Appendix A
Background Information
A. BACKGROUND INFORMATION

I. Background Information Relative to College of Engineering

A. General Information

**College of Engineering**
One Washington Square • San José, California USA, 95192-0080
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Fax: 408-924-3818
E-mail: coe@email.sjsu.edu

Dean: Dr. Belle Wei
Associate Dean for Graduate and Extended Studies: Dr. Ahmed Hambaba
Associate Dean for Undergraduate Studies: Dr. Ping Hsu
Associate Dean for Research: Dr. Kevin Corker

B. College of Engineering’s Mission

We will provide empowering educational opportunities to students for their technical, professional and social development in a competitive and dynamic global society. We will build a vibrant community of students, faculty, staff, alumni, and industry professionals through strategic collaborations with Silicon Valley, California, national and global partners.

**College of Engineering Goals**
The College has identified three goals to achieve its vision and mission.

- To be preeminent among undergraduate engineering institutions in the U. S.
  - Nationally recognized for engagement with local and global industries
  - Preferred California State University campus for undergraduate engineering education
  - Nationally recognized for curriculum and quality of undergraduate experience
- To be a nationally recognized, professionally oriented graduate engineering program
  - Nationally recognized for an applied technological curriculum
  - Coordinated graduate and outreach programs responsive to regional industry
- To be the preferred partner for applied research and development
  - Initiating centers of excellence and programs

C. Alignment with University Mission and Goals

**University Mission**
In collaboration with nearby industries and communities, SJSU faculty and staff are dedicated to achieving the university's mission as a responsive institution of the State of
California. To enrich the lives of its students, to transmit knowledge to its students along with the necessary skills for applying it in the service of our society, and to expand the base of knowledge through research and scholarship.

Goals-
For both undergraduate and graduate students, the university emphasizes the following goals:

- In-depth knowledge of a major field of study.
- Broad understanding of the sciences, social sciences, humanities, and the arts.
- Skills in communication and in critical inquiry.
- Multi-cultural and global perspectives gained through intellectual and social exchange with people of diverse economic and ethnic backgrounds.
- Active participation in professional, artistic, and ethnic communities.
- Responsible citizenship and an understanding of ethical choices inherent in human development.

Character and Commitment-
“San José State University is a major, comprehensive public university located in the center of San José and in the heart of Silicon Valley. SJSU is the oldest state university in California. Its distinctive character has been forged by its long history, by its location, and by its vision - a blend of the old and the new, of the traditional and the innovative. Among its most prized traditions is an uncompromising commitment to offer access to higher education to all persons who meet the criteria for admission, yielding a stimulating mix of age groups, cultures, and economic backgrounds for teaching, learning, and research. SJSU takes pride in and is firmly committed to teaching and learning, with a faculty that is active in scholarship, research, technological innovation, community service, and the arts.”

D. Faculty and Students

Table A-1 provides a summary of the faculty and student counts for the Fall Semester of 2005 for the College and each program under evaluation.

<table>
<thead>
<tr>
<th></th>
<th>HEAD COUNT</th>
<th>FTE</th>
<th>TOTAL STUDENT CREDIT HOURS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>FT</td>
<td>PT</td>
<td></td>
</tr>
<tr>
<td>Tenure Track Faculty</td>
<td>66</td>
<td>5</td>
<td>60.53</td>
</tr>
<tr>
<td>Other Teaching Faculty</td>
<td>2</td>
<td>99</td>
<td>31.26</td>
</tr>
<tr>
<td>(excluding student assistants)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student Teaching Assistants</td>
<td>0</td>
<td>42</td>
<td>8.15</td>
</tr>
<tr>
<td>Undergraduate Students</td>
<td>2367</td>
<td>647</td>
<td>2593.45</td>
</tr>
<tr>
<td>Graduate Students</td>
<td>513</td>
<td>1022</td>
<td>645.86</td>
</tr>
<tr>
<td>Professional Degree Students</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Table A-1 Faculty and Student Head Counts, Fall 2005

FTE: Full-time Tenure Track Faculty = Tenured & Probationary. Part-time Tenure Track Faculty = Faculty Early Retirement Program (FERP). Full-time Other Teaching faculty = Lecturer at 1.00. Part-time Other Teaching Faculty = Lecturer < 1.00. Student Teaching Assistants = Grad. Assistants & Teaching Associates, which we only considered as part-time only.

E. Engineering Personnel and Policies

Personnel – See Table A-2.

<table>
<thead>
<tr>
<th>College of Engineering</th>
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</thead>
<tbody>
<tr>
<td>Year: Fall 2005</td>
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<tr>
<td>College of Engineering</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HEAD COUNT</th>
<th>FT</th>
<th>PT</th>
<th>FTE</th>
<th>RATIO TO FACULTY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrative</td>
<td>2</td>
<td>7</td>
<td>5.2</td>
<td></td>
</tr>
<tr>
<td>Faculty (tenure-track)</td>
<td>82</td>
<td>5</td>
<td>70</td>
<td></td>
</tr>
<tr>
<td>Other Faculty (excluding student Assistants)</td>
<td>5</td>
<td>120</td>
<td>42</td>
<td></td>
</tr>
<tr>
<td>Student Teaching Assistants</td>
<td>0</td>
<td>42</td>
<td>9.15</td>
<td></td>
</tr>
<tr>
<td>Student Research Assistants</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technicians/Specialists</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Office/Clerical Employees</td>
<td>14</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Undergraduate Student Enrollment</td>
<td>2367</td>
<td>647</td>
<td>2214</td>
<td>19.7</td>
</tr>
<tr>
<td>Graduate Student Enrollment</td>
<td>513</td>
<td>1022</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table A-2. Personnel and Students

F. Non-Academic Support Units

a. The College of Engineering Computing Systems

The College of Engineering Computing Systems (ECS) is comprised of five full-time employees. Each individual is assigned an area of interest or specialization. The areas of interest and specialization are: faculty and staff desktop support, networking, World Wide Web (WWW), UNIX laboratories, and academic instructional laboratories. Several student assistants are shared by all ECS personnel.
Faculty and Staff Support

ECS develops and supports laboratory, faculty, and staff computer systems; implements, configures and maintains application software; network operating systems; provides Internet connectivity, and manages hardware and software licenses. ECS ensures the functionality, applicability, and maximum uptime of laboratory servers and workstations. As well, ECS ensures operational, reliable, secure, and optimal computer systems for academic computer laboratories and desktops.

The following list outlines specific work activities performed by ECS support personnel:

(1) Scott Pham, Information Systems Analyst, Career Level

- Plan, design, specify, evaluate select, order, install, configure, maintain, and administer software and hardware for servers, clients, and peripherals in academic computer laboratories. (See Exhibit II-3a)
- As needed, plan, specify, evaluate select, order, install, configure, and maintain software and hardware for faculty and staff desktop computers and peripherals.
- Troubleshoot laboratory and user operating systems and application software. Diagnose and repair computers and peripheral equipment. Develop procedures for secure and efficient laboratory use. Development of quick-recovery procedures to restore corrupt laboratory computer systems.
- Support faculty and staff as technical consultants for software, operating systems, and Internet connectivity issues.
- Maintain currency of virus protection. Maintain FTP server with current virus software and updates. Maintain frequent email and personal contact with faculty and staff.

(2) William Black, Operating Systems Analyst, Career Level

- Design, implement, and maintain UNIX laboratory hardware and software for the purpose of coursework and research. (See Exhibit II-3b)
- Provide supplemental support to department technicians.
- Assist in developing department and college-wide systems and policies.
- Investigate and evaluate new products and solutions.
- Assist the Network Administrator with developing and implementing network configuration changes.
- Work directly with faculty and staff to resolve individual computer issues. (Help Desk)

(3) In the Process of Hiring, Information Systems Analyst, Career Level, Webmaster

- Creates and manages the information content (words and pictures) and organization of the COE Web site (http://www.engr.sjsu.edu).
- Manages the computer server and technical programming aspects of the Web site.
- Educates and supports faculty and staff with Web related functions.
Works with ECS staff, department Chairs and Dean to establish the overall COE Web site design and policies.

The College of Engineering Webmaster typically "does it all." The Webmaster is someone with graphics design background who has also Web site creation skills and programming skills; mainly knowledge and experience with HTML, JAVA, and DHTML. The Webmaster administers multiple servers (i.e.: Web, FTP, Email, ListServer, Database, Applications, Files server) and writes or implement programs required by the faculty and staff.

(4) Ben Rashid, Information Systems Analyst, Career Level

The hardware technician provides hardware support and maintenance for the College of Engineering. The hardware technician is expected to: maintain, install, repair, and troubleshoot component level hardware in microcomputer systems, peripheral equipment, and local area networks; provide technical support for faculty and staff; act as liaison with hardware and software vendors; recommend upgrade requirements for software and hardware; maintain and monitor the College of Engineering computer inventory; and train and work closely with student assistants.

Specifically, Mr. Rashid troubleshoots email problems, desktop network issues, printing problems (including network printing), system performance issues, peripheral configuration, user account management, system security, part repair and service, hardware and software compatibility issues, and user data migration when new systems are installed.

(5) Kindness Israel, Information Systems Analyst, Expert Level, Director

The ECS Director is responsible for developing, implementing, managing, and maintaining cost-effective, reliable College-wide computing and network systems, which includes administrative systems, instructional computer labs, and Internet access. The Director makes specifications for procurement, installation, support, and maintenance of requisite hardware and software for the COE, makes recommendations for all Engineering departments, develops and implements operational policies, procedures, and practices necessary for reliable delivery of computing and network services in consultation with the Central Computing and Telecommunications, coordinates technology projects with the appropriate faculty, staff, and students, builds consensus and solicits input when making significant changes, and maintains good channels of communication in terms of decisions and policies associated with the delivery of technical services within the College. He provides support and direct supervision of personnel subordinate to this position (5 full time staff and 40 hours/week student assistants) including initiating and monitoring project planning and reviews, recommending personnel actions, preparing performance reviews, job descriptions, participates in recruitment of ECS personnel. He develops and implements requests and proposals for acquisition of equipment, software, supplies, and services, and assists in providing technical training for faculty and staff. The director also develops and
maintains databases, records, documents, and files associated with computing and networking systems.

a-2. ECS Scope of Responsibility

a-2.1. Network Infrastructure
Responsible Person(s): Kindness Israel, William Black, Scott Pham
Scope: COE Building, IS Building, Aviation Building, All Departments
Hardware/Software:

- COE IP Copper/Fiber Backbone (Currently 2000 ports)
  - 4 Alcatel 9 Slot OmniSwitches
  - 15 Alcatel 5 Slot OmniSwitches
  - 16 Alcatel 3 Slot OmniSwitches
  - 7 Alcatel 5024 OmniStacks
  - 4 Alcatel 1032 OmniStacks
  - Dozens of Netgear and Linksys Hubs
  - 6506 Cisco Router
  - 2511 Cisco Router

- COE Wireless Network
  - Linux Router/Gateway
  - 8 Wireless Linksys Access Points
  - RADIUS Server

- SUSU Wireless Network
  - Router
  - 4 Switches
  - 16 Cisco 1200 Access Points

Design and Implementation of New Network (Upgrade to 4,000 ports)

- New Cat6 Copper and Multimode Fiber Infrastructure by May 2005
- New Cisco Electronics by August 2005

Student/Faculty Impact: Administration, Staff, Faculty, and Students
Policy/Guidelines: Internet usage policies are determined by the CSU Chancellor's office.

a-2.2. Core Servers
Responsible Person(s): Kindness Israel, William Black, Scott Pham
Scope: COE, All Departments
Hardware/Software:

- Firewall (Linux using iptables)
- Xvision Server (Alcatel SNMP Server)
- VPN Server (Firewall access for Faculty)
- 3 DNS Servers (Domain Name Server Address Resolution)
- DHCP Server (IP Address Leasing)
- MRTG Monitor (Security Monitoring)
- MIRROR Server (Linux Software Application Server)
- 3 ENGR MS Active Directory Servers (Primary Domain Controller)
- Oracle 8i INFO Database (Faculty/Staff Database)
- Oracle 8i CMPE Database (CMPE 138, 143)
Application Development Server (Opentrak, Peoplesoft Access)

Student/Faculty Impact: Administration, Staff, Faculty, and Students
Policy/Guidelines: ECS is responsible for the procurement, installation, and maintenance of all hardware and software necessary to ensure the smooth operation of the COE computing infrastructure.

a-2.3. COE Academic Laboratories
Responsible Person: Scott Pham
Scope: E333, E390, E391, E407, E393, E394
Hardware/Software: 150 Pentium Computers, Domain Controller, and File Server / MS Win2000
Student/Faculty Impact: All Undergraduate Students, and Faculty
Policy/Guidelines: ECS is responsible for the procurement, installation, and maintenance of all hardware and software necessary to conduct computer laboratory instruction in the COE academic laboratories (Exhibit II-3a).

a-2.4. Open Laboratories
Responsible Person: Scott Pham
Scope: E405 and E390
Hardware/Software: 50 Pentium Computers, Domain Controller / MS WinNT
Student/Faculty Impact: Undergraduate, Graduate Students, and Faculty
Policy/Guidelines: ECS is responsible for the procurement, installation, and maintenance of all hardware and software necessary to conduct computer laboratory instruction in the COE open laboratories (Exhibit II-3a).

a-2.5. Department Laboratories
Responsible Person(s): Faculty members who conduct classes in the laboratories and department technicians.
Scope: Network access is provided by ECS.
Hardware/Software: MS Operating Systems, Sun Solaris, Linux
Student/Faculty Impact: Undergraduate, Graduate Students, and Faculty
Policy/Guidelines: ECS provides network access to all department laboratories. ECS provides secondary-level support to every department and research laboratory. Secondary-level support consists of answering any technical questions posed by the faculty or department technician thus ensuring the successful implementation of the project or class. Any ECS person may be called upon to assist.

a-2.6. Research Laboratories
Responsible Person(s): Faculty members who originally obtained the grant and department technicians.
Scope: Network access is provided by ECS.
Hardware/Software: Varies
Student/Faculty Impact: Graduate Students, Faculty
Policy/Guidelines: ECS provides network access to research laboratories such as the HAIL Lab, Cisco Laboratory, and faculty research laboratories. ECS provides
secondary-level support to every department and research laboratory. Secondary-level support consists of answering any technical questions posed by the faculty or department technician thus ensuring the successful implementation of the project. Any ECS person may be called upon to assist.

a-2.7. UNIX (Solaris) Laboratories
Responsible Person(s): William Black, Kindness Israel
Scope: Primarily EE and CMPE Cadence Laboratories and Research Laboratories
Hardware/Software: 120 Sun Solaris, IBM AIX, and Linux on Intel Architecture
Student/Faculty Impact: Graduate Students enrolled in Cadence Classes, Department Graduate Research Projects
Policy/Guidelines: ECS provides UNIX support for all departments of the COE (Exhibit II-3b).

a-2.8. WWW.ENGR.SJSU.EDU Website
Responsible Person: In the Process of Hiring
Scope: COE, All Departments
Hardware/Software: Dell Linux Server / Apache, MySQL, PHP, WebAdmin, Photoshop
Student/Faculty Impact: All Administrative, Faculty, Staff, and Students
Policy/Guidelines: ECS maintains the COE home page and provides support for all departments and faculty. Many departments have their own webmasters. ECS has always sought to coordinate and streamline the efforts of the department webmasters with the COE main page.

a-2.9. Administrative Desktop Support
Responsible Person: Ben Rashid
Scope: Dean and Graduate Studies Offices, CEE, ChemE
Hardware/Software: Domain Controller and File Server / Microsoft Windows and Office Suite Software - All Versions, PeopleSoft, Oracle Discover Clients, Photoshop, and assorted workflow applications.
Student/Faculty Impact: Administration, Staff, and Faculty
Policy/Guidelines: ECS provides front-line support to the Dean and Graduate Studies, and CEE. The other departments in the COE have department-level technician support. ECS provides secondary-level support to every department. Secondary-level support consists of answering any technical questions posed by the faculty or department technician thus ensuring the successful implementation of the department's operation. Any ECS person may be called upon to assist.

a-2.10. Email Support:
  Lotus Notes
  Responsible Person: Ben Rashid
  Scope: COE, All Departments
  Hardware/Software:
    Lotus Notes Servers - Central Computing
    Lotus Notes Clients - Ben Rashid
  Student/Faculty Impact: Administration, Staff, and Faculty
Policy/Guidelines: It is the responsibility of ECS to install and configure the Lotus Notes client. Lotus Notes servers are administered by Central Computing. Lotus Notes is the preferred (and recommended) email service for administrative, staff, and faculty usage.

Eudora
   Responsible Person: Scott Pham
   Scope: COE, All Departments
   Hardware/Software: Eudora Clients
   Student/Faculty Impact: Administration, Staff, and Faculty
   Policy/Guidelines: It is the responsibility of ECS to install and configure the Eudora client. Department technicians also assist with email client installations.

MS Outlook, Mozilla, and Other Email Clients
   Responsible Person(s): ECS Staff
   Scope: COE, All Departments
   Hardware/Software: Eudora Clients, Mozilla, Netscape, and MS Outlook
   Student/Faculty Impact: Administration, Staff, and Faculty
   Policy/Guidelines: It is the responsibility of ECS to install and configure Email clients in the absence of department technicians or in instances where special problems are encountered.

a-2.11. Faculty and Staff Desktop Support
   Responsible Person(s): Department Technicians, Ben Rashid, ECS Staff
   Scope: COE, All Departments
   Hardware/Software: Microsoft Windows - All Versions
   Student/Faculty Impact: Administration, Staff, and Faculty
   Policy/Guidelines: ECS provides front-line support to the Dean and Graduate Studies, and CEE. The other departments in the COE have department-level technician support. ECS provides secondary-level support to every department. Secondary-level support consists of answering any technical questions posed by the faculty or department technician thus ensuring the successful implementation of the department's operation. Any ECS person may be called upon to assist.

a-2.12. Backups
   Responsible Person(s): ECS Staff
   Scope: COE, All Departments
   Hardware/Software: Intel Architecture, Sun Sparc, Network Devices, Core Servers, File Servers, and Domain Controllers / Linux, Solaris, Windows 2000, Databases, Student Accounts, and Research data
   Student/Faculty Impact: Administrative, Faculty, Staff, and Students
   Policy/Guidelines: Kindness Israel performs daily and weekly backups on the COE core servers, databases, and Linux student accounts. Solaris student accounts are the responsibility of William Black, Scott Pham is responsible for the academic laboratory domain controllers and related student accounts, and Ben Rashid is responsible for the administrative domain controllers and file servers. In the Process of Hiring is responsible
for the COE WWW server and related accounts. Sigurd Meldal performs daily backups on the CMPE administrative accounts. The other COE departments perform no regular or scheduled backups.

a-2.13. Anti-Virus and Security
Responsible Person(s): Scott Pham, Kindness Israel, William Black
Scope: COE, All Departments
Hardware/Software: Intel Architecture / Microsoft Windows - All Versions
Student/Faculty Impact: Administrative, Faculty, Staff, and Students
Policy/Guidelines: The COE purchases McAfee AntiVirus software for distribution to the faculty and staff. ECS oversees and ensures that antivirus software updates are distributed to the COE department technicians for installation.

Security is primarily a subdivision of networking. The primary network defense is the COE firewall. Unfortunately, an inordinate amount of time is required to track-down abusers of the system. The security and best practices of the CSU are posted on the ECS Networking Web Page.

a-2.14. Software
Microsoft CD Library and Distribution Server (ecs_apps)
Responsible Person: Scott Pham
Scope: COE, All Departments
Hardware/Software: MS Operating Systems, MS Office Suite
Student/Faculty Impact: Faculty, Technical Staff
Policy/Guidelines: The COE purchases a minimal number of distribution disks and licenses. The original CDs are archived and the images are distributed via Juanita's share server which can be accessed using a password and shared link. All department technicians use the share server daily. Certain bootable CDs must be replicated from the original CDs. Juanita performs the CD creation task for the COE.

Software Licenses
Responsible Person: Scott Pham
Scope: Faculty
Hardware/Software: Matlab, McAfee, ASAP Contracts
Student/Faculty Impact: Faculty and Students
Policy/Guidelines: ECS obtains and maintains the software licenses. EE also has an extended version of Matlab applications. Matlab and AutoCad are distributed to the department technicians via the ECS application server along with non-licensed software.

a-2.15. COE and ECS Department Purchases
Responsible Person(s): Kindness Israel, Scott Pham, and Ben Rashid
Scope: COE, ECS, All Departments
Hardware/Software: All computer hardware and software necessary to maintain the COE and ECS departments.
Student/Faculty Impact: Administrative, Faculty, and Staff
Policy/Guidelines: In addition to the COE Dean and Graduate Studies office purchases, ECS also researches and advises faculty members and technical staff about where and how to obtain the most cost efficient hardware and software.

a-2.16. Staff Training  
Responsible Person(s): ECS Staff  
Scope: Department Technicians  
Hardware/Software: Intel and Sun / Microsoft Windows - All Versions, Linux, Sun Solaris  
Student/Faculty Impact: Department Technicians  
Policy/Guidelines: ECS has conducted classes for department technicians and maintains a mailing list for the purpose of keeping the technical staff informed of upcoming relevant events and special classes. By and large, a constant dialog and exchange of information is conducted between ECS and the technical staff.

a-2.17. Walk-In and Phone Support  
Responsible Person(s): ECS Staff  
Scope: COE, All Departments  
Hardware/Software: All.  
Student/Faculty Impact: Faculty, Technical, and Administrative Staff  
Policy/Guidelines: ECS has an "open door" policy toward questions and eagerly looks forward to helping any COE faculty, staff, or student solve their computer or network problems.

a-2.18. Special Projects  
Responsible Person: Kindness Israel  
Scope: Students  
Hardware/Software: Linux / Linux  
Student/Faculty Impact: Students  
Policy/Guidelines: Kindness Israel is the sponsor of the San Jose State Linux Users Group (SJSULUG). The club meets in E239 and has built several Linux clusters for research projects.

a-2.19. Student Organization Rooms  
Responsible Person(s): Department Technicians  
Scope: Departments  
Hardware/Software: Intel / Microsoft Operating Systems - All Versions.  
Student/Faculty Impact: Faculty, Students  
Policy/Guidelines: The department club rooms are maintained by the departments. ECS provides network access.

a-2.20. Development of Disaster Recovery Documentation/FAQs  
Responsible Person(s): ECS Staff  
Scope: COE, ECS  
Hardware/Software: All  
Student/Faculty Impact: ECS Staff
Policy/Guidelines: Every ECS staff member is required to produce a disaster recovery booklet or spreadsheet of computers under their care. The documentation contains the name, type, location, and any pertinent information about how to login, shutdown, and restart the machine and its primary services. ECS also maintains several

a-2.21. Software Development
Responsible Person(s): Kindness Israel, Student Assistant
Scope: Administration, Faculty, Staff
Hardware/Software: Linux on Intel Architecture / Advisor, Room Scheduler, Monitor Software, OpenTrak, Student Data, Login Accounts, COE Databases, Department Queries, UNIX Scripts.
Student/Faculty Impact: Administrative, Faculty, Students
Policy/Guidelines: ECS has traditionally employed a student programmer for the purpose of providing direct access to SIS and PeopleSoft data. These data have been used to create a myriad number of products and solve complex IT problems.

a-2.22. Inventory and Resources
Responsible Person: Kindness Israel
Scope: COE Building
Hardware/Software: Annual Inventory conducted with FD&O
Student/Faculty Impact: N/A
Policy/Guidelines: FD&O requires that all computer items and network equipment costing more than $5,000 be accountable. Overall, ECS is directly responsible for over a million dollars worth of computer and network equipment.

a-2.23. Computer and Printer Repair
Responsible Person(s): ECS Staff, Student Assistant
Scope: Academic Laboratories, Administrative Offices, Core Servers, ECS Desktops
Hardware/Software: Core Servers, Laboratory Computers, Administrative Computers, Sun Servers, Printers
Student/Faculty Impact: Undergraduate Students, Faculty, Administrative Staff
Policy/Guidelines: The academic laboratories are the sole responsibility of ECS. The Dean's office and Graduate Studies office are the sole responsibility of ECS. ECS also maintains the software and hardware contracts for the Cadence Solaris laboratories but does not purchase the licenses. Printers are generally cleaned and repaired locally by Ben Rashid or a student assistant.

b. Student Advising and Services

b-1. College of Engineering Units

The College of Engineering has two college-level student advising and supporting units: the Engineering Student Advising Center and the MESA Engineering Program.

The Engineering Advising Center was established in Spring 2005. The Center provides the following services to all engineering students:
• General Education requirement advising
• Monitoring and advising of students on probation
• Study skills workshops
• New Student Advising

The goal of the MESA Engineering Program is to increase the number of competent and qualified graduates entering the engineering profession from groups with low eligibility rates in college admissions. The program provides the following services: student study center, Academic Excellence Workshops, professional development workshops, freshmen orientation, career advising, and supports to student organizations.

c. Design and Fabrication Services

College of Engineering Central Shop is staffed by two full-time mechanics and several part-time student assistants. Central Shop provides a variety of services in the shops, laboratories, and related areas in support of the teaching and research needs of the instructional programs. The responsibilities of the central shop are maintenance and repair of mechanical equipment, design, fabrication and installation of teaching devices and apparatus for instructional, student projects, and faculty research needs, and providing guidance to faculty and students on machine operations.
II. Background Information Relative to the Department

A. General Information

The Department offers Mechanical Engineering and Aerospace Engineering Programs in both undergraduate and master’s degree levels. Currently the Department has 12 full-time faculty members and about 15 part-time faculty members, and the student enrollment is approximately 1,000 in Fall 2006.

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Professor and Chair
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Tel. (408) 924-4298
Fax (408) 924-3995
Email barezf@email.sjsu.edu

B. Department’s Mission, Goals, and Commitment

The Department’s mission is to serve society, the public sector, and private industry by:

- Providing undergraduate and graduate Mechanical and Aerospace engineering education that prepares students with the knowledge, modern applications and lifelong learning skills required to serve the engineering profession and industry.
- Contributing to the development and application of knowledge through faculty scholarship.
- Preparing students for the modern professional-practice environment.

C. Alignment with College’s Mission and Goals

The Mechanical Engineering Program is designed to align with College’s mission and goals. It provides students with a broad understanding of basic Mechanical engineering concepts, as well as the contemporary skills required by industry. The foundation courses provide a basis for professional competence and the required knowledge to focus on a particular specialization upon graduation, either in the work environment or through pursuing further advanced degrees. Courses that develop contemporary skills provide students an ability to be immediately competitive and productive as they begin their professional careers. The coursework includes extensive laboratory experiences and many opportunities for students to complete applied projects and designs. The Program also provides opportunities for co-op experiences and involvement in research projects through faculty & industry.

The Undergraduate Mechanical Engineering Program Educational Objectives (PEO) reflect our constituents’ expectations and the first goal of the College (To be preeminent...
among undergraduate engineering institutions in the U. S.) that our graduates should have:

1. A strong foundation in mathematics, basic science and engineering fundamentals, to successfully compete for entry-level positions or pursue graduate studies in ME or related fields.

2. Contemporary professional and lifelong learning skills including hands-on laboratory experience, familiarity with computers, modern software, and information technology, to successfully compete in the local, national and global engineering market.

3. Strong communication and interpersonal skills, broad knowledge, and an understanding of multicultural and global perspectives to work effectively in multidisciplinary teams, both as team members and as leaders.

4. An understanding of the ethical choices inherent in the engineering profession to deal with issues such as public safety, product marketing, and respect for intellectual property.

The Graduate Mechanical Engineering Program Educational Objectives (GPEO) aligns with the second goal of the College (To be a nationally recognized, professionally oriented graduate engineering program) that our MS graduates should have:

1. A strong foundation beyond the undergraduate level in their chosen focus area as well as in mathematics, basic science and engineering fundamentals, to successfully compete for technical engineering positions in the local, national and global engineering market, advance in their current position or pursue doctoral studies.

2. Professional and lifelong learning skills to be able to apply and extend theory to solve practical contemporary engineering problems.

3. The expertise necessary to undertake systems design and methodology related to mechanical engineering systems with possible specialization in areas such as: Energy Systems, Electronics Cooling, Electronics Packaging & Reliability, Finite Element Analysis & CAD, Mechatronics & MEMS, Product Design, Robotics, Automation & Manufacturing.

4. Strong verbal and written communication skills, including the ability to read, write, and comprehend technical documents.

5. Think and work independently to perform design and in-depth analysis in solving open-ended mechanical engineering problems.

In addition, faculty members engaging in research and development with local industry is aligned with the third goal of the College (To be the preferred partner for applied research and development).
D. Program Offered and Degree Granted
The Department offers two programs, Mechanical Engineering and Aerospace Engineering Programs, leading to award degrees in:

*Bachelor of Science in Mechanical Engineering* with the following areas of focus:
- Mechanical Design
- Mechatronics
- Thermal / Fluids

*Bachelor of Science in Aerospace Engineering* with the following areas of focus:
- Aircraft Design
- Spacecraft Systems,
- Space Transportation & Exploration

*Master of Science in Mechanical Engineering* with the following areas of specialization:
- Mechanical Engineering Design
- Thermal / Fluid Systems Engineering
- Controls and Manufacturing Systems

*Master of Science in Aerospace Engineering* with the following areas of specialization:
- Aircraft Design
- Spacecraft Systems,
- Space Transportation & Exploration

In addition, the department participates in the interdisciplinary Master of Science in Engineering (MSE) degree program. Off-campus cohort-based graduate MSME and MSAE programs were launched with the 2000/01 academic year at Lockheed-Martin Company in Sunnyvale, California.

E. Student Enrollment, Degree Data, and Enrollment Projection
Student enrollment in the MAE Department has been increased steadily for the past five years (2001 to 2005) and reached the peak in 2006. It is our projection that the enrollment will be held flat for the next two years before declining takes place. The table below shows the Fall semester enrollment figures from Year 2001 to 2005 for both undergraduate and graduate programs in Mechanical Engineering and Aerospace Engineering.

<table>
<thead>
<tr>
<th></th>
<th>Fall 2001</th>
<th>Fall 2002</th>
<th>Fall 2003</th>
<th>Fall 2004</th>
<th>Fall 2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>ME</td>
<td>389</td>
<td>414</td>
<td>439</td>
<td>451</td>
<td>474</td>
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<tr>
<td>Undergraduates</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ME</td>
<td>53</td>
<td>78</td>
<td>110</td>
<td>120</td>
<td>118</td>
</tr>
<tr>
<td>Graduates</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AE</td>
<td>137</td>
<td>146</td>
<td>147</td>
<td>138</td>
<td>139</td>
</tr>
<tr>
<td>Undergraduates</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

Appendix A 17
The approximate numbers of bachelor’s degrees and master’s degrees awarded for the past 5 academic years (2001/2002 to 2005/2006) are listed in the table below:

<table>
<thead>
<tr>
<th></th>
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<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ME</td>
<td>48</td>
<td>8</td>
<td>80</td>
<td>12</td>
<td>74</td>
<td>19</td>
<td>99</td>
<td>48</td>
<td>86</td>
<td>28</td>
</tr>
<tr>
<td>AE</td>
<td>11</td>
<td>3</td>
<td>12</td>
<td>2</td>
<td>17</td>
<td>16</td>
<td>16</td>
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<tr>
<td>Total</td>
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<td>92</td>
<td>14</td>
<td>91</td>
<td>35</td>
<td>115</td>
<td>58</td>
<td>100</td>
<td>40</td>
</tr>
</tbody>
</table>

F. Admission and Graduation Requirement

**Undergraduate admission and graduation requirements**

Generally, first time freshman applicants will qualify for regular admission if they meet the following requirements:

1. Have graduated from high school, have earned a Certificate of General Education Development (GED) or have passed the California High School Proficiency Examination; and
2. Have a qualifiable minimum eligibility index – the eligibility index is the combination of high school grade point average and score on either the ACT or the SAT (Eligibility Index Table is available in the SJSU catalog on page 438), and
3. Have completed with grades of C or better each of the courses in the comprehensive pattern of college preparatory subject requirements.

Transfer students who have completed fewer than 60 transferable semester college units are considered lower division transfer students. Students who have completed 60 or more transferable semester college units are considered upper division transfer students.

Generally, applicants will qualify for admission as a lower division transfer student if they have a grade point average of at least 2.0 (C or better) in all transferable units attempted, are in good standing at the last college or university attended, and meet any of the following standards:

1. Will meet the freshman admission requirements (grade point average and subject requirements) in effect for the term to which they are applying; or
2. Were eligible as a freshman at the time of high school graduation except for the subject requirements, and have been in continuous attendance in an accredited college since high school graduation, and have made up the missing subjects.

Generally, applicants will qualify for admission as an upper division transfer student if they meet the followings requirements:
1. They have a grade point average of at least 2.0 (C or better) in all transferable units attempted; and
2. They are in good standing at the last college or university attended; and they have completed at least 30 semester units of college coursework with a grade of C or better in each course to be selected from courses in English, arts, and humanities, social science, science and mathematics at a level at least equivalent to courses that meet general education requirements.

The ME Program requires successful completion of courses in the following areas: General Education, Human Performance, Mathematics and Sciences, Engineering Core, Requirements for the Major, One Capstone Course, and Technical Elective Courses. Technical Elective courses can be chosen from a list of available courses either for breadth or focus among the three areas of Mechanical Design, Mechatronics, or Thermal/Fluids with approval of the Department Academic Advisor. A total of 134 units is required for graduation. The Undergraduate ME Program brochure is attached in Appendix D.

To qualify for a baccalaureate degree in Mechanical Engineering, a student must receive a grade of ‘C-’ or better in all courses required for the program (Major and Technical Electives) and earn a cumulative grade point average of at least “C” (2.0) in each one of the following categories: all college work (the overall average), all units attempted at SJSU, all units in the major, and all units in a minor (if any).

**Graduate admission and graduation requirements**

Students desiring to pursue a MSME degree must satisfy each of the following requirements:

1. Must hold a Bachelor of Science in Mechanical Engineering (Aerospace Engineering) degree from a Mechanical Engineering Program (Aerospace Engineering Program) accredited by "Accreditation Board of Engineering and Technology" (ABET), or equivalent.*
2. A minimum grade point average (GPA) of 3.0 on a 4.0 scale over the last 60 semester units completed in engineering and/or science. Conditional admittance may be granted for grade point averages between 2.5 and 3.0.
3. Students from non-ABET accredited Engineering programs and international universities must have obtained 1200 or more for the sum of verbal, quantitative, and analytic scores on the Graduate Record Examination (GRE). Scores for each section must also be 400 or greater.+ 
4. The university admission requires that the students from non-English speaking countries must achieve a minimum TOEFL score of 550. *

The Department offers courses designed to provide Mechanical Engineers with advanced level of knowledge and skills in three areas of specialization: (1) **Mechanical Engineering Design**, (2) **Thermal/Fluid Systems Engineering**, and (3) **Controls and**
Manufacturing Systems Engineering. The graduate program consists of thirty (30) semester units of approved work, and at least twenty-four (24) must be 200-level courses in mechanical engineering. The student has the choice of Plan A (with a Thesis) or Plan B (with a Project Report).

All students are recommended to concentrate their studies in one of the areas of specialization, with the Graduate Advisor's approval. Each area of specialization requires:

a) 6 units of required courses for the degree.

b) 12 units of suggested courses for specialization areas.

c) 6 units of electives recommended for the area but subjected to the approval by the Graduate Coordinator, the student may take up to 6 units of coursework from the undergraduate program of the Department, or graduate courses from other departments, colleges/universities, or open university units. Students are allowed and encouraged to take up to 6 units of graduate courses from other related Sciences and Engineering programs.

d) 6 units of Project/Thesis.

With Plan A, six (6) units of thesis credits ME 299 are required. With Plan B, six (6) units of ME 295A,B are required. Both plans require an open examination to be conducted by the student’s thesis/project committee. Both the University GPA and the Mechanical and Aerospace Engineering Department GPA must be at least 3.0.

*Special programs can be developed for those with degrees from other related disciplines. These programs must be approved by the Graduate Studies Committee of the Department.

+ Special consideration may be given when the verbal score is below 400 but TOEFL score is above 600.

x This requirement is waived if the language of instruction at the home country is documented to be in English.
G. Department Advisory Council (DAC)

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