

**Associate of Applied Science in Electrical Engineering Technology
– Bachelor of Science in Electrical Engineering**

ARTICULATION AGREEMENT

between

**WAUKESHA COUNTY TECHNICAL COLLEGE
Associate of Applied Science in Electrical Engineering Technology**

and

**MILWAUKEE SCHOOL OF ENGINEERING®
AAS-EET to BSEE Transfer Pathway
in the Bachelor of Science in Electrical Engineering program**

Effective Fall 2024

This agreement applies to students entering the Waukesha County Technical College AAS-Electrical Engineering Technology program in Fall 2024 and entering the MSOE® AAS-EET to BSEE Transfer Pathway in the Electrical Engineering program in Fall 2026.

PURPOSE

Any student who:

- successfully completes the Associate of Applied Science in Electrical Engineering Technology (EET) program at Waukesha County Technical College (WCTC),
- successfully completes other specified courses at WCTC per this agreement, and
- meets admission requirements at Milwaukee School of Engineering (MSOE)

can earn a Bachelor of Science degree in Electrical Engineering (BSEE) at MSOE by successfully completing the AAS-EET to BSEE Transfer Pathway in the Electrical Engineering program.

In particular, any WCTC student who:

- a) successfully completes all courses in the Electrical Engineering Technology program at WCTC with a grade of C or better (not C-) in each course,
- b) successfully completes all other specified courses at WCTC, as defined in this articulation agreement, with a grade of C or better (not C-) in each course, and
- c) meets the MSOE admission requirements for transfer students into the Electrical Engineering program at MSOE, with a cumulative grade point average (CGPA) of 3.00 or greater

will be admitted into the AAS-EET to BSEE Transfer Pathway in the Bachelor of Science in Electrical Engineering program at MSOE.

Transfer Requirements and Equivalencies into the MSOE AAS-EET to BSEE Transfer Pathway

MSOE AAS-EET to BSEE Transfer Pathway in the BS in Electrical Engineering program
WCTC AAS-EET Associate of Applied Science in Electrical Engineering Technology

MSOE Course Numbers and Names	WCTC Course Numbers ^a
1. COM 1001 College Writing	801-136
2. COM 2001 Writing for STEM Disciplines	801-197 ^d
3. MTH 1110 Calculus I	804-198
4. MTH 1120 Calculus II	804-156
5. General Education elective ^b (for PSY3004; Curiosity CLO)	809-199
6. General Education elective ^b (for SOC 1001; Diversity CLO)	809-196
7. PHY 1110 Physics I Mechanics and Thermodynamics	806-187
8. ELE 1000 Introduction to EE	662-102
9. ELE 2001 Electric Circuits I	662-102 662-104 ^c 662-191 ^c
10. ELE 3141* Transfer Electronics	662-190 662-191 ^c
11. ELE 1801 Transfer Digital Logic and Embedded Systems	605-118 605-119 605-182 663-104
12. ELE 3401 Electric Power and Machines	605-126 662-104 ^c
13. Technical Elective ^b	605-187 (taken Spring 2014 or after)
14. Free Elective ^b	605-148

a All courses in each category must be satisfied for transfer credit of the designated MSOE course. All Two-year College EET program course titles are stated on page 3.

b Listed Two-year College course(s) is approved in this elective category. Any other Two-year College course requires approval by MSOE in advance of the student taking the course. Retroactive approval is not guaranteed.

c 10-662-104 and -190, prerequisites to 10-662-191, must be taken and passed with a grade of C (not C-) or better prior to when 10-662-191 is taken in order for 10-662-191 to be eligible for transfer consideration to MSOE.

d This course(s) is an elective or is not in the EET program at the Two-year College. If not fulfilled, additional course(s) must be taken at MSOE to fulfill BSEE degree requirements. Consult with an EE transfer advisor at MSOE.

Special Note: Required courses in the EET program that also transfer to MSOE:

662-104, 108, and -191 also transfer for ELE 2011 Electric Circuits II: Theory and Applications

*662-190 and 191 transfer for ELE 3101 Electronics I (ELE 3141 is a subset of ELE 3101)

801-196 will transfer for COM 3001 Professional Presentations only up until the start of the Fall 2026 semester.

801-198 Speech is a recommended replacement for 801-196.

(In effect at WCTC in Fall 2024 for transfer to MSOE in Fall 2026)

WCTC Electrical Engineering Technology - 106621

		Course Name	Course #	Weekly Hours	Credits	
Year 1	Fall A	DC Circuit Analysis	662-102	12	4	
		Digital Electronics I	605-118	8	2	
		Calculus 1 (16 week)	804-198	4	4	
			Total:	24	10	
	Fall B	AC Circuit Analysis	662-104**	12	4	
		Electronic Fabrication I	663-106*	4	1	
		Calculus 1 (16 week)	804-198	4	***	
			Total:	20	5	
	Spring A	Electronic Circuits I	662-190**	12	4	
		Calculus 2 (16 week)	804-156	4	4	
		Oral/Interpersonal Comm	801-196**	6	3	
			Total:	22	11	
	Spring B	Digital Electronics II	605-119	8	2	
		Calculus 2 (16 week)	804-156	4	***	
		Intro to Sociology	809-196	6	3	
		Total:	18	5		
Sum A	Programming for Electronics	663-104	4	1		
	English Composition 1	801-136	6	3		
		Total:	10	4		
Year 2	Fall C	Electronic Circuits II	662-191**	12	4	
		Calculus Based Physics 1	806-187	10	3	
			Total:	22	7	
	Fall D	Microcontrollers	605-182	10	3	
		Psychology of Human Rel	809-199	6	3	
			Total:	16	6	
	Spring C	Industrial Systems	605-126	10	3	
		Electronic Data Comm	605-187	10	3	
			Total:	20	6	
	Spring D	Data Acquisition	605-148	10	3	
		Linear Circuit Analysis	662-108**	6	3	
			Total:	16	6	
	Program Total Credits 60			Total:	16	6

* This course is required in the WCTC EET program to earn the AAS EET degree but does not count toward transfer requirements into the MSOE AAS-EET to BSEE Transfer Pathway program.

** Transferable into BS-level of the MSOE AAS-EET to BSEE Transfer Pathway program:
 662-104, 108, and -191 also transfer for ELE 2011 Electric Circuits II: Theory and Applications
 662-190 and 191 transfer for ELE 3101 Electronics I (ELE 3141 is a subset of ELE 3101)
 801-196 will transfer for COM 3001 Professional Presentations only up until the start of the Fall 2026 semester. 801-198 Speech is a recommended replacement for 801-196.

*** This course is continued over entire 16-week semester.

Provisions

The following provisions specify the standard procedures and terms of this articulation agreement. Text in italics is meant to clarify the rationale behind the corresponding provision. Non-compliance with any provision may result in nullification of this articulation agreement. Because these provisions are used in articulation agreements with several two-year colleges, the term “Two-year College” will be used to refer to the specific college named at the beginning of this articulation agreement. MSOE will be used to refer to Milwaukee School of Engineering.

1. Each institution will obtain the express written approval for using the other institution’s name in any promotional, advertising, and marketing media associated with this articulation agreement. Any promotional literature or other media will clearly indicate that the transfer is into the AAS-EET to BSEE Transfer Pathway of the Electrical Engineering program, *not* just the Electrical Engineering (EE) program, at MSOE. All people involved with the promotion of this transfer arrangement will clearly maintain this distinction to all audiences. A specific person in each public relations department and a specific academic program person(s) per institution will be designated for coordination and signoff, as listed on the “Institution-Specific Information” section in this articulation agreement. Each institution may electronically link to this articulation agreement and, with notice to the other party, to the website of the other institution. Guidelines for the use of MSOE®’s name and/or logo are listed on the “Guidelines for use of Milwaukee School of Engineering®’s Name and/or Logo” section in this articulation agreement.

The motivation for this provision is to ensure that each institution complies with accreditation and institutional criteria in promotional, advertising, and marketing media.

2. An active articulation agreement begins at the commencement of fall classes in the year stated on the first page of this agreement. The agreement must be actively reviewed by program faculty of both institutions and renewed each year to continue the agreement. Reasonable accommodations will be made for students if either program must be changed, but additional courses may be required of students if program changes occur. Students must be clearly informed of this possibility “up front.”

The intent of this provision is to recognize that changes in either or both of the two academic programs must be coordinated to accommodate the minimum two year lag between when a student begins at the Two-year College and begins at MSOE. However, each institution must preserve the right to change its academic programs on a timely basis, such as due to an immediate change in accreditation requirements.

3. The AAS-EET to BSEE Transfer Pathway at MSOE will be arranged so that the student who successfully completes all of the Two-year College courses specified in this agreement each year that the agreement is in force may enter the MSOE AAS-EET to BSEE Transfer Pathway program at the beginning of the subsequent academic year as outlined in this agreement. Exceptions to this clause are stated in provision 2. In the event that a Two-year College student completes the specified courses over an extended period of time in excess of the standard full-time schedule, and during that time the specified courses and/or core

curricula have changed, then reasonable efforts to accommodate this student into MSOE will be made. However, on-track status in the AAS-EET to BSEE Transfer Pathway program at MSOE is not guaranteed.

The intent of this provision is to promote curriculum stability yet to allow curriculum modifications that are advantageous or required, such as per accreditation mandates.

4. Curriculum changes which impact the articulation agreement may not be enacted during the academic year in which the agreement is active unless both the Program Director of the Electrical Engineering program at MSOE and the designated individual(s) in the corresponding transfer program at the Two-year College give their explicit consent, or unless curriculum changes are dictated by accreditation or institutional mandates. Minor revisions (such as course renumbering) are permitted but must be communicated to the other institution promptly via a memorandum of understanding. Curriculum changes that do not satisfy the articulation agreement provisions will nullify this articulation agreement.

The intent of this provision is to protect the integrity of the transfer arrangements for transfer students. This provision should be superfluous. Curriculum changes should be enacted in concert with the yearly articulation agreement renewal process.

5. The Two-year College will consent to the promotion of this articulation agreement by MSOE personnel in appropriate classroom settings and at job fairs and similar functions at the Two-year College.
6. Any formal presentations of this articulation agreement must be made by either Two-year College representatives, who are approved by the individual designated on the “Institution-Specific Information” section, or by MSOE representatives who are knowledgeable of this articulation agreement. See provision 1. The agreement or relationship between the Two-year College program and the MSOE BSEE program shall **not** be referred to as “two-plus-two (2+2)” in any manner.

The intent of this provision is to ensure that the agreement is accurately communicated to interested parties. Given that the AAS-EET to BSEE transfer pathway of the MSOE BSEE program is nominally 2.5 years, nobody should provide or imply a misleading statement to the contrary.

7. Instructional materials may be shared by MSOE with the Two-year College faculty. All copyrights and proper citation practices will be observed. In the event that permission to adapt (modify and use) any MSOE academic instructional materials provided to the Two-year College is granted, the materials must clearly be labeled with:

Adapted from (name of work) © (year) MSOE with permission of MSOE®.

Permission to use these materials begins with the signing of this articulation agreement and expires with the annual expiration of the articulation agreement.

The purpose of this access is to assist faculty from both institutions in developing and maintaining their coursework to ensure the equivalency and level of topical coverage for transferrable coursework utilized in the articulation agreement.

8. For the instruction of the designated electronics bridge courses (see provision 9), the Two-year College will use faculty with at least a BS degree in electrical engineering, electrical engineering technology, or other related field (as approved by MSOE), and with at least one of the following: (a) an MS degree in electrical engineering, electrical engineering technology, or other related field (as approved by MSOE), (b) current registration as a Professional Engineer (PE), or (c) successful completion of a workshop offered by MSOE on instructional techniques for electronics bridge courses. The above-stated credentials are considered appropriate educational background for instructors of the electronics bridge courses.
9. The electronics bridge courses and the calculus courses specific to the Two-year College are designated in provision 14. These courses will include a lecture format at a level and pace that prepares students for effective learning in a traditional course environment at the university level. Each electronic bridge course will also include a written comprehensive final exam and a laboratory component.

The intent of this provision is to ensure that students are prepared to learn effectively in the university environment that exists in the EE program at MSOE.

10. The Two-year College student must pass each course with a C or better (not C-) in order for the course to receive transfer credit in the AAS-EET to BSEE Transfer Pathway of the Electrical Engineering program at MSOE. Any exceptions to this policy must be approved in writing by the Program Director of the Electrical Engineering program or his/her designee at MSOE. Under the condition that the student must retake one or more courses, the student is not guaranteed on-track status in the AAS-EET to BSEE Transfer Pathway program at MSOE. The requirement to retake a designated bridge course (see provision 9) with a grade of less than a C may not be waived without exceptional cause as approved by MSOE.

The intent of this provision is to allow an “early” course with a passing grade below a C to transfer if there is sufficient evidence in subsequent courses for which the course in question is a prerequisite to warrant the exception.

11. The Two-year College and MSOE will cooperate on assessment of student outcomes in order to ensure and improve the viability of this *articulation agreement* and providing documentation for program accreditation. This cooperation includes arrangements whereby MSOE may obtain samples of assessment materials to include graded examples of student writing, examinations, and so forth. Individual student names should be removed in samples of student work. Under no circumstances is either institution allowed to reproduce any exchanged materials for distribution to anyone other than program faculty and administration involved with the courses in this articulation agreement and accreditation agency visitors, without the express written consent from the other institution. Non-adherence to this provision may result in students being required to take and pass entrance examinations for

admittance into the AAS-EET to BSEE Transfer Pathway program at MSOE and/or revocation of this articulation agreement.

The intent of this provision is to assess transfer student capabilities as they enter MSOE and to satisfy the requirements of accreditation agencies. Also, the collection of these data will be useful for continuing improvement of this articulation agreement.

12. This agreement may be terminated by either the Two-year College or MSOE if either fails to maintain regional accreditation or if BSEE program accreditation is discontinued or terminated.
13. General Education courses specified on Page 2 of this transfer agreement have been approved for transfer two academic years after the fall semester term for which the agreement took effect. Any significant change within the competencies or topical coverage of an approved course immediately renders the course unapproved for transfer unless reapproved by MSOE. Other general education courses at the Two-year College may be transferred if approved by MSOE in advance of the student taking the course. Retro-active approval by MSOE is not guaranteed.

The intent of this provision is to ensure that general education courses are pre-approved for transfer, whether by specification in this agreement or by explicit MSOE approval before the student takes the course.

14. Any provisions specifically applicable with Waukesha County Technical College:

Identification of the electronics bridge courses by course number and title:

662-104	AC Circuit Analysis
662-191	Electronic Circuits II

Identification of the calculus courses by course number and title:

804-198	Calculus 1
804-156	Calculus 2
804-167	Calculus 3

Institution-Specific Information

The purpose of this section is to provide information that is specific to each institution and is current as of the signing of this articulation agreement. Any changes to this information should be promptly communicated to the other institution. This information should include:

Name, Title, Phone Number(s), E-mail Address(es)

At Waukesha County Technical College:

Administrative person(s) directly responsible for the WCTC program:

Dr. Timothy Alft
Associate Dean
262-691-5543
talft@wctc.edu

Faculty directly responsible for the WCTC program:

Ms. Kathleen Bachhuber
Instructor
262-691-5341
kbachhuber1@wctc.edu

Person(s) designated to sign off on curriculum changes:

Dr. Timothy Alft
Associate Dean
262-691-5543
talft@wctc.edu

Person(s) designated to approve individuals who will make formal presentations on the WCTC program:

Dr. Timothy Alft
Associate Dean
262-691-5543
talft@wctc.edu

Person(s) designated for coordination and signoff of public relations/marketing and other promotional materials:

Mr. Andy Palen
Marketing & Communication
262-695-6247
apalen@wctc.edu

Website address for the institution:
www.wctc.edu

Website address specific to the WCTC program:
<https://www.wctc.edu/academics/programs-courses/programs/electrical-engineering-technology/index.php>

At Milwaukee School of Engineering:

Administrative person(s) directly responsible for the EE program:

Dr. Sheila Ross
EECS Department Chair
414-277-2381
ross@msoe.edu

Faculty directly responsible for the EE program and AAS-EET to BSEE Transfer Pathway, including curriculum changes:

Dr. Steve Holland
EE Program Director
414-277-7376
holland@msoe.edu

Dr. Robert Strangeway
AAS-EET to BSEE Transfer Pathway Coordinator
414-277-7311
strangew@msoe.edu

Person(s) designated for coordination and signoff of public relations/marketing and other promotional materials:

Mr. Sebastian Thachenkary (for sign-off)
Executive Director of Marketing and
Community Engagement
414-277-7141
thachenkary@msoe.edu

Dr. Steve Holland
EE Program Director
414-277-7376
holland@msoe.edu

Dr. Robert Strangeway
AAS-EET to BSEE Transfer Pathway
Coordinator
414-277-7311
strangew@msoe.edu

Ms. Samantha Kammers
Director of Admissions – Transfer, International,
and Graduate
414-277-7431
kammers@msoe.edu

Website address for the institution:
www.msoe.edu

Website address specific to the AAS-EET to BSEE Transfer Pathway program:
<https://www.msoe.edu/academics/undergraduate-degrees/engineering/electrical-engineering/electrical-engineering-aas-eet-to-bsee-transfer-plan/>

Guidelines for use of Milwaukee School of Engineering®'s Name and/or Logo

The motivation for this addendum is to insure that each Institution complies with accreditation and institutional criteria in all communication materials including, but not limited to, those generated or produced for marketing, advisement and/or legal purposes.


In an effort to meet standards set by our accreditation agencies, to minimize any confusion on the part of prospective or current students, and to protect the use of MSOE's name and logo, it is imperative that use of or reference to our name or programs be limited to those deemed appropriate by MSOE. As specified in the articulation agreement, MSOE's Executive Director of Marketing and Community Engagement or the director's designee will approve any and all narrative and graphic representation containing MSOE's name, logo or reference to our programs before it is published or distributed in any way.

To expedite the process of developing content for use in promotional literature or digital platforms, the following minimum guidelines should be followed. Noncompliance will result in disapproval.


Any promotional literature or digital media content will clearly indicate that the transfer, upon which this articulation agreement is based, is into the AAS-EET to BSEE Transfer Pathway of the Electrical Engineering program, not the traditional pathway of the Electrical Engineering (EE) program, at MSOE. All people involved with the promotion of this transfer arrangement will clearly maintain this distinction to all audiences at all times.

Our preferred reference is MSOE, however, for clarity purposes it is sometimes appropriate to use Milwaukee School of Engineering (MSOE), then use MSOE in later references of the same communication. Furthermore, MSOE will be referred to as a university. In no instance shall MSOE be referred to as a college or school.

MSOE has added a moniker to its logo. MSOE's name has not changed. Although MSOE refers to itself as a university, the word "university" is not part of its name.

The revised logo appears as below and should be used on all materials and on all digital platforms unless it would be so small that "UNIVERSITY" would be illegible. If that were the case, the original block logo  is to be used.



The name Milwaukee School of Engineering®, the acronym MSOE® and the  logo are all registered trademarks. The first time the name or acronym appear in any document they must have the ® mark. It is not necessary to include the ® mark with subsequent mentions in the same document or page. The logos have the ® mark embedded.

In materials where color is used, MSOE's logo will always be red, white, and black. If PMS 200 (red) is not available, only slight variations of the color will be acceptable. If this is not possible to accomplish, the logo must appear in black and white as follows:



Given the absolute need to provide clarity as to the limitations of the articulation agreement and avoid potential misunderstandings, in no instance shall MSOE's name or logo be used on a banner of any kind. For the same reason, communication in the form of brochures, catalogs, Web pages, blogs, letters, e-mail, posters, etc. must be carefully reviewed by MSOE. MSOE's logo may not appear on the cover of any literature, nor in the header on any digital platforms.

Contact the Executive Director of Marketing and Community Engagement indicated on the Institution-Specific Information section in this articulation agreement with any questions you may have and for needed approvals.

04-25-2017


Signatories

Jun 11, 2024

This agreement, signed and dated this ____ day of _____, 20____, has been thoroughly reviewed and approved by both institutions. The agreement is in effect for the 2024 – 2025 academic year.

Milwaukee School of Engineering

Waukesha County Technical College




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Dr. John Y. Walz
President



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Dr. Richard Barnhouse
President




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Dr. Eric T. Baumgartner
Executive Vice President of Academics



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Dr. Bradley Piazza
Vice President of Learning




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Dr. Sheila Ross
Department Chair
Electrical Engineering and
Computer Science Department



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Mr. Michael Shiels
Dean, School of Applied Technologies




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Program Director
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