Engineering Science
PhD Program

Southern Illinois University
College of Engineering
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Overview

The Ph.D. in Engineering Science (ESCN) at Southern Illinois University Carbondale was approved and initially offered in 1985. It continues to be the only interdisciplinary engineering doctoral program in the state. The focus of preparing highly-qualified individuals for teaching and research positions in higher education, industry, government, and other organizations is reflected in its mission: The Engineering Science Ph.D. program aims to provide world-class graduate education and research opportunities that enhance the economic and social well-being of the citizens of Illinois, the nation, and the world. Our mission will be accomplished by (1) recruiting, enrolling, and graduating Ph.D. level engineers with strong basic science, engineering, and mathematical backgrounds who can adapt to interdisciplinary research and emerging areas of technology; (2) providing expanded research opportunities and knowledge to students in engineering sciences, including materials development, energy processes, coal sciences, and other technologies that are critical to the economic health of the state and nation; (3) providing a central knowledge base for certain emerging technologies; and (4) increasing the number of Ph.D level engineers in interdisciplinary areas within science and technology. The doctoral program in engineering science has been successful in providing support in the development of research thrusts in several emerging technologies such as advanced materials, artificial neural systems, computer integrated manufacturing, gaseous and laser electronics, and advanced coal refining for SIUC. In 2007, the SIUC Graduate School and College of Engineering signed a memorandum of understanding with the SIUE School of Engineering to allow participation of SIUE students in the Engineering Science Ph.D. program. Through the agreement, SIUE is designated as a residency center by the SIUC Graduate School. It is anticipated that this agreement will lead to faculty and graduate student collaboration that simultaneously raises the productivity and visibility of engineering programs on both campuses.

The Doctor of Philosophy degree in Engineering Science is available for five concentrations that correlate with five of our engineering programs. The areas of concentration are:

- Civil and Environmental Engineering
- Electrical and Computer Engineering
- Industrial and Quality Engineering
- Mechanical Engineering and Energy Processes
- Mining and Mineral Resources Engineering
Calendar for Fall 2018

August 15

- Graduate School welcome party 11:30-1:30 at pavilion outside Student Services Building

August 20

- Fall Semester Begins!

August 31

- Last day to submit paperwork to the Registration Office to drop a semester length course to be eligible for a credit/refund; change credit/audit status; and to withdraw from the university with a full refund

September 2

- Last day for student to drop a full-term course with a full refund

September 3

- Labor Day - University Closed

September 14

- Deadline to apply for December 2018 Graduation

September 20

- Deadline to apply for Illinois residency for Fall 2018

October 2 – 3

- Electronic Thesis/Dissertation Workshops at Student Services Building 150/160 from 5-6 pm

October 10

- Funding Workshop at Student Services Building 150/160 from 1-3 pm

October 28

- Last day to withdraw from the university
- Last day to drop a course online using SalukiNet
November 2

- **Deadline for Format Check for Research Papers, Theses, and Dissertations to Graduate School for December Graduation**

November 9

- **Deadline to submit Research Papers, Theses, and Dissertations to Graduate School for December Graduation**

November 14

- Research Ethics Workshop at Student Services Building 150/160 from 10-12

November 15

- Deadline to submit Graduate Tuition Scholarship Application for Spring 2019

November 17-25

- Thanksgiving Vacation - Students

December 1

- Deadline date for Spring 2019 Graduate Assistantship contract due to Graduate School
- Graduate Assistant Re-Employment Notification: Departments must notify Graduate Assistants of decision to re-employ or not to re-employ for the following Spring Semesters

December 10-14

- Finals Week

December 15

- Graduate School **Commencement**

December 17, 2018 - January 13, 2019

- Holiday Break - Students

December 25, 2018 - January 1, 2019

- Campus Holiday

January 2, 2019

- Fellowship applications due to Jennifer
Engineering Science Faculty and Staff

Dean of College of Engineering
Dr. John Warwick 618-453-4321 warwick@siu.edu Engineering E room 102

Director of Engineering Science PhD program:
Dr. Tsuchin Philip Chu 618-453-7003 tchu@siu.edu Engineering E room 16

Office Administrator for Engineering Science PhD program:
Jennifer Langin 618-453-4321 jlangin@siu.edu Engineering E room 102

Engineering Science PhD committee:
Dr. Jale Tezcan CEE 618-453-6125 jale@siu.edu Engineering B room 32
Dr. Shaikh Ahmed ECE 618-453-7630 ahmed@siu.edu Engineering E room 222
Dr. Om Agrawal MEEP 618-453-7090 om@engr.siu.edu Engineering E room 15
Dr. Garth Crosby TECH 618-453-7841 crosby@engr.siu.edu Engineering D room 121

Civil and Environmental Engineering Faculty and Staff

- Chair, Sanjeev Kumar, kumars@engr.siu.edu, 618-453-7815
- Office Manager, Tuesday Ashner, tlashner@siu.edu, 618-536-2368
- Rolando Bravo, rbravo@siu.edu, 618-453-7809
- Lizette Chevalier, lizette.chevalier@siu.edu, 618-453-7653
- Bruce A. Devantier, bdevanti@siu.edu, 618-453-7819
- William Eichfeld, eichfeld@engr.siu.edu, 618-453-7838
- Kent J. Hsiao, hsiao@engr.siu.edu, 618-453-7811
- Ajay Kalra, kalraa@siu.edu, 618-453-7008
- Aslam Kassimali, aslam@siu.edu, 618-453-7807
- Prabir Kolay, pkolay@siu.edu, 618-453-7843
- Jia Liu, jialiu@siu.edu, 618-453-7006
- Vijay Puri, puri@engr.siu.edu, 618-453-7818
- Jale Tezcan, tezcan@engr.siu.edu, 618-453-6125
- John Warwick, warwick@siu.edu, 618-453-4321
Mechanical Engineering and Energy Processes Faculty and Staff

- Chair, Rasit Koc, kocr@siu.edu, 618-453-7005
- Office Manager, Tammy Hopkins, tammy@siu.edu, 618-536-2396
- Serge Abrate, abrate@engr.siu.edu, 618-453-7826
- Om Agrawal, om@engr.siu.edu, 618-453-7090
- Farhan Chowdhury, farhan.chowdhury@siu.edu, 618-453-7833
- Tsuchin (Philip) Chu, tchu@siu.edu, 618-453-7003
- Asghar Esmaeeli, esmaeeli@engr.siu.edu, 618-453-7001
- Kambiz Farhang, farhang@siu.edu, 618-453-7002
- Peter Filip, filip@siu.edu, 618-453-7932
- James Mathias, mathias@engr.siu.edu, 618-453-7016
- Kanchan Mondal, kmondal@siu.edu, 618-453-7059
- Emmanuel Nsofor, nsofor@engr.siu.edu, 618-453-7021
- Ian Suni, isuni@siu.edu, 618-453-7822
- Tomasz Wiltowski, tomek@siu.edu, 618-453-7000

Electrical and Computer Engineering Faculty and Staff

- Chair, Spyros Tragoudas, spyros@engr.siu.edu, 618-453-7027
- Office Administrator, Jessica Bradshaw, jesbrad@siu.edu, 618-453-2120
- Shaikh Ahmed, ahmed@siu.edu, 618-453-7630
- Iraklis Anagnostopoulos, iraklis.anagno@siu.edu, 618-453-7034
- Ying (Ada) Chen, adachen@siu.edu, 618-453-7060
- Kang Chen, kchen@siu.edu, 618-453-7038
- Gayan Baduge, gayan.baduge@siu.edu, 618-453-4755
- Lalit Gupta, lgupta@siu.edu, 618-453-7032
- Themistoklis Haniotakis, haniotak@siu.edu, 618-453-7026
- Frances Harackiewicz, fran@engr.siu.edu, 618-453-7031
- Konstadinos Hatziadoniu, hatz@siu.edu, 618-453-7036
- Dimitrios Kagaris, kagaris@engr.siu.edu, 618-453-7973
- Arash Komaee, akomaee@siu.edu, 618-453-7064
- Chao Lu, chaolu@siu.edu, 618-453-7028
- Jun Qin, jqin@siu.edu, 618-453-3460
- Mohammad Sayeh, sayeh@siu.edu, 618-453-7066
- Haibo Wang, haibo@engr.siu.edu, 618-453-1522
- Ning Weng, weng@engr.siu.edu, 618-453-7645

Mining and Mineral Resources Engineering Faculty and Staff

- Interim Chair, John Warwick, warwick@siu.edu, 618-453-4321
- Office Administrator, Diana Lyall, lyall@siu.edu, 618-453-7916
- Satya Harpalani, satya@engr.siu.edu, 618-536-6637
Industrial and Quality Engineering Faculty and Staff

- Chair, Julie Dunston, dunston@engr.siu.edu, 618-453-7832
- Office Administrator, Toni Laur, toni@engr.siu.edu, 618-453-7980
- Garth Crosby, crosby@engr.siu.edu, 618-453-7841
- Bruce DeRuntz, bruce@siu.edu, 618-453-7829
- Carl Spezia, powerguy@siu.edu, 618-453-7839
- Tomas Velasco, velasco@engr.siu.edu, 618-453-7842

Cost and Financial Assistance

You can view the Graduate School information at [https://gradschool.siu.edu/cost-aid/](https://gradschool.siu.edu/cost-aid/).

Graduate Assistantships

There are three types of Graduate Assistantships available at SIUC: Research, Teaching, and Administrative.

**Research Assistantships** may be offered by research centers and professors with research grants.

**Teaching Assistantships** may be offered by the chair of the department of your concentration (Civil and Environmental Engineering, Mechanical Engineering and Energy Processes, Electrical and Computer Engineering, Mining and Mineral Resources Engineering, or the Technology Department for Industrial and Quality Engineering concentrations).

**Administrative assistantships** across campus can be viewed at [https://jobs.siu.edu/view-all-jobs-ga](https://jobs.siu.edu/view-all-jobs-ga). Each posting lists the qualifications and how to apply.

Doctoral Fellowship

Information regarding the Doctoral Fellowship can be viewed at [https://gradschool.siu.edu/cost-aid/fellowships/](https://gradschool.siu.edu/cost-aid/fellowships/). The Doctoral Fellowship is designed for those nominees who show the greatest promise for scholarly and professional achievement in their respective disciplines at the doctoral level.

Fellowships will be awarded for three semesters - fall, spring, and summer semesters for a total of eleven (11) months. The Doctoral Fellowship pays a monthly stipend (excluding Summer Intersession May 16 thru June 15) and provides a full tuition waiver for fall and spring semesters, and up to 9 hours in the summer. Interested students should review the guidelines and application packet for more information.

Fellowship nomination materials are due to the Graduate School in January. Please submit all materials to Jennifer by January 2. Late applications will not be accepted. Fellowship offers will be announced in February.

Dissertation Research Assistantship (DRA)

Information regarding the Dissertation Research Assistantship can be viewed at [https://gradschool.siu.edu/cost-aid/fellowships/](https://gradschool.siu.edu/cost-aid/fellowships/). Dissertation Research Assistantships are academic awards designed for students who are in the dissertation preparation stage of their graduate education. Students should be able to complete the dissertation during the period of the award.
Students cannot apply for the award on their own as they must be nominated by the academic department. Interested students should contact their academic department for information on how to be nominated.

Fellowship nomination materials are due to the Graduate School in March. Please submit all materials to Jennifer by March 8. Late applications will not be accepted. DRA offers will be announced in April.

**Resources**

**Big Dawg**
Big Dawg is a high performance computing cluster available for local research projects working with large amounts of data. This 34.7 TeraFLOP supercomputer offers computing speeds comparable to the fastest academic supercomputers in the world. SIU provides access to BigDawg to all researchers and supervised students free of charge. For more information contact Chet Langin at cl.research@siu.edu or 618-536-2438 or go to [https://oit.siu.edu/rcc/](https://oit.siu.edu/rcc/).

**Catalog**
The Graduate School catalogs are available at [https://gradschool.siu.edu/about-us/grad-catalog/](https://gradschool.siu.edu/about-us/grad-catalog/).

**Engineering Computer Support Center**
For assistance with computers, computer labs, software, or any other computer topics, please see the Engineering Computer Support Center in Engineering E room 135, by phone at 618-536-2153, or by email at ecsc@engr.siu.edu.

**Electronic Theses and Dissertations (ETD) Help**
Each semester, Jennifer will email you an updated flyer from the Graduate School with information regarding assistance with formatting, Graduate School guidelines, PDF conversions, ETD submissions and more. You can also email etdsupport@siu.edu or visit [https://gradschool.siu.edu/current-students/thesis-dissertation-researchpaper/etd-overview.php](https://gradschool.siu.edu/current-students/thesis-dissertation-researchpaper/etd-overview.php) for more information regarding submission and guidelines.

**Graduate School**
The Graduate School website is full of information. You can access the website at [https://gradschool.siu.edu/](https://gradschool.siu.edu/). The Graduate School is located on the third floor of the Student Services building.

**Library**
Morris Library information is available at [https://lib.siu.edu/](https://lib.siu.edu/) or 618-45-2818. You may also contact them at 605 Agriculture Drive, MC 6632, Carbondale, IL 62901. Administrative Office: 453-2522. Circulation Services: 453-1455. Fax: 618-453-3440. adminoffice@lib.siu.edu
Timeline for Degree

After being admitted to the Engineering Science PhD program, the program timeline may be broken down into 26 credit hours of coursework, candidacy exam, 24 credit hours of dissertation, and the dissertation defense. Jennifer will help you complete your Program of Study form to keep track of what you have completed and what you have left to complete.

1. Complete 26 credit hours of coursework including 6 credit hours of math and 2 credit hours of ENGR 580 – PhD seminar.
   a. Two courses may be 400-level. All other courses must all be 500-level.
   b. Only six credit hours of dissertation taken before candidacy will be counted toward your degree requirements.
   c. ENGR 580 is taken twice for 1 credit hour each time. It should be taken your first fall semester in the program and again the fall semester after you are admitted to candidacy.
   d. Fill out a Course Request Form (CRF) when deciding with your advisor which courses to take and turn the form in to Jennifer. Course Request Forms can be found at https://gradschool.siu.edu/_common/documents/forms/course-request.pdf
   e. If you get an error message when trying to register for a course, please contact Jennifer.

2. Complete your candidacy exam the last semester of your coursework or else the first semester after your coursework is completed. Your candidacy committee should consist of 3 professors.
   a. Contact Jennifer for your 3 forms related to candidacy. The Candidacy Exam Committee Form should be filled out before your exams. The Candidacy Exam Results Form and the Admit to Candidacy Form should be filled out as soon as you complete your exams. All forms should be turned in to Jennifer after your advisor signs.

3. Form your dissertation committee the semester after you are admitted to candidacy. Fill out your Graduate Faculty Committee Approval Form https://gradschool.siu.edu/_common/documents/forms/committee-form.pdf. Jennifer can help with the graduate faculty status of faculty members. Four committee members must be from the College of Engineering and one committee member must be from outside the College of Engineering. Turn form in to Jennifer after your advisor signs.

4. Twenty four credit hours of ENGR 600 – Doctoral Dissertation are required.

5. A minimum of 6 months must pass between your dissertation proposal and your dissertation defense. Contact Jennifer for your Dissertation Proposal Approval Form.

6. You must be registered your final semester. If you graduate summer semester, you must be enrolled in a course for that summer semester.

7. Your dissertation defense is your final step before submitting your dissertation and graduating. Contact Jennifer for your Dissertation Approval Form and Oral Defense Form. These forms can also be found on the Graduate School website at https://gradschool.siu.edu/about-us/forms.php.
Program Core

The program core consists of 11 hours of course work: 6 hours in math, 3 hours in engineering or science and 2 hours of seminar. The math courses to choose from are: all 400 and 500, except MATH 400, 411, 412, 458, 480, 483, 511, 512, 513, and 516. The engineering courses to choose from are: ENGR 530—Engineering Data Acquisition: Theory and Practice, ENGR 540—Design of Engineering Experiments, ENGR 545—Advanced Numerical Methods in Engineering, ENGR 521—Probability and Stochastic Processes for Engineers. The science course could be any 400 or 500 level course in Computer Science, Physics, Chemistry or Geology, as approved by the student’s advisor. The seminar course, ENGR 580, must be taken in two separate semesters, each time as one-hour course. It is suggested that one-hour seminar is taken before candidacy and the other after candidacy.
Guide for Core and Concentration Courses

- Only two 400-level courses (typically 6 hours) can be counted towards the minimum required 26 semester hours of course work.
- Special Investigation course can be taken under ENGR 590 - Special Investigations in Engineering Science, and only 3 hours can be counted towards the minimum required 26 semester hours of course work.
- Transfer credit will normally be given for some of the graduate level courses suitable to the program upon review by the college Ph.D. committee. Proficiency examinations may be authorized by the committee for areas in which questions of transfer credit arise. No credit will be given for industrial experience. A maximum of six hours of course work can be transferred in all cases due to residency requirement, which states that every student must complete at least 24 semester hours of approved course work at SIUC prior to taking the candidacy examination.
- Of the 24 hours, only 6 hours can be dissertation (ENGR 600) hours before candidacy.
- A student transferring credits from a master’s program must have earned those credits over and above the required course work to obtain the M.S. degree in his/her institution. Credit cannot be transferred from master degrees obtained from international institutions.