

MTech Course Structure for SPASE students (as in Jul 2025)

1. **MTech credit requirements:** 144 credits, breakdown semester wise
 - a. 1st semester: 36 credits (4 full courses)
 - b. 2nd semester: 36 credits (4 full courses)
 - c. 3rd and 4th semester: MTech thesis of 72 credits
2. **First semester:**
 - a. Students would take 3 department compulsory courses. These will be in the form of 6 already floated modular courses.
 - b. And one open or department elective.
3. **In the second semester:**
 - a. In terms of specialization **two compulsory courses from a basket of courses** within a stream can be taken. We have identified two broad streams named: (1) Planetary science and technology (**PST**) and (2) Space Astronomy and Instrumentation (**SAI**)
 - b. And two open or department electives.

Semester - 1	Semester - 2
SPA 622 M Mathematical Techniques in Space Science and Engineering	Two courses from the basket of either PST or SAI (see table below)
SPA 623 M Numerical Techniques in Space Science and Engineering	Two Open or Department Electives
SPA 614M Introduction to Celestial Mechanics	
SPA 618M Introduction to Radiative Processes in Space	
SPA 613M Introduction to Celestial Observational Techniques	
SPA 617M Space Instrumentation Laboratory	
One Open or Department Elective	
Total credits: $6 \times 5 + 9 = 39$	Total credits: $4 \times 6 = 36$

PST	SAI
SPA 632 M Introduction to Mathematical Transforms	SPA 632 M Introduction to Mathematical Transforms and Applications to Space Sciences
SPA 631 M Statistical Methods and Applications	SPA 631 M Statistical Methods and Applications
SPA 627 M Introduction to Fluid Mechanics in Space	SPA 635M Study of compact objects using real space data (X-ray lab)
SPA 629M Introduction to Geology: Measuring the Heartbeat of a Planetary Body (no longer offered)	SPA 624M Optical Instrumentation lab
	SPA 636 Radio instrumentation, Observing techniques and data analyses lab
	SPA 611 Radio Astronomy

Semester 2 Open Electives:

- SPA 634 Optical Instrumentation in Astronomy (9 credits)
- SPA 633M Key Concepts in Astrobiology and Space Biology (5 credits)
- SPA 402 Introduction to Manmade Satellite System and its Environment (9 credits)