Engineering in the CSU for the “B” Student
Engineering for B Students in the CSU

Marc McGee
Director of Admission
California State University Maritime Academy

mmcgee@csum.edu
707-654-1331 (my desk phone)
707-246-8200 (my cell phone)
How to Spot a Future Engineer

• They think Spring Break is a kind of metal fatigue
• They know the 2\textsuperscript{nd} law of thermodynamics, but not their own shirt size
• They look forward to assembling IKEA furniture
• To the optimist, the glass is half full. To the pessimist, the glass is half empty. To the future engineer, the glass is twice as big as it needs to be.
Engineering vs Engineering Technology

• They are separate but closely related professional areas

• Engineering
  – Focus on theory and design
  – Multiple semesters of calculus and calculus-based, theoretical science courses

• Engineering Technology
  – Focus on application and implementation
  – Focus on algebra, trigonometry, applied calculus, and practical rather than theoretical courses
Engineering in the CSU

- http://degrees.calstate.edu
- https://www2.calstate.edu/pages/ImpactionSearch.aspx
- Engineering at 20 of the 23 campuses
- Not all engineering is impacted
- 3.00 is 2400 index
- Low tuition – great return on investment
Engineering in the CSU

• Humboldt State University
  Environmental Resources Engineering a great choice for a B student
  – This major is a great choice for students who are interested in solving environmental problems related to water and energy. Math is tool for engineers to solve problems. Some engineers love math, while others just use math to solve problems.

• Cal State Bakersfield
  Engineering Sciences – Petroleum Engineering
  – All engineering majors are NOT impacted
Engineering in the CSU

• Chico State University
  – Mechatronics Engineering
    • The mechatronic engineering graduate is prepared to design "intelligent" products such as cars that drive themselves, laser printers, self assembling machines and robots.
Engineering at CSU Maritime Academy (I)

- www.csum.edu/majors
- Three choices (35%-40% of our students)
  - Mechanical Engineering
  - Marine Engineering Technology
  - Facilities Engineering Technology
- All ABET accredited
- These programs are somewhat impacted for Fall 2018 and beyond.
Engineering at CSU Maritime Academy (II)

- As hands-on as it gets.
- Average class size of 20
- **After Year 1** - Required two month voyage on the *Golden Bear*
- **After Year 2** - Required two-month summer internship on ship or shore
- **After Year 3** - Second two-month voyage on the *Golden Bear* as a supervisor or a second internship on shore
Engineering at CSU Maritime Academy (IV)

• Corps of Cadets –
  - “Divisions” of Engineers
  - Real Leadership Experience
  - Professionalism

• 96% hired within a two months of grad.

• Average starting salary 78K for Marine or Facilities Eng. Tech.
Kelly Pjesky-Rempfer
Oregon State University
Northern California Admissions Advisor
(669) 237-0813
Kelly.P@OregonState.edu
- No impacted majors
- Out-of-state scholarships
- Unique programs
  - Majors, internships, research opportunities, student organizations
• Bioengineering
• Chemical Engineering
• Civil Engineering
• Computer Science
• Construction Engineering Management
• Ecological Engineering
• Environmental Engineering
• Electrical & Computer Engineering
• Industrial Engineering
• Manufacturing Engineering
• Nuclear Engineering
• Radiation Health Physics
• Mechanical Engineering
Pre-Professional/Professional College

- All students admitted to pre-engineering
- Admissions based on OSU requirements
  - No additional prerequisites for Engineering
- Students will build strong foundations in math, physics, chemistry and engineering principals before they progress in the professional program
- Students must apply to a specific program and be accepted based on the criteria listed on website.

- All students who achieve the minimum Pre-Core GPA listed for the program of their choice will be guaranteed admissions during that year.
  - Varies by major

- All requirements transparent = No surprises!
Pre-Professional/Professional College

- Students who show demonstrated ability in CORE engineering classes will move to the professional school
  - Varies by major (between 2.5-2.9 GPA)
  - C or better in CORE classes
- Professional school not limited by space
- Identify problems early on and work with advisor
Ed Devine
devinee@lafayette.edu
Director of West Coast Admission
WACAC Past-President
Lafayette Engineering

- 150 Years
- ABET Accredited
- Computer Science
- Electrical and Computer Engineering (17)
- Mechanical Engineering (50)
- Civil Engineering (23)
- Chemical and Biomolecular Engineering (31)
- Engineering and International Studies
Top 10 Characteristics of a GREAT Engineer

- Possesses a Strong Analytical Aptitude
- Shows an Attention to Detail
- Has Excellent Communication Skills
- Takes Part in Continuing Education
- Is Creative
- Shows an Ability to Think Logically
- Is Mathematically Inclined
- Has Good Problem Solving Skills.
- Is a Team Player
- Has Excellent Technical Knowledge*

EngineeringSchools.com
Courses to Complete in HS

Must Have
- Algebra I & II
- Geometry
- Trigonometry
- Biology
- Chemistry

Should Have
- Calculus I (II)
- Physics

Could Have
- Computer Science
- Engineering
- Higher Math
Activities

General
- Compete
- Research
- Program
- Study Abroad

High School
- Robotics
- Projects non class
- Summer Research
- Programming classes
- Internships
- Presentation
Prescriptions for Successful College Career

- Hands on learning
- Content/Experiences most important
- Connections and opportunities = success
- Interface between cultures and generations
- Respond to environment and change
- Life long learning

Dr. Steven Combs, HPU
Activities at Lafayette

- Engineers without Boarders
- Society of Environmental Engineers & Scientists
- Society of Women Engineers
- Minority Scientists and Engineers
- AICHE – American Institute of Chemical Engineers ASCE
- American Society of Civil Engineers
- ASME – American Society of Mechanical Engineers
- IEEE – (Electrical Engineers)
- The Best Society
- Bridge Team
- Formula 1 Race Car
- Excel Scholars Research
Liberal Arts
Preparing Citizen-Leaders

The Future of the LIBERAL ARTS COLLEGE in America and its Leadership Role in EDUCATION around the World
Top Three 21\textsuperscript{st} Century learning goals:

✓ Understanding human problems.

✓ Applying knowledge to new and increasingly complex situations.

✓ Knowing that questions can have more than one answer, and problems can have more than one solution.
“It's in Apple's DNA that technology alone is not enough. It's technology married with liberal arts, married with the humanities, that yields us the results that make our hearts sing,”

Steve Jobs
Key Skills of Liberal Arts Majors:

- Writing
- Speaking
- Foreign languages and cross-cultural knowledge
- Numeracy
- Research and information retrieval
- Analytical thinking
- Creative thinking
- Effective with ambiguity
- Learning and synthesizing new ideas
The percentage of employers who want more emphasis on the core skills of a liberal arts education:

- Written and oral communication: 89%
- Critical thinking/analytical reasoning: 81%
- Complex problem solving: 75%
- Ethical decision making: 75%
- Intercultural competence/teamwork: 71%
- Creativity and innovation: 70%

Source: NACE Research: *Job Outlook 2012* National Association of Colleges and Employers
College Trends

The percentage of employers who want more emphasis on the core skills of a liberal arts education:

- Written and oral communication: 89%
- Critical thinking/analytical reasoning: 81%
- Complex problem solving: 75%
- Ethical decision making: 75%
- Intercultural competence/teamwork: 71%
- Creativity and innovation: 70%

• Source: NACE Research: Job Outlook 2012 National Association of Colleges and Employers
STREAM

- Science
- Research
- Technology
- Engineering
- Arts
- Math
The problem is trying to build a company that solves a tangible problem. The most interesting thing is to operate on something fundamental on how humans live.

Mark Zuckerberg
Facebook
Forbes/Tech

Where did Mark Zuckerberg’s go to college?

What was Mark Zuckerberg’s major in college?

Psychology
Thank You!