

Progressive Education Society's

**Modern College of Arts, Science and Commerce,
Ganeshkhind, Pune-411016, India
(Autonomous)
(Affiliated to Savitribai Phule Pune University)**

B. Sc. Blended

Three Year Degree Program

Equivalent to the Degree Program of University of Melbourne, Australia

In collaboration with

University of Melbourne, Australia

and

Savitribai Phule Pune University, Pune-411007, India

Program structure

Choice Based Credit System (CBCS)

from

Academic Year 2022-23





About B. Sc. Blended Degree Program

B. Sc. Blended is an innovative Bachelor Degree in collaboration with the University of Melbourne (UoM), Australia. The UoM is the topmost university in Australia and among the top 40 universities in the world.

The syllabus has been designed by the experts from University of Melbourne (UoM), Indian Institute of Science Education and Research (IISER), Savitribai Phule Pune University (SPPU) and Modern College of Arts, Science and Commerce, Pune (Shivajinagar and Ganeshkhind campus)

Highlights

- The DST-INSPIRE Fellows get scholarships for perusing B. Sc. Blended.
- The three year B.Sc. Blended program is internationally recognized and allows the Students for direct admission for post-graduation Program with appropriate majors in University of Melbourne, Australia (UOM) and other universities in Australia.
- Students are also well prepared to qualify for various entrance exams and get admission for Masters and Integrated Ph.D. programs at reputed institutes like IISERs, IISC, TIFR, IUCAA and IITs.
- In the first two years Biology, Physics, Chemistry and Mathematics are compulsory subjects and in the third year the students will take Chemistry as a special subject.
- The students get the essence of Chemistry with the multidisciplinary approach towards Biology, Physics, Mathematics, Computers and English.
- The first two rankers will get fellowships for pursuing higher education in UOM.
- Free access to online learning resources of UOM.
- Course structure, assessment and academic audit by UOM.
- Guidance by experts from India and abroad.
- Guidance for the start ups.
- Guidance for the out of the box career opportunities for the creative students. E.g. Scientific writing, Scientific photography etc.
- The degree will be considered at par with that of UoM and the students will be eligible to pursue higher studies at UoM and other Universities in Australia.
- The students will be imparted solid training to enable them to pursue Masters and Integrated Ph. D. degrees in reputed institutes such as IITs, IISERs and Central Universities

B.Sc. Blended Outcomes

After the completion of B.Sc. Blended, the student will be able to

1. apply their broad knowledge of science across a range of fields, with in-depth knowledge in at least one area of study, while demonstrating an understanding of the local and global contexts in which science is practised;
2. articulate the methods of science and explain why current scientific knowledge is both contestable and testable by further inquiry;
3. apply appropriate methods of research, investigation and design, to solve problems in science, including the planning and/or conduct of a significant project, problem or investigation;
4. recognize the need for information; effectively search for, evaluate, manage and apply that information in support of scientific investigation or scholarly debate;
5. employ highly developed conceptual, analytical, quantitative and technical skills and are adept with a range of technologies;
6. evaluate the role of science in addressing current issues facing local and global communities, for example climate change, health and disease, food security, sustainable energy use

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7. work effectively in groups to meet a shared goal with people whose disciplinary and cultural backgrounds may differ from their own;
8. communicate clearly and convincingly about science ideas, practice and future contributions to expert and non-expert audiences, matching the mode of communication to their audience.

Eligibility

First Year B. Sc. Blended

Higher Secondary School Certificate (10+2) or its equivalent Examination in Science stream with Physics Chemistry, Mathematics and/or Biology.

Second Year B. Sc. Blended

Students are not directly admitted to second year of B. Sc. (Blended) course. Those who pass 13 subjects (practical courses are mandatory to pass) out of 17 the subjects (Semester I & Semester II combined) will be promoted to second year.

All the students shall opt for UGC mandatory course in Environmental Studies during second year. They shall pass this course in order to achieve eligibility for the 3rd year.

Third Year B. Sc. Blended

Students are not directly admitted to third year of B. Sc. (Blended) course. Those who complete first year in totality and pass 14 subjects (practical courses are mandatory to pass) out of 18 the subjects (Semester III & Semester IV combined) will be promoted to Third year B. Sc. (Blended) course.

Reservation and relaxation will be as per the Government

Duration: The duration of **B. Sc. (Blended)** Degree Program shall be of three years.

Medium of Instruction: The medium of instruction for the course shall be English.

Examination

Examination of each credit course has two parts: continuous assessment (internal 50%) and end semester examination (50%). The internal assessment will consist of Class Room Examinations (subjective/objective), Field Work, Viva-Voce, Assignments, Lab Work, tutorials, group discussions, etc conducted throughout the semester. The end semester examination will be based on the entire syllabus at the end of the semester.

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Course Structure

Nomenclature:

BIO: Biology. CHM: Chemistry. MTH: Mathematics. PHY: Physics. ENG: English;
 COMP – Computing/Computer Science; GEO – Earth Science; EVSB – Environmental Science,
 MICRO-Microbiology;

1 Credit = 1 Contact hour per week both for theory and lab courses

Semester I

Semester I		
Subject Code	Title of the Subject	Credits
MTH 101	Maths 1: Calculus	4
PHY 102	Physics 1: I Introductory Physics	3
CHM 103	Chemistry 1: General Chemistry – Chemistry of life	3
BIO 104	Biology 1: Diversity of Life	3
PHY LAB 105	Physics Practical	2
CHM LAB 106	Chemistry Practical	2
BIO LAB 107	Biology Practical	2
ENG 108	English: Critical Reading, Writing, Communication	3
Total Credits		22

Semester II

Semester II		
Subject Code	Title of the Subject	Credits
MTH 201	Maths 2: Algebra	4
PHY 202	Physics 2: Modern Physics	3
CHM 203	Chemistry 2: Physical and Inorganic	3
BIO 204	Biology 2: Cell Biology	3
PHY LAB 205	Physics Practical	2
CHM LAB 206	Chemistry Practical	2
BIO LAB 207	Biology Practical	2
COMP208	Computing	2
FLEXI	Flexi Course 1	3
MICRO 209 OR COMP 209 OR GEO209 OR EVSB210	Chemical Basis of Microbiology OR Problem solving using 'C' programming OR Geoscience-1 OR Environmental Science-1	
Total Credits		24

For other affiliated colleges under SPPU, Flexi Course -1 will be finalised based on individual requirements of the respective colleges.

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Semester III

Semester III		
Subject Code	Title of the Subject	Credits
MTH 301	Maths 3: Vector Calculus, and Probability and Statistics I	4
PHY 302	Physics 3: Quantum mechanics and Thermodynamics	3
CHM 303	Chemistry 3: Reactions and Synthesis	3
BIO 304	Biology 3: Functional Biology	3
PHY LAB 305	Physics Practical	2
CHM LAB 306	Chemistry Practical	2
BIO LAB 307	Biology Practical	2
FLEXI COMP308 OR MICRO308 OR GEO308 OR EVSB310	Flexi Course 2 Advanced 'C' and Python Programming OR Medicinal Microbiology and Fermentation Technology OR Earth Science II OR Environmental Science II	3
FLEXI COMPLAB309 OR MICROLAB 309 OR GEOLAB 309 OR EVSBLAB311	Practical for Flexi Course 2 Advanced programming practical OR Microbiology practical OR Earth Science II practical OR Environmental Science II practical	2
Total Credits		24
EVSB 312 (UGC mandatory course)	Environmental Studies - I (Theory & practical)	2
For other affiliated colleges under SPPU, Flexi Course - 2 will be finalised based on individual requirements of the respective colleges.		

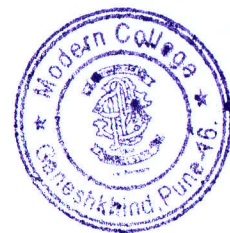
Semester IV

Semester IV		
Subject Code	Title of the Subject	Credits
MTH 401	Maths 4: Differential Equations, and Probability and Statistics II	4
PHY 402	Physics 4: Electricity, magnetism and Optics	3
CHM 403	Chemistry 4: Structure and properties	3
BIO 404	Biology 4: Genetics Evolution and Ecology	3
PHY LAB 405	Physics Practical	2
CHM LAB 406	Chemistry Practical	2
BIO LAB 407	Biology Practical	2
FLEXI	Flexi Course 3	3
FLEXI	Practical for Flexi Course 3	2
Total Credits		24
EVSB 412 (UGC Mandatory course)	Environmental Studies - II (Theory & practical)	2
For other affiliated colleges under SPPU, Flexi Course -3 will be finalised based on individual requirements of the respective colleges.		

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B. Sc. Blended – Chemistry

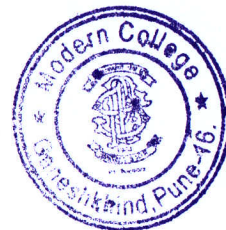
SEM V		
Subject Code	Title of the Subject	Credits
CHM 501	Chemical kinetics, Thermodynamics & Quantum chemistry	3
CHM 502	Catalysis and Industrial processes	3
CHM 503	Design and Synthesis of Organic Molecules	3
CHM 504	Introduction to analytical chemistry	3
CHM 505	Elective Course - 1	2
CHM 506	Elective Course - 2	2
CHM 507	Physical/Analytical Chemistry - LAB	2
CHM 508	Inorganic/Organic Chemistry - LAB	2
CHM 509	Project/ Dissertation	2
Total Credits		22

Elective Courses SEM V		
Subject Code	Title of the Subject	Credits
Elective Course - 1	Molecular Modelling in Chemistry	2
Elective Course - 2	Introduction to forensic Science and technology	2

Students can choose electives from other streams viz. Physics, Environmental Science or Earth Science. They also can choose electives from B. A. Liberal Arts.

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SEM VI		
Subject Code	Title of the Subject	Credits
CHM 601	Solid State chemistry & its Applications	3
CHM 602	Bioinorganic and Coordination chemistry	3
CHM 603	Natural product and Heterocyclic Chemistry	3
CHM 604	Separation Techniques and Advanced Analytical Techniques	3
CHM 605	Elective Course - 3	2
CHM 606	Elective Course - 4	2
CHM 607	Physical/Analytical Chemistry - LAB	2
CHM 608	Inorganic/Organic Chemistry - LAB	2
CHM 609	Project/ Dissertation	2
Total Credits		22

Elective Courses SEM VI		
Subject Code	Title of the Subject	Credits
Elective Course - 3	Materials chemistry	2
Elective Course - 4	Supramolecular chemistry	2

Students can choose electives from other streams viz. Physics, Environmental Science or Earth Science or Microbiology or Computer Science. They also can choose electives from B. A. Liberal Arts.

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M. M. Kulkarni
(Dr. Madhuri Kulkarni)
Chairman,
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