

Wind Energy Technology Course Sequences & Course Schedules

Proposed “Recommended Course Sequence – Wind Energy Technology, Associate in Applied Science Degree”

(No longer includes summer term)

Introduction to Computer Applications & Concepts (CIS 114) replaces Computer Fundamentals (CIS 108).

The semester hours for Fundamentals of Fluid Power (ELM 120) have been increased from 3 to 4 to more fully accommodate course outcomes.

PLC Fundamentals (ELM 210) has been moved from spring to fall to accommodate moving Electromechanical Capstone (ELM 276) and Wind Technology Internship II (WTT 278) from summer to spring.

Technical Communications (ENL 115) has been added as an alternative to English Composition I (ENL 101).

Math for Technicians (MTH 117) has been added as it is more relevant to the study of wind energy technology than Business Math (MTH 115), which has been allowed in the past. The Wind Energy Technology program description in the Course Catalog states: “The components of the WTT curriculum are algebra and trigonometry based” which is consistent with the Course Description and Course Outcomes of Math for Technicians (MTH 117).

Understanding Human Diversity (SSC 147) has been moved from spring to fall to accommodate moving Concepts in Environmental Science (GSC 120), typically taken as the natural science elective, from fall to spring at the request of the instructor.

Introduction to Maintenance Technology (WTT 101), a two semester-hour course, has been removed to accommodate the combined one semester-hour increase of ELM 120 and the one semester-hour increase resulting from adding MTH 117 (see above). WTT 101 course outcomes have been distributed among ELM 217, ELM 218, and WTT 210.

Airfoil and Composite Repair (WTT 270) has been removed, as it is no longer offered, and its course outcomes absorbed by Wind Turbine Troubleshooting and Repair (WTT 260).

| First Year – Fall Semester | | | | First Year – Spring Semester | | | |
|-----------------------------|-------------------------|--|------------|-------------------------------|-------------------------|--|-----------|
| Dept. | Course # | Course Title | Sem. Hours | Dept. | Course # | Course Title | Sem Hour |
| ELM | 120 | Fundamentals of Fluid Power | 4 | ELM | 217 | Industrial Maintenance Fundamentals | 3 |
| ENL | 101 <i>or</i> 115 | English Composition I <i>or</i> Technical Communications | 3 | MTH | 117 | Math for Technicians | 4 |
| WTT | 110 | Wind Safety and OSHA | 4 | WTT | 150 | Industrial Motor Controls | 4 |
| WTT | 120 | DC/AC Circuits | 4 | WTT | 160 | Power Generation and Transmission | 4 |
| Total Semester Hours | | | 15 | Total Semester Hours | | | 15 |
| Second Year – Fall Semester | | | | Second Year – Spring Semester | | | |
| Dept. | Course # | Course Title | Sem. Hours | Dept. | Course # | Course Title | Sem Hour |
| CIS | 114 | Introduction to Computer Applications & Concepts | 3 | WTT | 230 | Supervisory Control and Data Acquisition | 4 |
| ELM | 210 | PLC Fundamentals | 3 | WTT | 260 | Wind Turbine Troubleshooting and Repair | 4 |
| ELM | 218 | Maintenance Applications | 3 | WTT <i>or</i> ELM | 278 <i>or</i> 276 | Wind Technology Internship II <i>or</i> Electromechanical Capstone | 3 |
| SSC | 147 | Understanding Human Diversity | 3 | <i>Elective</i> | | Natural Science Elective | 3 |
| WTT | 210 | Wind Turbine Mechanical Systems | 4 | | | | |
| Total Semester Hours | | | 16 | Total Semester Hours | | | 14 |

Proposed “Recommended Course Sequence – Wind Energy Technology, Certificate in Applied Science”

(Now identical to first semester of Wind Energy Technology, Associate in Applied Science Degree above)

| Fall Semester | | | | Spring Semester | | | |
|-----------------------------|-------------------------|---|------------|-----------------------------|----------|-------------------------------------|------------|
| Dept. | Course # | Course Title | Sem. Hours | Dept. | Course # | Course Title | Sem. Hours |
| ELM | 120 | Fundamentals of Fluid Power | 4 | ELM | 217 | Industrial Maintenance Fundamentals | 3 |
| ENL | 101 <i>or</i> 115 | English Composition I <i>or</i> Technical Writing | 3 | MTH | 117 | Math for Technicians | 4 |
| WTT | 110 | Wind Safety and OSHA | 4 | WTT | 150 | Industrial Motor Controls | 4 |
| WTT | 120 | DC/AC Circuits | 4 | WTT | 160 | Power Generation and Transmission | 4 |
| Total Semester Hours | | | 15 | Total Semester Hours | | | 15 |

Proposed “Recommended Course Sequence – Electromechanical Technology, Certificate in Applied Science”

(Can now be completed in one year)

Computer Fundamentals (CIS 108) (3 semester hours) has been removed to match current (and proposed) non-requirement by Wind Energy Technology, Certificate in Applied Science. Industrial Maintenance Fundamentals (ELM 217) (3 semester hours) has been replaced by Power Generation and Transmission (WTT 160) (4 semester hours) as it is more relevant to electromechanical technology. The one-hour increase in semester hours of ELM 120 plus the one semester-hour increase resulting from adding MTH 117 (see below) balance out the total semester hours.

Fundamentals of Fluid Power (ELM 120) semester hours have been increased from 3 to 4 to more fully accommodate course outcomes.

Technical Communications (ENL 115) has been added as an alternative to English Composition I (ENL 101).

PLC Fundamentals (ELM 210) has been moved from spring to fall for consistency with the Wind Energy Technology program, which allows for completion of the Electromechanical Technology Certificate in one year, as does Industrial Maintenance Fundamentals (ELM 217) no longer being required for the ELM certificate.

Math for Technicians (MTH 117) has been added as it is more relevant to the study of electromechanical technology than Business Math (MTH 115), which has been allowed in the past.

| Fall Semester | | | | Spring Semester | | | |
|-----------------------------|----------|-----------------------------|------------|-----------------------------|-------------------------|---|------------|
| Dept. | Course # | Course Title | Sem. Hours | Dept. | Course # | Course Title | Sem. Hours |
| ELM | 120 | Fundamentals of Fluid Power | 4 | ENL | 101 <i>or</i> 115 | English Composition I <i>or</i> Technical Writing | 3 |
| ELM | 210 | PLC Fundamentals | 3 | MTH | 117 | Math for Technicians | 4 |
| WTT | 110 | Wind Safety and OSHA | 4 | WTT | 150 | Industrial Motor Controls | 4 |
| WTT | 120 | DC/AC Circuits | 4 | WTT | 160 | Power Generation and Transmission | 4 |
| Total Semester Hours | | | 15 | Total Semester Hours | | | 15 |

Proposed Schedule of WTT Courses, ELM Courses, GSC 120, MTH 115, & MTH 117

(Aligns with proposed "Recommended Course Sequence – Wind Energy Technology, Associate in Applied Science Degree" table)

| First Year - Fall Semester | | | | First Year - Spring Semester | | | |
|--|----------|---------------------------------|---------------------|-------------------------------|----------|--|-----|
| Dept. | Course # | Course Title | Day | Dept. | Course # | Course Title | Day |
| ELM | 120 | Fundamentals of Fluid Power | R | ELM | 217 | Industrial Maintenance Fundamentals | M |
| MTH | 115 | Business Math | F | MTH | 115 | Business Math | web |
| WTT | 110 | Wind Safety and OSHA | M | MTH | 117 | Math for Technicians | F |
| WTT | 120 | DC/AC Circuits | T | WTT | 150 | Industrial Motor Controls | R |
| | | | | WTT | 160 | Power Generation and Transmission | T |
| Second Year - Fall Semester | | | | Second Year - Spring Semester | | | |
| Dept. | Course # | Course Title | Day | Dept. | Course # | Course Title | Day |
| ELM | 210 | PLC Fundamentals * | W | ELM | 276 | Electromechanical Capstone * | -- |
| ELM | 218 | Maintenance Applications | M <i>or</i> R | GSC | 120 | Concepts in Environmental Science ** | ** |
| WTT | 210 | Wind Turbine Mechanical Systems | T | WTT | 230 | Supervisory Control and Data Acquisition | R |
| * PLC Fundamentals (ELM 210) moved from spring to fall to accommodate moving Electromechanical Capstone (ELM 276) and Wind Technology Internship II (WTT 278) from summer to spring, eliminating the summer term | | | | WTT | 260 | Wind Turbine Troubleshooting and Repair | W |
| | | | | WTT | 278 | Wind Technology Internship II * | -- |
| ** Concepts in Environmental Science (GSC 120) moved from fall to spring at instructor's request; GSC 120 must be scheduled Tuesday, or ending by 3:00 Monday, Wednesday, or Thursday to allow travel time to Tech Center for evening classes; ending after 3:00 on Monday is not an option, since a student completing the Electromechanical Technology Certificate and then wanting to complete the second year of the Wind Energy Technology degree would need to take ELM 217 on Monday at the Tech Center | | | | | | | |

Proposed changes do not adversely impact current WTT and ELM students:

- ELM 120 (4 credit hours) and MTH 117 (4 credit hours) in place of ELM 120 (3 credit hours), MTH 115 (3 credits hours), and WTT 101 (2 credit hours) affects only one academic year.
- As all first year students currently enrolled are taking ELM 120, increasing the semester hours of ELM 120 from 3 to 4 is not an issue.
- MTH 115 will continue to be offered, so a first year student who has yet to fulfill the mathematics requirement is not affected, although MTH 117 would preferably be taken regardless.
- Potential scheduling conflicts caused by moving ELM 210 and GSC 120 within one academic year have been addressed.

Proposed changes that affect only those WTT and ELM students starting in Spring 2018:

- Increasing the semester hours of ELM 120 from 3 to 4 results in total semester hours of 61 for the Wind Energy Technology Degree and 31 semester hours each for the Wind Energy Technology Certificate and the Electromechanical Technology Certificate. Possible solution: registering for ELM 120 as a 3 semester-hour course and ending the course (for those students only) after 12 weeks. This is feasible given the nature of the course.
- MTH 115 will continue to be offered, so a student who does not fulfill the mathematics requirement in Spring 2018 is not affected, although MTH 117 would preferably be taken regardless.

Current “Recommended Course Sequence – Wind Energy Technology, Associate in Applied Science Degree”

(As contained in Course Catalog 2017-2018, but with typos corrected)

| First Year – Fall Semester | | | | First Year – Spring Semester | | | |
|----------------------------|----------|--------------|------------|------------------------------|----------|--------------|------------|
| Dept. | Course # | Course Title | Sem. Hours | Dept. | Course # | Course Title | Sem. Hours |

| CIS | 108 | Computer Fundamentals | 3 | ELM | 217 | Industrial Maintenance Fundamentals | 3 |
|------------------------------------|----------|--|------------|--------------------------------------|----------|--|------------|
| ELM | 120 | Fundamentals of Fluid Power | 3 | <i>Elective</i> | | Mathematics Elective (MTH 115 or higher) | 3 |
| WTT | 101 | Introduction to Maintenance Technology | 2 | WTT | 150 | Industrial Motor Controls | 4 |
| WTT | 110 | Wind Safety and OSHA | 4 | WTT | 160 | Power Generation and Transmission | 4 |
| WTT | 120 | DC/AC Circuits | 4 | | | | |
| <i>Total Semester Hours</i> | | | 16 | <i>Total Semester Hours</i> | | | 14 |
| Second Year – Fall Semester | | | | Second Year – Spring Semester | | | |
| Dept. | Course # | Course Title | Sem. Hours | Dept. | Course # | Course Title | Sem. Hours |
| ELM | 218 | Maintenance Applications | 3 | ELM | 210 | Introduction to PLC's | 3 |
| ENL | 101 | English Composition I | 3 | SSC | 147 | Understanding Human Diversity | 3 |
| PHS | 115 | Applied Physics | 3 | WTT | 230 | Supervisory Control and Data Acquisition | 4 |
| WTT | 210 | Wind Turbine Mechanical Systems | 4 | WTT | 260 | Wind Turbine Troubleshooting and Repair | 4 |
| <i>Total Semester Hours</i> | | | 13 | <i>Total Semester Hours</i> | | | 14 |
| Second Year - Summer Term | | | | | | | |
| Dept. | Course # | Course Title | Sem. Hours | | | | |

| | | | |
|-----------------------------|-----|-------------------------------|----------|
| WTT | 270 | Airfoil and Composite Repair | 3 |
| <i>OR</i> | | | |
| WTT | 278 | Wind Technology Internship II | 3 |
| <i>OR</i> | | | |
| ELM | 276 | Electromechanical Capstone | 3 |
| Total Semester Hours | | | 3 |

Current “Recommended Course Sequence – Wind Energy Technology, Certificate in Applied Science”

(As contained in Course Catalog 2017-2018)

| First Year – Fall Semester | | | | First Year – Spring Semester | | | |
|----------------------------|----------|--|------------|------------------------------|----------|--|------------|
| Dept. | Course # | Course Title | Sem. Hours | Dept. | Course # | Course Title | Sem. Hours |
| ELM | 120 | Fundamentals of Fluid Power | 3 | ELM | 217 | Industrial Maintenance Fundamentals | 3 |
| WTT | 101 | Introduction to Maintenance Technology | 2 | ENL | 101 | English Composition I * | 3 |
| WTT | 110 | Wind Safety and OSHA | 4 | <i>Elective</i> | | Mathematics Elective (MTH 115 or higher) | 3 |

| | | | | | | | |
|--|-----|-----------------------|-------------|-----------------------------|-----|--|-------------|
| WTT | 120 | DC/AC Circuits | 4 | WTT | 150 | Industrial Motor Controls | 4 |
| * Inconsistent with first semester of WTT degree | | | | WTT | 160 | Power Generation and Transmission | 4 |
| Total Semester Hours | | | 13 * | Total Semester Hours | | | 17 * |

**Current “Recommended Course Sequence – Electromechanical Technology,
Certificate in Applied Science”**

(As contained in Course Catalog 2017-2018, but with DC/AC Circuits [WTT 120] added, which is omitted in error from First Year – Fall Semester)

| First Year - Fall Semester | | | | First Year - Spring Semester | | | |
|-----------------------------|----------|------------------------------------|------------|--|----------|---|-----------|
| Dept. | Course # | Course Title | Sem. Hours | Dept. | Course # | Course Title | Sem Hour |
| CIS | 108 | Computer Fundamentals | 3 | ELM | 210 | PLC Fundamentals * | 3 |
| ENL | 101 | English Composition I | 3 | ELM | 217 | Industrial Maintenance Fundamentals * | 3 |
| ELM | 120 | Fundamentals of Fluid Power | 3 | <i>Elective</i> | | Mathematics Elective (MTH 115 or higher) | 3 |
| WTT | 110 | Wind Safety and OSHA | 4 | WTT | 150 | Industrial Motor Controls | 4 |
| WTT | 120 | DC/AC Circuits | 4 | * Scheduled at the same time to accommodate Wind Energy program; ELM certificate cannot be completed in one semester | | | |
| Total Semester Hours | | | 17 | Total Semester Hours | | | 13 |

Current Schedule of WTT Courses, ELM Courses, GSC 120, & MTH 115

(Used with the following Recommended Course Sequence tables in Course Catalog 2017-2018: Wind Energy Technology, Associate in Applied Science Degree; Wind Energy Technology, Certificate in Applied Science; Electromechanical Technology, Certificate in Applied Science in which DC/AC Circuits [WTT 120] is omitted in error from First Year – Fall Semester)

| First Year - Fall Semester (2017) | | | | First Year - Spring Semester (2018) | | | |
|---|----------|--|-----|--|----------|--|-----|
| Dept. | Course # | Course Title | Day | Dept. | Course # | Course Title | Day |
| ELM | 120 | Fundamentals of Fluid Power | R | ELM | 217 | Industrial Maintenance Fundamentals * | M |
| MTH | 115 | Business Math | F | MTH | 115 | Business Math | wek |
| WTT | 101 | Introduction to Maintenance Technology | W | WTT | 150 | Industrial Motor Controls | R |
| WTT | 110 | Wind Safety and OSHA | M | WTT | 160 | Power Generation and Transmission | T |
| WTT | 120 | DC/AC Circuits | T | * Currently, the Electromechanical Technology Certificate cannot be earned in one year due to scheduling | | | |
| Second Year - Fall Semester (2017) | | | | Second Year - Spring Semester (2018) | | | |
| Dept. | Course # | Course Title | Day | Dept. | Course # | Course Title | Day |
| ELM | 218 | Maintenance Applications | M | ELM | 210 | Introduction to PLC's * | M |
| GSC | 120 | Concepts in Environmental Science ** | W | ELM | 276 | Electromechanical Capstone *** | -- |
| WTT | 210 | Wind Turbine Mechanical Systems | T | WTT | 230 | Supervisory Control and Data Acquisition | R |
| ** in place of Applied Physics (PHS 115) *** ELM 276, WTT 270, & WTT 278 not offered Summer 2017 | | | | WTT | 260 | Wind Turbine Troubleshooting and Repair | W |
| | | | | WTT | 278 | Wind Technology Internship II *** | -- |