September 27, 2007

MEMORANDUM

TO: Herbert Rabin  
Interim Dean, A. James Clark School of Engineering

FROM: Phyllis Peres  
Associate Provost for Academic Planning and Programs

SUBJECT: Proposal to add a Minor in Engineering Leadership Development (PCC log no. 06058)

On September 21, 2007, the Senate Committee on Programs, Curricula and Courses unanimously approved your proposal to add a Minor in Engineering Leadership Development. A copy of the approved proposal is attached.

The Minor is effective Spring, 2008. The College should ensure that the Minor is fully described in the Undergraduate Catalog and in all relevant descriptive materials, and that all advisors are informed.

CWR/

Enclosure

cc: Carmen Balthrop, Chair, Senate PCC Committee  
Sarah Bauder, Office of Student Financial Aid  
Mary Giles, University Senate  
Barbara Hope, Data Administration  
Denise Nadasen, Institutional Research & Planning  
Anne Turkos, Archives  
Linda Yokoi, Office of the Registrar  
Scott Wolpert, Undergraduate Studies  
Gary Perfmer, Clark School of Engineering  
Rachel Rose, Clark School of Engineering
THE UNIVERSITY OF MARYLAND, COLLEGE PARK
PROGRAM/CURRICULUM PROPOSAL

DIRECTIONS:
- Provide one form with original approval signatures in lines 1 - 4 for each proposed action. Keep this form to one page in length.
- Early consultation with the Office of the Associate Provost for Academic Planning & Programs is strongly recommended if there are questions or concerns, particularly with new programs.
- Please submit the signed form to Claudia Rector, Office of the Associate Provost for Academic Planning and Programs, 1119 Main Administration Building, Campus.
- Please email the rest of the proposal as an MSWord attachment to pcc-submissions@umd.edu.

DATE SUBMITTED_3/26/07__

A. JAMES CLARK SCHOOL OF ENGINEERING

PROPOSED ACTION (A separate form for each) ADD_X DELETE CHANGE_

DESCRIPTION (Provide a succinct account of the proposed action. Details should be provided in an attachment. Provide old and new sample programs for curriculum changes.)

Create a minor in Engineering Leadership Development.

JUSTIFICATION/REASONS/RESOURCES (Briefly explain the reason for the proposed action. Identify the source of new resources that may be required. Details should be provided in an attachment.)

The impetus for creating a minor in Engineering Leadership Development comes from several sources stating that our students must be prepared to work effectively in teams and serve as leaders in their professional futures.

Resources needed for instructor and instructional materials in two new courses – ENES 317: Introduction to Engineering Leadership and ENES 424: Engineering Leadership Capstone Course; to increase course size of ENCE 320: Project Management; and to offer ENES 472: International Business and Cultures in Engineering and Technology in fall and spring.

APPROVAL SIGNATURES - Please print name, sign, and date

1. Department Committee Chair

2. Department Chair

3. College/School PCC Chair

4. Dean

5. Dean of the Graduate School (if required)

6. Chair, Senate PCC

7. Chair of Senate

8. Vice President for Academic Affairs & Provost

VPAAP 8-05
Minor in Engineering Leadership Development
University of Maryland
August 8, 2007

The following proposal will discuss the rationale behind the creation of the minor in Engineering Leadership Development, courses included in the minor, a sample schedule, instructors, assessment, and rules of minors from the PCC manual. This minor is restricted to engineering students. Dr. Gary Pertmer, Associate Dean of the Clark School will maintain faculty oversight of the minor.

Rationale

The new minor in Engineering Leadership Development will prepare engineering students for life-long leadership roles in education, industry, and government. The minor will complement the technical skills and knowledge students acquire during their academic careers to better prepare them for leadership and collaborative roles in their professional futures. The minor will focus on leadership as communication, global awareness, project management, understanding oneself and working effectively with others.

In their report Engineer of 2020, the National Academy of Engineering affirms that “By 2020 we aspire to engineers who will assume leadership positions from which they can serve as positive influences in the making of public policy and in the administration of government and industry (NAE, 2004, p. 50).” The report describes the Engineer of 2020 as an individual with strong analytical skills, creativity, practical ingenuity, professionalism, the ability to work in teams and communicate with multiple audiences, as well as the ability to understand and be able to practice principles of leadership. In implementing these goals, NAE demands that “engineering educators and practicing engineers together undertake a proactive effort to prepare engineering education to address the technology and societal challenges and opportunities of the future (p. 51).” They suggest restructuring engineering curricula and related educational programs to prepare our engineers for both a creative and productive life as well as positions of leadership.

The demand for a changing curriculum is also heard from several of the Clark School’s corporate partners. Increasingly employers seek engineers that demonstrate leadership skills. One employer indicated that those who do not develop leadership skills do not make good managers or supervisors. On a more basic level, even for those not interested in pursuing managerial roles, everything is team oriented and students must be prepared to work in teams and take over leadership roles in solving technical problems. Another employer contended that a graduate with a minor in Engineering Leadership Development should be able to demonstrate strong interpersonal skills as well as an understanding of project management.

A report released by the National Association of Colleges and Employers reveals that leadership makes a difference in hiring. Employers responding to NACE’s Job Outlook 2007 survey said that the job candidate who has leadership experience, either inside or outside of the classroom, has the edge over those that have no leadership experiences. NACE executive director reports that “when employers are considering two equally qualified new college graduates for a position, what influences their decision about which candidate to choose? In our survey, employers reported that the candidate’s having held a leadership position would influence the decision very much (Koncz & Collins, 2006).”

The new minor in Engineering Leadership Development seeks to meet the goals outlined above. The minor will consist of 5 core courses and 1 elective for a total of 16 credits.


## Courses Included in Minor

**Course Key**

<table>
<thead>
<tr>
<th>Course Key</th>
<th>ENES 317: Introduction to Engineering Leadership (3 credits)</th>
<th>ENCE 320: Engineering Project Management (3 credits)</th>
<th>ENES 472: International Business and Cultures in Engineering and Technology (3 credits)</th>
<th>ENES 424: Engineering Leadership Capstone Course (3 credits)</th>
<th>EDPL 338: Intergroup Dialogue (1 credit)</th>
<th>Elective (3 credits), will be chosen in consultation with minor advisor</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>16 Total Credits</strong></td>
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### When Courses are Offered

<table>
<thead>
<tr>
<th>Course Key</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
<th>Summer</th>
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<tbody>
<tr>
<td>ENES 317&lt;sup&gt;1&lt;/sup&gt;</td>
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<td>EDPL 338</td>
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<tr>
<td>Elective</td>
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</table>

<sup>1</sup> ENES 317 was approved by VPAC in spring 2007. It will be offered beginning in spring 2008.<br><sup>2</sup> ENCE 320 is an existing course.<br><sup>3</sup> ENES 472 is an existing course.<br><sup>4</sup> ENES 424 was approved by VPAC in spring 2007. It will be piloted in spring 2008.

### Rationale behind each course

1. **ENES 317: Introduction to Engineering Leadership**
   This course will focus on an introduction to general leadership theories and real-world applications within engineering, understanding oneself, and working within a team.

2. **EDPL 338: Intergroup Dialogue**
   According to Engineer of 2020 and corporate partners, engineering students are lacking strong communication skills. This course will aid in students’ working across differences, surrounding conflict. It will be important to show the connection to working in a team, which can be incorporated in ENES 317 and ENCE 424.

3. **ENCE 320: Project Management**
   Across engineering disciplines, students will lead teams. To have these basic skills will put them at an advantage in a leadership role.
4. ENES 472: International Business and Cultures
   Increasingly, engineering is becoming a global field. Chances are students will work with individuals from different countries – both directly and indirectly. This course provides a preliminary glance at understanding important cultural differences in doing business and working on teams with individuals from other countries.

5. ENES 424: Engineering Leadership Capstone Course
   This course will expand upon the leadership concepts and theories introduced in ENES 317. The project requirements in this course will allow students to practice leadership in a real-world setting and gain an understanding of their own leadership style.

6. Elective:
   The elective will allow students to conceptualize leadership as they see it through taking a course in a specific subject related to how leadership is practiced within that discipline. All electives will be chosen in consultation with the minor advisor and must be approved by the minor advisor in advance.

Sample Schedules

Sample Schedule 1

<table>
<thead>
<tr>
<th></th>
<th>ENES 317</th>
<th>ENCE 320</th>
<th>ENES 472</th>
<th>ENES 424</th>
<th>EDPL 338</th>
<th>Elective</th>
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<td>Spring, 4th Year</td>
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<th>EDPL 338</th>
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<th>ENES 317</th>
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<th>ENES 472</th>
<th>ENES 424</th>
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Instructors

Dr. Gary Pertmer, Associate Dean in the Clark School, will maintain faculty oversight of the minor, including advising and supervision of the instructors for ENES 317 and ENES 472. Dr. Robert Waters, Associate Vice President & Special Assistant to the President, maintains faculty oversight for EDPL 338. A letter indicating OHRP’s acceptance for the inclusion of this course in the minor is attached. The following faculty will teach the remaining courses associated with the minor:

ENCE 320: John Cable, Director, Project Management Program, Civil and Environmental Engineering
ENES 424: Jocelyn Davis, Adjunct Faculty, Civil and Environmental Engineering

Assessment

The Socially Responsible Leadership Scale (SRLS) will be administered as a pre- and post-test. Before completing any coursework for the Minor in Engineering Leadership Development, each student will complete the SRLS. During the capstone course (ENES 424) each student will again complete the instrument.

In addition completion of a leadership change project which begins with ENES 317 and ends with ENES 424 will be used as an assessment tool to determine the depth of learning and application of leadership skills and knowledge.

Rules on Minors from PCC Manual

The following requirements for establishing academic minors were approved by the University Senate on February 9, 2004, and by the President on February 13, 2004.

Definition of minors:

1. A minor may be offered by any unit that offers or has the authority to offer an MHEC- approved major or certificate. Minors do not, however, require MHEC approval.

2. A minor may also be offered cooperatively by more than one unit or include courses from more than one unit.

3. Minors should be structured to provide students with a coherent field of study and a carefully considered intellectual justification. That field may be a truncated version of a major or a distinctive intellectual subset of a discipline. A random choice of courses from current offerings in a major may not constitute a minor.

4. There is no limit to the number of minors a unit may offer as long as resource availability is not an issue.

5. Minors must be established through the PCC process. For example, if a department or program wishes to offer a minor, that unit must seek approval from the Chair or Director, the Dean of the College or the Dean for Undergraduate Studies when appropriate, the College or Undergraduate Studies PCC committee, and the Senate PCC committee. Proposals for new minors must indicate resource requirements and resource availability.

6. Minors must be designed and overseen by faculty members. In situations where administrative staff provide essential support, a clearly described faculty oversight structure must be in place at proposal stage and continue for the duration of the minor.
7. Students who wish to pursue a minor should inform both their college and the unit in charge of the minor in order to ensure appropriate advising. When the student completes the minor, the unit offering the minor shall notify the student's college, which shall verify that the student has met all requirements (grades, credits, etc.) and forward the student's name, minor, and date of completion to the Registrar's Office. The posting of a minor on a student's official transcript is done concurrently with the posting of the bachelor's degree.

8. Minors will be posted on a student's academic transcript but not on the diploma. Minor designations on the transcript may carry a general discipline or field designation (e.g. minor in "Physics," "Geography," etc.) or a more specific designation (e.g. "English: African Diaspora").

9. A minor should have no fewer than 15 and no more than 24 academic credits, with at least nine credits at the upper level. A unit may apply for an exception to these criteria. Such application may particularly apply in situations where there are "hidden prerequisites" and/or in situations in which students have taken the prerequisites to the minor as part of another degree program.

10. A student may use a maximum of six credits (or two courses) to satisfy the requirements of both a major and a minor. A unit may place additional limits on the allowed overlap. Courses completed in one minor may not be used to satisfy the requirements in another minor.

11. The following must be clearly identified in the proposal: primary sponsoring unit with administrative responsibility for the minor, faculty coordinator of the minor, advising system for the minor, and title for the transcript. [Administrative note: as of 8/22/05, the proposal must also include plans for program assessment and student learning outcomes.]

12. No more than six of the required credits (or two courses) may be taken at an institution other than the University of Maryland, College Park. However, at least six upper division credits applied to the minor must be taken at this university.

13. No course with an earned grade below "C" may count towards a minor.

14. To continue in some form, current academic citations must be converted to minors; those not converted will be eliminated.

15. Units wishing to convert existing academic citations to minors will send their requests to the Dean's level PCC committee for review and forwarding to the Senate PCC Committee. Every effort should be made to handle this process with clarity, accuracy, and efficiency.

16. In some cases, departments requiring majors to have supporting courses may wish to allow students to substitute an appropriate minor for the supporting course requirement.

17. Once the proposal to offer minors is approved by the Senate and the President, citation programs that are to be converted to minors must have the conversion completed before the end of the following academic year. (i.e. the end of the Spring semester of 2005.) No student may initiate a program leading to a citation after the semester in which the citation is converted or after the deadline for conversion, whichever is earlier. Students who have begun a citation program before conversion and who complete it after conversion will have the option of having either the citation or the minor recorded on their transcripts, if they have satisfied the requirements for the one they choose to list.
May 4, 2007

Rachel Rose
A. James Clark School of Engineering
1124 Glenn L. Martin Hall
University of Maryland
College Park, MD 20742

Dear Ms. Rose:

After meeting with you to discuss the proposed minor in Engineering Leadership Development, I agree to provide the following resources to support this initiative:

- instructor and instructional materials in the two new courses - ENES 317: Introduction to Engineering Leadership and ENES 424: Engineering Leadership Capstone Course,
- increase the course size of ENCE 320: Project Management and
- offer an additional section of ENES 472: International Business and Cultures in Engineering in Technology in the spring semester.

Sincerely,

Nariman Farvardin
Professor & Dean
April 12, 2007

Rachel Rose
1124 Martin Hall
College of Engineering
University of Maryland
College Park, MD 20742

Dear Ms. Rose:

Thank you for considering the *Words of Engagement* Intergroup Dialogue Program (EDPL 338) for your minor in Engineering Leadership Development. After meeting with you to discuss the details, we are satisfied that this arrangement will be mutually beneficial and will greatly enhance the options available to students in Maryland’s Engineering programs. Thus, please consider this letter as an official acceptance of your offer of inclusion in your minor.

If we can answer any further questions, please contact us at your convenience. We can be reached as follows: Gloria Bouis, 301.405.2842, <gbouis@umd.edu>; Mark Brimhall-Vargas, 301.405.2840, <brimhall@umd.edu>.

Sincerely,

Gloria Bouis
Associate Director

Mark Brimhall-Vargas
Assistant Director
DATE:       June 12, 2007

TO:         Rachel Rose
            Engineering Special Programs Coordinator

FROM:       Jim Miller
            Collection Management Librarian

            Dr. Desider Viktor
            Director for Collection Management and Special Collections

            Susanna Van Sant
            Leader, Collection Management Team

RE:         Library Collection Assessment

This assessment is to accompany the Minor in Engineering Leadership Development proposed by the A. James Clark School of Engineering. The minor is restricted to engineering students and seeks to build leadership in students by developing their communication and project management skills, by their gaining global awareness and learning to work effectively in teams. The UM Libraries' collections provide a strong base and continued growth to support adequately the curricular and research needs of this proposed minor.

Books

The proposed minor is comprised primarily of existing courses so that the Libraries already acquire material to support teaching and research in this area. Furthermore, the Libraries also currently support a wide range of courses in related subject areas that provide materials relevant to the minor program, for example, business, administration, communication, education, counseling and personnel services, public policy, psychology and sociology.

Searches in the library Catalog indicate a quantity and currency of book materials sufficient to support the proposed minor. Current acquisition practices will continue to provide many new books on leadership both in engineering specifically as well as in general and in related fields.
Journals

The Libraries currently subscribe to at least 5 core journals (print and electronic) dealing specifically with the topic of engineering leadership:

1. Engineering management journal
2. IEEE engineering management review
3. IEEE transactions on engineering management
4. Journal of management in engineering
5. Leadership and management in engineering

In addition to these core journals, the Libraries provide access to many journals dealing with more general aspects of the leadership concept, such as:

1. Engineering Education
2. Leadership & organization development journal
3. Leadership Excellence
4. Leadership for the front lines
5. Leadership in action
6. The Leadership quarterly

Databases and Additional Online Full Text

The Libraries currently subscribe to a wide variety of databases that provide indexing, and in many cases full text, for journal articles and other information sources in many different subject areas relevant to leadership in engineering and in general. These include engineering-specific databases such as IEEE Explore, NTIS, Aerospace Database, ACM Digital Library and Compendex; business databases such as ABI/Inform, Business Source Premier, and Factiva, the education database ERIC and the soon to be accessible Education Research Complete; PsyInfo for coverage of the psychology of leadership; Academic Search Premier, LexisNexis Academic, and Communication and Mass Media Complete.

Conclusion

The new Minor in Engineering Leadership is well-supported by existing collections and collecting practices and does not require added funding for library materials.
**Minor in Engineering Leadership**  
**Possible Electives**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>EDCP 217</td>
<td>Introduction to Leadership</td>
</tr>
<tr>
<td>EDCP 220</td>
<td>Introduction to Human Diversity in Social Institutions</td>
</tr>
<tr>
<td>EDCP 318</td>
<td>Applied Contextual Leadership</td>
</tr>
<tr>
<td>EDCP 418</td>
<td>Leadership &amp; Identity</td>
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<tr>
<td>EDCP 420</td>
<td>Advanced Topics in Human Diversity and Advocacy</td>
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<tr>
<td>BSOS 301</td>
<td>Leadership in a Multicultural Society</td>
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<tr>
<td>GEMS 208</td>
<td>Special Topics in Leadership and Team Development</td>
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<tr>
<td>PSYC 361</td>
<td>Survey of Industrial and Organizational Psychology</td>
</tr>
<tr>
<td>SOCY 431</td>
<td>Principles of Organizations</td>
</tr>
<tr>
<td>PUAF 359C</td>
<td>Contemporary Issues in Political Leadership and Participation: Advocacy in the American Political System</td>
</tr>
<tr>
<td>PUAF 359R</td>
<td>Contemporary Issues in Political Leadership and Participation: African American Leadership</td>
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<tr>
<td>PUAF 359W</td>
<td>Contemporary Issues in Political Leadership and Participation: Women in Leadership</td>
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<td>ENES 498</td>
<td>Special Topics in Entrepreneurship</td>
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<td>ENES 160</td>
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<td>ENES 190H</td>
<td>Introduction to Design and Quality (QUEST)</td>
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<tr>
<td>ENES 490H</td>
<td>The Total Quality Practicum (QUEST)</td>
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<td>ENME 489B</td>
<td>Lean Six Sigma</td>
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<tr>
<td>ENME 489J</td>
<td>Production Management</td>
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<tr>
<td>ENME 489Q</td>
<td>Managing for Innovation and Quality</td>
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</table>