

A 3-2 PROGRAM OF COLLEGIATE EDUCATION

in

LIBERAL ARTS AND SCIENCE  
AND ENGINEERING

at

ELIZABETHTOWN COLLEGE

AND

THE PENNSYLVANIA STATE UNIVERSITY

April 2004

## A. INTRODUCTION

The faculties of Elizabethtown College and the Colleges of Engineering and Earth and Mineral Sciences of The Pennsylvania State University agree to establish an educational program in liberal arts and sciences and engineering. Three years, or the equivalent, will be spent by a participating student at Elizabethtown College, where the student will study liberal arts and science subjects along with pre-engineering courses. Upon satisfactory completion of the first three years and recommendation, the student will enter the Pennsylvania State University and complete the engineering major degree requirements. A successful completion of these programs will lead to an appropriate baccalaureate degree from each institution. Such a cooperative program is being created in an effort to fulfill the following objectives:

- i. To cooperatively provide a general education in liberal arts and sciences, as well as engineering education for each student enrolled, so that through approximately five years of study, depending on the major and completion of recommended courses, a student may complete what otherwise could require six or more years.
- ii. To provide a student who has not yet decided between engineering and other disciplines, additional time to make that decision while the student studies both arts and sciences during the first three years at Elizabethtown College.
- iii. To enable The Pennsylvania State University to attract a more diverse population to its engineering programs.
- iv. To enable qualified students to receive both a liberal and technical education at relatively low cost and, in so doing, provide the Commonwealth and the Nation with more broadly educated engineers.

## B. PROCEDURES

Counseling, admission and the transfer of students in this 3-2 cooperative program will be through the application of the following procedures and policies:

1. Application for admission to the program will be made to Elizabethtown College, where the candidate will be subject to the admission requirements of that institution. An individual who has been registered as a degree candidate and established a degree candidate record at The Pennsylvania State University prior to entering the 3-2 program at Elizabethtown College will be considered a re-enrollment candidate and must meet the criteria for re-enrollment in the major at The Pennsylvania State University.
2. A student will indicate the desire to follow the 3-2 program either at the time of the student's admission to Elizabethtown College, or early enough in the student's program to permit the student to complete as many of the suggested prerequisite courses, listed in the Appendix of this contract, as possible. Results from aptitude and achievement tests, records of scholastic achievement, and other pertinent information will be exchanged between institutions to aid both in guiding and in counseling students and prospective students. The Pennsylvania State University will provide Elizabethtown College with copies of curriculum planning guides used by advisers at Penn State for each major.

Elizabethtown College is responsible for informing students in the 3-2 program of the requirements for admission to Penn State, as described in this document and is encouraged to provide each student with a copy of this contract. Students should also be made aware of the courses that are available at Elizabethtown College that can be used to meet degree requirements for each of the majors that are part of this agreement. To that end, students should be provided with a copy of the Appendix to this contract.

Students should be advised by Elizabethtown College that some government-provided financial aid may not be available for a total of more than four years of study because engineering is considered, by financial-aid regulations, to be a four-year program. Students may, however, be eligible for merit-based scholarships after they complete one year of study at Penn State.

3. Each Fall semester (or term), the 3-2 program coordinator at Elizabethtown College shall provide the appropriate Dean's office of The Pennsylvania State University with a list of students at Elizabethtown College who have indicated their desire to participate in the 3-2 program. The names of students, their contact information, their intended major, and the year for which they will be seeking admission to Penn State shall be sent to the College of the students' intended major
4. The following engineering majors are available at Penn State to students participating in the 3-2 program. In the College of Engineering, Aerospace Engineering, Agricultural and Biological Engineering, Bioengineering<sup>1</sup>, Chemical Engineering<sup>1</sup>, Civil Engineering, Computer Engineering, Electrical Engineering, Engineering Science, Industrial Engineering, Mechanical Engineering, and Nuclear Engineering are available. In the College of Earth and Mineral Sciences, Environmental Systems Engineering, Materials Science and Engineering, Mining Engineering, and Petroleum and Natural Gas Engineering are available.
5. At the end of the first (Fall) semester of the third year, a student becomes a candidate for transfer for any of the available majors if the student has completed the entrance-to-major course requirements<sup>2</sup> and has attained a cumulative grade point average of 3.00<sup>3</sup> (on a 4.00 scale) or greater, with the following exceptions. Majors that are under enrollment control at Penn State will be available to students who have and maintain a cumulative grade point average of 3.50 or higher. In all cases, the cumulative grade point average that will be used to determine eligibility for an engineering major will be calculated by the method used at Penn State. Original grades for courses that were repeated along with grades for any the same courses that were repeated will be used in the calculation. Elizabethtown College may require higher academic standards for transfer.
6. The student should submit an application (available on the Web) to the Admissions Office of The Pennsylvania State University in the Fall of the student's third year at Elizabethtown College. The application should clearly indicate that the student is applying as a 3-2 student. It should be submitted promptly and no later than February 1 of the applicant's third year at Elizabethtown College. The completed application should be supported by the following documents:
  - a) Final high school record
  - b) Two copies of the official Elizabethtown College transcript, including all grades earned through the Fall Semester or Term of the third year
  - c) Schedule of courses for the Spring of the third year
  - d) Check sheet (see Appendix) of the courses taken and those planned for the Spring of the third year, as they relate to the Penn State courses listed for the requested engineering major. Students must retain a copy of the check sheet for their own records.

The application and supporting documents will be evaluated by the appropriate officer in the Admissions Office and the respective Dean's Office of the College of Engineering or Earth and Mineral Sciences at The Pennsylvania State University. If the applicant meets the entrance requirements, the applicant will be offered provisional admission to The Pennsylvania State University in the 3-2 program, commencing with the following summer session or fall semester.

At the completion of the third year, two copies of the final official transcript of work taken at Elizabethtown College should be forwarded to the Admissions Office. The applicant's admission to The Pennsylvania State University will be changed from a provisional basis to a permanent basis if the student has maintained the minimum cumulative grade point average required for the major, is in good standing at Elizabethtown

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<sup>1</sup> It is highly likely that more than two years will be required at PSU to complete the degree requirements for BIOE and CHE because major courses are not offered every semester.

<sup>2</sup> For College of Engineering majors, a minimum grade of 'C' is required in calculus I and II (8 credits), calculus-based physics (4 credits, mechanics), and general chemistry (3 credits).

<sup>3</sup> In a few majors, a 2.75 average will be sufficient for entrance. While these may change from year to year, students may enter Agricultural and Biological Engineering (A B E) and the majors in the College of Earth and Mineral Sciences (EMS) with a minimum cumulative grade point average of 2.75.

College, and has fulfilled all conditions, if any, specified in the student's provisional admission. A minimum of 76 transferable and applicable credits must be completed at Elizabethtown College. The student will be placed in the major in which provisional admission was offered, provided all entrance conditions are met. Under normal circumstances, failure to meet the conditions of provisional admission will result in the voiding of the offer of admission for the student and in his or her ineligibility to participate in the 3-2 program.

7. The suggested and available exposure to mathematics, science, engineering science, computer, liberal arts, and communications courses at Elizabethtown College is illustrated in the Appendix. The only required courses are those listed in Section B-5. However, it is in the student's best interest to complete as many of the suggested courses for their intended engineering major as possible at Elizabethtown College so that they can complete the degree requirements at Penn State in the most timely manner. Course numbers and descriptions may change by the actions of the Elizabethtown College faculty or Penn State faculty. In such cases, the Appendix only would need to be amended. Elizabethtown College will receive regular updates about changes at Penn State and will be expected to regularly inform Penn State of changes at Elizabethtown College, as they relate to the 3-2 program. Students must bring a completed check sheet (see Appendix) with them for their first meeting with their engineering faculty advisor.

The student's preparedness for engineering courses will be assessed by his/her major department and will be based on the courses taken at Elizabethtown College, as described on the completed course check list. If the student has not taken all the possible recommended courses at Elizabethtown College, it is very likely that more than two years (4 semesters) will be required to complete the Penn State degree requirements. The need to take missing requirements and the effect this may have on the student's graduation date will be determined by the student's major department at Penn State.

8. As soon as it becomes known, Penn State will notify Elizabethtown College of any changes in the majors that are under enrollment control. Normally, decisions about the majors that will be under enrollment control are made about two years before the students for whom the controls would apply are admitted to a major.
9. This agreement shall be reviewed on a 5-year cycle. As part of the review process, special attention will be paid to the total number of students and to the number of women and members of other under-represented groups in engineering that participate in the program from Elizabethtown College. A lack of response to requests for information and lack of adequate participation may result in termination of the agreement.

Robert N. Pangborn 5/27/04  
 Robert N. Pangborn Date  
 Associate Dean  
 College of Engineering

Robert Crane 5/24/04  
 Robert Crane Date  
 Associate Dean  
 College of Earth and Mineral Sciences

John J. Romano 6/16/04  
 John J. Romano Date  
 Vice Provost and Dean  
 Enrollment Management and Administration  
 The Pennsylvania State University

Donald B. Kraybill 13 May 2004  
 Donald B. Kraybill Date  
 Provost  
 Elizabethtown College

David Ferruzza May 12, 2004  
 David Ferruzza Date  
 Director of Engineering Programs  
 Elizabethtown College

## APPENDIX

Check sheets for core and major specific courses to be taken at  
Elizabethtown College  
by students wishing to become eligible for the  
3-2 Engineering Cooperative agreement with  
The Pennsylvania State University

Available at:

<http://www.engr.psu.edu/ProspectiveStudents/Undergraduate/3-2instlist.asp>

Name: \_\_\_\_\_

Student No.: \_\_\_\_\_

### 3-2 Engineering Program Courses for Core Curriculum

The Pennsylvania State University 3-2 Institution: **Elizabethtown College**

Course	Credits	Course Title	3-2 Course	Credits	Grade
CHEM 12	3	Chemical Principles	CH 105	4	_____
<sup>1</sup> CHEM 14	1	Experimental Chemistry I	Part of CH 105	-----	-----
<sup>2</sup> CMPS 201	3	Computer Programming for Engineers	CS 121	4	_____
<sup>3</sup> E MCH 11	3	Statics	EGR 262	3	_____
<sup>4</sup> ED&G 100	3	Introduction to Engineering Design and Graphics	EGR 100, 110	4	_____
ENGL 15	3	Rhetoric and Composition	EN 100	4	_____
ENGL 202C	3	Effective Writing: Technical Writing	EN 282	4	_____
HL SC	3	Health Education and Exercise and Sport Activities	3 1-credit PE courses	3	_____
MATH 140	4	Calculus and Analytic Geometry I	MA 121	4	_____
MATH 141	4	Calculus and Analytic Geometry II	MA 122	4	_____
<sup>5</sup> MATH 220	2	Matrices	MA 201	3	_____
<sup>6</sup> MATH 230	4	Calculus and Vector Analysis	MA 222	4	_____
MATH 251	4	Ordinary and Partial Differential Equations	MA 321	4	_____
PHYS 211	4	General Physics (Mechanics)	PHY 200	4	_____
PHYS 212	4	General Physics (Electricity and Magnetism)	PHY 201	4	_____
CAS 100	3	Effective Speech	COM 105	4	_____
Arts Elective	3	Architecture, Art History, Integrative Arts,	_____	4	_____
Arts Elective	3	Landscape Architecture, Music, Theatre Arts	_____	4	_____
<sup>7</sup> Humanities Elective	3	American Studies, Classics, History, Humanities,	_____	4	_____
Humanities Elective	3	Multi-Ethnic Studies, Philosophy, Religious Studies	_____	4	_____
ECON 2 or ECON 4	3	Intro to Microecon. or Macroecon. Analysis and Policy	EC <del>100</del> or 102	4	_____
Social & Behavioral Science Elective	3	Anthropology, Human Development, Political Science, Psychology, Sociology	_____	4	_____

<sup>1</sup>Except AERSP, M E<sup>2</sup>Except A B E<sup>3</sup>Except CH E, CMPEN, MATSE (PLMSE)<sup>4</sup>Except CMPEN, ENVSE, MATSE, PNGE<sup>5</sup>Except A B E, PNG E<sup>6</sup>Except ENVSE, MNG E<sup>7</sup>PNG E and MNG E require an ethics elective

Name: \_\_\_\_\_

Student No.: \_\_\_\_\_

### Additional 3-2 Program Courses for Specific Engineering Majors\*

The Pennsylvania State University

3-2 Institution: **Elizabethtown College**

Major	Course	Credits	Course Title	3-2 Course	Credits	Grade
BIO E, CH E, E SC, M E, ALL EMS (except MNG E)	CHEM 13	3	Chemical Principles	No Equivalent	-----	-----
BIO E, CH E, E SC, MATSE, PNG E	CHEM 15	1	Experimental Chemistry	No Equivalent	-----	-----
BIO E, CH E, MATSE(PLMSE)	CHEM 38	3	Organic Chemistry	CH 113	4	-----
COMPEN	CSE 120	3	Intermediate Programming	CS 122	4	-----
ALL ENGR but CH E, COMPEN, E E, and MATSE(PLMSE)	E MCH 12	3	Dynamics	ENGR 263	3	-----
ALL ENGR but CH E, COMPEN, E E, ENVSE, and MATSE(PLMSE)	E MCH 13	3	Strength of Materials	ENGR 264	3	-----
C E, PNG E	GEOSC 1	3	Physical Geology	ES 114	4	-----
ENVSE, MNG E	GEOSC 071	3	Physical Geology for Engineers	No Equivalent	-----	-----
ALL ENGR but CH E, COMPEN, E E, E SC, MNG E, and PNG E	M E 23/30	3	Introduction to Thermal Science/ Engineering Thermodynamics I	PHY 321	3	-----
C E, COMPEN, E E, M E	STAT 401/418	3	Experimental Methods/Probability	MA 252 / 351	3/4	-----
BIO E, CH E, MATSE(PLMSE)	CHEM 36, 39	2, 3	Organic Chemistry and Lab	CH 114	4	-----
BIO E, COMPEN, E E, I E	CSE 271, 275	3, 1	Introduction to Digital Systems & Lab	EGR 333	4	-----
BIO E, COMPEN, E E, E SC	EE 210	4	Circuits and Devices	EGR 210	4	-----
AERSP, E E, E SC, PNGE, MNG E	PHYS 213	2	Fluids & Thermodynamics	PHY 202	4	-----
ALL ENGR but A B E, C E, I E, ENVSE, PNG E, and MNG E	PHYS 214	2	Waves & Quantum Physics	PHY 221	3	-----

\* College of Engineering (ENGR) Majors:

AERSP Aerospace Engineering  
 A B E Agricultural and Biological Engineering  
 BIO E Bioengineering  
 CH E Chemical Engineering  
 CE Civil Engineering  
 COMPEN Computer Engineering  
 E E Electrical Engineering  
 E SC Engineering Science  
 I E Industrial Engineering  
 M E Mechanical Engineering  
 NUC E Nuclear Engineering

College of Earth and Mineral Sciences (EMS) Majors:

ENVSE Environmental Systems Engineering  
 MATSE Material Science and Engineering  
 (PLMSE) Polymer Science and Engineering Option of  
 MATSE  
 MNG E Mining Engineering  
 PNGE Petroleum and Natural Gas Engineering