

Articulation Agreement Proposal for Engineering Technology Associate's Degree programs at Northeast Wisconsin Technical College and the BS programs in Mechanical and Electrical Engineering Technology at UW-Green Bay

In accordance with the University of Wisconsin System guidelines for articulation agreements between UW System institutions and WTCS (Wisconsin Technical College System) districts, the following associates programs at NWTC will count for significant block credit transfers into the Mechanical, Electrical, and Environmental Engineering Technology programs at UW-Green Bay. Each will be discussed separately with material required by the AIS 6.2 guidelines for developing program-to-program articulation agreements. Students are required to successfully complete all UWGB degree requirements in order to earn a UWGB degree.

1. UW-Green Bay Mechanical Engineering Technology BS

Presented below is the curriculum for UWGB's Mechanical Engineering Technology Program.

UWGB Mechanical Engineering BS requirements

(without general education and graduation requirements, unless fulfilled by degree requirements)

Support Group (32-37 credits)

ET 101	Fundamentals of Engineering Technology (2 cr)
ET 130	Basic Electrical Circuits I (3 cr)
<i>either all</i>	
CHEM 211, 213	Principles of Chemistry I Lecture and Lab (5 cr)
CHEM 212, 214	Principles of Chemistry II Lecture and Lab (5 cr)
<i>or</i>	
ET 206	Chemistry for Engineers (5cr)
MATH 202	Calculus & Analytic Geometry I
MATH 203	Calculus & Analytic Geometry II
MATH 260	Introductory Statistics (4 cr)
PHYSICS 103 or 201	Fundamentals of Physics I (5 cr) or Principles of Physics I – either algebra or calculus based
PHYSICS 104 or 202	Fundamentals of Physics II (5 cr) or Principles of Physics II – either algebra or calculus based

Fundamentals Group (26 credits)

ENGR 213	Mechanics I: Statics (3 cr)
ENGR 214	Mechanics II: Dynamics (3 cr)
ET 105	Fundamentals of Drawing (3 cr)
ET 116	Basic Manufacturing Processes (3 cr)
ET 118	Fluids I (3 cr)
ET 142	Introduction to Programming (3)
ET 207	Parametric Modeling (2 cr)
ET 220	Mechanics of Materials (3 cr)
ET 221	Machine Components (3 cr)

Advanced Study Group (28 credits)

CHEM 320/PHYSICS 320	Thermodynamics & Kinetics (3 cr)
ENGR 301	Engineering Materials (4 cr)
ET 308	Finite Element Analysis (3 cr)
ET 318	Fluids II (2 cr)
ET 322	Design Problems (3 cr)
ET 324	Motors & Drives (3 cr)
ET 360	Project Management (3 cr)

ET 390

Mechatronics (4 cr)

One of

ET 400

Co-op/Internship in Engineering Technology (3 cr)

ET 410

Capstone Project (3 cr)

A. NWTC Mechanical Design Technology 10-606-1 Associate's Degree

Rationale for how programs are related: The Associates program in Mechanical Design Technology is a good fit for the fundamentals group of courses in UW-Green Bay's Mechanical Engineering Technology (MET) program. Students completing the associate's degree will meet the desired learning outcomes for some of the fundamentals, supporting, and advanced courses in UWGB's BS MET degree. Presented below are the curriculum for NWTC's Associate's program, the array of courses in the UWGB program that the Associate's program will fulfill in a block transfer, and recommendations for students pursuing this completion route. Students are required to successfully complete all UWGB degree requirements in order to earn a UWGB degree.

Proposed Articulated Block of Courses

Note that the two lists below, NWTC Associate's degree requirement and block list of classes that the associate's will fulfill, are not equivalent course lists. The NWTC list is the required course list for the associate's degree and the UWGB list is the fundamentals and supporting course block that the NWTC degree will fulfill.

NWTC Mechanical Design Technology Associate

Course #	Course name	Credits
10-103-131	Micro: Excel-Intro	1
10-606-111	Mechanical Design-Exploring	1
10-606-116	CAD-Intro	1
10-606-119	Sketching-Technical	2
10-606-210	Solidworks Fund and Drawing	3
10-606-211	Mech AutoCAD Fund	2
10-801-136	English Composition I	3
10-804-113	College Technical Math 1A	3
10-890-101	College 101	1
10-442-153	Prototype Metal Fabrication	2
10-606-213	CAD-Auxiliary & Flat Pattern	2
10-606-214	Fabrication & Assembly	4
10-614-204	Additive Manufacturing	1
10-804-114	College Technical Math 1B	2
10-806-154	General Physics 1	4
10-420-173	Mechanical Design – CNC	2
10-606-135	Machine Members Strength	5
10-606-158	SW Sheet Metal, Weldment...	3
10-623-170	Engineering Materials	3
10-606-212	CAD-ECD	1
10-620-100	Fluids 1: Basic Pneumatics	1
10-620-101	Fluids 2: Basic Hydraulics	1
10-620-165	Fluids 3: Inter Hydraulics	1
10-664-100	Automation 1: Control Logic	1
10-606-141	Design Problems	3
10-606-143	Mechanisms	3
10-606-215	SolidWorks Simulation	2
10-801-196	Oral/Interpersonal Comm	3
10-809-172	Intro. to Diversity Studies	3
10-809-199	Psych of Human Relations	3
		67

UWGB Courses

Course #	Course name	Credits
ET 101	Fund. of ET	2
ET 105	Fund. Of Drawing	3
ET 116	Basic Man. Processes	3
ET 118	Fluids I	3
ET 130	Basic Elec. Circuits	3
ET 207	Parametric Model	3
ET 220	Mechanics of Materials	3
ET 221	Machine Components	3
ET 322	Design Problems	3
ENGR	301 Engineering Materials	4
PHYSICS 103	Fund. of Physics I	5
Social Science Gen. Ed.		3
First Year Seminar		3
Ethnic Studies		3
ENG COMP 100 (English Competency)		3
MATH 101 (Math Competency)		3
Communications		3
Elective Credit Block		<u>14</u>
		67
Direct Course Equivalent		
General Education Course		

Recommendations for Students:

For NWTC students planning to pursue a BS in Engineering Technology, the following courses and their UWGB equivalents are recommended.

Course	NWTC #	credits		UWGB #	credits
Calculus 1	10-804-198	4	=	MATH 202, Calculus & Analytic Geo I	4
Calculus 2	10-804-181	4	=	MATH 203, Calculus & Analytic Geo II	4
Chemistry	10-806-135	5	=	CHEM 211/213 Princ Chem I/ET206	5

Courses Still Needed at UWGB

Course	Credits
ENGR 213, Mechanics I: Statics	3
ENGR 214, Mechanics II: Dynamics	3
ET 142, Introduction to Programming	3
ET 206, Chem for Engineers	5
OR all of CHEM 211/213 and 212/214	10
MATH 202, Calculus and Analytic Geometry I	4
MATH 203, Calculus and Analytic Geometry II	4
MATH 260, Introductory Statistics	4
PHYSICS 104, Fundamentals of Physics II	5
Remaining Advanced Study Group	21

Remaining gen eds, minimum: 3cr Fine Arts, 3cr Social Science (not PSYCH), 6 crs Humanities, 3 crs Biological Science, 3 crs Sustainability Perspective, 3 cr Global Culture, 3 crs Quantitative Literacy (use MATH 202), 6 credits Upper Level Writing Emphasis (taken through major coursework), Capstone (use ET 400 or 410)

B. NWTC Manufacturing Engineering Technology Associate's Degree 10-623-3

Rationale for how programs are related: The Associate's program in Manufacturing Engineering Technology is a good fit for the fundamentals group of courses in UW-Green Bay's Mechanical Engineering Technology (MET) program. Students completing the associate's degree will meet the desired learning outcomes for some of the fundamentals, supporting, and advanced courses in UWGB's BS MET degree. Presented below are the curriculum for NWTC's Associate's program, the array of courses in the UWGB program that the Associate's program will fulfill in a block transfer, and recommendations for students pursuing this completion route. The UWGB Mechanical Engineering Technology curriculum is given under 1A (previous section) of this document. Students are required to successfully complete all UWGB degree requirements in order to earn a UWGB degree.

Proposed Articulated Block of Courses

Note that the two lists below, NWTC Associate's degree requirement and block list of classes that the associate's will fulfill, are not equivalent course lists. The NWTC list is the required course list for the associate's degree and the UWGB list is the fundamentals and supporting course block that the NWTC degree will fulfill.

NWTC Manufacturing Engineering Technology

Associate

<u>Course #</u>	<u>Course name</u>	<u>Credits</u>
10-623-170	Engin. Materials	3
10-801-136	English Comp. 1	3
10-804-197	Coll. Algebra & Trig.	5
10-806-135	College Chemistry	5
10-890-101	College 101	1
10-606-116	CAD - Intro	1
10-620-170	Intro. Robotics	1
10-623-104	Continuous Imprvmt Fund	1
10-623-171	Polymer Comp. Proc.	3
10-623-175	Casting & Joining Proc.	3
10-801-198	Speech	3
10-804-198	Calculus 1	4
10-623-166	Man. Eng. Internship	1
10-420-170	Mat. Removal/Forming	3
10-623-117	Statics	3
10-606-210	Solidworks Fund/Draw.	3
10-606-211	Mech AutoCad Fund	2
10-809-172	Intro. Diversity Studies	3
10-809-198	Intro. Psychology	3
10-420-168	Comp. Aided Manu.	3
10-623-167	Engin. Economy	2
10-623-169	Lean. Man. Systems 1	2
10-623-118	Dynamics	3
10-664-102	Automation 3	1
10-664-103	Automation 4	1
10-664-104	Automation 5	1
10-804-181	Calculus 2	4
10-664-105	Automation 6	<u>1</u>
		69

UWGB Courses

<u>Course #</u>	<u>Course name</u>	<u>Credits</u>
ET 101	Fund. of Engin. Tech	2
ET 105	Fund. of Drawing	3
ET 207	Parametric Model	3
ET 116	Basic. Manu. Proc.	3
ET 206	Chemistry for Eng.	5
ET 220	Mech. of Mats.	3
ET 221	Machine Comp.	3
ENGR 301	Engineering Materials	4
ENGR 213	Eng. Mech. 1: Statics	3
ENGR 214	Eng. Mech. 2: Dynamics	3
MATH 101 (Math Competency)		3
MATH 202	Calculus & An Geo I	4
MATH 203	Calculus & An Geo II	4
First Year Seminar		3
Ethnic Studies Gen. Ed.		3
Social Science Gen. Ed.		3
ENG COMP 100 (English Competency)		3
Communications		3
Elective Credit Block		11
		<u>69</u>

Direct Course Equivalent

Recommendations for Students:

For NWTC students planning to pursue a BS in Engineering Technology, the following courses and their UWGB equivalents are recommended.

Course	NWTC #	credits		UWGB #	credits
Basic Elec. Circuits 1	10-660-104	1	=	ET 130, Basic Electrical Circuits I	3
and	10-660-105	1			
and	10-660-107	1			
Parametric Model. 2	10-606-158	3	=	ET 207, Param. Modeling	3
Fluids 1	10-620-100	1	=	ET 118, Fluids I	3
and	10-620-101	1			
and	10-620-165	1			

Courses Still Needed at UWGB

Course	Credits
--------	---------

ET 118, Fluids I	3
------------------	---

ET 130, Basics Electrical Circuits I	3
--------------------------------------	---

ET 142 Introduction to Programming	3
------------------------------------	---

MATH 260, Introductory Statistics	4
-----------------------------------	---

PHYSICS 103, Fundamentals of Physics 1	5
--	---

PHYSICS 104, Fundamentals of Physics II	5
---	---

Remaining Advanced Study Group	24
--------------------------------	----

Remaining gen eds, minimum: 3cr Fine Arts, 3 crs Social Science (not PSYCH), 6 crs Humanities, 3 crs

Biological Science, 3 crs Sustainability Perspective, 3 crs Global Culture, 6 crs Upper Level Writing

Emphasis, Capstone (use ET 400 or 410)

2. UW-Green Bay Electrical Engineering Technology BS

Presented below is the curriculum for UWGB's Electrical Engineering Technology Program.

UWGB Electrical Engineering BS requirements

(without general education requirements, unless fulfilled by degree requirements)

Support Group (20 credits)

ET 101	Fundamentals of Engineering Technology (2 cr)
MATH 202	Calculus & Analytic Geometry I (4 cr)
MATH 203	Calculus & Analytic Geometry II (4 cr)
PHYSICS 103 or 201	Fundamentals of Physics I or Principles of Physics I (5 cr) – either algebra or calculus based
PHYSICS 104 or 202	Fundamentals of Physics II or Principles of Physics II (5 cr) - either algebra or calculus based

Fundamentals Group (29 credits)

ET 105	Fundamentals of Drawing (3 cr)
ET 130	Basic Electrical Circuits I (3 cr)
ET 131	Basic Electrical Circuits II (3 cr)
ET 142	Introduction to Programming (3 cr)
ET 150	Codes, Safety, and Standards (2 cr)
ET 232	Semiconductor Devices (3 cr)
ET 233	Linear Circuits (3 cr)
ET 240	Microcontrollers & Programmable Logic Controllers (3 cr)
ET 250	Signals and Systems (3 cr)
ET 311	Digital Electronics (3 cr)

Advanced Study Group (31 credits)

ET 324	Motors and Drives (3 cr)
ET 340	Advanced PLCs (3 cr)
ET 342	Supervisory Control and Data Acq (3 cr)
ET 344	Industrial Electronics and Control (3 cr)
ET 346	Electric Power Systems (3 cr)
ET 348	Electromagnetic Fields and Applications (3 cr)
ET 350	Data Communication and Protocols (3 cr)
ET 360	Project Management (3 cr)
ET 390	Mechatronics (4 cr)

One of

ET 400	Co-op/Internship in Engineering Technology (3 cr)
ET 410	Capstone Project (3 cr)

A. NWTC Automation Engineering Technology Associate's Program 10-664-1

Rationale for how programs are related: The Associate's program in Automation Engineering Technology is a good fit for the fundamentals group of courses in UW-Green Bay's Electrical Engineering Technology (ElecET) program. Students completing the associate's degree will meet the desired learning outcomes for some of the fundamentals, supporting, and advanced courses in UWGB's BS ElecET degree. Presented below are the curriculum for NWTC's Associate's program, the array of courses in the UWGB program that the Associate's program will fulfill in a block transfer, and recommendations for NWTC students pursuing this completion route. Students are required to successfully complete all UWGB degree requirements in order to earn a UWGB degree.

Proposed Articulated Block of Courses

Note that the two lists below, NWTC Associate's degree requirement and block list of UWGB classes that the Associate's will fulfill, are not equivalent course lists. The NWTC list is the required course list for the Associate's degree and the UWGB list is the fundamentals and supporting course block that the NWTC degree will fulfill.

NWTC Automation Eng. Technology Associate

<u>Course #</u>	<u>Course name</u>	<u>Credits</u>
10-620-100	Fluids 1	1
10-620-101	Fluids 2	1
10-620-140	Mach. Wiring & Safety	1
10-660-104	DC 1	1
10-660-105	DC 2	1
10-664-100	Automation 1	1
10-664-101	Automation 2	1
10-801-196	Oral/Interpersonal Comm	3
10-804-113	College Technical Math 1A	3
10-890-101	College 101	1
	Elective	1
10-660-101	Digital 1	1
10-660-107	AC 1: Properties	1
10-660-108	AC 2: Reactance	1
10-664-102	Automation 3	1
10-664-103	Automation 4	1
10-664-104	Automation 5	1
10-801-136	English Comp. 1	3
10-804-114	College Technical Math 1B	2
10-806-143	Coll. Physics 1	3
	Elective	1
10-605-157	Power Elec. 1	1
10-605-158	Power Elec. 2	1
10-606-116	CAD-Intro	1
10-606-212	CAD-ECD	1
10-620-159	Power Elec. 3	1
10-620-161	Power Electricity 1	1
10-620-162	Power Electricity 2	1
10-664-105	Automation 6	1
10-664-151	Automation 8	1
10-664-152	Automation 9	1
10-664-160	Control 1	1
10-664-161	Control 2	1
10-664-162	Control 3	1
10-664-170	Safety Dev. And App.	1
10-620-170	Intro. Robotics	1
10-620-172	Robotic Vision Sys.	1
10-664-150	Automation 7	1
10-664-153	Automation 10	1
10-664-163	Control 4	1
10-664-164	Control 5	1
10-664-165	Control 6	1
10-801-197	Technical Reporting	3
10-664-189	Automation Sys. Int.	1
10-809-172	Intro. Diversity Study	3
10-809-198	Intro Psychology	3
		63

UWGB Courses

<u>Course #</u>	<u>Course name</u>	<u>Credits</u>
ET 101	Fund. of Engin. Tech.	2
ET 105	Fund. of Drawing	3
ET 130	Basic Elec. Circuits I	3
ET 131	Basic Elec. Circuits II	3
ET 142	Intro. To Program.	3
ET 150	Codes, Safety, Stand.	2
ET 232	Semiconductor Dev.	3
ET 240	Microcon. and PLCs	3
ET 250	Signals and Systems	3
ET 311	Digital Electronics	3
ET 324	Motors and Drives	3
ET 340	Advanced PLC's	3
ET 344	Ind. Elec. and Control	3
PHYSICS 103	Fund. of Physics I	5
Social Sc. Gen. Ed.		3
First Year Seminar		3
Ethnic Studies Gen. Ed.		3
ENG COMP 100 (English Competency)		3
MATH 101 (Math Competency)		3
Communications		3
Elective Credit Block		3
		63

Direct Course Equivalent
General Education Course

Recommendations for Students:

For NWTC students planning to pursue a BS in Engineering Technology, the following courses and their UWGB equivalents are recommended.

Course	NWTC #	credits		UWGB #	credits
Calculus 1	10-804-198	4	=	MATH 202, Calculus & An Geo I	4
Calculus 2	10-804-181	4	=	MATH 203, Calculus & An Geo II	4
Linear Circuits	10-605-160	1	=	ET 233, Linear Circuits	3
and	10-605-161	1			
and	10-605-162	1			

Courses Still Needed at UWGB

Course	Credits
ET 233, Linear Circuits	3
MATH 202, Calculus & Analytic Geometry I	4
MATH 203, Calculus & Analytic Geometry II	4
PHYSICS 104, Fundamentals of Physics II	5
Advanced study group	22

Remaining gen eds, minimum: 3cr Fine Arts, 3 crs Social Science (not PSYCH), 6 crs Humanities, 3 crs Biological Science, 3 crs Sustainability Perspective, 3 crs Global Culture, 3crs Quantitative Literacy (use MATH 202), 6 credits Upper Level Writing Emphasis (taken through major coursework), Capstone (use ET 400 or 410)

B. NWTC Electro-Mechanical Technology Associate's Program 10-620-1

Rationale for how programs are related: The Associate's program in Electro-Mechanical Technology is a good fit for the fundamentals group of courses in UW-Green Bay's Electrical Engineering Technology (ElecET) program. Students completing the associate's degree will meet the desired learning outcomes for some of the fundamentals, supporting, and advanced courses in UWGB's BS ElecET degree. Presented below are the curriculum for NWTC's Associate's program, the array of courses in the UWGB program that the Associate's program will fulfill in a block transfer, and recommendations for students pursuing this completion route. The curriculum for UWGB's Electrical Engineering Technology Program is given under 2A (above). Students are required to successfully complete all UWGB degree requirements in order to earn a UWGB degree.

Proposed Articulated Block of Courses

Note that the two lists below, NWTC Associate's degree requirement and UWGB's block list of classes that the Associate's will fulfill, are not equivalent course lists. The NWTC list is the required course list for the Associate's degree and the UWGB list is the fundamentals and supporting course block that the NWTC degree will fulfill.

NWTC Electro-Mechanical Technology Associate

Course #	Course name	Credits
10-442-150	Machine Fab. 1	1
10-620-100	Fluids 1: Pneumatics	1
10-620-101	Fluids 2: Hydraulics	1
10-620-165	Fluids 3: Inter Hydraulics	1
10-660-104	DC 1: Intro.	1
10-660-105	DC 2: Circuits	1
10-664-100	Automation 1	1
10-664-101	Automation 2	1
10-801-196	Oral/Interpersonal Comm	3
10-804-113	College Technical Math 1A	3
10-804-114	College Technical Math 1B	2
10-890-101	College 101	1
10-420-171	Machine Tool Proc. 1	1
10-420-172	Mach. Tool Proc. 2	1
10-442-151	Mach. Fabrication 2	1
10-620-140	Mach. Wiring and Safety	1
10-660-101	Digital 1: Logic	1
10-660-107	AC 1: Properties	1
10-660-108	AC 2: Reactance	1
10-664-102	Automation 3: PLC	1
10-664-103	Automation 4: PLC	1
10-664-104	Automation 5: PLC	1
10-806-143	College Physics 1	3
10-801-197	Technical Reporting	3
10-605-157	Power Electronics 1	1
10-605-158	Power Electronics 2	1
10-620-121	Mechanics 1: Basic	1
10-620-122	Mechanics 2: Inter.	1
10-620-123	Mechanics 3: Systems	1
10-620-159	Power Electronics 3	1
10-620-161	Power Electricity 1	1
10-620-162	Power Electricity 2	1
10-664-105	Automation 6	1
10-664-151	Automation 8	1
10-664-160	Control 1: Discrete	1
10-664-161	Control 2: Process	1
10-664-162	Control 3: Motion	1
10-664-170	Safety Dev. and Apps.	1
10-801-136	English Comp. 1	3
10-620-105	Rigging Systems 1	1
10-620-166	Fluids 4: Adv. Hydraulics	1
10-620-170	Intro. Robotics	1
10-620-172	Robotic Vision Systems	1
10-620-189	Mach. Int. Techniques	3
10-664-163	Control 4: Drive Perf.	1
10-664-164	Control 5: Servo Sys.	1
10-664-165	Control 6: Servo Sys.	1
10-809-172	Intro. Diversity Studies	3
10-809-198	Intro Psychology	3

66

UWGB Courses

Course #	Course name	Credits
ET 101	Fund. of Eng. Tech.	2
ET 130	Basic Elec. Circuits I	3
ET 131	Basic Elec. Circuits II	3
ET 142	Intro. to Programming	3
ET 150	Codes, Safety, Stand.	2
ET 232	Semiconductor Dev.	3
ET 240	Microcon. and PLCs	3
ET 250	Signals and Sys.	3
ET 311	Digital Electronics	3
ET 324	Motors and Drives	3
ET 340	Advanced PLC's	3
ET 344	Ind. Electronics & Control	3
ET 346	Electric Power System	3
PHYSICS 103	Fund. of Physics	5
First Year	Seminar	3
Social Sc.	Gen Ed	3
Ethnic Studies	Gen. Ed.	3
ENG COMP 100	(English Competency)	3
MATH 101	(Math Competency)	3
Communications		3
Elective Credit Block		<u>6</u>
		66

Direct Course Equivalent

General Education Course

Recommendations for Students:

For NWTC students planning to pursue a BS in Engineering Technology, the following courses and their UWGB equivalents are recommended.

Course	NWTC #	credits		UWGB #	credits
Calculus 1	10-804-198	4	=	MATH 202, Calculus & Analytic Geo I	4
Calculus 2	10-804-181	4	=	MATH 203, Calculus & Analytic Geo II	4
Linear Circuits	10-605-160	1	=	ET 233, Linear Circuits	3
and	10-605-161	1			
and	10-605-162	1			

Courses Still Needed at UWGB

Course	Credits
--------	---------

ET 233, Linear Circuits	3
-------------------------	---

ET 105 Intro. to Drawing	3
--------------------------	---

MATH 202, Calculus & Analytic Geometry I	4
--	---

MATH 203, Calculus & Analytic Geometry II	4
---	---

PHYSICS 104, Fundamentals of Physics II	5
---	---

Remaining Advanced Study Group	22
--------------------------------	----

Remaining gen eds, minimum: 3cr Fine Arts, 3 crs Social Science (not PSYCH), 6 crs Humanities, 3 crs Biological Science, 3 crs Sustainability Perspective, 3 crs Global Culture, 3crs Quantitative Literacy (use MATH 202), 6 credits Upper Level Writing Emphasis (taken through major coursework), Capstone (use ET 400 or 410)

C. NWTC Electrical Engineering Technology Associate's Program (transfertrack)

Rationale for how programs are related: The NWTC Associate's program in Electrical Engineering Technology (transfer track) is a good fit for the fundamentals group of courses in UW-Green Bay's Electrical Engineering Technology (ElecET) program. Students completing the associate's degree will meet the desired learning outcomes for some of the fundamentals, supporting, and advanced courses in UWGB's BS MET degree. Presented below are the curriculum for NWTC's Associate's program, the array of courses in the UWGB program that the Associate's program will fulfill in a block transfer, and recommendations for students pursuing this completion route. The curriculum for UWGB's Electrical Engineering Technology Program is given under 2A (above). Students are required to successfully complete all UWGB degree requirements in order to earn a UWGB degree.

Proposed Articulated Block of Courses

Note that the two lists below, NWTC Associate's degree requirement and block list of classes that the Associate's will fulfill, are not equivalent course lists. The NWTC list is the required course list for the Associate's degree and the UWGB list is the fundamentals and supporting course block that the NWTC degree will fulfill.

NWTC Electrical Eng. Technology Associate – Transfer Track

<u>Course #</u>	<u>Course name</u>	<u>Credits</u>
10-620-140	Mach. Wiring and Safety	1
10-660-101	Digital 1: Logic	1
10-660-102	Digital 2: Sequential	1
10-660-103	Digital 3: Registers	1
10-660-104	DC 1: Intro.	1
10-660-105	DC 2: Circuits	1
10-660-106	DC 3: Cir. Theorem	1
10-801-136	English Comp. 1	3
10-804-196	Trig. w Apps.	3
10-809-199	Psychology of Human Rel.	3
10-890-101	College 101	1
10-660-107	AC 1: Properties	1
10-660-108	AC 2: Reactance	1
10-660-109	AC3: RLC Circuits	1
10-660-110	Electronics 1	1
10-660-111	Electronics 2	1
10-660-112	Electronics 3	1
10-660-113	Digital 4: ALU	1
10-660-114	Digital 5: Characteristics	1
10-801-197	Technical Reporting	3
10-804-195	Coll. Alg. w Apps.	3
10-806-143	Coll. Physics 1	3
10-605-160	Linear Electronics 1	1
10-605-161	Linear Electronics 2	1
10-605-162	Linear Electronics 3	1
10-605-163	Micro 1: Intro	1
10-605-164	Micro. 2 Technique	1
10-605-165	Micro. 3 Interfaces	1
10-605-170	Datacomm. 1	1
10-605-171	Datacom. 2	1
10-605-172	Datacomm. 3	1
10-662-112	DC/AC 3	3
10-809-172	Intro. Diversity Studies	3
10-804-198	Calculus 1	4
10-605-169	Elec. Design Int.	3
10-620-161	Power Electricity 1	1
10-620-162	Power Electricity 2	1
10-662-124	Elec. Circuit Anal.	3
10-809-195	Economics	3
10-804-181	Calculus 2	4
10-664-102	Automation 3: PLC	1
10-664-103	Automation 4: PLC	1
10-664-104	Automation 5: PLC	1
		<hr/> 71

UWGB Courses

<u>Course #</u>	<u>Course name</u>	<u>Credits</u>
ET 101	Fund. of Eng. Tech.	2
ET 105	Fund. of Drawing	3
ET 130	Basic Elec. Circuits I	3
ET 131	Basic Elec. Circuits II	3
ET 142	Intro. to Program.	3
ET 150	Codes, Safety, Stand.	2
ET 232	Semiconductor Dev.	3
ET 233	Linear Circuits	3
ET 240	Microcon. and PLCs	3
ET 250	Signals and Sys.	3
ET 311	Digital Electronics	3
ET 350	Data Com & Protocol	3
PHYSICS103	Fund. of Physics I	5
MATH 202	Calculus & An Geo I	4
MATH 203	Calculus & An Geo II	4
First Year		3
Social Sc. Gen. Ed.		3
Social Sc. Gen. Ed.		3
Ethnic Studies Gen. Ed.		3
ENG COMP 100 (English Competency)		3
MATH 104 (Math Competency)		4
Communications		3
Elective Credit Block		2
		<hr/> 71

Direct Course Equivalent

General Education Course

Courses Still Needed at UWGB

<u>Course</u>	<u>Credits</u>
PHYSICS 104, Fundamentals of Physics II	5
Remaining Advanced Study Group	28
Remaining gen eds, minimum: 3cr Fine Arts, 6 crs Humanities, 3 crs Biological Science, 3 crs Sustainability Perspective, 3 crs Global Culture, 6 credits Upper Level Writing Emphasis (taken through major coursework), Capstone (use ET 400 Or 410)	

D. NWTC Utilities Engineering Technology Associate's Program

Rationale for how programs are related: The Associate's program in Utilities Engineering Technology is a good fit for the fundamentals group of courses in UW-Green Bay's Electrical Engineering Technology (ElecET) program. Students completing the associate's degree will meet the desired learning outcomes for some of the fundamentals, supporting, and advanced courses in UWGB's BS ElecET degree. Presented below are the curriculum for NWTC's Associate's program, the array of courses in the UWGB program that the Associate's program will fulfill in a block transfer, and recommendations for students pursuing this completion route. Students are required to successfully complete all UWGB degree requirements in order to earn a UWGB degree.

Proposed Articulated Block of Courses

Note that the two lists below, NWTC Associate's

<u>Course #</u>	<u>Course name</u>	<u>Credits</u>
10-468-100	Utility Safety	2
10-614-113	2D Essentials	2
10-620-100	Fluids 1: Pneumatics	1
10-620-101	Fluids 2: Hydraulics	1
10-660-101	Digital 1: Logic	1
10-660-102	Digital 2: Sequential	1
10-660-104	DC 1: Intro.	1
10-660-105	DC 2: Circuits	1
10-660-106	DC 3: Cir. Theorems	1
10-664-100	Automation 1	1
10-664-101	Automation 2	1
10-806-143	College Physics 1	3
10-804-118	Interm Alg. w Apps.	4
10-890-101	College 101	1
10-442-150	Machine Fab. 1	1
10-468-105	Utility Generation Systems	2
10-660-107	AC 1: Properties	1
10-660-108	AC 2: Reactance	1
10-660-109	AC 3: RLC Circuits	1
10-660-110	Electronics 1	1
10-664-102	Automation 3: PLC	1
10-664-103	Automation 4: PLC	1
10-664-104	Automation 5: PLC	1
10-804-196	Trig. W Apps.	3
10-468-101	Utility Power Sys. Coord.	3
10-605-157	Power Electronics 1	1
10-605-158	Power Electronics 2	1
10-620-159	Power Electronics 3	1
10-620-161	Power Electricity 1	1
10-620-162	Power Electricity 2	1
10-468-160	Elec Power Control 1	1
10-468-161	Elec Power Control 2	1
10-468-162	Elec PowerControl 3: SCADA	1
10-801-136	English Comp. 1	3
10-809-198	Intro Psychology	3
10-468-102	Utility Project Exec.	3
10-468-103	Utility Sys. Mainten.	3
10-468-104	Utility Sys. Nat. Gas	3
10-606-113	CAD	2
10-801-197	Tech. Reporting	3
10-809-172	Intro. Diversity Studies	3
		<hr/> 68

UWGB Courses

<u>Course #</u>	<u>Course name</u>	<u>Credits</u>
ET 101	Fund. of Eng. Tech.	2
ET 105	Fund. of Drawing	3
ET 130	Basic Elec. Circuits I	3
ET 131	Basic Elec. Circuits II	3
ET 232	Semiconductor Dev.	3
ET 240	Microcon. and PLCs	3
ET 250	Signals and Sys.	3
ET 311	Digital Electronics	3
ET 324	Motors and Drives	3
ET 340	Advanced PLC's	3
ET 344	Ind. Electronics & Control	3
ET 346	Elec Power Systems	3
PHYSICS 103	Fund. of Physics I	5
First Year Seminar		3
Social Sc. Gen. Ed.		3
ENG COMP 100 (English Competency)		3
Ethnic Studies Gen. Ed.		3
MATH 104 (Math Competency)		4
Communications		3
Elective Credit Block		9
		<hr/> 68

Direct Course Equivalent

General Education Course

Recommendations for Students:

For NWTC students planning to pursue a BS in Engineering Technology, the following courses and their UWGB equivalents are recommended.

Course	NWTC #	credits		UWGB #	credits
Calculus 1	10-804-198	4	=	MATH 202, Calculus & Analytic Geo I	4
Calculus 2	10-804-181	4	=	MATH 203, Calculus & Analytic Geo II	4
Linear Circuits	10-605-160	1	=	ET 233, Linear Circuits	3
and	10-605-161	1			
and	10-605-162	1			

Courses Still Needed at UWGB

<u>Course</u>	<u>Credits</u>
ET 142, Introduction to Programming	3
ET 150, Codes, Safety, & Standards	2
ET 233, Linear Circuits	3
MATH 202, Calculus & Analytic Geometry I	4
MATH 203, Calculus & Analytic Geometry II	4
PHYSICS 104, Fundamentals of Physics II	5
Remaining Advanced Study Group	19
Remaining gen eds, minimum: 3cr Fine Arts, 3 crs Social Science (not PSYCH), 6 crs Humanities, 3 crs Biological Science, 3 crs Sustainability Perspective, 3 crs Global Culture, 3 Quantitative Literacy (use MATH 202), 6 credits Upper Level Writing Emphasis (taken through major coursework), Capstone (use ET 400 or 410)	

3. UW-Green Bay Environmental Engineering Technology BS

Presented below is the curriculum for UWGB's Environmental Engineering Technology Program.

UWGB Environmental Engineering BS requirements (without general education requirements, unless fulfilled by degree requirements)

Support Group (39 credits)

BIOLOGY 201, 202	Principles of Biology: Cellular & Molecular Processes Lec & Lab (4 cr)
Chemistry 211, 213	Principles of Chemistry I Lec & Lab (5 cr)
Chemistry 212, 214	Principles of Chemistry II Lec & Lab (5 cr)
ET 101	Fundamentals of Engineering Technology (2 cr)
ET 103	Surveying (3 cr)
ET 105	Fundamentals of Drawing (3 cr)
MATH 202	Calculus & Analytic Geometry I (4 cr)
MATH 203	Calculus & Analytic Geometry II (4 cr)
MATH 260	Introductory Statistics (4 cr)
PHYSICS 103 or 201	Fundamentals of Physics I or Principles of Physics I (5 cr) – either algebra or calculus based

Fundamentals Group (28 credits)

BIOLOGY 322	Environmental Microbiology (4 cr)
ENV SCI 207	Laboratory Safety (1 cr)
ET 118	Fluids I (3 cr)
ET 201	Introduction to Environmental Engineering (3 cr)
ET 203	Introduction to Water and Waste Water (3 cr)
ET/ENV SCI 320	The Soil Environment (4 cr)
ET/ENV SCI 330	Hydrology (3 cr)
ET 391	Geographic Information Systems (3 cr)
GEOSCI 202	Physical Geology (4 cr)

Advanced Study Group (18-19 credits)

Required:

ET 360	Project Management (3 cr)
--------	---------------------------

Choose a minimum of one course from the following course list:

ET 331	Water and Waste Water Treatment (3 cr)
ET 334	Solid Waste Management (3 cr)
ET 464	Atmospheric Pollution and Abatement (3 cr)

Choose a minimum of one course from the following course list:

ECON 305	Natural Resources Economic Policy (3 cr)
ET 305	Environmental Systems (4 cr)
ET 323	Pollution Prevention (3 cr)
ET 377	Industrial Safety and Hygiene (3 cr)
ET 415	Solar and Alternate Energy Systems (3 cr)
ET 420	Lean Processes (3 cr)
ET 424	Hazardous and Toxic Materials (3 cr)
ET 432	Hydrogeology (3 cr)
ET 433	Ground Water: Resources and Regulations (3 cr)
PU EN AF 378	Environmental Law (3 cr)

One of:

ET 400	Co-op/Internship in Engineering Technology (3 cr)
ET 410	Capstone Project (3 cr)

A. NWTC Environmental Engineering: Waste and Water Technology Associate's Program 10-506-2

Rationale for how programs are related: The Associate's program in Environmental Engineering: Waste and Water Technology is a good fit for the fundamentals group of courses in UW-Green Bay's Environmental Engineering Technology (EnvirET) program. Students completing the associate's degree will meet the desired learning outcomes for some of the fundamentals, supporting, and advanced courses in UWGB's BS EnvirET degree. Presented below are the curriculum for NWTC's Associate's program, the array of courses in the UWGB program that the Associate's program will fulfill in a block transfer, and recommendations for NWTC students pursuing this completion route. Students are required to successfully complete all UWGB degree requirements in order to earn a UWGB degree.

Proposed Articulated Block of Courses

Note that the two lists below, NWTC Associate's degree requirement and block list of UWGB classes that the Associate's will fulfill, are not equivalent course lists. The NWTC list is the required course list for the Associate's degree and the UWGB list is the fundamentals and supporting course block that the NWTC degree will fulfill.

NWTC Environ. Eng.: Waste & Water Technology Associate

Course #	Course name	Cr
10-403-100	Blueprint Reading Intro	1
10-506-146	Intro. Environ. Science	3
10-506-147	Environ. Biology	4
10-804-113	College Technical Math 1A	3
10-806-134	General Chemistry	4
10-890-101	College 101	1
10-506-148	Environ. Chem. Analysis	4
10-506-149	Intro. Envir. Compliance	3
10-614-113	2D Essentials	2
10-620-100	Fluids I: Basic Pneumatics	1
10-620-101	Fluids 2: Basic Hydraulics	1
10-620-165	Fluids 3: Inter Hydraulics	1
10-801-136	English Composition 1	3
10-804-114	College Technical Math 1B	2
10-506-150	Envir. Microbiology	3
10-506-151	Wastewater Treatment Analysis	4
10-506-152	Ind. Safety & Emerg Response	3
10-606-113	CAD	2
10-620-121	Mechanics 1: Basic	1
10-620-122	Mechanics 2: Intermediate	1
10-664-100	Automation 1: Control Logic	1
10-664-101	Automation 2: Motor Control	1
10-801-197	Technical Reporting	3
10-506-154	Air Poll. Control Systems	3
10-506-155	Water Treat. & Analysis	4
10-506-156	Solid & Hazard. Waste	3
10-809-172	Intro. to Diversity Stud.	3
10-809-198	Intro. to Psychology	3
		68

UWGB Courses

Course #	Course name	Credits
ET 101	Fund. of Engin. Tech.	2
ET 118	Fluids I	3
ET 201	Intro. to Env. Eng.	3
ET 203	Intro Water & WW	3
ET 331	Water and WW Treat	3
ENV SCI 102	Intro Env Science	3
ENV SCI 207	Laboratory Safety	1
BIOLOGY 201	Prin Bio Cell/Mole Lec	3
BIOLOGY 202	Prin Bio Cell/Mole Lab	1
BIOLOGY 322	Envir. Microbiology	4
CHEM 211	Prin. Chem. I Lec	4
CHEM 213	Prin. Chem. I Lab	1
	First Year Seminar	3
	Social Science Gen. Ed.	3
	Ethnic Studies Gen. Ed.	3
	MATH 101 (Math Competency)	3
	ENG COMP 100 (English Competency)	3
	Communications Elective	3
	Elective Credit Block	<u>19</u>
		68
	Direct Course Equivalent	
	General Education Course	

Recommendations for Students:

For NWTC students planning to pursue a BS in Engineering Technology, the following courses and their UWGB equivalents are recommended.

Course	NWTC #	credits		UWGB #	credits
Calculus 1	10-804-198	4	=	MATH 202, Calculus & An Geo I	4
Calculus 2	10-804-181	4	=	MATH 203, Calculus & An Geo II	4

Courses Still Needed at UWGB

Course	Credits
--------	---------

PHYSICS 103	Fundamentals of Physics I	5
-------------	---------------------------	---

CHEM 212/214	Principles of Chemistry II Lec & Lab	5
--------------	--------------------------------------	---

MATH 202	Calculus & Analytic Geometry I	4
----------	--------------------------------	---

MATH 203	Calculus & Analytic Geometry II	4
----------	---------------------------------	---

MATH 260	Introductory Statistics	4
----------	-------------------------	---

GEOSCI 202	Physical Geology	4
------------	------------------	---

ET 103	Surveying	3
--------	-----------	---

ET 105	Fundamentals of Drawing	3
--------	-------------------------	---

ET 320	The Soil Environment	4
--------	----------------------	---

ET 330	Hydrology	3
--------	-----------	---

ET 391	Geographic Information Systems	3
--------	--------------------------------	---

Remaining Advanced Study Group		17
--------------------------------	--	----

Remaining gen eds, minimum: 3cr Fine Arts, 3 crs Social Science (not PSYCH), 6 crs Humanities, 3 crs Sustainability Perspective, 3 crs Global Culture, 3 crs Quantitative Literacy (use MATH 202), 6 credits Upper Level Writing Emphasis (taken through major coursework), Capstone (use ET 400 or 410)