

**STRATEGIC PLAN  
DEPARTMENT OF COMPUTER SCIENCE**

**Objective #1: Provide Broad Knowledge**

**Instruments:** Electronic Survey by the Chairman  
Feedback from the Industrial Advisory Board (IAB)  
Feedback from Industry, Supervisors of Interns  
Verbal Feedback to the Chairman from Various Sources  
Alumni Survey of 1999  
Alumni Survey of 2000  
GRE Scores of Graduates  
Departmental Faculty Review  
Probationary Faculty Review  
College of Science Exit Questionnaire  
Midterm Student Questionnaire of New/Visiting Faculty Classes

**Frequency of Data Collection:** Each semester or year

**Improvements Identified:**

- Assistance is needed for freshman/sophomore new students.
- Use of technology for better communication in classrooms.
- Offer more sections of classes so students do not have difficulty in registering for courses they wish to have.
- Increase access to advisors.
- Facilitate assimilation of incoming new students.
- Increase the number of hours computer science labs are open.
- Improvements in individual faculty members teaching methodology are suggested for better learning.
- Create a graphics laboratory.
- Create a special project lab.
- Include embedded systems in the curriculum.
- More space needed for faculty, students, labs and classrooms.

**Improvements Implemented:**

- Tutors are hired every semester to assist freshman/sophomore students.
- Classrooms have been equipped with electronic projectors to display computer output, Elmos to project information directly from books, and overhead projectors to display information from transparencies.
- Funds were requested and received to open more sections of classes.
- In addition to departmental advisors, the College of Science created a permanent advising center with full-time staff.
- More than ten advising sessions are conducted during June-August time period for the incoming new students.
- Computer science lab hours have been increased.

- Students' comments and feedback are discussed with individual faculty members and improvements are incorporated. New faculty members are assigned mentors.
- A graphics laboratory has been created in DERR 231B.
- A lab has been created in DERR 231C. It has three servers and fifteen workstations. Five of these machines have Windows NT. Five machines boot Linux, and five Macintosh machines authenticate to a Mac OS/X server. The other two servers area Linux and Windows NT.
- CS 3468 was changed to focus on embedded computer systems and to include written/graded projects to reinforce technical writing skills.
- The university has spent almost a million dollars in providing new offices and labs for the Department of Computer Science.

## **Objective #2: Prepare Students for MS or PhD Programs**

**Instruments:** Alumni Survey 1999  
Alumni Survey 2000  
GRE Scores of Graduates  
Faculty/Course Evaluation by Students

**Frequency of Data Collection:** Each semester or year

### **Improvements Identified:**

- Improve opportunities for undergraduate research.
- Computer science materials in the library need to be kept current.

### **Improvements Implemented:**

- A grant proposal which includes funding for undergraduate research assistants titled, "Mathematical Model of Cavity-Bearing Molecules," has been submitted to NSF, on September 21, 2001, for approx. \$1,000,000. A grant on, "Federated Multicast in IP," has been funded by the Texas Higher Education Coordinating Board, \$84,257.00; 01/2002 -- 12/2003. A Department of Defense contract generates approximately \$60,000 per year for research on the tactical approach to implementation of the Military Domain Representation Framework strategy. Another grant proposal titled, "Parallelizing Automata in Distributed Systems," has been submitted to NSF for the amount of \$330,096. A proposal on "Efficient Delivery of Mutual Exclusion in Large Distributed Systems" in the amount of \$88,618 has been submitted to the Texas Higher Education Coordinating Board. Other faculty members have either submitted or are currently preparing grant proposals which will include support for undergraduate students.
- Budget increased for library acquisitions and a decision to purchase digital/on-line journal subscriptions from IEEE and ACM.

### **Objective #3: Provide Skills to Analyze**

**Instruments:** Electronic Survey by the Chairman  
Feedback from the Industrial Advisory Board (IAB)  
Feedback from Industry, Supervisors of Interns  
Verbal Feedback to the Chairman from Various Sources  
Alumni Survey 1999  
Alumni Survey 2001  
GRE Scores of Graduates  
Student Course Evaluation Form

**Frequency of Data Collection:** Each semester or year

#### **Improvements Identified:**

- Provide multi-operating system environments in the computer science laboratories.
- Implement multi-operating system environments in courses.
- Encourage students to perform research.
- Individual faculty members identify areas in their course delivery that need improvement based on student comments.
- The chair identifies improvements necessary for individual instructors in their courses.
- Student concerns about course content are identified.

#### **Improvements Implemented:**

- Computer science labs provide multi-operating system environment including Windows NT, Minix, Linux, Compaq Unix, and Solaris.
- Windows NT is introduced very early in the program. Other operating systems listed above are introduced in advanced courses. Currently, efforts are being made to introduce some of the other operating systems earlier in the program. For example, the department's Undergraduate Curriculum Committee recently recommended CS 2308 be based on Linux.
- Computer science faculty write grant proposals. Although we currently have received a limited number of grants, students are participating in faculty research through these grants. Students are also encouraged to participate in the honors thesis program.
- Individual instructors use the feedback to improve their course delivery.
- Chairman works with instructors, who have received evaluations indicating a need for significant improvement, to improve their instruction.
- Curriculum committee discusses and implements potential changes in course content based on student feedback.

#### **Objective #4: Prepare Students to be Computer Science Professionals**

**Instruments:** Electronic Survey by the Chairman  
Feedback from the Industrial Advisory Board (IAB)  
Feedback from Industry, Supervisors of Interns  
Verbal Feedback to the Chairman from Various Sources  
Alumni Survey 1999  
Alumni Survey 2000  
College of Science Exit Questionnaire  
Student Course Evaluation Form  
Midterm Student Questionnaire of New/Visiting Faculty Classes

**Frequency of Data Collection:** Every Semester or Year

#### **Improvements Identified:**

- Facilitate hands-on practical experience and system management skills.
- Create environment for students to learn skills of managing professional societies.
- Provide funds for student travel to attend workshops or conferences.
- Students who work in our labs, learning both hardware and software maintenance, were more attractive as employees to smaller companies.
- Students/employers desired more exposure to object oriented ideas, including, but not restricted to, concurrency with objects, distributed objects, standards used for objects such as CORBA, Java.
- Students/employers desired more exposure to standard networking protocols such as TCP/IP.

#### **Improvements Implemented:**

- The department created CS 4100 which is titled, “Computer Science Internship” course, to encourage students to acquire practical experience with industry. Projects in computer science courses emphasize hands-on experience. Over twenty students hired for working in computer science labs are provided skills for system management. In fact, all the computer science laboratories are run by students under the supervision of one lab coordinator.
- A computer science fraternity, “Chi-Sigma Chi”, has been created and it functions under the supervision of Prof. Jeff Slomka.
- Student travel funds have been established in the College of Science.
- Increased the number of student assistants in our labs.
- Modifications to CS 43780 to incorporate concurrency, synchronize, and remote method invocations.
- Modifications to CS 4310 to incorporate Internet protocols TCP/IP into the curriculum. Included topics are RFCs for POP3, SMTP, IMAP4, DNS, socket programming, client/server applications in Unix and more.

## **Objective #5: Prepare Computer Science Teachers**

**Instruments:** Alumni Survey 1999  
Alumni Survey 2000

**Frequency of Data Collection:** Annually

Preparing students to be teachers has been a traditional objective for all academic departments at SWT. However, changes in state laws have affected this effort in recent years. Previously, teachers had to be certified through programs at universities; but now, new teachers may be certified through programs independent of universities. For example, a person with a degree may get certified to be a teacher by applying for a teaching position with a school district without having a teaching certificate. Once employed by the school district, that teacher can receive 'teacher' training directly through the school district or one of Texas' Regional Education Centers. Thus, certification is achieved by training on the job. The number of students who come to the Department of Computer Science for teacher education has dwindled to almost nothing. It is likely this objective will soon be removed.

## **Objective #6: Provide Understanding of Math and Sciences**

**Instruments:** Alumni Survey of 1999  
Alumni Survey of 2000  
GRE Scores of Graduates  
Feedback from the IAB

**Frequency of Instruments:** Annually

### **Improvements Identified:**

- Lack of knowledge of basic physics or chemistry has hindered some computer science students.
- Our students have not been able to take advantage of the Physics/Technology chip manufacturing program that has been developed at SWT in the past 4 years.

### **Improvements Implemented:**

- In 1999, the department instructed the departmental and school advisors to advise students into physics/chemistry courses.
- In 2001, the department has begun discussions with the Department of Physics to require a physics course that will specifically meet our students' needs.
- Annually, the department's curriculum representative meets with the Department of Math's representative to discuss/approve the syllabus for the Discrete Mathematics courses.