Aerospace Engineering Department 1987 – 2022

Dr. Nikos J. Mourtos Chair
AE Department History

1985: Dean Pinson asks Dr. Desautel to develop AE Program + AE Department

1987: AE Department + BSAE Program open

@ the time: only AE Program from Seattle to Boulder to Los Angeles

Dr. Mourtos: 1\textsuperscript{st} tenure-line faculty member hired

1989: first (transfer) students graduate w. BSAE degrees

Dr. Hunter: 1\textsuperscript{st} full-time lecturer hired

1991: BSAE ABET accreditation; ~ 400 majors

1992: MSAE Program open; emphasis on satellite subsystems
Program Distinctives

• Innovative, broad curriculum supported by state-of-the-art laboratories.
• *Philosophy*: integrate analysis + computation + design + experimentation, supported by wide-ranging hands-on laboratory experience and projects.
BSAE Program – 383 students

### Capstone Senior Design Experience (8 units)

|-----------------------------|--------------------------------|

<table>
<thead>
<tr>
<th>Elective (3 units)</th>
</tr>
</thead>
</table>

### Aerodynamics & Propulsion (14 units)

<table>
<thead>
<tr>
<th>AE167 – Propulsion</th>
</tr>
</thead>
<tbody>
<tr>
<td>AE164 – Aerothermodyn.</td>
</tr>
<tr>
<td>AE162 – Aerodynamics II</td>
</tr>
<tr>
<td>AE160 – Aerodynamics I</td>
</tr>
</tbody>
</table>

### Aerospace Structures & Materials (10 units)

| AE114 – Aerostructures II |
| AE112 – Aerostructures I |

### Aerospace Dynamics & Controls (15 units)

| AE168 – Dyn. & Control |
| AE165 – Flight Mechanics |
| AE157 – Control Sys. Des |
| AE138 – Vector Dyn. |

### Electronics (3 units)

| EE98 - Circuits |

### Engineering Fundamentals (10 units)

| Engr10 (Intro. to Engr.), AE20 (CAD), AE30 (Programming), Engr100W (Engr. Reports) |

### Science (17 units)

| Phys50 (Mechanics), Phys51 (Electricity & Magnetism), Phys52 (Waves, Heat & Light), Chem1A (General Chemistry) |

### Mathematics (16 units)

| Math30 (Calculus I), Math31 (Calculus II), Math32 (Calculus III), Math 33A (ODEs), Math39A (Linear Algebra) |
## SJSU MSAE Program – 76 students

### Advanced Math / Numerical Methods (6 Units)
- **AE 200**: Engineering Analysis of Aerospace Systems
- **AE 269**: CFD

### MSAE Core (12 Units)
- **AE242 / AE243 / AE 245 / AE 246 / AE247**: Astrodynamics / Aircraft D&C / Spacecraft D&C / Trajectories
- **AE 250 / AE 251**: Aerospace Structures & Materials
- **AE 262 / AE 264 / AE 265 / AE 266**: Aerodynamics / Hypersonics
- **AE 267**: Propulsion

### Focus Area (6 Units)
- **AE 210 (GWAR)**: Space Systems Engineering
- **AE 271 (GWAR) / AE 273 (GWAR)**: Aircraft Design

### Thesis/Project (6 Units)
- **AE 295 A&B or AE 299**: Project / Thesis

### Areas in which students with non BSAE degrees must take prerequisite courses
- Aerospace Structures
- Aerodynamics
- Flight Mechanics
- Aerospace Propulsion
- Aerospace Vehicle Dynamics & Control
...coming *Fall 2022*

**Spartan Accelerated Graduate Education**

**Apply:** Summer of Junior Year (95 units completed)

<table>
<thead>
<tr>
<th>To qualify:</th>
<th>2.5 min GPA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All Lower Division units completed</td>
</tr>
<tr>
<td></td>
<td>Engr 100W completed</td>
</tr>
<tr>
<td></td>
<td>B or better in AE112, AE114, AE138, AE140, AE157, AE160, AE162, AE165</td>
</tr>
<tr>
<td>5 Years</td>
<td>BSAE + MSAE degree completion</td>
</tr>
</tbody>
</table>
Space Systems Engineering Lab

Lab to be certified for microsat manufacturing & testing

Nanobed
Space Systems Engineering – Ground Station
Aerodynamics – Flow Visualization
1st Place, AIAA Design–Build–Fly: 2012 & 2016

AIAA's Design/Build/Fly contest gives college students a chance to pit their engineering smarts against international competitors in a remote-controlled aircraft flyoff. This year's event, the 20th annual competition, was arguably one of the most challenging. Joe Stumpe declassifies the winning design and explores the event's value to students.
Rocketry

HARP Team after launch – November 2018
10 missions launched to ISS 2012 – 2022

TechEdSat 13 launched 13 January 2022 on Virgin Orbit's LauncherOne vehicle part of the STP-27VP mission
San Jose City Council Commendation

February 26, 2019

TechEdSat Team, headed by Dr. Papadopoulos & Dr. Murbach (NASA Ames RC), received commendation for the launch of 8 Technology Education Satellites.
Gonzalo Mendoza
Director, Engineering & Innovation - Cessna
BSAE 1998

Anima Patil-Sabale
NASA engineer & aspiring astronaut
MSAE 2010

Dr. Wade Huebsch
Professor, Aerospace Engineering
West Virginia University
BSAE 1992

Jay Westerwelle
Mission Operations Manager
Space Systems Loral
BSAE 2014
Alumni Comments

The size of the AE department makes it feel like a family. I spent years working alongside fellow students, who became good friends. Many of them found jobs in the AE industry within the Silicon Valley. Being at the heart of Silicon Valley, the Department sets students up for networking opportunities that will help them in the future. I got to know my professors fairly well. That directly shaped my success when one of them put me in contact with a past student, who was at an organization with open job positions.


The deliberately open-ended real-world scenarios help build solid aerospace engineers who know how to find practical solutions to complex problems.

Tara Samuels MSAE (2017), Ph.D. Embry Riddle (2022), NASA Ames RC Engineer

The curriculum and teaching style in AE allowed me to approach new projects and solve problems differently than others I work with. I am better equipped to take initiative sooner than others, solve real problems by thinking outside the box, and appreciate success and failure in stride. Additionally, the program enhanced my team skills, allowing me to find more efficient ways of interacting with co-workers to accomplish my goals.

Jae Westerwelle BSAE (2014), SSL Mission Operations Manager
Aerospace Companies in the San Francisco Bay Area
AE Faculty

AE Tenure-Line Faculty

AE Adjunct Faculty
More information?

Dr. Nikos J. Mourtos, Chair
Office: Engr. 272A
(408) 924-3867
nikos.mourtos@sjsu.edu

Website: www.sjsu.edu/ae/