4 marks question from unit 4
K. 4 marks question from unit 4
L. 4 marks question from unit 4

} **Solve Any Two**

Course Type: Skill Enhancement Course

Course Name: Foreign Language-Japanese
Course Code: 1T3-C

Unit I:

- Basic self-introduction, talking about one's family
- Daily greetings and expressions; Basic vocabulary for day-to-day use
- Simple sentences: Basic Q and A about everyday situations

Unit II:

- Numbers (till 5 digits)
- Days of the week, months, dates, clock time
- Simple sentences: Talking about one's likes and dislikes, phrases for shopping

Unit III:

- Introduction to the scripts of Japanese Language
- Reading and writing Hiragana script
- Reading and writing basic words using Hiragana

Unit IV:

- Basic introduction about Japan and its history, geography, culture and traditions

Recommended books:

1. Marugoto Starter (A1) Rikai - Course Book for Communicative Language Competences, by TheJapan Foundation, Goyal Publishers & Distributors Pvt. Ltd (ISBN: 9788183078047)
2. Japanese Kana Script Practice Book – Vol. 1 Hiragana, by Ameya Patki, Daiichi JapaneseLanguage Solutions (ISBN: 9788194562900)

Question Paper Pattern

Q1. 16 questions of 1 mark each (4 questions per unit) 1 x 16 = 16
Q2. 16 questions of 2 marks each (4 questions per unit) 2 x 16 = 32
Q3. 8 questions out of 12 questions (internal choice) of 4 marks each (3 questions per unit)

A. 4 marks question from unit 1
B. 4 marks question from unit 1 } **Solve Any Two**
C. 4 marks question from unit 1
D. 4 marks question from unit 2
E. 4 marks question from unit 2 } **Solve Any Two**
F. 4 marks question from unit 2
G. 4 marks question from unit 3
H. 4 marks question from unit 3 } **Solve Any Two**
I. 4 marks question from unit 3
J. 4 marks question from unit 4
K. 4 marks question from unit 4 } **Solve Any Two**
L. 4 marks question from unit 4

Course Type: Skill Enhancement Course

Course Name: Aptitude Development – 1
Course Code: 1T3 – D

Course Outcomes

CO1	The Students will be able **to practice** effective communication in real life situations
CO2	The students will be able **to recognize** problem solving skills
CO3	The students will be able **to infer** logical reasoning techniques
CO4	The students will be able **to explain and infer** data analytical techniques
CO5	The Students will be able **to prepare themselves** for various competitive exams and different placement aptitude test as well.

Unit 1: Verbal Ability: Introduction of Parts of speech, What is noun, Kinds of Noun, Rules & Application, Definition of Pronoun, Examples, Rules & Application, Definition of Verb, Kinds of Verb, Rules & Application, Definition of Tense, Different types of Tenses, Examples, Rules & Application, Definition of Adjective, Kinds of Adjective, Rules & Application, Definition of Adverb, Kinds of Adverb, Rules & Application, Definition of Preposition, Examples , Rules & Application, Definition of Interjection, Examples, Rules & Its Application, Definition of Conjunction, Examples, Rules & Application, Different types of Articles, Examples, Rules & Application English Grammar. News paper reading (Economic Times).

Unit 2: Quantitative Aptitude I: Average- Concept on average, different missing numbers in average estimation, shortcuts & their application. Mixture & Allegation – Proportion & mixtures in percentages, populations & liquids, shortcuts & their application. Time & Work- Basic concept, Chain rule, formulae & their application. Pipes & cistern. Time and distance - Basic concept, Different problems & their shortcut tricks. Time & Speed & Tides- concept of speed, time & Distance, relative speed, Upstream & Downstream, formulae & their application, Non Verbal Reasoning, Image Formation, Water –Images, Mirror Image, Image completion, Paper Cutting And Folding

Unit 3: Logical reasoning: Coding & Decoding, series missing numbers, odd one out, cause effect, Direction & Ranking, Blood relations, Syllogism, Assumptions, Premise, and Conclusion, Assertions and Reasoning, Resume writing and LinkedIn Profiles.

Unit 4: Data Interpretation: Table Charts, Line Charts, Pie Charts, Bar Charts, Tabular Form, Missing Data Interpretation, Radar/Web.

Reference Books:

- Objective English- Arihant Publications
- Data Interpretation - R.S Agarwal
- Objective English Grammar- Kiran Publications
- Verbal & non-verbal reasoning- R.S Agarwal
- Quantitative Aptitude- R.S Agarwal
- Analytical Reasoning –Peeyush Bhardwaj

Question Paper Pattern

The end semester examination of Aptitude Development-I course shall have following question pattern.

MCQ Test: 40 Multiple Choice Questions of 2 mark each. 40 questions would be prepared covering all four units of the course with equal weightage. The MCQ based test can be taken either offline mode or online mode as per the available resources with the colleges. **Duration of the examination will be of 2 Hours.**

Course Type: Skill Enhancement Course
Course Name: Basics of MS Excel
Course Code : 1T4-A

Course Outcomes	
CO1	Student will be able to perform operations using Excel tabs and tools effectively.
CO2	Student will be able to reorganize the data with the help of Excel and compute various statistical parameters using Formulas and Functions
CO3	Student will demonstrate ability to work effectively on data sheet with the knowledge of Excel
CO4	Student will demonstrate the ability to construct Pivot Tables and perform operations on given data
CO5	Student will demonstrate the ability to present data in charts and graphs using Excel skills

UNIT-I

Introduction to Excel - About Excel, Features of Ms-Excel, **The Excel Environment**; Quick Access Toolbar, Title Bar, Ribbon Tabs, Name Box, Formula Bar, Scroll bars, Status bar, Page views, Zoom Tool. Ribbon Display Options button, Excel Workspace, Cells. **Creating Worksheets and Workbooks –**Creating and Renaming Worksheets, saving workbook, Copying and moving a worksheet. Inserting and deleting rows and columns, Inserting header and footer in a worksheet.

Formatting Cells; Selecting cells, entering text and numeric data into the cells, applying fonts and background colour, aligning data, merging cells, text wrapping, Number Formatting-Text, Percentage, Currency, Dates. Creating series, resizing columns width and rows height. **Excel Shortcuts –** Using Keyboard Shortcuts.

UNIT-II

Excel Formulas and Functions- Performing basic mathematical operations using formula, applying formulas using cell names and range, Formatting text using different text functions, Performing calculation using Numerical and Mathematical functions. If function, Logical functions-AND, OR, NOT.

Tables-Creating a Table, Applying styles to tables, Adding and Editing Records, Inserting Records and Fields, Deleting Records and Fields.

UNIT-III

Filters, Grouping and Charts in Excel- Filtering records, Sorting data by single and multiple columns, Custom sort, Changing sort order, Eliminating duplicate records.

Chart Preparation - Creating Charts, Selecting Charts and Chart Elements, Moving and Resizing Charts, Changing the Chart Type. **Apply Custom Data Formats and Layouts**- Changing the Data Range, Switching Column and Row Data, Choosing a Chart Layout, Choosing a Chart Style, Printing Charts, Deleting Charts, Applying Word art Styles to Chart Elements.

UNIT-IV

Introduction to Pivot Tables- Creating Pivot Tables and Pivot Charts, manipulating a PivotTable, Changing Calculated Value Fields, Applying PivotTable Styles, creating a PivotChart, Setting PivotTable Options.

Text Books

1. Excel 2019 All in one By Lokesh Lalwani, BPB Publications ISBN 9789388511582

References:

2. Microsoft® Excel® 2016 Bible Published by John Wiley & Sons, Inc., ISBN: 978-1-119-06751-1
3. Microsoft Official Academic Course Microsoft excel 2013, 2014 by John Wiley & Sons, ISBN 978-0-470-13308-8
4. Statistics for Managers: Using Microsoft Excel, Fifth Edition by David M. Levine, David F. Stephan, Timothy C. Krehbiel, and Mark L. Berenson, ISBN 0-536-04080 X
5. Microsoft Excel 2016 Step by Step - Curtis Frye, Microsoft Press, ISBN: 978-0-7356-9880-2

6. Student Guide 40571A Microsoft Excel Expert 2019: https://www.sos.wa.gov/_assets/library/libraries/projects/ita/40571a_microsoft_excel_expert_2019_ebook.pdf

Question Paper Pattern

The end semester examination of Basics of MS Excel Course shall have following question pattern.

Part I – MCQ Test: 40 Multiple Choice Questions of 1 mark each. 40 questions would be prepared covering all four units of the course. The MCQ based test can be taken in offline mode or online mode as per the available resources with the colleges. **Duration for solving 40 questions would be 1.5 Hours.**

Part II – Workbook Submission: A workbook will have to be submitted by the students. This workbook will carry 40 marks. There will be 8-10 practical questions to be performed using MS Excel and the output will be printed and attached in the workbook.

Course Type: Skill Enhancement Course
Course Name: Financial Accounting using Tally
Course Code : 1T4-B

Course Outcomes	
CO1	Student will acquire knowledge and understanding of Basics of Financial accounting and computerised Accounting
CO2	Given the day-wise transactions of firm, the students will be able to prepare ledger and group and will be able to create various vouchers, using Tally software
CO3	Given the details about the day-wise transactions of a firm, the student will be able to create bill wise detail based on stock.
CO4	Given the details about transactions, students will be able to prepare profit & Loss A/C report and balance sheet
CO5	Given the situation and data students will be able to perform operations in Tally

UNIT I Introduction to Accounting, Advantages of Accounting, Books of accounts, Classification of Accounts, Financial Statements, Inventory management, Computerized Accounting, Advantages of Computerized Accounting, Manual Vs Computerized Accounting, Need of Computerized Accounting, Accounts Organization.

UNIT II Introduction to Tally.ERP 9, Features of Tally, Tally ERP9 Components, Tally ERP 9 Window, Gateway of Tally, Creation, alteration and deletion of company, Ledger, Group, Voucher-Types of Voucher, Purchase Orders, Sales order, Budget.

UNIT III Inventory in Tally, Stock Groups, Stock Categories, Stock Items, Units of Measure, Godowns, Cost Centre, Cost Category., Stock Summery Report.

UNIT IV Working with Balance Sheet, working with Day Book Report, working with Profit & Loss A/c Report, working with Trial Balance Report, Ratio Analysis, Bank reconciliation, Tally Audit, Backup & Restore Data in tally.

Text Book

1. Accounting with Tally: K.K. Nadhani, BPB Publication.
2. Tally Tutorial:K.K. Nadhani and A.K. Nadhani, BPB Publication.

Reference Books:

1) Peter Norton's Computer fundamentals, fourth Edition – McGraw Hill
2) Computer fundamentals – Ravichandran D.
3) Tally Financial Accounting Program – Current Volume – Tally Press
4) Tally for Beginners – Tally Press

Question Paper Pattern

The end semester examination of Basics of Financial Accounting using Tally course shall have following question pattern.

Part I – MCQ Test: 40 Multiple Choice Questions of 1 mark each. 40 questions would be prepared covering all four units of the course. The MCQ based test can be taken offline or online as per the available resources with the colleges. **Duration for solving 40 questions would be 1.5 Hours.**

Part II – Workbook Submission: A workbook will have to be submitted by the students. This workbook will carry 40 marks. There will be 8-10 practical questions to be performed using Tally 9.0 package and the output will be printed and attached in the workbook.

Course Type: Ability Enhancement Compulsory Course
Course Name: Foundation of Managerial Effectiveness
Course Code: 1T5

Course Outcomes

CO1	The Students will be able **to relate** the concept of skill development with managerial skills
CO2	The students will be able **to interpret** the problem solving technique with the help of Johari Window

CO3	The students will be able **to analyse** group behaviour and explain of SWOT Analysis
CO4	The student will be able **to differentiate** between different structures of organisation and classify between empowerment and delegation
CO5	The students will be able **to point out** the effective managerial traits and ways to improve them

Unit 1:

Importance of competent managers, Introduction to skills & personal skills, skills of effective managers, developing self awareness on the issues of emotional intelligence, self learning styles, values, Change – Definition, advantages, and disadvantages of change, attitude towards change.

Unit 2:

Problem solving and building relationship: Problem solving, creativity, innovation, steps of analytical problem solving (Johari Window), limitations of analytical problem solving. Learning - learning of skills and applications of skills, Skills development and application.

Unit 3:

Group and Group Behaviour: Nature of group, group membership, stages of group development, characteristics of the group, types of groups. Team building: Developing teams and team work, advantages of team, leading team, team membership. Swot analysis – definition, basic elements, advantage, limitations, tips for conducting swot.

Unit 4:

Structure and Nature of organization. Matrix organization. Formal and informal organizations. Organization effectiveness- Criteria for evaluating effectiveness. Organizational life cycles. Empowering and delegating: Meaning of empowerment, dimensions of empowerment, how to develop empowerment, inhibitors of empowerment, delegating works.

Reference Books:

1. Essential of Business Administration - K.Aswathapa Himalaya Publishing House
2. Management: Concept and Strategies By J. S. Chandan, Vikas Publishing
3. Principles of Management, By Tripathi, Reddy Tata McGraw Hill
4. Principles of Management By Ramasamy T, Himalaya Publishing House
5. Principles of Management, Dr.Neeru Vashisht & Dr.Namita Rajput, Taxmann
V.S.P. Rao Managerial Skills Excel Books,2010, New Delhi

Question Paper Pattern for Semester End Examination

Q1. Very Short Answer type questions (2-3 lines/ up to 30 words). 8 Questions of 2 marks each. 2 questions from each unit

A – 2 Marks
B – 2 Marks
C – 2 Marks
D – 2 Marks
E- – 2 Marks
F- – 2 Marks
G- – 2 Marks
H- – 2 Marks

Q2. Short Answer type questions (6-8 lines/ up to 60 words). 8 Questions of 3 marks each. 2 questions from each unit

A – 2 Marks
B – 2 Marks
C – 2 Marks
D – 2 Marks
E- – 2 Marks
F- – 2 Marks
G- – 2 Marks
H- – 2 Marks

Q3. Long Answer type question (up to 300 words for 5 marks question and up to 500 words for 10 marks question) from Unit 1 with internal Choice

A – 5 Marks
B – 5 Marks
OR
C – 10 Marks

Q4. Long Answer type question (up to 300 words for 5 marks question and up to 500 words for 10 marks question) from Unit 2 with internal Choice

A – 5 Marks
B – 5 Marks
OR
C – 10 Marks

Q5. Long Answer type question (up to 300 words for 5 marks question and up to 500 words for 10 marks question) from Unit 3 with internal Choice

A – 5 Marks
B – 5 Marks
OR
C – 10 Marks

Q6. Long Answer type question (up to 300 words for 5 marks question and up to 500 words for 10 marks question) from Unit 4 with internal Choice

A – 5 Marks
B – 5 Marks
OR
C – 10 Marks

BBA (CBCS)– Semester – II

Course Type: Core Course
Course Name: Fundamentals of Business Management
Course Code: 2T2

Course Outcomes

CO1	The student will be able to **identify** different functions of management and management thoughts.
CO2	The student will be able to **differentiate** between Management and Administration as well as **identify** the skills required for a manager.
CO3	The student will be able to **Outline and illustrate** plans for various activities.
CO4	The Student will be able to **develop** competency of decision making while working in a group.
CO5	The student will be able to **apply** various management principles in his/ her day-to-day life

Unit I: Introduction -Nature, function, definition and importance of management, Definition, nature, purpose and scope of management, Functions of a manager, is management a science or art? Development of Management Thought -Scientific management; Contribution of Taylor, Fayol, Mary Follet, Elton Mayo; Hawthorne experiments, Contingency approach.

Unit II: Management and Administration-Management and administration, Management as a profession, Professionalism of management in India, Management ethics and management culture, Skills required of manager, Classification of skills, Methods of skills development.

Unit III: Management Planning-Concept of planning, objectives, Nature, Types of plan, Stages involved in planning, Characteristics of a good plan, Importance, Limitations of planning, Making planning effective, Strategic planning in Indian Industry.

Unit VI: Decision Making-Concept, characteristics of decisions, Types of decisions, Steps Involved in decision making, Importance of decision making, Methods of decision making, Committee Decision Making. Organisation -Concepts, Principle of organization, Importance, Features of good organization structure, Types of Organisation structure.

Reference Books:

1. Essential of Business Administration - K.Aswathapa Himalaya Publishing House
2. Management: Concept and Strategies By J. S. Chandan, Vikas Publishing
3. Principles of Management, By Tripathi, Reddy Tata McGraw Hill
4. Principles of Management By Ramasamy T, Himalaya Publishing House
5. Principles of Management, Dr.Neeru Vashisht & Dr.Namita Rajput, Taxmann

Question Paper Pattern for Semester End Examination

Q1. Very Short Answer type questions (4-5 lines/ up to 30 words). 8 Questions of 2 marks each. 2 questions from each unit

A – 2 Marks
B – 2 Marks
C – 2 Marks
D – 2 Marks
E – 2 Marks
F – 2 Marks
G – 2 Marks
H – 2 Marks

Q2. Short Answer type questions (6-8 lines/ up to 50 words). 8 Questions of 3 marks each. 2 questions from each unit

A – 3 Marks
B – 3 Marks
C – 3 Marks
D – 3 Marks
E- – 3 Marks
F- – 3 Marks
G- – 3 Marks
H- – 3 Marks

Q3. Long Answer type question (up to 300 words for 5 marks question and up to 500 words for 10 marks question) from Unit 1 with internal Choice

A – 5 Marks
B – 5 Marks
OR
C – 10 Marks

Q4. Long Answer type question (up to 300 words for 5 marks question and up to 500 words for 10 marks question) from Unit 3 with internal Choice

A – 5 Marks
B – 5 Marks
OR
C – 10 Marks

Q5. Long Answer type question (up to 300 words for 5 marks question and up to 500 words for 10 marks question) from Unit 3 with internal Choice

A – 5 Marks
B – 5 Marks
OR
C – 10 Marks

Q6. Long Answer type question (up to 300 words for 5 marks question and up to 500 words for 10 marks question) from Unit 4 with internal Choice

A – 5 Marks
B – 5 Marks
OR
C – 10 Marks

Course Type: Core Course

Course Name: Cost and Management Accounting

Course Code: 2T3

Course Outcomes:

CO-1	Given the data about the various cost student will be able to classify the elements of cost and also able to prepare cost sheet, tender/Quotation for various business proposals. Given the data of profit as per cost book and profit as per financial book the student will be able to prepare reconciliation statement form the same.
CO-2	Given the information about the each process through which a product has to pass, a student will able to compute the cost of each process, total cost of product and also able to compute the Value of abnormal loss and abnormal gain. Given the cost data about the transport vehicle (Goods and Passenger) the students will be able to **compute** the cost & profit of an operating service.
CO-3	Given the information about Cost, Volume & Profit student will be able Compute of Break Even Point, Profit Volume Ratio, Margin of Safety etc and also able use marginal costing for decision making purpose which includes a range of decisions such as Closing down a plant, dropping a product line, make or buy decisions, selection of suitable product mix, desired level of profits etc.
CO-4	Given the data about the various cost/Receipt and payments the students will be able **to prepare** budgets for forecasting cost structure at various production capacities and cash positions for a specific duration
CO-5	The students will be able to **apply** the concept of costing in ascertainment of cost, computation of profit and business forecasting.

Unit 1: Introduction to cost accounting - Meaning of Cost, Costing and Cost Accounting, Features, Scope and Functions of Cost Accounting, Advantages and Limitations of Cost Accounting; Concept of Cost; Analysis and Classification of Costs; Elements of Cost; Preparation of Cost Sheet (Statement of Cost); Quotations and tender. Introduction and need for reconciliation between financial accounts and cost account, reasons for disagreement in Profit; Preparation of Reconciliation Statement.

Unit 2: Process Costing - Meaning, features and applicability, difference between process and job costing, wastage and by-products, normal and abnormal loss. Preparation of process accounts (up to abnormal loss and abnormal gain only). **Operating Costing-** Classification of costs, features of operating costing: Preparation of log sheet for Transport (Goods and Passenger) costing only.

Unit 3: Marginal Costing and decision making - Introduction, Application of Marginal costing in terms of cost control, level of activity planning- Break-even-analysis: Application of BEP for various business problems in terms of profit planning, closing down a plant, dropping a product line, make or buy decisions, selection of suitable product mix, desired level of profits, closing down or suspending activities.

Unit 4: Budget and Budgetary Control- Concepts, Types of Budgets, Budgetary Control, Types of budgets, Advantage and limitations of budgets, Simple problems based on Flexible and Cash Budget, Basic concept of zero-base budgeting.

Reference Books:

1. Cost Accounting, Text and Problems, M.C Shukla, TS Grewal and MP Gupta, S Chand Publications
2. Cost Accounting, RSN Pillai and V. Bhagwathi, S. Chand Publication
3. Management Accounting, Bhagwati & Pillai, Second Edition, S. Chand &. Company ltd.
4. Taxman's Cost & Management Accounting – A student-oriented book with illustrations Ravi M Kishore, 6th Edition, Taxmann publication
5. Cost and Management Accounting- Theory, Problems and Solutions, M N Arora, 2019 Edition, Himalaya Publication.

Question Paper Pattern for Semester End Examination

Q1. Very Short Answer type questions (4-5 lines/ up to 30 words). 8 Questions of 2 marks each. 2 questions from each unit

A – 2 Marks
B – 2 Marks
C – 2 Marks
D – 2 Marks
E – 2 Marks
F – 2 Marks
G – 2 Marks
H – 2 Marks

Q2. Short Answer type questions (6-8 lines/ up to 50 words). 8 Questions of 3 marks each. 2 questions from each unit

A – 3 Marks
B – 3 Marks
C – 3 Marks
D – 3 Marks
E- – 3 Marks
F- – 3 Marks
G- – 3 Marks
H- – 3 Marks

Q3. Long Answer type question (up to 300 words for 5 marks question and up to 500 words for 10 marks question) from Unit 1 with internal Choice

A – 5 Marks
B – 5 Marks
OR
C – 10 Marks

Q4. Long Answer type question (up to 300 words for 5 marks question and up to 500 words for 10 marks question) from Unit 3 with internal Choice

A – 5 Marks
B – 5 Marks
OR
C – 10 Marks

Q5. Long Answer type question (up to 300 words for 5 marks question and up to 500 words for 10 marks question) from Unit 3 with internal Choice

A – 5 Marks
B – 5 Marks
OR
C – 10 Marks

Q6. Long Answer type question (up to 300 words for 5 marks question and up to 500 words for 10 marks question) from Unit 4 with internal Choice

A – 5 Marks
B – 5 Marks
OR
C – 10 Marks

Course Type: Ability Enhancement Compulsory Course
Course Name: Environmental Studies (AECC)
Course Code: 2T4

Course Outcomes

CO1	The Students will be able **to recognise** the importance of environmental studies and various natural recourses
CO2	The students will be able **to illustrate** various types of pollution and its causes and their control measures
CO3	The students will be able **to point out** the reasons of population growth and its impact on environment.
CO4	The students will be able **to identify and explain** the Social issues affecting environment
CO5	The students will be able **to relate** the environmental issues and act on their own level to protect it.

Unit I: Introduction to Environment Studies: Definition, Scope importance, Need for public awareness, sustainable development, Natural Resources- renewable and non- renewable resources, role of individual in conservation of natural resources(Forest, water, land, energy, mineral)

Unit II: Environment Pollution: Types of pollution- air, water, soil, noise, thermal and Nuclear, causes effects and control measures, Global warming, green house effect, Ozone layer depletion, Acid rains

Unit III: Human Population: Global population growth, variations among nations, Population explosion-causes and impact, Family welfare Programs-methods of sterilization; Infectious diseases, water related diseases, risk due to chemicals in food, Cancer and environment

Unit IV: Social Issues in Environment: Construction of dams: problems and concerns of resettlement, rehabilitation of affected people; Environmental ethics– issues and possible solutions, resource consumption patterns and need for equitable utilization; Equity disparity in western and eastern countries; Urban and rural equity issues; Need for gender equity.

Reference Books:

1. A text book of environmental by K M Agrawal, P K Sikdar, S C Deb", published by Macmillan

2. Environment management by N K Uberoi", published by Excel Books

3. Environment management by Dr. Swapan Deb", published by Jaico Publishing House.

4. Environmental Management by S K Agrawal", published by A.P.H. publishing Corporation.

Question Paper Pattern for Semester End Examination

Q1. Very Short Answer type questions (4-5 lines/ up to 30 words). 8 Questions of 2 marks each. 2 questions from each unit

A – 2 Marks
B – 2 Marks
C – 2 Marks
D – 2 Marks
E – 2 Marks
F – 2 Marks
G – 2 Marks
H – 2 Marks

Q2. Short Answer type questions (6-8 lines/ up to 50 words). 8 Questions of 3 marks each. 2 questions from each unit

A – 3 Marks
B – 3 Marks
C – 3 Marks
D – 3 Marks
E- – 3 Marks
F- – 3 Marks
G- – 3 Marks
H- – 3 Marks

Q3. Long Answer type question (up to 300 words for 5 marks question and up to 500 words for 10 marks question) from Unit 1 with internal Choice

A – 5 Marks

B – 5 Marks

OR

C – 10 Marks

Q4. Long Answer type question (up to 300 words for 5 marks question and up to 500 words for 10 marks question) from Unit 3 with internal Choice

A – 5 Marks

B – 5 Marks

OR

C – 10 Marks

Q5. Long Answer type question (up to 300 words for 5 marks question and up to 500 words for 10 marks question) from Unit 3 with internal Choice

A – 5 Marks

B – 5 Marks

OR

C – 10 Marks

Q6. Long Answer type question (up to 300 words for 5 marks question and up to 500 words for 10 marks question) from Unit 4 with internal Choice

A – 5 Marks

B – 5 Marks

OR

C – 10 Marks

Course Type: Generic Elective
Course Name: Sociology
Course Code: 2T5 – A

Course Outcomes:

CO1	The student will be able to identify the subject matter of sociology as a science
CO2	The students will be able to relate various domains of social sciences with sociology
CO3	The students will be able to interpret elements of culture and society in development of value system
CO4	The Students will be able to explain contribution of social institutions in social development
CO5	The student will be able to examine his / her role in community in terms of society, religion, caste, region, gender and polity.

Unit 1:

Characteristics of sociology as a science, Relationship of sociology with other social sciences – Anthropology, History, Economics, Political Science, Psychology.

Unit 2:

Focus of Studies in Sociology – Group: - Primary and secondary groups, their characteristics and importance in individual's life, In-groups, out groups and reference groups.

Unit 3:

Culture and Society – Definition and meaning and characteristics of culture, Material and non material culture, cultural lag, Elements of culture – Cognitive elements, beliefs, values, and norms and signs

Unit 4

Socialisation – Definition, meaning, and process of socialisation, Agents of Socialisation, Family, peer group and School, Stages of Socialisation.

Reference Books:

1. Bottomore, T. B., Sociology: A guide to problems and literature, George Allen and Unwin (India) Bombay, 1972

2. Inkeles, Alex, What is Sociology? Prentice Hall India, New Delhi 1987

3. Jayaram N. Introductory Sociology – Macmillan India, Madras, 1988

Question Paper Pattern for Semester End Examination

Q1. Very Short Answer type questions (4-5 lines/ up to 30 words). 8 Questions of 2 marks each. 2 questions from each unit

A – 2 Marks
B – 2 Marks
C – 2 Marks
D – 2 Marks
E – 2 Marks
F – 2 Marks
G – 2 Marks
H – 2 Marks

Q2. Short Answer type questions (6-8 lines/ up to 50 words). 8 Questions of 3 marks each. 2 questions from each unit

A – 3 Marks
B – 3 Marks
C – 3 Marks
D – 3 Marks
E- – 3 Marks
F- – 3 Marks
G- – 3 Marks
H- – 3 Marks

Q3. Long Answer type question (up to 300 words for 5 marks question and up to 500 words for 10 marks question) from Unit 1 with internal Choice

A – 5 Marks
B – 5 Marks
OR
C – 10 Marks

Q4. Long Answer type question (up to 300 words for 5 marks question and up to 500 words for 10 marks question) from Unit 3 with internal Choice

A – 5 Marks
B – 5 Marks
OR
C – 10 Marks

Q5. Long Answer type question (up to 300 words for 5 marks question and up to 500 words for 10 marks question) from Unit 3 with internal Choice

A – 5 Marks
B – 5 Marks
OR
C – 10 Marks

Q6. Long Answer type question (up to 300 words for 5 marks question and up to 500 words for 10 marks question) from Unit 4 with internal Choice

A – 5 Marks
B – 5 Marks
OR
C – 10 Marks

Course Type: Generic Elective
Course Name: Hospitality and Tourism
Course Code: 2T5 - B

Course Outcomes

CO1	The students will be able **to classify** different types of hotels and hotel rooms
CO2	The students will be able **to identify** different departments in hospitality industry and their functions
CO3	The student will be able **to formulate** various travel plans
CO4	The student will be able **to analyse** role of tourism development corporations
CO5	The students will be able **to plan** his / her career as a tour operator or travel agent

Unit 1: Structure of Hospitality Industry, Customer care in Hospitality Industry, Departmentalisation in Hotels, Classifications of Hotels & Hotel Rooms, Basis for Classification of Hotels, Distribution Channel in Hospitality.

Unit 2: Departments in Hospitality Industry, Food & Beverage Service department – Menu, Beverages; Housekeeping department – Roles and Procedures, Front Office Department- Organisation and Functions, Quality Control Department - Environmental and Food safety standards.

Unit 3: Constituents of Tourism Industry and tourism organizations, Tourism Regulations, Tourism Services and Operations, Modes of Transport, Tourism Accommodation, Informal and Subsidiary Services Categories and Roles, Travel Agency, Tour Operator, Tourism Information: Sources

Unit 4: Tourism Marketing - Advertising, Publicity, Selling, Tourism Policy and Planning, Infrastructure Development, Local Bodies, Officials and Tourism, ITDC and other state tourism development corporations. Manila Declaration on world tourism.

Reference Books:

Question Paper Pattern for Semester End Examination

Q1. Very Short Answer type questions (4-5 lines/ up to 30 words). 8 Questions of 2 marks each. 2 questions from each unit

A – 2 Marks
B – 2 Marks
C – 2 Marks
D – 2 Marks
E – 2 Marks
F – 2 Marks
G – 2 Marks
H – 2 Marks

Q2. Short Answer type questions (6-8 lines/ up to 50 words). 8 Questions of 3 marks each. 2 questions from each unit

A – 3 Marks
B – 3 Marks
C – 3 Marks
D – 3 Marks
E- – 3 Marks
F- – 3 Marks
G- – 3 Marks
H- – 3 Marks

Q3. Long Answer type question (up to 300 words for 5 marks question and up to 500 words for 10 marks question) from Unit 1 with internal Choice

A – 5 Marks
B – 5 Marks
OR
C – 10 Marks

Q4. Long Answer type question (up to 300 words for 5 marks question and up to 500 words for 10 marks question) from Unit 3 with internal Choice

A – 5 Marks
B – 5 Marks
OR
C – 10 Marks

Q5. Long Answer type question (up to 300 words for 5 marks question and up to 500 words for 10 marks question) from Unit 3 with internal Choice

A – 5 Marks

B – 5 Marks

OR

C – 10 Marks

Q6. Long Answer type question (up to 300 words for 5 marks question and up to 500 words for 10 marks question) from Unit 4 with internal Choice

A – 5 Marks

B – 5 Marks

OR

C – 10 Marks