PLASTICS ENGINEERING TECHNOLOGY, B.S.

Begin Campus: Any Penn State Campus
End Campus: Erie

Program Description
This major prepares graduates with the knowledge and skills needed to provide high level engineering technology support to a wide variety of industrial, developmental, commercial, consulting, and sales organizations dealing with the development, manufacture and/or distribution of plastics related products, materials and technologies. The program emphasizes the integration of engineering and scientific principles, practical hands-on experience, application of state-of-the-art computer technologies, and management methods.

Graduates are qualified for positions in product development, part design, tooling design, R&D, processing, plant engineering, production control, technical sales and marketing in the plastics industry, and are provided a path to a wide variety of graduate degrees in engineering, science or business.

The four-year baccalaureate program is accredited by the Engineering Technology Accreditation Commission of ABET, www.abet.org (http://www.abet.org). Graduates of the Penn State University associate degree program in Mechanical Engineering Technology may complete this degree in five semesters of full-time study.

What is Plastics Engineering Technology?
Plastics engineering technology is a unique undergraduate engineering discipline that studies optimization of the physical processes required to form raw plastics into useable, cost-efficient parts and components. Coursework in the discipline includes computer-aided design, materials properties, tool design and machining, fluid and thermal science, automation, and project management.

You Might Like This Program If...
- You recognize the ubiquity of plastics—they are everywhere!
- You are a creative problem solver.
- You are looking for a hands-on engineering discipline.
- You’d like to learn and conduct research in the country’s largest undergraduate plastics processing lab.

Entrance to Major
To be eligible for entrance to the Plastics Engineering Technology major, a student must have:
1. attained at least a 2.00 cumulative grade-point average;
2. completed MATH 81 or MATH 26, and MATH 82 or MATH 22, and MATH 83 or MATH 140, and PHYS 250, and earned a grade of C or better in each of these courses.

Degree Requirements
For the Bachelor of Science degree in Plastics Engineering Technology, a minimum of 134 credits is required:

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Education</td>
<td>45</td>
</tr>
<tr>
<td>Electives</td>
<td>1</td>
</tr>
<tr>
<td>Requirements for the Major</td>
<td>106</td>
</tr>
</tbody>
</table>

18 of the 45 credits for General Education are included in the Requirements for the Major. This includes: 9 credits of GN courses; 6 credits of GQ courses; 3 credits of GWS courses.

Per Senate Policy 83.80.5, the college dean or campus chancellor and program faculty may require up to 24 credits of coursework in the major to be taken at the location or in the college or program where the degree is earned.

General Education
Connecting career and curiosity, the General Education curriculum provides the opportunity for students to acquire transferable skills necessary to be successful in the future and to thrive while living in interconnected contexts. General Education aids students in developing intellectual curiosity, a strengthened ability to think, and a deeper sense of aesthetic appreciation. These are requirements for all baccalaureate students and are often partially incorporated into the requirements of a program. For additional information, see the General Education Requirements (http://bulletins.psu.edu/undergraduate/general-education/baccalaureate-degree-general-education-program/) section of the Bulletin and consult your academic adviser.

The keystone symbol appears next to the title of any course that is designated as a General Education course. Program requirements may also satisfy General Education requirements and vary for each program.

Foundations (grade of C or better is required.)
- Quantification (GQ): 6 credits
- Writing and Speaking (GWS): 9 credits

Knowledge Domains
- Arts (GA): 6 credits
- Health and Wellness (GHW): 3 credits
- Humanities (GH): 6 credits
- Social and Behavioral Sciences (GS): 6 credits
- Natural Sciences (GN): 9 credits

Integrative Studies (may also complete a Knowledge Domain requirement)
- Inter-Domain or Approved Linked Courses: 6 credits

University Degree Requirements
First Year Engagement
All students enrolled in a college or the Division of Undergraduate Studies at University Park, and the World Campus are required to take 1 to 3 credits of the First-Year Seminar, as specified by their college First-Year Engagement Plan.

Other Penn State colleges and campuses may require the First-Year Seminar; colleges and campuses that do not require a First-Year Seminar provide students with a first-year engagement experience.

First-year baccalaureate students entering Penn State should consult their academic adviser for these requirements.

Cultures Requirement
6 credits are required and may satisfy other requirements.
Writing Across the Curriculum
3 credits required from the college of graduation and likely prescribed as part of major requirements.

Total Minimum Credits
A minimum of 120 degree credits must be earned for a baccalaureate degree. The requirements for some programs may exceed 120 credits. Students should consult with their college or department adviser for information on specific credit requirements.

Quality of Work
Candidates must complete the degree requirements for their major and earn at least a 2.00 grade-point average for all courses completed within their degree program.

Limitations on Source and Time for Credit Acquisition
The college dean or campus chancellor and program faculty may require up to 24 credits of course work in the major to be taken at the location or in the college or program where the degree is earned. Credit used toward degree programs may need to be earned from a particular source or within time constraints (see Senate Policy 83-80). For more information, check the Suggested Academic Plan for your intended program.

Requirements for the Major
Each student must earn at least a grade of C in each 300- and 400-level course in the major field.

To graduate, a student enrolled in the major must earn a grade of C or better in each course designated by the major as a C-required course, as specified by Senate Policy 82-44. Credit used toward degree programs may need to be earned from a particular source or within time constraints. For more information, check the Suggested Academic Plan for your intended program.

A minimum of 120 degree credits must be earned for a baccalaureate degree. The requirements for some programs may exceed 120 credits. Students should consult with their college or department adviser for information on specific credit requirements.

Quality of Work
Candidates must complete the degree requirements for their major and earn at least a 2.00 grade-point average for all courses completed within their degree program.

Limitations on Source and Time for Credit Acquisition
The college dean or campus chancellor and program faculty may require up to 24 credits of course work in the major to be taken at the location or in the college or program where the degree is earned. Credit used toward degree programs may need to be earned from a particular source or within time constraints (see Senate Policy 83-80 (http://senate.psu.edu/policies-and-rules-for-undergraduate-students/82-00-and-83-00-degree-requirements/#83-80)). For more information, check the Suggested Academic Plan for your intended program.

Prescribed Courses: Require a grade of C or better
CHEM 100 Chemical Principles I 3
CHEM 111 Experimental Chemistry I 1
ENGL 202C Effective Writing: Technical Writing 3
MCHT 111 Mechanics for Technology: Statics 3
MCHT 213 Strength and Properties of Materials 3
MET 518 Finite Element Analysis for Plastics Design 3
MGMT 509 Project Management for Engineers 3
PHYS 250 Introductory Electromagnetics 4
PLET 50 Computer Applications for Plastics Engineering Technology 2
PLET 205 Introduction to Plastics 3
PLET 206W Plastic Materials and Properties 3
PLET 222 Introduction to Plastics Processing 4
PLET 227 Plastics Processing & Statistical Methods 4
PLET 232 Introduction to Part and Tool Design 3
PLET 235 Tool Design & Machining 2
PLET 304 Plastic Material Properties and Applications 3
PLET 323 Packaging Processes 3
PLET 330 Advanced Tooling & Rheology 4
PLET 345 Heat Transfer 2
PLET 350 Design of Plastic Parts 4
PLET 366 Fluid and Thermal Sciences 3
PLET 425 Automation for Plastics Processes 2
PLET 477 Novel and Emerging Technologies 2
PLET 481 Plastic Product Development 3
PLET 494A Plastics Projects 3

Additional Courses
Additional Courses: Require a grade of C or better
Select 15 credits of one of the following sequences: 15

Sequence A
MATH 22 College Algebra II and Analytic Geometry
or MATH 82 Technical Mathematics II
MATH 26 Plane Trigonometry
or MATH 81 Technical Mathematics I
MATH 83 Technical Calculus
or MATH 140 Calculus With Analytic Geometry I
MATH 210 Calculus with Engineering Technology Applications
Select 2 credits of GN electives

Sequence B
MATH 140 Calculus With Analytic Geometry I
MATH 141 Calculus with Analytic Geometry II
Select 2 credits of GN electives
Select 5 credits of general electives

Supporting Courses and Related Areas
Select a total of 9 credits of technical electives from School-approved list

Academic Advising
The objectives of the university’s academic advising program are to help advisees identify and achieve their academic goals, to promote their intellectual discovery, and to encourage students to take advantage of both in-and out-of class educational opportunities in order that they become self-directed learners and decision makers.

Both advisers and advisees share responsibility for making the advising relationship succeed. By encouraging their advisees to become engaged in their education, to meet their educational goals, and to develop the habit of learning, advisers assume a significant educational role. The advisee’s unit of enrollment will provide each advisee with a primary academic adviser, the information needed to plan the chosen program of study, and referrals to other specialized resources.

READ SENATE POLICY 32-00: ADVISING POLICY (http://senate.psu.edu/policies-and-rules-for-undergraduate-students/32-00-advising-policy/)

Erie
Jonathan Meckley
Program Chair, Associate Professor
213N Burke
Suggested Academic Plan

The suggested academic plan(s) listed on this page are the plan(s) that are in effect during the 2020-21 academic year. To access previous years’ suggested academic plans, please visit the archive (http://bulletins.psu.edu/undergraduate/archive/) to view the appropriate Undergraduate Bulletin edition (Note: the archive only contain suggested academic plans beginning with the 2018-19 edition of the Undergraduate Bulletin).

Plastics Engineering Technology at Erie Campus

The course series listed below provides only one of the many possible ways to move through this curriculum. The University may make changes in policies, procedures, educational offerings, and requirements at any time. This plan should be used in conjunction with your degree audit (accessible in LionPATH as either an Academic Plan or What If report). Please consult with a Penn State academic adviser on a regular basis to develop and refine an academic plan that is appropriate for you.

First Year

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
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<tr>
<td>EGT 120</td>
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<td>ENGL 15 or 30†</td>
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<td>MATH 81‡#†</td>
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<td>MATH 121</td>
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<tr>
<td>PLET 50*</td>
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<td>MATH 82‡#†</td>
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<td>PHYS 250‡#†</td>
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Second Year

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<tbody>
<tr>
<td>CAS 100†</td>
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<td>MATH 210*</td>
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<tr>
<td>MATH 83‡#†</td>
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<td>MCHT 213*</td>
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<td>MCHT 111*</td>
<td>3</td>
<td>PLET 206W†</td>
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<td>PLET 205*</td>
<td>3</td>
<td>PLET 227*</td>
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<tr>
<td>PLET 222*</td>
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<td>PLET 235*</td>
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Third Year

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<tbody>
<tr>
<td>MATH 211</td>
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<td>ENGL 202C‡†</td>
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<tr>
<td>MGMT 409*</td>
<td>3</td>
<td>MET 418*</td>
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<tr>
<td>PLET 304*</td>
<td>3</td>
<td>PLET 323*</td>
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<tr>
<td>PLET 330*</td>
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<td>PLET 345‡</td>
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Fourth Year

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<td>PLET 425*</td>
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<td>PLET 494A*</td>
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<tr>
<td>PLET 477*</td>
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<td>SCM 301*</td>
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<td>PLET 481*</td>
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<td>PLET 494A*</td>
<td>1</td>
<td>General Education Course</td>
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<tr>
<td>Technical Elective (300, 400-level)†</td>
<td>3</td>
<td>General Education Course</td>
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<td>General Education Course</td>
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<td>General Education Course (GHW)</td>
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|               |         |             |         |
|               |         | Credits     | Credits |
|               |         | 16          | 16      |

Total Credits 134

* Course requires a grade of C or better for the major
† Course requires a grade of C or better for General Education
# Course is an Entrance to Major requirement
‡ Course satisfies General Education and degree requirement

University Requirements and General Education Notes:

US and IL are abbreviations used to designate courses that satisfy University Requirements (United States and International Cultures).

W, M, X, and Y are the suffixes at the end of a course number used to designate courses that satisfy University Writing Across the Curriculum requirement.

GWS, GQ, GHW, GN, GA, GH, and GS are abbreviations used to identify General Education program courses. General Education includes Foundations (GWS and GQ) and Knowledge Domains (GHW, GN, GA, GH, GS, and Integrative Studies). Foundations courses (GWS and GQ) require a grade of ‘C’ or better.

Integrative Studies courses are required for the General Education program. N is the suffix at the end of a course number used to designate an Inter-Domain course and Z is the suffix at the end of a course number used to designate a Linked course.

Course will satisfy Writing Across the Curriculum requirement.

Program Note:

• Permissible Math substitutions: MATH 26 instead of MATH 81, MATH 22 instead of MATH 82, MATH 140 instead of MATH 83.

Career Paths

Penn State Behrend’s B.S. in Plastics Engineering Technology is the only plastics-specific undergraduate degree in the Penn State system and one of only six accredited programs in the United States. Because plastics are everywhere, plastics engineering technologists find employment in any industry sector that interests them. Automotive, aerospace, medical, electronics, computer, toy, and consumer products manufacturers frequently recruit Behrend graduates for positions in product development, part design, tooling design, processing, project engineering, production control, technical sales, and research.
Careers
Employers of recent B.S. in Plastics Engineering Technology graduates include Apple, General Motors, Graham Packaging, Graco, Microsoft, Nike, Philips Healthcare, Rubbermaid, and Tesla.

MORE INFORMATION ABOUT POTENTIAL CAREER OPTIONS FOR GRADUATES OF THE PLASTICS ENGINEERING TECHNOLOGY PROGRAM (http://behrend.psu.edu/school-of-engineering/academic-programs/plastics-engineering-technology/)

Opportunities for Graduate Studies
Students who hold a degree in Plastics Engineering Technology pursue master's and doctoral degrees in plastics engineering, polymer science, materials science, medical plastics, and elastomeric materials. Or, you can use a master's degree program to learn management skills; Penn State Behrend offers a Master of Manufacturing Management (M.M.M.) degree program for aspiring organizational leaders.

MORE INFORMATION ABOUT OPPORTUNITIES FOR GRADUATE STUDIES (http://behrend.psu.edu/school-of-engineering/academic-programs/master-of-manufacturing-management/)

Professional Resources
• ABET (http://www.abet.org/)
• Society of Plastics Engineers (https://www.4spe.org/membership/)
• Institution of Engineering and Technology (http://societyofwomenengineers.swe.org/)
• Society of Women Engineers (http://societyofwomenengineers.swe.org/)
• National Society of Black Engineers (http://www.nsbe.org/home.aspx)

Accreditation

ABET is a nonprofit, non-governmental accrediting agency for programs in applied and natural science, computing, engineering and engineering technology and recognized as an accreditor by the Council for Higher Education Accreditation. ABET accreditation is voluntary and provides assurance that a college or university program meets the quality standards of the profession for which that program prepares graduates. The School of Engineering at Penn State Behrend consistently places in the Top 50 in U.S. News & World Report's rankings of the nation's undergraduate engineering programs.

MORE INFORMATION ABOUT ABET ACCREDITATION (http://www.abet.org/)

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