

TO: Kathy Pollock, Chair, Senate Executive Committee  
FROM: Carol Lawton, Chair, Curriculum Review Subcommittee *Carol A. Lawton*  
DATE: January 18, 2019  
SUBJECT: Proposal for Minor in Materials Engineering Technology

Curriculum Review Subcommittee members support the proposal from the School of Polytechnic for a Minor in Materials Engineering Technology. We find that the proposal (attached) requires no Senate review.

Approving

Swathi Baddam  
Seth Green  
Carol Lawton  
Vincent Maloney  
Sue Skekloff  
Kate White

Not Approving

Absent

Jin Soung Yoo (approval by email)  
Julia Smith

**Degree/Certificate/Major/Minor/Tracks/Specialization/Concentration Cover Sheet**

Date: September 2018

Institution: Purdue University

Campus: Fort Wayne

School or College: Engineering, Technology, and Computer Science

Department: School of Polytechnic

Location: On Campus      50% or more online: Yes  No

County: Allen

Type: Minors: New

Program name:

Materials Engineering Technology

Graduate/Undergraduate: Undergraduate

Degree Code: Other

Brief Description:

New minor in Materials Engineering Technology (see attached documentation for details)

Rationale for new or terminated program:  
(see attached documentation for details)

CIP Code: 14.1801

Name of Person who Submitted Proposal:

Barry Dupen

Contact Information (phone or email): dupenb@pfw.edu

Undergraduate Academic Program Memo

Date: 11 September, 2018  
From: Barry Dupen  
To: Gary Steffen, Manoochehr Zoghi, Carl Drummond, Ronald Elsenbaumer  
Re: Materials Engineering Technology Minor

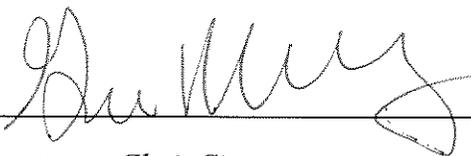
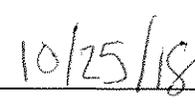
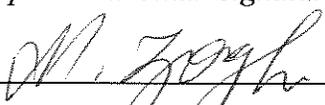
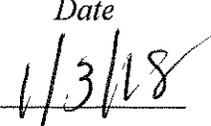
**Brief description of the program:**

The proposed Materials Engineering Technology minor comprises six courses in Engineering Materials which include practical laboratory skills, an introduction to the broad field of materials, and specialized courses in materials topics important to industry in our region (such as steelmaking and biomaterials).

**Brief rationale for program request:**

Northeast Indiana, northwest Ohio, and southern Michigan exceed national averages in manufacturing employment. A solid understanding of engineering materials will make our graduates more useful to regional industry. The School of Polytechnic is well-positioned to teach Engineering Materials, having two full-time faculty with Materials Ph.D.s, and two practicing Materials engineers on staff as LTLs.

**CIP Code:** 14.1801

	
Department Chair Signature	Date
	
School Dean Signature	Date
	
Vice Chancellor for Academic Affairs Signature	Date

**COLLEGE OF ENGINEERING, TECHNOLOGY, AND COMPUTER SCIENCE (ETCS)  
ASSEMBLY OF REPRESENTATIVES**

ASSEMBLY OF REPRESENTATIVES DOCUMENT

Document No. 18-19(2)

Date 11 September 2018

*(Date sent forward)*

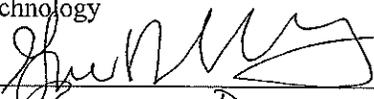
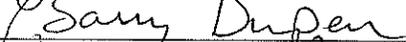
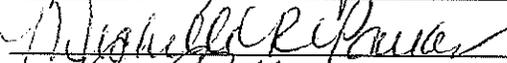
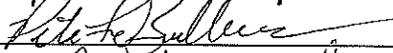
To: Curriculum Committee

**College of Engineering, Technology, and Computer Science**

The Curriculum Committee for the School of Polytechnic submits the attached document for your recommendation.

Entitled: Minor in Materials Engineering Technology

Committee:

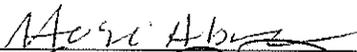
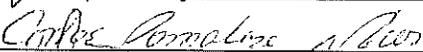
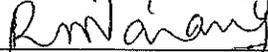
 \_\_\_\_\_ Director  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

*(Signatures of all department committee members)*

To: Assembly of Representatives

**The Curriculum Committee of the College of Engineering, Technology, and Computer Science**

Approved       Disapproved      # of votes: Yes 5    No 0      10-25-18  
Date

 \_\_\_\_\_ CME  
 \_\_\_\_\_ CS  
 \_\_\_\_\_ ECE  
 \_\_\_\_\_ OL  
 \_\_\_\_\_ POLY

*(Signatures of all Assembly committee members)*

To: Dean, ETCS

Approved       Disapproved       \_\_\_\_\_ 11-12-18  
Date

**Purdue University Fort Wayne**  
**Request for a New Minor in Materials Engineering Technology**

Proposed Title of Minor: *Materials Engineering Technology*

Department Offering the Minor: *School of Polytechnic*

Projected Date of Implementation: *Fall 2019*

I. Why is this minor needed? (Rationale)

*In 2015, the VCAA's office expressed interest in establishing a new materials-related educational program on campus. The MET Program recommended against establishing a full-blown B.S. program because only 1.7% of all B.S. engineering degrees in the U.S. are awarded in the materials field (materials science, materials engineering, metallurgy, polymer science, ceramics), and we could not justify hiring 4 professors and a lab technician, and building the four new laboratories required to make the program viable. We did not believe ICHE would approve a B.S. degree program in Fort Wayne.*

*However, Indiana leads the nation in both steelmaking and in the percentage of its residents employed in manufacturing. Much of this manufacturing is centered on advanced materials (biomedical, aerospace, and automotive industries), therefore, engineers who have a minor in Materials Engineering Technology will be more useful to industry than engineers lacking this educational background.*

*The School of Polytechnic employs the only two Purdue Fort Wayne faculty members having doctoral degrees in materials and engineering experience in the field, making the School ideally suited to offering a Materials Engineering Technology minor. In addition, two practicing metallurgists teach materials courses in the MET program part-time.*

II. List the major topics and curriculum of the minor.

*Major topics include materials processing; materials characterization; materials testing; structure/property relationships; the interaction between material and design; recycling and resource recovery; corrosion processes and prevention; failure analysis and prevention; materials selection; and specifications.*

*Required courses:*

- MET 18000 (Materials & Processes, 3 cr.), or ME 30300 (Materials Science & Engineering, 2 cr.) and ME 30400 (Mechanics & Materials Lab, 1 cr.)*
- ET 22000 (Materials Characterization, 3 cr.)*

*Four of the following courses:*

- ET 23000 (Introduction to Polymers, 3 cr.)*
- ET 24000 (Steelmaking, Forming, & Heat Treating, 3 cr.)*

- ET 31000 (*Failure Analysis, 3 cr.*)
- ET 32000 (*Biomedical Materials, 3 cr.*)
- ET 34000 (*Corrosion Control, 3 cr.*)
- MET 381 (*Engineering Materials, 3 cr.*)
- *Related materials course developed in the future*

*Total of 18 credit hours.*

III. What are the admission requirements?

*There are no special admission requirements (GPA or class standing) for admission into this minor.*

IV. Describe student population to be served.

*This minor will serve the needs of MET, IET, and ME undergraduate students.*

V. How does this minor complement the campus or departmental mission?

*This minor will serve the USAP goal of the former MCET Department (now part of the School of Polytechnic) offering a minor in Materials Engineering Technology, and meets the School's mission of supporting career aspirations of undergraduate students by developing educational programs to meet these needs.*

VI. Describe any relationship to existing programs within the university.

*The minor complements the MET, IET, and ME programs. Faculty will be drawn from the MET program and from local industry.*

*The College of Arts and Sciences has begun a minor in Materials Science, focusing on scientific rather than engineering applications. A working group of faculty from COAS and Polytechnic expects that the two minors will be complementary, sharing some courses and laboratories. For example, the COAS minor includes MET 18000, and the Polytechnic minor could well include the COAS electron microscopy course.*

VII. List and indicate the resources required to implement the proposed minor. Indicate sources (e.g., reallocations or any new resources such as personnel, library holdings, equipment, etc.).

*Full sets of ASM Handbooks and ASTM Standards are available at the Helmke library. No new resources will be required from the library.*

*The School of Polytechnic is gradually purchasing equipment required for a materials characterization laboratory, but at current funding levels, it will take another two years before the bare minimum of laboratory equipment is in place. University funds to complete the laboratory would greatly accelerate the launch of the minor. If 5% of the tuition fees of all MET students were allocated to laboratory equipment on a recurring basis, then the School could easily build and maintain the necessary laboratories for all MET lab courses.*

VIII. A Liaison Library Memo

IX. Describe any innovative features of the program (e.g., involvement with local or regional agencies, or offices, cooperative efforts with other institutions, etc.).

*The MET Industrial Advisory Committee strongly supports the creation of this minor.*

***When developing a new degree program, major, certificate, minor, concentration, track, or specialization please review the questions below when developing your response to the library or additional resources sections. Please consult your liaison librarian for assistance.***

### **Library Resources**

Address the following issues regarding the impact of the new program on the library's budget and personnel. Please respond to each item below indicating the library sources and services required to support the proposed program.

- Which databases/indexing sources will be used by the courses in this program?
  - ACM Digital Library
  - IEEE Xplore
  - Science Direct
  - Compendex
  - Scopus
  - Business Source Complete
  - Academic Search Premier
- What are the journals that will be used by students completing library research in this program? Please list three to five titles. Is there an expectation that access to new journals will need to be purchased for students in this program?

The following journal titles were selected based on their high impact factor in the disciplines related to engineering materials.

- *Advanced Materials*
- *Materials science & engineering. R, Reports : a review journal*
- *Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing*
- *Advanced Engineering Materials*
- *Journal of Materials Science and Technology*

The journals listed above and others related to engineering materials are covered in databases subscribed to by the library. The library performs an annual review of journal titles and databases subscription to consider adding or discontinuing subscriptions. The library will need to consider maintaining these subscriptions in upcoming budget requests in order to retain the same level of support for the program.

- Are there any specific reference sources (e.g. encyclopedias, handbooks, standards, etc.) required to support the new program?
  - At this time, no new references sources will be required to support the new minor. If the program grows significantly, the demand for materials such as ASTM standards and similar materials may necessitate the need for an increase in the recurring materials budget to cover the cost of ongoing subscriptions.
- Is there an expectation for additional books to be purchased? What about DVD or audio/visual materials? What is the estimated dollar amount needed yearly to support this program with new books and media materials?
  - This minor includes both existing and new courses in metallography, steelmaking, polymer science, failure analysis and prevention, and biomaterials. The library currently has a few resources in these areas and new purchases could be accommodated within the current monograph budget. Unless the program grows significantly, current monograph budget should be adequate to keep the collection up-to-date.
- Will the new program use the Library's Document Delivery Services? Costs for this service come out of the Library's budget. What types of materials would the program be requesting through DDS?
  - The addition of the minor should not significantly impact Document Delivery Services.
- Who is the liaison librarian for this program? The liaison librarian provides support through involvement in Blackboard-supported classes, one-on-one research consultations, in-class instructional sessions, and tailored course guides for research assignments. Which of these librarian services do you anticipate will be utilized in the new program?
  - Sarah Wagner, [wagners@ipfw.edu](mailto:wagners@ipfw.edu), is the liaison librarian for this program. The liaison librarian will be able to provide all of the services listed above. New services may be added as recommended by the liaison librarian.
- Memo from Liaison Librarian regarding resources.
- Is there an accrediting body that will be overseeing this program? What are the statements of the accrediting body related to the library, e.g. holdings, personnel, services?
  - This new minor program will not be accredited, separately the MCET programs are accredited by ABET.

## Liaison Librarian Memo

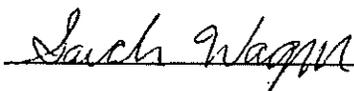
Date: 7/25/17  
From: Sarah Wagner, Information Services and Instruction Librarian  
To: Dr. Carl N. Drummond, Vice Chancellor for Academic Affairs  
Re: New Minor in **Materials Engineering Technology**

Describe availability of library resources to support proposed new program:

Currently, the library possesses the resources necessary to support this program, as it is based on existing courses and new courses on subjects of which the library collection currently has basic coverage. If the program grows significantly, additional resources may be required and these can be evaluated through document delivery requests.

### Comments:

The primary databases, journals, and books likely to be used by students and faculty involved in this program are either owned or subscribed to by the library at this time. Nevertheless, the library will need to take continuing support of the program into its future budget requests in order to maintain current subscriptions and to consistently update the print and electronic collection in this discipline. Finally, the library must support the need for new or additional materials reflecting changes in the profession, faculty teaching and research interests, as well as growth in the number of students in the program and their needs.



Liaison Librarian Signature

7-25-17

Date