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| Program Name: Mechanical Engineering |
| Qualification Level: Bachelor |
| Department: Mechanical Engineering |
| College: Engineering |
| Institution: Jouf University |

Mechanical Engineering Curriculum

| Year | Level | Course Code | Course Title | Required or Elective | Pre-Requisite Courses | Co-Requisite Courses | Credit Hours (LT, LB, TU) | Type of requirements (Institution, College or Department) |
|-------------|---------|--------------------|----------------------------------|----------------------|-----------------------|----------------------|---------------------------|---|
| First Year | Level 1 | ENGL 001 | English Language (1) | Required | - | | 6 (5,5,10) | University |
| | | MTH 101 | Introductory Mathematics | Required | - | | 3 (2,0,2) | College |
| | | CIS 101 | Computer Skills | Required | - | | 3 (2,2,0) | University |
| | | EDU 101 | University Life Skills | Required | - | | 2 (2,0,0) | University |
| | | Total Credit Hours | | | | | 14 (11,5,12) | |
| | Level 2 | ENGL 002 | English Language (2) | Required | ENGL 001 | | 6 (5,5,10) | University |
| | | MTH 102 | Differential Calculus | Required | MTH 101 | | 3 (2,0,2) | College |
| | | CHM 103 | Chemistry | Required | - | | 3 (2,2,0) | College |
| | | CIS 102 | Problem Solving and Programming | Required | CIS 101 | | 3 (2,2,0) | College |
| | | Total Credit Hours | | | | | 15 (11,9,12) | |
| Second Year | Level 3 | ISL 103 | Islamic Economic System | Required | - | | 2 (2,0,0) | University |
| | | ARB 100 | Arabic language skills | Required | - | | 2 (2,0,0) | University |
| | | MEC 101 | Engineering Drawing | Required | - | | 2 (1,2,0) | College |
| | | MEC 102 | Engineering Design (1) | Required | - | | 3 (2,2,0) | College |
| | | MEC 103 | Engineering Economy | Required | MTH 102 | | 2 (2,0,0) | College |
| | | MTH 203 | Integral Calculus | Required | MTH 102 | | 3 (2,0,2) | College |
| | | PHS 101 | General Physics (1) | Required | - | | 4 (3,2,0) | College |
| | | Total Credit Hours | | | | | 18 (14,6,2) | |
| | Level 4 | ISL 107 | Professional Ethics | Required | - | | 2 (2,0,0) | University |
| | | MEC 104 | Engineering Design (2) | Required | MEC 102 | | 2 (1,2,0) | College |
| | | MEC 105 | Basics of Engineering Technology | Required | MEC 101 | | 2 (1,2,0) | College |
| | | MTH 204 | Advanced Calculus | Required | MTH 203 | | 3 (2,0,2) | College |
| | | MTH 281 | Statistics and Probability | Required | MTH 203 | | 3 (2,0,2) | College |
| | | PHS 202 | General Physics (2) | Required | PHS 101 | | 4 (3,2,0) | College |
| | | Total Credit Hours | | | | | 16 (11,6,4) | |
| Third Year | Level 5 | ARB 102 | Writing Skills | Required | - | | 2 (2,0,0) | University |
| | | ELE 261 | Elect. & Electronic Circuits | Required | PHS 202 | | 2 (2,0,1) | Department |
| | | ISL 10x | University Elective (1) | Elective | - | | 2 (2,0,0) | University |
| | | MEC 211 | Materials Engineering | Required | PHS 202 | | 3 (2,0,2) | Department |
| | | MEC 212 | Materials Engineering Lab | Required | - | MEC 211 | 1 (0,2,0) | Department |
| | | MEC 231 | Statics | Required | MTH 203 | | 3 (2,0,2) | Department |
| | | MTH 305 | Differential Equations | Required | MTH 204 | | 3 (2,0,2) | College |
| | | Total Credit Hours | | | | | 16 (12,2,7) | |
| | Level 6 | ISL 10x | University Elective (2) | Elective | - | | 2 (2,0,0) | University |
| | | MEC 213 | ME Drawing & Graphics | Required | MEC 101 | | 3 (2,2,0) | Department |
| | | MEC 214 | Mechanics of Materials | Required | MEC 231 | | 3 (2,0,2) | Department |
| | | MEC 215 | Mech. of Materials Lab | Required | - | MEC 214 | 1 (0,2,0) | Department |
| | | MEC 221 | Thermodynamics | Required | PHS 202 | | 3 (2,0,2) | Department |
| | | MEC 232 | Dynamics | Required | MEC 231 | | 3 (2,0,2) | Department |
| | | MTH 382 | Numerical Methods | Required | MTH 305 | | 3 (2,0,2) | College |
| | | Total Credit Hours | | | | | 18 (12,4,8) | |
| Fourth Year | Level 7 | MEC 321 | Heat Transfer | Required | - | MEC 341 | 3 (2,0,2) | Department |
| | | MEC 322 | Sustainable Thermal Energy | Required | MEC 221 | | 3 (2,0,2) | Department |
| | | MEC 331 | Mechanics of Machines | Required | MEC 232 | | 4 (2,2,2) | Department |
| | | MEC 332 | Mechanical Vibration | Required | MEC 232 | | 3 (2,0,2) | Department |
| | | MEC 341 | Fluid Mechanics | Required | MEC 232 MEC 221 | | 3 (2,0,2) | Department |
| | | MEC 342 | Thermo-fluid lab (1) | Required | MEC 221 | MEC 341 | 1 (0,2,0) | Department |
| | | Total Credit Hours | | | | | 17 (10,4,10) | |
| | Level 8 | MEC 311 | Mech. Eng. Design (1) | Required | MEC 214 MEC 331 | | 3 (2,0,2) | Department |
| | | MEC 323 | Special Topics in Mech. Eng. | Required | Dept. Approval | | 3 (2,0,2) | Department |
| | | MEC 324 | Air Conditioning | Required | MEC 321 | | 3 (2,0,2) | Department |
| | | MEC 333 | Manufacturing Proc. | Required | MEC 214 MEC 211 | | 4 (2,2,2) | Department |
| | | MEC 334 | Automatic Control | Required | MTH 305 | | 3 (2,0,2) | Department |
| | | MEC 335 | Control and dynamic systems Lab. | Required | - | MEC 334 | 1 (0,2,0) | Department |
| | | MEC 343 | Thermo-fluids Lab (2) | Required | MEC 322 MEC 342 | | 1 (0,2,0) | Department |
| | | Total Credit Hours | | | | | 18 (10,6,10) | |

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|------------|----------|--------------------|---------------------------------|----------------------|-----------------------|----------------------|---------------------------|---|
| Fifth Year | Level 9 | ELE 461 | Electrical Machines | Required | ELE 261 | | 2 (1,0,2) | Department |
| | | MEC 411 | Mech. Eng. Design (2) | Required | MEC 311 | | 3 (2,0,2) | Department |
| | | MEC 451 | Graduation Project | Required | Pass 110 Credits | | 4 (2,4,0) | Department |
| | | MEC 4xx | Elective Course (1) | Elective | | | | Department |
| | | MEC 4xx | Elective Course (2) | Elective | | | | Department |
| | | Total Credit Hours | | | | | 15 | |
| | Level 10 | EDU 102 / BUS 101 | University Elective (3) | Elective | - | | 2 (2,0,0) | University |
| | | MEC 412 | Computer Aided Design | Required | MEC 311 | | 3 (2,2,0) | Department |
| | | MEC 452 | Engineering Projects Management | Required | Pass 120 Credits | | 2 (2,0,1) | Department |
| | | MEC 453 | Field Training* | Required | Pass 110 Credits | | 2 | Department |
| | | MEC 462 | Mechatronics | Required | MEC 334 | | 3 (2,0,2) | Department |
| | | MEC 4xx | Elective Course (3) | Elective | | | | Department |
| | | Total Credit Hours | | | | | 15 | |

*The student must perform a field training (2 credit hours) for 8 weeks after successfully completing 110 credits

List of Department Elective Courses:

| Course Code | Course Title | Required or Elective | Pre-Requisite Courses | Credit Hours | Type of requirements (Institution, College or Department) |
|-------------|----------------------------------|----------------------|-----------------------|--------------|--|
| MEC 413 | Tribology | Elective | ME 211 MEC 214 | 3 (2,0,2) | Department |
| MEC 414 | Aircraft Design | Elective | MEC 411 | 3 (2,0,2) | Department |
| MEC 415 | Measurements and Instrumentation | Elective | MEC 341 | 3 (2,0,2) | Department |
| MEC 421 | Power Plants | Elective | MEC 322 MEC 321 | 3 (2,0,2) | Department |
| MEC 422 | Internal Combustion Engines | Elective | MEC 322 MEC 341 | 3 (2,0,2) | Department |
| MEC 423 | Design of Power Systems | Elective | MEC 341 MEC 321 | 3 (2,0,2) | Department |
| MEC 424 | Refrigeration Engineering | Elective | MEC 321 | 3 (2,0,2) | Department |
| MEC 425 | Desalination Processes | Elective | MEC 321 MEC 322 | 3 (2,0,2) | Department |
| MEC 431 | Numerical Control Systems | Elective | MEC 333 | 3 (2,0,2) | Department |
| MEC 432 | Advanced Machining Technology | Elective | MEC 333 | 3 (2,0,2) | Department |
| MEC 441 | Gas Dynamics | Elective | MEC 341 MEC 322 | 3 (2,0,2) | Department |
| MEC 442 | Turbo Machinery | Elective | MEC 322 MEC 341 | 3 (2,0,2) | Department |
| MEC 443 | Renewable Energy | Elective | MEC 341 MEC 321 | 3 (2,0,2) | Department |
| MEC 444 | Solar Energy | Elective | MEC 321 MEC 341 | 3 (2,0,2) | Department |
| MEC 455 | Quality Control | Elective | MEC 333 | 3 (2,0,2) | Department |
| MEC 456 | Industrial Safety | Elective | MEC 321 MEC 335 | 3 (2,0,2) | Department |
| MEC 463 | Robotics | Elective | MEC 334 | 3 (2,0,2) | Department |

List of University Elective Courses:

| Course Code | Course Title | | LT | LB | TU | Credit Hours | Prerequisites |
|---------------------------|--------------|---------------------------------|----|----|----|--------------|---------------|
| University Elective (1&2) | ISL 101 | Fundamentals of Islamic Culture | 2 | 0 | 0 | 4 | |
| | ISL 105 | Human Rights | 2 | 0 | 0 | | |
| | ISL 108 | Contemporary Issues | 2 | 0 | 0 | | |
| University Elective (3) | EDU 102 | Volunteer Work | 2 | 0 | 0 | 2 | |
| | BUS 101 | Entrepreneurship | 2 | 0 | 0 | | |