

Unique Program Features

Faculty from Industry. Seventy-five graduate engineering faculty members work in Silicon Valley and maintain a strong industry connection. In addition to their business perspective, they are also instrumental in helping students link up with Bay Area engineering companies for internship and job opportunities.

Student Services for Working Professionals.

SCU recognizes the pressures that part-time students experience in balancing competing demands on their time. We are dedicated to streamlining the administrative processes by providing students with the highest level of student services.

Engineering Graduate Programs

Founded in 1912, the School of Engineering educates tomorrow's technical leaders in small and rigorous classes taught by expert faculty members. Our outstanding graduate programs offer master's and Ph.D. degrees, open university, and professional certificate programs.

Education Fitting Your Work Schedule and At Your Own Pace

Santa Clara University provides full-time students and busy working professionals in Silicon Valley with various education options to match their personal needs and working schedules, including:

- Degree Programs – full-time and part-time
- Certificate Programs – full-time and part-time
- Open University – take only the courses that interest you

To accommodate our students' busy working and internship schedules, all our graduate engineering classes are held outside of normal business hours, with early morning classes at 7-9 am, evening classes starting at 5 and 7 pm, and weekend classes. Our students can complete the program at their own pace.

For further information, please contact

Graduate Engineering Services
Santa Clara University
500 El Camino Real
Santa Clara, CA 95053
408-554-4061

Or Visit:

www.scu.edu/engineering/graduate

<https://www.scu.edu/engineering/academic-programs/aerospace-engineering-program/>

SANTA CLARA UNIVERSITY

Graduate Program

Aerospace Engineering

Master of Science



ENGR 0419



The Jesuit University in Silicon Valley

Aerospace Engineering



Aerospace students in this program learn to analyze, synthesize, and design aerospace systems through coursework and research activities.

The Master's Program in Aerospace Engineering (MSAE) at Santa Clara University is a two-year program targeted at students with an engineering or science background who want to pursue a career in the aerospace industry, government, or academia. The program provides scientific foundations in the following areas:

- space and atmospheric flight dynamics
- guidance, navigation, and control (GN&C)
- structures
- propulsion systems
- aerodynamics

Courses are taught in person by Santa Clara School of Engineering faculty and adjunct faculty, in conjunction with scientists and engineers from the local aerospace community in the San Francisco Bay Area.

Admission Requirements

- BS in aerospace or mechanical engineering from a program accredited by ABET
- Minimum of 3.0 GPA in all undergraduate upper division coursework in engineering, mathematics and science

Applicants who do not meet the above requirements may be considered for admission on a case by case basis.

Curriculum

A Master of Science degree in Aerospace Engineering (MSAE) requires 45 units of study with an overall GPA of 3.0 or higher. The student must develop a program of studies with the program's advisor in one of the main areas: aerodynamics, flight dynamics and control, propulsion systems, or structures. Courses taken to satisfy any particular requirement may be used to simultaneously satisfy additional requirements for which they are appropriate. The MSAE degree must include the following:

- Engineering Core requirement as described in Chapter 4 of the Graduate Bulletin of the School of Engineering (6 units)
- Math requirement (8 units): MECH 200 and 201, or MECH 202 and approved two-course sequence or equivalent four units course in Applied Math. Optimization Techniques, Numerical Analysis, Probability and/or Linear Algebra are recommended.
- Culminating Experience: 4-9 units towards a thesis or project course sequence

A thesis requires a faculty advisor and must be approved by an additional reader and the department chair. Thesis topics are to be determined by the student and faculty advisor. The additional reader need not be a Mechanical Engineering faculty member, but must be a full-time faculty member in the School of Engineering.

The student may take any additional graduate courses offered by the School of Engineering to meet the 45 unit requirement but no more than 6 units of Engineering Management courses may be taken.

Required Courses (minimum 8 units)

MECH 209-Continuum Mechanics (2 units)
MECH 214, 215-Advanced Dynamics I, II (4 units)
MECH 225, 226-Gas Dynamics I, II (4 units)
MECH 250, 251, 252-Finite Element Methods I, II, III (6 units)
MECH 266-Fundamentals of Fluid Mechanics (2 units)
MECH 268, 269-Computational Fluid Mechanics I, II (4 units)
MECH 270-Viscous Flow I (2 units)
MECH 323, 324-Modern Control Systems I, II (4 units)
MECH 334-Elasticity (4 units)

Required AE Courses (minimum 12 units)

MECH 205, 206-Aircraft Flight Dynamics and Control I, II (4 units)
MECH 220, 221-Orbital Mechanics I, II (4 units)
MECH 313-Aerospace Structures (4 units)
MECH 371-Space Systems Design and Engineering I (4 units)
MECH 431, 432-Spacecraft Dynamics and Control I, II (4 units)

Technical Electives

MECH 232, 233-Multibody Dynamics I, II (4 units)
MECH 299-Thesis (4-9 units)
MECH 315, 316-Digital Control Systems I, II (4 units)
MECH 329-Introduction to Intelligent Control (2 units)
MECH 355, 356-Adaptive Control I, II (4 units)
MECH 372-Space Systems Design and Engineering II (4 units)
MECH 420/ ELEN 238-Model Predictive Control (2 units)
MECH 423, 424-Nonlinear Systems and Control I, II (4 units)
MECH 429, 430-Optimal Control I, II (4 units)

