

BIRLA INSTITUTE OF TECHNOLOGY- MESRA, RANCHI
NEWCOURSE STRUCTURE - To be effective from academic session 2018- 19
Based on CBCS & OBE model
Recommended scheme of study for M.Tech (Aerodynamics)

| SEMESTER / Session of Study (Recommended) | Course Level | Category of course | Course Code | Courses | Mode of delivery & credits <i>L-Lecture; T-Tutorial;P- Practicals</i> | | | Total Credits <i>C- Credits</i> |
|---|-----------------|----------------------------|----------------------------|---|--|-------------------------|-------------------------|---------------------------------------|
| | | | | | L (Periods/ week) | T (Periods/ week) | P (Periods/ week) | C |
| FIRST / Monsoon | FIFTH | THEORY | | | | | | |
| | | Programme Core (PC) | SR 501 | Elements of Rocket Propulsion | 3 | 0 | 0 | 3 |
| | | | SR 502 | Elements of Aerodynamics | 3 | 0 | 0 | 3 |
| | | | SR 503 | Space Engineering & Space Dynamics | 3 | 0 | 0 | 3 |
| | | Programme Elective (PE) | SR 508 SR 509 | (One Course to be selected) Aerodynamic Stability and Control Aeroacoustics | 3 | 0 | 0 | 3 |
| | | Open elective OE | | Open Elective (OE) 1 | 3 | 0 | 0 | 3 |
| | | LABORATORIES | | | | | | |
| | | Programme Core (PC) | SR 506 | Rocket Propulsion Lab | 0 | 0 | 4 | 2 |
| | | | SR 507 | Aerodynamics Lab | 0 | 0 | 4 | 2 |
| | | TOTAL | | | | | | |
| SECOND/ Spring | FIFTH | THEORY | | | | | | |
| | | Programme Core (PC) | SR 576 | Compressible Flows | 3 | 0 | 0 | 3 |
| | | | SR 577 | Boundary Layer Theory | 3 | 0 | 0 | 3 |
| | | | SR 578 | Computational Fluid Dynamics | 3 | 0 | 0 | 3 |
| | | | SR 579 SR 580 SR 581 | (One Course to be selected) Experimental Aerodynamics Elements of Hypersonic Flight Missile Aerodynamics | 3 | 0 | 0 | 3 |
| | | | OPEN ELECTIVE OE | | Open Elective (OE) 2 | 3 | 0 | 0 |
| | | LABORATORIES | | | | | | |
| | | Programme Core (PC) | SR 582 | Low Speed Aerodynamics Lab | 0 | 0 | 4 | 2 |
| | | | SR 583 | High Speed Aerodynamics Lab | 0 | 0 | 4 | 2 |
| | | TOTAL | | | | | | |
| TOTAL FOR FIFTH LEVEL | | | | | | | 38 | |
| THIRD / Monsoon | SIXTH | THEORY | | | | | | |
| | | Programme Core (PC) | SR 600 | Thesis Part - I | | | | 8 |
| | | | SR 611 | Fundamentals of Turbulence | 3 | 0 | 0 | 3 |
| | | Programme Elective (PE) | SR 612 SR 613 SR 614 | (One Course to be selected) Aerodynamics of Internal Flows Basics of Measurement Turbulence Modelling in CFD | 3 | 0 | 0 | 3 |
| | | LABORATORIES | | | | | | |
| | | Programme Core (PC) | SR 615 | Data Acquisition and Processing Lab | 0 | 0 | 4 | 2 |
| TOTAL | | | | | | | 16 | |
| FOURTH/ Spring | SIXTH | Programme Core (PC) | SR 650 | Thesis Part - II | | | | 16 |
| TOTAL | | | | | | | 16 | |
| TOTAL FOR SIXTH LEVEL | | | | | | | 32 | |
| GRAND TOTAL FOR M.TECH PROGRAMME (38 + 32) | | | | | | | 70 | |

DEPARTMENT OF SPACE ENGINEERING & ROCKETRY
PROGRAMME ELECTIVES (PE)
OFFERED FOR LEVEL 5-6

| PE / LEVEL | Code no. | Name of the PE courses | Prerequisites courses with code | L | T | P | C |
|------------|----------|-----------------------------------|---------------------------------|---|---|---|---|
| FIFTH | SR 508 | Aerodynamic Stability and Control | NIL | 3 | 0 | 0 | 3 |
| | SR 509 | Aeroacoustics | NIL | 3 | 0 | 0 | 3 |
| | SR 579 | Experimental Aerodynamics | NIL | 3 | 0 | 0 | 3 |
| | SR 580 | Elements of Hypersonic Flight | NIL | 3 | 0 | 0 | 3 |
| | SR 581 | Missile Aerodynamics | NIL | 3 | 0 | 0 | 3 |
| SIXTH | SR 612 | Aerodynamics of Internal Flows | NIL | 3 | 0 | 0 | 3 |
| | SR 613 | Basics of Measurement | NIL | 3 | 0 | 0 | 3 |
| | SR 614 | Turbulence Modelling in CFD | NIL | 3 | 0 | 0 | 3 |

*** PROGRAMME ELECTIVES TO BE OPTED ONLY BY THE DEPARTMENT STUDENTS**

DEPARTMENT OF SPACE ENGINEERING & ROCKETRY
OPEN ELECTIVES (OE)*
OFFERED FOR LEVEL 5-6

| OE / LEVEL | Code no. | Name of the OE courses | Prerequisites courses with code | L | T | P | C |
|-------------------|-----------------|---|--|----------|----------|----------|----------|
| FIFTH | SR 509 | Aero acoustics | NIL | 3 | 0 | 0 | 3 |
| | SR 505 | Flame Propagation & Stability | NIL | 3 | 0 | 0 | 3 |
| | SR 553 | Ignition and Extinction in Chemical Rockets | NIL | 3 | 0 | 0 | 3 |
| | SR 555 | Heat Transfer in Space Applications | NIL | 3 | 0 | 0 | 3 |
| | SR 579 | Experimental Aerodynamics | NIL | 3 | 0 | 0 | 3 |
| SIXTH | SR 603 | Computational Combustion | NIL | 3 | 0 | 0 | 3 |

*** OPEN ELECTIVES TO BE OPTED ONLY BY OTHER DEPARTMENT STUDENTS**