Engineering Technology Credit Transfer:
LTC Associate Degree to UWGB Bachelor's Degree

In accordance with the University of Wisconsin System guidelines for articulation agreements between UW System institutions and Wisconsin technical college System (WTCS) districts, the following associates programs at Lakeshore Technical College (LTC) will count for significant block credit transfers into the Mechanical, Electrical, and Environmental Engineering Technology programs at UW-Green Bay (UWGB). Each will be discussed separately with material required by the AIS 6.2 guidelines for developing program-to-program articulation agreements.

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)
either both	
CHEM 211, 213	Principles of Chemistry I Lecture and Lab (5 cr)
CHEM 212, 214	Principles of Chemistry II Lecture and Lab (5 cr)
or	
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 (24 credits)	
ENGR 213	Mechanics I: Statics (3 cr)
ENGR 214	Mechanics II: Dynamics (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)	
One of		
ET 410	Capstone Project (3 cr)	
ET 400	Co-op/Internship in Engineering Technology (3 cr)	

A. LTC 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 the fundamentals course array and some of the supporting courses in UWGB's BS MET degree. Presented below are the curriculum for LTC's Associate's program and the array of courses in the UWGB program that the Associate's program will fulfill in a block transfer.

Proposed Articulated Block of Courses

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

LTC Mechanical Design Technology Associate

Course #	Course name	Credits
10-606-101	Basic Mech. Drafting	2
10-606-103	Inter. Mech. Drafting Autocad	2
10-606-105	Basic Model. Using Autocad	2
10-606-106	Geo. Dimen. and Toler.	3
10-606-112	Tool Design Basic	3
10-606-117	Machine Elements	3
10-606-118	Kinematics	3
10-606-125	Design Problems	3
10-606-130	Strength of Mats.	4
10-606-134	Statics	4
10-606-140	Draft. Para. using Solidworks	3
One of:	*10-606-160 Manu. Proc./Apps.* *10-606-104 Dev. Manu. Skills*	3
10-606-195	Parametric Drafting	3
10-606-196	Work. Draw. using Solidworks	3
10-606-197	Working Drawings	3
10-606-199	Intro. Current Man. Trends	3
One of:	*10-801-195* ***Written Comm.***** *10-801-197* ***Technical Report*** *10-801-136* ***English Comp. 1*****	3
10-801-196	**Oral/Inter. Skills**	3
10-804-115	**College Tech. Math 1**	5
10-806-154	General Physics 1	4
One of:	*10-809-196* ***Intro. to Sociology*** *10-809-195* ***Economics***	3
10-809-198	**Intro. to Psychology**	3
		68

UWGB Courses

Course #	Course name	Credits
ET 101	Intro. to Eng Tech	2
ET 105	Fund. Of Drawing	3
ET 106	Parametric Model I	2
ET 116	Basic Man. Processes	3
ET 207	Parametric Model. II	2
ET 220	Mechanics of Materials	3
ET 221	Machine components	3
ET 322	Design Problems	3
Physics 103	Fund. of Physics I	5
First Year Seminar		3
Math 094 (Math Competency)		0
English Comp OR COMM Elective**		3
Social Science gen ed		3
Social Science gen ed		3
Communications Elective		3
Elective Credit Block		22
		63

** Preferred course to earn ENG competency, other course will only transfer as elective

General Education Course

Direct Course Equivalent

Courses still needed at UWGB

Course		Credits
ET 118	Fluids I	2
ET 130	Basic Elec. Circuit I	3
ENGR 213	Mechanics I: Statics	3
ENGR 214	Mechanics II: Dynamics	3
ET 206	*Chemistry for Eng.*	*5*
	Or BOTH	
	CHEM 211/213 Principles of Chemistry 1 (lec & lab)	*5*
	CHEM 212/214 Principles of Chemistry 2 (lec & lac)	*5*
MATH 202	Calculus & Analytic Geometry I	4
MATH 203	Calculus & Analytic Geometry II	4
MATH 260	Introductory Statistics	4
Physics 104	Fundamentals of Physics II	5
Remaining Advanced study group (all except ET322)		25

Remaining pre-requisite courses, general education & graduation requirements

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 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 Acq (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)

One of

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

A. LTC 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 the fundamentals course array and some of the supporting courses in UWGB's BS ElecET degree. Presented below are the curriculum for LTC's Associate's program and the array of courses in the UWGB program that the Associate's program will fulfill in a block transfer.

Proposed Articulated Block of Courses

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

LTC Electro-Mechanical Technology Associate

Course #	Course name	Credits
10-620-103	Fluid Power 1	2
10-620-104	Fluid Power 2	3
10-620-120	Basic Tools and Measurement	1
10-620-122	Ind. Controls Intro.	2
10-620-130	Intro. to Mechanisms Mech.	3
10-620-138	Programm. Control. – Adv	3
10-620-140	Program. Control. Adv.	2
10-620-141	Ind. Controls and Motors	3
10-620-147	Electronic Dev. Transducers	2
10-620-164	Electromech. Systems	3
10-620-168	Robotics Intro.	2
10-620-169	Robotic Maintenance	1
10-620-171	Robotics Adv.	2
10-620-192	Frequency Drives	1
10-620-193	NEC Codes	1
10-620-194	Touch Screen Apps.	2
10-620-195	Indus. Troubleshooting	1
10-620-196	Ind. Applications	4
10-620-197	Analog Controls	2
10-620-198	Industrial Networks	2
10-620-199	Integration of Manu.	2
10-660-105	DC Fundamentals	2
10-660-110	AC Fundamentals	2
One of:	*10-801-195* ***Written Comm**** / *10-801-197* ***Technical Report***	3
10-801-196	**Oral/Inter. Comm.**	3
10-804-115	**Coll. Technical Math 1**	5
10-606-154	General Physics 1	4
One of:	*10-809-196* ***Intro. to Sociol*** / *10-809-195* ***Economics***	3
10-809-198	**Intro. to Psychology**	3
		68

UWGB Courses

Course #	Course name	Credits
ET 101	Funds Engin. Tech.	2
ET 105	Fund. of Drawing	3
ET 130	Basic Elec. Circuits I	3
ET 131	Basic Elec. Circuits II	3
ET 150	Codes, Safety, Stand.	2
ET 240	Microcon. and PLCs	3
ET 250	Signals and Systems	3
ET 311	Digital Electronics	3
ET 340	Advanced PLCs	3
Physics 103	Fund. of Physics I	5
First Year Seminar		3
English Comp. Or COMM Elective**		**3**
Math 094 (Math Competency)		**0**
Social Science gen ed		**3**
Social Science gen. ed.		**3**
Communications		**3**
Elective Credit Block		18
		63

** Preferred course to earn ENG competency, other course will only transfer as elective

General Education Course

Direct Course Equivalent

Courses still needed at UWGB

Course		Credits
ET 142	Intro to Programming	3
ET 232	Semiconductor Devices	3
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 (all except ET 340)		28

Remaining pre-requisite courses, general education & graduation requirements

B. LTC Energy Management Technology Associate's Program 10-481-3

Rationale for how programs are related: The Associate's program in Energy Management Technology, which is a partnered degree between Lakeshore Technical College and Northeast Wisconsin Technical College, 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 the fundamentals course array and some of the supporting courses in UWGB's BS ElecET degree. Presented below are the curriculum for NWTC's/LTC's Associate's program and the array of courses in the UWGB program that the Associate's program will fulfill in a block transfer.

Proposed Articulated Block of Courses

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

LTC Energy Management Technology Associate

Course #	Course name	Credits
10-413-110	Intro. to Energy	2
10-481-114	Intro. to Energy Manage.	3
10-660-105	DC Fundamentals	2
10-620-103	Fluid Power 1	2
10-804-115	**College Tech Math 1**	5
10-103-131	Excel 2010 Level 1	1
10-103-124	Intro. to MS Project Level 1	1
10-620-104	Fluid Power 2	3
10-481-106	Intro. to Water Resources	2
10-620-138	Program. Controllers	3
10-660-110	AC Fundamentals	3
10-801-195	**Written Comm.**	3
10-806-154	General Physics 1	4
10-481-109	Comm. HVACR Analysis	3
10-481-111	Energy control Strategies	3
10-481-115	Lighting Fund.	3
10-620-141	Ind. Controls and Motors	3
10-620-164	Electromechanical Systems	3
10-481-107	Building Energy Simulation	3
10-481-108	Comm. Energy Analysis	3
10-481-110	Energy Accounting	2
10-481-113	Energy Invest. Anal.	3
10-801-197	**Technical Reporting**	3
10-809-198	**Intro. to Psychology**	3
		66

UWGB Courses

Course #	Course name	Credits
ET 101	Fund. Eng. Tech.	2
ET 105	Fund. of Drawing	3
ET 130	Basic Elec. Circuits 1	3
ET 131	Basic Elec. Circuits 2	3
ET 150	Codes, Safety, Stand.	2
ET 240	Microcon. and PLCs	3
ET 250	Signals and Sys.	3
ET 311	Digital Electronics	3
Physics 103	Fund. of Physics	5
First year seminar		3
Math 094 (Math Competency)		0
English Comp.		3
Social Science Gen Ed		3
Communications		3
Elective Credit Block		22
		61
General Education Course		
Direct Course Equivalency		

Courses still needed at UWGB

Course		Credits
ET 142	Intro to Programming	3
ET 232	Semiconductor Developemtn	3
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		31

Remaining pre-requisite courses, general education & graduation requirements

C. LTC Wind Energy Technology Associate's Program 10-482-1

Rationale for how programs are related: The LTC Associate's program in Wind Energy Technology, which is a partnered degree between Lakeshore Technical College and Northeast Wisconsin Technical College, 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 the fundamentals course array and some of the supporting courses in UWGB's BS MET degree. Presented below are the curriculum for NWTC's/LTC's Associate's program and the array of courses in the UWGB program that the Associate's program will fulfill in a block transfer.

Proposed Articulated Block of Courses

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

LTC Wind Energy Technology Associate

Course #	Course name	Credits
10-413-110	Intro. to Energy	2
10-442-109	Wind Tur. Str. Weld Inspec.	1
10-482-101	Intro. to Wind Systems	3
10-482-113	Wind Tech, Health and Safety	2
10-482-120	Wind Technician 1 Lab	1
10-482-122	Wind Technician 2	1
10-482-124	Wind Technician 3	1
10-482-126	Wind Technician 4	3
10-482-128	Wind Technician 5	2
One of:	10-482-132 Turbine Main./S.A 10-482-103 Wind Farm INTSP	2
10-620-103	Fluid Power 1	2
10-620-104	Fluid Power 2	3
10-620-120	Basic Tools and Measurement	1
10-620-122	Intro. to Industrial Controls	2
10-620-130	Int. to Mech Mechanisms	3
10-620-138	Program. Controllers	3
10-620-139	PLC Practical Apps.	2

UWGB Courses

Course #	Course name	Credits
ET 101	Funds Eng. Tech.	2
ET 105	Fund. of Drawing	3
ET 130	Basic Elec. Circuits I	3
ET 131	Basic Elec. Circuits II	3
ET 150	Codes, Safety, Stand.	2
ET 240	Microcon. and PLCs	3
ET 250	Signals and Sys.	3
ET 311	Digital Electronics	3
Physics 103	Fund. of Physics I	5
English Comp. OR COMM Elective**		3
Math 094 (Math Competency)		0
First year seminar		3
Social Science Gen Ed		3
Sustainability Gen Ed		3
Communications Elective		3
Elective Credit Block		20
		62

10-620-141	Ind. Control and Motors	3	
10-620-164	Electromechanical Systems	2	
10-620-192	Frequency Drives	1	
10-620-193	NEC Codes	1	
10-620-195	Indus. Troubleshooting	1	
10-660-105	DC Fundamentals	2	
10-660-110	AC Fundamentals	2	
One of:	10-801-195 **Written Comm****		
	10-801-136 **English Comp****	3	
	10-801-197 **Technical Report**		
10-801-196	**Oral/Inter. Communication**	3	
10-804-115	**College Tech. Math 1**	5	
10-806-112	**Prin. Of Sustainability**	3	** Preferred course to earn ENG competency,
10-806-154	General Physics 1	4	other course will only transfer as elective
10-809-198	**Intro. to Psychology**	3	General Education Course
		67	**Direct Course Equivalent**

Courses still needed at UWGB

Course		Credits
ET 142	Intro to Programming	3
ET 232	Semiconductor Development	3
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 (all except ET 311)		28
Remaining pre-requisite courses, general education & graduation requirements		

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 (2 cr)
ET 201	Introduction to Air Quality (2 cr)
ET 202	Introduction to Solid and Hazardous Waste (2 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/ENV SCI 335	Water and Waste Water Treatment (3 cr)
ET/ENV SCI 334	Soild 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/ENV SCI 305	Environmental Systems (4 cr)
ET/ENV SCI 323	Pollution Prevention (3 cr)
ET 377	Indistrial Safety and Hygiene (3 cr)
ET/ENV SCI 415	Solar and Alternate Energy Systems (3 cr)
ET 420	Lean Processes (3 cr)
ET/ENV SCI 424	Hazardous and Toxic Materials (3 cr)
ET/ENV SCI/GESOSCI 432	Hydrogeology (3 cr)
ET/ENV SCI 433	Ground Water: Resources and Regulations (3 cr)
PU EN AF 378	Environmental Law (3 cr)

One of:

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

A. LTC Environmental Engineering Waste and Water Technology 10-506-2 Associate's Degree

Rationale for how programs are related: The Associates program in Environmental Engineering Waste and Water Technology, which is a partnered degree between Lakeshore Technical College and Northeast Wisconsin Technical College, is a good fit for the fundamentals group of courses in UW-Green Bay's Environmental 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 EnvironET degree. Presented below are the curriculum for NWTC'sLTC's Associate's program and the array of courses in the UWGB program that the Associate's program will fulfill in a block transfer.

Proposed Articulated Block of Courses

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

LTC ENV ENGR-Waste & Water Tech Associate

Course #	Course name	Credits
10-506-146	Intro to Envir. Science	3
10-506-147	Environmental Biology	4
10-804-118	**Inter. Algebra with Apps.**	4
10-806-134	General Chemistry	4
10-801-197	**Technical Reporting**	3
10-506-149	Intro. to Environ. Compliance	3
10-506-148	Envir. Chem. Analysis	4
10-620-138	Program. Controllers	3
10-620-157	Hydraulics - Industrial	2
10-801-195	**Written Communications**	3
10-809-195	**Economics**	3
10-506-150	Environmental Microbiology	3
10-506-151	Wastewater Treat & Analysis	4
10-506-152	Ind. Safety & Emer. Response	3
10-620-130	Intro. Mech. Mechanisms	3
10-413-100	Basic Electricity for Trades	3
10-413-102	Electrical Controls for Trades	1
10-506-153	Soild & Haz. Waste	4
10-506-154	Air Poll. Control Sys.	3
10-506-155	Water Treat. & Analysis	4
10-809-172	**Intro. to Diversity Studies**	3
10-809-198	**Intro. to Psychology**	3
		70

UWGB Courses

Course #	Course name	Credits
BIOL 201	Princ. of Biology I Lec	3
BIOL 202	Princ. of Biology I Lab	1
BIOLOGY 322	Envir. Micro.	4
CHEM 211	Prin of Chem I Lec	4
CHEM 213	Prin of Chem I Lab	1
ENVSCI 102	Intro Environ. Science	3
ENVSCI 207	Lab safety	1
ET 101	Funds of Eng. Tech	2
ET 105	Fund. of Drawing	3
ET 118	Fluids I	2
ET 201	Intro. to Air Quality	2
ET 202	Intro. Solid & Waste	2
ET 203	Intro. to Water & WW	3
ET 377	Ind. Safety & Hygiene	3
Math 101 (Math Competency)		3
English Competency		3
Social Science Gen Ed		3
Social Science Gen Ed		3
Ethnic Studies Gen Ed		3
Communications		3
Elective Credit Block		18
		70
General Education Course		
Direct Course Equivalent		

Courses still needed at UWGB

Course		Credits
CHEM 212/214	Principles of Chemistry II Lec & Lab	5
ET 103	Surveying	3
ET 320/ENV SCI 320	The Soil Environment	4
ET 330/ENV SCI 330	Hydrology	3
ET 391	Geographic Information Systems	3
GEOSCI 202	Physical Geology	4
MATH 202	Calculus & Analytic Geometry I	4
MATH 203	Calculus & Analytic Geometry II	4
MATH 260	Introductory Statistics	4
PHYSICS 103	Fundamentals of Physics I	5
Remaining Advanced study group (All except ET 377)		17

Remaining pre-requisite courses, general education & graduation requirements