# Bachelor of Technology (Mechatronics Engineering)

# Kurukshetra University, Kurukshetra

***SCHEME OF STUDIES/EXAMINATIONSw. e. f.* 2019-20 onwards**

**Semester–III**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **S.**  **No.** | **Course No.** | **Course Title** | **L:T:P** | **Hours/**  **Week** | **Credits** | **Examination Schedule (Marks)** | | | | **Duration of Exam**  **(Hours)** |
| **Major Test** | **Minor Test** | **Practical** | **Total** |
| 1 | #BS-201A | Optics & Waves | 3:0:0 | 3 | 3 | 75 | 25 | 0 | 100 | 3 |
| 2 | #BS-205A | Advanced Engineering Mathematics | 3:0:0 | 3 | 3 | 75 | 25 | 0 | 100 | 3 |
| 3 | #ES-203A | Basic Electronics Engineering | 3:0:0 | 3 | 3 | 75 | 25 | 0 | 100 | 3 |
| 4 | MTC-201 | Thermal Engineering | 3:0:0 | 3 | 3 | 75 | 25 | 0 | 100 | 3 |
| 5 | MTC-203 | Applied Engineering Mechanics | 3:1:0 | 4 | 4 | 75 | 25 | 0 | 100 | 3 |
| 6 | MTC-205 | Theory of Machines-I | 3:1:0 | 4 | 4 | 75 | 25 | 0 | 100 | 3 |
| 7 | ES-205L | Basic Electronics Engineering Lab | 0:0:2 | 2 | 1 | 0 | 40 | 60 | 100 | 3 |
| 8 | MTC-207 | Applied Engineering Mechanics Lab | 0:0:2 | 2 | 1 | 0 | 40 | 60 | 100 | 3 |
| 9 | MTC-209 | Theory of Machines-I Lab | 0:0:2 | 2 | 1 | 0 | 40 | 60 | 100 | 3 |
| 10 | \*MTC-211 | Industrial Training-I | 2:0:0 | 2 | - | - | 100 | - | 100 |  |
| 11 | \*\*MC-901A | Environmental Sciences | 3:0:0 | 3 | - | 100 | - | 0 | 100 | 3 |
|  |  | Total | 23:2:6 | 31 | 23 | 450 | 270 | 180 | 900 |  |

**Note:**

*1. \* MTC-211 is a mandatory non-credit course in which the students will be evaluated for the industrial training undergone after 2nd semester and students will be required to get passing marks to qualify.*

*2.\*\*MC-901A is a mandatory credit-less course in which the students will be required to get passing marks in the major test.*

*3. Students are allowed to use programmable scientific calculator during examination.*

*4. #The courses are common with B. Tech. Mechanical Engineering.*

# Bachelor of Technology (Mechatronics Engineering)

# Kurukshetra University, Kurukshetra

***SCHEME OF STUDIES/EXAMINATIONSw. e. f.* 2019-20 onwards**

**Semester–IV**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **S.**  **No.** | **Course No.** | **Course Title** | **L:T:P** | **Hours/**  **Week** | **Credits** | **Examination Schedule (Marks)** | | | | **Duration of Exam**  **(Hours)** |
| **Major Test** | **Minor Test** | **Practical** | **Total** |
| 1 | #ES-204A | Materials Engineering | 3:0:0 | 3 | 3 | 75 | 25 | 0 | 100 | 3 |
| 2 | MTC-202 | Digital Electronics | 3:0:0 | 3 | 3 | 75 | 25 | 0 | 100 | 3 |
| 3 | MTC-204 | Fluid Mechanics and Heat Transfer | 3:0:0 | 3 | 3 | 75 | 25 | 0 | 100 | 3 |
| 4 | MTC-206 | Production Technology-I | 3:0:0 | 3 | 3 | 75 | 25 | 0 | 100 | 3 |
| 5 | MTC-208 | Theory of Machines-II | 3:1:0 | 4 | 4 | 75 | 25 | 0 | 100 | 3 |
| 6 | MTC-210 | Fluid Mechanics and Heat Transfer Lab | 0:0:3 | 3 | 1.5 | 0 | 40 | 60 | 100 | 3 |
| 7 | MTC-212 | Theory of Machines-II Lab | 0:0:3 | 3 | 1.5 | 0 | 40 | 60 | 100 | 3 |
| 8 | MTC-214 | Digital Electronics Lab | 0:0:2 | 2 | 1 | 0 | 40 | 60 | 100 | 3 |
| 9 | \*MC-902A | Constitution of India | 3:0:0 | 3 | - | 100 | - | - | 100 | 3 |
|  |  | Total | 18:1:8 | 27 | 20 | 375 | 245 | 180 | 800 |  |

**Note:**

1. *\*MC-902Ais a mandatory credit-less course in which the students will be required to get passing marks in the major test.*
2. *Students are allowed to use programmable scientific calculator during examination.*
3. *All the students have to undergo six weeks industrial training after 4th semester and it will be evaluated in 5th semester.*
4. *#The courses are common with B. Tech. Mechanical Engineering.*

# Bachelor of Technology (Mechatronics Engineering)

# Kurukshetra University, Kurukshetra

***SCHEME OF STUDIES/EXAMINATIONSw. e. f.* 2020-21 onwards**

**Semester–V**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **S.**  **No.** | **Course No.** | **Course Title** | **L:T:P** | **Hours/**  **Week** | **Credits** | **Examination Schedule (Marks)** | | | | **Duration of Exam**  **(Hours)** |
| **Major Test** | **Minor Test** | **Practical** | **Total** |
| 1 | #HM-905A | Entrepreneurship | 3:0:0 | 3 | 3 | 75 | 25 | 0 | 100 | 3 |
| 2 | MTC-301 | Communication Systems | 3:1:0 | 4 | 4 | 75 | 25 | 0 | 100 | 3 |
| 3 | MTC-303 | Production Technology-II | 3:0:0 | 3 | 3 | 75 | 25 | 0 | 100 | 3 |
| 4 | MTC-305 | Automatic Control Systems | 3:0:0 | 3 | 3 | 75 | 25 | 0 | 100 | 3 |
| 5 | MTC-307 | Embedded Systems-I | 3:0:0 | 3 | 3 | 75 | 25 | 0 | 100 | 3 |
| 6 | MTC-309 | Communication Systems Lab | 0:0:2 | 2 | 1 | 0 | 40 | 60 | 100 | 3 |
| 7 | MTC-311 | Production Technology-II Lab | 0:0:4 | 4 | 2 | 0 | 40 | 60 | 100 | 3 |
| 8 | MTC-313 | Embedded Systems-I Lab | 0:0:2 | 2 | 1 | 0 | 40 | 60 | 100 | 3 |
| 9 | MTC-315 | Project-I | 0:0:2 | 2 | 1 | 0 | 0 | 100 | 100 | 3 |
| 10 | \*MTC-317 | Industrial Training-II | 2:0:0 | 2 | - | 0 | 100 | 0 | 100 |  |
| 11 | \*\*MC-903A | Essence of Indian Traditional  Knowledge | 3:0:0 | 3 | - | 100 | - | - | 100 | 3 |
|  |  | Total | 20:1:10 | 31 | 21 | 375 | 245 | 280 | 900 |  |

**Note:**

1. *\*MTC-317 is a mandatory non-credit course in which the students will be evaluated for the industrial training undergone after 4th semester.*
2. *\*\*MC-903A is a mandatory credit-less course in which the students will be required to get passing marks in the major test.*
3. *Students are allowed to use programmable scientific calculator during examination.*
4. *#The courses are common with B. Tech. Mechanical Engineering.*

# Bachelor of Technology (Mechatronics Engineering)

# Kurukshetra University, Kurukshetra

***SCHEME OF STUDIES/EXAMINATIONSw. e. f.* 2020-21 onwards**

**Semester–VI**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **S.**  **No.** | **Course No.** | **Course Title** | **L:T:P** | **Hours/**  **Week** | **Credits** | **Examination Schedule (Marks)** | | | | **Duration of Exam**  **(Hours)** |
| **Major Test** | **Minor Test** | **Practical** | **Total** |
| 1 | #HM-901A | Organizational Behaviour | 3:0:0 | 3 | 3 | 75 | 25 | 0 | 100 | 3 |
| 2 | MTC-302 | Embedded Systems-II | 3:0:0 | 3 | 3 | 75 | 25 | 0 | 100 | 3 |
| 3 | MTC-304 | Pneumatic and Hydraulic Instrumentation | 3:0:0 | 3 | 3 | 75 | 25 | 0 | 100 | 3 |
| 4 | MTP\* | Program Elective-I | 3:0:0 | 3 | 3 | 75 | 25 | 0 | 100 | 3 |
| 5 | MTP\* | Program Elective-II | 3:0:0 | 3 | 3 | 75 | 25 | 0 | 100 | 3 |
| 6 | MTC-306 | Embedded Systems-II Lab | 0:0:3 | 3 | 1.5 | 0 | 40 | 60 | 100 | 3 |
| 7 | MTC-308 | Pneumatic and Hydraulic InstrumentationLab | 0:0:3 | 3 | 1.5 | 0 | 40 | 60 | 100 | 3 |
| 8 | MTC-310 | Project-II | 0:0:6 | 6 | 3 | 0 | 0 | 100 | 100 | 3 |
|  |  | Total | 15:0:12 | 27 | 21 | 375 | 205 | 220 | 800 |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **Program Elective-I** | | **Program Elective-II** | |
| **Course No.** | **Course Title** | **Course No** | **Course Title** |
| MTP-302 | Internal Combustion Engines | MTP-308 | Computer Aided Design and Manufacturing |
| MTP-304 | Refrigeration and Air Conditioning | MTP-310 | Microcontrollers |
| MTP-306 | Digital Image Processing | MTP-312 | Automobile Engineering and Autotronics |

***Note:***

*1. All the students have to undergo 4 to 6 weeks Industrial Training after 6th semester which will be evaluated in 7th semester.*

*2. The course of Program Elective will be offered at 1/3rd strength or 20 students (whichever is smaller) of the section.*

*3. Students are allowed to use programmable scientific calculator during examination.*

*4.#The courses are common with B. Tech. Mechanical Engineering.*

# Bachelor of Technology (Mechatronics Engineering)

# Kurukshetra University, Kurukshetra

***SCHEME OF STUDIES/EXAMINATIONSw. e. f.* 2021-22 onwards**

**Semester–VII**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **S.**  **No.** | **Course No.** | **Course Title** | **L:T:P** | **Hours/**  **Week** | **Credits** | **Examination Schedule (Marks)** | | | | **Duration of Exam**  **(Hours)** |
| **Major Test** | **Minor Test** | **Practical** | **Total** |
| 1 | MTO\* | Open Elective-I | 3:0:0 | 3 | 3 | 75 | 25 | 0 | 100 | 3 |
| 2 | MTC-401 | Robotics and Automation | 3:0:0 | 3 | 3 | 75 | 25 | 0 | 100 | 3 |
| 3 | MTP\* | Program Elective-III | 3:0:0 | 3 | 3 | 75 | 25 | 0 | 100 | 3 |
| 4 | MTP\* | Program Elective-IV | 3:0:0 | 3 | 3 | 75 | 25 | 0 | 100 | 3 |
| 5 | MTC-403 | Robotics and Automation Lab | 0:0:2 | 2 | 1 | 0 | 40 | 60 | 100 | 3 |
| 6 | MTC-405 | Project-III | 0:0:8 | 8 | 4 | 0 | 100 | 100 | 200 | 3 |
| 7 | \*MTC-407 | Industrial Training-III | 2:0:0 | 2 | - | 0 | 100 | 0 | 100 |  |
|  |  | Total | 14:0:10 | 24 | 17 | 300 | 240 | 160 | 700 |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Course No.** | **Program Elective-III** | **Course No.** | **Program Elective-IV** | **Course No.** | **Open Elective-I** |
| MTP-401 | Advanced Manufacturing Technology | MTP-407 | Renewable Energy Resources | MTO-401 | Applied Numerical Techniques and Computer Programming |
| MTP-403 | Finite Element Methods | MTP-409 | Computational Fluid Dynamics | MTO-403 | Non-Destructive Testing |
| MTP-405 | Smart Materials | MTP-411 | Consumer Electronics | MTO-405 | Internet of Things |

***Note:***

*1.\*MTC-407 is a mandatory non-credit course in which the students will be evaluated for the industrial training undergone after 6th semester and students will be required to get passing marks to qualify.*

*2. \*The course of both Program Elective and Open Elective will be offered at 1/3rd strength or 20 students (whichever is smaller) of the section.*

*3. Students are allowed to use programmable scientific calculator during examination.*

# Bachelor of Technology (Mechatronics Engineering)

# Kurukshetra University, Kurukshetra

***SCHEME OF STUDIES/EXAMINATIONSw. e. f.* 2021-22 onwards**

**Semester–VIII**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **S.**  **No.** | **Course No.** | **Course Title** | **L:T:P** | **Hours/**  **Week** | **Credits** | **Examination Schedule (Marks)** | | | | **Duration of Exam**  **(Hours)** |
| **Major Test** | **Minor Test** | **Practical** | **Total** |
| 1 | MTC-402 | Project-IV | 0:0:10 | 10 | 5 | - | 100 | 100 | 200 | 3 |
| 2 | MTO\* | Open Elective-II | 3:0:0 | 3 | 3 | 75 | 25 | 0 | 100 | 3 |
| 3 | MTO\* | Open Elective-III | 3:0:0 | 3 | 3 | 75 | 25 | 0 | 100 | 3 |
| 4 | MTP\* | Program Elective-V | 3:0:0 | 3 | 3 | 75 | 25 | 0 | 100 | 3 |
| 5 | MTP\* | Program Elective-VI | 3:0:0 | 3 | 3 | 75 | 25 | 0 | 100 | 3 |
|  |  | Total | 12:0:10 | 22 | 17 | 300 | 200 | 100 | 600 |  |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Course No.** | **Program Elective-V** | **Course No.** | **Program Elective-VI** | **Course No.** | **Open Elective-II** | **Course No.** | **Open Elective-III** |
| MTP-402 | Non-Conventional Machining | MTP-408 | Artificial Intelligence & Expert Systems | MTO-402 | Sound and Noise Control | MTO-408 | Operation Research and Optimization Techniques |
| MTP-404 | Welding Technology | MTP-410 | Micro Electro Mechanical Systems | MTO-404 | Lubricants and Lubrication | MTO-410 | Sensors and Actuators |
| MTP-406 | Industrial Ergonomics | MTP-412 | Quality and Reliability Engineering | MTO-406 | Competitive Manufacturing Systems | MTO-412 | Solar Energy |

***Note:***

*1. The course of both Program Elective and open elective will be offered at 1/3rd strength or 20 students (whichever is smaller) of the section.*

*2. Students are allowed to use programmable scientific calculator during examination.*