



MATS UNIVERSITY



School of Sciences

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Master of Science

BOTANY

(2 YEARS FULL TIME POST GRADUATE PROGRAMME)

SEMESTER PATTERN

(2025 - 2027)



GENERAL INTRODUCTION OF THE DEPARTMENT

MATS School Sciences (MSS) was established with a vision to create technocrats in the applied branches of Biological and Chemical 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 health care, 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, DNA/RNA & Protein Electrophoresis apparatus, Plant Tissue Culture racks with light arrangements, Shakers, BOD incubator & Orbital Shaking Incubator etc.
- Microbial cell culture
- Microtome
- Various Botanical Specimens
- Various Permanent Slides
- Conservation Biology Lab

FACULTIES

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

M.Sc. Botany: SCOPE AND CONTENT

Botany is the study of plant sciences and is also known as plant biology or phytology. Students take up Master of Science (M.Sc) in Botany if they are interested to pursue a career in plant life and its characteristics. An M.Sc Botany course is a two-year course and various universities and colleges offer M.Sc Botany. The course is designed in such a manner that



students can become Botanists, mycologists and phycologists.

Botany also deals with various aspects of agriculture, horticulture, forestry and environmental science. The study of plants is vital as life is dependent on plants for a living. Plants produce energy, carbon, oxygen, nitrogen and water.

OBJECTIVES OF THE M.Sc. Botany PROGRAM

1. To impart knowledge and skills in various aspects of Botany.
2. To train the students for industrial need and to pursue further education.
3. To develop human resource and entrepreneurs in Botany with the ability to independently start their own ventures or small biotech units in the field of Botany.
4. Understand modern Botany - practices and approaches with an emphasis in technology application in pharmaceutical, medical, industrial, environmental and agricultural areas.
5. Become familiar with public policy, bio-safety, and intellectual property rights issues related to Botany applications nationally and globally
6. Gain experience with standard molecular tools and approaches utilized: to manipulate genes, gene products and organisms.
7. Develop skills in international teamwork and research collaboration.

ELIGIBILITY FOR ADMISSION:

Interested aspirants for M.Sc. Botany degree need to fulfill the below mentioned minimum eligibility criteria.

- ☐ Completion of UG (10+2+3) level of education.
- ☐ Botany as one of the subjects at UG 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. Postgraduates will be able to apply knowledge, concepts to solve issues related to their course.
2. Postgraduates will have ability to identify problems related to their subjects.
3. Postgraduates will have ability to analyze and derive valid conclusions with fundamental knowledge in their respective subjects.
4. Post graduates upon the needs of the environment and society, will be able to fulfill the same in the form of solutions within the safety limit of prevalent rules and guidelines.
5. Postgraduates will have ability to design, conduct experiments, analyze and interpret data for investigating problems in their respective fields.
6. Postgraduates will have the ability to select and apply appropriate tools and techniques.
7. Postgraduates will have knowledge for assessing societal, health, safety and legal aspects and the duties as responsible citizens of the country.
8. Postgraduates will have the knowledge of the need for sustainable development.
9. Postgraduates will have the knowledge of ethics and regulatory norms of their respective course.
10. Postgraduates will have oral, written communication skill along with team spirit.

PROGRAM SPECIFIC OUTCOMES:

1. Acquire knowledge on the various aspects of life sciences, cell biology, genetics, taxonomy, physiology, applied Botany.



2. Identify classify the plants by using the key characters.
3. Prepare and view specimens for examination using light microscopy.
4. Use pure culture and selective techniques to isolate fungi, plant pathogens, algae and identify them.
5. Qualitative and quantitative estimate the number of floral components by using enumeration and suitable sampling and techniques.

CAREER PROSPECTS:

A career in Botany might just be one of the most preferred careers in India. Botany as a subject is related to the study of plants and a career in it would mean studying in depth about fungi, algae, plants, diseases, growth, metabolism and the structure between different groups. When planning a career in Botany, the job profile can include study of plants, research, working with industries, teaching, self employment, and being a part of many more fields.

A person who works in this field is called a Botanist. It will be the job of the Botanist to study plant life along with finding solutions to problems related to that of forest and agriculture. There are also Botanists who deal with space travel, agriculture, artificial environments, hydroponics and various other interesting areas of research.

Botanists are required by varying organizations ranging from multinationals to research organizations to hospitality and tourism bodies, depending upon the nature of their activities. They fit into different roles depending on the activity of the organization and evolve into senior positions at high salaries.

THE MAIN JOB SECTORS ARE AS FOLLOWS:

After the completion of M.Sc in Botany, you can work in public and government sector as well. You can get a job role of Plant Taxonomy, Weed Scientists, Ethnobiology, Plant Scientists, Pathology, Palynology, Plant ecology and much more. You can make a career in different companies such as Chemical Companies, Nurseries, Seed Companies, Biotechnology Firms, Fruit Growers, Food Companies, Oil Industry and much more.

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 in 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.
- 3 Continuous Evaluation (Internal Marks)

i) Theory courses

The division of internal marks will of 50% marks for the mid semester examination and 50% of marks for the internal class tests. There shall be three class tests held during each semester. The three 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.

Evaluation through a semester-end examination

The distribution of weightage for various components of the evaluation shall be as given below:

	Bachelor's degree/ Under-graduate diploma	Master's degree/ Post-graduate diploma
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%

PASSING MARKS:

For postgraduate students, obtaining a minimum of 45% marks in aggregate in each course shall be essential for passing the course and earning its assigned credits. A candidate, who secures less than 45% 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+2)** semesters. All the program requirements shall have to be completed in **(n+2)** semesters.

ATKT criteria:

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



Level 6.0	Curriculum Matrix M.Sc. Botany						
Semester I					Marks Distribution		
Subject Type	Subject Code	Name of Subject	Hours/ week	Credit (L+T+P)	External	Internal	Total
Discipline Specific Core Course (DSCC)	MSC DSC - 101	Cell Biology and Biochemistry	3	3	70	30	100
	MSC DSC - 102	Algae, Bryophytes and Pteridophytes	3	3	70	30	100
	MSC DSC - 103	Diversity and Biology of Gymnosperms and Anatomy of Angiosperms	3	3	70	30	100
	MSC DSC - 104	Bio-Instrumentation	3	3	70	30	100
Laboratory	MSC DSC - 105	Lab Course I	2	1	35	15	50
	MSC DSC - 106	Lab Course II	2	1	35	15	50
Discipline Specific Elective Course (DSEC)	MSC DSE - 101	Plant Biotechnology OR Plant Pathology	4	4	70	30	100
	MSC DSE - 102						
Research Work	RM - 02	Research & Publication Ethics	4	4	70	30	100
		Total	24	22	490	210	700

Level 6.0	Curriculum Matrix M.Sc. Botany						
Semester II					Marks Distribution		
Subject Type	Subject Code	Name of Subject	Hours/ week	Credit (L+T+P)	External	Internal	Total
Discipline Specific Core Course (DSCC)	MSC DSC - 201	Computational Biology	3	3	70	30	100
	MSC DSC - 202	Ecology and Environment	3	3	70	30	100
	MSC DSC - 203	Plant Physiology and Metabolism	3	3	70	30	100
	MSC DSC - 204	Floral Morphology and Embryology of	3	3	70	30	100



		Angiosperms					
Laboratory	MSC DSC - 205	Lab Course III	2	1	35	15	50
	MSC DSC - 206	Lab Course IV	2	1	35	15	50
Discipline Specific Elective Course (DSEC)	MSC DSE - 201	Economic Botany OR Paleobotany & Palynology	4	4	70	30	100
	MSC DSE - 202						
OJT/Internship/Project	INT - 01	Internship-I	4	4	70	30	100
		Total	24	22	490	210	700

Level 6.5		Curriculum Matrix M.Sc. Botany					
Semester III					Marks Distribution		
Subject Type	Subject Code	Name of Subject	Hours/week	Credit (L+T+P)	External	Internal	Total
Discipline Specific Core Course (DSCC)	MSC DSC - 301	Angiosperms Taxonomy and Phytogeography	3	3	70	30	100
	MSC DSC - 302	Genetics and Breeding	3	3	70	30	100
Laboratory	MSC DSC - 303	Lab Course V	2	1	35	15	50
	MSC DSC - 304	Lab Course VI	2	1	35	15	50
Discipline Specific Elective Course (DSEC)-I	MSC DSE - 301	Microbial Diversity OR Ethnobotany	4	4	70	30	100
	MSC DSE - 302						
Discipline Specific Elective Course (DSEC)-II	MSC DSE - 303	Phytochemistry & Medicinal Botany OR Environmental Biotechnology	4	4	70	30	100
	MSC DSE - 304						
RP		Research Project and Proposal Writing	6	6	105	45	150



		Total	24	22	455	195	650
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Level 6.5	Curriculum Matrix M.Sc. Botany						
Semester IV					Marks Distribution		
Subject Type	Subject Code	Name of Subject	Hours/ week	Credit (L+T+P)	External	Internal	Total
Discipline Specific Core Course (DSCC)	MSC DSC - 401	Plant Molecular Biology: Genetic Engineering	3	3	70	30	100
	MSC DSC - 402	Plant Resource Utilization and Conservation	3	3	70	30	100
Laboratory	MSC DSC - 403	Lab Course VII	2	1	35	15	50
	MSC DSC - 404	Lab Course VIII	2	1	35	15	50
Dissertation		Dissertation Work and Thesis Writing		12	175	75	250
		Dissertation		1	35	15	50
		Viva- Voce		1	35	15	50
		Total		22	455	195	650