Introduction to the Civil Engineering Program

August 21, 2017

Presentation by Dr. W. Wright
Civil Engineering Program

I. The Civil Engineering Profession, Code of Ethics
II. Technical Specialties and Faculty
III. Graduate Program Goals and Plans of Study
IV. Curriculum & Current Course Offerings
V. Paying for Graduate School
VI. Forbes 15 most Valuable College Majors
VII. ASCE Raise the Bar
VIII. Financial Value
IX. Required Reading
X. Questions
I. Civil Engineering Profession
Civil Engineering

One of the oldest Engineering Professions
US Department of Labor, Bureau of Labor Statistics, Occupational Outlook Handbook Description of:

Civil Engineering → Link
Environmental Engineering → Link
Civil Engineering Profession

Code of Ethics
Civil Engineering Profession

Code of Ethics

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Civil Engineering Profession
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7. Engineers shall continue their professional development throughout their careers and shall provide opportunities for the professional development of those engineers under their supervision.
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II. Technical Specialties in Civil Engineering and Faculty
Civil Engineering Emphasis:

Environmental Engineering
Civil Engineering Emphasis: \textit{Environmental Engineering}

Environmental protection and remediation

Image from the River Network Collection

Department of Civil and Geomatics Engineering
Civil Engineering Emphasis:

Geomatics Engineering
Civil Engineering Emphasis: Geomatics Engineering

Measuring and mapping the earth and the built infrastructure
Civil Engineering Emphasis:

**Geomatics Engineering**

Riadh Munjy, Ph.D, P.
GME Program Coordinator;
CGE Dept. Chair
University of Washington, 1982.

Mustafa "Mike" Berber, Ph.D, P.E.
University of New Brunswick.

James Crossfield, Ph.D., L.S.

Scott Peterson, P.L.S., M.S.,
Purdue University, 2013.

Part-time & not pictured: 
Fareed Nader, Ph.D, (Emeritus)
Yushin Ahn, Ph.D., Ohio State University, 2008.
Iley Michael Ballinger (lecturer)
Dilruba Yeasmin (Lecturer)

Department of Civil and Geomatics Engineering
Civil Engineering Emphasis:

Structural Engineering
Civil Engineering Emphasis: 
*Structural Engineering*

Designing buildings, bridges, and other structures
Civil Engineering Emphasis

Structural Engineering

Dr. Ching Choo, P.E.
Program Coordinator
University of Kentucky, 2005

Dr. Fariborz Tehrani, P.E.
UC Los Angeles, 2008

Dr. Maryam Nazari
Iowa State University, 2016

Dr. Kimberly Stillmaker
UC Davis, 2016

Maureen Goolkasion, P.E.
(Part-time)

Todd Goolkasion, S.E.
(Part-time)

Majid Monfaredian
(part-time)
Civil Engineering Emphasis:

Transportation Engineering
Civil Engineering Emphasis: Transportation Engineering

Designing transportation systems, transportation planning, and traffic operations.
Civil Engineering Emphasis:  
*Transportation Engineering*

Dr. J. Larralde, P.E.  
*Associate Dean, LCOE*  
Purdue, 1984

Dr. Aly Tawfik  
Virginia Tech  
University, 2012

Dr. Xiaojun Li

A search is open for an additional faculty member
Civil Engineering Emphasis:

Geotechnical Engineering
Civil Engineering Emphasis: 

Geotechnical Engineering

Soil engineering, designing retaining walls, foundations, tunnels, and other geotechnical structures
Civil Engineering Emphasis: 

Geotechnical Engineering

Dr. Lalita Oka
University of Vermont, 2012

Dr. Arezoo Sadrinezhad
The University of Akron, 2014
Civil Engineering Emphasis:

Water Resources Engineering
Civil Engineering Emphasis: Water Resources Engineering

Designing water supply and flood management systems.
Civil Engineering Emphasis:

Water Resources & Environmental Engineering

Dr. William Wright, P.E.
Grad. Program Coordinator
U.C. Davis, 2000

Dr. Lubo Liu, P.E.
University of South Carolina, 2003

Dr. Fayzul Pasha, P.E.
University of Arizona, 2006

Cordie Qualle, M.S., P.E.
Industry Faculty Fellow.

Dr. Jerry Teng
(part-time)
Civil Engineering Emphasis: Staff

Steve Scherer
Department Technician

Beneves Chavez
Administrative Support Coordinator

Brissa Y. Quiroz, PhD
Valley Industry Partnership (VIP) Program Director
Lyles College of Engineering

Department of Civil and Geomatics Engineering
III. MSCE Program Goals and Plans of Study
Master of Science in Civil Engineering

Option in Water Resources & Environmental Engineering

Accelerated BS-MS
Program Goals
Program Goals

To prepare students for:

- professional practice
- advanced study beyond the master’s degree
Degree Requirements Overview

Program requirements:
Degree Requirements Overview

Program requirements:

1. Complete 30-units of approved coursework with a min. GPA of 3.0.

2. Complete:
   a. CE 210 Research Methods (min. grade B);
   b. The Graduate Writing Requirement (min. score 87.5%);
   c. Culminating experience -- Thesis, Project or Comprehensive Exam (min. score 87.5%).

3. Submit a completed and approved Graduate Degree Application (online) and Graduate Degree Clearance form (hard-copy)
Graduate Plans of Study

Plan A (Thesis)

a. 200-series CE courses, including CE 210 ................................. 12-24
b. 100-series CE or GME technical area courses ............................ 0-6
c. Courses outside the department .................................................... 0-6
d. Thesis CE 299 ............................................................................... 6
Plan A (Thesis)
a. 200-series CE courses, including CE 210 ............................. 12-24
b. 100-series CE or GME technical area courses ............................ 0-6
c. Courses outside the department .................................................. 0-6
d. Thesis CE 299 .............................................................................. 6

The work performed as part of the thesis is:
• Original, contributes to the advancement of engineering science or engineering practice.
• Of a quality and novelty worthy to be published in a professional technical journal.
• Reported in a Final Thesis Report
• Defended orally.
Graduate Plans of Study

Plan B (Project)

a. 200-series CE courses, including CE 210 ........................................ 15-27
b. 100-series CE or GME technical area courses ............................... 0-6
c. Courses outside the department .................................................. 0-6
d. Project CE 298 ........................................................................... 3
Graduate Plans of Study

Plan B (Project)

a. 200-series CE courses, including CE 210 ......................... 15-27
b. 100-series CE or GME technical area courses .................... 0-6
c. Courses outside the department ........................................ 0-6
d. Project CE 298 .................................................................. 3

The work performed as part of the Project:

- Evidence of originality, organization, clarity of purpose, critical analysis, accuracy, completeness,
- Quality of writing consisting with the standards appropriate for publication in the scholarly journals of the field.
- Reported in a Final Project Report
- Defended orally.
Plan C (Comprehensive Exam) – 75% min. overall score required
a. 200-series CE courses, including CE 210 ............................. 18-30
b. 100-series CE or GME technical area courses .......................... 0-6
c. Courses outside the department .............................................. 0-6
Graduate Plans of Study

Plan C (Comprehensive Exam) – 75% min. overall score required

a. 200-series CE courses, including CE 210 .................................................. 18-30
b. 100-series CE or GME technical area courses ................................. 0-6
c. Courses outside the department ................................................................. 0-6

The work performed as part of the Comprehensive Exam:

• Evidences the student's ability to:
  1. integrate the knowledge of the area
  2. show critical and independent thinking, appropriate organization, and
  3. demonstrate mastery of the subject matter.

• Determines if the candidate is able to use the content of his/her courses
  in applications that are not explicitly presented in the classroom but are
  the immediate and natural application of the classroom subjects.
Graduate Plans of Study

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  in applications that are not explicitly presented in the classroom but are
  the immediate and natural application of the classroom subjects.

The exam can be retaken only once.
Water Resources & Environmental Engineering (WREE) Option

1. CE 210, 242 and select two from: CE 205, 240, 241, and 247
2. 3 or 6 units of courses outside of the program (100 or 200 series)*
   (max 6 units from 100 series).

* Must be WREE-related and approved by the Graduate Program Coordinator.
IV. Curriculum & Course Offerings
Course Offerings – Fall 2017

CE Prerequisite Courses* (as required to meet admission conditions):

- CE 20 Eng Mech Statics Lecture
- CE 121 Mech of Matls Lecture and CE 121L Mech Matls Lab Lab
- CE 123 Soil Engineering Lecture and CE 123L Soils Engr Lab
- CE 128 CE Hydraulics Lecture and CE 129 Hydraulics Lab
- CE 130 Theory of Struct Lecture
- CE 132 Reinfrcd Cncrte Lecture & Lab
- CE 142 Env Engineering Lecture
- CE 150 Trans Plng Desg Lecture

* 1) Grad. students have priority seating; request a permission number from the instructor.
2) Prerequisite courses can be waived if student has completed a similar course.
3) For GME prerequisite course offerings see course schedule.
Course Offerings – Fall 2017

CE Technical Elective Courses* (Fall 2017, Max. 6 Units):

- CE 125 Geotech Egr Dsgn Lecture & Lab
- CE 133 Dsgn Steel Struc Lecture & Lab
- CE 134 Foundation Desgn Lecture & Lab
- CE 136 Dsgn Timbr Struc Lecture & Lab
- CE 141 Water Res Engr Lecture & Lab
- CE 146 Urb Stormwtr Mgt Lecture & Lab
- CE 151 Pavement Design Lecture & Lab
- CE 190 Independ Study

* 1) Grad. students have priority seating; request a permission number from the instructor.
   2) For GME technical course offerings see course schedule.
Course Offerings – Fall 2017

**CE Graduate Courses** (Fall 2017):

- CE 210 Research Seminar
- CE 225 Num Meth Geotech Lecture
- CE 232 Prestr Conc Desg Lecture
- CE 241 Con Fate & Trans Lecture
- CE 290 Independ Study
- CE 291T Trans Planning Lecture
- CE 298 Project Supervision
- CE 299 Thesis Supervision

* 1) There is always room (grad. courses do not fill up).
2) For GME course offerings see course schedule.
Enrolling in Courses & Payment of Fees – New Students
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To enroll:   - Go to the Fresno State home web page, click on the Quick Links menu,
- Select My Fresno State (your personal "my.csufresno.edu" web site),
- Log in, then click on the Student Services link, and then follow the instructions there.
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Problems: Call the Student Services Desk at (559) 278-7000.
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**Fees:** The first semester bill is generated after you have registered for courses (it will consist of registration fees, tuition, and health insurance). Nonresidents and foreign students pay a nonresident tuition fee.
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Fees: The first semester bill is generated after you have registered for courses (it will consist of registration fees, tuition, and health insurance). Nonresidents and foreign students pay a nonresident tuition fee.

International Students: International students must enroll in a minimum of 9 units to meet immigration regulations. Most students open a local bank account and transfer their money to that account so they can directly link their account to the university for direct payment. Foreign bank accounts cannot be linked.
Selection of Faculty Adviser
Selection of Faculty Adviser

• Students are encouraged to:
  • Familiarize themselves with faculty member research interests
  • Ask a faculty member if they would be willing to advise them.
  • If granted, the faculty adviser can request that this information be entered into the campus software (via Dept. Admin. Assistant).
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- Students who do not have an adviser:
  The graduate program coordinator will appoint an interim graduate adviser. Student and faculty interests are taken into account when making this appointment.

- A graduate student may change his/her graduate adviser (see the Graduate Student Handbook for details).
Student Responsibilities
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Students admitted into the MSCE program are responsible for becoming familiar with and meeting all relevant University and MSCE Program requirements.
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1. Reading and understanding the CE Graduate Student Handbook.
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1. Reading and understanding the CE Graduate Student Handbook.

2. Identifying critical milestones and tracking their progress towards meeting University and MSCE Program requirements.
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3. Completing and submitting required documents by the agreed upon or published deadlines.

_Students must plan ahead and provide sufficient time for obtaining required approvals and signatures (e.g., from your faculty adviser, grad. program coordinator, dept. chair, and other campus personnel)._
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3. Seeking advice from graduate faculty and University personnel on important decisions related to continuance in the program and progress towards meeting degree requirements.
V. Paying for Graduate School
Paying for Graduate School

Scholarships, Fellowships and Grants:
Scholarship, fellowship and employment opportunities are available through various entities campus.

Information is available at the following Internet sites:

http://www.fresnostate.edu/academics/graduatenet/students/financial-aid.html
http://www.fresnostate.edu/academics/gradstudies/financial/
http://www.fresnostate.edu/academics/gradstudies/financial/financialopportunitiesdgs.html
http://fresnostate.edu/studentaffairs/financialaid/grants-loans/index.html
Paying for Graduate School

On-Campus employment:

LCOE:

Financial opportunities within our college include:

- Instructional assistant (graders)
- Teaching assistants
- Graduate instructors
- Research assistants
- Scholarships (?)

Students are recruited by faculty based on observation of student performance in courses and on their perceived skills.
Paying for Graduate School

Off-campus employment:

• Internships and full-time positions come to our attention frequently. Students are notified by email. Opportunities are also listed at:
  
  Pathways: [www.fresnostate.edu/engineering/jobs/pathwaysjobs/index.html](http://www.fresnostate.edu/engineering/jobs/pathwaysjobs/index.html)
  
  HireFresnoState: [www.fresnostate.edu/studentaffairs/careers/student/jobs.html](http://www.fresnostate.edu/studentaffairs/careers/student/jobs.html)

• We have a Curriculum Practical Training program for international students*.

• Some employers will pay part of the tuition (ask them).

* Curricular Practical Training (CPT) is an employment authorization available to F-1 students where the practical training employment is considered to be an integral part of an established curriculum or academic program. Employment may be an internship, cooperative education job, a practicum, or any other work experience that is either required for your degree.
VI. Forbes 15 most Valuable College Majors
...Engineering concentrations comprise one third of the most valuable majors.

- Software engineering majors (No. 4) earn a median of $87,800 after 10 years on the job;
- environmental engineering majors (No. 5) earn a median of $88,600;
- civil engineering majors (No. 6) earn a median of $90,200; and
- petroleum engineering majors (No. 9) earn a median of $155,000—the highest paycheck on the list.
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- petroleum engineering majors (No. 9) earn a median of $155,000—the highest paycheck on the list.

“These aren’t majors that anyone could do. They’re hard, and these programs weed people out,” says Bardaro. “However, there is high demand for them and a low supply of people with the skills, so it drives up the labor market price.”
In the Millennial Branding survey, employers reported engineering and computer information systems majors as their top recruits.
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Also, nearly half of these employers (47%) said the competition for new science, technology, engineering and math talent is steep. That means while other recent grads fight for jobs, these students will likely field multiple offers.
VII. ASCE Raise the Bar
ASCE’s The Vision for Civil Engineers in 2025: In order to keep pace with new technologies and rapidly changing current practices, .......

ASCE is currently supporting a proposal requiring all those who would like to become civil engineering professionals to complete the equivalent of a master’s degree in civil engineering.

ASCE Raise The Bar Video
https://www.youtube.com/watch?v=bBjayYd5gNg
VIII. Financial Value
College graduates cash in over lifetime, study says*

"The challenge is to convince those high school students on the margins is that it is really worth their time to go to college.”

Jacqueline King, policy analyst with the American Council on Education, an advocacy group

“The time commitment is significant, but most people do find it worth it. They go to every single class, and they are trying to get the most out of their own dollar.”

Kevin Malecek, graduate student in American politics at American University in Washington.

* The Fresno Bee, July 18, 2002
THE VALUE OF A GRADUATE MASTER’S DEGREE

Getting a master's degree has a definite payoff in terms of income, according to a 2003 report by the American Council on Education's Division of Policy Analysis and Research. The report (Building a Nation of Learners) indicates that over an 8-year period (1990-98), workers with a master’s degree earned $100,000 more than workers with a bachelor’s degree and that the average monthly income for someone with a master's degree was $1,000 more than for an individual with a bachelor's degree. Furthermore, the National Center for Educational Statistics found that 98 percent of master's degree recipients were employed within a year after completing their degrees. Future enrollment projections indicate that even more students will be seeking the master's degree for professional enhancement/career advancement and that these students will need some form of financial support.

Source: Fresno State Division of Graduate Studies “Sourcebook” (2013)
A graduate degree in Civil Engineering can:

• significantly increase your technical background to help you meet job requirements and do better work with new knowledge/skills;

• provide you the opportunity to do really interesting work, including, an opportunity to conduct research and publish a thesis;

• provide you with more career options;

• distinguish you from peers and make you more competitive/viable for promotion;

• Increase your pay.
IX. Required Reading
Civil Engineering Graduate Program

Required Reading:

1. **MSCE Graduate Student Handbook**: Remember to detach, sign and submit the form located at the end of the Handbook.


Civil Engineering Profession

https://www.youtube.com/watch?v=LTXPQM8S4Ss
Civil Engineering Profession

Another movie trailer: [Link]
Civil Engineering Graduate Program

Questions?
Civil Engineering Graduate Program

For more information contact the Graduate Program Coordinator, Dr. William Wright

wfwright@csufresno.edu

(559) 278-5591
Fresno State research: Leftover food gets new life as bioplastic

By Hannah Parfect - The Fresno Bee

Fresno State researcher Bill Wright pulls bags of frozen, mushy strawberries out of his lab freezer. He’s converting the pink food waste into an unexpected consumer product: plastic.

In his small lab space in a campus engineering building, silver trays filled with dark powder share cluttered space on tables with a spectrophotometer that measures light, a centrifuge and other equipment. Graduate student Michael Nunez, the lab manager, sits fermented fruit sloshing in buckets painted with the slogan “Let’s do this!” — a fitting message for the researchers, who have worked tirelessly to convert waste from fruit, nuts and other food into biodegradable plastic.

Feathery pieces of the stuff sit in glass test tubes. The opaque, delicate-looking plastic can be turned into water-resistant plastic pellets, molded down into molds, and shaped into forks and spoons, composting bags and plant pots.

It’s a fresh take on the concept of reuse, recycle. And one that makes a lot of sense in the food-producing central San Joaquin Valley, Wright said.

“An incredible amount of food is grown in this fertile valley and not all of it makes it to the dinner table. There’s quite a bit that ends up being a burden,” Wright said. “We look at it as a resource.”

For nearly two years Wright has led the research on behalf of a start-up called Full Cycle Bioplastics, an eco-friendly company started by two brothers that’s looking to commercialize an affordable plastic made from food waste. The company has donated $110,000 to fund the project, Wright said.

In a year when plastic is being shunned in California — plastic shopping bags could disappear from many stores by summer — and floating islands of debris in the Pacific are catching international headlines, once-niche bioplastics are carving out a bigger corner of a market still dominated by petroleum-based plastic.

Commercial production of various bioplastics has been churning for decades. But Wright and his research team are taking a new approach. Instead of more popular methods, like growing corn or soybeans to use in the conversion process, they’re using food scraps, like peach pits and fruit stubs.