



# MATS UNIVERSITY



## SYLLABUS AS PER NEP 2020

### SCHOOL OF SCIENCES

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Bachelor of Science

B.Sc. General

(Combination of Three Subjects)

**Three Year Full Time Bachelor's Degree**

## SEMESTER PATTERN (2025 - 2028)



## GENERAL INTRODUCTION OF THE DEPARTMENT

MATS School of Sciences (MSS) was established with a vision to create technocrats in the applied branches of Sciences to convey updated scientific knowledge. In the school the performances of the students are constantly monitored by continuous assessment. The School believes in supplementing academic input of students with the help of regular Seminar, Guest Lectures, Industrial/Research Institute visits and encouraging the students to participate in National & International Seminars, Conferences and Workshops.

## DEPARTMENT HIGHLIGHTS

- Research focus on frontier of Life Sciences and affordable healthcare
- Highly acclaimed scientists as faculty
- State-of-the-art Lab facilities
- Hand-on training on sophisticated equipments
- Academia – Industry interface
- Multidisciplinary research in affordable healthcare, Agriculture and Food

## COURSE DESIGN

The department follows a unique course-design which is contemporary and cutting-edge. It includes modern and advanced papers/ subjects including the papers from Management Science as given in the curriculum matrix.

## PEDAGOGY

- Chalk Board, LCD and Projector based teaching
- Research based teaching
- Project based learning
- Separate lab bench for each student

## FACILITIES

State-of-the-art facilities include:

- Double beam UV- Visible Spectrophotometer, Cooling Centrifuge, Microfuge, Incubators, Microscopes, Laminar flow hoods, Colorimeter, Micro- and regular balance, Electronic Balance Autoclave, Glass distillation apparatus, Computers, Deep freeze, pH meter, conductivity meter, DNA/RNA & Protein Electrophoresis apparatus, Plant Tissue Culture racks with light arrangements, Shakers, BOD incubator & Orbital Shaking Incubator etc
- Microbial cell culture
- Plant tissue culture

## FACULTIES

- Well experienced faculties from Academic Institutes and Industries
- Invited lectures by eminent scientists from different countries



## B. SC. BIOLOGY: SCOPE AND CONTENT

Biology is the research-oriented science. This study includes a large variety of subjects including Cell biology & Genetics, Plant Diversity, Chemistry, Animal Sciences, Plant Sciences, Environmental Studies, Computer applications, Genetic Engineering, Inheritance Biology, Poultry Farming, Biostatistics, Research Methodology, Communication and IT Skills, Entrepreneurship, Languages English & Hindi, Principles of Management, Anatomy, Physiology & Reproductive Biology, Principles of Marketing Project work etc.

### OBJECTIVES OF THE B.Sc. General PROGRAM (Combination of Three Subjects)

1. To impart basic knowledge and skills of various aspects of biology.
2. To train the students for industrial need and to pursue further education.
3. To develop human resource and entrepreneurs in biology with the ability to independently start their own ventures.
4. Understand modern biology - practices and approaches with an emphasis in biology application in pharmaceutical, medical, industrial, environmental and agricultural areas.
5. Become familiar with issues related to biology nationally and globally
6. Gain experience with standard biological tools.
7. Develop skills in teamwork.

### ELIGIBILITY FOR ADMISSION:

Interested aspirants for B.Sc. (General with Combination of Three Subjects) degree need to fulfill the below mentioned eligibility criteria.

- Completion of Higher Secondary (10+2) level of education.
- Physics, chemistry and biology as main subjects at HSC level
- Instead of biology, one may even have had any subject related to biological sciences as one of the main subject of study.

### PROGRAM OUTCOME:

1. Students will be able to gain fundamental knowledge of skills and vocational certificates and their applications.
2. Students will be able to demonstrate and apply the principles of skills and vocational training certificates.
3. Diploma holders will be able to apply knowledge, concepts to solve issues related to their course.
4. Diploma holders will have ability to analyze and derive valid conclusions with fundamental knowledge in their respective subjects.
5. Diploma holders upon the needs of environment and society, will be able to fulfill the same in the form of solutions within the safety limit of prevalent rules and guidelines.
6. Graduate will have ability to design, conduct experiments, analyze and interpret data for investigating problems in their respective fields.
7. Graduate will have ability to select and apply appropriate tools and techniques.
8. Graduate will have knowledge for assessing societal, health, safety and legal aspects and the duties as responsible citizen of country.
9. Honors degree holders will have the knowledge for the need of sustainable development.



10. Honors degree holders will have the knowledge of ethics and regulatory norms of their respective course.

11. Honors degree holders will have oral, written communications skill along with team spirit.

#### PROGRAM SPECIFIC OUTCOMES:

1. Application of knowledge and techniques of basic sciences related to biological and chemical sciences.
2. Scale up of biochemical process after designing, optimization and analysis for developing products required for society.
3. Tabulation and interpretation of Biological data using computer software.
4. Students will be equipped to understand three fundamental aspects in biological phenomenon: a) what to seek; b) how to seek; c) why to seek?

#### CAREER PROSPECTS:

B.Sc. (General) (Combination of three Subjects) Bachelor of science (Chemistry, Botany and Zoology)  
This course enables the students to take up advanced studies in Chemistry, Botany, and Zoology and can find opportunities in all these subject areas. On successful completion of the B.Sc. General programme students will be able to provide a comprehensive understanding of fundamentals of chemical sciences and biological sciences. They will also be able to express proficiency in oral and written communications to appreciate innovation in research, understand the impact of chemicals in societal and environmental contexts, apply ethical principles and responsibilities while conducting animal studies, understand the biodiversity and apply the knowledge to conserve endangered species and develop industry-focused skills to lead a successful career.

#### THE MAIN JOB SECTORS ARE AS FOLLOWS:

Health service organizations, Pharmaceutical companies, Universities and Research institute, Horticultural industries, Conservation organizations, Food and drink manufacturers, Water industry, Agricultural industry, Law Enforcement, Poultry industry, Sericulture and Pisciculture Industry.

#### ATTENDANCE:

A candidate shall be deemed to have undergone a regular course of study in the University, if he/she has attended at least 60% of the lectures in each subject will be at least 75% in the aggregate of lectures, tutorials and practical in order to be eligible to appear at the Final Examination.

#### SCHEME OF EXAMINATION, EVALUATION AND DISTRIBUTION OF MARKS:

1. The overall weightage of a course in the Syllabi and Scheme of Teaching & Examination shall be determined in terms of Marks assigned to the course.
2. The evaluation of students in a course shall have two components unless specifically stated otherwise in the Scheme of Teaching & Examination and Syllabi:
  - (i) Evaluation through a semester-end examination (University Examination Marks)
  - (ii) Continuous evaluation by the teacher(s) of the course.

		Bachelor's degree/ Under-graduate diploma	Master's degree/ Post-graduate diploma
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A.	THEORY COURSES		
	(i) Semester-end examination	70%	70%
	(ii) Continuous evaluation by the teachers	30%	30%
B.	PRACTICAL/LABORATORY COURSES		
	(i) Semester-end examination	70%	70%
	(ii) Continuous evaluation by the teachers	30%	30%
C.	DISSERTATION/THESIS		
	(i) Assessment by External Examiner	70%	70%
	(ii) Assessment by Internal Examiner	30%	30%

### CONTINUOUS EVALUATION (INTERNAL MARKS)

#### (i) Theory courses

The division of internal marks will of 50% marks for mid semester examination and 50% of marks for the internal class tests. There shall be three class tests held during each semester. These class tests shall ordinarily be held after 4 weeks, 8 weeks and 12 weeks of teaching in accordance with the University Academic Calendar.

#### (ii) Practical/Laboratory courses

The total internal marks in practical /Laboratory courses shall be based on performance in the laboratory, regularity, practical exercises /assignments, quizzes, etc. The assessment shall be given at three nearly equi-spaced intervals.

### PASSING MARKS:

For undergraduate students, obtaining a minimum of 40% marks in aggregate in each course shall be essential for passing the course and earning its assigned credits. A candidate, who secures less than 40% of marks in a course, shall be deemed to have failed in that course.

### GRADING SYSTEM:

#### For UG:

80% and above – “10 Grade Point” and Letter Grade “O” (Outstanding)

40% and above but below 45% - “Grade Point 4” and Letter Grade “P” (Pass)

#### For PG:

80% and above – “10 Grade Point” and Letter Grade “O” (Outstanding)

45% and above but below 50% - “Grade Point 4” and Letter Grade “P” (Pass)

### PROGRAM DURATION:

The maximum permissible period for completing a program for which the prescribed program duration is **n semesters**, shall be **(n+4)** semesters. All the program requirements shall have to be completed in **(n+4)** semesters.

### ATKT CRITERIA:

ATKT Candidate means a candidate who failed in not more than forty percent of the total number of Core and Corebracket papers, excluding the Practical Examination / Project Work / Viva Voce Examination in the Semester Examination and is appearing in the Examination of same semester again which is organized with the next Semester Examination. Forty percent will be rounded off to



# MATS UNIVERSITY



higher side in case it is not a whole number. In case a Students fails or was absent in Practical Examination / Project Work / Viva Voce Examination, he/she may be allowed to have ATKIT exam on his/her own expenses.

President

Vice-Chancellor

Sir



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*[Signature]*

*President*

*Vinayakumar*

*G. S. S.*