

**INSTITUTE OF SCIENCE, NAGPUR.**  
(An Autonomous Institute of Government of Maharashtra)



**DIRECTION NO. 1 OF 2021**

**DIRECTION RELATING TO THE EXAMINATION  
LEADING TO THE DEGREE OF  
MASTER OF SCIENCE, SEMESTER PATTERN  
(CHOICE BASED CREDIT SYSTEM)**

**(TO BE IMPLEMENTED FROM 1 JULY 2021)**



**INSTITUTE OF SCIENCE, NAGPUR.**  
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OF MASTER OF SCIENCE, SEMESTER PATTERN  
(CHOICE BASED CREDIT SYSTEM)**

**Whereas**, Maharashtra Universities Act, 2016 (hereinafter referred to as Act) has come into force from 2016-17 and was amended from time to time,

AND

**Whereas**, the Board of Studies in all the Science subjects in their meeting prepared the syllabi, scheme of examination and absorption scheme for the M. Sc.,

AND

**Whereas**, the Academic Coordinator has considered, accepted and recommended to the Director, Institute of Science, Nagpur M. Sc. Semester-I to IV with draft direction and other details.

AND

I, Director, Institute of Science, Nagpur 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)**"
2. The direction shall come into force from the date of its issuance by Hon'ble Director, Institute of Science, Nagpur.
3. The duration of the M. Sc. course shall be of two academic years consisting of four semesters with the examinations at the end of each semester namely:
  - a) M. Sc. Semester I Exam
  - b) M. Sc. Semester II Exam
  - c) M. Sc. Semester III Exam
  - d) M. Sc. Semester IV Exam

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

Sr. No.	Name of the examination	Main Examination	Supplementary Examination
1	Semester I and III	Winter	Summer
2	Semester II and IV	Summer	Winter

**ELIGIBILITY TO THE COURSE:**

5. Subject to their compliance with the provisions of this direction and of other ordinances in force from time to time, the following applicant candidates shall be eligible for the admission to Master of Science and examinations their of

A	For M.Sc. (Physics) Semester-I	For admission to the M. Sc. Semester I in Physics, a candidate shall have offered Physics as one of the subjects at the qualifying B.Sc. Examination.
B	For M.Sc. (Chemistry) Semester-I	For admission to the M. Sc. Semester I in Chemistry, a candidate shall have offered Chemistry / Industrial Chemistry as one of the subjects at the qualifying B.Sc. Examination.
C	For M.Sc. (Mathematics) Semester-I	For admission to the M. Sc. Semester I in Mathematics, a candidate shall have offered Mathematics as one of the subjects at the qualifying B.Sc. Examination.
D	For M. Sc. (Statistics) Semester-I	For admission to the M. Sc./M.A. Semester I in Statistics, a candidate shall have offered Statistics/Maths as one of the subjects at the qualifying B.Sc./B.A. Examination.
E	For M.Sc. (Botany) Semester-I	For admission to the M. Sc. Semester I in Botany, a candidate shall have offered Botany as one of the subjects at the qualifying B.Sc. Examination.
F	For M.Sc. (Zoology) Semester-I	For admission to the M. Sc. Semester I in Zoology, a candidate shall have offered Zoology as one of the subjects at the qualifying B.Sc. Examination.
G	For M.Sc. (Environmental Science) Semester-I	For admission to the M. Sc. Semester I in Environmental Science, a candidate shall have offered Environmental Science as one of the subjects at the qualifying B.Sc. Examination.

Candidates shall have passed any one of the above examinations from Rashtasant Tukadoji Maharaj Nagpur University or any other statutory University of India or abroad, recognized by the UGC or any other concerned apex regulatory authority / body of India.

## 6. Semester Examinations

A	M. Sc. Semester I Examination	Students who have fulfilled the eligibility criteria as mentioned in Section 5 and have been admitted to this course in Semester I.
B	M. Sc. Semester II Examination	Students who have been admitted to this course in semester II.
C	M. Sc. Semester III Examination	Students who have been admitted to this course in semester III.
D	M. Sc. Semester IV Examination	<p>i) Students who have been admitted to this course in semester IV.</p> <p>Every student shall submit two copies of the project report (typed and properly bound) for the Fourth Semester to the Concerned Department at least 15 days prior to the commencement of the final practical examination through the Head of the Department concerned along with the certificate signed by the supervisor and declaration by the candidate towards original work which is not submitted to any university or organization for award of the degree. The scheme/guidelines for the students and supervisors regarding Project Work Report are given in Appendix 04.</p>

(Note: Subject to the Rules of ATKT as mentioned in para 7 of this direction)

7. The **ATKT** rules for admission for the M. Sc. Course (Theory, Practical and Seminar as separate passing head and on calculation fraction, if any, shall be rounded. Ex. If two third of the passing heads value is 3.01 or 3.5 then it shall be considered as 3 whereas 3.67 Or 3.89 will be considered as 4 ) shall be as given in the following table

Admission to Semester	Candidate should have passed in all the subjects of the following examination of R.T.M. Nagpur University	Candidate should have passed at least two third of the passing heads of the following examinations
<b>Semester I</b>	As provided in the para 5 of the direction	--
<b>Semester II</b>	--	--
<b>Semester III</b>	--	Semester I and II taken together
<b>Semester IV</b>	--	--

8. The fees for the tuition, examination, laboratory and other fees shall be as prescribed by the Institute of Science, Nagpur from time to time.

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

(b) The medium of instruction and examination shall be English.

10. 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.

11. 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.
12. 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 with this direction.
13. The provisions of the award of grace marks for passing an examination, securing higher grade in subject(s) shall be issued by the Institute of Science, Nagpur separately shall apply to the examination under this direction.
14. 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.
15. Successful examinees at the end of M. Sc. Sem-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.
16. No candidate shall be admitted to an examination under this direction, if he / she has already passed the same examination of this Institute or of any other university.
17. Successful examinees at the M. Sc. Sem I, II, III, & IV Examinations shall be entitled to receive a Certificate signed by the Controller of Examination and Evaluation of Institute of Science, Nagpur (COEE) and successful examinees at the end of M. Sc. Sem IV examination shall, on payment of prescribed fees, receive a Degree in the prescribed format, signed by the Director, Institute of Science, Nagpur and Vice-Chancellor of RTM Nagpur University.
18. This course is based on Choice Based Credit System and therefore, it will be also regulated by guidelines and regulation given in appendices / annexure which are part of this direction.

**Date:**

**Sd/-**  
**Dr. Anjali Rahatgaonkar**  
**Director,**  
**Institute of Science, Nagpur**

### Appendix-1

#### Scheme of teaching and examination under semester pattern Choice Based Credit System (CBCS) for M.Sc. Program in all subjects except Mathematics

<b>Semester I for M.Sc. Program in all subjects except Mathematics</b>										
Theory / Practical	Teaching scheme (Hours / Week)			Credits	Examination Scheme					
	Th	Pract	Total		Duration in hrs.	Max. Marks		Total Marks	Minimum Passing Marks	
						External Marks	Internal Ass		Th	Pract
Paper 1	4	-	4	4	3	80	20	100	40	
Paper 2	4	-	4	4	3	80	20	100	40	
Paper 3	4	-	4	4	3	80	20	100	40	
Paper 4	4	-	4	4	3	80	20	100	40	
Practical 1	-	8	8	4	3-8*	100**	-	100		40
Practical 2	-	8	8	4	3-8*	100**	-	100		40
Seminar 1	2	-	2	1			25	25	10	
<b>TOTAL</b>	<b>18</b>	<b>16</b>	<b>34</b>	<b>25</b>		<b>520</b>	<b>105</b>	<b>625</b>	<b>170</b>	<b>80</b>

<b>Semester II for M.Sc. Program in all subjects except Mathematics</b>										
Theory / Practical	Teaching scheme (Hours / Week)			Credits	Examination Scheme					
	Th	Pract	Total		Duration in hrs.	Max. Marks		Total Marks	Minimum Passing Marks	
						External Marks	Internal Ass		Th	Pract
Paper 5	4	-	4	4	3	80	20	100	40	
Paper 6	4	-	4	4	3	80	20	100	40	
Paper 7	4	-	4	4	3	80	20	100	40	
Paper 8	4	-	4	4	3	80	20	100	40	
Practical 3	-	8	8	4	3-8*	100**	-	100		40
Practical 4	-	8	8	4	3-8*	100**	-	100		40
Seminar 2	2	-	2	1			25	25	10	
<b>TOTAL</b>	<b>18</b>	<b>16</b>	<b>34</b>	<b>25</b>		<b>520</b>	<b>105</b>	<b>625</b>	<b>170</b>	<b>80</b>

Semester III for M.Sc. Program in all subjects except Mathematics										
Theory / Practical	Teaching scheme (Hours / Week)			Credits	Examination Scheme					
	Th	Pract	Total		Duration in hrs.	Max. Marks		Total Marks	Minimum Passing Marks	
						External Marks	Internal Ass		Th	Pract
Paper 9	4	-	4	4	3	80	20	100	40	
Paper 10	4	-	4	4	3	80	20	100	40	
Paper 11	4	-	4	4	3	80	20	100	40	
Paper 12	4	-	4	4	3	80	20	100	40	
Practical 5	-	8	8	4	3-8*	100**	-	100		40
Practical 6	-	8	8	4	3-8*	100**	-	100		40
Seminar 3	2	-	2	1			25	25	10	
<b>TOTAL</b>	<b>18</b>	<b>16</b>	<b>34</b>	<b>25</b>		<b>520</b>	<b>105</b>	<b>625</b>	<b>170</b>	<b>80</b>

Semester IV for M.Sc. Program in all subjects except Mathematics										
Theory / Practical	Teaching scheme (Hours / Week)			Credits	Examination Scheme					
	Th	Pract	Total		Duration in hrs.	Max. Marks		Total Marks	Minimum Passing Marks	
						External Marks	Internal Ass		Th	Pract
Paper 13	4	-	4	4	3	80	20	100	40	
Paper 14	4	-	4	4	3	80	20	100	40	
Paper 15	4	-	4	4	3	80	20	100	40	
Paper 16	4	-	4	4	3	80	20	100	40	
Practical 7	-	8	8	4	3-8*	100**	-	100		40
Project		8	8	4		100**	-	100		40
Seminar 4	2	-	2	1			25	25	10	
<b>TOTAL</b>	<b>18</b>	<b>16</b>	<b>34</b>	<b>25</b>		<b>520</b>	<b>105</b>	<b>625</b>	<b>170</b>	<b>80</b>

Note: Th = Theory; Pr = Practical/lab, \* = If required, for two days.

\*\* = The Practical and Project shall be evaluated by both the External and Internal Examiner in the respective Department / Center / Affiliated College as per guidelines appended with this direction.

1. In each semester, the student will have to deliver a seminar on any topic relevant to the syllabus / subject 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.
2. The student will have to carry out the project work (based on guidelines appended to this direction) in lieu of practical in the fourth semester in the department or depending on the availability of placement; he / she will be attached to any of the national / regional / private research institute / organization.
3. Internal Assessment Marks will be as per appendix attached in this direction.
4. One credit of 25 marks for theory / tutorial will be of one clock hour per week, running for 15 weeks.
5. One credit of 25 marks for practical / project / seminar will be of two clock hour per week, running for 15 weeks.

#### Appendix-2

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

<b>Semester I for M.Sc. Program in Mathematics</b>											
Theory / Practical	Teaching scheme (Hours / Week)		Credits			Examination Scheme					
	Th	Total	Theory	Int. Assessment	Total	Duration in hrs.	Max. Marks		Total Marks	Minimum Passing Marks	
							External Marks	Internal Ass		Th. External	Internal Ass.
Paper 1	5	5	4	1	5	3	100	25	125	50	
Paper 2	5	5	4	1	5	3	100	25	125	50	
Paper 3	5	5	4	1	5	3	100	25	125	50	
Paper 4	5	5	4	1	5	3	100	25	125	50	
Paper 5	5	5	4	1	5	3	100	25	125	50	
<b>TOTAL</b>	<b>25</b>	<b>25</b>	<b>20</b>	<b>5</b>	<b>25</b>		<b>500</b>	<b>125</b>	<b>625</b>	<b>250</b>	



<b>Semester II for M.Sc. Program in Mathematics</b>											
Theory / Practical	Teaching scheme (Hours / Week)		Credits			Examination Scheme					
	Th	Total	Theory	Int. Assessment	Total	Duration in hrs.	Max. Marks		Total Marks	Minimum Passing Marks	
							External Marks	Internal Ass		Th. External	Internal Ass.
Paper 6	5	5	4	1	5	3	100	25	125	50	
Paper 7	5	5	4	1	5	3	100	25	125	50	
Paper 8	5	5	4	1	5	3	100	25	125	50	
Paper 9	5	5	4	1	5	3	100	25	125	50	
Paper 10	5	5	4	1	5	3	100	25	125	50	
<b>TOTAL</b>	<b>25</b>	<b>25</b>	<b>20</b>	<b>5</b>	<b>25</b>		<b>500</b>	<b>125</b>	<b>625</b>	<b>250</b>	

<b>Semester III for M.Sc. Program in Mathematics</b>											
Theory / Practical	Teaching scheme (Hours / Week)		Credits			Examination Scheme					
	Th	Total	Theory	Int. Assessment	Total	Duration in hrs.	Max. Marks		Total Marks	Minimum Passing Marks	
							External Marks	Internal Ass		Th. External	Internal Ass.
Paper 11	5	5	4	1	5	3	100	25	125	50	
Paper 12	5	5	4	1	5	3	100	25	125	50	
Paper 13	5	5	4	1	5	3	100	25	125	50	
Paper 14	5	5	4	1	5	3	100	25	125	50	
Paper 15	5	5	4	1	5	3	100	25	125	50	
<b>TOTAL</b>	<b>25</b>	<b>25</b>	<b>20</b>	<b>5</b>	<b>25</b>		<b>500</b>	<b>125</b>	<b>625</b>	<b>250</b>	

Semester IV for M.Sc. Program in Mathematics											
Theory / Practical	Teaching scheme (Hours / Week)		Credits			Examination Scheme					
	Th	Total	Theory	Int. Assessment	Total	Duration in hrs.	Max. Marks		Total Marks	Minimum Passing Marks	
							External Marks	Internal Ass		Th. External	Internal Ass.
Paper 16	5	5	4	1	5	3	100	25	125	50	
Paper 17	5	5	4	1	5	3	100	25	125	50	
Paper 18	5	5	4	1	5	3	100	25	125	50	
Paper 19	5	5	4	1	5	3	100	25	125	50	
Paper 20	5	5	4	1	5	3	100	25	125	50	
<b>TOTAL</b>	<b>25</b>	<b>25</b>	<b>20</b>	<b>5</b>	<b>25</b>		<b>500</b>	<b>125</b>	<b>625</b>	<b>250</b>	

\*Internal Assessment: For the purpose of internal assessment the department will conduct three tests (with equal weight of marks). Best two scores of a student in these tests will be considered to obtain the internal assessment score of that student.

### Appendix-3

#### **Project Work Scheme / Guidelines for the Students, Supervisors and Examiners**

Every student is required to carry out a project work in semester IV. The project can be of following types.

A) Experimental Project Work; OR B) Field Based Project Work; OR C) Review writing based Project Work.

#### ***Experimental Project Work OR 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 15 days 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, Conclusion 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 of the Department.

#### ***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 reviews published in a standard, peer reviewed journals. On the basis of this work, student must submit the Project Report (typed and properly bound) in two copies at least 15 days to commencement of the final Practical / lab Examination of Semester IV. The project report shall comprise of Abstract, Introduction, detailed review, Discussion, Summary, Conclusion 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 of the Department.

The supervisors for the Project Work shall be from the following.

A person shall be full time university PG recognized faculty member in the relevant subject. OR

A person shall be full time university UG recognized faculty member in the relevant subject having Ph. D. and teaching the relevant subject for 5 years OR not having Ph. D. and teaching the relevant subject for 10 years.

OR

A person shall be full time university approved faculty member in related subject having Ph. D. with 5 years teaching experience or OR not having Ph. D. but having 10 years teaching experience and teaching the relevant subject.

OR

Scientists of National Laboratories / Regional Research Laboratories who are approved by virtue of their appointments in such facilities by the Union Government / the State Government / Nagpur University / Other Universities recognized by UGC.

OR

A person appointed in PG on contractual / contributory basis, having NET / SET / Ph.D in the relevant subject and having 3 years teaching experience as contractual / contributory at PG level.

OR

University / Institute of Science, Nagpur Ex-Faculty members in the relevant subject

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 Coverage of subject matter, Arrangement and presentation, References, etc.

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

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Total	: 100 Marks
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## **Appendix-5**

### **Seminar**

#### **Guidelines for Students, Supervisors and Examiners**

In each semester (Except M. Sc. Mathematics), the student will have to deliver a seminar on any topic relevant to the syllabus / subject 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 seminar report typed and 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 seminar shall be forwarded to the Controller of Examination and Evaluation , Institute of Science, Nagpur within due period through Head of the Department. The record of the seminar should be preserved till the declaration of the final result.

## **Appendix 6**

### **Internal Assessment:**

1. The internal assessment marks shall be awarded by the concerned teacher.
2. The internal assessment shall be completed by the respective Department at least 15 days prior to the final examination of each semester. The Marks shall be sent to the Controller of Examination, Institute of Science, Nagpur immediately after the Assessment in the prescribed format.
3. For the purpose of internal assessment the Department / College shall conduct one to three assignments described below. Best two scores of a student in these assignments shall be considered to obtain the internal assessment score of that student.
4. General guidelines for Internal Assessment are:
  - a) The internal assessment marks assigned to each theory paper as mentioned in Appendix 1 shall be awarded on the basis of attendance and assignments like class test, 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 / Director. Institute of Science, Nagpur.
  - g) Final submission of internal marks to the Controller of Examination, Institute of Science, Nagpur shall be before the commencement of the Theory / Practical examinations.

## Appendix 7

### 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 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. Sc. \_\_\_\_\_

Semester \_\_\_\_\_ during the academic year \_\_\_\_\_. The candidate has satisfactorily completed the experiments prescribed by Institute of Science, Nagpur for the subject \_\_\_\_\_

Dated \_\_\_/\_\_\_/\_\_\_\_\_

Signature of the teacher who taught the examinee

1. \_\_\_\_\_

2. \_\_\_\_\_

Head of the Department

## Appendix – 8

### General Rules and Regulations regarding pattern of question paper, absorption scheme 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 (In M. Sc. Mathematics, each paper will be of 100 marks)
3. Question paper will consist of five questions, each of 16 marks (In M. Sc. Mathematics, each question will be of 20).
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. Sc. Program shall consist of four semesters, wherein the student has to complete 100 credits. Each subject (or course) has fixed number of credits. The types of subject subheads are: Core, Core Pract, Core Elective, Core Elective Pract, Seminar and Project.

#### Explanatory terms:

1. **Core:** Major theory papers in the concerned subject.
2. **Core Elective:** These papers will be specialization in the concerned subject.
3. **Project:** Project is in semester IV if applicable.
4. **Seminar:** The seminar in each semester, if applicable 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.

For example a subject with 6-2-6 (L-T-P) means it has 6 Lectures, 2 Tutorial and 6 Practical in a week. This subject will have ten credits ( $6 \times 1 + 2 \times \frac{1}{2} + 6 \times \frac{1}{2} = 10$ ). 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 125 marks	Letter Grade	Grade point
91-100	114 – 125	O	10
81-90	101 – 113	A+	09
71-80	89 – 100	A	08
61-70	76 – 88	B+	07
51-60	64 – 75	B	06
41-50	61 – 63	C	05
= 40	=50	P	04
<40	<10	F	0
Ab	Ab	Ab	0

**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

$$\text{SGPA (Si)} = \frac{\sum(C_i \times G_i)}{\sum C_i}$$

where  $C_i$  is the number of credits of the  $i$ th course and  $G_i$  is the grade point scored by the student in the  $i$ th course.

**Illustration for SGPA**

Code	Theory / Practical	Credits	Marks Obtained	Out of	Grade Point	Grade Letter	Credit Point (Credit x Grade Point)
Core 1	Paper 1	4	91	100	10	O	4x10=40
Core 2	Paper 2	4	89	100	9	A+	4x9=36
Core 3	Paper 3	4	50	100	5	C	4x5=20
Core 4	Paper 4	4	78	100	8	A	4x8=32
Pract. Core 1 & 1	Practical 1	4	89	100	9	A+	4x9=36
Pract. Core 3 & 4	Practical 2	4	85	100	9	A+	4x9=36
Seminar 1	Seminar 1	1	23	25	10	O	1x10=10
	<b>Total</b>	<b>25</b>					<b>210</b>
Thus, <b>SGPA = 210/25 = 8.4</b>							

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.

$$\text{CGPA} = \frac{\sum (C_i \times S_i)}{\sum C_i}$$

where  $S_i$  is the SGPA of the  $i$ th semester and  $C_i$  is the total number of credits in that semester.

#### Illustration for CGPA

Semester 1	Semester 2	Semester 3	Semester 4
Credit : 25 SGPA: 8.46	Credit : 25 SGPA: 7.83	Credit : 25 SGPA: 5.69	Credit : 25 SGPA: 6.31

Thus,

$$\text{CGPA} = \frac{25 \times 8.46 + 25 \times 7.83 + 25 \times 5.69 + 25 \times 6.31}{100}$$

$$= \frac{211.5 + 195.75 + 142.45 + 157.75}{100} = \frac{707.25}{100} = 7.0725 \quad \text{i.e. } 7.07$$

The SGPA and CGPA shall be rounded off to 2 decimal points and reported in the transcripts. Ex.  $7.0765 = 7.08$  or  $7.0755 = 7.07$  or  $6.5168 = 6.52$  etc.

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

## Appendix 9

### Workload Chart for M. Sc. Subjects in Faculty of Science & Technology

#### Note

1. The M. Sc. Course is semester pattern comprising of total Four Semester
2. Sem I and III from June to Nov/Dec and Sem II and IV from Dec/Jan to April
3. Each Theory or Practical or Tutorials or Seminar period is of One hour duration.
4. Ref. Column No 8 & 9 – the workload depends on Theory, Core Elective, and Practical Batches, hence total workload cannot be given.

S.No	Name of the subject according to Syllabi	Post Graduate Degree Semester	Total no. of papers	Total Periods in a week				Total workload / Periods	Remarks
				Theory Periods	Practical Periods	Seminar Equivalent to Theory periods)	Total workload in Hours		
1	Physics	Semester I	4	16	16	02	--	--	A batch will not exceed by more than 11 students for Practical
		Semester II	4	16	16	02	--	--	
		Semester III	4	16	16	02	--	--	
		Semester IV	4	16	16	02	--	--	
2	Chemistry	Semester I	4	16	16	02	--	--	A batch will not exceed by more than 11 students for Practical
		Semester II	4	16	16	02	--	--	
		Semester III	4	16	16	02	--	--	
		Semester IV	4	16	16	02	--	--	
3	Mathematics	Semester I	5	25	--	--	--	--	No Practical
		Semester II	25	--	--	--	--	25	
		Semester III	25	--	--	--	--	25	
		Semester IV	25	--	--	--	--	25	
4	Statistics	Semester I	4	16	16	02	--	--	A batch will not exceed by more than 11 students for Practical
		Semester II	4	16	16	02	--	--	
		Semester III	4	16	16	02	--	--	
		Semester IV	4	16	16	02	--	--	
5	Botany	Semester I	4	16	16	02	--	--	A batch will not exceed by more than 11 students for Practical
		Semester II	4	16	16	02	--	--	
		Semester III	4	16	16	02	--	--	
		Semester IV	4	16	16	02	--	--	
6	Zoology	Semester I	4	16	16	02	--	--	A batch will not exceed by more than 11 students for Practical
		Semester II	4	16	16	02	--	--	
		Semester III	4	16	16	02	--	--	
		Semester IV	4	16	16	02	--	--	
7	Environmental Science	Semester I	4	16	16	02	--	--	A batch will not exceed by more than 11 students for Practical
		Semester II	4	16	16	02	--	--	
		Semester III	4	16	16	02	--	--	
		Semester IV	4	16	16	02	--	--	