

## ABOUT THE PROGRAM

The Environmental Engineering—Waste & Water Technology program prepares learners to maintain the quality of water, air, waste, and other materials through testing, analysis, and monitoring to keep the environment and community healthy and safe. This program will meet a need for environmental engineering technicians in northeast Wisconsin.

## PROGRAM OUTCOMES

- Identify, monitor, and evaluate environmental hazards.
- Examine the effects of pollution.
- Determine strategies to minimize or prevent waste in order to reduce impact on the environment.
- Create and maintain environmental reports in accordance with applicable standards.
- Utilize applied science and mathematical skills to modify, test, and operate equipment used in the prevention, control, and remediation of environmental issues, including waste and water treatment.
- Perform periodic inspections in compliance with applicable standards.
- Use effective oral and written communication skills.
- Utilize problem solving skills.
- Perform safe work practices.

## ADMISSIONS STEPS

- Work with Admissions Specialist to:
  - Submit application and \$30 fee to NWTC.
  - Complete an assessment for placement (Accuplacer or ACT).
- Meet with NWTC program advisor to discuss program details.
- Meet with LTC program advisor/counselor to discuss program details.

## APPROXIMATE COSTS

- \$132 per credit (resident)
- \$198 per credit (out-of-state resident)
- Other fees vary by program (books, supplies, materials, tools, uniforms, health-related exams, etc.) Visit [gotoltc.edu/financial-aid/tuition-and-fees](http://gotoltc.edu/financial-aid/tuition-and-fees) for details.

## PLACEMENT SCORES

Accuplacer/ACT scores will be used to develop your educational plan. Contact your program advisor/counselor for details.

## SPECIAL NOTE

Northeast Wisconsin Technical College (NWTC) offers its Environmental Engineering—Waste & Water Technology program in cooperation with LTC.

## CAREER & EDUCATION ADVANCEMENT OPPORTUNITIES

LTC credits transfer to over 30 universities. For more information visit [gotoltc.edu/future-students/transfer](http://gotoltc.edu/future-students/transfer).

## CONTACT

NWTC:  
Alana Eder, Academic Advisor  
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LTC:  
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| Catalog No.   | Class Title                          | Credit(s)       |
|---------------|--------------------------------------|-----------------|
| <b>Term 1</b> |                                      |                 |
| 10506146      | Intro to Environmental Science **    | 3               |
| 10506147      | Environmental Biology **             | 4               |
| 10804118      | Intermediate Algebra with Apps       | 4               |
| 10806134      | General Chemistry                    | 4               |
| 31457318      | Industrial Maintenance Print Reading | 1               |
| 10606101      | Basic Mechanical Drafting            | 2               |
|               |                                      | <b>18</b>       |
| <b>Term 2</b> |                                      |                 |
| 10506149      | Intro to Environ. Compliance **      | 3               |
| 10506148      | Environmental Chem Analysis **       | 4               |
| 10804196      | Trigonometry with Applications ***   | 3               |
| 10620157      | Hydraulics-Industrial                | 2               |
| 10620158      | Pneumatics-Industrial                | 1               |
| 10606103      | Intermediate Mechanical Drafting     | 2               |
| 10801195      | Written Communications               | 3               |
|               |                                      | <b>18</b>       |
| <b>Term 3</b> |                                      |                 |
| 10506150      | Environmental Microbiology **        | 3               |
| 10506151      | Wastewater Treatment & Analysis **   | 4               |
| 10506152      | Ind. Safety & Emerg. Response **     | 3               |
| 10620130      | Mechanisms, Mechanics Intro          | 3               |
| 10809172      | Introduction to Diversity Studies    | 3               |
| 10801197      | Technical Reporting                  | 3               |
|               |                                      | <b>19</b>       |
| <b>Term 4</b> |                                      |                 |
| 10506153      | Solid and Hazardous Waste **         | 3               |
| 10506154      | Air Pollution Control Systems **     | 3               |
| 10506155      | Water Treatment & Analysis **        | 4               |
| 10620138      | Programmable Cntrlrs-Allen Bradley   | 3               |
| 10809198      | Introduction to Psychology           | 3               |
|               |                                      | <b>16</b>       |
|               |                                      | <b>TOTAL 71</b> |

\*\* = Classes held at NWTC

Term 1 & 2: NWTC classes are held on Tuesdays & Thursdays

Term 3 & 4: NWTC classes are held on Mondays & Wednesdays

\*\*\* = Class can be taken via ITV at LTC or in person at NWTC

All other classes are scheduled at LTC

Curriculum and Program Acceptance requirements are subject to change.  
Program start dates vary; check with your advisor/counselor for details.



**AIR POLLUTION CONTROL SYSTEMS...**air quality problems, federal and state regulatory mechanisms, and the types of emission control technology currently available. Monitoring emissions and ambient air quality are addressed.

**BASIC MECHANICAL DRAFTING...**provides the learner with the skills to utilize AutoCAD's drawing editor, viewing commands; apply coordinate entry methods, AutoCAD file commands; utilize draw commands, modify commands; create and edit text, prints & plots; apply geometric construction to solve a drawing problem; utilize selection sets, duplicating modify commands, layers & objects properties, blocks; apply principles of orthographic and multi view projection.

**ENVIRONMENTAL BIOLOGY...**environmental problems are examined from scientific, ethical, economic and sociological perspectives. Emphasis is placed on protection of the human environment with discussion of environmental issues and environmentally related public health concerns

**ENVIRONMENTAL CHEMICAL ANALYSIS...**laboratory techniques are performed to determine the suitability of supply sources and purification processes in the water and wastewater industries. PREREQUISITE: 10-806-134, General Chemistry

**ENVIRONMENTAL MICROBIOLOGY...**is a study of the background and role of bacterial analysis. Sampling and analytic methods including quality control procedures and environmental parameters are studied and related to applicable standards. PREREQUISITE: 10-506-174, Environmental Biology

**GENERAL CHEMISTRY...**covers the fundamentals of chemistry. Topics include the metric system, problem-solving, periodic relationships, chemical reactions, chemical equilibrium, properties of water; acids, bases, and salts; and gas laws. PREREQUISITE: 10804196 or 10804113 College Tech Math 1A or 10804109 Alg for Gen Chem or 10804121 Tech Math I or 10804195 College Tech Math 1 or 10804115 College Tech Math 1 or equiv or 10834110 Elem Algebra and 10838105 Intro Rdg & Study Skills or equiv

**HYDRAULICS INDUSTRIAL...**prepares the learner to identify hydraulic component symbols; adjust a pressure relief valve; analyze the operation of a pilot operated relief valve; analyze Pascal's law; evaluate flow, velocity, work and power in industrial hydraulic circuits; analyze meter-in, meter-out, and bypass flow control circuits; evaluate the characteristics of hydraulic pumps, motors; directional and control valves; identify basic hydraulic control valves; and assemble hydraulic circuits. PREREQUISITES: Math equivalency requirements met or 31457318 Trades Math Industrial Maint and 31457318T1 Trades Math Industrial Maint 1, 31457318T2 Trades Math Industrial Maint 2 or 10804118 Intern College Algebra or COREQUISITE: 10804114 Tech Math 1B

**INDUSTRIAL MAINTENANCE PRINT READING...**prepares the learner to read prints; make sketches; interpret orthographic projections to include sections, auxiliary views, threads, and fasteners; and to solve problems in metal trades, fabrication, and troubleshooting.

**INDUSTRIAL SAFETY & EMERGENCY RESPONSE...**state and federal regulations related to worker safety, industrial hygiene, and response to emergency situations. Emphasis is placed on response to releases of hazardous materials.

**INTERMEDIATE ALGEBRA WITH APPLICATIONS...**offers the learner algebra content with applications. Topics include properties of real numbers, order of operations, algebraic solution for linear equations and inequalities, operations with polynomial and rational expressions, operations with rational exponents and radicals, algebra of inverse, logarithmic and exponential functions. PREREQUISITES: Accuplacer Math score of 100 and Accuplacer Algebra score of 55 or equivalent or 10834110 Elementary Algebra w Apps and COREQUISITE: 10838105 Intro Reading and Study Skills or CONDITION: Reading accuplacer minimum score of 74 or equivalent

**INTERMEDIATE MECHANICAL DRAFTING...**provides the learner with the skills to create two dimensional section views, create two-dimensional auxiliary views, create prints/plots from paper space, modify and set dimension attributes, apply dimensioning symbols, and apply ASME Y14.5M standards for dimensioning and tolerancing. COREQUISITE: 10606101 Basic Mechanical Drafting

**INTRO TO ENVIRONMENTAL COMPLIANCE...**is an introduction to regulatory concepts and requirements for compliance with environmental regulations by governmental and non-governmental entities.

**INTRO TO ENVIRONMENTAL SCIENCE...**an introduction to the basic principles of environmental science including ecology, energy, resources, waste management, air, water, and soil pollution.

**INTRODUCTION TO PSYCHOLOGY...**introduces students to a survey of the multiple aspects of human behavior. It involves a survey of the theoretical foundations of human functioning in such areas as learning, motivation, emotions, personality, deviance and pathology, physiological factors, and social influences. It directs the student to an insightful understanding of the complexities of human relationships in personal, social, and vocational settings. COREQUISITE:10838105 Intro Reading and Study Skills or Accuplacer Reading score of 74 or equivalent

**INTRODUCTION TO DIVERSITY STUDIES ...**is a course that draws from several disciplines to reaffirm the basic American values of justice and equality by teaching a basic vocabulary, a history of immigration and conquest, principles of transcultural communication, legal liability and value of aesthetic production to increase the probability of respectful encounters among people. In addition to an analysis of majority/minority relations in a multicultural context, the topics of ageism, sexism, gender differences, sexual orientation, the disabled and the American Disability Act (ADA) are explored. Ethnic relations are studied in global and comparative perspectives. COREQUISITE:10838105 Intro Reading and Study Skills or Accuplacer Reading score of 74 or equivalent

**MECHANISMS MECHANICS INTRODUCTION TO...**prepares the learner to use tools and fasteners safely; identify belt and chain drive components; install and adjust belt and chain drives; apply bearing and lubrication information; perform coupling alignment using straight edge, feeler gauge, and dial indicator and laser methods; identify various gear drives; calculate gear ratios; and analyze first-, second-, and third-class levers.

**PNEUMATICS INDUSTRIAL...**prepares the learner to identify pneumatic component symbols, examine the main parts of a pneumatic system; identify air conditioning and distributing equipment; evaluate the characteristics of physical laws that apply to pneumatics; identify the laws governing pneumatics; adjust pressure regulator to specified pressure; evaluate the general characteristics and terms of pressure drop versus flow relationship; evaluate the general characteristics and terms of vacuum generation. COREQUISITES: 10620157 Hydraulics-Industrial or 10620159 Hydraulics 1

**PROGRAMMABLE CONTROLLERS-ALLEN BRADLEY ADVANCED ...**prepares the student to develop applications utilizing subroutine instructions, analog modules; gain a basic understanding of creating and troubleshooting programs using the ControlLogix, RSLOGIX5000 software. PREREQUISITE: 10620138 Prog Cntrls/AB or 10620138C1 Prog Cntrls/AB (3 cr)

**SOLID & HAZARDOUS WASTE...**identify the hierarchy of and regulations related to solid and hazardous waste, the waste stream, pollution prevention and disposal strategies. Learn detection techniques and proper transporting and handling methods.

**TECHNICAL REPORTING...**provides students with the skills to prepare and present oral and written technical reports. Types of reports may include lab and field reports, proposals, technical letters and memos, technical research reports, and case studies. Designed as an advanced communication course for students who have completed at least the prerequisite introductory writing course. PREREQUISITE:10831103 Intro to College Wrtg or CONDITION: Written Comm Prepared Learner (Accuplacer Wrtg min score of 86 or Equivalent) and COREQUISITE: 10838105 Intro Rdg & Study Skills or CONDITION: Reading Accuplacer min score of 74 or equivalent

**TRIGONOMETRY WITH APPLICATIONS...**topics include circular functions, graphing of trigonometry functions, identities, equations, trigonometric functions of angles, inverse functions, solutions of triangles complex numbers, DeMoivre's Theorem, polar coordinates, and vectors. PREREQUISITE: Accuplacer-CM=63 or ACT-Math 24 or 10-804-118, Intermediate Alg w/ Apps with "C" or better AND Accuplacer Reading=55 or ACT Reading=15 or 10-838-105, Introduction to Reading & Study Skills with "C" or better OR equivalent 3 cr.

**WASTEWATER TREATMENT & ANALYSIS...**physical, chemical, and biological principles of operation of wastewater treatment systems. The basic unit processes, control parameters, and mathematical problem-solving related to collection systems and treatment facilities are introduced. Laboratory procedures and practices involved with operation of wastewater analysis and treatment including industrial waste treatment technologies. PREREQUISITE: 10-506-148, Environmental Chem Analysis

**WATER TREATMENT & ANALYSIS...**Physical, chemical, and biological principles of operation of water treatment systems. The basic unit processes, control parameters, and mathematical problem-solving related to treatment facilities and distribution systems are introduced. Laboratory procedures and practices involved with operation of water analysis and treatment. PREREQUISITE: 10-506-148, Environmental Chem Analysis

**WRITTEN COMMUNICATION...**teaches the writing process, which includes prewriting, drafting, revising, and editing. Through a variety of writing assignments, the student will analyze audience and purpose, research and organize ideas, and format and design documents based on subject matter and content. Keyboarding skills are required for this course. It also develops critical reading and thinking skills through the analysis of a variety of written documents. PREREQUISITE:10831103 Intro to College Wrtg or CONDITION: Written Comm Prepared Learner (Accuplacer Wrtg min score of 86 or Equivalent) and COREQUISITE: 10838105 Intro Rdg & Study Skills or CONDITION: Reading Accuplacer min score of 74 or equivalent