Proposal Of A New Undergraduate Or Graduate Program

This document should not exceed 3-5 pages in length.

1. Proposing College / School: Engineering
   Department: Mechanical (Materials) Eng

2. Proposed Program Title: Minor in Materials Engineering

3. CIP Code of Proposed Program: MATL

4. Proposed Implementation Date: Fall 2012

5. Relationship of Proposed Program to the Auburn University Mission Statement and Strategic Plan:

(Auburn University's mission statement may be accessed at the following site: http://www.auburn.edu/administration/trustees/policymanual/vision_and_mission.html; Auburn University's strategic plan may be accessed at the following site: http://ocm.auburn.edu/strategic_plan/)

Materials engineering supports the practical emphasis of the land grant university mission. This minor will better prepare non-MATL majors for addressing materials issues in their careers and thus support Priority 1: Elevating Academics of Auburn University’s strategic plan.

6. Expected Program Outcomes and Assessment Methods:

(Expected outcomes must be stated clearly and must include student learning outcomes and an assessment plan for ascertaining the extent to which the expected outcomes are achieved and for designing improvements based on analysis of assessment results.)

Students completing the minor will have an understanding structure-property relationships of different types of materials and be able to apply this understanding to the processing and selection of materials for engineering applications.

In addition to evaluation of student work for course grade, separate assessment instruments are used to evaluate student performance relative to ABET student outcomes and these instruments will be used to evaluate students in the minor program.

7. Degree Requirements (Including All Formal Options):

(For programs at the undergraduate level, please provide a curriculum model for the program as well as for each formal option.)

<table>
<thead>
<tr>
<th>Required Courses</th>
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<tbody>
<tr>
<td>MATL 2100: Introduction to Materials Science (3)</td>
</tr>
<tr>
<td>MATL 3100: Engineering Materials – Metals (3)</td>
</tr>
<tr>
<td>MATL 3200: Engineering Materials – Polymers (3)</td>
</tr>
<tr>
<td>MATL 3300: Engineering Materials – Ceramics (3)</td>
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<table>
<thead>
<tr>
<th>Elective Courses (at least 3 credit hours from the following):</th>
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<tbody>
<tr>
<td>MATL 2210: Materials for Sustainable Energy Production and Storage (1)</td>
</tr>
<tr>
<td>MATL 2220: Materials and the Environment (1)</td>
</tr>
<tr>
<td>MATL 2230: Mineral Resources: Processing and Availability (1)</td>
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<tr>
<td>MATL 3101: Metallography Laboratory (1)</td>
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<tr>
<td>MATL 3201: Polymer and Composites Laboratory (1)</td>
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<tr>
<td>MATL 4500: Materials Properties and Selection (4)</td>
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<td>MATL 5600: Corrosion (3)</td>
</tr>
<tr>
<td>MATL 5700: Biomaterials (3)</td>
</tr>
<tr>
<td>MATL 5750: Microstructure and Mechanics of Skeletal Tissues (3)</td>
</tr>
</tbody>
</table>
8. Specific Admission and/or Continuation Requirements:

None

9. Existing Courses and New Courses Required:

All required and elective courses exist.

10. Relationship of Proposed Program to Other Auburn University Programs:

(If "yes" for either item, please provide explanation in the space provided below.)

Will the program support or be supported by other program(s) at Auburn University?

☐ Yes ☐ No

Will this program replace any existing program(s), or specializations / options / concentrations within existing program(s) at Auburn University?

☐ Yes ☐ No

11. New or Additional Resources / Resource Shifting Required:

(If "yes" for any item, please provide explanation in the space provided below.)

Will additional faculty lines be required?

☐ Yes ☐ No

Will new or additional space (e.g.: laboratory or classroom) be required?

☐ Yes ☐ No

Will additional library resources be required?

☐ Yes ☐ No

Will additional GTA support be required?

☐ Yes ☐ No

Explanation of or provision for new or additional resources / explanation of program's support or replacement of other programs:

12. Potential Duplication of Other Programs in the State:

(If the program would overlap with or duplicate a similar offering at another institution in the state, articulate the program's necessity and/or any differences from similar programs.)

Related programs in state:
University of Alabama: B.S. Metallurgical Engineering
UAB: B.S. in Materials Engineering
UAB has a minor in Materials Engineering which would serve a purpose similar to the proposed minor for UAB students.

13. Collaboration With Other Institutions:

(Indicate whether or not the proposed program will -- either immediately or in the future -- involve collaboration with other post-secondary institutions. If so, provide all relevant details.)

No plans for collaboration at this time.

14. Distance Education:

(If Distance Education will be incorporated in the delivery of the proposed program, provide details of implementation, scope, etc.)

The minor will be for on-campus students.

15. Documented Need for Proposed Program:

(Elaborate upon the methodology used to appropriately assess regional, state, or national need and/or student demand for program.)

Evidence of the need for knowledge on materials engineering is evident by students enrolled in the Master of Materials Engineering (M.Mt.I.E.) outreach program. Most of these students have undergraduate degrees in other disciplines and are pursuing the M.Mt.I.E. degree because they need an understanding of materials properties for their jobs.
16. Employment Opportunities:

(Provide specific examples of employment opportunities anticipated for graduates of the proposed program.)

Many engineers in other disciplines need understanding of material properties and performance. The following are a few examples where materials selection or design are important:

- An aerospace engineer selecting a lightweight material for an aircraft
- An electronics engineer fabricating an electronic device
- A mechanical engineer designing an automotive passenger cabin for improved safety
- A chemical engineer designing processing facility for improved corrosion resistance