

AN ARTICULATION AGREEMENT
BETWEEN
ROBERT MORRIS UNIVERSITY
AND
COMMUNITY COLLEGE OF BEAVER COUNTY

OBJECTIVE OF THE AGREEMENT

Based on the commonality of purpose and a mutual goal of assuring a quality education, Community College of Beaver County and Robert Morris University enter into the following articulation agreement. The primary objective of this agreement is to maximize credit transferability while retaining all Robert Morris academic requirements and providing a rigorous program of study. This agreement will afford students the opportunity to realize their educational goals and enhance their future employability through a curriculum that is both challenging and rewarding.

TERMS AND CONDITIONS OF THE AGREEMENT

This agreement applies to Community College of Beaver County (CCBC) graduates with an earned Associate in Sciences Degree in Pre-Engineering who plan to enter Robert Morris University (RMU) in a major under the Bachelor of Science degree program majoring in Engineering (Biomedical, Mechanical, Software, or Industrial Concentrations).

Up to 51 credits will be granted to students (pending on concentration selected) who have successfully completed an Associate Degree provided that:

- Students have completed the curriculum as outlined in the CCBC 2016-2017 College catalog
- Students have fulfilled grade requirements of the major into which they are transferring.

Courses completed at other academic institutions do not affect the nature or scope of this agreement. Said courses will be evaluated according to the Academic Policies of RMU regarding transfer credits.

RMU will provide an official evaluation of all previously completed coursework and placement of those credits at the time of application.

RMU reserves the right to change program requirements and/or transfer equivalents.

Notice of changes in program requirements by any party of this agreement must be given in writing in a timely manner.

Termination of this agreement may be made by any party, and must be in writing.

Students who sign a letter of intent are indicating their interest in attending RMU and will be entitled to:

- a waiver of the RMU application fee
- advanced registration along with RMU students
- participation in department functions and activities while enrolled at CCBC

However, this letter of intent does not obligate students to attend RMU. Students who sign a letter of intent must matriculate within three years.

CCBC will properly advertise and will provide information regarding RMU, its academic programs, requirements, and services extended to the transfer graduate under the terms of this agreement.

CCBC will communicate with the RMU Academic Services Office regarding issues and questions posed by participating students.

CCBC will provide the RMU Admissions Office with the names and addresses of CCBC students who have indicated an interest in attending RMU and would benefit from major department activity information.

The undersigned duly authorized officials agree to abide by the above terms and conditions.

APPROVED BY:

COMMUNITY COLLEGE OF BEAVER COUNTY ROBERT MORRIS UNIVERSITY

Christopher M. Reber, Ph.D. Date
President

Christopher B. Howard, Ph.D. Date
President

ROBERT MORRIS UNIVERSITY

**ACADEMIC REQUIREMENTS FOR
Bachelor of Science
Major: ENGINEERING
Biomedical Engineering Concentration
Minimum Credits Required - 126**

**School: Engineering, Mathematics, and Science
Department: Engineering**

1. ROBERT MORRIS UNIVERSITY CORE--41 Credits

CHEM1210	Chemistry I	3	CHEM101	HIST ____	History Elective** or	3 ____
CHEM1215	Chemistry I Lab	1	CHEM101	POLS ____	Political Science Elective**	
COSK1220	Reading and Writing Strategies	3	WRIT101	(**Choose from: HIST1100, HIST1200, HIST1500, HIST1600, HIST1700, HIST1800 or POLS1020)		
COSK1221	Argument and Research	3		HUMA1010	Humanities: Art and Music	3
COSK2220	Public Speaking and Persuasion	3	COMM201	INFS1020	Intro to Decision Support Systems	3
COSK2230	Professional Communications	3		*MATH2070	Calculus w/Analytic Geometry I	4
ECON1010	Survey of Economics	3		PSYC1010	General Psychology	3
ELIT ____	Literature Elective	3	LITR210	SOCI1020	Contemporary American Social Prob.	3

2. MATH AND SCIENCE--31 Credits

BIOL1210	Anatomy and Physiology I	3		CHEM2210	Chemistry II/CHEM2215 Chem Lab	4
BIOL1215	Anatomy and Physiology I Lab	1				
BIOL1220	Anatomy and Physiology II	3			Engineering Practice	
BIOL1225	Anatomy and Physiology II Lab	1		MATH3420	Differential Equations	3
				PHYS1210	Physics I	3
ENGR2080	Engineering Statistics	3		PHYS1215	Physics I Lab	1
MATH2170	Calculus with Analytic Geometry II	4	MATH161	PHYS2210	Physics II	3
				PHYS2215	Physics II Lab	1

3. BUSINESS--9 Credits

ACCT1020	Fundamentals of Accounting	3		MGMT3100	Management Theory and Practice	3
MARK3100	Principles of Marketing	3				

4. BASIC ENGINEERING—12 Credits

ENGR1610	Statics and Strength of Materials	3		ENGR2160	Engineering Graphics	3
ENGR2140	Circuits and Electromagnetics	3		ENGR2180	Engineering Materials	3

5. MAJOR--31 Credits

ENGR1010	Introduction to Engineering	3	ENGR100	*ENGR3510	Biomechanics	3
*ENGR2100	Dynamics	3		*ENGR4520	Design and Manufacturing of Biomedical Engineering Devices and Systems	4
*ENGR2510	Biomedical Engineering Principles	3				
*ENGR3110	Thermodynamics and Energetics	3		*ENGR4900	Engineering Practice	3
ENGR3200	Value Design	3		*ENGR4950	Integrated Engineering Design	3
*ENGR3300	Fluid Mechanics	3				

6. APPROVED ELECTIVES--3 Credits Minimum (Choose two from the following: ENGR3600 Production Engineering, ENGR3680 Intro to Quality Engineering, ENGR4030 Project Engineering, ENGR4170 Numerical Methods, ENGR4200 Safety and Methods Engineering, ENGR4510 Introduction to Biomaterials, ENGR4700 Robotics and Automation, and ENGR4801 Rapid Prototyping and Reverse Engineering

3 ____

IMPORTANT NOTES:

A minimum grade of C must be earned in each course identified with an asterisk.

A cumulative Q.P.A. of 2.00 or higher is required for graduation.

48 credits apply to this degree program.

All students must take 12 credits of Communication Skills as part of the RMU Core Curriculum. Depending upon placement testing scores, students will take COSK1220 or COSK2221 in addition to COSK1221, COSK2220, and COSK2230. If placed in COSK1220, a student's Core requirements are Communication Skills COSK1220, COSK1221, COSK2220, and COSK2230. If placed in COSK1221 (advanced placement; no credit earned for COSK1220), a student's Core requirements are Communication Skills COSK1221, COSK2220, COSK2221, and COSK2230. Upon completion of the COSK courses, students must complete a component of courses (the specific number is determined by the student's "academic" School) to meet one of the requirements for graduation. These courses called "Communication Skills Intensive" are integrated into the degree as part of the "major" areas of the checksheet.

Major Code - MCEN

Checksheet Code - EB

Academic Year - 2016-2017

ROBERT MORRIS UNIVERSITY

**ACADEMIC REQUIREMENTS FOR
Bachelor of Science
Major: ENGINEERING
Mechanical Engineering Concentration
Minimum Credits Required - 126**

**School: Engineering, Mathematics, and Science
Department: Engineering**

1. ROBERT MORRIS UNIVERSITY CORE--41 Credits

CHEM1210	Chemistry I	3	CHEM101	HIST ____	History Elective** or	3 ____
CHEM1215	Chemistry I Lab	1	CHEM101	POLS ____	Political Science Elective**	
COSK1220	Reading and Writing Strategies	3	WRIT101	(**Choose from: HIST1100, HIST1200, HIST1500, HIST1600, HIST1700, HIST1800 or POLS1020)		
COSK1221	Argument and Research	3		HUMA1010	Humanities: Art and Music	3
COSK2220	Public Speaking and Persuasion	3	COMM201	INFS1020	Intro to Decision Support Systems	3
COSK2230	Professional Communications	3		*MATH2070	Calculus w/Analytic Geometry I	4
ECON1010	Survey of Economics	3		PSYC1010	General Psychology	3
ELIT ____	Literature Elective	3	LITR210	SOCI1020	Contemporary American Social Prob.	3

2. MATH AND SCIENCE--25 Credits

ENGR2080	Engineering Statistics	3		PHYS1210	Physics I	3
MATH2170	Calc with Analytic Geometry II	4	MATH161	PHYS1215	Physics I Lab	1
MATH3090	Calc with Analytic Geometry III	4		PHYS2210	Physics II	3
MATH3400	Linear Algebra w/Applications	3		PHYS2215	Physics II Lab	1
MATH3420	Differential Equations	3				

3. BUSINESS--9 Credits

ACCT1020	Fundamentals of Accounting	3		MGMT3100	Management Theory and Practice	3
MARK3100	Principles of Marketing	3				

4. BASIC ENGINEERING—12 Credits

ENGR1610	Statics and Strength of Materials	3		ENGR2160	Engineering Graphics	3
ENGR2140	Circuits and Electromagnetics	3		ENGR2180	Engineering Materials	3

5. MAJOR--33 Credits

ENGR1010	Introduction to Engineering	3	ENGR100	*ENGR4100	Machine Design	3
*ENGR2100	Dynamics	3		*ENGR ____	Engineering Elective	3
*ENGR3110	Thermodynamics and Energetics	3		*ENGR4900	Engineering Practice	3
ENGR3200	Value Design	3		*ENGR4950	Integrated Engineering Design	3
*ENGR3300	Fluid Mechanics	3		*INFS2184	C++ Programming	3
*ENGR3350	Heat Transfer	3				3

6. APPROVED ELECTIVES--6 Credits Minimum (Choose two from the following: ENGR3250 Automated Identification Systems, ENGR3500 Material Handling and Plant Layout, ENGR3600 Production Engineering, ENGR3650 Product and Tool Design ENGR3680 Intro to Quality Engineering, ENGR4030 Project Engineering, ENGR4150 Des. Analysis of Mechanical Systems, ENGR4170 Numerical Methods, ENGR4200 Safety and Methods Engineering, ENGR4400 Device Control, ENGR4700 Robotics and Automation and ENGR4801 Rapid Prototyping and Reverse Engineering)

_____	3	_____	3
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IMPORTANT NOTES:

A minimum grade of C must be earned in each course identified with an asterisk.

47 credits apply to this degree program.

All students must take 12 credits of Communication Skills as part of the RMU Core Curriculum. Depending upon placement testing scores, students will take COSK1220 or COSK2221 in addition to COSK1221, COSK2220, and COSK2230. If placed in COSK1220, a student's Core requirements are Communication Skills COSK1220, COSK1221, COSK2220, and COSK2230. If placed in COSK1221 (advanced placement; no credit earned for COSK1220), a student's Core requirements are Communication Skills COSK1221, COSK2220, COSK2221, and COSK2230. Upon completion of the COSK courses, students must complete a component of courses (the specific number is determined by the student's "academic"School) to meet one of the requirements for graduation. These courses called "Communication Skills Intensive" are integrated into the degree as part of the "major" areas of the checksheet.

ROBERT MORRIS UNIVERSITY

ACADEMIC REQUIREMENTS FOR

Bachelor of Science

Major: ENGINEERING

Software Engineering Concentration

Minimum Credits Required - 126

School: Engineering, Mathematics, and Science

Department: Engineering

1. ROBERT MORRIS UNIVERSITY CORE—41 Credits

CHEM1210	Chemistry I	3	CHEM101	HIST_____	History Elective** or	3_____
CHEM1215	Chemistry I Lab	1	CHEM101	POLS_____	Political Science Elective**	
COSK1220	Reading and Writing Strategies	3	WRIT101	(**Choose from: HIST1100, HIST1200, HIST1500, HIST1600, HIST1700 HIST1800 or POLS1020)		
COSK1221	Argument and Research	3		HUMA1010	Humanities: Art and Music	3
COSK2220	Public Speaking and Persuasion	3	COMM201	INFS1020	Intro to Decision Support Systems	3
COSK2230	Professional Communications	3		*MATH2070	Calculus w/Analytic Geometry I	4
ECON1010	Survey of Economics	3		PSYC1010	General Psychology	3
ELIT_____	Literature Elective	3	LITR210	SOCI1020	Contemporary American Social Prob.	3

2. MATH AND SCIENCE –25 Credits

ENGR2080	Engineering Statistics	3		MATH3420	Differential Equations	3
MATH2170	Calc with Analytic Geometry II	4	MATH161	MATH4000	Discrete Mathematics	3
CHEM2210	Chemistry II/CHEM2215 Chem Lab	4	CHEM102	PHYS1210	Physics I	3
				PHYS1215	Physics I Lab	1
				PHYS2210	Physics II	3
				PHYS2215	Physics II Lab	1

3. BUSINESS –9 Credits

ACCT1020	Fundamentals of Accounting	3		MGMT3100	Management Theory and Practice	3
MARK3100	Principles of Marketing	3				

4. BASIC ENGINEERING—9 Credits

ENGR1610	Statics and Strength of Materials	3	
ENGR2140	Circuits and Electromagnetics	3	
ENGR2160	Engineering Graphics	3	ENGR120

5. MAJOR –30 Credits

ENGR1010	Introduction to Engineering	3	ENGR100	*ENGR4900	Engineering Practice	3
ENGR3200	Value Design	3		*ENGR4950	Integrated Engineering Design	3
*ENGR3400	Software Verification and Validation	3		*INFS2151	JAVA Programming	3
*ENGR3410	Fundamentals of Software Engineering	3		*INFS2184	Programming in C++	3
*ENGR4450	Distributed Systems Implementation	3		*INFS3185	Data Structures with C++	3

6. APPROVED ELECTIVES—12 Credits Minimum

Students may choose from the following courses: ENGR3420 Computer Architecture for Software Engineers, ENGR4170 Numerical Methods, ENGR4650 Simulation, ENGR4700 Robotics and Automation, INFS3210 Operating Systems Concepts, INFS3188 Object-Oriented Applications Programming, INFS3440 Health Care Information Systems, INFS4240 Database Management Systems, INFS4241 Open Source e-Commerce Development, INFS4630 Intro to Geographic Information Systems, INFS3230 Networks/Data Computer Communications, INFS3235 Computer and Network Security, and/or INFS3236 Local Area Network Design Management.

_____	_____	3	_____	_____	3
_____	_____	3	_____	_____	3

IMPORTANT NOTES:

A minimum grade of C must be earned in each course identified with an asterisk.

51 credits apply to this degree program.

All students must take 12 credits of Communication Skills as part of the RMU Core Curriculum. Depending upon placement testing scores, students will take COSK1220 or COSK2221 in addition to COSK1221, COSK2220, and COSK2230. If placed in COSK1220, a student's Core requirements are Communication Skills COSK1220, COSK1221, COSK2220, and COSK2230. If placed in COSK1221 (advanced placement; no credit earned for COSK1220), a student's Core requirements are Communication Skills COSK1221, COSK2220, COSK2221, and COSK2230. Upon completion of the COSK courses, students must complete a component of courses (the specific number is determined by the student's "academic" School) to meet one of the requirements for graduation. These courses called "Communication Skills Intensive" are integrated into the degree as part of the "major" areas of the checksheet.

Major Code – ENGR

Checksheet Code – EG

Academic Year – 2016-2017

ROBERT MORRIS UNIVERSITY

**ACADEMIC REQUIREMENTS FOR
Bachelor of Science
Major: ENGINEERING
Industrial Engineering Concentration
Minimum Credits Required - 126**

**School: Engineering, Mathematics, and Science Department: Engineering
Department: Engineering**

1. ROBERT MORRIS UNIVERSITY CORE--41 Credits

CHEM1210	Chemistry I	3CHEM101	HIST_____	History Elective** or	3_____
CHEM1215	Chemistry I Lab	1CHEM101	POLS_____	Political Science Elective**	
COSK1220	Reading and Writing Strategies	3WRIT101	(**Choose from: HIST1100, HIST1200, HIST1500, HIST1600, HIST1700 HIST1800 or POLS1020)		
COSK1221	Argument and Research	3_____	HUMA1010	Humanities: Art and Music	3TRAN
COSK2220	Public Speaking and Persuasion	3COMM201	INFS1020	Intro to Decision Support Systems	3CIST100
COSK2230	Professional Communications	3_____	*MATH2070	Calculus w/Analytic Geometry I	4MATH160
ECON1010	Survey of Economics	3_____	PSYC1010	General Psychology	3PSYC101
ELIT_____	Literature Elective	3WRIT101	SOCI1020	Contemporary American Social Prob.	3_____

2. MATH AND SCIENCE--25 Credits

ENGR2080	Engineering Statistics	3_____	MATH3400	Linear Algebra with Applications	3_____
MATH2170	Calc with Analytic Geometry II	4MATH161	MATH3420	Differential Equations	3_____
CHEM2210	Chemistry II/CHEM2215 Chem Lab	4CHEM2210	PHYS1210	Physics I	3PHYS202
			PHYS1215	Physics I Lab	1PHYS202
			PHYS2210	Physics II	3PHYS203
			PHYS2215	Physics II Lab	1PHYS203

3. BUSINESS--9 Credits

ACCT1020	Fundamentals of Accounting	3_____	MGMT3100	Management Theory and Practice	3_____
MARK3100	Principles of Marketing	3_____			

4. BASIC ENGINEERING--9 Credits

ENGR1610	Statics and Strength of Materials	3_____	ENGR2180	Engineering Materials	3_____
ENGR2160	Engineering Graphics	3ENGR120			

5. MAJOR--30 Credits

ENGR1010	Introduction to Engineering	3ENGR100	*ENGR4900	Engineering Practice	3_____
ENGR2500	Human Factors Engineering	3_____	*ENGR4950	Integrated Engineering Design	3_____
ENGR3200	Value Design	3_____	ENGR_____	Engineering Elective	3_____
ENGR3500	Material Handling and Plant Layout	3_____	(Choose four from the following: ENGR3250, ENGR3600, ENGR3650, ENGR3680, ENGR3900, ENGR4030, ENGR4400, ENGR4650, ENGR4700 OR ENGR4801		
ENGR3700	Manufacturing Planning and Control	3_____	INFS2184	C++ Programming	3CIST150
ENGR4200	Safety and Methods Engineering	3_____			

6. APPROVED ELECTIVES--12 Credits Minimum (Choose four from the following: ENGR3250 Automated Identification Systems, ENGR3600 Production Engineering, ENGR3650 Product and Tool Design, ENGR3680 Intro to Quality Engineering, ENGR3900 Optimization Technology Industrial Engineering, ENGR4030 Project Engineering, ENGR4400 Device Control, ENGR4650 Simulation, ENGR4700 Robotics and Automation or ENGR4801 Rapid Prototyping and Reverse Engineering)

_____	_____	3_____	_____	_____	3_____
_____	_____	3_____	_____	_____	3_____

IMPORTANT NOTES:

A minimum grade of C must be earned in each course identified with an asterisk.

51 credits apply to this degree program.

All students must take 12 credits of Communication Skills as part of the RMU Core Curriculum. Depending upon placement testing scores, students will take COSK1220 or COSK2221 in addition to COSK1221, COSK2220, and COSK2230. If placed in COSK1220, a student's Core requirements are Communication Skills COSK1220, COSK1221, COSK2220, and COSK2230. If placed in COSK1221 (advanced placement; no credit earned for COSK1220), a student's Core requirements are Communication Skills COSK1221, COSK2220, COSK2221, and COSK2230. Upon completion of the COSK courses, students must complete a component of courses (the specific number is determined by the student's "academic" School) to meet one of the requirements for graduation. These courses called "Communication Skills Intensive" are integrated into the degree as part of the "major" areas of the checksheet.

Major Code - ENGR

Cheksheet Code - ED

Academic Year - 2016-2017

SEMESTER BY SEMESTER BREAKDOWN OF COURSE EQUIVALENTS

CCBC COURSES		RMU EQUIVALENT	
CRSE NO	COURSE TITLE	CRSE NO	COURSE TITLE
First Semester			
CHEM101	General Chemistry I	CHEM1210	Chemistry I and Lab (CHEM1215)
CIST100	Intro to Information Technology	INFS1020	Intro to Decision Support Systems
MATH155	Pre-Calculus	MATH1020	Pre-Calculus (Not Applicable)
ENGR100	Introduction to Engineering	ENGR1010	Introduction to Engineering
CIST130	Introduction to Agile Robotics		Not Applicable
Second Semester			
CHEM102	General Chemistry II	CHEM2210	Chemistry II and Lab (CHEM2215) (Not applied to Mechanical)
ENGR120	CAD: Computer Aided Drafting	ENGR2160	Engineering Graphics
WRIT101	English Composition	COSK1220	Reading and Writing Strategies
MATH160	Calculus I	MATH2070	Calculus w/Analytic Geometry I
CIST135	Integrated Intelligent Systems		Not Applicable
Third Semester			
CIST150	C++ Programming or CIST160	INFS2184	C++ Programming (Not applied to Biomedical)
MATH161	Calculus II	MATH2170	Analytical Calculus with Geometry II
PHYS202	University Physics I	PHYS1210	Physics I and Lab (PHYS1215)
LITR210	Concepts of Literature	ELIT1999	Literature Elective
Fourth Semester			
COMM201	Public Speaking	COSK2220	Public Speaking and Persuasion
PHYS203	University Physics II	PHYS2210	Physics II and Lab (PHYS2215)
PSYC101	General Psychology (TAOC Category Five)	PSYC1010	General Psychology
	TAOC Category six (Any FINE, MUSI, PHIL)	HUMA1010	Humanities: Art and Music

Students are also encouraged to take up to 18 credits from the following selection:

- SOCI210
- Any HIST or POLS course
- ACCT110 Financial Accounting
- BUSM112 Principles of Management
- BUSM245 Principles of Marketing
- BUSM255 Macroeconomics **or** BUSM256 Microeconomics

Maximum of 69 credits can transfer