

Northcentral Technical College Engineering Technology Articulation

Articulation Agreement Proposal for Engineering Technology Associate's Degree programs at Northcentral 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 NTC will count for significant block credit transfers into the Mechanical and Electrical 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 Electrical Engineering Technology BS

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

UWGB Electrical Engineering Technology BS requirements

(without general education and graduation 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 211	Digital Electronics (3 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)

Advanced Study Group (31 credits)

ET 324	Motors and Drives (3 cr)
ET 340	Advanced PLCs (3 cr)
ET 342	Supervisory Control and Data Acquisition (3 cr)
ET 344	Human Machine Interface (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)
<i>One of</i>	
ET 400	Co-op/Internship in Engineering Technology (3 cr)
ET 410	Capstone Project (3 cr)

A. NTC Electromechanical Technology Associate Degree Program

Rationale for how programs are related: The Associate’s program in Electromechanical 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 much of the fundamentals course array and some of the supporting courses in UWGB’s BS ElecET degree. Presented below are the curriculum for NTC’s Associate’s program and the array of courses in the UWGB program that the Associate’s program will fulfill in a block transfer.

Articulated Block of Courses

Note that the two lists below, NTC Associate’s degree requirement and block list of UWGB classes that the Associate’s will fulfill, are not equivalent course lists. The NTC list is the required course list for the Associate’s degree and the UWGB list is the fundamentals and supporting course block that the NTC degree will fulfill. Students are required to successfully complete all UWGB degree requirements in order to earn a UWGB degree.

NTC Electromechanical Technology

<u>Course #</u>	<u>Course Name</u>	<u>Credits</u>
10-103-225	Excel 2013 Level 1	1
10-103-226	Word 2013 Level 1	1
10-612-120	Fluid Power Sys. 1	1
10-612-121	Fluid Power Sys. 2	1
10-612-122	Fluid Power Sys. 3	1
10-620-172	Industry Workplace Safety	1
10-623-179	Interp. Eng. Drawings	2
10-660-112	DC 1: Circuit Fundamentals	1
10-660-113	DC 2: Circuit Analysis	1
10-660-116	AC 1: Circuit Fundamentals	1
10-660-117	AC2: Circuit Analysis	1
10-660-118	Electrical Fabrication	1
<i>One of:</i>	10-804-195 Coll. Alg. w/ Apps.	3
	10-804-118 Inter. Alg. w/ Apps.	
10-806-143	College Physics 1	3
10-605-170	Digital Electronics 1	1
10-605-171	Digital Electronics 2	1
10-605-172	Elec.Dev.& Circuits 1	1
10-605-173	Elec. Dev. & Circuis 2	1
10-620-151	Machine Control 1	1

UWGB Courses

<u>Course #</u>	<u>Course Name</u>	<u>Credits</u>
Physics 103	Fundamentals of Physics I	3
Physics 104	Fundamentals of Physics II	3
ET 101	Funds. Engineering Technology	2
ET 105	Fundamentals of Drawing	3
ET 130	Basic Electrical Circuits I	3
ET 131	Basic Electrical Circuits II	3
ET 150	Codes, Safety & Standards	2
ET 211	Digital Electronics	3
ET 240	Microcontrollers & PLCs	3
ET 250	Signals & Systems	3
ET 324	Motors & Drives	3
ET 340	Advanced PLCs	3
Communication		3
ENG COMP Competency		3
	First Year Seminar	3
Social Science		3
Social Science		3
MATH Competency		3
	Elective Credit Block (may vary)	16
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10-620-152	Machine Control 2	1
10-620-153	Machine Control 3	1
10-620-157	Mechanical Systems 1	1
10-620-158	Mechanical Systems 2	1
10-620-159	Industrial Motors 1	1
10-620-170	Intro. Solidworks	1
10-620-171	AutoCAD for Technicians	1
10-660-121	Intro. Microcontrollers	1
10-660-122	Electrical Systems	1
10-806-144	College Physics 2	3
10-420-101	Intro. Machine Shop	2
10-620-154	Robot Applications 1	1
10-620-155	Robot Applications 2	1
10-620-156	Robot Applications 3	1
10-620-160	Industrial Motors 2	1
10-620-161	Servo Systems 1	1
10-620-162	Servo Systems 2	1
10-620-163	Servo Systems 3	1
10-620-164	PLC 1	1
10-620-165	PLC 2	1
10-620-166	PLC 3	1
10-801-196	Oral/Interper. Comm.	3
10-442-101	Intro. Welding	2
10-620-145	Electromechanical Projects	3
10-620-167	PLC 4	1
10-620-168	PLC 5	1
10-620-169	PLC 6	1

One of:	10-801-195	Written Comm.	3
	10-801-136	English Comp. 1	
One of:	10-809-195	Economics	3
	10-809-196	Intro. Sociology	
One of:	10-809-198	Intro. Psychology	3
	10-809-199	Psych. of Human Rel.	

Direct Course Equivalent

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General Education Course

Courses still needed at UWGB

<u>Course</u>	<u>Credits</u>
ET 142 Introduction to Programming	3
ET 232 Semiconductor Devices	3
ET 233 Linear Circuits	3
Math 202 Calculus and Analytic Geometry I	4
Math 203 Calculus and Analytic Geometry II	4
Advanced study group (except ET 324 and ET 340)	25
Remaining pre-requisite courses and general education graduation requirements	

2. UW-Green Bay Mechanical Engineering Technology BS

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

UWGB Mechanical Engineering Technology 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 both</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 (4cr)
MATH 203	Calculus & Analytic Geometry II (4cr)
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
PHYSICS 104 or 202	Fundamentals of Physics II or Principles of Physics II (5 cr) – either algebra or calculus based

Fundamentals Group (24 credits)

ENGR 213	Mechanics I (3 cr)
ENGR 214	Mechanics II (3 cr)
ET 105	Fundamentals of Drawing (3 cr)
ET 106	Parametric Modeling I (2 cr)
ET 116	Basic Manufacturing Processes (3 cr)
ET 118	Fluids I (2 cr)
ET 207	Parametric Modeling II (2cr)
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)
<i>One of</i>	
ET 400	Co-op/Internship in Engineering Technology (3 cr)
ET 410	Capstone Project (3 cr)

A. NTC Mechanical Design Engineering Technology Associate's Degree, Program #106061

Rationale for how programs are related: The Associates program in Mechanical Design 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 the fundamentals course array and some of the supporting courses in UWGB's BS MET degree. Presented below are the curriculum for NTC's Associate's program and the array of courses in the UWGB program that the Associate's program will fulfill in a block transfer.

Articulated Block of Courses

Note that the two lists below, NTC Associate's degree requirement and block list of classes that the Associate's will fulfill, are not equivalent course lists. The NTC list is the required course list for the associate's degree and the UWGB list is the fundamentals and supporting course block that the NTC degree will fulfill. Students are required to successfully complete all UWGB degree requirements in order to earn a UWGB degree.

NTC Mechanical Design Engineering Technology

<u>Course #</u>	<u>Course Name</u>	<u>Credits</u>
10-103-225	Excel 2013 Level 1	1
10-606-103	Mech. Des. Work. Pre.	1
10-606-105	Tech. Drafting/CAD	2
10-606-128	Tech. Detailing	2
10-606-132	Materials of Industry	2
10-606-160	Man. Processes - Machining	2
One of:	10-804-195 Coll. Alg. w/ Apps.	3
	10-804-118 Int. Alg. w/ Apps	
10-806-154	Gen. Physics 1	4
10-606-106	2D AutoCAD Apps.	2
10-606-111	App. Mech. for Tech.	3
10-606-115	Machine Design 1	2
10-606-162	Manu. Proc. - Fab.	2
10-606-163	Strength of Mats.	3
One of:	10-801-195 Written Comm.	3
	10-801-136 English Comp. 1	
10-804-196	Trig. w/ Apps.	3
10-606-100	Solidworks Mech. Des.	2
10-606-107	Design. for Manu.	4
10-606-108	Geo. Dim. & Tol. Fund.	1
10-606-114	Mechanisms	4
10-606-117	Machine Design 2	3
10-612-120	Fluid Power Syst. 1	1
10-612-121	Fluid Power Syst. 2	1
10-612-122	Fluid Power Syst. 3	1
10-606-109	Comp. Apps. & Anal.	1
10-606-116	Tooling & Prod.	2
10-606-125	Design Problems	3
10-606-130	Autodesk Inv.3D CAD	2
10-801-197	Technical Reporting	3

UWGB Courses

<u>Course #</u>	<u>Course Name</u>	<u>Credits</u>
ET 101	Funds. Engineering Technology	2
ET 105	Fundamentals of Drawing	3
ET 106	Parametric Modeling I	2
ET 116	Basic Manufacturing Processes	3
ET 118	Fluids I	2
ET 207	Parametric Modeling II	2
ET 220	Mechanics of Materials	3
ET 221	Machine Components	3
ET 318	Fluids II	2
ET 322	Design Problems	3
Physics 103	Fundamentals of Physics I	4
	First Year Seminar	3
	MATH Competency	4
	ENG COMP Competency	3
	Communication	3
	Social Science	3
	Social Science	3
	Elective Credit Block (may vary)	21
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	10-809-196 Intro. Sociology	3
One of:	10-809-198 Intro. Psychology	3
	10-809-199 Psych.of Human Rel.	
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Direct Course Equivalent

General Education Course

Courses still needed at UWGB

Course	Credits
ET 130 Basic Electrical Circuits I	3
ET 206 Chemistry for Engineers	5
ENGR 213 Mechanics I	3
ENGR 214 Mechanics II	3
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
Advanced study group (except ET 318 and ET 322)	23
Remaining pre-requisite courses and general education graduation requirements	

The above Engineering Technology articulation agreement is effective August, 1, 2016. This agreement will be reviewed every 5 years. Both Northcentral Technical College and the University of Wisconsin-Green Bay agree to notify each other of any curricular changes. Programmatic changes from either institution may render this agreement void.

Signatures

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 Dean, College of Science and Technology
 UW-Green Bay

 Dr. Lori Weyers
 President
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 Gregory Davis
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 Dr. Shelley Mondeik
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Northcentral Technical College