



Shared Program
with NWTC
Pending Approval

Environmental Engineering—Waste & Water Technology

Program No: 10-506-2
Associate Degree in Applied Science
Degree Completion Time: Four Terms
2013-2014

Catalog No.	Class Title	Credit(s)
Term 1		
10-506-146	Intro to Environmental Science *	3.00
10-506-147	Environmental Biology *	4.00
10-804-118	Intern Algebra w Apps	4.00
10-806-134	General Chemistry	4.00
	Total	15.00
Term 2		
10-506-149	Intro to Environ. Compliance *	3.00
10-506-148	Environmental Chem Analysis *	4.00
10-413-100	Basic Electricity for Trades	3.00
10-620-157	Hydraulics-Industrial	2.00
10-620-158	Pneumatics-Industrial	1.00
10-801-195	Written Communications	3.00
10-809-195	Economics	3.00
	Total	19.00
Term 3		
10-506-150	Environmental Microbiology *	3.00
10-506-151	Wastewater Treatment & Analysis *	4.00
10-506-152	Ind. Safety & Emerg. Response *	3.00
10-620-130	Mechanisms, Mechanics Intro	3.00
10-620-138	Programmable Cntrlrs-Allen Bradley	3.00
10-801-197	Technical Reporting	3.00
	Total	19.00
Term 4		
10-506-153	Solid and Hazardous Waste *	4.00
10-506-154	Air Pollution Control Systems *	3.00
10-506-155	Water Treatment & Analysis *	4.00
10-809-172	Introduction to Diversity Studies	3.00
10-809-198	Intro to Psychology	3.00
	Total	17.00
	Program Total	70.00

* Must Travel to NWTC on Tuesdays and/or Thursdays

Note: Program start dates vary; check with your counselor for details.

Curriculum and program acceptance requirements are subject to change.

About the Shared Programs

Northeast Wisconsin Technical College (NWTC) offers its Environmental Engineering—Waste & Water Technology program in cooperation with LTC. As an Environmental Engineering—Waste & Water Technology student, you'll:

- Attend all general studies and electrical/hydraulic/pneumatic courses at LTC.
- Semesters 1 and 2
 - Attend classes at LTC each week on Mondays, Wednesdays, and Fridays.
 - Attend live classes at NWTC each week on Tuesdays and Thursdays.
- Semesters 3 and 4
 - Attend classes at LTC on Mondays, Wednesdays, and Fridays.
 - Attend classes at NWTC on Tuesdays and Thursdays.
- Attend live, interactive TV classes.

About the Career

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.

Careers

A graduate of the program will have the potential for employment with diverse employers such as industrial facilities, municipalities, utilities, and governmental agencies in the following areas:

- Recycling coordinators establish, coordinate, and promote recycling programs and operations, often turning old products and waste from industrial processes into useful, environmentally-safe raw materials.
- Environmental engineering technicians apply theory and principles of environmental engineering to modify, test, and operate equipment and devices used in the prevention, control, and remediation of environmental problems, including waste treatment and site remediation under the direction of engineering staff or scientists.
- Recycling and resource managers utilize best management practices to manage organizational resources and recycling and resource programs impacting the culture, community, and business practices of an organization.
- Water and waste water treatment plant and system operators operate or control an entire process or system of machines, often through the use of control boards, to transfer or treat water or wastewater.
- Water resource specialists design and implement programs and strategies related to water resource issues such as supply, quality, and regulatory compliance issues.

With additional education and/or work experience, graduates may find other opportunities for employment, such as environmental engineer and environmental health and safety manager.

Admissions Steps

- Submit Application and \$30 Processing Fee to NWTC
- Meet with Program Advisor

Requirements for Program Entry

Courses required for mastery of algebra skills. For a description of algebra skills, see the Basic Education Section of this catalog. The student will either provide proof of having completed course work in Windows, Word, and Excel or pass a proficiency test.

Program Outcomes

- You will learn to:
- 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.

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.)

Entrance Assessment Scores

Accuplacer	ACT
Elem. Algebra - 61	NA
Reading - 55	Reading - 17
Sentence Skills - 75	English - 16

As a requirement for program entry, an Academic Skills Assessment (Accuplacer) with appropriate benchmark scores is necessary. Program benchmarks are Reading Comprehension 55, Arithmetic 34, and Sentence Skills 60. However, we recommend a student receive the scores listed above to be successful in this program. Remediation options are available to reach recommended scores. Equivalent assessment scores are acceptable. To learn more about these assessments and program benchmark scores, please contact a counselor at (920) 498-5444 or (888) 385-6982 and ask for Alana Eder. For other questions at LTC, please call Michelle Gibbs, Next Generation Energy Coordinator, at (920) 693-1372.

Bellevue University
Capella University
Concordia University
Excelsior College
Franklin University
Herzing University

Lakeland College
Ottawa University
Silver Lakae College
University of Phoenix
Upper Iowa University
UW-Green Bay

UW-Oshkosh
UW-Stout

10-413-100 Basic Electricity for the Trades

...provides practical DC/AC concepts to introduce various components, electrical quantities, and measuring values in DC and AC circuits. Circuit measurement of voltage, current and resistance will be taken with analog and digital meters applying basic concepts. The student will learn about electrical theory, electrical safety, basic circuit design, measuring equipment, general wiring practices, motors, and transformers.

10-506-146 Intro to Environmental Science

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

10-506-147 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

10-506-148 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

10-506-149 Intro to Environmental Compliance

...is an introduction to regulatory concepts and requirements for compliance with environmental regulations by governmental and non-governmental entities.

10-506-150 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

10-506-151 Wastewater Treatment & Analysis

...physical, chemical, and biological principles of operation of water and wastewater treatment systems are studied. The basic unit processes, control parameters, and mathematical problem-solving related to collection systems, treatment facilities, and distribution systems are introduced

10-506-152 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.

10-506-153 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.

10-506-154 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.

10-506-155 Water Treatment & Analysis

...laboratory procedures and practices involved with operation of water and wastewater analysis and treatment including industrial waste treatment technologies.

PREREQUISITE: 10-506-151, Water & Wastewater Oper & Mgmt

10-620-130 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.

10-620-140 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 Cntrl/AB or 10620138C1 Prog Cntrl/AB (3 cr)

10-620-157 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

10-620-158 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

10-801-195 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

10-801-197 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

10-804-118 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

10-806-134 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 1 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

10-809-172 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

10-809-195 Economics

...provides the participant with an overview of how a market-oriented economic system operates, and it surveys the factors which influence national economic policy. Basic concepts and analyses are illustrated by reference to a variety of contemporary problems and public policy issues. Concepts include scarcity, resources, alternative economic systems, growth, supply and demand, monetary and fiscal policy, inflation, unemployment and global economic issues.

COREQUISITE:10838105 Intro Reading and Study Skills or Accuplacer Reading score of 74 or equivalent

10-809-198 Intro 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