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JANICE INDRUTZ  
CORPORATE SECRETARY  
THE GRADUATE SCHOOL  
Office of the Dean

TO: Debasish (Deba) Dutta, Executive Vice President for Academic Affairs and Provost

FROM: Mark J. T. Smith, Dean 

DATE: February 23, 2015

SUBJECT: Proposal for a Master of Science Degree and a Doctor of Philosophy Degree in Environmental and Ecological Engineering, College of Engineering, PWL

The enclosed proposal for a Master of Science Degree and a Doctor of Philosophy Degree in Environmental and Ecological Engineering, from the College of Engineering at Purdue University, West Lafayette, was recommended for approval by the Purdue University Graduate Council on February 19, 2015.

I am pleased to add my own endorsement to the proposal and hope that you can endorse it and transmit it to the president for approval by the Board of Trustees and the Indiana Commission for Higher Education.

The Environmental and Ecological Engineering faculty are from nine different Schools of Engineering including Civil, Agricultural and Biological, Chemical, Material, Mechanical, Engineering Education, Nuclear, Aeronautical and Astronautical, and Electrical and Computer. The formalized degree programs will provide vital transformative STEM education and world changing research opportunities to graduate students. Currently, there are no graduate level programs available to students seeking an advanced degree in environmental engineering at a public institution in Indiana. The Environmental and Ecological Engineering M.S. and Ph.D. degree programs will lead in traditional and modern environmental engineering, industrial ecology and sustainability.

Please let me know if you have any questions about this recommendation for a new Master of Science degree and Doctor of Philosophy degree in Environmental and Ecological Engineering from the College of Engineering, Purdue University West Lafayette.

Enclosure

Copies: James Sutherlin, Audeen Fentiman, Phil Pope, Candiss Vibbert

MJTS/tlp

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**COVER PAGE**

INSTITUTION: Purdue University

CAMPUS: West Lafayette

COLLEGE: Engineering

DEPARTMENT/SCHOOL: Division of Environmental and Ecological Engineering

DEGREE PROGRAM TITLE: Master of Science in Environmental and Ecological Engineering and  
Doctor of Philosophy

SUGGESTED CIP CODE: 14.1401

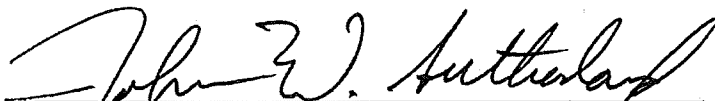
PROJECTED DATE OF IMPLEMENTATION: August 2015

**SIGNATURE PAGE**

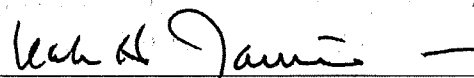
**Degree Title:** Master of Science Environmental and Ecological Engineering  
Doctor of Philosophy Environmental and Ecological Engineering

**Name of academic unit offering the new degree:** College of Engineering

Include signatures from all involved programs:

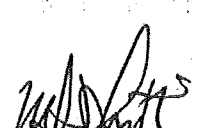
  
\_\_\_\_\_  
John W. Sutherland, Professor and Fehsenfeld Family Head  
Environmental and Ecological Engineering

10/31/14  
Date

  
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Leah H. Jamieson, The John A. Edwardson Dean  
Ransburg Distinguished Professor of Electrical and Computer Engineering  
College of Engineering

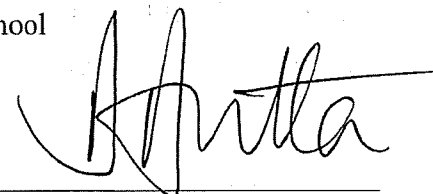
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Approval Recommended by the Graduate Council

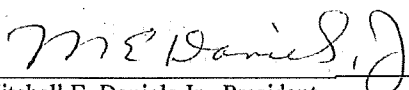
  
\_\_\_\_\_  
M. J.T. Smith  
Dean of the Graduate School

2/19/15  
Date

2/25/15  
Date

  
\_\_\_\_\_  
Debasish (Deba) Dutta  
Provost

3/5/15  
Date

  
\_\_\_\_\_  
Mitchell E. Daniels Jr., President

3/30/15  
Date

## **Executive Summary for the creation of M.S. and Ph.D. Program in Environmental and Ecological Engineering (EEE) at the Purdue West Lafayette Campus**

The College of Engineering at Purdue University is proposing the creation of the Environmental and Ecological Engineering (EEE) graduate degree program. This program will provide a leadership role in Indiana's economic and social development by preparing EEE graduates to join a high quality educated workforce in an area of national need. The creation of graduate degrees in Environmental and Ecological Engineering will contribute to meeting the strategic goals of the university by providing affordable, accessible, and pedagogically-structured education and research programs. The formalized degree programs will provide vital transformative STEM education and world changing research opportunities for graduate students. Currently there are no graduate degree programs in Environmental Engineering at Purdue University or at a public institution in the state of Indiana. The labor market demand for EEE graduates is strong. Based on data from the US Bureau of Labor Statistics the national growth rate of employment in this field is projected to be greater than 15%. Growth in Indiana is projected to be much faster than the national rate at greater than 29%. Recent data reveals that 35.5% and 5.0% of environmental engineering workers (25 years and older) had attained a Master's and Doctoral (or professional) degree, respectively. For EEE undergraduates an accessible 4 + 1 Master's degree will be integrated with the BSEEE allowing students to earn a graduate credential in only two additional semesters.

The name 'Environmental and Ecological Engineering' highlights an innovative approach to managing complex problems with an integrated perspective that considers both environmental issues and ecological interactions. The EEE curriculum trains engineers to apply their technical understanding of systems engineering, biology, and chemistry to develop strategies to protect human and environmental health. Environmental impacts are a consequence of human development and the practice of every discipline of engineering. EEE seeks to lead in the education of all disciplines of engineering in how to incorporate design, practices and processes that are more harmonious with the earth's ecosystems. This guiding philosophy incorporates unique qualities relative to peer institutions such as a Systems perspective on environmental issues, Meta-disciplinary team oriented course work and a focus on ecological interactions and resilient designs that take into account complexity and connectivity among systems. All Ph.D. students will be required to complete a research dissertation. Master's students will have the option of participating in research but may complete a course work only degree.

The program builds upon the strengths of Purdue by leveraging resources and space from established units such as Civil Engineering, Agricultural and Biological Engineering, Industrial Engineering, and Materials Engineering at Purdue University. These Purdue graduate engineering programs have some connections to environmental engineering, thus potential synergy and collaborations exist with the EEE graduate degree program. At present, graduate level degrees in environmental engineering represent a gap within the Purdue Engineering system. However, several graduate engineering programs may be considered as being synergistic to the proposed graduate degree programs. The traditional areas of environmental engineering are closely linked to programs in Agricultural and Biological Engineering and Civil Engineering, whereas the emerging areas such as sustainability and industrial ecology are linked to all engineering disciplines.