

# **Savitribai Phule Pune University**

## **RULES AND REGULATIONS**

**for**

### **PG Choice Based Credit System for Science Programme of Affiliated Colleges**

#### **Under Faculty of Science and Technology**

**Effective from June 2019**



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## 1. Background/Preamble:

Education plays enormously significant role in building of a nation. There are quite a large number of educational institutions, engaged in imparting education in our country. Majority of them have entered recently into semester system to match with international educational pattern. However, our present education system is churning out youth who have to compete locally, regionally, nationally as well as globally. The present alarming situation necessitates transformation and/or redesigning of system, not only by introducing innovations but developing "learner-centric approach.

Majority of Indian higher education institutions have been following the system which obstructs the flexibility for the students to study the subjects/courses of their choice and their mobility to different institutions. There is need to allow the flexibility in education system, so that students depending upon their interests can choose inter-disciplinary, intra-disciplinary and skill-based courses. This can only be possible when choice based credit system (CBCS), an internationally acknowledged system, is adopted. The choice based credit system not only offers opportunities and avenues to learn core subjects but also explore additional avenues of learning beyond the core subjects for holistic development of an individual. The CBCS will undoubtedly facilitate benchmarking of our courses with best international academic practices.

### 1.1 Preface

In a bid to fine tune our scientific education system to the global standards & practices, the Credit-Grade based performance and assessment system will be implemented with effect from June 2019 onwards for all the Post Graduate Programmes (PG) of affiliated colleges under the Faculty of Science, Savitribai Phule Pune University, Pune, starting with First Year.

With the advent of frontier science, technology and ever-changing expectations from the Industry and Society, it has become imperative to relook at the structure and subject contents of various PG courses to make it contemporary and relevant.

As per the decision by the authorities of Savitribai Phule Pune University, the faculty of Science has prepared the choice based credit system and its structure. The revised course is of 80 credits and 1 credit is equivalent to 15 hours of teaching in a semester. Assessments in credit system consist of A) In-semester continuous assessment and B) End-semester assessment for the Theory head and Term Work/ Practical / Oral / Presentation at the end of the semester for Practical, Oral, Seminar and Project Head.

The faculty of Science has shouldered the idea of incorporating latest advances in Science and technology and equips the subject/syllabus contents with latest and relevant topics and know-hows. Accordingly the new structure and syllabi are being introduced, to be implemented from the academic year 2019-20 from First Year and it will continue for subsequent years. The rules governing the programmes shall be as given below with suffix R, followed by the rule number.

- R.1. All PG programmes, under Faculty of Science shall be offered with credit system.
- R.2. All the M.Sc programmes running under the Faculty of Science will be of two years duration.
- R.3. The M.Sc. degree will be awarded to students who complete a total of 80 credits (120 credits) in a minimum of two (three) years by completing on an average 20 credits per semester. .

- R.4. Each theory credit is equivalent to 15 clock hours of teaching and Each practical credit is equivalent to 30 clock hours of teaching in a semester
- R.5. A student is required to earn 80 credits in a minimum period of four semesters.
- R.6. Final CGPA will be calculated on the basis of 80 credits.
- R.7. There is 15 weeks teaching during the semester.
- R.8. Except practical credits wherever applicable, students may be allowed to complete less courses per semester on a condition they complete the two-year degree course in a maximum of four years and a three-year degree course in a maximum of five years. This facility will be available subject to the availability of concerned courses in a given semester and with a maximum variation of 25 per cent credits (in case of fresh credits) per semester.
- R.9. A student may opt for courses equivalent to 25 percent credits from any other department than the one where he/she is registered. In case a student wishes to take all courses from the parent department he/she can also do so.
- R.10. Regular students can take extra credit courses from their own department or from other departments. In such cases, students shall specify the extra credits and this will be so noted on their Grade sheets. The CGPA of a student will be computed on the basis of
  - a. his/her performance in the core courses from parent Department
  - b. best performance of the required number of credits from all elective courses opted by him/her.

### **1.2 Advantages of the choice based credit system:**

1. Shift in focus from the teacher-centric to student-centric education.
2. Student may undertake as many credits as they can cope with (without repeating all courses in a given semester if they fail in one/more courses).
3. CBCS allows students to choose inter-disciplinary, intra-disciplinary courses, skill oriented papers (even from other disciplines according to their learning needs, interests and aptitude) and more flexibility for students.
4. CBCS makes education broad-based and at par with global standards. One can take credits by combining unique combinations. For example, Physics with Economics, Microbiology with Chemistry or Environment Science etc.
5. CBCS offers flexibility for students to study at different times and at different institutions to complete one course (ease mobility of students). Credits earned at one institution can be transferred to another institution.

### **1.3 Implementation of PG course structure:**

1. For the purpose of computation of work-load the following mechanism may be adopted as per UGC guidelines:
  - i) 1 Credit = 1 Theory period of one hour duration per week
  - ii) 1 Credit = 1 Tutorial period of one hour duration per week
  - iii) 1 Credit = 1 Practical period of two hour duration per week
2. Each theory Lecture time is of 1 hour = 60 min
3. Each practical session time for Compulsory Practical Paper is of 8 hour = 480 min
4. Each practical session time Choice Based Optional Paper is of 4 hour = 240 min

5. Exam pattern: University assessment 70 % and continuous internal assessment 30%.

## 2. PG Programme Structure:

2.1 Each M.Sc. programme is of 2 years duration. The minimum total no. of credits requirement for each programme is 80. In the structure, the credits are distributed over 4 semesters. The open elective included, gives the student a wide choice of subjects from other programmes. The Credit structure for M.Sc. programme is given below in Table 1.

**Table 1**

### Structure of Choice Based Credit System for Postgraduate Science Programme

#### M.Sc. (Semester - 1)

Sr. No.	Core Compulsory Theory Paper (CCTP)	Choice Based Optional Paper (CBOP)	Theory/practical	Core Compulsory Practical Paper (CCPP)	Credit
1	CCTP – 1	-		-	4
2	CCTP – 2	-		-	4
3	CCTP – 3	-		-	4
4	-	CBOP - 1	Theory	-	2
			Practical		2
5	-	-		CCPP - 1	4
<b>Total Credit of Semester 1</b>					<b>20</b>

#### M.Sc. (Semester - 2)

	Core Compulsory Theory Paper (CCTP)	Choice Based Optional Paper (CBOP)	Theory/practical Credit	Core Compulsory Practical Paper (CCPP)	Credit
1	CCTP – 4	-		-	4
2	CCTP – 5	-		-	4
3	CCTP – 6	-		-	4
4	-	CBOP - 2	Theory	-	2
			Practical		2
5	-	-		CCPP - 2	4
<b>Total Credit of Semester 2</b>					<b>20</b>

### M.Sc. (Semester - 3)

	Core Compulsory Theory Paper (CCTP)	Choice Based Optional Paper (CBOP)	Theory/ practical Credit	Core Compulsory Practical Paper (CCPP)	Credit
1	CCTP – 7	-		-	4
2	CCTP – 8	-		-	4
3	CCTP – 9	-		-	4
4	-	CBOP -3	Theory	-	2
			Practical		2
5	-	-		CCPP - 3	4
<b>Total Credit of Semester 3</b>					<b>20</b>

### M.Sc. (Semester - 2)

	Core Compulsory Theory Paper (CCTP)	Choice Based Optional Paper (CBOP)	Theory/ practical Credit	Core Compulsory Practical Paper (CCPP)	Credit
1	CCTP – 10	-		-	4
2	CCTP – 11	-		-	4
3	-	CBOP – 4	Theory	-	2
			Practical		2
4	-	CBOP – 5	Theory	-	2
			Practical		2
			Practical Credit	2	
5	-	-		CCPP - 4 (Project)	4
<b>Total Credit of Semester 4</b>					<b>20</b>

**Note:** i) Each credit will be equivalent to 15 clock hours of teaching

ii) 75% of the credits (60) is compulsory from the core subject and 25% i.e. 20 credits from any other department than the one where he/she is registered. In case student wishes to take all courses from the department he/ she can also do so.

iii) Credit: 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.

iv) Refer detailed rules and regulations for credit and semester system in postgraduate department/centers of the university with effect from academic year 2018-19 which displayed on the website of the university.

v) Choice Based Optional Papers (CBOP) means elective course (departmental course) to be offered along with practical i.e. theory (2 credit) + practical (2 credit) = 4 credit OR those boards feel that they cannot have practical for the CBOP, then they can offer different 4 credit full theory courses and choice be given to the students.

vi) Core Compulsory Practical Paper (CCPP) means the practical to be given to the student based on the Core Compulsory Theory Paper (CCTP) taught in the respective semester.

### 3. Eligibility for Admission:

- Eligibility to take admission for M.Sc. program is the student has to complete Bachelor degree in specific subject.
- Admissions will be given as per the selection procedure / policies adopted by the respective college keeping in accordance with conditions laid down by the Savitribai Phule Pune University of Pune.
- Reservation and relaxation will be as per the Government rules.

#### 3.2 Medium of Instruction: English

#### 3.3 Award of Credits:

- Each course having 4 credits shall be evaluated out of 100 marks and student should secure at least 40 marks (40%) to earn full credits of that course.
- Each course having 3 credits shall be evaluated out of 75 marks as students should secure at least 30 marks (40%) to earn full credits of that course.
- Each course having 2 credits shall be evaluated out of 50 marks and student should secure at least 20 marks (40%) to earn full credits of that course.
- Each course having 1 credit shall be evaluated out of 25 marks as student shall secure 10 marks (40%) to earn full credits of that course.
- GPA shall be calculated based on the marks obtained in the respective subject provided that student should have obtained credits for that course. Structure of marks scheme for choice based credit system program is given in Table 2.

**Table 2:****Structure of Examination Mark Scheme of Choice Based Credit System for Postgraduate Science Programme**

Semester	Course Name	Subject Name	Credit	Maximum Internal Marks	Maximum External Marks
I	CCTP – 1		4	30	70
	CCTP – 2		4	30	70
	CCTP – 3		4	30	70
	CBOP –1 (Theory )		2	15	35
	CBOP –1 (Practical)		2	15	35
	CCPP – 1		4	30	70
II	CCTP – 4		4	30	70
	CCTP – 5		4	30	70
	CCTP – 6		4	30	70
	CBOP – 2 (Theory )		2	15	35
	CBOP – 3 (Practical)		2	15	35
	CCPP – 2		4	30	70
III	CCTP – 7		4	30	70
	CCTP – 8		4	30	70
	CCTP – 9		4	30	70
	CBOP – 3 (Theory )		2	15	35
	CBOP – 3(Practical)		2	15	35
	CCPP – 3		4	30	70
IV	CCTP – 10		4	30	70
	CCTP – 11		4	30	70
	CBOP – 4 (Theory )		2	15	35
	CBOP – 4 (Practical)		2	15	35
	CBOP – 5 (Theory )		2	15	35
	CBOP – 5 (Practical)		2	15	35
	CCPP – 4		4	30	70

Core Compulsory Theory Paper (CCTP)

Choice Based Optional Paper (CBOP)

Core Compulsory Practical Paper (CCPP)



## 4. Evaluation Pattern:

### Examination Rules

- 4.1 A student cannot appear for semester end examination unless he/she has maintained 75% attendance during the teaching period of that course. If a student fails to maintain attendance up to 75%, at the time of filling of examination forms, an undertaking from the student should be taken stating that he/she will be allowed to appear for examination subject to fulfillment of required attendance criteria during the remaining period of teaching of the course.
- 4.2 Each course carrying 100 marks shall be evaluated with Continuous Assessment (CA) and University Evaluation (UE) mechanism.
- 4.3 Continuous assessment shall be of 30 marks (30%) while University Evaluation shall be of 70 marks (70%). To pass in a course, a student has to secure minimum 40 marks (40%) provided that he should secure minimum 28 marks (40%) in University Evaluation (UE) and 12 marks (40%) in continuous assessment.
- 4.4 Each credit will have an internal (continuous) assessment of 30% of marks and a teacher must select a variety of procedures for examination such as:
  - a) Written Test and/or Mid Term Test (not more than one for each course)
  - b) Term Paper;
  - c) Viva-voce,
  - d) Projects / Surveys / Field visits,
  - e) Tutorials,
  - f) Group Discussion
  - g) Journal/Lecture/Library notes;
  - h) Seminar presentation;
  - i) Short Quizzes;
  - j) Assignments;
  - k) Extension Work;
  - l) Research Project by individual students or group of students; or
  - m) An Open Book Test (with the concerned teacher deciding what books are to be allowed for this purpose.)etc (on approval of the head of the centre)
- 4.5 If a student misses an internal assessment examination, he/she will have a second chance with the permission of the teacher concerned. Such a second chance shall not be the right of the student; it will be the discretion of the teacher concerned to give or not to give second chance to a student to appear for internal assessment.
- 4.6 Students who have failed semester-end exam may reappear for the semester-end exam in the subsequent period. The student will be finally declared as failed if he/she does not pass in all credits within a total period of four years in case of two year courses and five years in case of three year courses. After that, such students will have to seek fresh admission as per the admission rules prevailing at that time.
- 4.7 Internal marks will not change. A student cannot repeat internal assessment. In case he/she wants to reappear for the internal assessment he/she can do so only by registering for the said courses during the semesters in which the courses are being conducted.



- 4.8 There shall be revaluation of the answer scripts of semester-end examination of theory papers only but not of internal assessment papers as per Ordinance no 134 A and B.
- 4.9 While marks will be given for all examinations, they will be converted into grades. The semester end and final grade sheets and transcripts will have only grades and grade points average.
- 4.10 Except for the technology faculty, in subjects or departments where project work is part of the credits, the project will consist of not more than ten percent of the total credits for the degree course.

## 5. ATKT Rules:

- 5.1 Minimum number of credits required to take admission to Second Year: 20 [50% of total credit in first year]
- 5.2 A student cannot register for the third semester, if he/she fails to complete 50% credits of the total credits expected to be ordinarily completed within two semesters. In this case, a student can seek admission to first or second semester in order to complete the requisite number of credits and to be able to seek admission in the third semester.

## 6. Completion of Degree Course:

- 6.1 A student, who earns 80 credits, shall be considered to have completed the requirements of the M. Sc. degree program and CGPA will be calculated for such student.
- 6.2 The following percentage to grade and grade point is given in Table-3 and respected example of CGPA calculated is given in Table-4.

**Table - 3**

**Percentage to Grades and Grade Points**

Sr. No.	Grade Letter	Grade Point	Marks
1	O (Outstanding)	10	$90 \leq \text{Marks} \leq 100$
2	A+ (Excellent)	9	$75 \leq \text{Marks} \leq 89$
3	A (Very Good)	8	$60 \leq \text{Marks} \leq 74$
4	B+ (Good)	7	$55 \leq \text{Marks} \leq 59$
5	B (Above Average)	6	$50 \leq \text{Marks} \leq 54$
6	C (Average)	5	$45 \leq \text{Marks} \leq 49$
7	D (Pass)	4	$40 \leq \text{Marks} \leq 44$
8	F (Fail)	0	Marks < 40
9	Ab (Absent)	0	

**Table-4**  
**Structure of CGPA and Mark Scheme of Choice Based Credit System for**  
**Postgraduate Science Programme (An Example)**

Semester	Course Name	Subject Name	Credit	Maximum Internal Marks	Maximum External Marks	Grade Letter (F-O)	Grade point (0 - 10)	Credit Point = (Credit x Grade point)
I	CCTP – 1		4	30	70	A	8	32
	CCTP – 2		4	30	70	O	10	40
	CCTP – 3		4	30	70	A+	9	36
	CBOP – 1 (Theory)		2	15	35	B+	7	14
	CBOP – 1 (Practical)		2	15	35	A+	9	18
	CCPP – 1		4	30	70	O	10	40
			20	150	350			180
				<b>SGPA</b>	<b>Total Credit point / Total credit for the semester</b>			9.00
II	CCTP – 4		4	30	70	O	10	40
	CCTP – 5		4	30	70	O	10	40
	CCTP – 6		4	30	70	A+	9	36
	CBOP – 2 (Theory)		2	15	35	A	8	16
	CBOP – 3 (Practical)		2	15	35	A+	9	18
	CCPP – 2		4	30	70	O	10	40
			20	150	350			190
				<b>SGPA</b>	<b>Total Credit point / Total credit for the semester</b>			9.50
III	CCTP – 7		4	30	70	A	8	32
	CCTP – 8		4	30	70	O	10	40
	CCTP – 9		4	30	70	A+	9	36
	CBOP – 3 (Theory)		2	15	35	B+	7	14
	CBOP – 3 (Practical)		2	15	35	A+	9	18
	CCPP – 3		4	30	70	O	10	40
			20	150	350			180
				<b>SGPA</b>	<b>Total Credit point / Total credit for the semester</b>			9.00

IV	CCTP – 10	4	30	70	C	5	20
	CCTP – 11	4	30	70	D	4	16
	CBOP – 4 (Theory)	2	15	35	A+	9	18
	CBOP – 4 (Practical)	2	15	35	B+	7	14
	CBOP – 5 (Theory)	2	15	35	A+	9	18
	CBOP – 5 (Practical)	2	15	35	O	10	20
	CCPP – 4	4	30	70	O	10	40
		20	150	350			146
			<b>SGPA</b>	<b>Total Credit point / Total credit for the semester</b>			7.30
			<b>CGPA</b>	<b>Total Credit point / Total credit for the course</b>			= 8.70
			<b>Final Grade</b>				A+ (Excellent)
			<b>% of Marks</b>				82 %

## 7. PERFORMANCE INDICES:

The semester end grade sheet will contain grades for the courses along with titles and SGPA. Final grade sheet and transcript shall contain CGPA.

**7.1 Semester Grade Point Average (SGPA)** -The performance of a student in a semester is indicated by a number called the Semester Grade Point Average (SGPA). The SGPA is the weighted average of the grade points obtained in all the courses, seminars and projects registered by the student during the semester.

$$SGPA = \frac{\sum_{i=1}^p C_i G_i}{\sum_{i=1}^p C_i}$$

$$SGPA = \frac{\sum \text{Grade Points Earned} \times \text{Credits for each course}}{\text{Total Credits}}$$

For Example: suppose in a given semester a student has registered for five courses having credits C<sub>1</sub>, C<sub>2</sub>, C<sub>3</sub>, C<sub>4</sub>, C<sub>5</sub> and his / her grade points in those courses are G<sub>1</sub>, G<sub>2</sub>, G<sub>3</sub>, G<sub>4</sub>, G<sub>5</sub> respectively.

Then students

$$SGPA = \frac{C_1 G_1 + C_2 G_2 + C_3 G_3 + C_4 G_4 + C_5 G_5}{C_1 + C_2 + C_3 + C_4 + C_5}$$

SGPA is calculated up to two decimal places by rounding off.

7.2 Course Grade Point Average (CGPA)- The CGPA is the weighted average of the grade points obtained in all the courses (Theory/term work/practical/oral/presentation) of first semester to sixth semester for the students admitted in the First year and third to sixth semester for the students directly admitted at Second year. It is calculated in the same manner as the SGPA.

In case of a student passing a failed course or in case of improvement, the earlier grade would be replaced by the new grade in calculation of the SGPA and CGPA.

## 8. RESULT:

Based on the performance of the student in the semester examinations, the Savitribai Phule Pune University will declare the results and issue the Semester Grade sheets.

The class shall be awarded to a student on the CGPA calculated as mentioned in Rule no. 6.1. The award of the class shall be as per Table 5 and corresponding percentage calculation for the CGPA is given in Table 6 along with all details and examples.

**Table 5**  
**CGPA distribution and corresponding class of the degree awarded**

Sr. No	CGPA	Class of the Degree awarded
1	9.50 or More than 9.50	Outstanding (O)
2	8.25 or more but less than 9.50	Excellent (A+)
3	6.75 or more but less than 8.25	Very Good (A)
4	5.75 or more but less than 6.75	Good (B+)
5	5.25 or more but less than 5.75	Above Average (B)
6	4.75 or more but less than 5.25	Average (C)
7	4.00 or more but less than 4.75	Pass (D)

**Table 6**  
**Percentage calculation of a corresponding CGPA**

For the calculation of Percentage from CGPA following equation can be used.

$$\% \text{ of Marks} = \left\{ \begin{array}{l} \text{if O grade then } 20 \times \text{CGPA} - 100 \\ \text{if A+ grade then } 12 \times \text{CGPA} - 25 \\ \text{if A grade then } 10 \times \text{CGPA} - 7.5 \\ \text{if B+ grade then } 5 \times \text{CGPA} + 26.25 \\ \text{if B grade then } 10 \times \text{CGPA} - 2.5 \\ \text{if C grade then } 10 \times \text{CGPA} - 2.50 \\ \text{if D grade then } 6.6 \times \text{CGPA} + 13.6 \end{array} \right\}$$

The factors considered in the above equations are evaluated from the grade point and marks distribution given in Table 3. The examples of the calculation of percentage are given in the Table 7.

**Table 7**

**Some examples of CGPA to percentage calculations**

Obtained CGPA	Equation	Percentage (%)	Grade
10	$20 \times 10 - 100 = 100$	100	O
9.75	$20 \times 9.75 - 100 = 95$	95	O
9.5	$20 \times 9.5 - 100 = 90$	90	O
9.0	$12 \times 9 - 24 = 84$	84	A+
8.25	$12 \times 8.25 - 24 = 75$	75	A+
8.0	$10 \times 8.0 - 7.5 = 72.5$	72.5	A
7.0	$10 \times 7.0 - 7.5 = 62.5$	62.5	A
6.75	$10 \times 6.75 - 7.5 = 60.0$	60.0	A
6.25	$5 \times 6.25 + 26.25 = 57.5$	57.5	B+
5.75	$5 \times 5.75 + 26.25 = 55$	55	B+
5.5	$10 \times 5.5 - 2.5 = 52.5$	52.5	B
5.25	$10 \times 5.25 - 2.5 = 50$	50	B
4.75	$10 \times 4.75 - 2.50 = 45$	45	C
4.0	$6.6 \times 4.0 + 13.6 = 40$	40	D

While declaring the result, the existing relevant ordinances are applicable. There is also a provision for verification and revaluation. In case of verification, the existing rules will be applicable. The revaluation result will be adopted if there is a change of at least 10% marks and in the grade of the course.

For grade improvement a student will have to take minimum 30% of the requisite number of credits for the concerned degree. These courses will be theory courses from the parent department. Grade improvement programme will be implemented at the end of the academic year. A student can opt for the grade improvement programme only after the declaration of the result for his/her final semester exam, i.e., at the end of the next academic year after passing the final examination and within two years of completion of the degree and only once.

