Savitribai Phule Pune University, Pune

RULES AND REGULATIONS

For

Two Years MCA (Under Engineering) Programme

Master of Computer Applications (Under Engineering)– 2025 Pattern

Under Faculty of Science and Technology

(With Effect from Academic Year 2025-26)

www.unipune.ac.in/

Preface by Dean

In an era defined by technological breakthroughs and digital transformation, the demand for highly skilled post graduate professional who can lead research, develop cutting-edge solutions, and address complex challenges has never been greater. As per the decision by the authorities of Savitribai Phule Pune University, the faculty of Science and Technology has prepared the choice-based credit system (CBCS) and structure. Our MCA programme are meticulously designed to equip you with the advanced theoretical understanding, practical expertise, and critical thinking skills necessary to excel in this dynamic landscape.

Our curriculum is regularly updated to reflect the latest industry trends and research breakthroughs, ensuring that your education remains relevant and impactful. You will have access to state-of-the-art laboratories, cutting-edge research facilities, and a collaborative ecosystem that fosters interdisciplinary learning and groundbreaking discoveries.

The revised course is of 86 credits and 1 credit is equivalent to 15 hours. Assessments in revised credit system consist of Comprehensive Continuous Evaluation and End-semester assessment. Both have an approximately equal weightage.

CBCS, or Choice Based Credit System, is a framework implemented by Savitribai Phule Pune University (SPPU) for its professional programme. It allows students flexibility in choosing their courses, promoting a student-centric approach to education. The system is designed to offer a wider range of subjects, including interdisciplinary and skill-based options, and aims to equip students with relevant knowledge and practical skills.

Beyond the classroom, we encourage you to engage with our robust research initiatives, participate in industry collaborations, and leverage the numerous opportunities for professional development. Our aim is not just to impart knowledge, but to cultivate independent thinkers, problem-solvers, and ethical leaders who will drive innovation and make a significant difference in society.

Dr. Raosaheb Latpate
Dean – Science and Technology
Savitribai Phule Pune University, Pune

Guidelines for MCA Programme:-

Accordingly, the new structure and syllabus are being introduced, to be implemented from the academic year 2025-26.

- MCA (Under Engineering) programme, under Faculty of Science and Technology shall be offered with credit system.
- MCA (Under Engineering) programme run under the Faculty of Science and Technology will be of two years duration.
- The total no. of credits required for the completion of the programme is 86 credits. One credit is equivalent to 15 hours.
- A student is required to earn 86 credits in a minimum period of four semesters.

Course Outcomes (CO): Course Outcomes are narrower statements that describe what students are expected to know, and are able to do at the end of each course. These relate to the skills, knowledge and behaviour that students acquire in their progress through the course.

Assessment: Assessment is one or more processes, carried out by the institution, that identify, collect, and prepare data to evaluate the achievement of Program Educational Objectives and Program Outcomes.

Evaluation: Evaluation is one or more processes, done by the Evaluation Team, for interpreting the data and evidence accumulated through assessment practices. Evaluation determines the extent to which Program Educational Objectives or Program Outcomes are being achieved, and results in decisions and actions to improve the program.

Credit Framework for MCA Programme

Type of Courses	Credits				
	Semester I	Semester II	Semester III	Semester IV	Total
Programme Core Course	09	12	13	-	34
Programme Elective Course	03	03	03	03	12
Laboratory Courses	07	04	03	-	14
Technical Seminar	-	-	-	02	02
Research Methodology	03	-	-	-	03
On Job Training/Internship	-	03	-	15	18
Research Project	-	-	03	-	03
Total	22	22	22	20	86

Structure of MCA – 2025 Pattern

FY MCA Semester I

Course Code	Course Type	Course Name	Teaching Scheme (Hrs./week)			Examination Scheme and Marks						Credits			
			Theory	Tutorial	Practical	CCE*	End-Sem	Term work	Practical	Oral/ Presentation	Total	Theory	Tutorial	Practical	Total
PCC-501-MCA	Programme Core Course	Mathematical foundation for Computer Application	3	-	-	50	50	-	-	-	100	3	-	-	3
PCC-502-MCA	Programme Core Course	Data Structures and Algorithms	3	-	-	50	50	-	-	-	100	3	-	-	3
PCC-503-MCA	Programme Core Course	Object Oriented Programming	3	-	-	50	50	-	-	-	100	3	-	-	3
RM-530-MCA	RM	Research Methodology	3	-	-	50	50	-	-	-	100	3	-	-	3
PEC-520A-MCA	Programme Elective Course (Elective –I)	A. Artificial Intelligence	3	-	-	50	50	-	-	-	100	3	-	-	3
PEC-520B-MCA		B. Mobile Computing													
PEC-520C-MCA		C. Data Analytics													
PCC-504-MCA	Programme Core Course	Data Structures Laboratory	-	-	4	-	-	50	50	-	100	-	-	2	2
PCC-505-MCA	Programme Core Course	Object Oriented Programming Laboratory	-	-	4	-	-	25	25	-	50	-	-	2	2
PEC-521-MCA	Programme Elective Course	Elective-I Laboratory	-	-	2	-	-	25	-	25	50	-	-	1	1
PCC-506-MCA	Programme Core Course	Python Programming Laboratory	-	1	2	-	-	50	-	-	50	-	1	1	2
Total			15	1	12	250	250	150	75	25	750	15	1	6	22

CCE*: Comprehensive Continuous Evaluation

FY MCA Semester – II

Course Code	Course Type	Course Name	Teaching Scheme (Hrs./week)			Examination Scheme and Marks						Credits			
			Theory	Tutorial	Practical	CCE*	End-Sem	Term work	Practical	Oral/ Presentation	Total	Theory	Tutorial	Practical	Total
PCC-551-MCA	Programme Core Course	Operating System and Network Fundamentals	3	-	-	50	50	-	-	-	100	3	-	-	3
PCC-552-MCA	Programme Core Course	Database Management System	3	-	-	50	50	-	-	-	100	3	-	-	3
PCC-553-MCA	Programme Core Course	Software Engineering and Project Management	3	-	-	50	50	-	-	-	100	3	-	-	3
PCC-554-MCA	Programme Core Course	Java and Advance Java Programming	3	-	-	50	50	-	-	-	100	3	-	-	3
PEC-570A-MCA	Programme Elective Course (Elective –II)	A. Machine Learning	3	-	-	50	50	-	-	-	100	3	-	-	3
PEC-570B-MCA		B. Internet of Things													
PEC-570C-MCA		C. Data Mining and Data Warehousing													
PCC-555-MCA	Programme Core Course	Java Programming Laboratory	-	-	4	-	-	25	50	-	75	-	-	2	2
PCC-556-MCA	Programme Core Course	Database Laboratory	-	-	2	-	-	-	-	50	50	-	-	1	1
PCC-557-MCA	Programme Core Course	Project Based Learning	-	-	2	-	-	25	-	-	25	-	-	1	1
OJT-581-MCA	Internship/OJT (IN/OJT)	Internship	-	-	6	-	-	50	-	50	100	-	-	3	3
Total			15	-	14	250	250	100	50	100	750	15	-	7	22

CCE*: Comprehensive Continuous Evaluation

SY MCA Semester III

Course Code	Course Type	Course Name	Teaching Scheme (Hrs./week)			Examination Scheme and Marks						Credits			
			Theory	Tutorial	Practical	CCE*	End-Sem	Term work	Practical	Oral/ Presentation	Total	Theory	Tutorial	Practical	Total
PCC-601-MCA	Programme Core Course	Software Testing and Quality Assurance	3	-	-	50	50	-	-	-	100	3	-	-	3
PCC-602-MCA	Programme Core Course	Data Science	3	-	-	50	50	-	-	-	100	3	-	-	3
PCC-603-MCA	Programme Core Course	Web Technology	3	-	-	50	50	-	-	-	100	3	-	-	3
PCC-604-MCA	Programme Core Course	Cyber Security	3	-	-	50	50	-	-	-	100	3	-	-	3
PEC-620A-MCA	Programme Elective Course (Elective–III)	A. Deep learning	3	-	-	50	50	-	-	-	100	3	-	-	3
PEC-620B-MCA		B. Block Chain													
PEC-620C-MCA		C. Business Intelligence													
PCC-605-MCA	Programme Core Course	Lab Practice-I	-	-	2	-	-	-	50	-	50	-	-	1	1
PCC-606-MCA	Programme Core Course	Web Technology Laboratory	-	-	2	-	-	25	-	25	50	-	-	1	1
PCC-607-MCA	Programme Core Course	Cyber Security Laboratory	-	-	2	-	-	25	-	-	25	-	-	1	1
PCC-608-MCA	Programme Core Course	Corporate Communication and Aptitude Skills Development	-	1	-	-	-	25	-	-	25	-	1	-	1
RPR-631-MCA	Research Project	Research Project	-	-	6	-	-	50	-	50	100	-	-	3	3
Total			15	1	12	250	250	125	50	75	750	15	1	6	22

CCE*: Comprehensive Continuous Evaluation

SY MCA Semester IV

Course Code	Course Type	Course Name	Teaching Scheme (Hrs./week)			Examination Scheme and Marks						Credits			
			Theory	Tutorial	Practical	CCE*	End-Sem	Term work	Practical	Oral / Presentation	Total	Theory	Tutorial	Practical	Total
PEC-670A-MCA	Programme Elective Course (Elective –IV)	A. Generative AI and Prompt Engineering	3	-	-	50	50	-	-	-	100	3	-	-	3
PEC-670B-MCA		B. Dev Ops													
PEC-670C-MCA		C. Cloud Computing													
SEM-680-MCA	Seminar	Technical Seminar	-	-	4	-	-	-	-	50	50	-	-	2	2
OJT-681-MCA	Internship/ OJT (IN/OJT)	Field Project/Major Project	-	-	28	-	-	200	-	150	350	-	-	15	15
Total			3	-	32	50	50	200	-	200	500	3	-	17	20

CCE*: Comprehensive Continuous Evaluation

Laboratory: The laboratory work will be based on completion of assignments confined to the Programme Core courses and Programme Elective courses of that semester.

Internship:

Internships are structured, short-term, supervised training opportunities designed to provide students with real-world exposure to industry practices, culture, and environments that cannot be fully experienced in the classroom.

For MCA students, the internship is to be undertaken after Semester 1, for 4 weeks duration, with evaluation taking place in Semester 2. Students must maintain an internship diary or workbook, documenting daily tasks, observations, and suggestions, signed regularly by the supervisor. Upon completion, they are required to submit the diary/workbook, internship report, attendance record, and an industry-signed evaluation sheet to the institute.

The final evaluation will be carried out by the programme head, faculty mentor, or industry supervisor, based on the compilation of activities, quality of work, level of achievement, supporting evidence, and duration of tasks, ensuring academic credit for the internship.

Research Project:

The research project work shall be based on the knowledge acquired by the student during the coursework and preferably it should meet and contribute towards the needs of the society. The project aims to provide an opportunity of designing and building complete system or subsystems based on area where the student likes to acquire specialized skills.

The Research Project is an integral part of the curriculum and shall be carried out by the student under the guidance of a faculty member.

As part of the evaluation, the student shall deliver presentations demonstrating progress and technological advancement related to the chosen topic. A duly certified project report in the prescribed standard format shall be submitted for satisfactory completion, approved by the concerned Guide and Head of the Department/Institute.

Technical Seminar:

The student shall deliver the seminar on a topic approved by authorities. The student shall select a state-of-the-art topic of their own choice, preferably relevant to the latest trends and specialization in the concerned branch, based on electives or research interests, and approved by the competent authority.

The work may be an independent topic or an extension of prior research/specialization area. The student shall prepare and submit a seminar report in the prescribed standard format, duly certified by the concerned Guide and Head of the Department/Institute, for satisfactory completion.

Field Project/Major Project:

A Field Project or Major Project is a vital component of experiential learning, allowing students to bridge the gap between theoretical knowledge and real-world application. It provides an opportunity to observe, analyze, and understand practical situations within a specific environment or community.

These projects must be carried out by students individually. As part of this requirement, students are encouraged to undergo an industrial internship for a minimum duration of three months. If a student chooses a Major Project with a research focus, they must work on a real-life research problem.

For satisfactory completion of the course, the student is required to prepare and submit a final project report in a standardized format. This report must be duly certified by the assigned guide and the Head of the Department or Institute.

Definition of Credit

- 1 hour Lecture (TH) per week per semester = 1 Credit
- 1 hours Tutorial (TU)per week per semester = 1 Credit
- 2 hours Practical (PR)/Laboratory per week = 1 Credit
- 4 Credit theory courses shall be designed for a minimum of 50 hours of the Teaching-Learning process.
- 3 Credit theory courses shall be designed for a minimum of 40 hours of the Teaching-Learning process.
- Two-credit theory courses shall be designed for a minimum of 25 hours of the Teaching-Learning process
- One credit theory course shall be designed for a minimum of 15 hours of the Teaching-Learning process

Guidelines for Examination Scheme

Theory Examination: The theory examination shall be conducted in two different parts Comprehensive Continuous Evaluation (CCE) and End-Semester Examination (ESE).

Comprehensive Continuous Evaluation (CCE)

Comprehensive Continuous Evaluation (CCE) of 50 marks based on all the Units of course syllabus to be scheduled and conducted at institute level. To design a Comprehensive Continuous Evaluation (CCE) scheme for a theory subject of 50 marks with the specified parameters, the allocation of marks and the structure can be detailed as follows:

Sr.	Parameters	Marks	Coverage of Units
1	Unit Test	20 Marks	Units 1 & Unit 2 (10 Marks/Unit)
2	Assignments / Case Study	20 Marks	Units 3 & Unit 4 (10 Marks/Unit)
3	Seminar Presentation / Open Book Test/ Quiz	10 Marks	Unit 5

Departments shall choose components totaling 50 marks, at least one unit test is mandatory. At the end of the semester, the final marks for CCE shall be assigned based on the performance of the student and is to be submitted to the University.

Format and Implementation of Comprehensive Continuous Evaluation (CCE)

- **Unit Test:**
  - **Format:** Questions designed as per Bloom's Taxonomy guidelines to assess various cognitive levels (Remember, Understand, Apply, Analyze, Evaluate, and Create).
  - **Implementation**: Schedule the test after completing Units 1 and 2. Ensure the question paper is balanced and covers key concepts and applications.
  - **Sample Question Distribution:**
    - **Remembering (4 Marks):** Define key terms related to [Topic from Units 1 and 2].
    - **Understanding (4 Marks):** Explain the principle of [Concept] in [Context].
    - **Applying (4 Marks):** Demonstrate how [Concept] can be used in [Scenario].
    - **Analyzing (4 Marks):** Compare & contrast [Two related concepts] from Units 1 and 2.
    - **Evaluating (4 Marks):** Evaluate the effectiveness of [Theory/Model] in [Situation].
- **Assignments / Case Study:** Students should submit one assignment or one Case Study Report based on Unit 3 and Unit 4.
  - **Format:** Problem-solving tasks, theoretical questions, practical exercises, or case studies that require in-depth analysis and application of concepts.
  - **Implementation:** Distribute the assignments or case study after covering Units 3 and 4. Provide clear guidelines and a rubric for evaluation.
- **Seminar Presentation / Open Book Test / Quiz**
- **Seminar Presentation:**
  - **Format:** Oral presentation on a topic from Unit 5, followed by a Q&A session.
  - **Deliverables:** Presentation slides, a summary report in 2 to 3 pages, and performance during the presentation.
  - **Implementation:** Schedule the seminar presentations towards the end of the course. Provide students with ample time to prepare and offer guidance on presentation skills.
- **Open Book Test:**
  - **Format:** Analytical and application-based questions to assess depth of understanding.
  - **Implementation:** Schedule the open book test towards the end of the course, ensuring it covers critical aspects of Unit 5.
- **Quiz:**
  - **Format:** Quizzes can help your students practice existing knowledge while stimulating interest in learning about new topic in that course. You can set your quizzes to be completed individually or in small groups.

- **Implementation:** Online tools and software can be used create quiz. Each quiz is made up of a variety of question types including multiple choice, missing words, true or false etc.

- **Term Paper/Conference Paper Publication**
  - **Format:** Prepare a research paper on a course-related topic in IEEE format (Abstract, Introduction, Methodology, Results, Conclusion, References). Aims to build research and writing skills.
  - **Implementation:** Students will choose a topic (with faculty approval) and conduct literature review, data collection/analysis, and structured writing as per IEEE guidelines. Papers can be prepared individually or in pairs. Final submissions is evaluated internally and submitted to reputed conferences or journals for publication consideration.
- **Example Timeline for conducting CCE:**
  - Weeks 1-4 : Cover Units 1 and 2
  - Week 5 : Conduct Unit Test (20 marks)
  - Weeks 6-9 : Cover Units 3 and 4
  - Week 10 : Distribute and collect Assignments / Case Study (20 marks)
  - Weeks 10-12 : Cover Unit 5
  - Week 13 : Conduct Seminar Presentations or Open Book Test or Quiz (10 marks)
- **Evaluation and Feedback:**
  - **Unit Test:** Evaluate promptly and provide constructive feedback on strengths and areas for improvement.
  - **Assignments / Case Study:** Assess the quality of submissions based on the provided rubric. Offer feedback to help students understand their performance.
  - **Seminar Presentation:** Evaluate based on content, delivery, and engagement during the Q&A session. Provide feedback on presentation skills and comprehension of the topic.
  - **Field Project / Major Project:** Evaluation shall be carried out as per the guidelines specified in the syllabus.
  - **Open Book Test**: Evaluate based on the depth of analysis and application of concepts. Provide feedback on critical thinking and problem-solving skills.

By following this scheme, you can ensure a structured and comprehensive evaluation of students' understanding and application of the course material, adhering to Bloom's Taxonomy guidelines for cognitive skills evaluation.

End-Semester Examination (ESE)

End-Semester Examination (ESE) of 50 marks written theory examination based on all the unit of course syllabus scheduled by university. Question papers will be sent by the University through

QPD (Question Paper Delivery). University will schedule and conduct ESE at the end of the semester.

The paper setting, conduct of examination, and assessment for the End-Semester Examination of the Second Year (Semester-IV) subject **Elective IV** shall be carried out by the respective college as per the schedule prescribed by Savitribai Phule Pune University. The Director/Principal shall approve the panel of paper setters in consultation with the Head of the Department. Out of the three sets of question papers prepared, the Director/Principal shall select any one question paper for distribution to the students on the day of the examination.

Format and Implementation of End-Semester Examination (ESE)

Question Paper Design

Below structure is to be followed to design an End-Semester Examination (ESE) for a theory subject of 50 marks on all 5 units of the syllabus with questions set as per Bloom's Taxonomy guidelines and 10 marks allocated per unit.

Balanced Coverage: Ensure balanced coverage of all units with questions that assess different cognitive levels of Bloom's Taxonomy: Remember, Understand, Apply, Analyze, Evaluate, and Create. The questions should be structured to cover:

- Remembering: Basic recall of facts and concepts.
- Understanding: Explanation of ideas or concepts.
- Applying: Use of information in new situations.
- Analyzing: Drawing connections among ideas.
- Evaluating: Justifying a decision or course of action.
- Creating: Producing new or original work (if applicable).

Detailed Scheme: Each unit will have a combination of questions designed to assess different cognitive levels. By following this scheme, you can ensure a comprehensive and fair assessment of students' understanding and application of the course material, adhering to Bloom's Taxonomy guidelines for cognitive skills evaluation.

End Semester Examination Guidelines

Question Paper:

1. One section with five questions (10 marks each). Each has an alternate from the same unit.
2. Framing of questions should be according to Anderson/Revised Bloom's Taxonomy and disseminated through the question papers with a mention of course outcomes as well.

Assessment

1. Assessment will be done at the centralized assessment programme (CAP) Centre of the College by the Expert who is appointed as an examiner for the courses as per 48(3) panel of Maharashtra public university act 2016.
2. Moderation will be done at the CAP Centre designated by the University by the Expert who is appointed as an examiner for the subject as per 48(3) panel.

Monitoring of CCE

1. Periodic monitoring of CCE will be done by respecting board of studies members, whenever required.
2. Colleges should maintain all the records related to CCE with CEO for verification.
   Staff members should keep all the records of Unit Tests, Assignments / Case Study, Seminar Presentation / Open Book Test/ Quiz duly signed by head of the institute with College Examination officer.

Assessment and Grade Point Average

1. **Marks/Grade/Grade Point:** A grade is assigned to each head based on marks obtained by a student in examination of the course. The marks obtained in Comprehensive Continuous Evaluation (CCE) and end-semester examination (ESE) are considered together to calculate the grade of the course. These grades, their equivalent grade points are given in Table 2.

Table 2. Grade and Grade Point

Sr. No.	% of Max. Marks	Grade Point	Grade Letter
1	90 ≤ Marks ≤ 100	10	O (Outstanding)
2	75 ≤ Marks ≤ 89	9	A+ (Excellent)
3	60 ≤ Marks ≤ 74	8	A (Very Good)
4	55 ≤ Marks ≤ 59	7	B+ (Good)
5	50 ≤ Marks ≤ 54	6	B (Above Average)
6	45≤ Marks ≤49	5	C (Average)
7	40≤ Marks ≤44	4	D (Pass)
8	Marks <40	0	F (Fail)
9	Nil	0	Ab (Absent)
10	--	0	FX (Detained, Repeat the Course)
11	--	0	IC (Incomplete Course- Absent for Exam but continue for the course)
12	--	0	AC (Audit Course Completed)
13	--	--	ACN (Audit Course Not Completed)

2. Passing Grade:

- The grades O, A+, A, B+, B, C, D are passing grades.
- A candidate acquiring any one of these grades in a course shall be declared as PASS. And student shall earn the credits for a course only if the student gets passing grade in that course.
- F Grade -The Grade F shall be treated as a failure grade.
- The student with F grade will have to pass the concerned course by re-appearing for the examination.
- The student with F grade for any stage of the Project Work, will have to carry out additional work/ improvement as suggested by the examiners and re-appear for the examination.
- FX Grade-The grade FX in a course is awarded by the college, if a student does not maintain the minimum attendance in the Lecture / Tutorial class as prescribed by the SPPU and/or his performance during the semester is not satisfactory and/or he/she fails in the Term Work head of that course.
- The student with FX grade in a given course is not permitted to take the end of semester examination in that course. Such a student will have to re-register for the course.
- The student with F / FX in a course shall not be awarded any credits for that course.
- AC and ACN Grade -The student registered for audit course shall be awarded the grade AC after satisfactory completion of audit course and shall be included in the Semester grade report for that course, provided student has the minimum attendance as prescribed by the SPPU and satisfactory In-semester performance and secured a passing grade in that course. Student who is unable to complete audit course will be awarded as ACN grade.

Rules for Passing CCE and ESE

R1 (Term Work/Practical/Oral Seminar/Presentation): To pass any practical-related component (like term work, practical exams, or presentations), the student must score at least 40% in each individual component.

R2 (Theory - CCE): For theory subjects, the student must score at least 40% (20 Marks) in the Comprehensive Continuous Evaluation (CCE) part.

R3 (Theory - ESE): Similarly, the student must score at least 40% (20 Marks) in the End-Semester Examination (ESE) for theory subjects.

R4 (Theory - Overall): A student must secure a minimum of 40% marks separately in CCE and ESE, and a minimum of 40% (40 marks) in the aggregate of CCE and ESE taken together (out of 100 marks).

R5 (Repeating CCE): If a student fails in CCE, they have the option to repeat it in either an odd or even semester, at the college level.

R6 (Repeating ESE): A failing student can repeat the End-Semester Examination (ESE) in either the odd or even semester, conducted by Savitribai Phule Pune University.

R7 (Carry Forward Marks): If a student has scored at least 40% in either CCE or ESE, the marks for that component will be carried forward to the next semester.

R8 (Course Credits): In order to earn credits for any course (whether it's a theory, term work, practical, or other components), the student must pass the course with the minimum required marks or grade.

R9 (Revaluation/Photocopying): Students are allowed to apply for revaluation or photocopying of their End-Semester Theory Examination papers.

Rules of ATKT (Allowed To Keep Term):

R1 A student can register for the third semester, if he/she earns minimum 50% credits of the total of first and second semesters of FY MCA.

R2 A student will be awarded the degree if he/she earns 86 credits.

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.

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.

$$CGPA = \frac{\sum_{i=1}^{p} CiGi}{\sum_{i=1}^{p} Ci}$$

$$SGPA = \frac{\sum GradePointsEarned\ x\ CreditsForEachCourse}{TotalCredits}$$

For Example: suppose in a given semester a student has registered for five courses having credits C1, C2, C3, C4, C5 and his / her grade points in those courses are G1, G2, G3, G4, G5 respectively. Then students

$$SGPA = \frac{C1G1 + C2G2 + C3G3 + C4G4 + C5G5}{C1 + C2 + C3 + C4 + C5}$$

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

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 fourth semester.
ln 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.

$$CGPA = \frac{\sum_{i=1}^{p} Ci Gi}{\sum_{i=1}^{p} Ci}$$

Percentage calculation of a corresponding CGPA

The calculation of Percentage from CGPA the following equation can be used:-

% of Marks

If O grade then 20 x CGPA - 100
If A+ grade then 10 x CGPA - 5
If A grade then 10 x CGPA - 5
If B+ grade then 12 x CGPA - 20
If B grade then 5 x CGPA + 23.75
If C grade then 10 x CGPA - 2.50
If D grade then 6.6 x CGPA + 13.6

Examples of CGPA to percentage calculations: -

CGPA Range	Grade	Formula
≥ 9.50	O	20 × CGPA – 100
8.25 to < 9.50	A+	12 × CGPA – 25
6.75 to < 8.25	A	10 × CGPA – 7.5
5.75 to < 6.75	B+	5 × CGPA + 26.25
5.25 to < 5.75	B	10 × CGPA – 2.5
4.75 to < 5.25	C	10 × CGPA – 2.5
4.00 to < 4.75	D	6.6 × CGPA + 13.6

***