

Shri Ramdeobaba College of Engineering and Management, Nagpur
Department of Mechanical Engineering
Program: M. Tech in Robotics & Automation (2022-23)

SEM-I

| SN | Course Code | Course Name | L | P | Total | Credits | Internal Assessm | Semester Examinati | Total |
|----|-------------|--|-----------|-----------|-----------|-----------|------------------|--------------------|------------|
| 1 | RAT511 | Robot Kinematics and Dynamics | 3 | - | 3 | 3 | 40 | 60 | 100 |
| 2 | RAT512 | Robotic sensors and actuators | 3 | - | 3 | 3 | 40 | 60 | 100 |
| 3 | RAT513 | Advanced Industrial Automation | 3 | - | 3 | 3 | 40 | 60 | 100 |
| 4 | RAT514 | Control System theory | 3 | | 3 | 3 | 40 | 60 | 100 |
| 5 | RAT515 | Program Elective-1 | 3 | - | 3 | 3 | 40 | 60 | 100 |
| 6 | RAP516 | Robotics Lab | | 4 | 4 | 2 | 40 | 60 | 100 |
| 7 | RAP517 | Industrial Automation and IoT Lab | - | 4 | 4 | 2 | 25 | 25 | 50 |
| 8 | RAP518 | Design thinking, Innovation and Enterpreneurship | | 4 | 4 | 2 | 25 | 25 | 50 |
| 9 | RAT519 | Professional Practices and Ethics | 1 | - | 0 | 1 | 50 | 0 | 50 |
| | | Total | 16 | 12 | 27 | 22 | 340 | 410 | 750 |

Program Elective-1

| Course Code | Program Elective-1 |
|-------------|--------------------------------------|
| RAT515-1 | Field and Service Robot |
| RAT515-2 | Industrial Internet of Things (IIoT) |

SEM-II

| SN | Course Code | Course Name | L | P | Total | Credits | Internal Assessm | Semester Examinati | Total |
|----|-------------|--|-----------|----------|-----------|-----------|------------------|--------------------|------------|
| 1 | RAT521 | Mobile Robotics | 3 | - | 3 | 3 | 40 | 60 | 100 |
| 2 | RAT522 | Artificial Intelligence and Machine Learning in Robotics | 3 | - | 3 | 3 | 40 | 60 | 100 |
| 3 | RAT523 | Research Methodology | 3 | - | 3 | 3 | 40 | 60 | 100 |
| 4 | RAT524 | Program Elective -2 | 3 | - | 3 | 3 | 40 | 60 | 100 |
| 5 | RAT525 | PG Group Elective | 3 | - | 3 | 3 | 40 | 60 | 100 |
| 6 | RAT599 | Open Elective-1 | 3 | - | 3 | 3 | 40 | 60 | 100 |
| 7 | RAP527 | Integrated Advance Manufacturing Lab | | 4 | 4 | 2 | 25 | 25 | 50 |
| 8 | RAP528 | Product Life-cycle Management Lab | - | 4 | 4 | 2 | 25 | 25 | 50 |
| 9 | RAP529 | Project Based Learning | - | 4 | 4 | 2 | 25 | 25 | 50 |
| | | Total | 20 | 8 | 28 | 24 | 315 | 435 | 750 |

| Course Code | Program Elective -2 |
|-------------|-------------------------|
| RAT524-1 | Bioinspired Robotics |
| RAT524-2 | Supply Chain Management |

| Course Code | PG Group Elective |
|-------------|---|
| RAT525-1 | Robotic Process Automation |
| RAT525-2 | Product life cycle Management (PLM) |
| | Embedded system using Raspberry-pi (Electronics dept) |
| | Machine Vision and Image Processing (CS Dept/E&C) |

| Course Code | Open Elective |
|-------------|--|
| RAT599-1 | Industrial robotics |
| RAT599-2 | Mechatronics |
| RAT599-3 | Electric and Hybrid Vehicle Technology |

SEM-III

| SN | Course Code | Course Name | L | P | Total | Credits | Internal Assessm | Semester Examinati | Total |
|-----------|-------------|--|-----------|----------|-----------|-----------|------------------|--------------------|------------|
| 1 | RAT611 | Program Elective -3 | 3 | - | 3 | 3 | 40 | 60 | 100 |
| 2 | RAT612 | Program Elective -4 | 3 | - | 3 | 3 | 40 | 60 | 100 |
| 3 | RAP613 | Dessertation Phase - I | - | 3 | 3 | 6 | 100 | 100 | 200 |
| | | Total | 11 | 3 | 14 | 12 | 180 | 220 | 400 |
| OR | | | | | | | | | |
| 4 | RAP614 | Industry Internship-Phase-I / Research Internship-Phase-I / TBI Internship-Phase-I | | | | 12 | 200 | 200 | 400 |

| Course Code | | Program Elective-3 | | | | | | | |
|---------------|-------------|--|---|---|-------|---------|------------------|--------------------|-------|
| RAT611-1 | | Smart Manufacturing and Digital Twins | | | | | | | |
| RAT611-2 | | Economics and financial management | | | | | | | |
| Course Code | | Program Elective-4 | | | | | | | |
| RAT612-1 | | Strategic Project Management | | | | | | | |
| RAT612-2 | | Digital Manufacturing | | | | | | | |
| SEM-IV | | | | | | | | | |
| SN | Course Code | Course Name | L | P | Total | Credits | Internal Assessm | Semester Examinati | Total |
| 1 | RAP621 | Dessertation Phase-II | - | 6 | 6 | 12 | 200 | 200 | 400 |
| OR | | | | | | | | | |
| 2 | RAP622 | Industry Internship-Phase-I / Research Internship-Phase-I / TBI Internship-Phase-I | | | | 12 | 200 | 200 | 400 |

Total Credits: 22 + 24 + 12 + 12 = 70