Industrial Electrical

Contact Information
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The Industrial Electrical option of the Electrical Technology program is designed to give students the skills necessary for successful employment in the industrial sector of the electrical industry. The core curriculum of the Electrical Technology program includes in-depth study of electrical theory, applied math, code study and residential wiring. A substantial amount of hands-on experience is provided in our seven dedicated laboratories, which contain AutoCAD drawing, advanced electrical test equipment, electric motors, magnetic motor starters, programmable controllers, electronic devices and instrumentation. Green technology is applied in areas of lighting and design class, efficiency of motors, controlling of loads (lighting, AC, etc.) in building operation through programmable controllers (PLCs).

The Industrial Electrical option adds skills in the area of automated industrial controls (robotics, pneumatics and digital electronics) as well as large motors and the electronic drives that control those motors. Graduates of this option find employment as maintenance technicians for manufacturing firms, power companies and processing plants. They also have opportunities to work as engineering technicians in the design, manufacturing and sales of electrical equipment. This flexibility in employment is made possible by the department’s eight faculty members who collectively have over 200 years of industry and training experience.

Graduates of this option are also exempt from the mandatory classroom training required by North Dakota law (ND Century Code 43-09-11).

While students are fully employable upon completion of this associate-granting program, some elect to return for another year of training, earning the Electrical Master Technician degree (please refer to the Electrical Technology, Electrical Master Technician). Other students may wish to continue their education by returning for an additional year, combining Electrical Technology with Robotics, Automation and Mechatronics, HVAC/R, Plumbing, or business classes. Students may transfer to four-year colleges and universities for a bachelor's degree in programs such as Construction Management or Engineering Technology.

Admission Requirements*
The applicants must be high school graduates or equivalent. Students considered for acceptance must complete all admission requirements.

Required minimum placement scores:

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<thead>
<tr>
<th>ACT</th>
<th>ACCUPLACER</th>
<th>ACCUPLACER</th>
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</thead>
<tbody>
<tr>
<td>Reading – 15</td>
<td>Reading Comp – 61</td>
<td>NEXT GENERATION</td>
</tr>
<tr>
<td>English – 15</td>
<td>WritePlace – 3-4</td>
<td>Reading – 240</td>
</tr>
<tr>
<td>Math – 17</td>
<td>Arithmetic – 51</td>
<td>Writing – 237</td>
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<tr>
<td></td>
<td>Elementary Algebra – 25</td>
<td>QAS – 232</td>
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Or transfer equivalencies will apply as appropriate.

Applicants not meeting the above requirements are encouraged to visit with the academic counselor at 701-671-2257 or the Electrical Technology department chair at 701-671-2662 for strategies to meet the admission requirements.

*Program Admission Requirements are subject to revision. Please check the department or program website under Program Admission Requirements for current information.

Course Code | Course Title                                   | Credits |
-------------|-----------------------------------------------|---------|
ECAL 101    | Direct Current (DC) Fundamentals              | 5       |
ECAL 102    | Alternating Current (AC) Fundamentals         | 5       |
ECAL 103    | Electrical Code Study                         | 4       |
ECAL 111    | Electric Meters and Motors Lab                | 3       |
ECAL 133    | Basic Wiring Lab                              | 3       |
ECAL 137    | Electrical Drafting                           | 2       |
ECAL 201    | Three-Phase Electrical Systems                | 5       |
ECAL 205    | Electrical Design and Lighting                | 3       |
ECAL 211    | AC Measurements                               | 4       |
ECAL 223    | Electronic Devices/Lab                        | 4       |
ECAL 241    | Basic Motor Controls Lab                      | 3       |
ECAL 243    | Programmable Logic Controllers Lab            | 3       |

Industrial Courses

ECAL 224 | Automated Industrial Controls Lab | 5
ECAL 242 | Advanced Drives/Lab              | 2
ECAL 253 | Introduction to Instrumentation Lab | 3

Related/General Education Courses

FYE 101   | Science of Success                  | 1       |
ENGL 110  | College Composition I               | 3       |
English/Communication Elective (choose one)
ENGL 105  | Technical Communications            | 3       |
ENGL 120  | College Composition II              | 2       |
ENGL 125  | Introduction to Professional Writing | 2       |
COMM 110  | Fundamentals of Public Speaking     | 2       |
MATH 132  | Technical Algebra I                 | 2       |
MATH 134  | Technical Algebra II                | 2       |
MATH 136  | Technical Trigonometry              | 2       |
HPER 140   | Wellness Elective(s)                | 2       |
Social and Behavioral Sciences, Humanities, History and/or Computer Electives
Recommended:
  • CIS 101 – Computer Literacy – 2 cr
  • PSYC 100 – Human Relations in Organizations – 2 cr

Total Required Credits  | 73

NOTE: This program requires an HP ProBook 650 laptop or equivalent. Please refer to the NDSCS website for specifications. The cost will be approximately $900 if purchased from NDSCS. Contact the NDSCS ITS Department for more information and to reserve/purchase a laptop at 701-671-3333 option 5.

For further information regarding the Electrical Department, contact Ivan Maas, department chair at 701-671-2662.

Award
Upon successful completion of the required courses, students will be awarded an Associate in Applied Science degree in Electrical Technology, Industrial Electrical. This is the only program/degree in the ND University System which also qualifies most graduates for the 2,000 hours of apprenticeship credit for North Dakota, South Dakota and Minnesota.