



JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY ANANTAPUR
COLLEGE OF ENGINEERING (AUTONOMOUS)
ANANTHAPURAMU – 515 002
COURSE STRUCTURE AND SYLLABUS
M.TECH – CONTROL SYSTEMS

| Semester-I | | | | | | | |
|--------------|-------------------------------------|--|----------|-----------|---|---|-----------|
| S.No. | Course Code | Course Name | Category | Hours per | | | Credits |
| | | | | L | T | P | |
| 1. | 21D22101 | Modern Control Systems | PC | 3 | 0 | 0 | 3 |
| 2. | 21D22102 | Adaptive Control Theory | PC | 3 | 0 | 0 | 3 |
| 3. | 21D22103a 21D22103b 21D22103c | Program Elective Course – I 1. Estimation of Signals & Systems 2. Real Time & Embedded | PE | 3 | 0 | 0 | 3 |
| 4. | 21D22104a 21D22104b 21D22104c | Program Elective Course – II 1. Intelligent Control Systems 2. Networked Control Systems 3. Digital control Systems | PE | 3 | 0 | 0 | 3 |
| 5. | 21D22105 | Control Systems Lab | PC | 0 | 0 | 4 | 2 |
| 6. | 21D22106 | Control Systems Simulation Lab | PC | 0 | 0 | 4 | 2 |
| 7. | 21D11107 | Research Methodology and IPR | MC | 2 | 0 | 0 | 2 |
| 8. | 21D11108a 21D11108b 21D11108c | Audit Course – I 1. English for Research Paper Writing 2. Value Education 3. Pedagogy Studies | AC | 2 | 0 | 0 | 0 |
| Total | | | | | | | 18 |

| Semester-II | | | | | | | |
|-------------|-------------------------------------|---|----------|-----------|---|---|---------|
| S.No. | Course Code | Course Name | Category | Hours per | | | Credits |
| | | | | L | T | P | |
| 1. | 21D22201 | Non-linear Control Systems | PC | 3 | 0 | 0 | 3 |
| 2. | 21D22202 | Process Dynamics & Control | PC | 3 | 0 | 0 | 3 |
| 3. | 21D22203a 21D22203b 21D22203c | Program Elective Course – III 1. Robotics & Control 2. Optimal Control 3. Performance Assessment & Plant Wide Control | PE | 3 | 0 | 0 | 3 |
| 4. | 21D22204a 21D22204b 21D22204c | Program Elective Course – IV 1. Solar & Wind Energy Conversion Systems 2. Biomedical Measurement Systems 3. Robust Control | PE | 3 | 0 | 0 | 3 |
| 5. | 21D22205 | Process Control Lab | PC | | 0 | 4 | 2 |
| 6. | 21D22206 | Advanced Control Systems Simulation Lab | PC | 0 | 0 | 4 | 2 |
| 7. | 21D22207 | Technical Seminar | PR | 0 | 0 | 4 | 2 |

| | | | | | | | |
|----|-----------|------------------------------|----|---|---|---|---|
| 8. | 21D11208a | Audit Course – II | AC | 2 | 0 | 0 | 0 |
| | 21D11208b | 1. Disaster Management | | | | | |
| | 21D11208c | 2. Constitution of India | | | | | |
| | | 3. Stress Management by Yoga | | | | | |



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COURSE STRUCTURE AND SYLLABUS
M.TECH – CONTROL SYSTEMS

| Semester-III | | | | | | | |
|--------------|-------------------------------------|---|----------|-----------|---|----|---------|
| S.No. | Course Code | Course Name | Category | Hours per | | | Credits |
| | | | | L | T | P | |
| 1. | 21D22301a 21D22301b 21D22301c | Program Elective Course – V 1. Industrial Drives & Control 2. Data Driven Control 3. Guidance Strategies for Autonomous Vehicles | PE | 3 | 0 | 0 | 3 |
| 2. | 21D20301 | Open Elective Waste To Energy | OE | 3 | 0 | 0 | 3 |
| 3. | 21D22302 | Dissertation Phase – I | PR | 0 | 0 | 20 | 10 |
| 4 | 21D22303 | Co-Curricular Activities | PR | | | | 02 |
| Total | | | | | | | 18 |

| Semester-IV | | | | | | | |
|-------------|-------------|-------------------------|----------|-----------|---|----|---------|
| S.No. | Course Code | Course Name | Category | Hours per | | | Credits |
| | | | | L | T | P | |
| 1. | 21D22401 | Dissertation Phase – II | PR | 0 | 0 | 32 | 16 |
| Total | | | | | | | 16 |

Open Elective:

There shall be one Open Elective in III Semester. The respective boards have to give one subject under open elective category. The students have to choose an elective offered by any Department. However, the student shall not select the subject which is already studied or to be studied during the course.

Audit course I:

4. Research Paper Writing Skills

Audit course II:

3. Stress Management by Yoga



M.Tech- EPS- (R21)

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY ANANTAPUR
COLLEGE OF ENGINEERING (AUTONOMOUS)
ANANTHAPURAMU – 515 002
COURSE STRUCTURE AND SYLLABUS
M.TECH – ELECTRICAL POWER SYSTEMS

| Semester-I | | | | | | | |
|--------------|-------------------------------------|--|----------|-----------|---|---|-----------|
| S.No. | Course Code | Course Name | Category | Hours per | | | Credits |
| | | | | L | T | P | |
| 1. | 21D21101 | Advanced Power System Protection | PC | 3 | 0 | 0 | 3 |
| 2. | 21D21102 | Power System Security and State Estimation | PC | 3 | 0 | 0 | 3 |
| 3. | 21D21103a 21D21103b 21D21103c | Program Elective I: i. Machine Learning Application to Power systems ii. Modelling and Analysis of HVDC Systems iii. Power System Optimization | PE | 3 | 0 | 0 | 3 |
| 4. | 21D21104a 21D21104b 21D21104c | Program Elective II: i. Solar & Wind Energy Conversion Systems ii. Smart Grid Technologies iii. Electric Vehicle Engineering | PE | 3 | 0 | 0 | 3 |
| 5. | 21D21105 | Machines & Power Systems Lab | PC | 0 | 0 | 4 | 2 |
| 6. | 21D21106 | Power Systems Simulation Lab | PC | 0 | 0 | 4 | 2 |
| 7. | 21D11107 | Research Methodology and IPR | MC | 2 | 0 | 0 | 2 |
| 8. | 21D11108a 21D11108b 21D11108c | Audit Course – I 1. English for Research Paper Writing 2. Value Education 3. Pedagogy Studies | AC | 2 | 0 | 0 | 0 |
| Total | | | | | | | 18 |

| Semester-II | | | | | | | |
|-------------|-------------------------------------|--|----------|-----------|---|---|---------|
| S.No. | Course Code | Course Name | Category | Hours per | | | Credits |
| | | | | L | T | P | |
| 1. | 21D21201 | Power System Stability and Control | PC | 3 | 0 | 0 | 3 |
| 2. | 21D21202 | FACTS Controllers | PC | 3 | 0 | 0 | 3 |
| 3. | 21D21203a 21D21203b 21D21203c | Program Elective III: i. Power System Wide Area Monitoring & Control ii. Modern Control Theory iii. Reactive power Compensation & Management | PE | 3 | 0 | 0 | 3 |
| 4. | 21D21204a 21D21204b 21D21204c | Program Elective IV: i. Power Quality ii. Distributed Generation and Micro grid Control iii. EHVAC Transmission systems | PE | 3 | 0 | 0 | 3 |
| 5. | 21D21205 | Renewable Energy Systems Lab | PC | 0 | 0 | 4 | 2 |
| 6. | 21D21206 | FACTS Devices & Simulation Lab | PC | 0 | 0 | 4 | 2 |
| 7. | 21D21207 | Technical Seminar | PR | 0 | 0 | 4 | 2 |

| | | | | | | | |
|-------|-----------|--|----|---|---|---|----|
| 8. | 21D11208a | Audit Course – II 1. Disaster Management 2. Constitution of India 3.Stress Management by Yoga | AC | 2 | 0 | 0 | 0 |
| | 21D11208b | | | | | | |
| | 21D11208c | | | | | | |
| | | | | | | | |
| Total | | | | | | | 18 |



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COURSE STRUCTURE AND SYLLABUS
M.TECH – ELECTRICAL POWER SYSTEMS

| Semester-III | | | | | | | |
|--------------|-----------------|--|----------|----------------|---|----|---------|
| S.No. | CourseCode | Course Name | Category | Hours per week | | | Credits |
| | | | | L | T | P | |
| 1. | 21D21301a | * Program Elective V: i. Restructured power systems ii. Risk Assessment of Electrical Power Systems iii. Power System Automation | PE | 3 | 0 | 0 | 3 |
| | 21D21301b | | | | | | |
| | 21D21301c | | | | | | |
| | | | | | | | |
| 2. | 21D20301 | * Open Elective: Waste to Energy | OE | 3 | 0 | 0 | 3 |
| 3. | 21D21302 | Dissertation Phase -I | PR | 0 | 0 | 20 | 10 |
| 4. | 21D21303 | Co-curricular Activities | PR | | | | 02 |
| Total | | | | | | | 18 |

| Semester-IV | | | | | | | |
|-------------|------------|-------------------------|----------|----------------|---|----|----|
| S.No. | CourseCode | Course Name | Category | Hours per week | | | |
| | | | | L | T | P | |
| 1. | 21D21401 | Dissertation Phase – II | PR | 0 | 0 | 32 | 16 |
| Total | | | | | | | 16 |

Open Elective:

There shall be one Open Elective in III Semester. The respective boards have to give one subject under open elective category. The students have to choose an elective offered by any Department. However, the student shall not select the subject which is already studied or to be studied during the course.

Audit course I:

4. Research Paper Writing Skills

| Semester-I | | | | | | | |
|--------------|-------------------------------------|---|----------|----------------|---|---|-----------|
| S. No. | Course Code | Course Name | Category | Hours per week | | | Credits |
| | | | | L | T | P | |
| 1. | 21D24101 | System Reliability Concepts | PC | 3 | 0 | 0 | 3 |
| 2. | 21D24102 | Life Testing & Reliability Estimation | PC | 3 | 0 | 0 | 3 |
| 3. | 21D24103a 21D24103b 21D24103c | Program Elective Course - I i. Software Reliability ii. Reliable & Fault Tolerant Computing iii. Information Security | PE | 3 | 0 | 0 | 3 |
| 4. | 21D24104a 21D24104b 21D24104c | Program Elective Course – II i. Six Sigma Concepts ii. Reliability in Engineering Design iii. Monte Carlo Simulation | PE | 3 | 0 | 0 | 3 |
| 5. | 21D24105 | Probabilistic Distributions Simulation Lab | PC | 0 | 0 | 4 | 2 |
| 6. | 21D24106 | Reliability Life Testing Simulation Lab | PC | 0 | 0 | 4 | 2 |
| 7. | 21D11107 | Research Methodology and IPR | MC | 2 | 0 | 0 | 2 |
| 8. | 21D11108a 21D11108b 21D11108c | Audit Course – I 1. English for Research Paper Writing 2. Value Education 3. Pedagogy Studies | AC | 2 | 0 | 0 | 0 |
| Total | | | | | | | 18 |

| Semester-II | | | | | | | |
|--------------|-------------|---|----------|----------------|---|---|-----------|
| S. No. | Course Code | Course Name | Category | Hours per week | | | Credits |
| | | | | L | T | P | |
| 1. | 21D24201 | R - Programming | PC | 3 | 0 | 0 | 3 |
| 2. | 21D24202 | Stochastic Process | PC | 3 | 0 | 0 | 3 |
| 3. | 21D24203a | Program Elective Course – III i. Risk Assessment and Management | PE | 3 | 0 | 0 | 3 |
| | 21D24203b | ii. Maintenance Engineering& Management | | | | | |
| | 21D24203c | iii. Reliability Optimization | | | | | |
| 4. | 21D24204a | Program Elective Course – IV i. Statistical Quality Control | PE | 3 | 0 | 0 | 3 |
| | 21D24204b | ii. Power System Reliability | | | | | |
| | 21D24204c | iii. Intelligent Algorithms | | | | | |
| 5. | 21D24205 | Network Reliability simulation Lab | PC | 0 | 0 | 4 | 2 |
| 6. | 21D24206 | R – Programming Lab | PC | 0 | 0 | 4 | 2 |
| 7. | 21D24207 | Technical Seminar | PR | 0 | 0 | 4 | 2 |
| 8. | 21D11208a | Audit Course – II | AC | 2 | 0 | 0 | 0 |
| | 21D11208b | 1. Disaster Management | | | | | |
| | 21D11208c | 2. Constitution of India 3.Stress Management by Yoga | | | | | |
| Total | | | | | | | 18 |



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COURSE STRUCTURE AND SYLLABUS
M.TECH – RELIABILITY ENGINEERING

| Semester-III | | | | | | | |
|--------------|-----------------|---|----------|----------------|---|----|-----------|
| S. No. | Course Code | Course Name | Category | Hours per week | | | Credits |
| | | | | L | T | P | |
| 1. | 21D24301a | Program Elective Course – V i. Python Programming ii. Statistical Techniques in Big Data Analysis iii. Statistical Techniques in Machine Learning | PE | 3 | 0 | 0 | 3 |
| | 21D24301b | | | | | | |
| | 21D24301c | | | | | | |
| 2. | 21D20301 | Open Elective Waste to Energy | OE | 3 | 0 | 0 | 3 |
| 3. | 21D24302 | Dissertation Phase – I | PR | 0 | 0 | 20 | 10 |
| 4. | 21D24303 | Co-Curricular Activities | PR | | | | 02 |
| Total | | | | | | | 18 |

| Semester-IV | | | | | | | |
|--------------|-------------|-------------------------|----------|----------------|---|----|-----------|
| S. No. | Course Code | Course Name | Category | Hours per week | | | |
| | | | | L | T | P | |
| 1. | 21D24401 | Dissertation Phase – II | PR | 0 | 0 | 32 | 16 |
| Total | | | | | | | 16 |

Open Elective:

There shall be one Open Elective in III Semester. The respective boards have to give one subject under open elective category. The students have to choose an elective offered by any Department. However, the student shall not select the subject which is already studied or to be studied during the course.

Audit course I:

1. Research Paper Writing Skills

Audit course II:

1. Stress Management by Yoga



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COURSE STRUCTURE AND SYLLABUS
M.TECH – POWER AND INDUSTRIAL DRIVES

I Semester

| S.No. | Course Code | Course Name | L-T-P | Credits |
|-----------------|-------------------------------------|---|-------|---------|
| 1 | 21D23101 | Switched Mode Power Converters | 3-0-0 | 3 |
| 2 | 21D23102 | Machine Modelling and Analysis | 3-0-0 | 3 |
| 3 | 21D23103a 21D23103b 21D23103c | Program Elective I: i) Power Electronic Control of DC Drives ii) Modern Control Theory iii) Energy Auditing and Management | 3-0-0 | 3 |
| 4 | 21D23104a 21D23104b 21D23104c | Program Elective II: i) Solar Energy Conversion Systems ii) Wind Energy Conversion Systems iii) Smart Grid Technologies | 3-0-0 | 3 |
| 5 | 21D23105 | Power Electronic Circuit Lab | 0-0-4 | 2 |
| 6 | 21D23106 | Renewable Energy Sources Lab | 0-0-4 | 2 |
| 7 | 21D11107 | Research Methodology and IPR | 2-0-0 | 2 |
| 8 | 21D11108a 21D11108b 21D11108c | Audit Course – I 1. English for Research Paper Writing 2. Value Education 3. Pedagogy Studies | 2-0-0 | 0 |
| Total Credits : | | | | 18 |

II Semester

| S.No. | Course Code | Course Name | L-T-P | Credits |
|-------|-------------------------------------|---|-------|---------|
| 1 | 21D23201 | Modern Power Electronics | 3-0-0 | 3 |
| 2 | 21D23202 | FACTS Controllers | 3-0-0 | 3 |
| 3 | 21D23203a 21D23203b 21D23203c | Program Elective III i) Advanced Electric Drives ii) Advanced Power Semiconductor Devices & Protection iii) Applications of Power Converters | 3-0-0 | 3 |
| 4 | 21D23204a 21D23204b 21D23204c | Program Elective IV i) Power Quality ii) AI Techniques in Electrical Engineering iii) Digital Signal Processors and applications | 3-0-0 | 3 |
| 5 | 21D23205 | Electric Drives Lab | 0-0-4 | 2 |
| 6 | 21D23206 | FACTS Devices & Simulation Lab | 0-0-4 | 2 |

| | | | | |
|-----------------|-----------|--------------------------------|--------|----|
| 7 | 21D23207 | Mini Project/Technical Seminar | 0 -0-4 | 2 |
| 8 | 21D11208a | Audit Course – II | 2-0-0 | 0 |
| | 21D11208b | 1. Disaster Management | | |
| | 21D11208c | 2. Constitution of India | | |
| | | 3.Stress Management by Yoga | | |
| Total Credits : | | | | 18 |

Semester III

| S.No. | Course Code | Course Name | L-T-P | Credits |
|-----------------|-------------------------------------|--|--------|---------|
| 1 | 21D23301a 21D23301b 21D23301c | * Program Elective V: i) Control & Integration of Renewable Energy Sources ii) Energy Storage Technologies iii) Hybrid Electric Vehicle Engineering | 3-0-0 | 3 |
| 2 | 21D20301 | * Open Elective: Waste to Energy | 3-0-0 | 3 |
| 3 | 21D23302 | Dissertation Phase -I | 0-0-20 | 10 |
| 4 | 21D23303 | Co-curricular Activities | | 2 |
| Total Credits : | | | | 18 |

Semester IV

| S.No. | Course Code | Course Name | L-T-P | Credits |
|-----------------|-------------|-------------------------|--------|---------|
| 1 | 21D23401 | Dissertation Phase - II | 0-0-32 | 16 |
| Total Credits : | | | | 16 |

Open Elective:

There shall be one Open Elective in III Semester. The respective boards have to give one subject under open elective category. The students have to choose an elective offered by any Department. However, the student shall not select the subject which is already studied or to be studied during the course.

Audit course I:

1. Research Paper Writing Skills