ARTICULATION AGREEMENT

FOR

ENGINEERING and ENGINEERING TECHNOLOGY PROGRAMS

(other than Plastics Engineering Technology)

BETWEEN

BUTLER COUNTY COMMUNITY COLLEGE

AND

PENN STATE ERIE, THE BEHREND COLLEGE

I. PURPOSE

Penn State Erie, The Behrend College, and Butler County Community College (BCCC) together establish this articulation agreement allowing graduates of BCCC's Associate in Applied Science programs entry into Penn State Behrend's Engineering and Engineering Technology programs. Upon completion of one of these associate degree programs at BCCC, the student will enter Penn State Behrend's School of Engineering to complete the upper division engineering or engineering technology course requirements as specified by that institution. Successful completion of these requirements will lead to a baccalaureate degree from Penn State Behrend. The agreement is being created in an effort to fulfill the following objectives.

1. To provide an educational pathway leading to a baccalaureate degree for the diverse body of associate degree students enrolled at BCCC.

2. To allow a student who has not yet decided among various disciplines additional time to decide while completing an associate's degree from the variety of the programs offered at BCCC. During this time the student may also ascertain whether their abilities and interests lie in their chosen field of study.

3. To provide the student with a planned sequence of courses which, if completed successfully, would guarantee the student acceptance at a baccalaureate level, degree granting engineering school. By following the planned sequence the student can normally expect to complete the baccalaureate degree in five semesters at Penn State Behrend. In some instances the student may also obtain a business minor in the same period.

4. To allow those qualified students to receive an advanced technical education at lower cost.

II. PROCEDURES

Counseling, admission, and the transfer of students in this program will be proposed through the application of the following procedures and policies:

1. Upon completion of the associates degree program, a student becomes a candidate for transfer if the student has maintained a quality point average of 2.7 or better (4.0 = A) at BCCC and is recommended (by letter) for transfer by BCCC. In special cases a recommendation from the Dean at BCCC may be considered. Penn State Behrend may require a higher quality point average because of space availability or changes in programs. The change in quality point average will take effect with those students entering BCCC in the fall semester after the institution has been notified.

2. The individual student requests an application from the Admissions Office of Penn State Behrend in September of the student's second year at BCCC. The request should include a statement identifying the program of admission. The application should clearly indicate that the student is applying for a particular program and should be submitted no later than November 30. The completed application should be supported by the following credentials: final high school record; two copies of the official BCCC transcript including all grades earned through the second semester; a schedule of courses for the third and fourth semesters; a recommendation by a designated official of BCCC that the student should be admitted to the requested program. The application and supporting credentials will be evaluated by the Admissions Office and the School of Engineering office at Penn State Behrend. If the applicant meets the minimum requirements, the applicant will be offered conditional admission to Penn State Behrend commencing with the subsequent fall semester.

   Upon completion of the associate degree program at BCCC, two copies of the final official transcripts of work taken at BCCC should be forwarded to the Admissions Office. The applicant's admission to Penn State Behrend will be changed from a conditional basis to a permanent basis if: the student has maintained an overall average of 2.7 or that which is required by the Agreement at the time the student enters the program at BCCC; is in good standing at BCCC; and has fulfilled all conditions, if any, specified in the student's provisional admission.

3. An entering student at BCCC who plans to follow the designated articulation program will be enrolled in either the chemistry, engineering, or math associate degree curriculums at BCCC and should complete the associate degree program prior to matriculation at Penn State Behrend. The tables below indicate how courses successfully completed at BCCC with a C or better will be applied in the designated engineering or engineering technology curriculum. Descriptions of these courses are published in the BCCC and The Pennsylvania State University catalogs. These courses must be completed by all students transferring to Penn State Behrend seeking an engineering or engineering technology baccalaureate degree with a grade of "C" or better.

4. Penn State requires all students admitted to baccalaureate degree programs to have completed two (2) units of a foreign language at the high school level. Students entering the School of Engineering programs under the guidelines of this agreement who have not met this language requirement will be required to satisfy the language requirement before they will be eligible to graduate.

5. The BCCC will promptly notify Penn State Behrend upon any substantive curriculum modification to the above mentioned associate programs, and further agrees that the terms of this agreement will no longer apply unless Penn State Behrend provides written approval that the curriculum changes do not alter the intent of this agreement.

6. The Agreement should be reviewed every five years and the tables in Item 3 revised as necessary. All revisions are to be agreed to by each institution's institutional representatives.

7. The terms of this agreement shall remain in effect, except as stipulated in certain previous terms listed herein, until terminated by either party. Any party may terminate the agreement, with or without cause, on the provision of 120 days written notice to the other parties.

8. This agreement constitutes the entire agreement and terms of understanding among parties named herein, and supersede any other prior agreements or understandings among parties.

Articulation
BC3 (A.A.S. Electronics Technology or A.A.S. Robotics Technology) → Penn State Behrend Electrical and Computer Engineering Technology

The following list of courses should be completed at Butler Community College prior to transferring to Penn State Behrend. The tables below indicate how the credits will be applied in the Electrical and Computer Engineering Technology program at Penn State Erie, The Behrend College.

Mathematics

BC3 COURSE	PENN STATE BEHREND EQUIVALENT
MATH 101 (3) – College Algebra	MATH 21 (3) – College Algebra
MATH 102 (3) – Trigonometry and Functions	MATH 41 (3) - Trigonometry and Analytic Geometry
MATH 221 (4) – Calc and Analytic Geometry I	MATH 083 (4) – Technical Calculus
MATH 222 (4) – Calc and Analytic Geometry II	MATH 210 (3) – Calculus with Engineering Technology applications

Science: Physics and Chemistry

BC3 COURSE	PENN STATE BEHREND EQUIVALENT
CHEM 101 (4) – Chemistry I	CHEM 110 (3) Chemical Principles CHEM 111 (1) – Experimental Chemistry
PHYS 101 (4) – Physics I	PHYS 250 (4) – Introductory Physics I
Science (3-4)*	Science (2-3) – Natural Science (GN)

Engineering Technology

BC3 COURSE	PENN STATE BEHREND EQUIVALENT
ELEC 110 (7) – Electrical Fundamentals & ELEC 291 (3) – Linear Circuit Analysis	EET 101/109 (4) – Electrical Circuits I and lab **&** EET 114/118 (5) – Electrical Circuits II and lab
ELEC 225 (4) – Digital Electronics	CMPET 117/120 (4) –Digital Electronics and lab
ELEC 221 (5) – Electronics I	EET 210/205 (3) – Fundamentals of Semiconductors and lab
ELEC 240 (4) – Fundamentals of Microprocessors	CMPET 211 (3) – Processors and DSP
ELEC 222 (5) – Electronics II	EET 216/221 (4) – Linear Electronic Circuits and lab
DRFT 120 (4) – Technical Graphics with AutoCAD **OR** DRFT 108 (3) – 3-D Geometric Modeling/SolidWorks	EG T 119 (2) – Intro to CAD for ECET
DRFT 116 (1) – Technology Applications with Excel & ELEC 250 (2) – Individual Research Project (with some required programming) **OR** COMP 230 (3) – Programming in C++ for Engineers and Scientists	EET 002S (1) – Intro to Engr Tech **&** CMPET 005 (1) – Experiment Methods Engr Tech

English Composition, Technical Writing, and Speech Communications

BC3 COURSE	PENN STATE BEHREND EQUIVALENT
ENGL 101 (3) – College Writing	ENGL 015 (3) – Composition and Rhetoric
ENGL 102 (3) – Research Writing	ENGL 202C (3) – Technical Writing
COMM 201 (3) – Speech	CAS 100 – Speech Communications

Social Science, Humanities, and Arts

Penn State requires that students complete 18 credits of Social Science (GS), Humanities (GH), and Arts (GA) credits. These course selections need to be balanced among the three areas, and also meet Penn State's International (IL) and US requirements. We recommend that BC3 students take 12 of these credits (4 courses) prior to transferring to Penn State Behrend, and we recommend the following choice of courses to meet the Penn State GS, GH, GA, US, and IL requirements.

BC3 COURSE	PENN STATE BEHREND EQUIVALENT
ECON 101 (3) – Principles of Econ – Macro	ECON 004 (3) – Macroeconomics (GS)
ECON 102 (3) – Principles of Econ – Micro	ECON 002 (3) – Microeconomics (GS)
ARTS 101 (3)	ART H 100 (3) – Intro to Art (GA, IL)
HIST 201 (3)	HIST 020 (3) - American Civilization to 1877 (GH, US)

Phys Ed and Health

BC3 COURSE	PENN STATE BEHREND EQUIVALENT
PHED/HLTH (3) – Take 3 credits	BB H/KINES (3) – Health and Physical Education

*Selection of possible courses includes:
- PHSC 120 (3) – Principles of Geology
- PHSC 123 (3) – Astronomy
- BIOL 101 (4) – Biology I
- PHYS 102 (4) – Physics II
- CHEM 102 (4) – Chemistry II

Social Science, Humanities, and Arts

Penn State requires that students complete 18 credits of Social Science (GS), Humanities (GH), and Arts (GA) credits. These course selections need to be balanced among the three areas, and also meet Penn State's International (IL) and US requirements. We recommend that BC3 students take 12 of these credits (4 courses) prior to transferring to Penn State Behrend, and we recommend the following choice of courses to meet the Penn State GS, GH, GA, US, and IL requirements.

BC3 COURSE	PENN STATE BEHREND EQUIVALENT
ECON 101 (3) – Principles of Econ – Macro	ECON 004 (3) – Macroeconomics (GS)
ECON 102 (3) – Principles of Econ – Micro	ECON 002 (3) – Microeconomics (GS)
ARTS 101 (3) – Introduction to Arts	ART H 100 (3) – Intro to Art (GA, IL)
HIST 201 (3) – Early US History	HIST 020 (3) - American Civ to 1877 (GH, US)

Phys Ed and Health

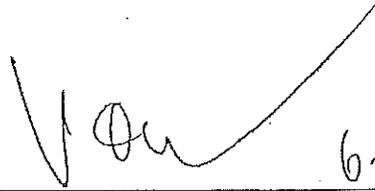| BC3 COURSE	PENN STATE BEHREND EQUIVALENT
PHED/HLTH (3) – Take 3 credits	BB H/ESACT (3) – Health and Physical Education

III.   AGREEMENT SIGNATURES

The Pennsylvania State University and BCCC have entered this agreement on the indicated dates and witnessed by the signatures below:
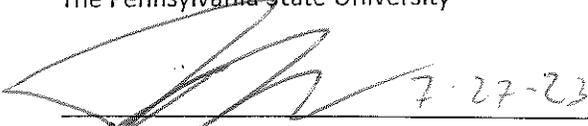
Dave Callejo   Date
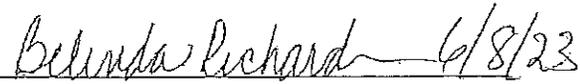Interim Vice President for Commonwealth Campuses
The Pennsylvania State University

Jeff Adams   Date
Interim Vice Provost and Dean, Undergraduate
Education
The Pennsylvania State University

Ralph M. Ford   Date
Chancellor
Penn State Erie, The Behrend College

Timothy Kurzweg   Date
Director, School of Engineering
Penn State Erie, The Behrend College

Nicholas C. Neupauer   Date
President Butler County Community College

Belinda Richardson   Date
Provost and Vice President for Academic Affairs
Butler County Community College
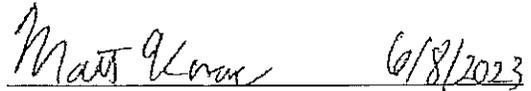
Matt Kovac   Date
Dean of STEM
Butler County Community College

Appendices – Recommended Scheduling Patterns

Recommend Scheduling at Penn State Behrend

BC3 A.S. Electronics Technology → Penn State Behrend Electrical and Computer Engineering Technology

The following is a recommended scheduling pattern to completing the Electrical & Computer Engineering Technology Degree at Penn State Behrend, assuming the student has completed recommended courses prior to transfer.

Fall Semester -- Junior Year

CMPET	301	3	Algorithmic Process for Electrical Sys
EET	341	3	Measurements/Instrumentation
EG T	120	3	Intro to Graphics & Solids Model
MATH	211	3	Intermediate Calculus
		12 cr.	

Spring Semester -- Junior Year

CMPET	355	3	Intermediate Microprocessors
EET	315	3	Linear/Discrete Sys Anal
EET	330	3	Communication Systems
EET	275	3	Intro Program Logic Controllers
		12 cr.	

Fall Semester -- Senior Year

EET	416	3	Fluids/Thermal in Electric Sys
EET	440	3	Applied Feedback Controls
EET	480	1	ECET Systems Senior Design
Tech Elect		3	*select from School list*
Tech Elect		3	*select from School list*
		13 cr.	

Spring Semester -- Senior Year

QC	450	3	Quality Control and Quality Improvement
EET	490W	3	ECET Senior Design Project
S/H/A		3	*select from Univ Gen Ed list*
S/H/A		3	*select from Univ Gen Ed list*
Tech Elect		(3)	*select from School list*
		15 cr.	

The courses above apply for the Electrical (EET) option. For the Computer (CMPET) option, students complete:

- CMPET 333 in place of EET 330
- CMPET 456 in place of EET 416
- CMPET 457 in place of EET 440

Recommend Scheduling at Penn State Behrend

BC3 A.S. Robotics Technology → Penn State Behrend Electrical and Computer Engineering Technology

The following is a recommended schedule pattern to complete the Electrical & Computer Engineering Technology Degree at Penn State Behrend, assuming the student has completed recommended courses prior to transfer.

Fall Semester -- Junior Year

CMPET	301	3	Algorithmic Process for Electrical Systems
EET	213W	5	Fundamentals Electrical Machines
EET	341	3	Measurements/Instrumentation
MATH	211	3	Intermediate Calc. & Diff Eqs w/Applications

14 cr.

Spring Semester -- Junior Year

CMPET	355	3	Intermediate Microprocessors
EET	275	3	Intro Program Logic Controllers
EET	315	3	Linear/Discrete Sys Anal
EET	330	3	Communication Systems

12 cr.

Fall Semester -- Senior Year

EET	416	3	Fluids/Thermal in Electric Sys
EET	440	3	Applied Feedback Controls
EET	480	1	ECET Systems Senior Design
Tech Elect		3	*select from School list*
Tech Elect		3	*select from School list*

13 cr.

Spring Semester -- Senior Year

QC	450	3	Quality Control and Quality Improvement
EET	490W	3	ECET Senior Design Project
Tech Elect		3	*select from School list*
S/H/A		3	*select from Univ Gen Ed list*
S/H/A		3	*select from Univ Gen Ed list*

15 cr.

The courses above apply for the Electrical (EET) option. For the Computer (CMPET) option, students complete:

- **CMPET 333 in place of EET 330**
- **CMPET 456 in place of EET 416**
- **CMPET 457 in place of EET 440**