MASTER OF SCIENCE [M.Sc.]

COURSE ORDINANCE

1. PREAMBLE

The University Grants Commission (UGC) has initiated several measures to bring equity, efficiency and excellence in the Higher Education System of country. The important measures taken to enhance academic standards and quality in higher education include innovation and improvements in curriculum, teaching-learning process, examination and evaluation systems, besides governance and other matters.

The UGC has formulated various regulations and guidelines from time to time to improve the higher education system and maintain minimum standards and quality across the Higher Educational Institutions (HEIs) in India. The academic reforms recommended by the UGC in the recent past have led to overall improvement in the higher education system.
Faculty of Physical Sciences. Shree Guru Gobind Singh Tercentenary University, Gurugram with the aim to enhance academic standards in quality of higher education has adopted the UGC guide lines as such in all PG courses.

The grading system is considered to be better than the conventional marks system and in order to facilitate student mobility across institutions with in India and across countries the community grade point average (CGPA) has been introduced in all the PG courses. The guidelines as follows,

CHOICE BASED CREDIT SYSTEM (CBCS):

The CBCS provides an opportunity for the students to choose courses from the prescribed courses comprising core, elective/minor or skill based courses. The courses can be evaluated following the grading system, which is considered to be better than the conventional marks system. Therefore, it is necessary to introduce uniform grading system in the entire higher education in India. This will benefit the students to move across institutions within India to begin with and across countries. The uniform grading system will also enable potential employers in assessing the performance of the candidates. In order to bring uniformity in evaluation system and computation of the Cumulative Grade Point Average (CGPA) based on student's performance in examinations, the UGC has formulated the guidelines to be followed.

Outline of Choice Based Credit System:

a. **Core Course:** A course, which should compulsorily be studied by a candidate as a core requirement is termed as a Core course.

b. **Elective Course:** Generally a course which can be chosen from a pool of courses and which may be very specific or specialized or advanced or supportive to the discipline/ subject of study or which provides an extended scope or which enables an exposure to some other discipline/subject/domain or nurtures the candidate's proficiency/skill is called an Elective Course.

   i. **Discipline Specific Elective (DSE) Course**: Elective courses may be offered by the main discipline/subject of study is referred to as Discipline Specific Elective. The

University/Institute may also offer discipline related Elective courses of interdisciplinary nature (to be offered by main discipline/subject of study).

ii. **Dissertation/Project:** An elective course designed to acquire special/advanced knowledge, such as supplement study/support study to a project work, and a candidate studies such a course on his own with an advisory support by a teacher/faculty member is called dissertation/project.

c. **Skill Enhancement Course:** The course based upon the content that leads to Knowledge enhancement.

d. **Open Elective Course:** In order to adopt the inter disciplinary approach open elective course introduced, there exist a university basket having papers from the discipline other than Faculty of Physical Sciences.Student has to opt a paper of 4 credit of his/her choice from the basket.

2. GOALS:

i. Employment prospects for post graduates are very good. The scientific knowledge and mathematical and analytic skills acquired help to place across a wide range of industries including aerospace, pharmaceutical, dyes, fabrics, electronics, semiconductors, petroleum, communications, computing, education, commerce, civil services and many more.

ii. The course will build a rich knowledge base to provide a foundation for the continued study of science.

iii. The theoretical and experimental skills necessary to analyze and solve a range of advances problems, providing an excellent foundation for leadership.

iv. Post-graduation leads to abundance of research opportunities.

3. OBJECTIVES

The postgraduate training should enable the student to:

i. Practice efficiently various investigative procedures backed by scientific knowledge including basic sciences and skills.

ii. Get expertise in his/her field of interest

iii. Play the assigned role in the implementation of required practical skills.

iv. Be a motivated ‘teacher’ - defined as one keen to share knowledge and skills with a colleague or a junior or any learner continue to evince keen interest in continuing education irrespective of whether he/she is in a teaching institution or is practicing and use appropriate learning resources.

v. Exercise empathy and a caring attitude and maintain professional integrity, honesty and high ethical standards.

vi. The student is expected to know his subject in depth; however, emphasis should be on the analytical techniques. Knowledge of recent advances and basic sciences as applicable to his/her specialty should get high priority.

vii. Competence in skills commensurate with the specialty (actual hands-on training) must be ensured.

4. Duration and Nomenclature of the Course:

The duration of M.Sc (Physics /Chemistry /Mathematics /Applied Mathematics /Forensic Sciences/Environmental Sciences/ Nanoscience and Technology) course shall be of two academic years consisting of four (4) semesters (15-17 weeks) under Credit Based System(CBS). On successfulcompletion of all the four semesters, the student will be awarded M.Sc.Degree in the concerned course. The student shall complete the course within a maximum period of 4 years from the date of admission to the first semester, failing which he/she will be disqualified from the course.

5. Admission to the Course:

i. Eligibility for Admission:

For admission to the 1st Semester of M.Sc. (Physics) course, the candidate must have passed B.Sc. (Pass) with Physics as one of the subjects/B.Sc. (Hons.) Physicswith 50% marks (45% marks in case of SC/ST candidates of Haryana only) in aggregate or equivalent grade from any university recognized by UGC

For admission to the 1st Semester of M.Sc. (Chemistry) course, the candidate must have passed B.Sc. (Pass) with Chemistry as one of the subjects/B.Sc. (Hons.) Chemistry with 50% marks (45% marks in case of SC/ST candidates of Haryana only) in aggregate or equivalent grade from any university recognized by UGC**.**

For admission to the 1st Semester of M.Sc. (Mathematics) course, the candidate must have passed B.Sc. (Pass) with Mathematics as one of the subjects/B.Sc. (Hons.) Mathematics /B.A (Pass) with Mathematics/ as one of the subjects/ B.A (Hons.) Mathematicswith 50% marks (45% marks in case of SC/ST candidates of Haryana only) in aggregate or equivalent grade from any university recognized by UGC**.**

For admission to the 1st Semester of M.Sc. (Applied Mathematics) course, the candidate must have passed B.Sc. (Pass) with Mathematics/Satistics as one of the subjects/B.Sc. (Hons.) Mathematics /B.A (Hons.) Mathematicswith 50% marks (45% marks in case of SC/ST candidates of Haryana only) in aggregate or equivalent grade from any university recognized by UGC**.**

For admission to the 1st Semester of M.Sc. (Forensic Science) course, the candidate must be graduate with Physics, Chemistry & Mathematics OR Physics, Chemistry & Biology OR Agricultural sciences OR BCA OR B.Pharm. OR B.Sc.(Nursing) OR Engineering sciences OR B.Sc.(Forensic Sciences) OR Medical sciences with 50% marks (45%marks in case of SC/ST candidates of Haryana only) in aggregate or equivalent grade from any university recognized by UGC.

For admission to the 1st Semester of M.Sc. (Environmental Sciences) course, the candidate must have passed B.Sc(Non Medical/ Environmental Sciences/Life Sciences/Bio Sciences/ Agriculture) with 50% marks (45% marks in case of SC/ST candidates of Haryana only) in aggregate or equivalent grade from any university recognized by UGC**.**

For admission to the 1st Semester of M.Sc. (Nanoscience and Technology) course, the candidate must have passed B.Sc. (Sciences)with 50% marks (45% marks in case of SC/ST candidates of Haryana only) in aggregate or equivalent grade from any university recognized by UGC**.**

ii. Schedule of admission and payment of fees:

The admission schedule, along with last date for the submission of admission forms and payment of fees, shall be fixed by the Vice-Chancellor from time to time.

6. Mode of Selection of Candidates for Admission:

The admissions will be made as per the following criteria:

Sr.No.	Criteria	Condition
1	On the Basis of the Merit of the qualifying Examination.	If the no. of applicants is up to 3 times of the intake
2	On the Basis of the Merit of the Entrance Examination.	If the no. of applicants is more than 3 times of the intake

7. Syllabus:

The syllabus recommended by University Grants Commission (UGC) has been adopted as such. It is based on Choice Based Credit System (CBCS) and is recommended by Board of Studies and approved by Academic Council from time to time.

8. Scheme of Examination, distribution of marks, credit systemand Syllabus:

The Scheme of examination, distribution of marks in various papers along with the credit system and the syllabus of the course shall be as approved by Board of Studies/Academic Council from time to time.

9. Medium of Instruction and Examination:

The medium of the instruction and the examination shall be English only.

10. Attendance Requirements/Eligibility to Appear in Examination:

The student should fulfill the following criteria to be eligible for appearing in the End Term Semester Examinations:

i. He/sheshould bear a good moral character.

ii. He/she should be on the rolls of theDept./Faculty of the University during the semester.

iii. He/she should have 75% of the attendance during the respective semester. Twenty five per cent (25%) of attendance relaxation shall account for illness and contingencies of serious and unavoidable nature.

iv. The Dean of the Faculty of his own or on the recommendation of the HoD shall have the power to give relaxation upto 5% on genuine grounds over the minimum 75% attendance.

v. Further, the Vice Chancellor of his own or on the recommendation of the Dean shall have the power to give further relaxation upto 5% on genuine grounds over the above mentioned minimum attendance.

vi. He/she should not be a defaulter in payment of any dues of the SGT University and no disciplinary action is pending against the student.

11. Exemption from Attendance / Shortage of attendance to be condoned:

The shortage of lecture to the maximum limit as under can be condoned by the competent authority:

Sr. No	Exemptable No. of Lecture	Ground of Exemption	Competent Authority
1	All periods of the days of blood donation	Voluntarily blood donation to the Blood Bank.	Dean of the Faculty
2	All periods of the day of Examination	For appearing in the supplementary examinations(Theory /Practical/Viva-voce)	-do-
3	10 days attendance during a semester	For participation in University or Inter-Collegiate Sports Tournaments/ Youth Festivals, NCC/NSS Camps/University Educational Excursions/ Mountaineering Courses	-do-
4	15days attendance during a semester	For participation in Inter-University Sports Tournaments/ Youth Festivals	-do-

Provided:

i. that he/she has obtained prior approval of the Dean, Faculty of Physical Sciences;

ii. that credit may be given only for the days on which lectures were delivered or tutorials or practical work done during the period of participation in the aforesaid events.

12. Attendance Shortage Warning:

Attendance shortage warning will be displayed on the Faculty's Notice Board and University Website by 10^{th} day of every month.

13. Detained students

A student,who does not fulfill the criteria prescribed in Clauses10-11, will not be eligible for appearing in the End Term Semester Examination in that particular paper and will be deemed as Detained in that paper.Such student will repeat the course/paper alongwith the regular students of the subsequent batchto fulfill the prescribed conditions to appear in the "End Term" examination of the course/ paper.

14. Submission of Examination Forms and Payment of Examination Fee:

The Dean, Faculty of Physical Sciences shall submit the examination admission forms of thosestudents who satisfy the eligibility criteria to appear in the examinations to the Controller of Examinations as per schedule of examination circulated by him from time to time.

15. University Examinations:

i. End Term Semester Examinations:

The examination for the 1st and 3rd semesters (Odd Semesters) shall ordinarily be held in the month of December and of the 2nd and 4th semesters (Even Semesters) in the month of May/June. The examination dates are fixed by the controller of examination with the approval of Vice Chancellor.

ii. Fail/ Reappear candidates:

Fail / re-appear candidate of the odd semesters (1st & 3rd) will take re-appear exams as an ex-student in the subsequent exams of the odd semesters(1st&3rd). Similarly, for the even semesters (2nd&4th), he/she will take re-appear exams. in the subsequent exams of the even semesters (2nd&4th). However, a candidate appearing in the 4th semester examination (Regular) may appear simultaneously in his/her re-appear paper(s) of lower semesters.

16. Improvement Examination:

The student may be permitted to improve his/her result subject to the following conditions:

i. The student will be permitted to appear in improvement examination as an ex-student with regular batches.

ii. The student will be permitted to improve his/her CGPA in one or all papers in which he/she has obtained CGPA less than 'First Division' in aggregate.

iii. Only one chance per paper will be given. The chance must be availed within a year of initially passing of every semester examination.

iv. The candidate will be required to apply and allowed to appear only for theory examinations.

v. If the status/nature of the student's result does not improve by five (05) or more per cent, his/her improvement result will be declared "PRS" (Previous Result Stands).

vi. The candidate shall be allowed to appear in the improvement examination(s) along with regular candidates as and when the course is offered. No separate examination will be held for improvement of result. In case of change of syllabi, the student shall have to appear for improvement in accordance with the changed syllabi of the concerned course applicable to the regular students of that exam.

17. Setting of Question Papers:

i. The Head of the Department/Dean of the Faculty shall supply the panel of internal and external examiners duly approved by the Board of Studies to the Controller of Examinations. The paper(s) will be set by the examiner(s) nominated by the Vice-Chancellor from the panel of examiners.

ii. An examiner shall be allowed to set not more than two papers in a semester examination.

iii. The examiner(s) will set the question papers as per criteria laid down in the Scheme of Examinations as approved by the Board of Studies/Academic Council of the University.

18. Evaluation Process – Theory and Practical:

Evaluation of Answer Books:

The answer books may be evaluated either by the paper setter or any other internal or external examiner to be nominated by the Controller of Examiners with the approval of the Vice-Chancellor from the panel of examiners approved by the Board of Studies.

Re-evaluation of Answer Books:

Re-evaluation/ rechecking of any paper is allowed. The students can apply for Re-evaluation/ Re-checking of any paper to the Controller of Examinations through the HoD/Dean of the Faculty within 10 days of the declaration of result by paying prescribed fee.

Practical Examinations - Appointment of Examiner:

a. The practical examinations shall be conducted by a Board of two Examiners consisting of one internal and one external examiner to be nominated by the Vice-Chancellor from the panel of examiners.

Marks Distribution:

The distribution of marks in examination of the practical paper will be as per the criteria given below:

a. Experimental performance = 60% marks
b. Viva-Voce = 30% marks
c. Laboratory work report = 10% marks

19. External Assessment (Summative Assessment):

Sixty per cent marks shall be assigned to each theory and practical paper as Summative Assessment. The distribution of marks in theory as well as practical papers will be in accordance to IQAC guidelines.

20. Internal Assessment(Formative Assessment):

i. Theory Paper:

Forty per cent marks shall be assigned to each theory paper as Internal Assessment which shall be awarded as per the criteria given below:

Theory paper:

a. Attendance = 10 %
b. Mid-term Class Test = 20 %
c. Assignment/Quiz/Seminar etc. = 10 %

ii. Practical paper:

Forty per cent marks shall be assigned to each practical paper as Internal Assessment which shall be awarded as per the criteria given below:

i. Attendance = 10 %
ii. Regular experimental performance = 10 %
iii. Mid-term Internal Viva = 10 %
iv. Laboratory work report = 10 %

iii. In case of ex-students, those appearing for re-appear / improvement examination in any semester, their previous Internal Assessment marks will be counted.If there is any change in Scheme of Examination, then Internal Assessment marks will be modified accordingly.

iv. The concerned teacher shall preserve records on the basis of which the Internal Assessment has been awarded and shall make the same available to the Controller of Examinations whenever required.

v. The Head of the Department/ Dean of the Faculty shall ensure:

a. That the internal assessment marks are displayed for information of the students at least seven (07) days before the commencement of the examinations of each semester

b. That the internal assessment marks are submitted to the Controller of Examinations at least seven (07) days before the commencement of the examinations of each semester.

21. Criteria for Promotion to Higher Semester:

The student shall be promoted to 2nd and 4th semester automatically without any condition of passing minimum number of papers. For promotion from 2ndto 3rd Semester, the student shall have to clear at least 50% papers of 1st and 2nd semesters taken together.

22. Credit Based Grading System:

i. Key Definitions:

Programme	An educational programme leading to award of a Degree, Diploma or Certificate.
Course	Usually referred to as 'paper' is a component of a programme. All courses need not carry the same weight.
Credit	A unit by which the course work is measured. One credit is equivalent to one hour of teaching (lecture or tutorial) or two hours for practical work/field work per week. A Research Based Paper /Project is equal to 5 credits.
Credit Point	It is the product of grade point and number of credits for a course i.e. Credit Point = No. of credits in a course X "grade value" of the grade obtained in the course.
Grade Point Average (GPA)	There are two types of GPAs as given hereunder: Semester Grade Point Average (SGPA) Cumulative Grade Point Average (CGPA) Every student earns a distinct SGPA and a distinct CGPA at the end of each specified semester.
SGPA	SGPA is a measure for performance of student in a Semester. It is the Point Average ratio of sum of the product of number of credits with the grade points scored by the student in all the courses taken by him/her and the sum of the number of credits of all the Courses undergone by the student i.e. $SGPA\ (Si) = \sum (CixGi) / \sum Ci$

CGPA	CGPA is a measure of performance up to any Grade Gradespecified semester Point Average beginning from the first Semester. It is also calculated in the same (CGPA) manner as SPGA taking into account all the courses undergone by a student over all the semesters of programme i.e. CGPA = ∑(Cix Si) / ∑Ci
Grade Point	Itis a numerical weight allotted to each letter grade on a 10-point scale.
Letter Grades	It is an index of the performance of a student in a said course. The Grades are denoted by letters O, A+, A, B+, B, C, P, F and Ab.

ii. Credits, Semesters, Courses and total Credit Points:

S.No	Course	Semesters	Theory Credits	Practical credits	Project/ Industrial Training Credits	Open Elective	Total Credits
1	M.Sc.(Physics)	4	15×4=60	3×6=18 1×4=4	6	4	92
2	M.Sc.(Chemistry)	4	13×4=52	10×3=30	6	4	92
3	M.Sc.(Mathematics)	4	20×4=80	1×2=2	4	4	90
4	M.Sc.(Applied Mathematics)	4	20×4=64	1×2=2	4	4	90
5	M.Sc.(Forensic Sciences)	4	19×4=76	4×4=16	8	4	104
6	M.Sc.(Environmental Science)	4	16×4=64	6×2=12	8 (Project) 2(IT)	4	90
7	M.Sc.(Nanoscience & Technology)	4	16×4=64	4×4=16	6	4	90

Grading Table

Range of Percentage of Marks	Letter Grade	Grade Points	Range of Grade Points	Classification
90 and above	O (Outstanding)	10	9-10	Outstanding
80 & above but less than 90	A+ (Excellent)	9	8< 9	Excellent
70 & above but less than 80	A (Very Good)	8	7< 8	1st Div with Distinction
60 & above but less than 70	B+ (Good)	7	6< 7	1st Division

50 & above but less than 60	B (Above Average)	6	5<6	2nd Division
Above 40 but less than 50	C (Pass Average)	5	Above 4 <5	3rd Division
40	P(Pass)	4	4	Pass
Less than 40	F (Fail)	0	-	Fail

Formula for Calculating percentage of marks:

CGPA× 10 e.g. 6.53× 10 = 65.3

Formula for Grade Point calculation:

G = (Marks Obtained in Paper/Total marks of paper) x100.

Formula for Computation SGPA & CGPA

i. The SGPA is the ratio of sum of the product of the number of credits with the grad points scored by a student in all the courses taken by a students and the sum of the number of credits of all the courses taken by the students;

i.e SGPA (Si) = $\sum(Ci \times Gi) / \sum Ci$,

where Ci is the no of credits of the ith course and Gi is the grad point Scored by the student in the ith course

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

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

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

iii. The SGPA and CGPA shall be rounded up to 2 decimal points and reported in the transcripts. Result–Cum-Detailed Marks Card/ Transcript: Based on the above recommendations on letter grades, grade points and SGPA and CGPA, the DMC/ Transcript for each semester and a consolidated transcript in dictating the performance in all semester may be issued

iv. **1. Illustration of Computation of SGPA and CGPA and Format for Transcripts**

Course	**Credit**	**Grade Letter**	**Grade Point**	**Credit Points (Credit × $Grad$)**
Course 1	3	A	8	3×8 = 24
Course 2	4	B +	7	4×7 = 28
Course 3	3	B	6	3×6 = 18
Course 4	3	O	10	3×10 = 30
Course 5	3	C	5	3×5 = 15
Course 6	4	B	6	4×6 = 24
	20			**139**

Thus, SGPA = 139/20 = 6.95

Similarly, Suppose the SGPA for 2nd , 3rd and 4th semester are 7.85 , 5.6, and 6.0 with credits 22, 24 and 22, respectively, then for a two-year PG Programme, the CGPA will be computed as followed,

$$CGPA = (20\times 6.95 + 22 \times 7.85 + 24 \times 5.6 + 22 \times 6.0)/88 = 6.57$$

Course	Credits	Grade Letter	Grad Point Block	Range of Grad Points(Actual Grade Value as per marks obtained	Earned Credit Point(Credit × Actual $\boldsymbol{Grade\ Value}$)
Course 1	3	O	10	9.2	3×9.2=27.6
Course 2	3	A+	9	8.2	3×8.2=24.6
Course 3	4	A	8	7	4×7=28
Course 4	3	B+	7	6.7	3×6.7=27.6
Course 5	3	B	6	5.6	3×5.6=16.8
Course 6	4	C	5	4.7	4×4.7=18.8
	20				**135.9**

Thus, SGPA= 135.9/20 = 6.79

Similarly suppose SGPA for 2nd , 3rd , and 4th semester are 7.85, 5.6 and 6.0 with credits 22, 24, and 22 respectively

$$CGPA = (20\times 6.79 + 22 \times 7.85 + 24 \times 5.6 + 22 \times 6.0)/88 = 6.53$$

Calculating percentage of marks

$$CGPA\times 10 \text{ E.G.} 6.53\times 10 = 65.3$$

23. Pass criteria:

The minimum percentage of marks to pass the examination in each subject/paper will be 40% each in theory paper, practical /field work/Research Project etc. examination & internal assessment. The student has to pass in summative and formative (Internal) assessment separately.

24. Declaration of Results:

i. The Controller of Examinations shall declare the results as early as possible after the conclusion of each examination, but before the start of teaching for the next academic session.

ii. Each successful student/ the student placed in reappear shall receive a copy of the Detailed Marks Certificate/ Grade Card Sheet of each semester examination.

iii. The student whose result is declared late without any fault on his/her part may attend classes for the next higher semester provisionally at his /her own risk and responsibility, subject to his /her passing the concerned semester examination. In case, the student fails to pass the concerned semester examination, his/her attendance/internal assessment in the next higher semester in which he / she was allowed to attend classes provisionally will stand cancelled.

25. Other Provisions:

i. Nothing in the Ordinance shall debar the University from amending the Ordinance and the same shall be applicable to all the students whether old or new.

ii. Any other provision not contained in the Ordinance shall be governed by the rules and regulations framed by the University from time to time.

iii. In case of any dispute, the Vice-Chancellor will be competent authority to interpret the rules and his interpretation shall be final.