AMENDMENT
ARTICULATION AGREEMENT

Montgomery College
Associate of Science in Engineering Program

Frostburg State University
Bachelor of Science in Engineering

Entered into this 14th day of May, 2014.

Joseph M. Hoffman, Ph.D.
Dean
College of Liberal Arts and Sciences
Frostburg State University

Eun-Woo Chang, Ph.D.
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Eric J. Moore, Ph.D.
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Chair
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Montgomery College

This agreement is effective with new Frostburg State University admits Fall 2014.
This agreement will be reviewed annually.

ARTICULATION AGREEMENT

Montgomery College, Associate of Science in Electrical Engineering
and
Frostburg State University, Bachelor of Science in Engineering.

RECITALS

Montgomery College (hereafter referred to as "MC"), a community college in Montgomery County, Maryland, and Frostburg State University ("FSU"), a comprehensive regional institution in Western Maryland and a constituent institution of the University System of Maryland, agree to offer an articulated program leading to the award of an Associate of Science (A.S.) in Electrical Engineering Degree and a Bachelor of Science (B.S.) in Engineering. The parties further agree that students from MC, through this articulation agreement, will be permitted to transfer credits earned for the A.S. at MC to FSU, leading to the award of the B.S. degree in Engineering at FSU. The only concentration available pursuant to this agreement is electrical engineering.

I. Purpose

a. It is the intent that this articulation agreement will facilitate a smooth transition from MC's Engineering Transfer program to the B.S. in Engineering program at FSU. As a result of this articulation agreement, MC graduates will understand how FSU transfers the credits earned at MC. This agreement provides a systematic plan for students to receive both the A.S. degree from MC and the B.S. degree in Engineering from FSU.

b. This agreement sets forth a clear set of responsibilities and expectations for both institutions. The parties agree to work collaboratively to meet the needs of MC graduates in facilitating transfer to FSU.

c. MC encourages graduates to continue their educational pathway in engineering for both personal and professional development, as well as career advancement in the engineering profession. This articulation agreement for completion of the B.S. in Engineering facilitates students' successful achievement of credentials in the field.

II. Requirements of the Program

a. Students must have completed all math, science, and core engineering courses required for the A.S. degree at MC in order to enter into the transfer program. A maximum of seventy (70) credit hours from MC will be allowed toward fulfillment of the one hundred twenty (120) credit hours required for completion of the B.S. degree.

b. Engineering transfer students from MC will have their coursework evaluated by FSU to determine which FSU general education requirements and discipline requirements have been met. MC courses shall be evaluated by FSU for transferability, and FSU shall accept courses for transfer at its sole discretion. By taking full advantage of the MC-FSU course agreements described below, the transfer student will matriculate at FSU with junior standing.

c. In accordance with Code of Maryland Regulations (COMAR), all courses meeting general education requirements at MC will transfer to FSU as general education courses.

d. Students must maintain a minimum of a 2.0 cumulative grade point average in order to transfer to the FSU Engineering Program.

e. The maximum number of credits that will be accepted by FSU toward degree requirements from non-direct classroom instruction (including CLEP, AP, IB and FSU Special Departmental examination scores) is thirty (30) credits. Tech Prep credits will transfer where appropriate, as will credit awarded for experiential learning ("life experience") if recorded on MC's transcript.

f. While MC and FSU do not presently have a dual admission program, if the parties later enter into such a program, this agreement will not preclude students from participation and students may apply for and receive the benefits of dual admission. Those students shall then be subject to the policies of said program should they apply.

g. MC students who have completed the A.S. degree will be given every consideration for financial assistance and will be eligible to compete for academic scholarships at FSU.

h. This agreement becomes effective on the date set forth on the first page of this document. MC and FSU agree to publicize this program. The parties further agree to monitor the performance of the program and to make revisions as may be mutually agreed upon as necessary. Curricula for engineering programs undergo frequent change and this agreement will be amended to reflect such changes as they occur. Amendments will be made in writing and appended to this

agreement. Amendments need only be approved by the deans and chairs from both institutions.

i. This agreement may be terminated by either party with ninety (90) days written notice to the other. The parties agree that termination shall include an agreement that students currently enrolled in the program at the time of termination shall be permitted to complete the program as described herein.

III. A.S. in Electrical Engineering - B.S. in Engineering Transfer Courses

The following indicates the transfer of course agreement between the MC and FSU:

a. General Education Requirements to be Completed at MC

Frostburg Requirement	**Current MC Equivalent (ID starting fall 2014)**	**Explanation/Notes**
ENGLISH COMPOSITION (3 credits)	EN 102 (ENGL 102) Critical Reading, Writing and Research	
HUMANITIES (3 credits)	Approved general education course from the Humanities category.	MC requires only 3 credits in humanities.
FINE AND PERFORMING ARTS (3 credits)	One approved general education from the Arts category.	
SOCIAL SCIENCE (6 credits)	Two approved general education courses (in two different disciplines) from the Social and Behavioral Sciences category.	
MATHEMATICS (3-4 credits)	MA 181 (MATH 181)	Required in the A.S. program
NATURAL SCIENCE (7 - 8 cr; one course must have a lab component)	CH 135 (CHEM 135) or CH 101 (CHEM 131) PH 161 (PHYS 161)	Required in the A.S. program
MODES OF INQUIRY ELECTIVE (3 credits)	PL 202 (PHIL 140)	Ethics course will be required for engineering students beginning in Fall 2012 and will be accepted for GEP credit by FSU.

b. Degree Program Requirements to be Completed at MC

The B.S. degree with a major in Engineering at FSU requires students to successfully complete the following course work. Some of these courses also may meet general education requirements, as indicated above.

Frostburg State University			Current MC Program Equivalent (ID starting fall 2014)
Course Number	Course Title	Credit Hours	
ENES 100	Introduction to Engineering Design	3.0	ES 100 (ENES 100)
MATH 236	Calculus I	4.0	MA 181 (MATH 181) Already in GEP above
MATH 237	Calculus II	4.0	MA 182 (MATH 182)
MATH 238	Calculus III	4.0	MA 280 (MATH 280)
MATH 432	Differential Equations	3.0	MA 282 (MATH 282)
CHEM 201	General Chemistry I	4.0	CHEM 135 or CHEM 131
PHYS 261	Principles of Physics I – Mechanics	3.0[1]	PH 161 (PHYS 161) Already in GEP above
PHYS 262	Principles of Physics II – Electricity and Magnetism	4.0	PH 262 (PHYS 262)
PHYS 263 AND PHYS 264	Principles of Physics III – Acoustics and Optics AND Principles of Physics IV – Thermodynamics and Modern Physics	4.0	PH 263[2] (PHYS 263)
ENEE 114	Programming Concepts for Engineers	5.0[3]	EE 140 and 150 (ENEE 140 and 150)
ENEE 204	Basic Circuit Theory	3.0	EE 207[4] (ENEE 207)
ENEE 206	Fund. Digital and Electric Circuits Lab	2.0	EE 245 (ENEE 245)
ENEE 241	Numerical Methods in Engineering	4.0	EE 222 (ENEE 222)
ENEE 244	Digital Logic Design	3.0	EE 244 (ENEE 244)
TOTAL Program Credits=50			

[1] Three credit course at MC is equivalent to FSU's 4 credit PHYS 261 course.
[2] The student learning outcomes of the PHYS 263 course at MC is equivalent to the combined outcomes of PHYS 263 and PHYS 264 at FSU.
[3] ENEE 140 and 150 at Montgomery College together are equivalent to FSU's 4 credit ENEE 114 course.
[4] Course is 4 credits at MC but will transfer in as 3 credits at FSU.

TOTAL Program Credits=50

c. Degree Program Requirements to be Completed at FSU

All FSU bachelor's degree candidates must complete a minimum of 39 upper-division (300-400) credit hours.

Frostburg State University			Notes
Course Number	Course Title	Credit Hours	
ENME 350	Electronics and Instrumentation I	3.0	
ENME 351	Electronics and Instrumentation II	3.0	
ENEE 380	Electromagnetic Theory	3.0	
ENGL 338	Technical Writing	3.0	
ENES 401	Fundamentals of Energy Engineering	3.0	
ENEE 303	Analog and Digital Electronics	3.0	
ENEE 350	Computer Organization	3.0	
ENEE 307	Electronic Circuits Design	2.0	
ENES 491	Engineering Seminar	3.0	
ENES 310	Mechatronic and Robotic Design	3.0	
ENEE 439	Topics in Signal Processing	3.0	
ENEE 475	Power Electronics	3.0	
ENEE 408	Capstone Design Project	3.0	
IDIS 150	Freshman Colloquium	3.0	Fulfills 3 hrs. of GEP colloquia requirements.
	300/400 level Identity and Difference course (general education)	3.0	The rationale for this is to comply with the requirement that less than 70 credits be transferred and to enable students to meet the 39 credit minimum for upper division coursework.
	300-400 level Technical Electives	6.0	Must be ENES, ENEE, or ENME courses.
	Electives (any)	3.0	Required for student to achieve the 120 credits for graduation
Total = 53			

d. Course Sequencing

Engineering Transfer students transferring to the Engineering Program at FSU shall be notified by MC and FSU that the Engineering curriculum is built upon a series of established course sequences. For students to progress through the program, they must have the appropriate pre-requisites, co-requisites, and must maintain a minimum 2.0 GPA.

Students wishing to participate in the program should develop an education plan at MC by contacting:

Muhammad Kehnemouyi, Ph.D., P.E.
Chair, Department of Physics, Engineering, and Geosciences
Montgomery College
240-567-5228
muhammad.kehnemouyi@montgomerycollege.edu

MC will direct students interested in participating in the Engineering Transfer program to apply for admission to FSU, indicating Engineering as the intended major. Applications can be submitted online at: www.frostburg.edu.

Contact person at FSU for the program is:

Eric J. Moore, Ph.D.
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Frostburg State University
301-687-4500
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