Overview

Charles W. Davidson
College of Engineering
What’s New in the College of Engineering?

Update to Frosh Admissions Ranking
Fall 2017 admitted class

9th ABET-Accredited Program! Biomedical Engineering
2016 Fall Open House!!!

COME AND SEE WHAT WE HAVE TO OFFER!

At the open house you will:
- explore our College of Engineering labs
- speak with current students, staff, and faculty
- get a preview of what it is like to be a student here
- learn more about College of Engineering majors

For more information & to register visit: bit.ly/fallpreviewday2016
2017 Women in Engineering Conference!!!

SAVE THE DATE

ENGINEERING A BETTER TOMORROW

Silicon Valley WE Conference ‘17

MARCH Sat. 25th 2017
8:30am-7:00pm

Women in Engineering
Our EPICS Program!!!
Davidson College of Engineering – Student Snapshot

- Largest college at SJSU by majors (7348 total)
- Largest engineering program in the 23-campus CSU system
- Largest Masters program among CSU and comparable university peers
- More than 6,000 undergraduate and graduate students

Student Enrollment 2015*

*As of Fall 2015

4675

2673
Demographics

Undergraduate Programs by Gender, Fall 2015

- Female: 775
- Male: 3,900

Graduate Programs by Gender, Fall 2015

- Female: 939
- Male: 1,734

Undergraduate Programs by Ethnicity, Fall 2015

- AmInd: 2
- Black: 92
- Asian: 288
- PacIsl: 14
- Hisp: 181
- White: 92
- Foreign: 2

Graduate Programs by Ethnicity, Fall 2015

- AmInd: 6
- Black: 21
- Asian: 384
- PacIsl: 124
- Hisp: 976
- White: 92
- Foreign: 2,007
Davidson College of Engineering – Enrollment by Engineering Disciplines (Fall 2015)

<table>
<thead>
<tr>
<th>Discipline</th>
<th>MS</th>
<th>BS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Software Engineering</td>
<td>932</td>
<td>381</td>
</tr>
<tr>
<td>Mechanical Engineering</td>
<td>770</td>
<td>121</td>
</tr>
<tr>
<td>Materials Engineering</td>
<td>656</td>
<td>71</td>
</tr>
<tr>
<td>Industrial/Syst Engineering</td>
<td>696</td>
<td>214</td>
</tr>
<tr>
<td>Industrial Technology</td>
<td>603</td>
<td>185</td>
</tr>
<tr>
<td>Engineering</td>
<td>603</td>
<td>203</td>
</tr>
<tr>
<td>Electrical Engineering</td>
<td>603</td>
<td>139</td>
</tr>
<tr>
<td>Computer Engineering</td>
<td>603</td>
<td>349</td>
</tr>
<tr>
<td>Civil Engineering</td>
<td>603</td>
<td>128</td>
</tr>
<tr>
<td>Chemical Engineering</td>
<td>603</td>
<td>62</td>
</tr>
<tr>
<td>Biomedical Engineering</td>
<td>603</td>
<td>66</td>
</tr>
<tr>
<td>Aviation</td>
<td>282</td>
<td>66</td>
</tr>
<tr>
<td>Aerospace Engineering</td>
<td>312</td>
<td>60</td>
</tr>
</tbody>
</table>
Fall 2016 Impaction - Freshmen

EI - GPA*800+SAT; 2900 SJSU min

Program
Freshmen Admissions Ranking for Fall 2017 Cohort

- ENG EI = GPA*800 + SAT Critical Reading Score + 3*SAT Math Score
- Max ENG EI = 6400
- Same admissions targets
Supplemental Criteria for Transfer Admissions – Fall 2016

• Supplemental Course Credit for C or better in the following equivalents:
  – Math 30, Math 31, Phys 50
    • (For Electrical Engineering): Add Phys 51
    • (For Computer Engineering): Add CMPE 30
    • (For Software Engineering): Add CS/SE 46A
    • (For Aviation/Technology): Math 71 OR 30; Phys 2A OR 50; Remove Math 31
  – \[ \text{Score} = (GPA \times 150) + \sum_{n=1}^{N} \text{Supplemental Courses}_n \times \left( \frac{600}{N} \right) \]
    • Applicants will be ranked by \text{Score} and admitted to capacity/show rate
    • Max score = 1200

• ENG applicants have an A3 waiver
## Fall 2016 Impaction - Transfer

<table>
<thead>
<tr>
<th>TRN GPA 0  Crs</th>
<th>AE</th>
<th>BME</th>
<th>CE</th>
<th>ChE</th>
<th>CMP E</th>
<th>EE</th>
<th>GenE</th>
<th>ISE</th>
<th>MatE</th>
<th>ME</th>
<th>SE</th>
<th>Avia</th>
<th>Tech-Man</th>
<th>Tech-CENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td>2</td>
<td>3.5</td>
</tr>
<tr>
<td>TRN GPA 1  Crs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.8</td>
<td></td>
</tr>
<tr>
<td>TRN GPA 2  Crs</td>
<td>3.3</td>
<td></td>
<td>3.6</td>
<td>3.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.7</td>
<td>2.7</td>
<td>2.7</td>
</tr>
<tr>
<td>TRN GPA 3  Crs</td>
<td>2.4</td>
<td>2.7</td>
<td>2.7</td>
<td>3.8</td>
<td>2.7</td>
<td></td>
<td>2.4</td>
<td></td>
<td>3</td>
<td></td>
<td>3.6</td>
<td></td>
<td>2.4</td>
<td>2.4</td>
</tr>
<tr>
<td>TRN GPA 4  Crs</td>
<td>2.7</td>
<td>2.7</td>
<td></td>
<td></td>
<td>2.7</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td></td>
<td>2</td>
<td></td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

2.0 GPA = SJSU min
IMC’s for Transfer Students - Unofficial

• Four Intersegmental Model Curricula for engineering exist at: (https://c-id.net/degreereview.html)
  1. Mechanical and Aerospace
  2. Civil
  3. Electrical
  4. Computer and Software

• Currently, no benefit to Admissions ranking. However, upper division at SJSU will be very smooth if completed.
ENG Graduation Rates

FTF Graduation Rates in College of Engineering

Transfer Graduation Rates in College of Engineering

Six-year Graduation Rates (unless otherwise stated)

Entering Cohort
ENG Student Success Programs

• Engineering Student Success Center (ESSC)
• MESA Engineering Program (MEP)
• Women in Engineering (WIE)
• Community of Engineering Learning and Living (CELL)
• Global Technology Initiative (GTI)
• Scholarships
  – Silicon Valley Engineering Council
  – Engineering Leadership Program
Recommending an ENG Major

**Transport/Infrastructure**
- Aerospace/Aviation
- Civil
- Electrical
- Industrial and Systems
- Mechanical

**Biotechnology**
- Biomedical
- Chemical
- Electrical
- Materials
- Mechanical

**Environment/Sustainability**
- Civil
- Chemical
- Electrical
- Mechanical
- General

**Robotics/Manufacturing**
- Computer/Software
- Electrical
- Mechanical
- Industrial and Systems
- Technology: Man/CENT

**Semicon/Telecomm**
- Computer/Software
- Electrical
- Chemical
- Materials
- Mechanical

**Web/Code**
- Computer/Software

**Aerospace**
- Aerospace/Aviation
- Mechanical/Electrical
- Computer/Software
Professional Accreditation

• ABET-Accredited
  – Aerospace
  – Biomedical
  – Chemical
  – Civil
  – Computer
  – Electrical
  – Industrial and Systems
  – Materials
  – Mechanical

• Other
  – General
  – Software (expected F18)
  – Technology (accredited by ATMAE)
  – Aviation
Aerospace Engineering

<table>
<thead>
<tr>
<th>Degrees Offered:</th>
</tr>
</thead>
<tbody>
<tr>
<td>BS Aerospace Engineering and MS Aerospace Engineering</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Areas of Curriculum/Research Focus:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Aerodynamics aerospace structures</td>
</tr>
<tr>
<td>• Aircraft and spacecraft design</td>
</tr>
<tr>
<td>• Space systems engineering</td>
</tr>
<tr>
<td>• Flight mechanics</td>
</tr>
<tr>
<td>• Dynamics</td>
</tr>
<tr>
<td>• Stability and control</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Distinguishing Characteristics:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small class sizes; hands-on learning experiences;</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Careers:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aerospace engineering; aircraft and space systems research, design, development, testing and integration; navigation</td>
</tr>
</tbody>
</table>

Designing and working on machines that can explore the universe feels amazing. Our team is building a maglev train, and the research can apply both to land and to an orbital space station.

Sean Snyder, Senior Aerospace Engineering
## Aviation

**Degrees Offered:** BS Aviation

**Areas of Specialization:**
- Professional flight
- Operations
- Aviation management
- Maintenance management

**Distinguishing Characteristics:** Fundamentals of aviation (mathematics, science and general courses relevant to aviation); specialized training; student flying clubs

**Careers:** Major airports and airlines, general aviation airports, air charter operators, and the military

---

**Enrique Taitt,** Freshman, Aviation

*Since my sophomore year in high school, I wanted to attend SJSU to complete my degree in aviation and pursue my dream career as a pilot. I have strong interests in understanding the mechanics and engineering aspects of airplanes and helicopters.*
# Biomedical Engineering

<table>
<thead>
<tr>
<th>Degrees Offered:</th>
<th>BS Biomedical Engineering and MS Biomedical Engineering</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distinguishing Characteristics:</td>
<td>Curriculum developed in partnership with potential employers; project teams; state-of-the-art technology; hands-on laboratory environment; exploration of ethical issues; preparation to function in a U.S Food and Drug Administration regulated environment</td>
</tr>
<tr>
<td>Careers:</td>
<td>Biomedical devices, bioelectronics and instrumentation; imaging, bioinformatics and manufacturing</td>
</tr>
</tbody>
</table>

SJSU is one of the few universities that offers biomedical engineering in the Bay Area. We are in the heart of Silicon Valley, and employers here love students who have had hands-on experience in internships and labs and who are involved in the clubs the college offers.
# Chemical Engineering

**Degrees Offered:**
BS Chemical Engineering and MS Chemical Engineering

**Graduate Areas of Specialization:**
- Biotechnology
- Environmental health and safety
- Semiconductors and polymers

**Graduate and Undergraduate Area of Specialization:**
- Biochemical Engineering

**Careers:**
Chemical process engineer, chemical plant manager, product engineer and automation engineer; semiconductor processing, biotechnology, and industrial chemicals

---

Maribel Locsin, Senior, Chemical Engineering

*My favorite hands-on experience is the ChemE car competition. Our student chapter of the American Institute of Chemical Engineers designed and built a small-scale car fueled solely by chemical reaction. To compete against universities around the world was an amazing experience.*
Civil and Environmental Engineering

<table>
<thead>
<tr>
<th>Degrees Offered:</th>
<th>BS Civil Engineering and MS Civil Engineering</th>
</tr>
</thead>
</table>
| Curriculum Areas of Focus: | • Construction  
• Environmental  
• Geotechnical  
• Structural  
• Transportation  
• Water resources engineering |
| Distinguishing Characteristics: | Award-winning professors; hands-on laboratory experience; and active student clubs |
| Careers: | Construction or environmental engineer; geotechnical or structural engineering; transportation and water resources |

Adam Rondeau, Senior, Civil Engineering

*I like applying math, physics and material properties to real-world problems, I really enjoyed my hands-on concrete labs and annual Steel Bridge student competition from the American Society of Civil Engineers.*
# Computer Engineering

<table>
<thead>
<tr>
<th><strong>Degrees Offered:</strong></th>
<th>BS Computer Engineering and MS Computer Engineering</th>
</tr>
</thead>
</table>
| **Graduate Areas of Specialization:** | • Embedded systems  
• Networking systems  
• Secure systems  
• Systems design |
| **Distinguishing Characteristics:** | Curriculum includes computer hardware design, embedded systems, software design and the construction of real and virtual systems for enterprises; hands-on practice using the latest developments in emerging technologies |
| **Careers:** | Computer hardware design, embedded systems, network systems, secure systems and systems design |

My favorite hands-on learning experience was an SJSU engineering camp I participated in called EXCEED. I designed and built my own mobile shelving unit, which was donated to a nonprofit organization.

Sarah Fried,  
Freshman,  
Computer Engineering
# Electrical Engineering

<table>
<thead>
<tr>
<th>Degrees Offered:</th>
<th>BS Electrical Engineering and MS Electrical Engineering</th>
</tr>
</thead>
</table>
| Graduate Areas of Specialization: | • Analog electronics  
• Digital system design  
• Networking and communication  
• Digital signal processing  
• Integrated circuit design and fabrication |
| Careers: | Design, fabrication, product or applications engineer; technical sales or management |

It has been a great opportunity to attend SJSU, one of the top engineering programs in the country, because it’s located in Silicon Valley, which is known as the hub of all things innovative. The program continues to give me a broad understanding of engineering so that I have the flexibility to see a wide range of jobs after graduation.

Uche Igwe, Junior, Electrical Engineering
Genera l Engineering

Degrees Offered: BS General Engineering; MS Civil Engineering; MBA/MSE Business Administration and Systems Engineering; MBA/MSSE Business Administration and Software Engineering, undergraduate minors include Business and Green Engineering

Graduate Areas of Specialization: • Bioinformatics • Electronic materials and devices • Green technology • Environmental health and safety

Careers: Bioinformatics, electronic materials and device engineering; environmental health and safety, and green technology

When I toured SJSU and learned about the opportunities in the engineering field, I knew that the campus was a good fit for me. As an engineer, I can have a part in almost any major business.

Daniel Fix, Freshman, General Engineering
Industrial and Systems Engineering

**Degrees Offered:**
BS Industrial and Systems Engineering, MS Industrial and Systems Engineering, MS Human Factors and Ergonomics, MSE General Engineering, Engineering Management

**Graduate Areas of Specialization:**
- Manufacturing and service organizations
- Human factors and ergonomics
- Engineering management

**Careers:**
Systems engineer or analyst; supply chain or process engineer; quality assurance engineer, human factors engineer and management consultant

Diane Ashley Licardo, Junior, Industrial and Systems Engineering

*My favorite hands-on learning experience was building robots, combining multiple disciplines from computer engineering for programming to mechanical engineering for overall design.*
## Industrial Technology

### Degrees Offered:
BS Industrial Technology (Computer Electronics and Network Technology or Manufacturing Systems, Green Manufacturing)

### Distinguishing Characteristics:
Practical hands-on experiences; in depth technical knowledge; use of current programming languages to analyze and solve industrial problems

### Careers:
High-tech systems, computers, networks, green technologies, electronic devices, and manufacturing

---

**Allen Dutra,**
Senior,
Industrial Technology,
Computer Electronics and Network Technology

*The curriculum is about applying theory in real-world applications. Designing and building automated systems with microcontrollers and transducers is by far my favorite hands-on learning experience.*
# Materials Engineering

<table>
<thead>
<tr>
<th>Degrees Offered:</th>
<th>BS Materials Engineering and MS Materials Engineering</th>
</tr>
</thead>
</table>
| Graduate Areas of Specialization: | • Biomaterials  
• Composites  
• Electronic and magnetic materials  
• Polymers  
• Semiconductor processing  
• MEMS  
• Microelectronic packaging  
• Nanotechnology |
| Careers: | Materials engineer, materials scientist, semiconductor engineer, metallurgical engineer, failure analysis engineer or characterization scientist |

*Patrick Ala, Senior, Materials Engineering*

*I choose SJSU because it gave me a chance to pursue a degree in materials engineering. I highly enjoy the hands-on training. At SJSU, you’ll learn the things you need to know to become an engineer, and you’ll have an opportunity to network with industry professionals from Silicon Valley.*
## Mechanical Engineering

### Degrees Offered:
- BS Mechanical Engineering and MS Mechanical Engineering

### Graduate Areas of Specialization:
- Energy systems
- Electronics cooling
- Electronics packaging and reliability
- Robotics
- Product design
- Finite element analysis and CAD
- Mechatronics and MEMS
- Automation and manufacturing

### Careers:
- Mechanical design engineer, mechanical manufacturing engineer, simulation engineer, semiconductor manufacturing and equipment

---

**Kyle Schmidt, Senior Mechanical Engineering**

For my senior project, I was a member of an engineering team that designed and built a human-powered vehicle for an American Society of Mechanical Engineers competition. I value the one-on-one time with my professors and the camaraderie of my fellow engineers.
Software Engineering

Degrees Offered: BS Software Engineering and MS Software Engineering

Graduate Areas of Specialization:
- Cloud computing and virtualization
- Cybersecurity
- Enterprise software technologies
- Networking software
- Software systems engineering

Careers: Software engineer, software developer, software engineering manager, and product marketing manager

Akshay Wattal, Graduate Student, Software Engineering

Being in Silicon Valley, SJSU provides me with a lot of career opportunities. The software engineering courses are relevant to industry and up to date with the latest trends. For my big data analytics project, the program provided hands-on experiences working with new and different technologies.