Effective Fall 2020
Associate of Science-Transfer, Track 2
Engineering Major Related Program (MRP) Agreement

This document represents an agreement between the undersigned baccalaureate institutions offering a bachelor's degree in engineering and the community and technical colleges that offer at least one of the four pathways of the Associate of Science-Transfer, Track 2 Engineering Major Related Program (AS-T 2/MRP) degree. This agreement meets all requirements of Washington's Associate of Science-Transfer Track 2 (AS-T 2). The four pathways are:

- Bioengineering and Chemical Engineering (BioE and ChemE) Pathway (includes Biomass Resources Science & Engineering)
- Computer and Electrical Engineering (Comp E and EE) Pathway
- Civil and Mechanical Engineering (CE and ME) Pathway (includes Environmental, Aeronautical and Industrial Engineering)
- Materials Science and Manufacturing Engineering (MSE and MFGE) Pathway

Effective fall 2020 this agreement cancels and supersedes the existing statewide Engineering AS-T 2/MRP agreement dated 2008.[1] Parties to the 2008 Engineering AS-T 2/MRP agree to continue to honor that agreement until fall 2022 for students who enrolled in the 2008 EngineeringAST-2/MRP prior to fall 2020. This agreement shall be subject to review and renewal by all parties not later than fall 2023 Official signatures of parties to this agreement are on file at the Washington Student Achievement Council (WSAC).

Baccalaureate institutions party to this agreement are:

Public Baccalaureates
Eastern Washington University
University of Washington
Washington State University
Western Washington University

Private Baccalaureates
Gonzaga University
Saint Martin's University
Seattle Pacific University
Seattle University
Walla Walla University

Community and technical colleges agree:

- The published associate degree listing will include advice to students about the need for early contact with their potential transfer institutions regarding the specific course choices in each area of the agreement where options are listed including explicit language with regard to

[1] 2018 modifications: Dropped "Pre-" from pathway/major area, added 2 electives to Bioengineering and Chemical engineering pathway, changed language related to elective selection, renamed "Other Engineering" pathway to Civil and Mechanical Engineering pathway, added Materials Science/Manufacturing Engineering pathway.

specialization requirements to clarify that degree pathways include multiple majors within a pathway and that courses may apply to a particular major but not another within a single pathway.

- The published associate degree will include advice to students regarding checking with their potential transfer institutions about admission requirements, including overall minimum GPA, a higher GPA in a selected subset of courses, or a specific minimum grade in one or more courses such as math or English. The published associate degree will also inform students that they must apply to graduate.
- The published associate degree will encourage students to enroll in math and science sequence courses at a single institution and, if possible, not break up sequenced courses between institutions.
- The effective date of this agreement is the date signed. Associate degrees developed under this agreement will be available as of the academic term an individual college identifies for implementation of the Engineering AS-T 2/MRP degree.
- When listing the AS-T, Track 2 in their publications, community and technical colleges that offer at least one pathway of the Engineering AS-T 2 will provide the expanded detail shown below regarding the major pathway(s) in the field of engineering. The college will retain the current AS-T, Track 2 description for students intending to major in engineering, computer science, physics, and atmospheric sciences. In addition, the college will emphasize the advising notes included as part of the agreement.
- To offer the Engineering AS-T 2/MRP, each community and technical college and each baccalaureate institution party to the agreement must collaborate toward assuring that the required courses in this agreement are either equivalent to or replace the similar required lower division courses offered by each baccalaureate institution. Individual course equivalency agreements are between individual institutions, and this agreement does not uniformly grant course equivalency.
- Subsequent to the effective date, community and technical colleges awarding at least one of the four pathways of the Engineering AS-T 2/MRP will designate completion as follows for clarity on the transcript and for use by the State Board for Community and Technical Colleges (SBCTC) for tracking reporting purposes:
    - AS-T Bio/Chem E/MRP, Intent Code of, Exit Code of O, EPC of BIOE and CIP of 14.0701, ctcLink code of CHEBCAS
    - AS-T Comp E/EE/MRP, Intent Code of, Exit Code of P, EPC of CEE and CIP of 14.1001, ctcLink code of EECCEAS
    - AS-T CE/ME/MRP, Intent Code of, Exit Code Q, EPC of OTRE and CIP of 14.1901, ctcLink code of MEEMCAS
    - AS-T MSE/MFGE/MRP …
- If any community or technical college finds that changes to the MRP are needed, they will notify the co-chairs of the Joint Transfer Council. JTC will review the changes as detailed in the "Statewide Transfer Agreement Process" found at https://www.sbctc.edu/resources/documents/colleges-staff/programs-services/transfer/joint-transfer-council/statewide-transfer-agreements-process.pdf

The participating baccalaureate institutions agree:

- Students completing any track of the Engineering AS-T 2/MRP, if admitted to the baccalaureate institution, will be admitted as juniors with all or most prerequisites for the specific engineering major completed. In addition, these students will have lower division general education courses partially completed in a manner like the partial completion by freshmen-entry engineering students.
- Each baccalaureate institution and each community and technical college party to the agreement must collaborate toward assuring that the required courses in this agreement are either equivalent to or replace the similar required lower division courses offered by each baccalaureate institution. Individual course equivalency agreements are between individual institutions, and this agreement does not

uniformly grant course equivalency.

- Baccalaureate institutions will apply up to 111 quarter credits required under this agreement to the credits required in the bachelor's degree, subject to institutional policy on the transfer of lower division credits.
- Baccalaureate institutions will each build an alert mechanism into their curriculum review process for changes related to the prerequisites for engineering majors that affect this agreement.
    - The alert will go to the institution's or sector's JTC member for discussion.
    - If the proposed change will affect lower division course taking, the JTC member will bring the issue to JTC's attention for action to review or update this agreement.
- Prior to making changes to admission requirements or to lower division course requirements for the major, institutions agree to follow the "Process for Revisions and Changes to the Statewide Transfer Associate Degree Agreements" found at https://www.wsac.wa.gov/sites/default/files/Statewide.Transfer.Agreements.Process.pdf and to abide by the related implementation timelines.
    - This statewide process applies only to changes to specific courses, test results, or other information not included in this agreement that would affect eligibility for admission to the major. It is not required for changes in upper division graduation requirements or the GPA an institution may establish for admission to a program.

The Washington Council for Engineering & Related Technical Education (WCERTE) agrees:

- If WCERTE finds that changes to the AS-T 2/MRP are needed or a new transfer degree for development, they will notify the co-chairs of the Joint Transfer Council. JTC will review the changes as detailed in the "Statewide Transfer Agreement Process" found at https://www.sbctc.edu/resources/documents/colleges-staff/programs-services/transfer/joint-transfer-council/statewide-transfer-agreements-process.pdf

The Joint Transfer Council agrees:

JTC will notify WSAC of the review and of subsequent changes made to the agreement.

Associate of Science –Transfer, Track 2 Expanded Detail for Engineering MRPs

Engineering is a broad discipline and one pathway will not fit the requirements for all sub-disciplines contained within engineering. Therefore, these pathways within the Associate of Science – Transfer, Track 2 degree are designed for the following major areas:

- Bioengineering and Chemical Engineering (BioE and ChemE) Pathway
    - Note: This pathway includes Biomass Resource Science and Engineering
- Computer and Electrical Engineering (Comp E and EE) Pathway
- Civil and Mechanical Engineering (CE and ME) Pathway.
    - Note: This pathway includes Aeronautical, Environmental and Industrial Engineering.
- Materials Science and Manufacturing Engineering (MSE and MFGE) Pathway

Within each pathway, the required courses are common junior-ready transfer preparation for all majors at all participating baccalaureate institutions. The degree becomes tailored for specific preparation to a single major at a single transfer institution through appropriate selection of the specialization courses. A specialization course that is appropriate to transfer to one baccalaureate institution may not be the appropriate choice for another baccalaureate institution. It is critical that students be in communication with advisors at their community or technical college and the intended transfer baccalaureate institution.

Generic AS-T 2 Requirements (overview only; review AS-T 2 agreement for more details)		**BioE and ChemE Pathway**	**CompE and EE Pathway**	**CE and ME Pathway**	**MSE and MFGE Pathway**
I. Be issued only to students who have earned a cumulative grade point average of at least 2.0, as calculated by the degree awarding institution		• Minimum GPA requirements are established by each participating baccalaureate institution. Meeting the minimum GPA does not guarantee admission. Engineering programs are competitive and may require a higher GPA than 2.0 overall or a higher GPA in specific courses. • Students must apply to graduate at the community or technical college to be awarded this AS-T 2/MRP.			

Generic AS-T 2 Requirements (overview only; review AS-T 2 agreement for more details)		**BioE and ChemE Pathway**	**CompE and EE Pathway**	**CE and ME Pathway**	**MSE and MFGE Pathway**
II. Be based on 90 quarter hours of transferable credit including:		Credits: 90 - 104	Credits: 91 - 105	Credits: 98 – 111	Credits: 95-104
A. Communication Skills (Minimum 5 credits) College-level composition course		**5 credits College Writing**	**5 credits College Writing**	**5 credits College Writing**	**5 credits College Writing**
B. Mathematics/Statistics (15 quarter credits) • Two courses at or above introductory calculus level. • 5 credits of third quarter calculus or statistics chosen with an advisor.		**18-20 credits in Mathematics are required as follows:** • 5 credits Calculus 1 • 5 credits Calculus 2 • 5 credits Calculus 3 • 3-5 credits Differential Equations	**23-25 credits in Mathematics are required as follows:** • 5 credits Calculus 1 • 5 credits Calculus 2 • 5 credits Calculus 3 • 3-5 credits Differential Equations • 5 credits Linear Algebra	**23-25 credits in Mathematics are required as follows:** • 5 credits Calculus 1 • 5 credits Calculus 2 • 5 credits Calculus 3 • 3-5 credits Differential Equations • 5 credits Linear Algebra	**20 credits in Mathematics, are required as follows:** • 5 credits Calculus 1 • 5 credits Calculus 2 • 5 credits Calculus 3 • 5 credits Linear Algebra
C. Humanities and Social Science (minimum 15 credits) • Minimum 5 credits in Humanities • Minimum 5 credits in Social Science		**15 credits in Humanities and Social Science** An Economics course is recommended	**15 credits in Humanities and Social Science** An Economics course is recommended	**15 credits in Humanities and Social Science** An Economics course is recommended	**15 credits in Humanities and Social Science** An Economics course is recommended

Generic AS-T 2 Requirements (overview only; review AS-T 2 agreement for more details)		**BioE and ChemE Pathway**	**CompE and EE Pathway**	**CE and ME Pathway**	**MSE and MFGE Pathway**
• Additional 5 credits in either Humanities or Social Science					
D.1. Physics (15 credits) Calculus-based or non-calculus based sequence including laboratory		**15-18 credits in Engineering Physics, are required as follows:** • 5-6 credits Engineering Physics 1 + lab • 5-6 credits Engineering Physics 2 + lab • 5-6 credits Engineering Physics 3 + lab	**15-18 credits in Engineering Physics, are required as follows:** • 5-6 credits Engineering Physics 1 + lab • 5-6 credits Engineering Physics 2 + lab • 5-6 credits Engineering Physics 3 + lab	**15-18 credits in Engineering Physics, are required as follows:** • 5-6 credits Engineering Physics 1 + lab • 5-6 credits Engineering Physics 2 + lab • 5-6 credits Engineering Physics 3 + lab	**15-18 credits in Engineering Physics, required as follows:** • 5-6 credits Engineering Physics 1 + lab • 5-6 credits Engineering Physics 2 + lab • 5-6 credits Engineering Physics 3 + lab
D.2. Chemistry with laboratory (5 credits)		**23-30 credits in Chemistry, are required as follows:** • 5-6 credits General Chemistry 1 + lab • 5-6 credits General Chemistry 2 + lab • 5-6 credits General Chemistry 3 + lab	**5-6 credits General Chemistry 1 + lab**	**10-12 credits in Chemistry, are required as follows:** • 5-6 credits General Chemistry 1 + lab • 5-6 credits General Chemistry 2 + lab	**5-6 credits General Chemistry 1 + lab**

Generic AS-T 2 Requirements (overview only; review AS-T 2 agreement for more details)		BioE and ChemE Pathway	CompE and EE Pathway	CE and ME Pathway	MSE and MFGE Pathway
		• 4-6 credits Organic Chemistry 1 + lab • 4-6 credits Organic Chemistry 2 + lab or Biology for Science Majors + lab			
E. Remaining Credits (35 credits) Remaining credits should be planned with the help of an advisor based on the requirements of the specific discipline at the baccalaureate institution the student selects to attend.	**Required Courses**		**8-11 credits in Engineering, required as follows:** • 4-6 credits Electrical Circuits • 4-5 credits Computer Programming	**15 credits in Engineering, required as follows:** • 5 credits Statics • 5 credits Mechanics of Materials • 5 credits Dynamics	**15 credits in Engineering, required as follows:** • 5 credits Statics • 5 credits Mechanics of Materials • 5 credits Materials Science
	Specialization Courses Remaining credits should be planned with the help of an advisor based on the requirements	**14-16 credits** Select 3 specialization courses in consultation with an advisor as appropriate for intended specialization in the major and	**20-25 credits** • Select 5 specialization courses in consultation with an advisor as appropriate for	**15-21 credits** • Select 4 specialization courses in consultation with an advisor as appropriate for	**20-25 credits** • Select 5 specialization courses in consultation with an advisor as appropriate for

Generic AS-T 2 Requirements (overview only; review AS-T 2 agreement for more details)		BioE and ChemE Pathway	CompE and EE Pathway	CE and ME Pathway	MSE and MFGE Pathway
	of the specific discipline at the intended transfer baccalaureate institution.	the intended transfer institution: • Applied Numerical Methods • Intro to Design • Computer Programming • Linear Algebra • Calculus 4 (Advanced or Multi-variable Calculus) • Technical Writing • Electrical Circuits • Statics • Chemical Process, Principles and Calculations • Biology for Science Majors 1 + lab • Biology for Science Majors 2 + lab • Organic Chemistry 2 + lab • Materials Science • Biochemistry	intended specialization in the major and the intended transfer institution: • A second course in Computer Programming – object oriented • Intro to Design • Calculus 4 (Advanced or Multi-variable Calculus) • Technical Writing • Statics • Dynamics • Thermodynamics • Digital Logic • Biology for Science Majors I + lab • General Chemistry 2 + lab • Applied Numerical Methods • Microprocessors	intended specialization in the major and the intended transfer institution: • Computer Programming • Intro to Design • Calculus 4 (Advanced or Multi-variable Calculus) • Engineering Graphics (with CAD) • Technical Writing • Thermodynamics • Electrical Circuits • Materials Science • Applied Numerical Methods • Biology for Science Majros 1 + lab • General Chemistry 3 + lab	intended specialization in the major and the intended transfer institution: • Computer Programming • Intro to Design • Calculus 4 (Advanced or Multi-variable Calculus) • Differential Equations • Engineering Graphics (with CAD) • Technical Writing • Thermodynamics • Dynamics • Applied Numerical Methods • Biology for Science Majors I + lab • General Chemistry 2 + lab

Generic AS-T 2 Requirements (overview only; review AS-T 2 agreement for more details)		**BioE and ChemE Pathway**	**CompE and EE Pathway**	**CE and ME Pathway**	**MSE and MFGE Pathway**
		• Thermodynamics	• Electrical Circuits 2 (Power, Filters, AC) • Signals & Systems		• General Chemistry 3 + lab • Organic Chemistry 1 + lab

Statewide Engineering AS-T, Track 2 Major Related Program (MRP) Agreement

Participants to the Agreement

The Joint Transfer Council (JTC) reviewed this agreement on DATE and forwarded it for approval to the chief academic officers and engineering deans of the participating baccalaureate institutions and to the Deputy Executive Director of Education for the State Board for Community and Technical Colleges (SBCTC), representing the public community and technical colleges. Official signatures of parties to this agreement are on file at the Washington Student Achievement Council (WSAC).

On behalf of the Washington State Community and Technical Colleges

_____

Carli Schiffner, Deputy Executive Director of Education, SBCTC — Date

Public Baccalaureate Participants to the Agreement

Eastern Washington University

_____

David May — Date
Interim Provost

_____

David Bowman — Date
Dean, College of Science, Technology, Engineering and Mathematics

University of Washington

_____

Mark Richards — Date
Provost

_____

Nancy Allbritton — Date
Dean, College of Engineering

Washington State University

_____

Bryan Slinker — Date
Interim Provost

_____

Mary Rezac — Date
Dean, College of Engineering and Architecture

Western Washington University

Brent Carbajal Provost	Date
Brad Johnson Dean, College of Science & Engineering	Date

Private Baccalaureate Participants to the Agreement

Gonzaga University

Deena González Provost	Date
Karlene Hoo Dean, School of Engineering and Applied Science	Date

St. Martin's University

Kathleen Boyle Provost	Date
David Olwell Dean, College of Engineering	Date

Seattle Pacific University

Bruce Congdon Provost	Date
Derek Wood Interim Co-Dean, College of Arts and Sciences, STEM and Social Sciences Division	Date

Seattle University

Shane Martin Provost	Date
Michael Quinn Dean, College of Science and Engineering	Date

Walla Walla University

Volker Henning	Date	Brian Roth	Date
Provost		Dean, College of Engineering	

Engineering AS-T 2/MRP Workgroup Participants

Community and Technical Colleges:

Mohan Raj, Cascadia College
Anna Stufano, Cascadia College
Michael Threapleton, Centralia College
Chelsia Berry, Seattle Central College
Rebecca Sliger, Tacoma Community College
Eric Davishahl, Whatcom Community College
Ed Harri, Whatcom Community College

Baccalaureate Institutions:

Keith Klauss, Eastern Washington University
Marty Weiser, Eastern Washington University
Jae Chung, Saint Martin's University
Debbie Crouch, Seattle Pacific University
Mara Rempe, Seattle University
Brian Fabien, University of Washington Seattle
Brian Roth, Walla Walla University
Krishna "Siva" Sivakumar, Washington State University
Jeff Newcomer, Western Washington University

Agencies and Organizations

Julie Garver, Council of Presidents
Terri Standish-Kuon, Independent Colleges of Washington
Jamilyn Penn, State Board for Community and Technical Colleges
Patrick Burnett, WCERTE Chair
Gail Wootan, Washington Student Achievement Council

Joint Transfer Council Members

Co-Chairs:

Mary Wack, Washington State University, co-chair
Michelle Andreas, South Puget Sound Community College, co-chair

Community and Technical Colleges

Joyce Hammer, Centralia College
Kerry Levett, Cascadia College
Matt Campbell, Pierce Community College, Puyallup
Bradley Lane, Seattle Central College
Chad Hickox, Walla Walla Community College
Ed Harri, Whatcom Community College

Public Baccalaureate Institutions

Gail Mackin, Central Washington University
Megan McConnell, Central Washington University
Keith Klauss, Eastern Washington University
Larry Geri, The Evergreen State College
Janice DeCosmo, University of Washington
Steven Vanderstaay, Western Washington University

Independent Baccalaureate Institutions

Sheila Steiner, Saint Martin's University
Debbie Crouch, Seattle Pacific University

Western Governor University - Washington

Tonya Drake, Western Governors University Washington

Intercollege Relations Commission representative

Waylon Safranski, Washington State University

SBCTC Washington State Student Services Commission

Jessica Gilmore English, Renton Technical College

Agency Staff

Julie Garver, Council of Presidents
Carli Schiffner, State Board of Community and Technical Colleges
Jamilyn Penn, State Board of Community and Technical Colleges
Gail Wootan, Washington Student Achievement Council
Terri Standish-Kuon, Independent Colleges of Washington