UNIVERSITY OF TEXAS AT DALLAS

Self Study

Electrical Engineering

Electrical Engineering
The Erik Jonsson School of Engineering and Computer Science
The University of Texas at Dallas
Richardson, Texas 75083
http://www.utdallas.edu/dept/ee/

2005

Report prepared for the ABET Engineering Accreditation Commission

SELF-STUDY QUESTIONNAIRE

FOR THE REVIEW OF

THE ELECTRICAL ENGINEERING PROGRAM

The Erik Jonsson School of
Engineering and Computer Science
The University of Texas at Dallas
Richardson, Texas 75083

Submitted by

The University of Texas at Dallas

to the

Engineering Accreditation Commission

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The Future of The University of Texas at Dallas

Dean's Message

The Erik Jonsson School of Engineering and Computer Science is located in the heart of the "**Telecom Corridor®**". The Jonsson School focused, from its inception, on educating electrical engineers and computer scientists to serve the needs of local high-tech industry. In recent years, rapid growth in enrollments plus increased specialization have sparked the development of new degree programs in telecommunication engineering, the nation's first such accredited program, computer engineering, and software engineering. Together with the traditional EE and CS disciplines, these programs currently form the core of the School's academic curricula.

The Jonsson School and UTD stand poised for a new era of growth and excellence, based in large part on a 5-year, $300 million initiative involving the State of Texas, the UT System, and **Texas Instruments**. The plan, announced in June 2003, will significantly enhance both the breadth and quality of engineering education and research at UTD. Included is the construction of a 200,000 sq. ft. state-of-the-art research center, to be completed in 2006. This new facility will broaden the scope of current research activities and, more importantly, foster new interdisciplinary programs with related sciences such as physics, chemistry, and molecular biology, the UTD School of Management, and even the arts and humanities. It will also facilitate joint research with other outstanding local institutions such as UT Southwestern Medical Center.

The need for interdisciplinary programs has been driven by the rapid convergence of fields such as microelectronics, sensors, nanoscience, biotechnology, information science, and environmental and health sciences. As the boundaries between these disciplines become increasingly blurred, emerging technologies will rely more heavily on our ability to integrate them into a coherent engineering system. Most recently, we began a new initiative called "To 50 in five. With our community and corporate partnerships, UTD is poised to move into its next level of development - becoming one of the country's 50 Tier-One universities within the next five years. The Jonsson School is working tirelessly in conjunction with university officials to crack the ranks of the top 50 engineering programs and the top academic research institutions nationally. We are confident our effort will be successful.

These are exciting times for all of us at the Jonsson School. The opportunity to have an impact on the future of technology has never been greater. We are inviting all that have the interest and the desire to join us at UTD and play a part in forging that future.

C. Robert Helms
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Self-Study Report for Electrical Engineering

A. Background Information

1. Degree Titles

This program offers three-degree titles:

- Bachelor of Science in Electrical Engineering
- Masters of Science in Electrical Engineering
- Ph.D. in Electrical Engineering

2. Program Modes

The program is offered on-campus with classes both the day and evening classes. Distance learning is provided for students who live outside the boundaries of Dallas, Tarrant, Denton, or Collin County through the University of Texas Telecampus system.

3. Actions to Correct Previous Deficiencies

During the previous visit, the following items were addressed and corrected:

<u>Introduction</u>

The Erik Jonsson School of Engineering and Computer Science in The University of Texas at Dallas have taken the following actions to correct prior deficiencies as described using accreditation methodology required prior to EC 2000. These responses are keyed to specific comments.

<u>Institutional Weaknesses</u>

<u>Criterion I.C.1.f: Faculty Advising.</u> This criterion requires the faculty to assume responsibility for curricular and career advising. There is evidence in the student transcripts that some students are not being properly advised, especially during the first two years. Some students were skeptical of the new centralized advising system, citing lack of direct faculty contact and sometimes receipt of poor advice on course prerequisites. The new advising system does not appear to require that the faculty members are ultimately responsible for student advising. This must be considered a weakness, especially when it is noted that faculty advising has been an issue since at least the 1993 visit.

Response:

Beginning fall 1999, a new advising system was implemented consisting of four professional advisors, two support staff, and a manager who reports to the College Master. Since then, all engineering major students have been assigned both a faculty advisor and a professional advisor. A letter of introduction and a description of the new advising procedure were sent from the assigned faculty and professional advisors to all engineering students on March 20, 2000. To ensure that each student receives adequate advising, the policy requires each student to meet with their assigned faculty advisor and a professional advisor once per term in preparation for registration. In addition to introducing structured guidelines for faculty members to follow, a self-assessment is also planned once a year during May. Having professional advisors and faulty advisors working together in this way provides coordinated, comprehensive, and effective advising. While faculty advisors focus on engineering curricular and career advising, professional advisors provide additional aspects of the advising program, i.e., core curriculum, transfer issues, referral services, time management training, study skills, etc.

The new advising system greatly expands and formalizes the function of academic advising on campus, while still allowing each school freedom in how it organizes itself to provide this service to students. It recognizes the importance of good advising to academic success and capitalizes on the skills and talents of a professional advisor. It provides guidelines for continuous improvement of academic advising campus-wide and a format for each advising unit to evaluate it relative to the standards.

We believe that the new advising system properly utilizes the skills and capabilities of professional advisors and faculty. However, we recognize that the ultimate decision and recommendation on advising is the responsibility of the faculty, and the Associate Dean for Undergraduate studies.

Criterion I.C.6.d: Laboratory Facilities. The lack of a functioning laboratory plan at the time of the visit constitutes a weakness. Specifics such as detailed replacement schedules, anticipated future needs, and evidence of laboratory planning continuity seemed to be missing. While the labs appeared to be adequate at the time of the visit, neither the plan provided in Volumes I and II of the self-study report nor the plan presented on the last day of the visit appear to provide assurance that the current.

Response:

After the October 1999 visit, a faculty committee was appointed to develop a Laboratory Upgrade Plan. This plan was completed, approved by the faculty and forwarded to the Team Chair in December of 1999. This laboratory plan addresses three aspects of laboratory operation in The Erik Jonsson School of Engineering and Computer Science: course content, equipment, and space. In this context, equipment includes both hardware and software. The software aspects of the plan apply to all software used for undergraduate teaching, including but not limited to laboratory courses.

The Laboratory Committee has the major responsibility for Laboratory operations. Supporting and complementing this work is the Computer Committee. Together these committees provide the Dean with the requisite information needed to support equipment, computer and software purchase decisions, consistent with both needs and available resources. Lab assessment information solicited from the faculty is used to provide a periodic record of laboratory acquisitions and needs. This information guides the evaluation of requests for new equipment purchases submitted to the Lab Committee. In addition, the Laboratory Committee reviews academic content and coordinates activities within laboratory courses. This information is used to support laboratory equipment purchase decisions, to establish priorities, and to prevent unnecessary duplication. An underlying rule is to focus attention on one laboratory area each year, and rotate through all of the labs from year to year.

The student infrastructure fee of $3/SCH for all courses taken in the School generates the funds is to fund teaching labs, student computing equipment and classroom equipment within the School.

Institutional Concerns

1 .Criterion I.C.1.c: Faculty Size. There is concern that the faculty size will not be sufficient to handle expected future enrollment growth.

Response:

The Jonsson School has been the most aggressive schools on campus in recruiting new faculty. As Shown in table 1, we added 37 new faculties to the school of engineering and computer science since FY 2000.

FACULTY NEW HIRES FY 2000			
DEPARTMENT	FACULTY in 2000	FACULTY in 2005	Change
Electrical Engineering	25	43	18
Computer Science	36	35	19

Table 1

The Jonsson School will continue to recruit quality faculty needed for the expected growth in the student population.

2. *Criterion I.C.6.a: Adequate Facilities.* *Expected future enrollment growth will likely make current classroom space inadequate. This is a concern. Prompt approval and construction of the proposed new engineering building is essential if enrollment continues to increase.*

Response:

The UT Board of Regents has approved a new engineering building for UTD in 2000 and the building was completed in 2003. This addition of this facility effectively doubles the lab and classroom space since the 1999 review.

Institutional Observations

1. The School of Engineering and Computer science should immediately begin working towards implementation of the EC2000.

Response:

This effort began in fall 1999 and is documented in this self study. A major organizational change was implemented in the summer of 2004. The office of Associate Dean for Accreditation was established to institutionalize the ABET process in the Jonsson School.

4. Contact Information

Electrical Engineering Program Office

ECSN 2.716
972-883-6755

Electrical Engineering Program Head

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B. Accreditation Summary

1. Students

This section describes the process by which students are admitted, advised and evaluated at UTD. Process and procedures for ensuring that students meet degree requirements and are eligible for graduation are also described.

The University of Texas at Dallas is a four-year, comprehensive, state-supported institution of higher learning, offering a variety of programs at the undergraduate, master's, and doctoral levels. The University has a special commitment to two undergraduate populations: freshmen selectively admitted from the top ranks of graduating high school seniors and students transferring with superior academic records from area community colleges and other educational institutions.

1.1 Evaluating Students

1.1.1 Evalution for Admission

In April 2004, the Office of Admissions moved from its previous location in the lower level of the Eugene McDermott Library to Hoblitzelle Hall and merged with the Office of Enrollment Services that was already located there. A search for a Director of the Office of Admissions is expected to be completed in May 2005. The merger creates a one-stop service center for entering student and is expected to result in significant service improvements.

U.T. Dallas accepts applications for admission from freshmen and transfer students at all levels for the fall, spring, and summer semesters. Applicants are invited to contact the Office of Admissions, located in Hoblitzelle Hall, for counseling and specific information about degree program prerequisites that may enable them to qualify for admission. Early contact ahead of the college freshman year will enable applicants to take advantage of admissions counseling in order to make a wise selection of courses prior to enrollment at U.T. Dallas.

Entering Freshmen

The curriculum and the expectations of student performance at The University of Texas at Dallas assume that entering freshman students have successfully completed a full college-track high-school curriculum and have demonstrated strong general verbal/quantitative aptitudes as measured on national standardized tests.

Automatic Admissions:

In accordance with Chapter 51 of the Texas Education Code, students are automatically admitted to the University as first-time freshmen if they graduate in the top 10% of their class from an accredited Texas high school. Applicants must have graduated from high school during one of the two school years preceding the academic year for which they seek admission and be considered first time freshman. Applicants admitted because they are in the top 10% of their high school class may be required to complete additional preparatory work before enrolling in the University. They may also be required to remove any deficiencies in their high school coursework before graduating from the University.

Reviewed Admissions:
Applications from all students not graduating from Texas high schools in the top 10% of their class, as specified above, will be reviewed. Applicants must have graduated from an accredited high school or satisfied equal requirements, and should have completed the high school unit requirements listed below (last item in list). Admission decisions are based on the applicant's composite achievement profile, including:

- high school class rank;
- strength of academic preparation including the number of courses taken and their difficulty (honors, AP, IB, etc);
- SAT-I or ACT scores;
- record of achievements/honors/awards;
- special accomplishments/work/service both in and out of school;
- essays (view topics);
- special circumstances that put academic achievements in context;
- recommendations (not required);
- successful completion of a high school curriculum that includes:
- four units of Language Arts, including at least one unit of writing skills;
- two units of a single foreign language (three units recommended);
- three and one-half units of Mathematics beginning with Algebra I or higher I including a course dealing with trigonometry, such as pre-calculus (four units recommended).
- three units of laboratory science, not including Physical Science;
- three units of Social Sciences, not including work-study (four units recommended);
- one-half unit of Fine Arts (one unit recommended);
- one and one-half units of General Education Electives (two and one-half units recommended);

The University also recommends one unit of Computer Science, one-half unit of Health, and one and one-half units of Physical Education. For Texas residents, consideration may be given to socioeconomic and geographic information.

The review process gives primary consideration to the applicant's scores on standardized tests and high school record although no specific class rank, test score, or other qualification by itself assures admission except as described above under Automatic Admissions. The decision for each applicant will be to approve admission or to deny admission.

The achievement levels of students admitted to the University of Texas at Dallas are illustrated by the following statistical profile of the entering freshman class of 2004.

- 73% of students were in the top 25% of their high school graduating class;
- 40% were in the top 10% of their class;
- The average SAT score for all incoming UTD freshman was 1239 and the average SAT for ECS incoming freshman was 1275.

The average SAT score of the entering class in Fall 2004 was the highest among public universities in the State of Texas (2nd highest overall among all Texas universities).

Math Placement
All students who intend to take pre-calculus, or calculus I must qualify for admission to the class based on their performance on the SAT II math tests or other credit by examination. During Freshman Orientation, the Learning Resource Center will administer both the SAT II IC and IIC mathematics tests. For the past few years (including the 2004-05 academic year), students wishing to enter pre-calculus needed to attain a score of 460 on the SAT II IC test. For calculus I admission, students needed to score at least 560 on the SAT II IC tests or a 530 on the SAT IIC test.

Performance in the Calculus classes (MATH 2417, MATH 2419) is closely monitored by the Dean of Undergraduate Studies, the Associate Deans of Undergraduate Education, and the Mathematics Department. The entrance criteria for Calculus I was raised in spring 2005 (effective with the fall 2005 entering class) to 630 (in the SAT II IC or SAT IIC tests) to better align test scores with expected success in the class. The thresholds for entering pre-calculus remain the same.

Program Prerequisites:
In addition, for admission to a degree program, the student should have completed all lower-division prerequisites as determined by the program. The student should consult the program listings in the Undergraduate Catalog for these requirements. Excellent resources for local community college students are the 2+2 Guides, which detail both program prerequisites and General Education Core courses by the community college course numbers. These guides are available at the UT Dallas Office of Admissions, or from local community college counselors.

1.1.2 Evaluating Students in Progress
A degree audit is available to all students upon request. The audit provides information regarding the assignment of transfer credits, recommendations for the sequence of course requirements remaining, and an accounting of requirements completed, so that the student and advisor can more effectively plan future semesters. Students are referred to faculty advisors to discuss course options compatible with specific career or curriculum goals.

Scholastic Probation
A student is considered to be making satisfactory scholastic progress when he or she is carrying an approved schedule of classes, is not on probation, and has a GPA of at least 2.0 (C average) in the major and overall.

All students who show a cumulative grade point deficiency, defined as a cumulative GPA below a ‘C’ or 2.00, are placed on probation automatically by noting such status on their academic record. A student may also be placed on probation by the ADU if the student does not maintain at least a 2.0 GPA in the major and related courses, independent of the overall GPA.

A student on scholastic probation must meet with an academic advisor prior to registration. In addition, such students may not register for more than 12 semester hours, and must earn a 2.2 GPA each semester while on probation. Violation of these conditions may lead to the student’s suspension from the university.

Grade point deficiencies incurred at U.T. Dallas must be removed through additional course work at U.T. Dallas. Grade points earned at other institutions are not used in computing the GPA and may not be used to remove a grade point deficiency.

Students who leave the university on scholastic probation will be readmitted on scholastic probation only, even if they have attended another university in the interim. If a student withdraws from the university while on scholastic probation, and if this action results in an additional grade point deficiency, the student has failed to meet the minimum requirements for removal of scholastic probation and will be placed on scholastic suspension.

Scholastic Suspension
A student is automatically placed on scholastic suspension by the University for Failure to meet the terms of scholastic probation. Undergraduate students receive notice of scholastic suspension on their grade report sheets. A student who is under scholastic suspension may not enroll in, audit, or visit a class unless the student is readmitted as described below. Notice of this scholastic suspension will show on the student's transcript.

Students in a major who are placed on scholastic suspension by the university for the first time may be readmitted only by permission of the ADU. Non-degree seeking students and students with undeclared majors who are placed on suspension for the first time may be readmitted only by the permission of the Dean of Undergraduate Education. Students thus readmitted may be subject to additional probationary conditions placed upon them by their ADU.

A student who has been placed on scholastic suspension more than once, or has a grade point deficiency of 30 grade points or more, will be suspended from the university indefinitely and may be readmitted only by petition of the ADU to the dean of undergraduate education. student, thus, readmitted may be subject to additional probationary conditions placed upon them by their ADU, and/or dean of undergraduate education.

A student who reenters the university after having been suspended for failure to meet the terms of probation will reenter on scholastic probation.

1.2 Undergraduate Advising

The Office of Undergraduate Advising (OUGA) in the Erik Jonsson School of Engineering and Computer Science comprises both professional and faculty advisors. A 9,000 square feet advising unit includes offices for graduate and undergraduate advising as well as a waiting area and offices for those who manage recruiting activities and the industrial practice, or co-op programs. OUGA comprises two program coordinators, five professional advisors, and the Associate Dean for Undergraduate Education (ADU) permanently housed in the unit. In addition, 9 faculty advisors spend periods of four hours per week each in private offices within the unit.

Professional advisors typically have MS degrees in counseling or education. They are trained in all of the school and university rules and regulations and they have access to the student records data base. These professional advisors are the primary contact for students in developing academic goals, creating and maintaining degree plans, developing final degree plans for graduation, and answering questions or working to resolve academic or personal issues. The advisors are extremely well networked with staff in Records, the health and counseling center, the tutoring services, the bursar's office, and the Undergraduate Dean's office; they are able to obtain information, make referrals, and effect changes that regular faculty members would find laborious if not impossible.

Although the professional advisors are usually the first link in the chain of advice, everything about the operation of the advising unit and the details of the advice that is given to students is controlled by the faculty. The ADU is primarily responsible to the faculty of the school and the university for the accuracy and timeliness of the advice given to students. The ADU is the final authority within the Engineering School for decisions relating to the interpretation and implementation of the academic rules set up by the faculty. The ADU is also the primary liaison between the upper administrations of the school and the university. Information flows both ways through the ADU regarding difficulties encountered during the advising process and changes in process and rules that must be implemented by the advisors. Weekly meetings between the dean, the program heads, and the associate deans provide a high-level forum for such information flow. The ADU's presence on curriculum committees and ABET review committees also facilitate exchanges of information.

Students are able to access advising services by appointment or walk in, thru email and/or phone, and the OUGA web page. An advising file is set up for each student and maintained to include complete information for the student and expedite the advising process. In addition, a web based university contact log is maintained. For each contact made with a student, regardless of its form, an entry is made in this log with brief notes regarding the contact. Advisors across the University have access to this log.

Each advisor facilitates course enrollment during registration periods, including resolution of issues resulting from transfer credit application, e.g., overriding a pre-requisite when a transfer credit has been used that does not reflect the specific UTD course number.

During the 2004-05 academic years, a number of changes were implemented within the Office of Undergraduate Advising.

Assigned Advising

For the past few years, students did not have a specific advisor assigned to them. They would consult with whoever was available or would wait to see their favorite advisor. While web logs and proper documentation in student files kept a history that was available to all advisors and enabled an advisor to follow up on issues handled by a different advisor, this approach led to long lines and delays when students insisted on seeing the most experienced or their favorite advisor. Furthermore, since no one was specifically responsible for advising a particular student, significant numbers went unadvised unless they run into problems. In March 2005 (in time for registration for summer, fall 2005), a switch to assigned advising was implemented. Students were assigned to the five professional advisors based on the first letter of the student's last name with the two program coordinators handling referred cases and special populations. The reason for the switch was to encourage the development of a relation between student and advisor and provide better service by having each advisor responsible for a set group of students.

1.3 Monitoring Students

At all times throughout the year the professional advisors are available to students who present personal or academic problems that are interfering with academic performance. The advisor works with the student to determine the best courses of action to resolve these problems. Options may include working directly with the student or making a referral to an appropriate university resource.

The Office of Undergraduate Advising offers a more formally structured opportunity, Operation Improved Strategies, for students who are on academic probation and who have been dropped due to insufficient academic progress as defined by the University. These students must get permission from the ADU to be readmitted to the University. This program is designed to provide support for participating students, and offers opportunities for the student to explore personal responsibility, areas requiring change, and resources available to facilitate these changes. Participation in this program is a factor considered by the ADU for continuing probationary students when they apply for readmission.

In order to facilitate access to faculty advisors, OUGA has provided offices for faculty advisors within the Student Services office suite. The schedule for faculty advisors is posted in OUGA and provides availability during the peak student traffic periods. Using this design the students have access to faculty advisors in a location they are already familiar with. Faculty advisors are particularly helpful when they have questions regarding curriculum choices, changes of major, masters and Ph.D degree programs, and career decisions. Faculty advisors have a deep knowledge of the content of the degree programs and the interaction between courses and programs. Professional advisors have a deep knowledge of the university and school rules and policies. Together they provide an integrated approach to advising that covers the needs of our students.

Contacts with both professional and faculty advisors are logged and the ADU routinely examines the log files to determine the fraction of ECS students whose most recent contact is beyond one semester. These students are contacted by our professional advisors and encouraged to come in for advice. Recent logs show that more than 80% of our undergraduate population of 2000+ students makes some form of contact with an advisor in the unit each semester. NOTE: Actually we are at about 60% per year - not 80% a semester – about 1000 distinct contacts per year – about 2500 contacts all together.

We also carry out satisfaction surveys of students who visit the advising unit. These surveys provide a means for students to tell us "what they really think" about our advising staff and the procedures that we have implemented. The overwhelming majority of responses are extremely positive. As might be expected, there are always some complaints. Students complain that they were unable to see their favorite advisor, or that they didn't get the answer that they wanted. Occasionally students will complain about a specific advisor's demeanor. Positive, or negative, student responses occasionally include advice on how to improve the services that we offer.

Weekly meetings of the professional and faculty advisors enable the ADU to discuss these and other issues and to continue to improve our operation. We also use these meetings to continue to train our advisors, to enable exchanges between all members of the unit, and to facilitate planning for upcoming events, such as registration, freshmen and transfer student orientation meetings, and the occasional recruiting trip.

In addition to the formally organized advising carried out by the professional and faculty advisors within the unit, students are encouraged to see any member of the faculty of the school during office hours. We do not log these contacts, but faculty are asked to keep a rough estimate of the number of hours they spend with students outside of contacts directly related to the courses they are teaching.

Learning Resource Center

The Learning Resource Center offers assistance to students in the areas of reading, writing, mathematics, and study skills through individual appointments, group workshops, short courses, and audio and video tapes. The Writing Lab offers one-to-one assistance with writing assignments and general writing skills. The Math Lab gives short-term and semester-long support for a variety of mathematics courses. The Learning Resource Center also offers developmental math, reading, and writing classes. These classes are for credit, but they do not count toward graduation. Assistance is also available in study skills, note-taking, writing, test taking, algebra, and preparation for the TASP (required for teacher certification), GRE, GMAT, and LSAT. In addition, students can receive help with time management, basic mathematics improvement, test-anxiety reduction, and various other study techniques and strategies. All students enrolled at the university are eligible for these services.

1.4 Policies for Acceptance of Transfer Students

Transfer Students

UT Dallas welcomes applications from prospective students who have begun their college work at other institutions of higher education. To be admitted the applicant must be in good standing at the institution(s) previously attended.

Transfer of Freshmen and Sophomores

Applicants to UTD who have previously taken courses at one or more other accredited institutions of higher education and who are classified as freshmen or sophomores will be reviewed for admission using the same criteria for first-time freshmen. Freshman applicants must have a cumulative GPA of at least 3.00, on a 4.00 scale, for all post-secondary academic course work. Sophomore applicants must have a cumulative GPA of at least 2.50, on a 4.00 scale, for all post-secondary academic course work.

Transfer of Juniors and Seniors: Automatic Admissions:

Applicants to UTD who have previously taken courses at one or more other accredited institutions of higher education and who are classified as juniors or seniors are admitted automatically if their cumulative GPA for post-secondary academic course work is 2.50 or better, on a scale of 4.00.

Reviewed Admissions

Applications that do not qualify for automatic admission will be reviewed by the Associate Dean for Undergraduate Education of the college housing the applicant's major. ADUs will pay particular attention to the academic content and grades of the applicant's college-level work.

Students admitted on probation must earn a GPA of at least 2.20 for the first semester of enrollment, are limited to at most 12 hours. Failure to meet this condition will result in suspension. Students admitted on probation by the ADU who are subsequently suspended from the university may be readmitted only by the ADU.

Regardless of the number of lower-division hours which a student transfers to the university, applicants seeking admission to UTD should be aware that they will need at least 51 upper-division hours to graduate.

1.5 Process to Ensure All Students Meet Degree Requirements

Core Curriculum

The State of Texas has developed a Core curriculum and a strict review process for qualifying classes at State institutions as fulfilling a Core curriculum requirement. UT-Dallas requires that all students complete a Core Curriculum of 42 semester credit hours that serves as the foundation of the undergraduate education program. In accordance with Texas Education Code Chapter 61,

Subchapter S, a student who successfully completes a recognized core curriculum at another Texas public institution of higher education may transfer that block of courses to U.T. Dallas where it will be substituted for the U.T. Dallas core curriculum. Under the Core curriculum, students are expected to master the techniques of English composition and rhetoric and complete a requirement in advanced writing (6 hours); students will be offered an exposure to the foundations of mathematical reasoning (6 hours), an orientation to the natural sciences (9 hours), an exploration of the arts and humanities (6 Hours), Behavioral and social sciences (3 hours), and an introduction to the history, government, and politics of the United States and Texas (12 Hours).
Core curriculum classes are automatically transferred as equivalent to the corresponding UTD class that fulfills the same requirement (assuming that a grade of at least C was earned).

Validation of Transfer Credit and Fit in Degree Plan.
Transfer credits are processed at two levels. Student transcripts are first examined by the Office of Admissions. As soon as an application for admission, including transcripts and any required test scores, has been received, the Office of Admissions will evaluate the student's record to determine which credits earned at another college or university will transfer to UTD. Those courses that are deemed of sufficient level to be awarded university credit are entered into the Student Records database; they are either matched to a specific UTD class or are left as "unassigned" credit. Each student who is admitted to UTD will receive a copy of this evaluation and an outline of the degree plan for the program to which the student is admitted. A copy of the evaluation will also be sent to the student's advising office.

The faculty, acting through the ADUs, has the ultimate responsibility for applying transfer credit to the requirements for specific academic degrees. Unassigned credit that a transfer student has received can be used in a student's degree plan only upon petition to the appropriate ADU and approval of the petition. The petition must state the transfer class, the UTD class that the student wants it assigned to, and supporting documentation including official course description and accompanying materials from the college/university at which the course was taken. The petition is normally handled by the ADU in the School of Engineering and Computer Science except when the petition involves a Core Curriculum requirement (in that case, the petition is submitted to the ADU of the School at UTD that offers the course that the petitioned wants transfer credit assigned to; this ensures than validity of transfer credit is determined by the ADU that is best qualified to make the decision and improves consistency). The ADU, in consultation with appropriate faculty in the school or with ADUs from other UTD schools, accepts or denies these requests and a record of the decision is kept in the student's file. Upon approval, the student's advisor enters the substitution into the student's record so that the audit accurately reflects degree requirements completed.

The university accepts for transfer credit only academic post-secondary course work completed with a grade of C or better at accredited institutions of higher education (in Spring 2005, a clarification was added that "C" means 2.0 quality points). UT Dallas does not offer credit for nonacademic course work, such as vocation, developmental or remedial studies, nor grant credit for prior experiential learning. Course work that is accepted for transfer credit is applicable toward satisfying requirements for a specific UTD major according to the same criteria as those used for equivalent UTD courses. Prospective transfer students for Dallas-area community colleges should refer to the UT Dallas 2+2 Transfer Guide, available at community college counseling offices and at the UTD Office of Admissions, in order to inform themselves about curricula appropriate to the various UTD majors.

Pre-Graduation Audits
While most students carefully monitor their progress and regularly consult with their advisors, sometimes problems come up at graduation audits resulting in delays in graduation and related difficulties. To avoid such last minute surprises, in spring 2005 the professional advisors started a review of the degree plans for all students assigned to them to spot potential problems. Since a significant number of troublesome cases were identified, it was decided to institute a mandatory pre-graduation audit during the junior year (at about 75 hours applicable to the degree program). This policy will go into effect in summer 2005.

Graduation Audit
A process for graduation audits is provided to ensure that students who intend graduation in the current semester have indeed completed all their degree requirements. The advisor performs a graduation audit, and then signs the graduation application. Before Census Day the applicants' files are again reviewed for degree requirement completion. The student is contacted if problems are identified, and efforts are made to resolve those problems. After this second review, a set of graduation applicants is submitted to Records for the final audit and certification of degrees by the Faculty Senate.

On-Course audits and Degree Plans
The Registrar's office at UT-Dallas has implemented an automated system for carrying out degree plan audits; the system is called On-Course and was heavily relied on by advisors. The Advising unit is working closely with the Registrar's office to identify and correct the discrepancies; hardcopy degree plans will continue to be required until the automated On-Course audits can be relied on to be correct

2. Program Educational Objectives

In this section, we describe the mission for the university as a whole. Then, we describe the mission of the Erik Jonsson School of Engineering and Computer Science, which houses the Telecommunications Engineering Department. The Erik Jonsson School of Engineering and Computer Science engineering programs provide an interdisciplinary approach to training engineers with the requisite knowledge to meet the needs of the industry. Therefore, the educational objectives for the program and the constituencies of the program are also described in this section. The processes to establish, review, and improve the objectives and constituencies are explained in this section as well.

The principal objective of the electrical engineering program is to provide a rational educational experience. Being aware of the rapid growth and changes in the field, we seek to provide a baccalaureate education including a comprehensive treatment of contemporaneously important as well as basic topics. The focus of the engineering degrees is to provide world-class education in modern communications networks and systems. Our graduates are uniquely qualified for rewarding and successful careers in telecommunications, data communications, network architecture, wireless, optical networking and next generation networks.

2.1 University of Texas at Dallas' Mission Statement

The mission of the University of Texas at Dallas is to provide Texas and the nation with benefits of educational and research programs of the highest quality. These programs address the multi-dimensional needs of a dynamic, modern society driven by the development, diffusion, understanding and management of advanced technology.

It is the University of Texas at Dallas's strategic intent to be a nationally recognized top-tier university sculpted within a model of focused excellence. The university emphasizes education and research in engineering, science, technology and management while maintaining programs of focused excellence in other academic areas. Within the context of this mission, the goals of the university are as follows:

- To provide able, ambitious students with a high quality, cost-effective education that combines the nurturing environment of a liberal arts college with the intellectual rigor and depth of a major research university.
- To discover new knowledge and to create new art that enriches civilization at large and contributes significantly to economic and social programs.
- To enhance the productivity of business and government with strategically designed, responsively executed programs of research, service and education.
- The university intends to achieve these objectives by investing in students and faculty, building upon its programs, policies and operations and enhancing institutional character and excellence in education. The major points of the University of Texas at Dallas's strategic plan to accomplish these goals are as follows:
- Continue to strengthen the identity of the university as a leader in higher education in terms of excellent faculty and superior students.
- Enhance the quality of its students' learning experiences and its employees' work environment.
- Emphasize education and research in science and technology and in leadership and management, while maintaining concurrent programs of focused excellence in other fundamental fields of art and knowledge.

- Expand and intensify partnerships relations with business, governmental and educational neighbors.
- Enhance programmatic quality and institutional balance while adhering to rigorous quality standards
- Actively pursue external support of and funding for the ambitious academic and service programs integral to its mission

2.2 Mission of Erik Jonsson School of Engineering and Computer Science

- Engineering is central to the mission of the University of Texas at Dallas.

"…to be responsive to the educational and research needs of the nation as exemplified by the technologically sophisticated and managerially intensive economy of the Dallas Metroplex."

- The current (2003) Erik Jonsson School Mission Statement is:

"We will play a distinctive and productive role in engineering and computer science, and deliver the necessary skills and assets required to our students and research sponsors by closing the gap between academic research and industrial practice."

"We will achieve excellence by recruiting faculty members who are outstanding in research and who are able and willing to collaborate with others in academia, industry and government, and by maintaining high standards for graduates and for faculty promotion and tenure."

Reputation will follow from real accomplishments that result from following our own way, not necessarily a path that has been established elsewhere.

The principal objective of the engineering program is to provide a rational educational foundation for the broad practice of electrical engineering. Being aware of the rapid growth and changes in the field, we seek to provide a baccalaureate education including a comprehensive treatment of contemporaneously important as well as basic topics. These topics presently include networks, electronics, electromagnetic, computers, signal processing, communications, and design.

While developing its curriculum, the Erik Jonsson School is particularly aware of the perceived future needs of the industries of North Texas related to information systems and electronics manufacturing. The engineering program prepares individuals for direct entry at the baccalaureate level into professional practice, but the program emphasizes a strong analytical preparation for continued formal education at the masters and doctoral level. A specific mission of the University of Texas at Dallas and the Erik Jonsson School is to provide opportunities for persons employed full time in local industry to continue and complete their education at both undergraduate and graduate levels. The Erik Jonsson School also strives to use modem computing and telecommunications technology to enhance the quality of education.

The Erik Jonsson School of Engineering and Computer Science received authorization from the Coordinating Board of Texas to add a Bachelor of Science and a Master of Science Degree in the Electrical Engineering Degree Program to degrees in Computer Science and Telecommunications Engineering. This was done to enable the Erik Jonsson School to better serve its students and corporate clients in the surrounding Telecom Corridor and in the State as a whole. The University of Texas at Dallas provides engineers and scientist for companies in the Telecom Corridor, but the Telecom Corridor faces an acute problem, one it shares with other high-tech centers. Companies could not find enough engineers and technical people, which required a blend of knowledge from the areas of electrical engineering, Telecommunications, Computer Science, and Economics/Policy. The current B.S.E.E. in Electrical Engineering requires the potential engineer to take classes in areas not specific to any one subject, hence limiting the number of course hours available to teach specific information.

The Erik Jonsson School of Electrical Engineering and Computer Science programs provide an interdisciplinary approach to training engineers with the requisite knowledge to meet the needs of the industries in these fields.

2.3 Mission of the Electrical Engineering Program

The focus of the electrical engineering degrees is to provide world-class education in modern communications networks and systems. Our graduates are uniquely qualified for rewarding and successful careers in telecommunications, data communications, network architecture, wireless, optical networking and next generation networks.

2.4 Specific Program Educational Objectives

One broad goal for the Erik Jonsson School is an excellent education for our students. Specific Program Educational Objectives toward this goal for our students are:

- A successful long-lived engineering career
- Meeting the needs of local industry.
- Leading engineering teams.
- Actively use engineering skills to mentor and promote the engineering profession in populations still underrepresented in it.
- Actively pursuing lifelong learning.

Additional Objectives for a high quality educational infrastructure include:

- Growing and maintaining an outstanding faculty that remains motivated and empowers
- Excellent facilities, including teaching laboratories, computing facilities and classrooms with advanced presentation capabilities

2.5 Constituencies of the Program

We consider the following to be the constituencies of the University of Texas at Dallas Engineering program:

- Students
- Industry
- The Community of the Metroplex of Dallas and the citizens of the State of Texas
- Alumni
- Faculty
- Government and Academia

2.6 Curriculum and Process to Ensure Achievement of Program Educational Objectives

The faculty, alumni, and industrial representatives were involved in the definition and updating of the program objectives. A draft of the PEO's was developed in spring 2003 by the electrical engineering curriculum and ABET Committees based on the missions of the institution and the department and upon the ABET quality criteria. This draft was discussed with the faculty in a faculty meeting in spring 2003.

Throughout January, February and March 2003, the University of Texas at Dallas's ABET Faculty Committee had biweekly meetings to decide on some additional details that are crucial to the ABET Process. Program Outcomes and Assessment methods were determined and agreed upon. Specifically, the electrical engineering and Computer Science faculty met on Friday 3/21/03 to discuss the period for updating and reporting The University of Texas at Dallas's continuous improvement processes. A major outcome of this meeting was that there was a consensus that the Self Study Questionnaire would be updated annually every June.

On April 25-26, 2003 the ECS faculty attended the ABET Workshop where they received in-depth training in the ABET Continuous Improvement Process. This document reflects UTD's direct implementation of many of the valuable methodologies that were taught in these sessions.

2.6.1 Feedback, Quality and Continuous Improvement

An assessment plan was developed to ensure that graduates have achieved the program undergraduate educational objectives. The general assessment process flow chart is shown in Figure Y. The Curriculum Committee is at the heart of this assessment and improvement process. The committee monitors the surveys from the students, alumni and industry, and looks for areas where improvement is needed. They also solicit input from the faculty on a regular basis to determine if other changes are needed in the program. Additionally, the Advising Office collects informal input that is provided to the Curriculum Committee. The three area committees, within the department, also provide suggested changes to the Curriculum Committee. Using these inputs, changes are identified and then implemented.

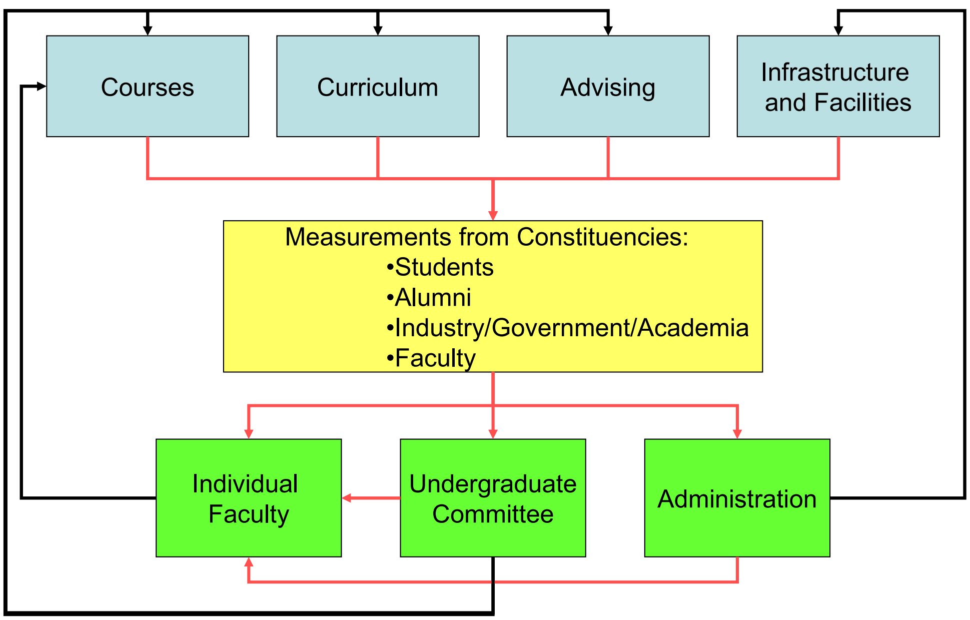


Figure 2.6.1. Electrical Engineering Program Assessment Flowchart

2.6.2 Achieving the Program Educational Objectives

The Electrical Engineering program objectives are assessed using employer surveys, alumni surveys and graduation exit surveys. We are also able to gather limited data related to assessing PEO's from our Industrial Practice Program. The Jonsson School's Industrial Practice Program is formal Co-Op / Intern programs offered at the graduate and undergraduate levels.

Although graduation exit surveys are taken every semester, employer and alumni surveys are not. Employer and alumni surveys were taken in the fall of 2000 and the fall of 2002.

The most objective assessment of our PEO'S comes from employer surveys.. Employers were ask to rate the general skills and basic technology skills of UTD electrical engineering graduates that were working for their company. General skills rated were communication skills, critical thinking skills and personal management. Basic technology skills were specific to the electrical engineering profession and covered advanced engineering mathematics, systems and controls, micro-electronics, electromagnetic engineering, digital systems and digital signal processing.

The Alumni survey covered Electrical Engineering graduates who had been practicing engineers for at least one year. Graduates rated their education as it related to succeeding in the engineering profession and the content of the degree program. The objective was to get alumni feedback on whether or not our PEO'S were achieved. The alumni survey also addressed the same areas as the employer surveys so that results could be compared between the two constituencies.

Starting in the fall of 2000, we asked our IPP employers to participate in assessing students that were working in their companies. This data showed that we needed to strengthen our student's communication skills. This applied to both undergraduate and graduate students. Since the earlier surveys did not differentiate undergraduate from graduate we have not use the results to point out areas of concern but to provide an independent check on the assessment process. The results of the assessment of PEO's will be presented in the next section of the self-study.

The following is a table of the specific assessment measures used at the University of Texas at Dallas and the components of quality they measure.

Table 2.6.2 Assessment Measures and the Components of Quality that are measured

Comment [lc1]: The paragraph above this is also numbered as 2.6.2 - we need to change one of them.

Specific Assessment Measures	***Students***	***Faculty***	***Facilities***	***Advising***	***Courses***	***Labs***	***Teaching assistants***
			Program Educational Objectives				
Employer Focus Group And Survey	X				X	X	
Alumni Focus Group and Survey		X	X	X	X	X	
IAB Meetings		X			X	X	
Industrial Practices Program	X		X		X		
			Program Outcomes				
EBI Senior Exit Survey	X	X	X	X	X	X	
IAB Meetings		X			X	X	
Homework, Test and Laboratories	X				X	X	
Faculty Course Evaluations	X				X	X	X
Student Course Evaluations		X	X	X	X	X	X
Industrial Practices Program	X			X			

2.6.3 Office of Assessment Activities and Assessment Process

In an effort to evaluate the institutional effectiveness of our programs, the Erik Jonsson School of Engineering and Computer Science established the Office of Assessment to meet the needs of various programs. This office provides information and support to the administrative and academic units in a broad range of activities. Currently, the Office of Assessment implements the use of the Undergraduate Level Senior Exit Survey, the Alumni Focus Group Meeting and Survey, and the Employer Focus Group and Survey. In addition, we participate in a university-wide course evaluation every semester. The Erik Jonsson School faculty members are also an important part of our student outcome assessment efforts, in that they provide data for individual courses as well as for each program in regards to student outcomes criteria.

Undergraduate Exit Survey

The first formal exit survey from graduating seniors from ECS was introduced and implemented in the fall semester 2002. This survey measurement was developed by the Office of Assessment as a pilot study with the framework from EE faculty members. The results were distributed to the department in May 2001.

Since then, ECS has acquired a survey instrument from a private vendor and continues to implement this process every semester in the Office of Assessment. The results of this survey, which are quantitative data, were distributed to the department in the years 2001,2002 ,2003 and 2004, 98% in 2003, and 66% in 2004. Collection of this data has been largely successful with the return rate of 85% in 2001 and 88% in 2002. In addition, we have collected the written comments while the survey was being implemented and this qualitative portion of the data is distributed together with the quantitative portion.

Employer Focus Group and Survey

Continuous improvement of the curriculum remains an ongoing goal for colleges and universities. In particular, disciplines such as engineering and computer science demand not only the incorporation of current science and technological research, but also of new technological demand in industry. Moreover, one of the important missions of the Erik Jonsson School of Engineering and Computer Science is to meet the needs of our constituencies, including employers for our graduates.

In the fall semester of 2000, the engineering faculty of the Erik Jonsson School voted to revise the curriculum. Based on these initiatives, it was imperative to include employers in the process. Subsequently, as a part of our ongoing effort to meet the goal, Jonsson School surveyed employers in relevant industry.

The Director of Assessment initiated a focus group to study the proposed questionnaire items. The proposed survey instrument was modeled on an existing survey with the direction of department heads, program heads, committee chairs and members and numerous engineering faculty members who generously offered their comments and suggestions. The purpose of this initial step was to insure that our survey instrument adequately addressed the diverse needs of our employers and of the industry.

With kind accommodation from the Director of the Industrial Practice Programs, we were able to invite major industry representatives as well as representatives from the *alumni* and *alumnae* to pilot the information gathering meetings on October 4 and November 3, 2000. This group included 18 individuals representing eight major companies.

These meetings were followed by the distribution and implementation of our survey to 117 companies on November 17, 2000. The data was collected by December 8, 2000. Subsequent summary reports and descriptive statistics tables on quantitative and qualitative data was distributed in April 18, 2001. This survey portion was conducted again with the identical format in summer 2004 and results were distributed in fall 2004.

Alumni Focus Group Meeting and Survey

The Alumni Survey is conducted every other year and spearheaded by a focus group meeting and survey distributions. This process allows us to collect both quantitative and qualitative data.

The first focus group meeting was held in the fall semester 2000 and the results were incorporated as a major input to the EE Department's efforts on curriculum improvement. Subsequently, the second focus group meeting was held in fall 2001 and this process was followed by the survey implementation. Quantitative portions of the results were collected from the paper and pencil surveys during fall 2001, spring 2002, and summer 2002 semesters. The qualitative data portion is a combination of focus group results from fall 2001 and written comments on our survey forms from fall 2001, spring 2002, and summer 2002. Subsequent summary reports were distributed in January 2003.

These were followed by the distribution and implementation of our survey to 117 companies on November 17, 2000. The data was colleted by December 8, 2000. Subsequent summary reports and descriptive statistics table on quantitative and qualitative data were distributed in spring 2001. This survey portion was conducted again with the identical format summer 2004 and results were distributed in fall 2004.

Subsequent alumni survey was conducted in 2003-2004. As done in the past, Alumni focus group meetings were held in fall 2003 and the alumni survey portion implementation is in the process during spring-summer 2004 semesters. Currently, assessment office is implementing alumni survey 2004-2005. As done in the past, our Alumni focus group meeting wad held in fall 2004 semester and the alumni survey portion implementation is in the process during spring-summer 2005 semesters.

2.6.4 Evidence of Assessment Process

All of the measures indicated in the top loop of the Electrical Engineering Program Objectives and Outcomes Procedure Flow Chart are available for inspection. Specifically, student exit interviews, IAB reports, comparisons of other university's programs, faculty input from minutes of meetings, student input from surveys and reports are all available for review. In addition, the individual course learning objectives, CLO, evaluated by students and faculty are available as are examples of student work necessary to meet the Program Outcomes. ABET inputs and guidelines are available on the ABET web site.

Assessment Process Data Table

Assessment	Action Taken	Results
Spring 2000		
Prior Weaknesses	Fall 1999, established a new advising system consisting of professional advisors and support staff, and a manager who reports to the Dean.	
Faculty Advising: Needed more faculty involvement and support	March 2000: All engineering major students assigned both a faculty advisor and a professional advisor. The goal was meeting with the student at least once a year.	
No Laboratory Plan	Lab plan written and approved in December of 1999. Reviewed annually	
Faculty Size may not be adequate for growth goals	ECS added 37 new faculty since 1999	
Facilities may not be adequate for growth	Get Board Of Regents approval for a new building	Engineering and Computer Science South Building came on line in fall of 2003
General Comment • The Engineering Programs need to start implementing EC2000 • Student Course Evaluation	Fall of 1999 formed first committee to implement EC2000	
Fall 2000 EBI Exit Survey		
▪ More academic Advisors are needed	6 Professional Academic Advisors hired by summer of 2001	2002, 2003 and 2004 Exit surveys show significant improvement in advising
▪ Academic dishonesty needs attention	CS and EE effective teaching committees publish recommendations	Larger class rooms used for testing and additional TA's provided Plagiarism software used to monitor student work

Assessment Process Data Table

Assessment	Action Taken	Results
Spring 2001 EBI Senior Exit Survey Student Course Evaluation Faculty Course Objective Ratings Employer Survey	ECS adopt the use of EBI surveys to aid outcome assessments	
▪ Student communications skills need improvement	Fall 2001 implemented EE/CS 3390, Professional and Technical Communications course.	2002, 2003 and 2004 alumni and exit surveys show ratings improvement
▪ Students need more exposure to work ethics, business ethics and personal integrity	Fall2001 implemented required course for all ECS majors: ISS-3360, Politics & Values in Business and Technology	2002, 2003 and 2004 alumni and exit surveys show ratings improvement.
Fall 2001 Reviewed EC EVAL Outcomes Assessment for EC 2000 EBI Exit Survey Student Course Evaluation Faculty Course Objective Ratings	Implemented EC EVAL Outcomes Assessment for EC 2000	

Assessment Process Data Table

Assessment	Action Taken	Results
Spring 2002 Deans office Assessment that an ABET Team is needed for the School EBI Exit Survey Student Course Evaluation Faculty Course Objective Ratings Alumni Survey ▪ “Preparation of Communication receives lowest rating ▪ “Degree assisted in career” is the next lowest factor	ABET Team Established to guide and direct the EC 2000 process for EE, TE and SE Senior lecturer faculty with extensive industry experience used for career advising	2004 Alumni and Exit survey ratings show substantial improvement 2004 Alumni survey, Degree assisted in career was the most improved factor
Fall 2002 EE/TE faculty Outcomes assessment ECS Self Studied EBI Exit Survey Student Course Evaluation Faculty Course Objective Ratings	First faculty inputs for assessment required for EC EVAL Software Policy to implement the EC 2000 Process is established. Self Studies for all programs will be updated yearly. Initial documents due June 2003.	

Assessment Process Data Table

Assessment	Action Taken	Results
Spring 2003 ABET workshops for all Faculty EBI Exit Survey Student Course Evaluation Faculty Course Objective Ratings	A special ABET training workshop for all Faculty to be held in April 25-26, 2003. An independent session focused on the 2003 Self Studies on Saturday April 25.	Published 2003 version of program self-studies
Fall 2003 IAB Meeting EBI Exit Survey ▪ Students concerned with the quality and operation of the engineering labs. Alumni Survey Employer/Industry Survey Student Course Evaluation Faculty Course Objective Ratings	IAB meetings for EE and TE held Assigned Dr. Nathan Dodge and EE Lab Committee to take responsibility for Lab operations.	2004 EE lab survey indicate that lab courses are now satisfactory.

Assessment Process Data Table

Assessment	Action Taken	Results
Spring 2004 Mock ABET Review of 2004 self studies EBI Exit Survey ▪ Students want more applied courses with an emphasis on practical skills Student Course Evaluation Faculty Course Objective Ratings	Conducted Mock ABET reviews of EE, TE, SE and CS self-studies. EE curriculum committee has taken this issue under advisement	Published 2004 version of program self-studies.
Fall 2004 Associate Dean for Accreditation IAB Meeting EBI Exit Survey Student Course Evaluation Faculty Course Objective Ratings	ECS Dean established the office of Associate Dean for Accreditation to institutionalize the ABET Process IAB meetings for EE ,TE, SE and CS held	

Assessment Process Data Table

Assessment	Action Taken	Results
Spring 2005 Institutionalizing ABET EBI Exit Survey Alumni Survey Employer/Industry Survey Student Course Evaluation Faculty Course Objective Ratings	Spring 2005: ECS Dean required that **All** Faculty Annual reports include resumes in ABET format and Faculty Assessments of undergraduate classes Next Survey fall'05 Next Survey fall'05	Spring 2005; New Program Educational Objectives with measurements adopted.
Fall 2005 ***(projected)*** EBI Exit Survey Alumni Survey Employer/Industry Survey Student Course Evaluation Faculty Course Objective Ratings		

2.7 Program Education Objectives

The Electrical Engineering program uses three survey instruments to measure whether we meet our PEO's. We use Alumni surveys, Employer surveys and surveys, which are taken while our students are participating in co-op programs in our Industrial Practices Program.

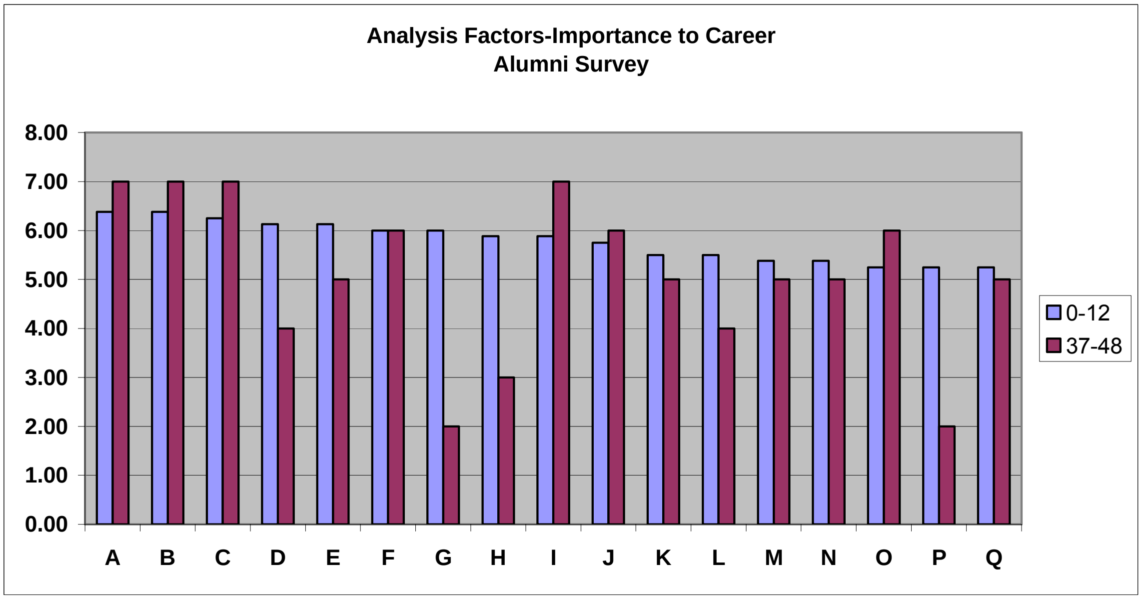
The alumni data provides valuable data because our graduates rate the importance on their career of the ABET A-K criteria for two time periods, one when they have practice for one year or less and again when they have been out 3 or more years.

Figures 2.7.A and 2.7 B show how the importance of factors on alumni careers changes with time. Our alumni indicate that factors such as using reference materials, analyzing and interpreting data and recognizing the need for life long learning are considered more important that the ability to apply science and solve problems.

These results indicate that these factors which are most important to our alumni after they have been in the field for 3 or more years must continue to be emphasized in our curriculum.

Employee surveys have been used to access too aspects of our PEO's. Employer surveys taken in 2002 and 2004 were reviewed to see how UTD graduates performed on the ABET A-K outcomes. Although the overall averages were consistent, we were more interested in changes. The results show that although we showed gains on objectives B, H and J we need to continue to work on A-Applying Knowledge of math and science and, D-Identify, Formulating and Solving Engineering Problems. Please see figure 2.7.C

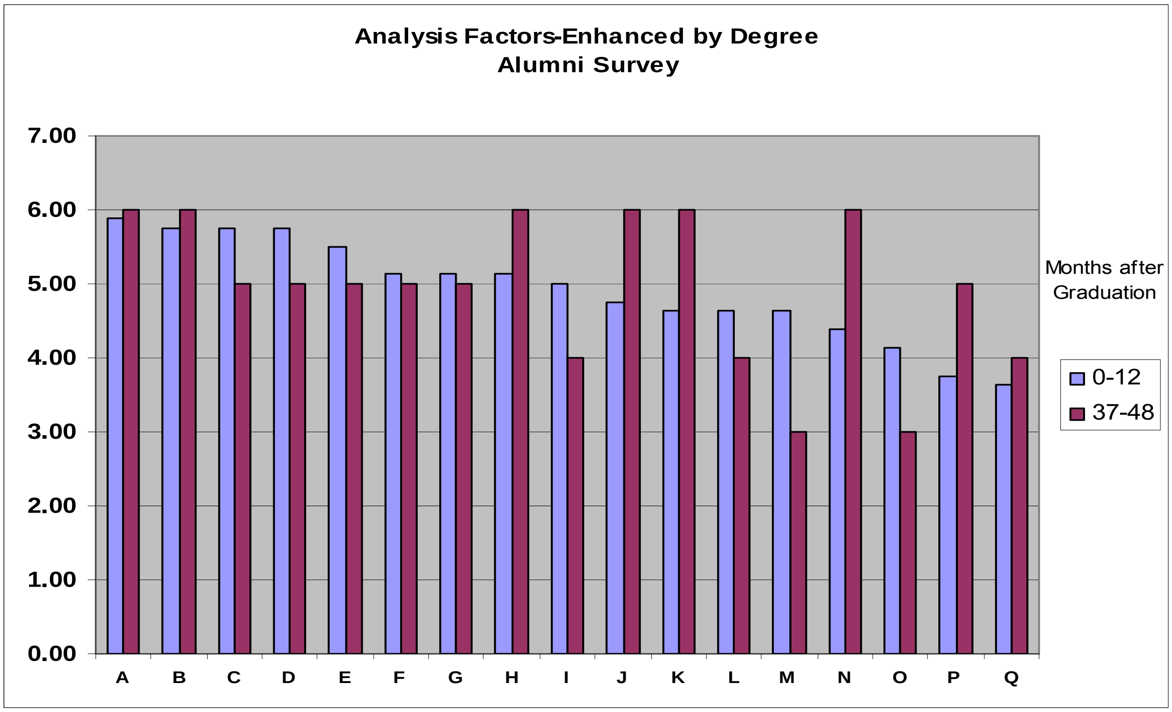
Figure 2.7A



FACTOR	0-12 mo	37-48 mo	Delta Importance to grads after 3-4 year	
Use Reference Material	6.38	7.00	0.62	More
Analyze & Interpret Data	6.38	7.00	0.62	More
Recognize Life Long Learning	6.25	7.00	0.75	More
Solve Engineering	6.13	4.00	-2.13	Less
Function in Multi Disp. Teams	6.13	5.00	-1.13	
Communicate-Written	6.00	6.00	0.00	
Understand Ethical	6.00	2.00	-4.00	Less
Apply Science	5.88	3.00	-2.88	Less
Design a System, Component.	5.88	7.00	1.12	
Communicate-Oral	5.75	6.00	0.25	
Apply Math		5.50	5.00	-0.50
Identify or Formulate	5.50	4.00	-1.50	
Use Modern Engineering Tools	5.38	5.00	-0.38	
Conduct Experiments	5.38	5.00	-0.38	
Pilot Test	5.25	6.00	0.75	More
Understand Impact/Society	5.25	2.00	3.25	Less
Design Experiments		5.25	5.00	-0.25

Comment [lc2]: What is this column represent ?

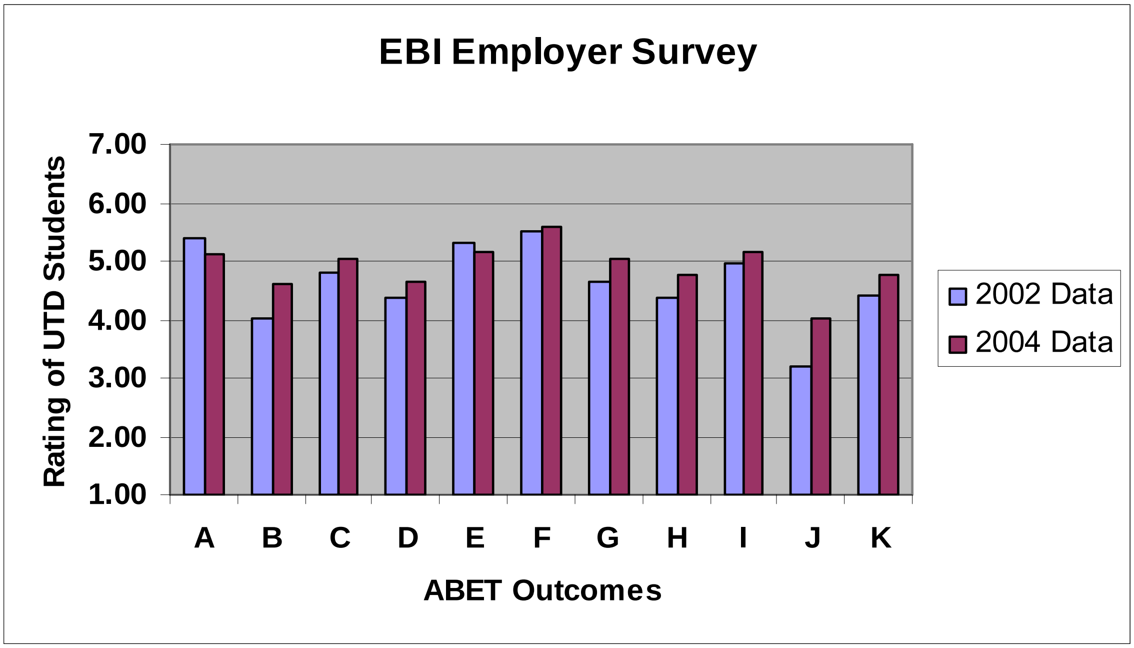
Figure 2.7.B



FACTOR	0-12 mo	37-48 mo	Delta	Importance to grads after 3-4 years
A. Design Experiments		5.88	6.00	0.12
B. Conduct Experiments	5.75	6.00	0.25	
C. Analyze & Interpret Data	5.75	5.00	-0.75	Less
D. Design a System, Component.	5.75	5.00	-0.75	Less
E. Function in Multi Disp. Teams	5.50	5.00	-0.50	
F. Identify or Formulate	5.13	5.00	-0.13	
G. Solve Engineering	5.13	5.00	-0.13	
H. Understand Ethical	5.13	6.00	0.87	
I. Understand Impact/Society	5.00	4.00	1.00	Less
J. Use Modern Engineering Tools	4.75	6.00	1.25	More
K. Communicate-Oral	4.63	6.00	1.37	More
L. Communicate-Written	4.63	4.00	-0.63	
M. Pilot Test	4.63	3.00	-1.63	Less
N. Use Reference Material	4.38	6.00	1.62	More
O. Recognize Life Long Learning	4.13	3.00	-1.13	
P. Apply Science	3.75	5.00	1.25	More
Q. Apply Math		3.63	4.00	0.37

Figure 2.7.C

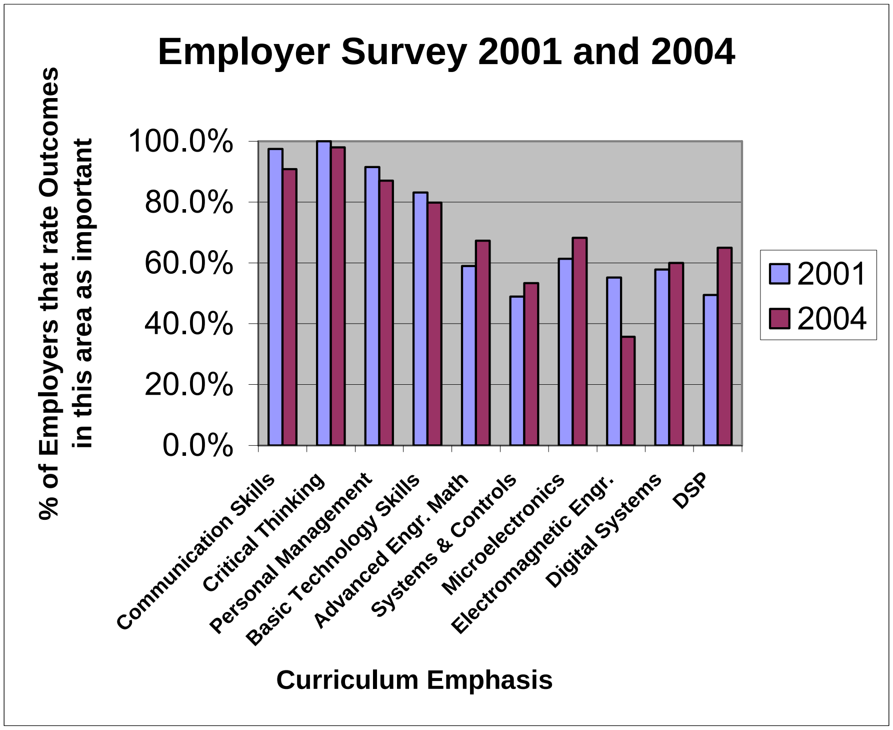
Comment [lc3]: What is rating of students represent?? GPA ??



ABET a-k objectives	2002	2004	Delta	Largest Change
A. Apply knowledge of math and science	5.41	5.13	-0.27	Decrease
B. Design and Conduct Experiments	4.02	4.61	0.59	Increase
C. Design a system, component, or Process to meet desired needs	4.82	5.05	0.23	
D. Function in Multi-disciplinary Teams	4.38	4.65	0.28	
E. Identify, formulate, and solve engineering problems	5.30	5.17	-0.13	Decrease
F. Understanding of professional and ethical responsibility	5.50	5.57	0.07	Small increase
G. Communicate effectively	4.64	5.04	0.40	
H. Broad education to understand impact in a global & societal context	4.36	4.78	0.42	Increase
I. Recognition of the need and an ability to engage in life-long learning	4.95	5.17	0.22	
J. Knowledge of contemporary Issues	3.18	4.02	0.84	Increase
K. Use the techniques, skills, and modern engineering tools		4.42	4.77	0.34

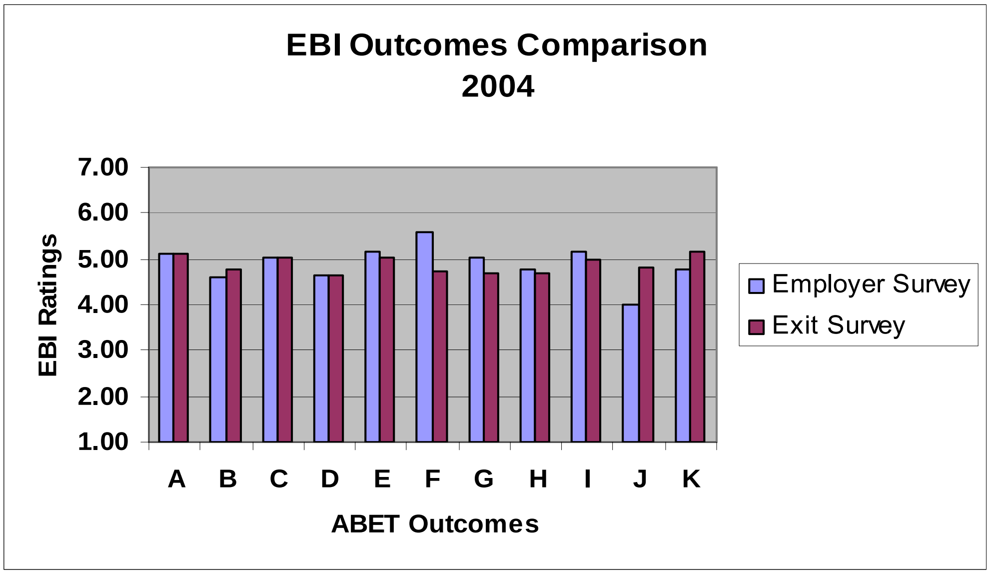
A different survey measured these factors that employers believe are most important was taken in 2001 and 2004. The results are shown in figure 2.7.D. This figure shows that basic skills requirements remain unchanged; however specific skills required for Electrical Engineers have changed over the past 3 years. The need for Electrical Engineering strong in Electromagnetic has decreased but for those strong in Microelectronics and Digital Signal processing made significant jumps. The results of these surveys will help the Electrical Engineering Department Head schedule classes to meet needs.

Figure 2.7.D



A final piece of information can be obtained by comparing the 2004 Employer survey data with that of the graduating seniors. Figure 2.7.E shows that we need to emphasize F-Understanding of professional & ethical responsibility and G-communicating effectively because employers place more weight on that objective than our graduates think they have attained. The surveys of supervisors of students participating in co-op and graduate intern programs is also used to indicate areas that we need to work on in our program.

Figure 2.7.E.



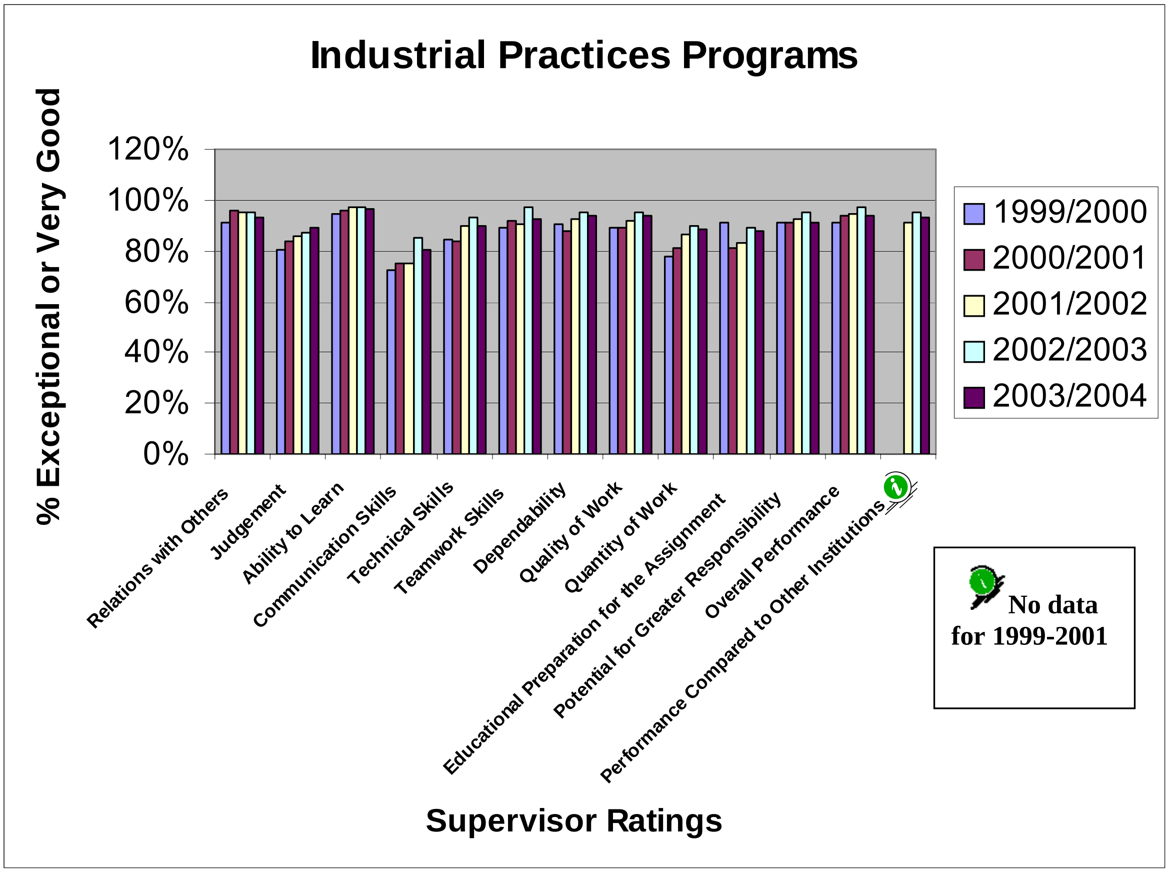
ABET A-K Objectives	Employe	UTD	Grad	Delta	Action
A. Apply knowledge of math and science	5.13	5.13	0.00		
B. Design and conduct experiments	4.61	4.78	-0.17		
C. Design a system, component, or process to meet desired needs	5.05	5.03	0.02		
D. Function in multi-disciplinary teams	4.65	4.63	0.02		
E. Identify, formulate, and solve engineering problems	5.17	5.04	0.13		
F. Understanding of professional and ethical responsibility needs attention	5.57	4.73	0.84		
G. Communicate effectively	5.04	4.69	0.36		
H. Broad education to understand impact in a g & societal context	4.78	4.68	0.10		
I. Recognition of the need and an ability to eng in life-long learning	5.17	4.97	0.20		
J. Knowledge of contemporary issues	4.02	4.83	0.81		
K. Use the techniques, skills, and modern engir tools	4.77	5.14	-0.37		

Comment [lc4]: What does E??mployer and Action represent

Comment [lc4]: What does E??mployer and Action represent

Figure 2.7.F shows results from supervisors in our IDP program from the 1999-2000 academic years through the 2003-2004 year. Communications skills are a weakness for our students but we have shown steady improvement since 1999. In the future, undergraduate ratings and graduates will be separated so that we can focus on the undergraduate population.

Figure 2.7.F



3. Program Outcomes and Assessments

In this section, we describe the assessment process, provide documented assessment results, provide evidence that results are applied to further development and improvement, and demonstrate the achievement of each program outcome important to the University of Texas at Dallas's mission and the objectives of the program.

3.1 List of Program Outcomes

We have chosen our program outcomes to correspond exactly to the outcome requirements of Criterion 3 because these are excellent indicators of what today's engineering students require for a successful career.

a) An ability to apply knowledge of mathematics, science and engineering

b) An ability to design and construct experiments, as well as to analyze and interpret data

c) And ability to design a system, component or process to meet desired needs

d) An ability to function on interdisciplinary teams

e) An ability to identify, formulate and solve engineering problems

f) An understanding of professional and ethical responsibility

g) An ability to communicate effectively

h) The broad education necessary to understand the impact of engineering in a global and societal context

i) A recognition of the need for and an ability to engage in life-long learning

j) A knowledge of contemporary issues

k) An ability to use the techniques, skills and modern engineering tools necessary for engineering practices

3.2 Relationship between the program outcomes and the program Educational Objectives

	Preparation for:				
Engineering Program Outcomes:	**A successful long-lived engineering career.**	**Meeting the needs of local industry.**	**Leading engineering teams.**	**Actively use engineering skills to mentor and promote the engineering profession in populations still underrepresented in it.**	**Actively pursuing lifelong learning.**
(a) an ability to apply knowledge of mathematics, science, and engineering	X			X	X
(b) an ability to design and conduct experiments, as well as to analyze and interpret data	X	X	X		
(c) an ability to design a system, component, or process to meet desired needs	X	X	X		
(d) an ability to function on multi-disciplinary teams	X	X	X		
(e) an ability to identify, formulate, and solve engineering problems	X	X	X		
(f) an understanding of professional and ethical responsibility	X		X	X	
(g) an ability to communicate effectively	X	X		X	
(h) the broad education necessary to understand the impact of engineering solutions in a global and Societal Context	X		X	X	X
(i) a recognition of the need for, and an ability to engage in life-long learning	X	X		X	X
(j) a knowledge of contemporary issues	X	X		X	X
(k) an ability to use the techniques, skills, and modern engineering tools necessary for Engineering Practice	X			X	X

Table X shows our mapping of the Program Educational Objectives to the Program Outcomes

3.3 Relationship between the Program Outcomes and the Requirements of Criterion 3

Comment [lc5]: What is criterion 3 ??

The University of Texas at Dallas Engineering Program Outcomes are the Outcome requirements of Criterion 3 because these are excellent indicators of what today's engineering students require for a successful career. In addition we have developed survey instruments to measure our ability to achieve program educational objectives and program outcomes.

3.4 Overview of Assessment Processes Used to Assess Program Outcomes

In order to obtain statistically reliable assessment data, several assessment devices were used:

Pre-graduation

- In-class assessment by students
- Faculty class assessments
- Senior exit surveys
- Industrial Practice Program Employer Evaluations

Post-graduation

- Alumni surveys (2 and 5 years)
- Employer surveys
- Job placement data, and admission data to graduate schools

The main assessment devices used to ensure that students achieved the program outcomes were the in-class assessment of class learning objectives done by all the faculty, and two surveys.

Detailed explanation follows of how the above assessment devices were used and implemented.

3.5 Program Outcomes

This section describes the assessment methods used to measure the outcomes of the electrical engineering program.

3.5.1 Student Evaluations of Courses, Instructors and Teaching Assistant's

Approximately three weeks before the end of the semester, a 15-minute period at the beginning of each class is reserved for student evaluations, by prior arrangement with the instructor. The evaluation is conducted by a teaching assistant who has no formal relationship with the instructor. The instructor is not present during the evaluation. At the beginning of the 15-minute evaluation period, students are asked to complete course evaluation forms that detail the efficiency of the instructor, the teaching assistant (if applicable), and course materials. The forms and standards of the student course evaluations are customized by a Committee on Effective Teaching (CET) of the School of Electrical Engineering and Computer Science. This committee is appointed by the dean to ensure that the university's policy of effective teaching is met as stated in University Policy Memorandum 96-III.21-70. The results of these evaluations are made available to both the individual instructors and the department or program head.

Figure 3.5.1 A. shows a summary of student's evaluations from 2000 thru 2004. Figure 3.5.1 A also shows the average of all student evolutions for all required upper division Electrical Engineering Courses collected. A sample copy of the student evaluation form filled out by each student is shown in Appendix-EE1. The results are summarized in three basic categories: The instructor, presentation, knowledge of the subject and effectiveness, the course, relevance and usefulness of course content and three, exams and homework; the length difficulty and quality in learning the objectives.

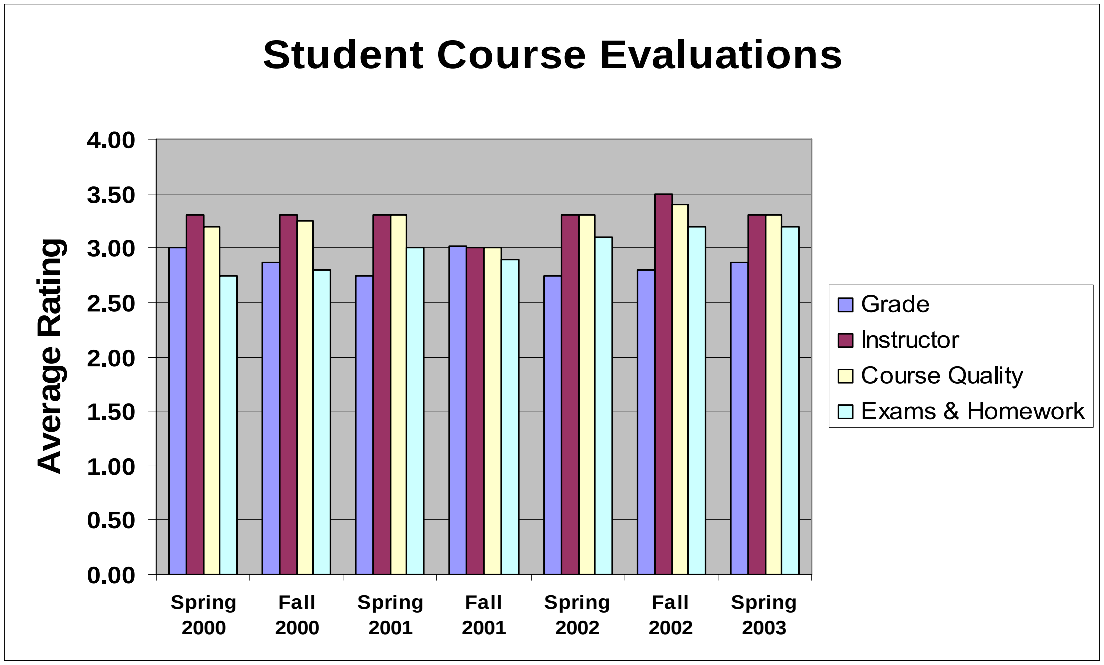
Comment [lc6]: Where is figure 3.5.1A

The results of these evaluations show that overall: the quality of instruction and the course was consistently rated excellent. The rating on exams and homework started in the fair range but has consistently improved and is now rated as good. It should be noted that the perceived improvement in exam and homework did not result in grade inflation. The average grades for upper division courses are relatively constant. Student Course Evaluations for each course are available for review.

The student course evaluations are used for outcomes assessment in an indirect way student comments and ratings help faculty and administration make the necessary changes in a course to make the learning process more effective. The student ratings help a faculty member get customer feedback and in some instances results in significant changes in departmental operations.

As an example in the spring of 2003 student evaluations showed that, the labs for a particular course were not as good as it could be. As a result of this assessment, the teaching lab structure and operations received a substantial modification. Dr. Nathan Dodge was designated as manager of teaching laboratory operations and two technicians were hired to see that all labs were properly stocked, that lab manuals for all classes were updated and that all Teaching Assistants received proper training. Another responsibility is to coordinate with individual instructors to see the lab experiments do not get ahead of class lecture materials.

Figure 3.5.1 A



	Grade	*Instructor*	*Course*	*Exams*
Spring 2000	3.00	3.30	3.20	2.75
Fall 2000	2.87	3.30	3.25	2.80
Spring 2001	2.75	3.30	3.30	3.00
Fall 2001	3.02	3.00	3.00	2.90
Spring 2002	2.74	3.30	3.30	3.10
Fall 2002	2.80	3.50	3.40	3.20
Spring 2003	2.87	3.30	3.30	3.20

3.5.2 In-Class Assessment by Faculty

In the fall 2001 semester, a memo was sent to all faculty members asking them to develop course-learning objectives (CLO's) for core undergraduate courses. The faculty were also asked to map each of the class objectives to a single or multiple a-k ABET outcomes. Table 2 shows an example CLO form for the Signals and Systems course (EE 3302). Courses were divided into three-concentration areas microelectronics, digital systems and communications/DSP. Each area group was responsible for the development of CLO's for designated courses within their concentration area. By the end of the fall 2001 semester, the faculty completed the CLO's for all undergraduates' courses) a copy of all CLO forms is provided in Appendix X)

At the end of the semester, course instructors are required to rate the student's ability in achieving the course learning objectives on a scale of one to five, with five being exceptional and one being poor. In addition, instructors are required to: (1) list the class materials (e.g., homework, exams, and projects) used for assessing each CLO, and (2) the criteria used in obtaining the rating scores (see Example in Table 2)

The Office of Assessment is responsible for collecting all the CLO forms each semester and distributing the rating scores to the ABET Committee. The ABET Committee, in collaboration with the Undergraduate Curriculum Committee, analyzes the data and computes the mean rating scores of the a-k ABET outcomes across all courses. The mean rating scores of the a-k ABET outcomes are compared against a threshold, and if the scores fall below that threshold, it signifies a change needs to be made in the curriculum. The threshold level was initially set by the ABET Committee to 3.75 (out of a maximum score of 5) for all ABET outcomes. Before any action is taken, possible changes to the curriculum are discussed in the faculty meeting. Feedback from the industrial advisory board is also sought.

The process ensures that the loop is closed for program improvement. One of the main advantages of in-class assessment is that all faculty are involved in the assessment process and consequently in program improvement.

Assessment of EE3301 and EE3101 (Electrical Network Analysis and Lab)

Instructor: Semester:

Use this form to assess the students' performance in the course, based on all or selected sets of examinations, homework, or projects assigned for this course.

On a scale of 1 to 5, with 5 being exceptional and 1 being poor, rate the students':

				ABET	Material	Criteria
		Class learning objectives	Rating	Objective	Used	Used
		EE3301				
	1.	Ability to analyze circuits[†] using Kirchoff's laws		a,e	Hwk, Test 1	5=A, [3,4=B], 2=C, 1=D
	2.	Ability to analyze series and parallel resistive circuits		a	Hwk, Test 1	5=A, [3,4=B], 2=C, 1=D
	3.	Ability to analyze circuits using the node-voltage method		a,e	Hwk, Test 1	5=A, [3,4=B], 2=C, 1=D
	4.	Ability to analyze circuits using the mesh-current method		a,e	Hwk, Test 1	5=A, [3,4=B], 2=C, 1=D
	5.	Ability to transform circuits using Thevenin and Norton equivalents		a,e	Hwk, Test 1	5=A, [3,4=B], 2=C, 1=D
	6.	Ability to analyze RL, RC and RLC circuits - step and natural response.		a,e	Hwk, Test 2	5=A, [3,4=B], 2=C, 1=D
	7.	Ability to analyze sinusoidal steady state circuits involving R, L and C.		a,e	Hwk, Test 3	5=A, [3,4=B], 2=C, 1=D
	8.	Ability to apply the Laplace transform in circuit analysis		a,e,k	Hwk, Final	5=A, [3,4=B], 2=C, 1=D
	9.	Ability to identify and use transfer functions in circuit analysis		a,e,k	Hwk, Final	5=A, [3,4=B], 2=C, 1=D
	10.	Ability to design and analyze frequency selective circuits (low-, high-pass filters)		a,c	Hwk, Final	5=A, [3,4=B], 2=C, 1=D
	11.	Ability to use the Bode diagrams in circuit analysis.		a,e	Hwk, Final	5=A, [3,4=B], 2=C, 1=D
		EE3101				
	12.	Ability to use general purpose laboratory equipment		b,k	Hwk, Lab	5=A, [3,4=B], 2=C, 1=D
	13.	Ability to measure circuit parameters		b,k	Hwk, Lab	5=A, [3,4=B], 2=C, 1=D
	14.	Ability to design and test RL, RC and RLC circuits.		b,k	Hwk, Lab	5=A, [3,4=B], 2=C, 1=D
	15.	Ability to analyze and test sinusoidal steady state circuits.		b,k	Hwk, Lab	5=A, [3,4=B], 2=C, 1=D
		[†] Unless otherwise noted, "circuits" refers to both DC and AC conditions.				
		a. An ability to apply knowledge of mathematics, science and engineering				
		b. An ability to design and conduct experiments as well as to analyze and interpret data				
		c. An ability to design a system, component or process to meet desired needs				
		e. An ability to identify, formulate and solve engineering problems				
		k. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice				

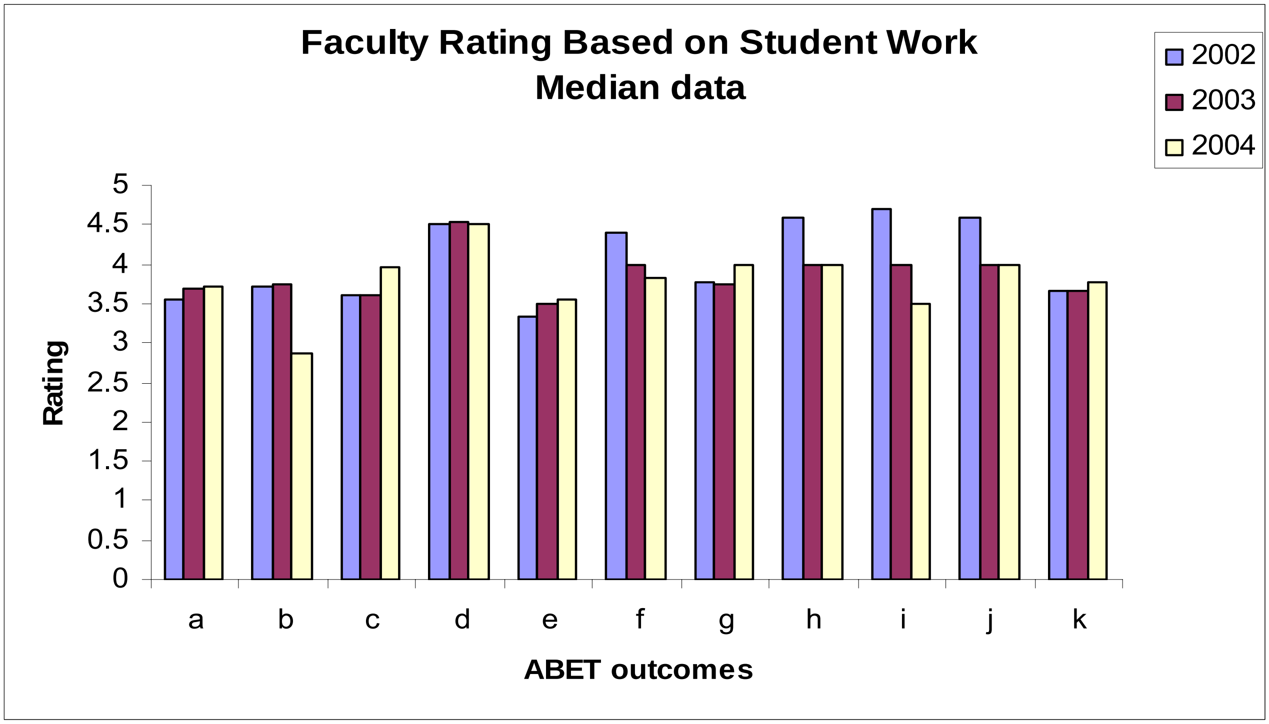
Course#	Course Name	a	b	c	d	e	f	g	h	i	J	k
EE 1102	Introduction to Experimental Techniques	x	x	x	x	x		x				x
EE 2110	Introduction to Digital Systems Laboratory	x	x	x	x	x		x				x
EE 2300	Applied Linear Algebra											
EE 2310	Introduction to Digital Systems	x		x		x						x
EE 3101	Circuits Lab		x									x
EE 3102	Signals and Systems Lab	x		x		x						x
EE 3110	Electronic Devices Lab	x		x		x						x
EE 3111	Electronic Circuits Lab	x		x		x						x
EE 3120	Digital Circuits Laboratory	x	x	x		x		x				x
EE 3150	Communications Systems Lab	x	x	x		x		x				x
EE 3300	Advanced Engineering Mathematics	x				x						x
EE 3301	Circuits	x		x		x						x
EE 3302	Signals and Systems	x		x		x						x
EE 3310	Electronic Devices											
EE 3311	Electronic Circuits											
EE 3320	Digital Circuits	x		x		x						x
EE 3341	Probability Theory and Statistics	x	x			x						
EE 3350	Communication Systems	x				x						
EE 3390	Prof. and Tech. Communication				x	x	x	x		x	x	
EE 4301	Electromagnetism I	x	x	x	x	x		x				x
EE 4302	Electromagnetism II	x	x	x	x	x		x				x
EE 4304	Computer Architecture	x		x		x						x
EE 4310	Systems and Control	x		x		x						x
EE 4325	Introduction to VLSI Design	x		x		x						x
EE 4330	Integrated Circuit Technology	x		x		x						x
EE 4340	Analog Integrated Circuit Analysis and Design	x		x		x						x
EE 4360	Analog Integrated Circuit Analysis and Design	x		x		x						x
EE 4361	Introduction to Digital Signal Processing	x		x		x						x
EE4365	Introduction to Wireless Communication	x		x		x						x
EE 4367	Telecommunications Switching and Transmission	x		x		x						x
EE 4368	RF Circuit Design Principles	x		x		x						x
EE 438X	Senior Design Project	x	x	x	x	x		x				x
EE 4390	Telecom Senior Design Project	x	x	x	x	x		x	x		x	x
EE 4V9X	Special Topics/Independent Studies in EE	x	x	x	x	x		x	x		x	x

Table 3 shows the mapping of undergraduate courses to ABET outcomes. Most of the *a*-*k* ABET outcomes are evaluated by multiple courses, thereby strengthening the reliability of our results. Four outcomes (f, h, i, j) are evaluated by relatively fewer courses; however, these outcomes are also evaluated in the alumni and senior exit surveys.

Figure 3.5.2 shows average faculty ratings for A-K objectives for years 2002 thru 2004 for all undergraduates Electrical Engineering classes. The faculty ratings for each course are included in the materials prepared for the program evaluators. Based on the data shown in figure 3, we have been able to identify areas of strength and those that need improvement. Those areas that showed the most improvement were in c) ability to design a system, component or process to meet desired needs, e) ability to identify, formulate and solve engineering problems and g) the ability to communicate effectively.

The areas that declined the most were f) understanding of professional and ethical responsibility, ABET objectives h, i, j and b) design and conduct experiments as well as to analyze and interpret data. In those instances in which the target goal of 3.75 was not achieved we then considered the trend. In ABET objective e), although we did not achieve the 3.75 we are continuing to make progress. We are, however paying closer attention to ABET objective b) and i) specifically, the reorganization of the teaching labs is expected to improve ABET objective b. To impact ABET objective i) several new programs have been initiated to provide financial incentives for graduates to pursue Masters and PhD programs. The “Get Doc” program targets promising graduates by offering them Research Assistantships valued at $25,000 per year. In 2004, there were 15 “Get Doc” awardees and in 2005, 10 have been awarded at this date. Another program “Fast track” offer students the opportunity to substitute certain graduate classes for their undergraduate degree, thereby shortening the time required to obtain a Masters degree.

Figure 3.5.2



ABET a-k objectives	2002	2004	Delta	Largest Change
A. Apply knowledge of math and science	5.41	5.13	-0.27	Decrease
B. Design and Conduct Experiments	4.02	4.61	0.59	Increase
C. Design a system, component, or Process to meet Desired Needs	4.82	5.05	0.23	
D. Function in Multi-disciplinary Teams	4.38	4.65	0.28	
E. Identify, formulate, and solve engineering problems	5.30	5.17	-0.13	Decrease
F. Understanding of professional and ethical respo	5.50	5.57	0.07	Small increase
G. Communicate effectively	4.64	5.04	0.40	
H. Broad education to understand impact in a global & Societal Context	4.36	4.78	0.42 Incre	
I. Recognition of the need and an ability to engage in Life-long learning	4.95	5.17	0.22	
J. Knowledge of Contemporary Issues	3.18	4.02	0.84	Increase
K. Use the techniques, skills, and modern engineer tools	4.42	4.77	0.34	

Comment [lc7]: Should this be two different titless , Or all one title ??? Should this last column have information.

3.5.3 Senior Exit Surveys

This survey was administered every semester since the fall of 2002. The qualitative results from the survey of the graduating seniors in 2002 gave a generally very positive evaluation of the electrical engineering program (the majority of the respondents rated the quality of the Electrical Engineering Department “good” to “excellent” and rated the design courses to be “good” to “excellent”.

Although the original senior exit survey provided us with qualitative feedback, most of the questions in that survey did not specifically address the a-k ABET outcomes. We, therefore, adopted the EBI survey, which address the a-k ABET outcomes in 2001.

The EBI exit surveys are important because they provide data from our graduating seniors that we can compare with three important classes of institutions. The select 6 allows us to pick six universities that we feel have programs comparable to ours, from the list of universities participating in the EBI surveys. For the year 2003-2004, we chose The University of California-Riverside, The University of Kansas, The University of Houston, and The University of Texas at Austin, The University of Missouri of Columbia, and the University of Virginia.

There were 55 Universities that participated in the 2003-2004 survey. The other two classes of Electrical Engineering programs that we use are the Carnegie Class Universities and all schools in the survey.

We use the EBI surveys to access our performance relative to students exiting other institutions but not as an absolute measure. In the 2002 EBI survey shown in figure 3.5.3 A, relative to all schools, UTD graduates felt that related to the ABET A-K outcomes, our performance was best in ABET outcomes H-Board Education to understand impact in a global & societal context, I-Recognition of the need and an ability to engage in life-long learning and J-Knowledge of contemporary issues.

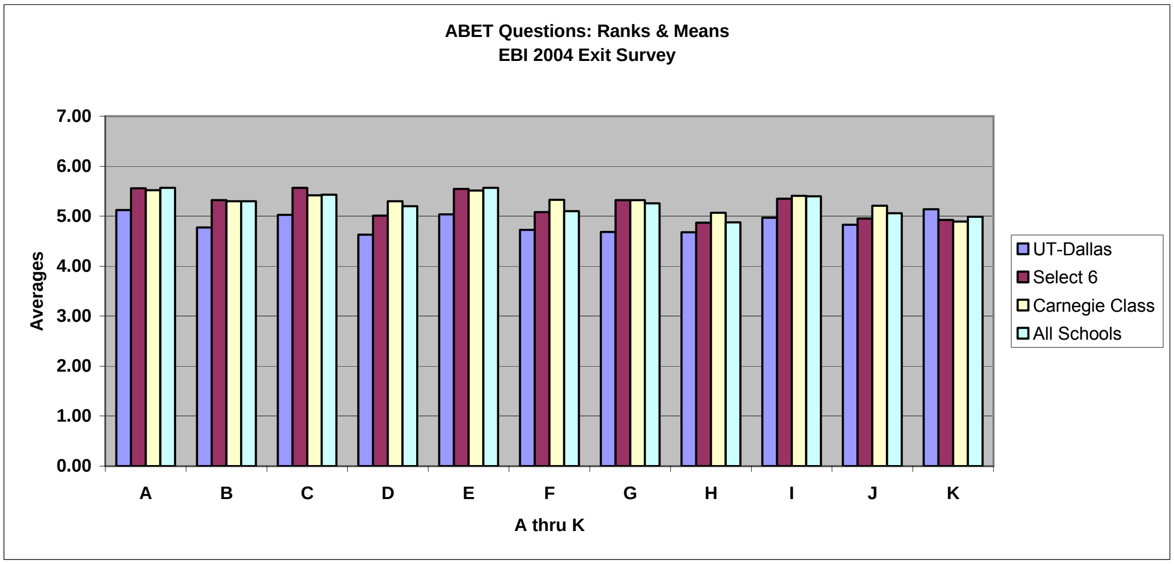
The ABET outcomes that were the weakest were D-Function in Multi-disciplinary Teams, E-Identify, Formulate, and Solve Engineering Problems and G-Communicating Effectively. The results for the 2004 EBI survey shown in figure 3.5.3 B show essentially the same results.

We have addressed the ABET outcomes in which we feel our graduates indicated that we were weaker in the rest of the schools in the survey.

In particular, Senior Projects have been expanded to insure that there is a better opportunity to deal with multidisciplinary issues. The open-endedness of the new projects insures that students will have the opportunity to identify, formulate and solve more diverse problems. We have also encouraged the faculty to include more formal written and oral presentations as part of their course to increase the communication experiences.

Even though we use a variety of instruments to measure ABET A–K outcomes, the faculty assessment based on performance in class on homework, quizzes, exams and projects is the best measure of outcome achievement.

Figure 3.5.3.A



EBI EXIT Survey	UTD	All	Deltas	Strength/Weakness
A. Apply knowledge of math and science	5.13	5.57	-0.44	
B. Design and Conduct Experiments	4.78	5.30	-0.52	
C. Design a system, component, or process to meet desired needs	5.03	5.43	-0.40	
D. Function in Multi-disciplinary teams	4.63	5.20	-0.57	Weakness
E. Identify, formulate, and solve engineering problems	5.04	5.57	-0.53	Weakness
F. Understanding of professional and ethical responsibility	4.73	5.10	-0.37	
G. Communicate effectively	4.69	5.26	-0.57	Weakness
H. Broad education to understand impact in a global & societal Context	4.68	4.88	-0.20	Strength
I. Recognition of the need and an ability to engage in life-long learning	4.97	5.40	-0.43	
J. Knowledge of contemporary issues	4.83	5.06	-0.23	Strength
K. Use the techniques, skills, and modern engineering tools	5.14	4.99	0.15	Strength

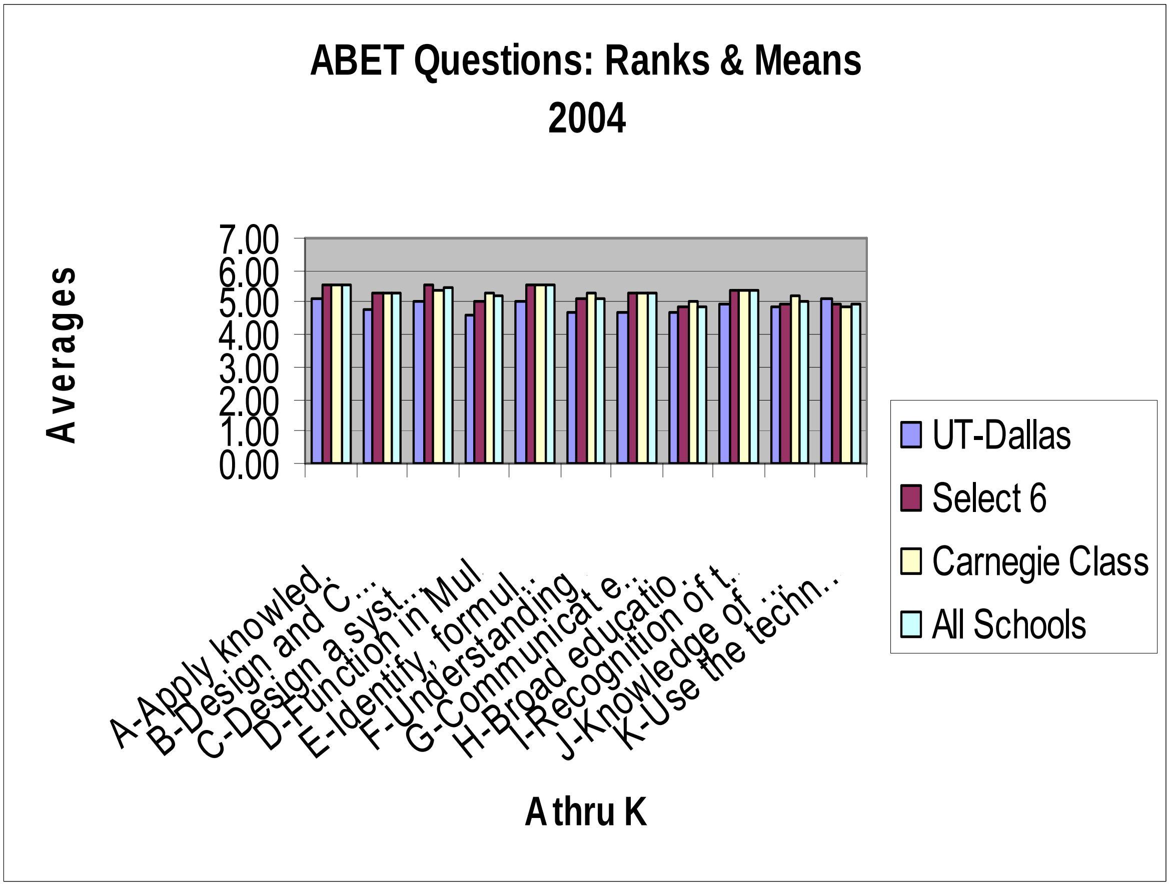


Figure 3.5.3.B

EBI EXIT Survey	UTD	All	Deltas	Strength/Weakness
A. Apply knowledge of math and science	5.13	5.57	-0.44	
B. Design and conduct experiments	4.78	5.30	-0.52	
C. Design a system, component, or process to meet desired needs	5.03	5.43	-0.40	
D. Function in multi-disciplinary teams	4.63	5.20	-0.57	Weakness
E. Identify, formulate, and solve engineering problems	5.04	5.57	-0.53	Weakness
F. Understanding of professional and ethical responsibility	4.73	5.10	-0.37	
G. Communicate effectively	4.69	5.26	-0.57	Weakness
H. Broad education to understand impact in a global & societal context	4.68	4.88	-0.20	Strength
I. Recognition of the need and an ability to engage in life-long learning	4.97	5.40	-0.43	
J. Knowledge of contemporary issues	4.83	5.06	-0.23	Strength
K. Use the techniques, skills, and modern engineering tools	5.14	4.99	0.15	Strength

3.6 Program Improvement

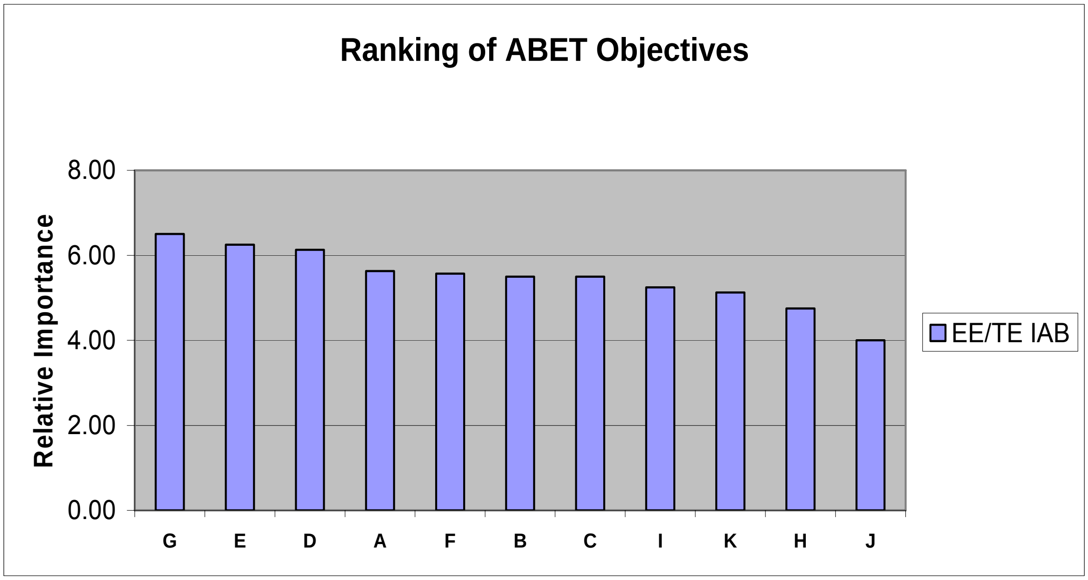
The results and analysis of our surveys were presented to the Electrical Engineering IAB on October 30, 2004. The IAB was then asked to rank the relative importance of the ABET objectives. The results of these rankings are shown in figure 3.6.A. The IAB felt that the three most important objectives are:

- G-Communicate effectively
- E-Identify, formulate and solve Engineering problems
- D-Function in multi-disciplinary Teams

These IAB results along with those found from other assessment tools have been forwarded to the Electrical Engineering curriculum for further action.

Figure 3.6.A

Comment [lc8]: Should this table be sorted by ranking or title ?



ABET A-K Objectives	Ranking of ABET Objectives	Focus Area
G. Communicate effectively	6.50	X
E. Identify, formulate, and solve engineering problems	6.25	X
D. Function in Multi-disciplinary teams	6.13	X
A. Apply knowledge of math and science	5.63	
F. Understanding of professional and ethical responsibility	5.57	
B. Design and conduct experiments	5.50	
C. Design a system, component, or Process to meet desired needs	5.50	
I. Recognition of the need and an ability to engage in life-long learning	5.25	
K. Use the techniques, skills, and modern engineering tools	5.13	
H. Broad education to understand impact in a global & societal context	4.75	
J. Knowledge of Contemporary Issues	4.00	

4. Professional Component

Our Electrical Engineering curriculum provides both breadth and depth across the range of engineering topics such as microelectronics, signal processing, digital and analog systems and communications. Our graduates have: knowledge of probability and statistics, including applications appropriate to the program name and objectives; and knowledge of mathematics through differential and integral calculus, basic sciences, computer science, and engineering sciences necessary to analyze and design complex electrical and electronic devices, software, and systems containing hardware and software components, as appropriate to program objectives. Our graduates are also required to have knowledge of advanced mathematics, typically including differential equations, linear algebra, complex variables, and discrete mathematics.

Our graduates are prepared for engineering practice through the EE curriculum culminating in a major design experience based on the knowledge and skills acquired in earlier course work and incorporating engineering standards and realistic constraints that include most of the following considerations as appropriate: economic; environmental; sustainability; manufacturability; ethical; health and safety; social; and political.

Our Electrical Engineering degree plans satisfies the requirements specified by the Accreditation Board for Engineering and Technology (ABET). The course work includes at least:

- One year (32 SCH) of an appropriate combination of mathematics and basic sciences;
- One and one-half years (48 SCH) of engineering topics.
- General education component that complements the technical content of the curriculum and is consistent with program and intuition objectives

Electrical Engineering Program Curriculum

Comment [lc9]: What number format should this be ?

The table below describes how the curriculum has changed since the 1999 ABET visit. The changes were implemented based on faculty course evaluations, employer feed back, our Industrial Advisory Board and requirements mandated by the state of Texas. However, the engineering faculty is primarily responsible for assuring that the curriculum devotes adequate attention and time to each curricular component area and that students are prepared for engineering practice as required by Criterion 4.

Curriculum Changes	Reason for Change	Comments
1998-2000 Catalog		
Curriculum for the 1999 ABET Visit		Baseline for 2005 visit.
o RHET 1101 no longer a degree requirement. It is a university requirement only if the student falls into certain categories.	UTD Undergraduate Dean	This requirement results in sum students having 129 credit hours when they graduate. One hour more than required.
• Supplemental 1999 Catalog		.
A. Change from General Education requirements to CORE requirements. The ethics course, A&H 2306, removed from General Requirements	Texas State legislative action	ISSS 3360 in the ECS curriculum
2000-2002 Catalog		
• Supplemental 2001 catalog o Changes in EE/TE Curriculum ▪ Revised the advanced mathematics courses ▪ Revised Electrical networks Course ▪ Added Introduction to Experimental Techniques Course ▪ Added "Signals and Systems Lab" ▪ Added "Systems and Control" ▪ Added "Technical Writing" course	EE Curriculum Committee review to align program with ABET 2000	Proposal to change curriculum, June 2001
2002-2004 Catalog •		
2004-2006 Catalog •		

Comment [lc10]: Blank bullet pint for

The course which meet the ABET requirements, according to criterion 4, are described in the following sections.

4.1 Mathematic and Basic Science

The professional component must include: (a) one year of a combination of college level mathematics and basic sciences (some with experimental experience) appropriate to the discipline. The Electrical Engineering program requires the following:

Topic	**Credit Hours**
MATH 2417 Calculus I	4
MATH 2419 Calculus II	4
CS 1337 Computer Science I	3
PHYS 2325/2125 Mechanics & Heat w/Lab	4
MATH 2420 Differential Equations	4
PHYS 2326/2126 Electromagnetism & Waves/Lab	4
CHM 1311/1111 General Chemistry I/Lab	4
EE 3300 Applied Linear Algebra	3
EE3300 Advanced Engineering Math I	3
EE 3341 Prob. Theory & Stats	2
Total-ABET BASIC-Level Requirement	32
Overall Total for Degree	35
Percent of Abet Requirement	109.4%

4.2 Engineering Topics

The professional component must include: (b) one and one-half years of engineering topics, consisting of engineering sciences and engineering design appropriate to the student's field of study. The engineering sciences have their roots in mathematics and basic sciences but carry knowledge further toward creative application. These studies provide a bridge between mathematics and basic sciences on the one hand and engineering practice on the other. Engineering design is the process of devising a system, component, or process to meet desired needs. It is a decision-making process (often iterative), in which the basic sciences, mathematics, and the engineering sciences are applied to convert resources optimally to meet these stated needs. The Electrical Engineering program requires the following:

Topic	**Credit Hours**
EE 1102 Introduction experimental techniques	1
EE 2310/2110 Computer Organization & Des/ Lab	4
EE 3301/3101 Electrical Network Analysis/ Lab	4
EE 3302/3102 Signals & Systems/Lab	4
EE 3310/3110 Electronic Devices/Lab	4
EE 3320 /3120 Digital Circuits / Lab	4
EE3311/3111 Electronic Circuits /Lab	4
ECS 3390 Prof.& Tech. Communication	1
EE 3341 Prob. Theory & Stats	1
EE 4301 Electromagnetic engineering	3
EE3350/3150 Communications Systems /Lab	4
EE 4368 RF Ckt. Design Principles	3
EE 438X Senior Design Project I	3
EE Elective	3
EE Elective	3
EE Elective	3
EE4310 Systems and controls	3
Senior Design Project II	3
Total-ABET BASIC-Level Requirement	48
Overall Total for Degree	55
Percent of total	114.6%

4.3 General Education Classes Consistent with Program Objectives

The professional component must include: (c) a general education component that complements the technical content of the curriculum and is consistent with the program and institution objectives. The Electrical Engineering program requires the following:

Topic	Credit Hours
RHET 1302 Rhetoric	3
RHET 1101 Oral Communication	1
Arts 1301 Exploration of the Humanities	3
Human 1301 Exploration of the Arts	3
GOVT 2301 American/Texas constitution	3
GOVT 2302 American/Texas structure & function	3
HST 1301 Themes & ideas of American History	3
Free Elective (***)	3
HST 1302 Issues in American History	3
ENGS 3360 Politics and Values in Bus. & Tech.	3
ECS 3390 Prof. & Tech. Communication	2
Total-ABET BASIC-Level Requirement	N/A
Overall Total for Degree	30
Percent of total	N/A

To complete degree requirements students are required to take electives outside of the engineering courses.

Comment [lc11]: What is the total number of elective required ?

Topic	Credit Hours
Advanced Elective [outside EE]	3
Advanced Elective [outside EE]	3
Free Elective	3

Our students are prepared for engineering practice through the curriculum culminating in a major design experience based on the knowledge and skills acquired in earlier course work and incorporating appropriate engineering standards and multiple realistic constraints.

Table 8.1in section 8 Program Criteria shows which courses apply to the Electrical Engineering curricular categories. The course syllabi and course descriptions for these course plus electives are included in Appendix I D of the self-study.

5. Electrical Engineering Faculty

The Jonsson School has been aggressive in recruiting new faculty. We added 37 new faculty members to the school of engineering and computer science since FY 2000, 18 of which are Electrical Engineering faculty members.

The following faculty members develop and teach courses in the electrical engineering curriculum and help with its administration:

The following is a list of EE Faculty members as of the spring 2005 semester.

Comment [lc12]: Do you want this table of Professors sorted by last name? What about all of the other tables (including the ones above)? – do you want them sorted any certain way?

LAST NAME	FIRST NAME	RANK
Balsara	Poras	Professor
Cantrell	Cy	Professor
Fonseka	John	Professor
Frensley	William	Professor
Gnade	Bruce	Professor
Hunt	Bob	Professor
Kehtarnavaz	Nasser	Professor
Kiasaleh	Kamran	Professor
Lee	Gil	Professor
Loizou	Philip	Professor
MacFarlane	Duncan	Professor
Ober	Raimund	Professor
Overzet	Lawrence	Professor
Pervin	William J.	Professor
Shaw	Don	Professor
Tamil	Lakshman	Professor
Wallace	Robert	Professor
Zhou	Dian	Professor
Al-Dhahir	Naofal	Associate Professor
Bhatia	Dinesh	Associate Professor
Burnham	Gerry	Associate Professor
Byrne	Dale	Associate Professor
Fumagalli	Andrea	Associate Professor
Goeckner	Matthew	Associate Professor

LAST NAME	FIRST NAME	RANK
Kim	Moon	Associate Professor
Nosratinia	Aria	Associate Professor
Nourani	Mehrdad	Associate Professor
Lee	Hoi	Assistant Professor
Lee	Jeong-Bong (JB)	Assistant Professor
Liu	Jin	Assistant Professor
Minn	Hlaing	Assistant Professor
Panahi	Issa	Assistant Professor
Sangireddy	Rama	Assistant Professor
Saquib	M.	Assistant Professor
Torlak	Murat	Assistant Professor
Bernardin	Pete (Charles)	Senior Lecturer
Boyd	William	Senior Lecturer
Cilia	Andrew	Senior Lecturer
Dodge	Nathan	Senior Lecturer
Esposito	Ed	Senior Lecturer
Kalam	Muhammad	Senior Lecturer
Rajasekaran	P.K.	Senior Lecturer
Saad	Ricardo	Senior Lecturer
Tacca	Marco	Senior Lecturer
Viswanathan	T.R.	Research Professor
Hellums	James	Adjunct Prof / Lecturer

6. Facilities

The Erik Jonsson School of Engineering and Computer Science is a state-of-the-art facility consisting of a network of Sun servers and Sun Engineering Workstations. All systems are connected via an extensive fiber-optic Ethernet and, through the Texas Higher Education Network, have direct access to most major national and international networks. In addition, many personal computers are available for student use.

In addition to the Computer Science faculty, there are individuals who are involved in computer related work in many other areas of the University, including the several physical and social sciences and in various areas of business and management. Students majoring in computer science with interest in these important application areas have the opportunity to consult and work with talented faculty from a wide range of disciplines.

The Engineering and Computer Science Complex provides extensive facilities for research in microelectronics, telecommunications, and computer science. A Class 1000 microelectronics clean room facility, including e-beam lithography, sputter deposition, PECVD, LPCVD, etch, ash and evaporation, is available for student projects and research. An electron beam lithography pattern generator capable of sub-micron resolution is also available for microelectronics research. The Plasma Applications and Science Laboratories have state-of-the-art facilities for mass spectrometry, microwave, interferometry, optical spectroscopy, optical detection, in situ elipsometry and FTIR spectroscopy. In addition, a Gaseous Electronics Conference Reference Reactor has been installed for plasma processing and particulate generation studies. The Optical

Measurements Laboratory has a dual wavelength (visible and near infrared) Gaertner Ellipsometer for optical inspection of material systems, a variety of interferometric configurations, high precision positioning devices, and supporting optical and electrical components. The Optical Communications Laboratory includes attenuators, optical power meters, lasers, APD/p-i-n photodetectors, optical tables, and couplers and is available to support system level research in optical communications. The Photonic Testbed Laboratory supports research in photonics and optical communications with current-generation optical networking test equipment. The Nonlinear Optics Laboratory has a network of Sun workstations for the numerical simulation of optical transmission systems, optical routers and all-optical networks. The Electronic Materials Processing laboratory has extensive facilities for fabricating and characterizing semiconductor and optical devices. The Laser Electronics Laboratory houses graduate research projects centered on the characterization, development and application of ultrafast dye and diode lasers. Research in characterization and fabrication of nanoscale materials and devices is performed in the Nanoelectronics Laboratory.

The Engineering and Computer Science Complex provides extensive facilities for research in electrical engineering, telecommunications, and computer science and engineering. The Center for Integrated Circuits and Systems (CICS) includes a network of workstations, personal computers, FPGA development systems, and a wide spectrum of state-of-the-art commercial and academic design tools to support graduate research in computer engineering. In the Digital Signal Processing Laboratory several multi-CPU workstations are available in a network configuration for simulation experiments. Hardware development facilities for real time experimental systems are available and include microphone arrays, active noise controllers, speech compressors and echo cancellers. The Distributed Computing Laboratory has a network of personal computers running Linux to support network simulation using discrete-event simulation packages. The Hardware/Software Co-design Laboratory has many workstations and PCs with DSP modules to support the experiments for various implementations in DSP and communications.

The multimedia communications laboratory has a dedicated network of PC's, Linux stations, and multi-processor, high performance workstations for analysis, design and simulation of image and video processing systems. The speech processing laboratory has a network of PC's with audio I/O capability for analysis and processing of speech signals. The laboratory is also equipped with several Texas Instruments processors for real-time processing of speech signals. The Broadband Communication Laboratory has design and modeling tools for fiber and wireless transmission systems and networks, and all-optical packet routing and switching. The Advanced Communications Technologies (ACT) Laboratory provides a design and evaluation environment for the study of telecommunication systems and wireless and optical networks. ACT has facilities for designing network hardware, software, components, and applications.

The Center for Systems, Communications, and Signal Processing, with the purpose of promoting research and education in general communications, signal processing, control systems, medical and biological systems, circuits and systems and related software, is located in the Erik Jonsson School.

The faculty of the Erik Jonsson School's Photonic Technology and Engineering Center (PhoTEC) carry out research in enabling technologies for microelectronics and telecommunications. Current research areas include nonlinear optics, Raman amplification in fibers, optical switching, applications of optical lattice filters, microarrays, integrated optics, and optical networking.

In addition to the facilities on campus, cooperative arrangements have been established with many local industries to make their facilities available to U.T. Dallas graduate engineering students.

6.1 Computer Facilities

List the computer facilities available for use in the engineering programs, including a description of the primary purpose and utilization of the equipment. Describe plans for expanding, updating, maintaining, and replacing computer equipment and related facilities. Computer facilities for purposes of this study will be grouped into the following categories:

- General purpose/open access
- Restricted access
- Shared equipment

Of course all faculty members have one or more personal workstations, generally SUN, PC, and/or Macintosh.

General Purpose/Open Access Facilities

- McDermott Library Microcomputer Laboratories
- Primary purpose is general computing and network access for all students. These facilities can be reserved for instruction purposes on a restricted basis.
- Green Building Microcomputer Laboratory – Primary purpose is instruction, but when not scheduled for class use is open to all students. Lab is heavily used by the School of Social Sciences.
- Jonsson Building Computer Laboratories – Primary purpose is to provide access toshared UNIX systems, but may be reserved for instruction.

Restricted Access Facilities

- Multi-Purpose Building Microcomputer Lab – Primary purpose is instruction. Lab is shared across the University and is available only by prior reservation.
- Jonsson School of Electrical Engineering and Computer Science (ECS) Computer Controlled Testing Labs – Primary purpose is teaching laboratories associated with specific courses (EE1102, 2110, 3201, 3210, 3211, 3220, 3250). Labs contain PC's running LABVIEW software to drive electronic test equipment.
- ECS General Computing Lab – Primary purpose is instruction in computer programming.
- ECS Solarium Lab – Primary purpose is use in circuit design courses.
- ECS provides 4 classrooms equipped with projection devices, network connection and an terminals for instruction purposes.

Very large classes make use of the rooms in the south engineering building and the UTD Conference Center Auditorium, which are equipped with high-quality multimedia instructional technology.

Shared Equipment

- SUN Enterprise 3000 “Jupiter” (qty. 4 – 250MHz processors, 1GB RAM) – Primary purpose is as a computer server for applications such as MATLAB and user developed code , as well as circuit design simulations.
- SUN Enterprise 3000 “Apache” (qty. 2 – 250 MHz processors, 512MB RAM) – Primary purpose is a general access application server available to all students, faculty and staff.
- Sun Enterprise 6000 “Ra” (qty. 18 – 167MHz processors, 2.75GB RAM) – Primary purpose is research.
- PC Server “Pluto” supporting McDermott Labs – provides file and print services (currently transitioning from Novell Netware to Windows NT).

The campus network is currently built around two Cisco Catalyst 5500 switches plus various routers, smaller switches, hubs and concentrators. The campus network is connected to the Internet via the Texas Higher Education Network (THEnet) and a grant application has been submitted to NSF for connection to the vBNS.

6. 2 Library Facilities

Library materials supporting the Jonsson School of Engineering/Computer Science are held in the Eugene McDermott Library, the main library of the University of Texas at Dallas. The book and periodical collections are arranged by standard Library of Congress call number. Books, including most conference proceedings, are located on the 4th level and are available for users to borrow. Library users have electronic access to thousands of e-books, conference proceedings and e-journals when the library is not open.

The paper journal/periodical and the reference collections are shelved on the 2nd level. These volumes must be used in the library, but are available for reproduction within the guidelines of the copyright code. All engineering-related government publications and electronic services are available on the 2nd level in the Reference area. Electronic sources are available remotely with a valid University ID.

Table 6.2.1 shows the acquisition history for the McDermott Library.

TABLE 6.2.1 Library Acquisitions

	COLLECTION RESOURCES 2002-2003 TITLES Aquistions		COLLECTION RESOURCES 2003-2004 TITLES Inclusive		CURRENT COLLECTION RESOURCES 2004 TITLES	
	Books	Periodicals**	Periodicals	Books	Periodicals	Books
Entire Institutional Library In the following fields included above	90,000	12,403	16,234	781,021	27,887	812,929
Engineering and Computer Science	2,352	4,100	4,836	209,456	8,220	21,241
Chemistry	320	300	327	5,420	555	4,769
Mathematics	336	317	337	1,046	572	9,906
Physics	274	163	199	3,264	338	7,626
Other Specialty Areas (Specify)						

The mission of the Eugene McDermott Library Reference and Information Services Department is to provide faculty, students and staff of the University of Texas at Dallas with the information necessary to support instruction and research.

The Public Services Department provides a range of services to library users. Librarians and support staff handle nearly 100,000 questions per year at four service desks. In addition, the reference librarians provide answers to reference questions submitted on a department WWW page and through a UT System collaborative online chat reference initiative.

The reference staff is actively involved in the overall educational goals of the University through its instructional and service approach to the provision of information. Professional librarians create instructional sessions providing basic and advanced assistance in conducting library research. Faculty members can request customized instruction to support a particular project or to familiarize students with research tools in a discipline, including the library catalog, electronic databases, the Internet, reference sources and government publications. Liaison librarians are exploring the possibility of incorporating a library/librarian presence within the class management software being used by faculty.

The Eugene McDermott Library offers a full range of online resources to support the Erik Jonsson School of Engineering and Computer Science. The Library operates an Information Commons with 36 workstations and 32 wireless-Web enabled laptops designed to support database and Internet research activities and to provide access to a collection of compact disc materials.

At present, the Library subscribes to over 200 Internet-based resources, many of which include the full text of periodical or newspaper articles and complete statistical/numerical data from major publishers such as the U.S. federal government, the Institute of Electrical and Electronics Engineers (IEEE), the Institute of Electrical Engineers (IEE), the Association of Computing Machinery (ACM), and Elsevier Engineering Information, Inc. Engineering/Computer Science related databases include ACM Digital Library, Compendex (Engineering Village), Computer Source, General Science Abstracts, IEEE/IEE Xplore, INSPEC, Optics InfoBase, Personal Computing Abstracts, Science Citation Index, Web of Science and Academic Search Premier. The Internet database collection is available off-campus to UTD students and faculty except when the information provider updates their systems. This mode of access supports all distance learning activities. The library continues to acquire electronic journals over paper whenever possible. Most compact disc products must be used in the library, although the department actively facilitates the transition of products to the Internet as needed.

The library also offers database search capabilities of online resources available from DIALOG and WESTLAW. Fees are charged for searching the former, on a cost recovery basis.

Library materials for the School of Engineering and Computer Science are acquired through a campus-wide process. The library orders monographs as they are published through an approval program with Blackwell. The monographs are received based on a well-detailed profile representing the faculty research and course instruction programs.

The Engineering and Computer Science Library Liaisons are responsible for the monitoring of this program and order materials that complement the approval plan after consultation with the faculty. Separate accounts are made available for media items, replacements, databases and journals.

The library building is open for study and access to materials in the open stacks 91 hours per week.

Library Building and Stacks Hours:

Mon-Fri	8:00am – midnight
Sat	9:00am – 8:00pm
Sun	1:00pm – midnight

The library is open 24/7 during midterm and finals weeks but closed during some holidays and intersession.

Reference Desk Hours:

Mon – Thur	8:00am – 10:00pm
Fri	8:00am – 8:00pm
Sat	10:00am – 6:00pm
Sun	1:00pm – 10:00pm

Reference hours are reduced during the summer semester.

UT System "Ask-a-Librarian" Online Chat Reference Services (available on the Internet):

Mon – Thurs	12:00pm-6:00pm
Fri	12:00pm-4:00pm

McDermott Library has assigned two reference librarians as liaisons to the faculty, students and staff of the Jonsson School of Engineering and Computer Science. They are responsible for ordering materials for the faculty in support of the curriculum and research efforts. They also provide several levels of library instruction – orientation tours, classroom instruction and individual appointments with a librarian. The librarians are available to assist faculty with library research as needed. Table 6.2.2 show the history of library expenditures since FY2002.

Table 6.2.2 Library Expenditures

	FY 2002	FY 2003	FY 2004	FY 2005
Total Library Current Funds	$1,940,378	$2,310,710	$2,313,841	$2,757,391
Expenditures for the Engineering Unit (Total)	$427,520	$441,434	$450,297	$551,478
Books	$14,657	$12,297	$11,751	$13,787
Periodicals-paper	$150,000	$160,000	$100,000	$118,568
Periodicals-Electronics	$88,242	$94,306	$153,316	$181,988
Other Engineering-Related Services	$174,621	$174,831	$185,230	$220,590

The Eugene McDermott Library has a seating capacity of 640 seats and can seat approximately 5% of the student enrollment. The reading room in the School of Engineering and Computer Science provides seating for 20+ students. The library is willing to provide a librarian and a laptop for approximately 10 hours per week.

The McDermott Library continues to work with its professional staff and UTD faculty advisory committee to improve services and explore changes in policy that impact students. Space limitations restrict the number of seats available for study within the building, although access to online library resources and services is available through several other computer labs on campus.

The library maintains a Multimedia Center that includes VHS, CD and DVD formats in support of classroom instruction. 32 wireless-Web enabled laptops are available for check out at this desk.

McDermott Library also maintains a map collection, a large microfilm collection and a growing collection of cd-roms which accompany computer science and engineering monographs.

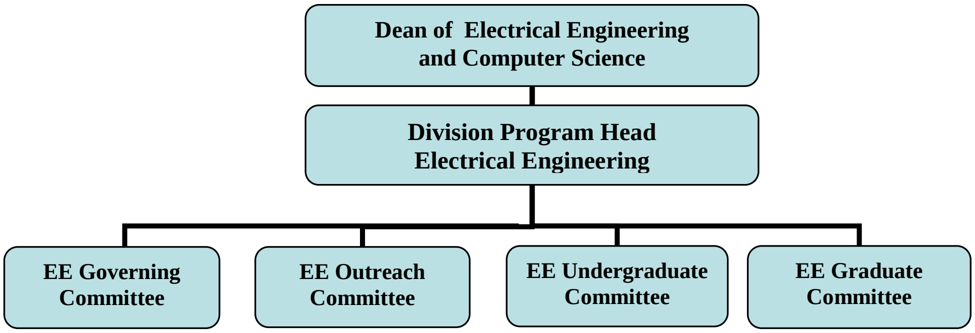
7. Institutional Support and Financial Resources

The Department of Computer Science offers the Ph.D. degree in Computer Science and has Master's degrees in CS with Major in Software Engineering as well as tracks in Telecommunications, and Traditional Computer Science. At the undergraduate level, the CS department is the first in the state of Texas to offer a Bachelor of Science degree in Software Engineering. In fall 2002, the Department of Computer Science moved into a new 152,000 sq. ft. building. We have experienced very rapid growth in recent years and the potential for future growth is excellent. Currently the CS Department has a total of 40 faculty and 20 senior lecturers. 12 computer/research laboratories, equipped with around 300 high performance workstations and high-end PCs. The Academic Computer Center supports both UNIX based workstations and PCs as well as high-speed dial-in access to campus computing facilities.

The Erik Jonsson School of Engineering and Computer Science have 3,600 students. The university is located in one of the most attractive suburbs of the Dallas metropolitan area. There are over 600 high-tech companies within 10 miles of the campus, including Alcatel, Ericsson, MCI, National Semiconductor, Nortel, and Texas Instruments. Opportunities for joint university-industry research projects and consulting are excellent. The program expects to continue its growth into a major center for research and teaching in engineering and computer science. The Erik Jonsson School has laboratories for research in software engineering, telecommunications engineering, voice and data networking, digital systems, digital signal processing, optics and optical communications, solid-state device theory, plasma science, and clean-room facilities for semiconductor processing and microelectronics. Currently, the Erik Jonsson School has 70 tenured/tenure-track faculty members.

As in most universities, it is difficult to find sufficient resources for the level of support staff needed to really allow the faculty to use their time most effectively. Nevertheless, we have established an electronics shop with one person responsible for ordering, repairing and maintaining such equipment. We have two technicians responsible for machining and supporting our experimental facilities (primarily optics and microelectronics laboratories). We have two secretaries to handle routine needs of the engineering faculty, and we have a cooperative arrangement with the Academic Computer Center to provide hardware and software support for computers and networks. As with the faculty, all support personnel have a computer workstation or PC at their disposal.

7.1 Organizational Structure



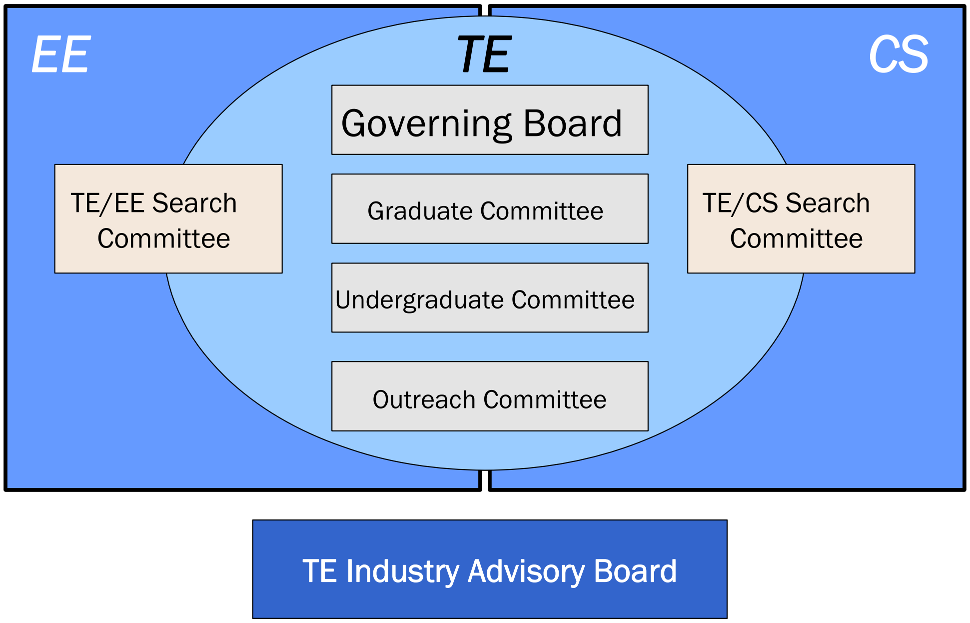
The preceding figure shows the organizational structure for the electrical engineering program.

The EE program is an interdisciplinary program administered by the Telecommunications Engineering Division on behalf of the Departments of Electrical Engineering and Computer Science in the Erik Jonsson School of Engineering and Computer Science. The following faculty members develop and teach courses in the TE curriculum, and help with its administration:

Faculty members are recruited from academia and industry, both in the US and abroad. They are chosen based on rigorous academic standards, extensive experience in industry, demonstrated ability to teach undergraduate and graduate students effectively, ability to serve on departmental and university committees, effectiveness in advising students, and ability to build and sustain viable research programs.

Several committees ensure proper administration for the TE program. All committees have representatives from both the Electrical Engineering Department and the Computer Science Department. The Governing Committee is the main and final authority for the TE Program. Its duties include the following:

- Setting the medium to long-term priorities of the TE program regarding curriculum, strategy, marketing, etc.
- Making general decisions to commit the TE program to a particular course of action
- Hiring and personnel issues
- Defining the budget for the program



The preceding figure shows the organizational structure for the electrical engineering program.

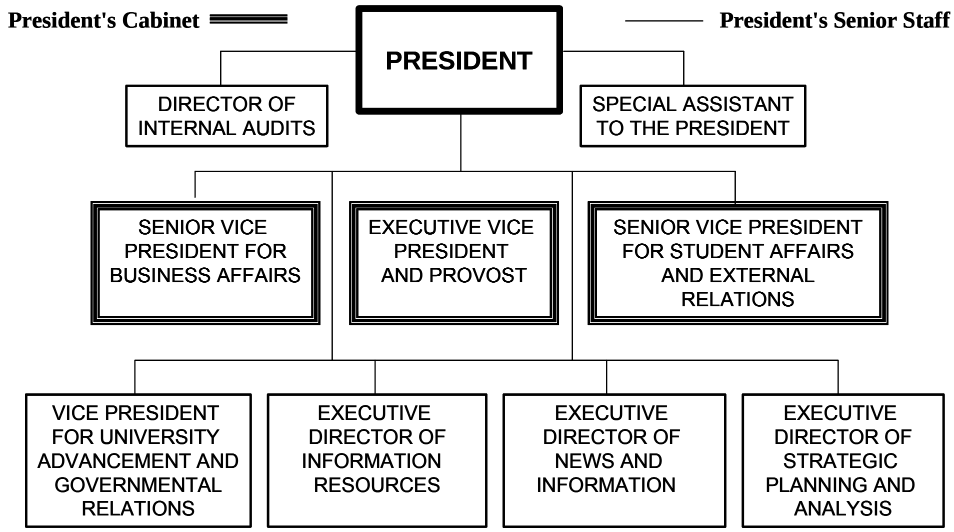
Comment [lc13]: Resize the object above so that it is centered.

Several committees ensure proper administration for the program. All committees have representatives from both the Telecommunications Engineering Department and the Computer Science Department. The Governing Committee is the main and final authority for the electrical engineering Program. Its duties include the following:

- Setting the medium to long-term priorities of the electrical engineering program regarding curriculum, strategy, marketing, etc.
- Making general decisions to commit the electrical engineering program to a particular course of action
- Hiring and personnel issues
- Defining the budget for the program

7.1.1 U.T. Dallas Administrative Structure

The central administrative organization at U.T. Dallas is shown below. The president and vice presidents meet regularly to discuss university policy and administration.



7.1.2 Board of Regents

Officers

James Richard Huffines, Chairman
Rita C. Clements, Vice –Chairman
Woody L. Hunt, Vice-Chairman
Cyndi Taylor Krier, Vice-Chairman
Francie A. Fredrick, Counsel and Secretary

Members

Terms Expires February 1, 2005

Woody L. Hunt	El Paso
Charles Miller	Houston
Robert A. Estrada	Dallas

Terms Expires February 1, 2007

Rita Clements	Dallas
Judith L. Craven, M.D.	Houston
Cyndi Taylor Krier	San Antonio

Term Expires February 1, 2009

John W. Barnhill, Jr.
H. Scott Caven , Jr.
James Richard Huffines

8. Program Criteria

Our Electrical Engineering curriculum provides both breadth and depth across the range of engineering topics such as microelectronics, signal processing, digital and analog systems and communications. Our graduates have knowledge of probability and statistics, including applications appropriate to the program name and objectives; and knowledge of mathematics through differential and integral calculus, basic sciences, computer science, and engineering sciences necessary to analyze and design complex electrical and electronic devices, software, and systems containing hardware and software components, as appropriate to program objectives. Our graduates are also required to have knowledge of advanced mathematics, typically including differential equations, linear algebra, complex variables, and discrete mathematics.

Our graduates are prepared for engineering practice through the EE curriculum culminating in a major design experience based on the knowledge and skills acquired in earlier course work and incorporating engineering standards and realistic constraints that include most of the following considerations as appropriate: economic; environmental; sustainability; manufacturability; ethical; health and safety; social; and political.

Our Electrical Engineering degree plans satisfies the requirements specified by the Accreditation Board for Engineering and Technology (ABET). The course work includes at least:

1. One year (32 SCH) of an appropriate combination of mathematics and basic sciences;

2. One and one-half years (48 SCH) of engineering topics.

3. A general education component that complements the technical content of the curriculum and is consistent with the program and intuition objectives.

Table 8.1 shows which courses apply to the Electrical Engineering curricular categories. The course syllabi and course descriptions for these course plus electives are included in section B. of Appendix I of the self-study.

Table 8.1 Curriculum Analysis

Institution: UT Dallas **Program:** Electrical Engineering

Curricular Category	Applicable UTD Course Number Criteria Requirement	
Mathematics and Basic Science	MATH 2417 MATH 2419 PHYSICS 2325/2125 PHYSICS 2326/2126	CHEM 1311 CHEM 1111 EE 3341 CS 1315
Engineering Topics	EE 1102 EE 3301/3101 ENGS 3360 EE 3302/3102 EE 3310/3110 EE 3311/3111	EE 3320/3120 EE 4301 EE 3350/3150 EE 4310 EE Electives
General Education	RHET 1302 RHET 1101 A&H 1301 AP 1301 GOVT 2301	GOVT 2302 HST 1301 HST 2301 Electives
Other	Advanced Elective (Outside of EE), Free Electives	

Please List Below Any Applicable Program Criteria Requirements:	
Advanced Mathematics	EE 3300
Differential Equations	MATH 2420
Linear Algebra	EE 2310
Complex Variables	EE 3300
Discrete Mathematics	EE 2310, EE 3320, CS 2315

Are curricular requirements met in each of the following areas?	**UTD Course**
Culmination of curriculum in a major design experience.	EE 438X
Major design experience based on knowledge and skills acquired in earlier course work.	EE 438X EE Electives
Major design experience incorporates engineering standards and realistic constraints that include most of the following considerations: economic; environmental; sustainability; manufacturability; ethical; health and safety; social; and political.	EE 438X ENGS 3360
Other requirements contained in applicable program criteria:	
Computer Science	EE 2315
EE Electives	EE 43XX

All lower-division students in either Electrical Engineering concentrate on mathematics, science and introductory engineering courses, building competence in these cornerstone areas for future application in upper-division engineering courses. The following requirements apply both to students seeking to transfer to U.T. Dallas from other institutions as well as to those currently enrolled at U.T. Dallas, whether in another school or in the Erik Jonsson School of Engineering and Computer Science.

Although the electrical engineering curricula that follow have been designed to meet these criteria, students have the responsibility, in consultation with an advisor, to monitor their own choice o courses carefully to be certain that all academic requirements for graduation are being satisfied. Students are strongly encouraged to take courses in such subjects as accounting, industrial management, finance, personnel administration, and engineering economy.

9. General Advanced-Level Program

Not applicable

Electrical Engineering

Appendix I-Additional Information

Tabular Data for Program

The Erik Jonsson School of
Engineering and Computer Science
The University of Texas at Dallas
Richardson, Texas 75083

Engineering Accreditation Commission
Accreditation Board for Engineering and Technology
111 Market Place, Suite 1050
Baltimore, Maryland 21202-4012
Phone: 410-347-7700
Fax: 410-625-2238
e-mail: eac@abet.org
www: http://www.abet.org/

A. Tabular Data for Program

Table I-1. Basic-Level Curriculum
Electrical Engineering

Year; Semester or Quarter	Course (Department, Number, Title)	Category (Credit Hours) Math & Basic Sciences	Engineering Topics *Check if Contains Significant Design (✓)*	General Education	Other
Freshman I			( )		
	MATH 2417 Calculus I	4	( )		
	CS 1337 Computer Science I	3	(x)		
	RHET 1302 Rhetoric		( )	3	
	RHET 1101 Oral Communication		( )	1	
	EE 1102 Intro. to experimental techniques		1 ( )		
	A&H 1301 Exploration of the Humanities		( )	3	
Freshman II			( )		
	MATH 2419 Calculus II	4	( )		
	EE 2310/2110 Computer Organization & Des/ Lab		4 (x)		
	PHYS 2325/2125 Mechanics & Heat w/Lab	4	( )		
	AP 1301 Exploration of the Arts		( )	3	
	GOVT 2301 American/Texas constitution		( )	3	
			( )		
			( )		
			( )		
			( )		
			( )		
			( )		
			( )		
			( )		
			( )		

Table I-1. Basic-Level Curriculum
Electrical Engineering

Year; Semester or Quarter	Course (Department, Number, Title)	Category (Credit Hours)			
		Math & Basic Sciences	Engineering Topics *Check if Contains* <u>*Significant*</u> *Design (✓)*	General Education	Other
Sophomore I			( )		
	MATH 2420 Differential Equations	4	( )		
	PHYS 2326/2126 Electromagnetism & Waves/Lab	4	( )		
	CHM 1311/1111 General Chemistry I/Lab	4	( )		
	EE 2300 Applied Linear Algebra		3 (x)		
	GOVT 2302 American/Texas structure & function		( )	3	
Sophomore II	EE3300 Advanced Engineering Math I	3	( )		
	HST 1301 Themes & ideas of American History		( )	3	
	EE 3301/3101 Electrical Network Analysis/ Lab		4 (x)		
	ENGS3360 [4] Politics and Values in Bus. & Tech.		( )	3	
	Free Elective (***)		( )	3	
			( )		
			( )		
			( )		
			( )		
			( )		
			( )		
			( )		
			( )		
			( )		
			( )		

(Continued on next page)

Table I-1. Basic-Level Curriculum

Electrical Engineering

Year; Semester or Quarter	Course (Department, Number, Title)	Category (Credit Hours) Math & Basic Sciences	Engineering Topics *Check if Contains* *Significant* *Design (✓)*	General Education	Other
Junior I			( )		
	EE 3302/3102 Signals & Systems/Lab		4 ( )		
	EE 3310/3110 Electronic Devices/Lab		4 (x)		
	EE 3341 Prob. Theory & Stats	2	1( )		
	HST 2301 Issues in American History		( )	3	
			( )		
Junior II			( )		
	EE 3320 /3120 Digital Circuits / Lab		4 (x)		
	EE 3311/3111 Electronic Circuits /Lab		4 (x)		
	ECS 3390 Technical Writing		( )	3	
	Advanced Elective [outside EE]		( )		3
	EE 4301 Electromagnetic engineering	3	( )		
			( )		
			( )		
			( )		
			( )		
			( )		
			( )		
			( )		
			( )		
			( )		
			( )		

(Continued on next page)

Table 1. Basic-Level Curriculum (continued)
Electrical Engineering

Year; Semester or Quarter	Course (Department, Number, Title)	Category (Credit Hours)			
		Math & Basic Science	Engineering Topics *Check if Contains Significant Design (✓)*	General Education	Other
Senior I			( )		
	EE4350/4150 Communications Systems /Lab		4 (x)		
	EE 4368 RF & distributed circuits		3 (x)		
	EE 438X Senior Design Project I		3 (x)		
	EE Elective		3 (x)		
	EE Elective		3 (x)		
			( )		
Senior II			( )		
	EE Elective		3 (x)		
	EE4310 Systems and controls		3 (x)		
	Senior Design Project II		3 (x)		
	Advanced Elective [outside EE]		( )		3
	Free Elective (3sch)***		( )		3
			( )		
			( )		
			( )		
			( )		
			( )		
TOTALS-ABET BASIC-LEVEL REQUIREMENTS		35	55	30	9
OVERALL TOTAL FOR DEGREE	129				
PERCENT OF TOTAL					
Totals must satisfy one set	Minimum semester credit hours	32 hrs	48 hrs		
	Minimum percentage	25%	37.5 %		

Note that instructional material and student work verifying course compliance with ABET criteria for the categories indicated above will be required during the campus visit

The preceding table is an example of the Electrical engineering Basic Level Curriculum. Upon enrollment, EE students meet with their advisors and are informed of the program course requirements. Each student's course curriculum must be reviewed and authorized by their advisors. This helps ensure that the students understand the courses necessary for graduation. This also helps tailor the program to the specific needs of each student's career goals while maintaining a high degree of quality and uniformity in the University of Texas at Dallas's electrical engineering graduates. Students graduating from the electrical engineering program are required to take a total of 128 credit hours to earn their degree in electrical engineering as detailed in the Electrical Engineering Basic-Level Curriculum in Table I-1 above.

Table I-2(a) Course and Section Size Summary

Electrical Engineering

Course No.	Title	No. of Sections offered in Current Year	Avg. Section Enrollment	Type of Class[1]			
				Lecture	Laboratory	Recitation	Other
EE 1102	Introduction to Experimental Techniques	12	19	10%	90%		
EE 2110	Introduction to Digital Systems Laboratory	14	15	10%	90%		
EE 2300	Applied Linear Algebra	4	40	100%			
EE 2310	Introduction to Digital Systems	5	44	100%			
EE 2V95	Individual Instruction in Electrical Engineering	0	0	N/A			
EE 2V99	Topics in Electrical Engineering	0	0	N/A			
EE 3101	Electrical Network Analysis Laboratory	10	16	10%	90%		
EE 3102	Signals and Systems Laboratory	7	14	10%	90%		
EE 3110	Electronic Devices Laboratory	8	19	10%	90%		
EE 3111	Electronic Circuits Laboratory	10	12	10%	90%		
EE 3120	Digital Circuits Laboratory	7	12	10%	90%		
EE 3150	Communications Systems Laboratory	10	15	10%	90%		
EE 3300	Advanced Engineering Math	4	37	100%			
EE 3301	Electrical Network Analysis	4	43	100%			

Table I-2(b) Course and Section Size Summary
Electrical Engineering

Course No.	Title	No. of Sections offered in Current Year	Avg. Section Enrollment	Type of Class[1]			
				Lecture	Laboratory	Recitation	Other
EE 3302	Signals and Systems	6	34	100%			
EE 3310	Electronic	4	47	100%			
EE 3311	Electronic Circuits	4	38	100%			
EE 3320	Digital Circuits	4	67	100%			
EE 3341	Probability Theory and Statistics	6	49	100%			
EE 3350	Communications Systems	5	41	100%			
EE 4301	Electromagnetic Engineering I	4	30	100%			
EE 4302	Electromagnetic Engineering II	1	14	100%			
EE 4304	Computer Architecture	1	17	100%			
EE 4310	Systems and Controls	3	42	100%			
EE 4325	Introduction to VLSI Design	0	0	100%			
EE 4330	Integrated Circuit Technology	1	24	100%			
EE 4341	Digital Integrated Circuit Analysis and Design	0	0	100%			
EE 4360	Digital Communications	2	10	100%			
EE 4361	Introduction to Digital Signal Processing	2	33	100%			

Enter the appropriate percent for each type of class for each course (e.g., 75% lecture, 25% recitation).

Table I-2(c) Course and Section Size Summary
Electrical Engineering

Course No.	Title	No. of Sections offered in Current Year	Avg. Section Enrollment	Type of Class[1]			
				Lecture	Laboratory	Recitation	Other
EE 4365	Introduction to Wireless Communication	2	23	100%			
EE 4367	Telecommunications Switching and Transmission	2	12	100%			
EE 4368	RF Circuit Design Principles	3	30	100%			
EE 4380	Microprocessor Design Project I	2	26	25%	75%		
EE 4381	Mobile Communications System Design Project I	4	10	25%	75%		
EE 4382	Individually Supervised Senior Design Project I (Microelectronics)	0	0	25%	75%		
EE 4383	Microprocessor Design Project II	0	0	25%	75%		
EE 4384	Mobile Communications System Design Project II	1	8	25%	75%		
EE 4385	DSP-Based Design Project I./EE 4386 DSP-Based Design Project II	1	20	25%	75%		
EE 4390	Intro to Telecom Networks	2	13	100%			

Enter the appropriate percent for each type of class for each course (e.g., 75% lecture, 25% recitation).

Table I-3 (a) Faculty Workload Summary Fall 2003-Spring 2004
Electrical Engineering

Faculty Member (Name)	FT or PT (%)	Classes Taught (Course No./Credit Hrs.) Term and Year1	Total Activity Distribution[2]		
			Teaching	Research	Other[3]
Naofal, Al-Dhahir	FT	EE6360(F)			
Poras Balsara	FT	EE3320(F)	25%	50%	25%
Charles Bernardin	FT	EE/TE3302(F),EE3302(F),EE3102(S)	75%		25%
Dinesh Bhatia	FT	EE6370(F),EE3320(S)	25%	50%	25%
William Boyd	75%	EE4310(F),EE3302((F),EE3110(S)	75%		
Gerry Burnham	FT	EE3301(F)	25%		75%
Dale Byrne	FT	EE6309(F),EE3300(F),EE6317(S)	75%	25%	
Cy Cantrell	FT	EE6345(F),EE4301(S)	20%	25%	50%
Andrew Cilia	FT	EE4380(F/S),EE4381(F/S),EE3120(S)	100%		
Nathan Dodge	FT	EE1102(F/S),EE2110(F/S)	75%		25%
Edward Esposito	FT	EE2300(F/S)	50%		50%
John Fonseka	FT	EE3150(F),EE3350(F/S),EE3300(S)	75%	25%	
William Frensley	FT	EE4368(F),EE6319(F),EE4330(S)	75%	25%	
Andrea Fumagalli	FT	EE6340(F/S),EE3302(S)	50%	50%	
Bruce Gnade	FT	EE6322(F),EE7V82(F)	25%	50%	25%
Matthew Goeckner	FT	EE4302(F),EE6283(S),EE6383(S)	50%	50%	

Table I-3(b) Faculty Workload Summary
Electrical Engineering

Faculty Member (Name)	FT or PT (%)	Classes Taught (Course No./Credit Hrs.) Term and Year1	Total Activity Distribution[2]		
			Teaching	Research	Other[3]
James Hellums	25%	EE7331(F),EE6326(S)	25%		
Louis R. Hunt	FT	EE6336(F),EE4310(F),EE6361(S)	75%	25%	
Muhammad Kalam	FT	EE3111(F),EE4367(F),EE4390(F/S)	75%	25%	
Nasser Kehtarnavaz	FT	EE6364(F),EE6367(S),EE4386(S)	50%	50%	
Kamran Kiasaleh	FT	EE6349(F),EE6352(S)	50%	25%	25%
Moon Kim	FT	EE7V82	25%	75%	
Hoi Lee	FT	N/A			
Jeong-Bong (JB) Lee	FT	EE3110(F),EE7V82(S)	50%	50%	
Gil Lee	FT	EE3310(F),EE3110(F),EE4340(S)	50%	50%	
Jin Liu	FT	EE6325(F),EE3311(S)	25%	75%	
Philip Loizou	FT	EE3302(F),EE6362(S)	25%	50%	25%
Duncan MacFarlane	FT	EE3341(F),EE6316(S)	25%	25%	50%
Hlaing Minn	FT	EE6352(F),EE4360(S)	25%	75%	
Aria Nosratinia	FT	EE6360(F),EE3341(S)	25%	75%	
Mehrdad Nourani	FT	EE6302(F),EE6301(S),EE6303(S)	25%	75%	
Raimund Ober	FT			100%	

Table I-3(c) Faculty Workload Summary
Electrical Engineering

Faculty Member (Name)	FT or PT (%)	Classes Taught (Course No./Credit Hrs.) Term and Year1	Total Activity Distribution[2]		
			Teaching	Research	Other[3]
Lawrence Overzet	FT	EE6320(F),EE3310(S)	50%	50%	
Issa Panahi	FT	EE6360(F),EE6361(S)	50%	75%	
William J. Pervin	FT	EE3300(F/S),EE3341(F),EE2310(S)	75%	25%	
P.K. Rajasekaran	FT	EE3350(F/S),EE6360(F/s),EE4361(S)	75%		25%
Ricardo Saad	50%	EE43401(F/S),EE6310(F),EE6355(S)	50%		
Rama Sangireddy	FT	EE4304(F),EE7304(F),EE6304(S)	25%	75%	
M. Saquib	FT	EE6365(F),EE4365(F),EE6349(S)	25%	75%	
Don Shaw	0%	N/A			Emeritus
Marco Tacca	FT	EE4381(S),EE3301(S)	50%		50%
Lakshman Tamil	FT	EE2300(F),EE7V86(F/S)	50%	50%	
Murat Torlak	FT	EE4385(F),EE6390(S)	50%	50%	
T.R. Viswanathan	FT	EE4390(F)	25%	75%	
Robert Wallace	FT	EE7V82(F)	25%	75%	
Dian Zhou	50%	EE3120(F),EE6375(F)	50%		

1. Indicate Term and Year for which data apply.
2. Activity distribution should be in percent of effort. Faculty member’s activities should total 100%.
3. Indicate sabbatical leave, etc., under "Other."

Table I-4(a) Faculty Analysis
Electrical Engineering

Name	Rank	FT or PT	Highest Degree	Institution from which Highest Degree Earned & Year	Years of Experience: Govt./ Industry Practice	Years of Experience: Total Faculty	Years of Experience: This Institution	State in which Registered	Level of Activity (high, med, low, none): Professional Society (Indicate Society)	Level of Activity: Research	Level of Activity: Consulting /Summer Work in Industry
Naofal, Al-Dhahir	Associate Professor	FT	PhD	Stanford University '94	4	3	2		IEEE, WCNC, ICC High	High	Low
Poras Balsara	Professor	FT	PhD	Pennsylvania State '89		20	15	TX	IEEE Med	High	Med
Charles Bernardin	Senior Lecturer III	FT	PhD	John Hopkins '79	22	3	3		IEEE Med	None	Low
Dinesh Bhatia	Associate Professor	FT	PhD	UT Dallas '90		10	5	TX	IEEE Med	Med	Low
William Boyd	Senior Lecturer III	FT	PhD	Texas A & M '69			4	TX		None	None
Gerry Burnham	Associate Professor	FT	PhD	U. Southern California '73	28	11	9	TX	IEEE, ASEE Med.	None	Med
Dale Byrne	Associate Professor	FT	PhD	University of Arizona '78	20	16	16	FL/TX	IEEE Med	Med	Low
Cy Cantrell	Professor	FT	PhD	Princeton '68	7	28	24		IEEE Med	Med	Low
Andrew Cilia	Senior Lecturer III	FT	MSEE.	UT Arlington '96			4		IEEE Med	Med	Med
Nathan Dodge	Senior Lecturer III	FT	PhD	UT Austin '69	29	11	8	TX	IEEE Med	None	None

Table I-4(b) Faculty Analysis
Electrical Engineering

Name	Rank	FT or PT	Highest Degree	Institution from which Highest Degree Earned & Year	Years of Experience			State in which Registered	Level of Activity (high, med, low, none)		
					Govt./ Industry Practice	Total Faculty	This Institution		Professional Society (Indicate Society)	Research	Consulting /Summer Work in Industry
Edward Esposito	Asst. Dean/ Senior Lecturer	FT	PhD	Harvard '79			3		Am. Physical Society low	None	None
John Fonseka	Professor	FT	PhD	Arizona State '88			17			Med	Low
William Frensley	Professor	FT	PhD	1976 University of Colorado			15		IEEE, APS Med	Med	Med
Andrea Fumagalli	Associate Professor	FT	PhD	Poli Tenico di Toriono '92		14	9		IEEE, EOS, SPIE,	High	Med
Bruce Gnade	Professor	FT	PhD	Georgia Tech '82			2		Am. Physical Society, IEEE Med	High	Med
Matthew Goeckner	Associate Professor	FT	PhD	University of Iowa '90			7		IEEE Med	High	Med
Robert Helms	Dean, Professor	FT	PhD	Stanford University					IEEE Low	None	None
James Hellums	Adjunct Professor	PT	PhD	UT Dallas '02	11	24	2		IEEE	None	None
Louis R. Hunt	Professor	FT	PhD	Rice University '70			21		IEEE Low	Med	Low
Muhammad Kalam	Senior Lecturer III	FT	PhD	University of Kentucky '79	19	2	3		IEEE Low	Low	None
Nasser Kehtarnavaz	Professor	FT	PhD	Rice University '87		18	3		IEEE, SPIE Med	High	Low

Table I-4(c) Faculty Analysis
Electrical Engineering

Name	Rank	FT or PT	Highest Degree	Institution from which Highest Degree Earned & Year	Years of Experience: Govt./ Industry Practice	Years of Experience: Total Faculty	Years of Experience: This Institution	State in which Registered	Level of Activity (high, med, low, none): Professional Society (Indicate Society)	Level of Activity: Research	Level of Activity: Consulting /Summer Work in Industry
Kamran Kiasaleh	Associate Professor	FT	PhD	U. Southern California '86			17		IEEE Med	High	Low
Moon Kim	Associate Professor	FT	PhD	Arizona State '88			2			High	Med
Hoi Lee	Assistant Professor	FT	PhD	Hong Kong University '04			1		IEEE Low	High	None
Jeong-Bong (JB) Lee	Assistant Professor	FT	PhD	Georgia Tech '87			3		IEEE,SPIE, MRS Med	High	Med
Gil Lee	Professor	FT	PhD	North Carolina State '87						High	Med
Jin Liu	Assistant Professor	FT	PhD	Georgia Tech '97			5		IEEE, SRIE Med	Med	Med
Philip Loizou	Professor	FT	PhD	Arizona State '95			8		IEEE, Acoustc Society Hgh	High	Low
Duncan MacFarlane	Professor	FT	PhD	Portland State '85	1	11	6		IEEE, OSA High	High	Low
Hlaing Minn	Assistant Professor	FT	PhD	University of Victoria '01			3		IEEE Low	Med	Low
Aria Nosratinia	Associate Professor	FT	PhD	University of Illinois '96			3		IEEE High	High	Low

Table I-4(d) Faculty Analysis
Electrical Engineering

Name	Rank	FT or PT	Highest Degree	Institution from which Highest Degree Earned & Year	Years of Experience: Govt./ Industry Practice	Years of Experience: Total Faculty	Years of Experience: This Institution	State in which Registered	Level of Activity (high, med, low, none): Professional Society (Indicate Society)	Level of Activity: Research	Level of Activity: Consulting /Summer Work in Industry
Mehrdad Nourani	Associate Professor	FT	PhD	Case Western '93			5		IEEE High	Med	Med
Raimund Ober	Professor	FT	PhD	Cambridge '87			12		IEEE Low	High	Low
Lawrence Overzet	Professor	FT	PhD	University of Indiana '83			17		IEEE, Amer. Vacuum Soc.	High	Med
Issa Panahi	Assistant Professor	FT	PhD	University of Colorado '88			2	TX	IEEE, SPMA Med	Med	Med
William J. Pervin	Professor	FT	PhD	University of Pittsburgh '57		43	30		IEEE, ACM High	Low	Low
P.K. Rajasekaran	Senior Lecturer III	FT	PhD	Southern Methodist '71			3		IEEE low	None	Low
Ricardo Saad	Senior Lecturer III	FT	PhD	University of Toronto,'96			4		IEEE Low	None	High
Rama Sangireddy	Assistant Professor	FT	PhD	Iowa State '03			2			Med	Low
M. Saquib	Assistant Professor	FT	PhD	Rutgers '98	1	6	4		IEEE High	High	Low
Don Shaw	Professor Emeritus	FT	PhD	Baylor '65			8			N/A	N/A

Table I-4(e) Faculty Analysis
Electrical Engineering

Name	Rank	FT or PT	Highest Degree	Institution from which Highest Degree Earned & Year	Years of Experience			State in which Registered	Level of Activity (high, med, low, none)		
					Govt./ Industry Practice	Total Faculty	This Institution		Professional Society (Indicate Society)	Research	Consulting /Summer Work in Industry
Marco Tacca	Senior Lecturer III	FT	PhD	UT Dallas '02			3		IEEE Low	Med	None
Lakshman Tamil	Professor	FT	PhD	Rhode Island '88	9	13	16		IEEE Low	Med	Med
Murat Torlak	Assistant Professor	FT	PhD	UT Austin '95			6		IEEE/ACM High	High	Low
T.R. Viswanathan	Research Professor	FT	PhD	University of Saskatchewan '94			1		IEEE Low	Low	High
Robert Wallace	Professor	FT	PhD	University of Pittsburgh '88			2		IEEE, Amer. Vacuum Soc	High	Med
Dian Zhou	Professor	FT	PhD	University of Illinois '90			6		IEEE Low	Med	None

Table I-5. Support Expenditures
Electrical Engineering

Fiscal Year	1	2	3	4
	2001-2002	2002-2003	2003-2004	2004-2005
Expenditure Category				
Operations[1] (not including staff)	955,755	1,444,661	1,698,227	1,163,405
Travel[2]	130,921	114,217	144,703	82,043
Equipment[3]	289,600	262,665	179,764	54,907
Institutional Funds	292,905	297,960	380,284	231,284
Grants and Gifts[4]	1,033,371	1,523,583	1,642,410	1,069,071
Graduate Teaching Assistants	483,316	724,978	671,035	586,349
Part-time Assistance[5] (other than teaching)	108,860	130,162	431,796	301,197

B. Course Syllabi

CHEM 1311 General Chemistry / CHEM 1111 General Chemistry Laboratory

MATH 2417 Calculus I

MATH 2419 Calculus II

MATH 2420 Differential Equations with Applications

PHYS 2325 Mechanics and Heat/ PHYS 2125 Physics Laboratory I

PHYS 2326 Electromagnetism and Waves/ PHYS 2125 Physics Laboratory II

CS 1315 (COSC 1315) Computer Science I

ECS 3390 Professional and Technical Communication

EE 1102 Introduction to Experimental Techniques

EE 2110 Introduction to Digital Systems Laboratory

EE 2300 Applied Linear Algebra

EE 2310 Introduction to Digital Systems

EE 3101 Electrical Network Analysis Laboratory

EE 3102 Signals and Systems Laboratory

E 3110 Electronic Devices Laboratory

EE 3111 Electronic Circuits Laboratory

EE 3120 Digital Circuits Laboratory

EE 3150 Communications Systems Laboratory

EE 3300 Advanced Engineering Mathematics

EE 3301 Electrical Network Analysis

EE 3302 Signals and Systems

EE 3310 Electronic Devices

EE 3311 Electronic Circuits

EE 3320 Digital Circuits

EE 3341 Probability Theory and Statistics

EE 3350 Communications Systems

EE 4301 Electromagnetic Engineering I

EE 4302 Electromagnetic Engineering II

EE 4304 Computer Architecture

EE 4310 Systems and Controls

EE 4325 Introduction to VLSI Design

EE 4330 Integrated Circuit Technology

EE 4340 Analog Integrated Circuit Analysis and Design

EE 4341 Digital Integrated Circuit Analysis and Design

EE 4360 Digital Communications

EE 4361 Introduction to Digital Signal Processing

EE 4365 Introduction to Wireless Communication

EE 4367 Telecommunications Switching and Transmission

EE 4368 RF Circuit Design Principles

EE 4380 Microprocessor Design Project I

EE 4381 Mobile Communications System Design Project I

EE 4383 Microprocessor Design Project II

EE 4382 Individually Supervised Senior Design Project I (Microelectronics)

EE 4384 Mobile Communications System Design Project II

EE 4385 DSP-Based Design Project I./

EE 4386 DSP-Based Design Project II

EE 4387 Individually Supervised Senior Design Project II

EE 4390 Introduction to Telecommunication Networks

EE 4399 Senior Honors in Electrical Engineering

EE 4420 Microprocessor Systems Design

EE 4V95 Undergraduate Topics in Electrical Engineering

EE 4V97 Independent Study in Electrical Engineering

EE 4V98 Undergraduate Research in Electrical Engineering

CHEM 1311-General Chemistry/CHEM 1111 General Chemistry Laboratory I

Course Catalog Description: 2000-2004 catalog

Course Designation: Required

CHEM 1311 General Chemistry I (*3 semester hours*) Introduction to elementary concepts of chemistry theory. The course emphasizes chemical reactions, the mole concept and its applications, and molecular structure and bonding. (3-0) S

CHEM 1111 General Chemistry Laboratory I (*1 semester hour*) Introduction to the chemistry laboratory. Experiments are designed to demonstrate concepts covered in CHEM 1311; including properties and reactions of inorganic substances, and elementary qualitative and quantitative analysis. (0-3) S

Prerequisite:

One year of High School Chemistry

Textbook

"Chemistry: Matter and Its Changes",4th Edition by Brady & Senese
University of Texas at Dallas: Chemistry Lab Manual

Reference:

"Study Guide for Chemistry: Matter and Its Changes", 4th Edition by Brady & Senese

Course Objectives:

To provide an understanding of Chemistry and applications after completing this course, the student will be able to analyze simple chemical reactions and will understand basic concepts of molecular structure.

Topics Covered:

- Atoms and Elements
- Compounds and Chemical Reactions
- Measurement
- Quantum Mechanical Atom
- Chemical Bonding:General Concepts
- Chemical Bonding and Mol Structure
- The Mole
- Solutions
- Oxidation-Reduction Reactions
- Energy and Chemical Change
- Properties of Gases

Class/Laboratory Schedule:

Lab Preview: Preview questions are designed to help students understand the concepts and techniques involved in each experiment.

Lab Manuals: University of Texas at Dallas: Chemistry Lab Manual 1998-99

Prelab: The pre-lab is designed to help students prepare for successful completion of the experiment. It demonstrates the aim, chemistry and execution of the experiment. Students are expected to turn in their pre-lab at the beginning of each lab period. It is typically one page and should contain the following content: Objective, Apparatus and Chemicals Needed, Techniques (if any), Brief Procedure in their own words.

- Exp 2 Nomenclature
- Exp 1 Basic Lab Operations
- Exp 3 Chromatography
- Exp 4 Identification of Compounds
- ***** Problem Set
- Exp 5 Spectroscopy
- Exp 6 Molecular Geometry
- Exp 7 Limiting Reactant
- Exp 8 Volumetric Analysis
- Exp 9 Vinegar Analysis
- Exp 11 Metathesis Reactions
- Exp 12 Redox Reactions

Contribution of Course to meeting professional component:

Mathematics and basic science requirement

Relation to outcomes: a,b,c

Prepared by: C.D. Cantrell 4/27/05

Math 2417 Calculus I

Course Catalog Description: 2000-2004 catalog

Course Designation: Required

MATH 2417 Calculus I (*4 semester hours*) Functions, limits, continuity, differentiation; integration of function of one variable; logarithmic, exponential, and inverse trigonometric functions; techniques of integration, and applications. Three lecture hours and two discussion hours a week. Prerequisite: A SAT II Mathematics Level IC Test score of 560, a Level II Test score of 530, or a grade of at least C in MATH 2312 or an equivalent course. (4-0) S

Prerequisite:

MATH 2312 or an equivalent course

Textbook

CALCULUS by Larson, Hostetler and Edwards, 7^{th} Edition, Student Solution Manual Available in Bookstore

Reference:

WEB: The utility WebCT, accessible from a UTD computer lab or from your own Web connection, will be an essential communication tool for this course. The URL is http://webct.utdallas.edu; this can also be accessed from the UTD home page.

Course Objectives:

After completing this course the student will be able to differentiate and integrate simple functions and will be able to apply calculus to scientific and engineering problems**.**

Topics Covered:

- Preparation for Calculus (Self-review for students)
- Limits and their Properties
- Differentiation
- Applications of Differentiation
- Integration
- Logarithmic, Exponential, and Other Transcendental Functions
- Applications of Integration
- Integration Techniques, L'Hôpital's Rule, and Improper Integrals

Class/Laboratory Schedule:

MATH LAB HOURS
Monday-Thursday 10:00 am - 8:00 pm
Friday/Saturday 10:00 am - 2:00 pm or by appointment

Contribution of Course to meeting professional component:

Mathematics and basic science requirement

Relation to outcomes: a,b,c

Prepared by: C.D. Cantrell 4/28/05

Math 2419 Calculus II

Course Catalog Description: 2000-2004 catalog

Course Designation: Required

MATH 2419 Calculus II (*4 semester hours*) Continuation of MATH 2417. Improper integrals, sequences, infinite series, power series, parametric equations and polar coordinates, vectors, vector-valued functions, functions of several variables, partial derivatives and applications, multiple integration. Three lecture hours and two discussion hours a week. Prerequisite: A score of at least 4 on the Advanced Placement Calculus BC exam or MATH 2417. (4-0) S

Prerequisite:

MATH 2417 or an equivalent course

Textbook

CALCULUS by Larson, Hostetler and Edwards, 7th Edition, Student Solution Manual Available in Bookstore

Reference:

WEB: The utility WebCT, accessible from a UTD computer lab or from your own web connection, will be an essential communication tool for this course. The URL is http://webct.utdallas.edu; this can also be accessed from the UTD home page.

Course Objectives:
To provide an understanding of series convergence and approximation, plane and space curves, and of vectors, partial differentiation and multiple integration, and their applications in the sciences.

Topics Covered:

- Integration Techniques, L'Hôspital's Rule, and Improper Integrals
- Infinite Series
- Conics, Parametric Equations, and Polar Coordinates
- Vectors and the Geometry of Space
- Vector-Valued Functions
- Functions of Several Variables
- Multiple Integration

Class/Laboratory Schedule:

MATH LAB HOURS
Monday-Thursday 10:00 am - 8:00 pm
Friday/Saturday 10:00 am - 2:00 pm or by appointment

Contribution of Course to meeting professional component:

Mathematics and basic science requirement

Relation to outcomes: a,b,c

Prepared by: C.D. Cantrell 5/28/05

Math 2420 Differential Equations with Applications

Course Catalog Description: 2000-2004 catalog

Course Designation: Required

MATH 2420 Differential Equations with Applications *(4 semester hours*) Topics covered will be drawn from the following list: First order differential equations, ordinary differential equations, system of linear differential equations, stability, series solutions, special functions, Sturm-Liousville problem, Laplace transforms and linear differential equations, numerical solutions and applications in physical sciences and engineering using computers. Three lecture hours and two discussion hours per week. Prerequisite: MATH 2419. (4-0) S

Prerequisite:

MATH 2419 or an equivalent course

Textbook

CALCULUS by Larson, Hostetler and Edwards, 7th Edition, Student Solution Manual

Reference:

WEB: The utility WebCT, accessible from a UTD computer lab or from your own web connection, will be an essential communication tool for this course.

Course Objectives:

After completing this course the student will have a basic understanding of solution methods for various types of ordinary differential equations**.**

Topics Covered:

- First order differential equations
- Ordinary differential equations
- System of linear differential equations,
- Stability, series solutions, special functions
- Sturm-Liouville problem
- Laplace transforms and linear differential equations,
- Numerical solutions and applications in physical sciences and engineering using computers

Class/Laboratory Schedule:

MATH LAB HOURS
Monday-Thursday:10:00 am - 8:00 pm; Friday/Saturday 10:00 am - 2:00 pm or by appointment

Contribution of Course to meeting professional component:

Mathematics and basic science requirement

Relation to outcomes: a,b,c

Prepared by: C.D. Cantrell 4/28/05

PHYS 2325 Mechanics and Heat / PHYS 2125 Physics Laboratory I

Course Catalog Description: 2000-2004 catalog

Course Designation: Required

PHYS 2325 Mechanics and Heat (*3 semester hours*) Calculus based. Basic physics including a study of space and time, kinematics, forces, energy and momentum, conservation laws, rotational motion, torques, and harmonic oscillation. Two lectures and one recitation session per week. Prerequisite: MATH 2417. Co-requisite: PHYS 2125. (3-0) Y

PHYS 2125 Physics Laboratory I (*1 semester hour*) Laboratory course to accompany PHYS 2325. Personal computer-based data presentation and curve fitting. Basic measurement concepts such as experimental uncertainty, mean, standard deviation, standard error, and error propagation will be covered. Co-requisite: PHYS 2325. (0-3) Y

Prerequisite:

Math 2417-Calculus I

Textbook

University Physics (11th edition) Volume 1, Young and Freedman
Online HW: Mastering Physics for Young/Freedman, 11th edition

Reference:

N/A

Course Objectives:

This is a list of what I expect you to know and be able to do by the end of this class; Addition, scalar multiplication, and vector multiplication of vectors, Understand the components of linear motion (displacement, velocity, acceleration), Understand the different forces and work force problems, Understand Newton's laws of motion, Understand the different types of energy, Use the conservation of energy to work problems, Understand impulse, momentum and collisions, Understand center of mass and rigid bodies motion, Know rotational variables and the relationship between linear and rotational variables, Be able to solve problems using rotational and linear variables, Understand and work with equilibrium situations including the different types of equilibrium, Understand simple harmonic motion and waves including their properties, Understand fluids in motion and at rest, Understand heat and heat transfer mechanisms, Understand the three laws of thermodynamics, Know the types of engines and refrigerators

Topics Covered:

- Introduction, Units, Vectors
- Velocity, Acceleration, 1-D Motion,2-D and 3-D Motion, Constant Acceleration
- Newton's Laws and applications
- Work, Potential Energy
- Gravity
- Momentum, Impulse, Collisions in 1-D,Collisions in 2-D
- Angular Motion
- Moment of Inertia
- Torque, Rolling, Angular Momentum
- Static Equilibrium

- Simple Harmonic Motion
- Waves, Pressure
- Buoyancy, Ideal Gas
- First Law of Thermodynamics, PV Diagrams
- Second Law of Thermodynamics, Engines, Refrigerators

Class/Laboratory Schedule:

The course includes experiments designed to explore several areas in Mechanics and Heat. The experiments in PHYS 2125 give you the opportunity to examine several phenomena in great detail. In Physics, there is interplay between the theory that you see in a class or read about and experimental work. One is not more important than the other but one informs the other: theoretical predictions are a natural focus of experiment and experimental results help to develop theory.

It is the responsibility of the student in this lab course to familiarize herself/himself with concepts required in any experiment. The manual is a rough guide to concepts required and not a thorough explanation of those ideas. Books that fully describe those concepts are available.

Contribution of Course to meeting professional component:

Mathematics and basic science requirement

Relation to outcomes: a,b,c

Prepared by: C.D. Cantrell 4/27/05

PHYS 2326 Electromagnetism and Waves/PHYS 2126 Physics Laboratory II

Course Catalog Description: 2000-2004 catalog

Course Designation: Required

PHYS 2326 Electromagnetism and Waves (*3 semester hours*) Continuation of PHYS 2325. Topics include electrostatics and electromagnetics, electric field and potential, electric currents, magnetic fields, laws of Coulomb, Ampere, and Faraday, Maxwell's theory of propagation. Two lectures and one recitation session per week. Prerequisites: PHYS 2325 and MATH 2419. Co-requisite: PHYS 2126. (3-0) Y

PHYS 2126 Physics Laboratory II (*1 semester hour*) Laboratory course to accompany PHYS 2326. Builds on concepts of Physics Lab I. Will emphasize the use of an oscilloscope and measurements using simple circuits constructed in class. Co-requisite: PHYS 2326. (0-3) Y

Prerequisite:

PHYS 2325 and MATH 2419. Co-requisite: PHYS 2126. (3-0) Y

Textbook

The basic material is covered in many textbooks and students may use any of them. This particularly refers to: R.A. Serway and R.J. Beichner, **"Physics for Scientists and Engineers"**, Volume 2; D. Halliday, R. Resnick, J. Walker, **"Fundamentals of Physics"**, Volume 2.

Reference:

R.P. Feynman, R.B. Leighton, & M. Sands, **"The Feynman Lectures on Physics"**, Vol. 2 – Read this for the Physics of it! ;A. Shadowitz, **"The Electromagnetic Field".**

Course Objectives:

This is an introductory course on electricity, magnetism and electromagnetic waves. The goal is for students to develop an understanding and gain a practical knowledge of basic notions of electric charges, currents, electromagnetic fields and forces. Our focus is not on "training" and "dry" learning of the lecture materials but on conceptual understanding (broad concepts like "physical fields vs action-at-a-distance", "superposition principle", etc.) and developing skills to apply basic principles to actual problem solving. Lectures and problem solving sessions will include examples of how to approach problems; students are expected to spend as much as possible of their own time on problems, quizzes, etc. Some part of the lectures will be devoted to topics beyond the textbook content and intended to make students aware of more advanced stuff, to put things in a more general picture and to be, in a sense, inspirational. Lectures and other materials will be made available online.

Topics Covered:

- Introduction to Electric Charges and Fields
- Properties of Electric Charges
- Coulomb's Law and Superposition;
- Conductors and Insulators;
- Magnetic fields and Lorenz force;
- Mathematics of Vector Fields
- Electrostatics in Vacuum and Dielectrics
- Electric Current and DC Circuits
- Magnetostatics in Vacuum and Matter
- Motion of Charges in Electric and Magnetic Fields
- Time-Dependent Fields and Currents
- Maxwell's Equations and Electromagnetic Waves

Class/Laboratory Schedule:

The course includes experiments designed to explore several areas in Electromagnetism and Waves. The experiments in PHYS 2126 give you the opportunity to examine several phenomena in great detail. In Physics, there is interplay between the theory that you see in a class or read about and experimental work. One is not more important than the other but one informs the other: theoretical predictions are a natural focus of experiment and experimental results help to develop theory.

It is the responsibility of the student in this lab course to familiarize herself/himself with concepts required in any experiment. The manual is a rough guide to concepts required and not a thorough explanation of those ideas. Books that fully describe those concepts are available.

Contribution of Course to meeting professional component:

Mathematics and basic science requirement

Relation to outcomes: a,b,c

Prepared by: C.D. Cantrell 4/27/05

CS 1337 Computer Science I

Course Catalog Description: 2000-2004 catalog

Course Designation: Required

CS 1337 Computer Science I (3 semester hours) Introduction to object-oriented software analysis, design, and development. Classes and objects. Object composition and polymorphism. Sorting, searching, recursion. Strings and stacks using core classes. Inheritance and interfaces. Graphic User Interfaces. Includes a comprehensive programming project. Prerequisite: CS 1336 or equivalent programming experience. (3-0) S

Prerequisites: CS 1336 or equivalent programming experience

Textbook: Liang, Daniel. **Introduction to Java Programming.**
5th Edition. Prentice Hall.

Course Objective:
After successful completion of this course, the student will have the: Ability to develop object oriented software solutions for use on computers; to express algorithmic solutions in a high level computer language; to utilize the String classes; to utilize express multi-class relationships among objects; to implement graphical user interfaces; to develop graphical programs utilizing standard layout
Managers; to develop event driven programs; to process data with abstract data types; to perform searches and sorts; to develop programs utilizing recursive methodology; to utilize reference variables; to utilize exception processing in sequential file input and output

Objectives: After successful completion of this course, the student will have the ability to: develop object oriented software solutions for use on computers; express algorithmic solutions in a high level computer language; utilize the String classes; utilize express multi-class relationships among objects; implement graphical user interfaces; develop graphical programs utilizing standard layout managers; develop event driven programs; process data with abstract data types; perform searches and sorts; develop programs utilizing recursive methodology; utilize reference variables; utilize exception processing in sequential file input and output

Course Outline:
- Introduction to Java
- Methods Review
- Recursion
- Objects and classes
- Strings
- Class Inheritance and Interfaces
- OO Software development
- GUI Programming
- Sorting and Searching
- Files

Class/Laboratory Schedule:

Class meets Monday, Wednesday, and Friday's for 50 minutes or Tuesday and Thursday's for one hour and fifteen minutes.

Contribution of course to meeting professional component:

Mathematics and basic science requirement

Relation to program outcomes: a,c,e

Prepared by:

Martha Sanchez and C. D. Cantrell 4/28/05

ECS 3390 Professional and Technical Communication

Course Description: 2002-2004 catalog

Course Designation: Required

ECS 3390 Professional and Technical Communication (3 semester hours) Course utilizes an integrated approach to writing and speaking for the technical profession. The writing component focuses on writing professional quality technical documents such as proposals, memos, abstracts, reports and letters. The oral communication part of the course focuses on planning, developing, and delivering dynamic, informative and persuasive presentations. Gives students a successful communication experience working in a functional team environment using a total on-line/real time learning environment. Prerequisite: RHET 1302. (3-0) S.

Prerequisite: RHET 1302

Textbook:

Specified by Instructor

Course Objective:

After completing this course the student will be able too communicate effectively with customers, technical peers and management orally and in writing.

Topics Covered:
Written and oral technical communications

Class/laboratory Schedule:

Class meets Monday, Wednesday, and Friday's for 50 minutes or Tuesday and Thursday's for one hour and fifteen minutes.

Contribution of course to meeting professional component:

General Education

Relation to program outcomes: g

Prepared by:

C.D. Cantrell 4/27/05

EE 1102 Introduction to Experimental Techniques

Course Catalog Description: 2002-2004 Catalog

Course Designation: Required

EE 1102 Introduction to Experimental Techniques (*1 semester hour*) EE fundamentals laboratory that stresses laboratory procedures; learning use of common laboratory equipment such as power supplies, multimeters, signal generators, and oscilloscopes; making measurements; familiarization with simple DC resistor circuits; Ohm's law; analyzing AC signals, including frequency, period, amplitude, and rms value; inductors, capacitors and DC transients; measuring phase shift in an AC circuit due to an inductor or capacitor; and basics of laboratory report writing. (0-1) S

Prerequisites: N/A

Textbook: The EE 1102 Laboratory Manual and two electronics kits.

Course Objectives:

This course introduces students to experimental practices in an electrical circuit laboratory. Students will learn to use common laboratory instruments, including the power supply, multimeter, oscilloscope, and signal generator. Experiments cover fundamentals of circuit theory, including passive circuit elements, DC and AC circuits, and measurement techniques. Students will learn to communicate research results by writing a laboratory report. Students will work in two-person teams.

Topics Covered:

- Building a simple electronic circuit
- The relation of voltage, current, and resistance in a DC circuit.
- AC signals, the signal generator, and the oscilloscope.
- Capacitors, inductors, and transient circuit behavior.
- Resistor-inductor-capacitor (RLC) circuit transient behavior.
- Building a more complex electronic circuit.
- Inductors and capacitors in AC circuits.
- RL and RC AC circuits.
- Manufacturing tolerance: a statistical analysis of resistor variation.
- Two circuit design problems.

Class/Laboratory Schedule:

Class meets once a week for three hours.

Contribution to Course Meeting professional Component:

An engineering topic

Relation to program outcomes:

a,b,c,d,e,g,k

Prepared by: Dr. Nathan Dodge

EE 2110 Introduction to Digital Systems Laboratory

Course Catalog Description: 2002-2004 Catalog

Course Designation: Required

EE 2120 Introduction to Digital Systems Laboratory: (*1 semester hour*) Laboratory to accompany EE 2310. The purpose of this laboratory is to give students an intuitive understanding of digital circuits and systems. Laboratory exercises include construction of simple digital logic circuits using prototyping kits and board-level assembly of a personal computer

Prerequisite: CS 1315. Co-requisite: EE 2310

Textbook: None. All material (including this syllabus) is available on-line. To obtain all EE 2110 course material, go to the instructor's web site at http://www.utdallas.edu/~dodge/ee2110 and click on "EE 2110." Labs are in Acrobat .pdf format, requiring Acrobat 5.0 reader, which can be obtained from the University of Texas at Dallas software website (http://www.utdallas.edu/ir/local/index.html) or from the Adobe website. Once downloaded, they can be printed for use in the lab.

Course Objectives: This course includes experiments with combinational and sequential digital logic, hands-on assembly of an IBM-style PC, and assembly language programming.

Topics Covered:

- Introduction to laboratory equipment; simple logic gates; common logic gates
- Digital adder circuits.
- Bi-stable circuits (flip-flops and latches).
- Shift registers and counters.
- Assembly of a PC
- Programming project number 1; machine instructions and writing a simple program.
- Programming project number 2; writing a program involving a repetitive loop.
- Programming project number 3; procedures and use of the stack.
- Programming problem; a lab practicum on assembly language programming.

Class/laboratory Schedule:

Class meets once a week for three hours.

Contribution of Course to meeting professional component:

An engineering topic

Relation to program outcomes:

a,b,c,d,e,g,k

Prepared by: Dr. Nathan Dodge

EE 2300 Applied Linear Algebra

Course Description: 2002-2004 Catalog

Course Designation: Required

EE2300 Applied Linear Algebra (3 semester hours) Matrices, vectors, determinants, linear systems of equations, Gauss-Jordan elimination, vector spaces, basis, eigenvalues, eigenvectors, numerical methods in linear algebra using MATLAB, computer arithmetic, Gaussian elimination, LU factorization, iterative solutions to linear systems, iterative methods for estimating eigenvalues, singular value decomposition, QR factorization.

Prerequisite: MATH 2419 (3-0) S

Textbook (required) : Introduction to Linear Algebra. Third Edition. By Gilbert Strang. Wellesley-Cambridge Press, 2003

Course Objectives: 1) To provide a fundamental understanding of the theoretical and computational aspects of modern linear algebra and its applications 2) To introduce the students to the powerful software tool MATLAB

Topics Covered:

- Introduction to Vectors & Matrices (Vector operations, Inner Product, Matrix operations)
- Linear Systems of Equations (Elementary Operations, Gaussian Elimination, Echelon Form, Homogeneous and Non-Homogeneous Systems of Equations, Matrix Inversion, Triangular Factorization)
- Determinants (Minors, Cofactors, Properties of Determinant, Cramer's Rule)
- Vector Spaces & Subspaces (Linear span, linear dependence and independence, basis, The four fundamental subspace of a matrix)
- Orthogonality (projections, orthogonal bases, Gram-Schmidt procedure, QR factorization)
- Eigenvalues and Eigenvectors (Characteristic Polynomial, Matrix Diagonalization, Positive Definite Matrices, Similar Matrices)

Class/laboratory Schedule:
Class meets Monday, Wednesday, and Friday's for 50 minutes or Tuesday and Thursday's for one hour and fifteen minutes.

Contribution of course to meeting professional component:
a, e,

Relation to program outcomes:
Mathematic and Basic science

Prepared by: Naofal Al-Dhahir

EE 2310 Introduction to Digital Systems

Course Catalog Description: 2002-2004 Catalog

EE 2310 Introduction to Digital Systems: (*3 semester hours*) Introduction to hardware structures and assembly-language concepts that form the basis of the design of modern computer systems. Internal data representation and arithmetic operations in a computer. Basic logic circuits. MIPS assembly language. Overview of PC architecture..

Prerequisite: CS 1315 **Co requisite:** EE 2110 (3-0) S

Textbooks:

Required; Schaum's Outline of Theory and Problems of Digital Principles, Third Edition, Roger L. Tokheim, (McGraw-Hill), **Introduction to RISC Assembly Language Programming**, John Waldron, (Addison-Wesley, 1998**),**

Recommended: Computer Organization and Design, Second Edition, David Patterson and John Hennessy (Morgan Kaufmann, 1997)., **Logic Works 4, Capilano Computing Systems, Inc. (Addison-Wesley, 1996).**

Objectives: This course covers principles of digital systems, assembly language programming, and an overview of computer architecture. It provides a background in basic technology areas that are required to understand computer architecture and design, including: Binary numbers and codes, Hexadecimal numbers, Fundamentals of Boolean Algebra, Digital logic gates, Basic combinational logic circuits, Sequential logic/clocked circuits, Assembly language programming, Modern computer organization

Topics:

- Overview, history of computing, binary numbers.
- Two's complement negative binary number representations and binary codes.
- Boolean algebra and combinational digital logic
- More complex combinational logic circuits.
- Karnaugh maps; logic simplification
- Fundamentals of sequential logic circuits, flip-flops
- More complex latch or flip-flop circuits.
- Designing sequential digital logic;
- Assembly language programming; introduction to SPIM.
- Overview of MIPS instruction set; register-register instructions and system calls.
- Writing and executing MIPS programs.
- Memory reference instructions.
- MIPS shift and logical instructions; branch instructions and their use in program control.
- Constructing loops in SPIM
- Procedures and use of the stack.
- Computer operation, processes, and final programming session
- Class programming exercise
- Computer architecture: ALU and control unit design
- Review of single-cycle ALU.
- Multicycle implementation.
- Pipeline introduction.

- Pipelined processors.
- Memory architecture and management.

Class/laboratory Schedule:
Class meets Monday, Wednesday, and Friday's for 50 minutes or Tuesday and Thursday's for one hour and fifteen minutes.

Contribution of course to meeting professional Component:

An engineering topic

Relation to program outcomes:

a,c,e,k,

Prepared by: Dr. Nathan Dodge, September 2003

EE 3101- Electrical Network Laboratory

Course Catalog Description: 2002-2004

Course Designation: Required

EE 3101 Electrical Network Analysis Laboratory (*1 semester hour*) Laboratory to accompany EE 3301. Design, assembly and testing of linear electrical networks and systems. Use of computers to control electrical equipment and acquire data. Prerequisite: EE 1102. Corequisite: EE/TE 3301. (Same as TE 3101) (0-1) S

Prerequisite: EE 1102. Corequisite: EE/TE 3301. (Same as TE 3101) (0-1) S
EE 3301

Textbook:
Manual for Electrical Engineering Circuits Laboratory, University of Texas at Dallas, 2004.

Course Objectives:
This course is designed to train juniors in electrical engineering and telecommunications engineering in the use of test equipment such as oscilloscopes, multi-meters, and signal-generators, to give them an understanding of the characteristics of real components used in linear circuits, a background in basic electric measurements, and insight into the correspondence between theory and practice.

Topics covered:

- Learning to use test equipment to take measurements.
- Measurements on DC Circuits
- Natural response of RL and RC circuits.
- Step response of series RLC circuits.
- Operational Amplifiers
- Power in AC circuits.
- Frequency response and input/output impedances.
- Resonant circuits.
- Mutual inductance and transformers.
- Equalization networks.

Class/laboratory Schedule:

Class meets once a week for three hours.

Contribution of course to meeting Professional Component:
An engineering topic

Relation to program outcomes:
b,k,

Prepared by: Nathan Dodge, September 2003

EE/TE 3102 Signals and Systems Laboratory

Course Catalog Description: 2002-2004 Catalog

Course Designation: Required

EE/TE 3102 Signals and Systems Laboratory (*1 semester hour*) Laboratory based on MATLAB to accompany EE 3302. Fourier analysis, implementation of discrete-time linear time-invariant systems, applications of Fast Fourier Transform, design of digital filters, applications of digital filters..

Prerequisites: MATH 2420, EE/TE 3301, and CS 1315

Co requisite: EE/TE 3302. (Same as TE 3102) (0-1) S

Textbook: Manual for Signals and Systems Laboratory EE 3102

Course Objectives: In this course, the student will acquire hands-on experience with programming in MATLAB. MATLAB will enable you to study and understand the theory behind signals and systems as well as validate the theory with real-world examples. The lab will cover linear time-invariant systems, Fourier series, Fourier transforms, sampling, digital filters along with several accompanying digital signal processing applications.

Topics Covered:

- Lab 1 Introduction to MATLAB
- Lab 2 Linear time-invariant systems and convolution
- Lab 3 Fourier series
- Lab 4 The continuous-time Fourier transform
- Lab 5 Sampling and aliasing
- Lab 6 Analysis of discrete-time systems
- Lab 7 The FFT
- Lab 8 Digital Filtering (optional)

Class/laboratory Schedule:

Class meets once a week for three hours.

Contribution of course to meeting Professional Component:
An engineering topic

Relation to program outcomes:
a,c,e,k

Prepared by: Bill Boyd, May 2005

EE 3110 Electronic Devices Laboratory

Course Catalog Description: 2002-2004

Course Designation: Required

EE 3110 Electronic Devices Laboratory (*1 semester hour*) Laboratory to accompany EE 3310. Experimental determination and illustration of properties of carriers in semiconductors including carrier drift, photoconductivity, carrier diffusion; p-n junctions including forward and reverse bias effects, transient effects, photodiodes, and light emitting diodes; bipolar transistors including the Ebers-Moll model and secondary effects; field effect transistors including biasing effects, MOS capacitance and threshold voltage. Prerequisite: EE 1102. Corequisite: EE 3310. (0-1) S

Prerequisites: EE 1102. Co requisite: EE 3310

Textbook: EE 3110 Electronic Devices laboratory (download from web site)

Course Objectives: This course Laboratory to accompany EE 3310 and provides a fundamental understanding of applications to engineering problems.

Topics covered:
- Axioms of probability
- Lab equipment tutorial
- Introduction to LabView
- Conductivity and the Hall effect in silicon
- Silicon diode characteristics
- Small signal models of pn junction diodes
- Transient signals of pn junction diodes
- Low frequency characteristics of JFETs
- MOSFETs
- MOSFET amplifiers

Class/Laboratory Schedule:
Class meets one day per week for 3 hours

Contribution of course to meeting professional component:
An engineering topic

Relation to program outcomes:
b,k,

Prepared by: Gil Lee, March 31, 2005

EE 3111 Electronic Circuits Laboratory

Course Catalog Description: 2002-2004 Catalog

Course Designation: Required

EE 3111 Electronic Circuits Laboratory: (*1 semester hour*) Laboratory to accompany EE 3311. Design, assembly and testing of electronic circuits that use diodes, transistors and operational amplifiers in configurations typically encountered in practical applications.

Prerequisite: EE/TE 3101

Co requisite: EE 3311 (0-1) S

Textbook:

Reference:
M. N. Horenstein, *Microelectronic Circuits and Devices*, Second Edition, Prentice Hall, 1996.

Course Objectives:
This course is intended to provide junior and senior students in electrical engineering an opportunity to design electronic circuits, using diodes, transistors, and op-amps. In addition, the students learn to quantitatively bring together analytic, numerical, and experimental techniques in the design and testing of their circuits.

Topics Covered:
- Diode Bridge Rectifier
- Transistor Switch
- Single Transistor Amplifier
- Multistage Transistor Amplifier
- Difference Amplifier
- Single Operational Amplifier Circuit with Feedback
- Multistage Operational Amplifier Circuit with Feedback

Class/Laboratory Projects:

This class meets once a week for three hours

Contribution of course to meeting professional component:

An engineering topic

Relation to program outcome:

b,k,

Prepared by: Nathan Dodge **,** May 2005

EE 3120 Digital Circuits Laboratory

Course Catalog Description: 2002-2004 Catalog

Course Designation: Required

EE 3120 Digital Circuits Laboratory (*1 semester hour*) Laboratory to accompany EE 3320. Design, assembly, and testing of logic circuits. Prerequisite: EE 2110. Corequisite: EE 3320. (0-1) STextbook:

Course Objectives:
This course is designed to give juniors and seniors in electrical engineering an ability to choose modem electronic components and subsystems and to integrate them into overall designs. Strong emphasis is placed on the use of programmable logic devices and CAD tools.

Topics:

- Introduction to the digital lab.
- Combinational logic design using PDLs.
- Hierarchical combinational logic design using MSI blocks.
- Arithmetic and logic unit design.
- Flip-flops and registers.
- Sequential logic design using PDLs.

Class/laboratory Schedule:

This class meets once a week for three hours

Contribution of course to meeting professional component:

An engineering topic

Relation to program outcomes:

b,k,

Prepared by: Nathan Dodge, May 2005

EE 3150 Communications Systems Laboratory

Course Catalog Description: 2002-2004 Catalog

Course Designation: Required

EE 3150 Communications Systems Laboratory (*1 semester hour*) Laboratory to accompany EE 3350. Fundamental elements of communications systems hardware; use of spectrum analyzers and other measurement instruments typically encountered in communication systems; design of active filters in communications systems; analog frequency and amplitude modulators and demodulators; data communication systems.

Prerequisites: Co-requisite EE3350

Textbook:

EE 3350 Laboratory manual

Course Objectives:
To familiarize senior undergraduate students with many measurement tools including measurement in the frequency domain. Two experiments are dedicated to the design of active filters for communications applications. The final design experiment is dedicated for communication systems which require the knowledge from all previous experiments and also the accompanied course EE 3350.

Topics covered:

- Fourier Transform
- Impulse Response of a System
- Active Filter Design I (LPF and HPF)
- Active Filter Design II (BPF and BSF)
- Amplitude Modulation and Demodulation
- Frequency Modulation and Demodulation
- Pulse Code Modulation
- Communication Design

Class/laboratory Schedule:

This class meets once a week for three hours

Contribution of course to meeting professional component:

An engineering topic

Relation to program outcomes:

b,k,

Prepared by: Nathan Dodge May 2005

EE 3300 Advanced Engineering Mathematics

Course Catalog Description: 2002-2004 Catalog

Course Designation: Required

EE 3300 Advanced Engineering Mathematics (*3 semester hours*) Survey of advanced mathematics topics needed in the study of engineering. Topics include vector differential calculus, vector integral calculus, integral theorems, complex variables, complex integration, series, residues and numerical methods. Examples are provided from microelectronics and communications.

Prerequisite: Math 2420 (2-0) S

Textbook: Text M. L. Boas, Mathematical Methods in the Physical Sciences, 2nd edition, John Wiley and Sons, 1983

Course Objectives: This course enables students to study advanced mathematical topics needed for engineering. The purposes are: 1) to introduce the undergraduate electrical engineering student to advanced mathematical techniques that will be encountered in subsequent courses in the electrical engineering curriculum, 2) to illustrate how mathematical reasoning and modeling are applied to obtain the solution to realistic engineering problems in microelectronics and telecommunications. The course begins with a short discussion of infinite series and sequences, followed by integration in two and three dimensions, leading to the algebra and calculus of vectors and vector and scalar fields. The course concludes with an introduction to complex analysis, including the algebra and calculus of complex numbers and functions, complex integration, power series, and the Cauchy and residue theorems.

Topics Covered:

- Differential Equations with Applications
- Linear Algebra
- Matrices
- Vectors
- Determinants
- Eigenvalue and Eigenvectors
- Vector differential calculus-Gradient, Divergence, and Curl
- Inner product, Cross Product
- Curves, Tangents, and Arc Length
- Velocity and Acceleration
- Vector Integral calculus-Line and Surface Integrals
- Integral Theorems-Green's, Divergence, and Stokes
- Complex Numbers
- Complex Integration
- Complex Analytic Functions
- Power Series, Taylor Series, Laurent Series
- Residue Integration Method

Class/laboratory Schedule:

Class meets Monday, Wednesday, and Friday's for 50 minutes or Tuesday and Thursday's for one hour and fifteen minutes.

Contribution of course to meeting professional component:

Mathematics and Basic Science

Relation to program outcomes:

a,e,k

Prepared by: John Fonseka, May 2005

EE/TE 3301 Electrical Network Analysis

Course Catalog Description: 2002-2004 Catalog

Course Designation: Required

EE 3301 Electrical Network Analysis *(3 semester hours*) Analysis and design of RC, RL, and RLC electrical networks. Sinusoidal steady state analysis of passive networks using phasor representation; mesh and nodal analyses. Introduction to the concept of impulse response and frequency analysis using the Laplace transform. Prerequisites: MATH 2420, PHYS 2326. Corequisite: EE/TE 3101. (Same as TE 3301) (3-0) S

Prerequisites: MATH 2420, PHYS 2326

Co requisite: EE/TE 3101

Textbook: Electric Circuits, Fifth Edition, James W. Nilsson, Addison-Wesley, 6^{th} edition.

Course Objectives: This course is designed to give sophomores in Electrical and telecommunications engineering an ability to analyze and design passive analog circuits.

Topics Cover:

- Circuit Elements
- Simple Resistive Circuits
- Techniques of Circuit Analysis: Node-Voltage Method, Mesh-Current Method, Source Transformations, Thevenin and Norton Equivalents, Maximum Power Transfer, Super Position
- Operational Amplifiers
- Inductors and Capacitors
- Response of First-Order RL and RC Circuits
- Natural Response of RLC Circuits
- Sinusoidal Steady-State Analysis:
- Sinusoidal Steady-State Power Calculations
- The Laplace Transform in Circuit Analysis: A Review of the Laplace Transform, Circuit Elements in the s Domain, Circuit Analysis in the s Domain
- Introduction to Frequency Selective Circuits: Low-Pass Filters, High-Pass Filters, Band Pass Filters, Band reject Filters

Class/Laboratory Projects:

Class meets Monday, Wednesday, and Friday's for 50 minutes or Tuesday and Thursday's for one hour and fifteen minutes.

Contribution of course to meeting professional component:

An engineering topic

Relation to outcomes:

a,c,e,k

Prepared by: Gerald Burnham, May 2005

EE 3302 - Signals and Systems Fall

Course Catalog Description: 2000-2004 Catalog

Course Designation: Required

EE 3302 Signals And Systems
(3 semester hours) Advanced methods of analysis of electrical networks and linear systems. Laplace transforms, Fourier series, and Fourier transforms. Response of linear systems to step, impulse, and sinusoidal inputs. Convolution, system functions, and frequency response. Z transforms and digital systems.

Prerequisites:
MATH 2420, EE 3301. (3-0) S

Textbook:
Continuous and Discrete Signals and Systems, Samir S. Soliman and Mandyam O. Srinath, Prentice Hall, 1998

Reference: (optional*)*
Signals and Systems: Continuous anti-Discrete, Second Edition, Rodger E. Ziemer, William H. Trantor and D. Ronald Fannin, MacMillan Publishing Co., 1989.
Signals and Linear Systems, Third Edition, Robert A. Gabel, Richard A Roberts, John Wiley and Sons Publishing Co., 1987.

Course Objectives:
After completing this course, the student will be able to analyze signals and systems in the time domain and the frequency domain, and will be able to switch between the two with facility.

Topics Covered:
- Systems and signals, applications and motivation.
- Signals, mathematical properties, classification and representations.
- Convolutions and correlations, continuous and discrete.
- Fourier analysis, continuous and discrete.
- Filtering.
- Modulation.
- Sampling.

Class/laboratory Schedule:
Class meets Monday, Wednesday, and Friday's for 50 minutes or Tuesday and Thursday's for one hour and fifteen minutes.

Contribution of course to meeting professional component:
An engineering topic

Relation to program outcomes:
a,c,e,k

Prepared by: Pete Bernardin , May 2005

EE 3310 Electronic Devices

Course Catalog Description: 2000-2004 Catalog

Course Designation: Required

EE 3310 Electronic Devices (*3 semester hours*) Theory and application of solid state electronic devices. Physical principles of carrier motion in semiconductors leading to operating principles and circuit models for diodes, bipolar transistors, and field effect transistors. Introduction to integrated circuits.

Prerequisites: MATH 2420, PHYS 2326 and EE 3301

Textbooks: B. Streetman and S. Banerjee, "Solid State Electronic Devices (5th edition)", Pretice Hall, 2000 Useful References [Books]R. Pierret, "Semiconductor Device Fundamentals**"**

Reference:

Course Objectives: The course provides basic information on the physics of operation of p-n junction diodes, bipolar junction transistors and field effect transistors. The course will enable students to analyze and to some extent design basic solid state device sites by Topic: Solution of differential equations. Solution of the one dimensional diffusion equation. Theory of electrostatics and electromagnetics, including the laws of Coulomb, Maxwell, Ampere and faraday. Probability theory, statistics and numerical methods. Theory and analysis of electrical networks.

Topics Covered:

- . Introduction to microelectronic devices
- . Atoms and electrons
- . Energy bands and charge carriers
- . Excess charge carriers
- . *pn* Junction diode
- . JFET and MOSFET
- . Bipolar junction transistor

Class/laboratory Schedule:
Class meets Monday, Wednesday, and Friday's for 50 minutes or Tuesday and Thursday's for one hour and fifteen minutes.

Contribution of course to meeting professional component:
An engineering topic

Relation to program outcomes:
a,c,e,k

Prepared by: J.B. Lee, May 2005

EE 3311 Electronic Circuits

Course catalog Description: 2002-2004 Catalog

Course Designation: Required

EE 3311 Electronic Circuits (*3 semester hours*) Analysis design of electronic circuits using diodes, transistors operational amplifiers with feedback. Gain stability of basic amplifier circuits using BJT's, JFET's and MOSFET's; classes of amplifiers; performance of ideal and non-ideal operational amplifiers..

Prerequisites: EE/TE 3301,EE 3310

Co requisite: EE 3111.(3-0) S

Textbook: A. Sedra and K. Smith , Microelectronic Circuits , fifth Edition, Oxford University Press, ISBN: 0-13-158775-7.

Reference: Richard Jaeger, *Microelectronic Circuit Design*, McGraw Hill, 1996.

Course Objectives: This course is designed to give junior and senior students in electrical engineering an understanding of the characteristics of non-linear and active solid state components in networks, and the ability to design electronic circuits based on this knowledge.

Topics Covered:

- Semiconductor diode DC and AC small-signal models and applications.
- BJT and FET characteristics and models.
- Transistor DC models and load line analysis
- Operating point design and temperature effects.
- Small signal low and high frequency models for BJT and FET.
- Single stage amplifiers mid frequency analysis and design.
- Multistage amplifier low and high frequency analysis and design.
- Operational amplifier models and circuits using operational amplifiers

Class/laboratory Schedule:
Class meets Monday, Wednesday and Friday's for 50 minutes or Tuesday and Thursday's for one hour and fifteen minutes

Contribution of Course to meeting professional component:
An engineering topic

Relation to program outcomes:
a,c e,k,

Prepared by: Gil Lee, May 2005

EE 3320 Digital Circuits

Course Catalog Description: 2002-2004 Catalog

Course Designation: Required

EE 3320 Digital Circuits (*3 semester hours*) Boolean logic. Design and analysis of combinational logic circuits using SSI and MSI. Design and analysis of synchronous state machines. Use of programmable logic devices and simple CAD tools.

Prerequisite: EE 2310

Co requisite: EE 3120. (3-0) S

Textbook:
Fundamentals of Digital Logic with Verilog Design, Stephen Brown and Zvonko Vranesic, McGraw Hill Publishing, 2003, ISBN: 0-07-282315-1

Course Objectives:
Understand the importance of digital circuits and systems which form the basis for most of the electronic devices ranging from small electronic toys to large scale computers. Understand how these circuits are designed and operate.

Topic Covered:

- Logic Gates and Implementations
- Electrical properties of logic gates (CMOS)
- Digital Logic Design Fundamentals
- Programmable Logic Devices
- Logic design using ABEL
- Karnaugh Map based minimization (SOP and POS forms)
- Combinational Logic Analysis and Design
- Functional and Timing analysis
- Decoders and Encoders
- Multiplexers and Demultiplexers
- ROM based logic design
- Field Programmable Gate Arrays
- Tristate Logic
- Sequential Logic Elements
- Latches and Flip-flops
- Latch and flip-flop timings
- Sequential Logic Analysis and Design
- Counters and Registers
- Sequential logic circuit timing
- State minimization and assignment
- Arithmetic Circuits
- Combinational Shifter
- Multipliers
- Digital Design Examples

- Dynamic Hazards in digital circuits
- Testable design

Class/laboratory Schedule:
Class meets Monday, Wednesday and Friday's for 50 minutes or Tuesday and Thursday's for one hour and fifteen minutes

Contribution of Course to meeting professional component:
An engineering topic
Relation to outcomes:
a,c,e,k

Prepared by: Dinesh Bhatia 5-16-05

EE 3341 – Probability and Statistics

Course Catalog Description: 2004-2006

Course Designation: Required

EE 3341 Probability Theory and Statistics (*3 semester hours*) Axioms of probability, conditional probability, Bayes theorem, random variables, probability density function (pdf), cumulative density function, expected value, functions of random variable, joint, conditional and marginal pdf's for two random variables, moments, introduction to random processes, density estimation, regression analysis and hypothesis testing. Prerequisite: MATH 2419. (Same as TE 3341) (3-0) SY

Prerequisites: Math 2419.

Textbook: Probability and Stochastic Processes by Roy D. Yates and David j. Goodman, John Wiley and Sons, ISBN 0-471-17837-3

Course Objectives: This course provides a fundamental understanding of probability and statistics with applications to engineering problems.

Topics covered:

- Axioms of probability
- Conditional Probability
- Bayes Theorm
- Random variables
- Probability Density Function (pdf), Cumulative Density Function
- Expected value
- Functions of Random Variables
- Joint and Marginal pdf's for two random variables
- Moments
- Introduction to Statistical and Hypothesis Testing

Class/Laboratory Schedule:

Class meets Monday, Wednesday, and Friday's for 50 minutes or Tuesday and Thursday's for one hour and fifteen minutes.

Contribution of course to meeting professional component:

An engineering topic

Relation to program outcomes:

a,b,e

Prepared by: Aria Nostratina, March 31, 2005

EE 3350 Communications Systems

Course Catalog Description: 2002-2004

Course Designation: Required

EE 3350 Communications Systems (*3 semester hours*) Fundamentals of communications systems. Review of probability theory and Fourier transforms. Filtering and noise. Modulation and demodulation techniques, including amplitude, phase, pulse code, pulse position, and pulse width modulation concepts. Time division multiplexing.

Prerequisites: EE 3300, EE/TE 3302, and EE/TE 3341. (3-0) S

Textbook: Modern Digital and Analog Communication Systems, third edition, B.P. Lathi, Oxford University Press, 1998, ISBN: 0-19-51009-9

Topics Covered:

- Signal Analysis
- Signal Analysis
- Fourier Transform (FT)
- Fourier Series
- Linear Systems, Filters
- Spectral Density Functions
- Amplitude Modulation (AM)
- Single Sideband Modulation (SSB)
- SSB, VSB Modulation
- Amplitude demodulation
- Performance of AM
- FM and PM
- Performance of FM
- PAM
- PCM, PCM transmission
- Demodulation of PCM
- Digital carrier Modulation
- Performance of PCM

Class/laboratory Schedule:
Class meets Monday, Wednesday, and Friday's for 50 minutes or Tuesday and Thursday's for one hour and fifteen minutes.

Contribution of course to meeting professional component:

An engineering topic

Relation to program outcomes:
a,e,

Prepared by: John Fonseka, May 2005

EE 4301 – Electromagnetic Engineering I

Course Catalog Description: 2004-2006 Catalog

Course Designation: Required

EE 4301 Electromagnetic Engineering I (3 semester hours) Introduction to the general characteristics of wave propagation. Physical interpretation of Maxwell's equations. Propagation of plane electromagnetic waves and energy. Transmission lines. Antenna fundamentals.

Prerequisites:
PHYS 2326, EE 3300. (3-0) S

Textbook:
Elements of Engineering Electromagnetics, Sixth Edition, N. N. Rao, Prentice Hall, 2004.

Course Objectives:
After completing this course, the student will be able to analyze static and dynamic electric and magnetic fields, plane waves, transmission lines, dipole antennas, and antenna arrays.

Topics Covered:

- Electrostatics; Gauss' law in integral and differential form; capacitance. (10 classes)
- Magnetostatics; Ampere's law in integral and differential form. (4 classes)
- Electromagnetic induction; Faraday's law in integral and differential form; summary of Maxwell's equations. (1 class)
- Plane electromagnetic waves. (5 classes)
- Polarization of electromagnetic waves; solution of the 1-dimensional wave equation. (1 class)
- Analysis of transmission lines using fields and bounce diagrams. (7 classes)
- Electromagnetic radiation. (2 classes)
- Dipole antennas. (3 classes)
- Antenna arrays and review of radiation & antennas. (3 classes)

Class Schedule:
Class meets Monday, Wednesday, and Friday for 50 minutes, or Tuesday and Thursday for one hour and fifteen minutes.

Contribution of course to meeting professional component:

An engineering topic

Relation to program outcomes:

a,b,c,d,e,g,k

Prepared by: C. D. Cantrell, 3/31/05

EE 4302 Electromagnetic Engineering II

Course Catalog Description: 2004-2006

Course Designation: Elective

EE 4302 Electromagnetic Engineering II (*3 semester hours*) Continuation of the study of electromagnetic wave propagation. Metallic and dielectrically guided waves including microwave waveguides and optical fibers. Dipole antennas and arrays. Radiating and receiving systems. Propagation of electromagnetic waves in materials and material properties. Prerequisite: EE 4301. (3-0) S

Prerequisites: EE 4301.

Textbook: Electromagnetic Field and Waves, Magdy F. Iskander, Waveland Press, Prospect Heights, IL, ISBN 1-57766-115-X

Course Objectives: This course provides a fundamental understanding of probability and statistics with applications to engineering problems.

Topics covered:

- Applied elements of electromagnetism
- Tranmission Lines
- Antennas
- Fiber Optic Wave Guides
- Wave Interaction and Interfaces

Class/Laboratory Schedule:

Class meets Monday, Wednesday, and Friday's for 50 minutes or Tuesday and Thursday's for one hour and fifteen minutes.
A class project related to RFID is also required

Contribution of course to meeting professional component:

An engineering topic

Relation to program outcomes:
a,b,c,d,e,g,k

Prepared by: Matthew Goeckner, March 31, 2005

EE 4304 Computer Architecture

Course Catalog Description: 2002-2004

Course Designation: Elective

EE 4304 Computer Architecture (*3 semester hours*) Introduction to computer organization and design, including the following topics: CPU performance analysis. Instruction set design, illustrated by the MIPS instruction set architecture. Systems-level view of computer arithmetic. Design of the datapath and control for a simple processor. Pipelining. Hierarchical memory. I/O systems. I/O performance analysis. Multiprocessing

Prerequisite: EE 3320. (3-0) S

Textbook: Computer Organization and Design: The Hardware/Software Interface, second edition, D.A. Paterson and J.L. Hennessy, Morgan Kaufman, 1998

Reference:

Course Objectives:

Topics covered:

- Introduction to Computer Organization
- Evaluating performance
- Instruction set design
- Computer Arithmetic
- Processor: datapath and control
- Pipelining
- Memory Organization
- Interfacing processor and peripherals
- Advanced topics

Class/Laboratory Projects:

Contribution of course to meeting professional component:

An engineering topic

Relation to outcomes:

a,c,e,k

Prepared by: R. Sangireddy, May 2005

EE 4310 Systems and Controls

Course Catalog Description: 2000-2004 Catalog

Course Designation: Required

EE 4310 Systems and Controls (*3 semester hours*) Introduction to linear control theory. General structure of control systems. Mathematical models including differential equations, transfer functions, and state space. . Control system characteristics. Sensitivity, transient response, external disturbance, and steady-state error. Control system analysis. Performance, stability, root-locus method, Bode diagram, log diagram, and Nichol's diagram. Control system design. Compensation design using phase-lead and phase-lag networks. Prerequisites: EE 2300, EE/TE 3302 (3-0)

Prerequisites:
MATH 2420, EE 3301, EE/TE 3302.

Textbook:
Gene F. Franklin, J. David Powell, and Abbas Emani-Naeini, *Feedback Control of Dynamic Systems, Fourth Edition,* Addison-Wesley Publishing Co., 2002

Reference: ***(optional)***
N/A

Course Objectives:
This course introduces students to important techniques for control systems design.

Topics Covered:

- History of Feedback Control
- Dynamic Models
- Dynamic Response
- PID Controllers
- Steady-state Tracking and Disturbance Rejection
- Stability
- Root-locus
- Lead and Lag compensation
- Bode Plot
- Nyquist Stability Criterion
- Compensation
- Sensitivity
- State-space Design
- Estimators

Class/laboratory Schedule:
Class meets Monday, Wednesday, and Friday's for 50 minutes or Tuesday and Thursday's for one hour and fifteen minutes.

Contribution of course to meeting professional component:
An engineering topic

Relation to program outcomes:

a,c,e,k,

Prepared by: Bob Hunt, May 2005

EE 4325 Introduction to VLSI Design

Course Catalog Description: 2002-2004

Course Designation: Elective

EE 4325 Introduction to VLSI Design (*3 semester hours*) Introduction to CMOS digital IC design using semi-custom and full-custom design techniques with an emphasis on techniques for rapid prototyping and use of various VLSI design tools. FPGA's, standard cell and full-custom design styles. Introduction to a wide variety of CAD tools

Prerequisite: EE 3320 (or, for CS majors, CS/SE 4340). (3-0) T Cross List CE 6325-501

Textbook: Determined by instructor

Course Objectives: To understand various techniques for the design of digital circuits and systems using appropriate CAD tools.

Topics covered:

- Course Overview, Introduction to VLSI & ASIC Design
- CAD tools introduction and tutorial
- VLSI Design Styles and Methodologies
- Full Custom Layout Lab.
- Layout & Simulation Lab.
- MOS transistor Theory
- CMOS inverter details
- CMOS combination logic, Static logic
- PLAs, State Machines
- Layout Styles
- Pas transistor logic
- Parasitics: resistance,capacitance,etc.
- Performance estimation:delay,power
- VHDL/Verilog to ASIC using Synthesis approach
- VHDL/ Verilog to FPGA
- CMOS Fabrication process
- Design for Testability

Class/Laboratory Projects:

Contribution of course to meeting professional component:

An engineering topic

Relation to outcomes:

a,c,e,k

Prepared by: L. Velasquez

EE 4330 Integrated Circuit Technology

Course Catalog Description: 2002-2004

Course Designation: Elective

EE 4330 Integrated Circuit Technology (*3 semester hours*) Principles of design and fabrication of integrated circuits. Bipolar and MOS technologies. Passive and active component performance, fabrication techniques including epitaxial growth, photolithography, oxidation, diffusion, ion-implantation, thin and thick film components. Design layout of integrated devices. Relations between layout fabrication techniques.

Prerequisite: EE 3310

Textbook: Richard C. Jaeger, Introduction to Microelectronic Fabrication, Prentice Hall, 2002

Course Objectives: To learn the language, science and technology of integrated circuit fabrication and how these affect the performance of micro-electronic devices.

Topics covered:

- Overview of Fabrication
- Lithography
- Thermal Oxidation of Silicon
- Atomic Diffusion
- Ion Implantation
- Film Deposition Processes
- Contact and Interconnections: Ohmic contacts, Metallization
- Packaging and Yield
- MOS Process Integration
- Bipolar Process Integration

Class/Laboratory Projects:

Class meets Monday, Wednesday, and Friday's for 50 minutes or Tuesday and Thursday's for one hour and fifteen minutes

Contribution of course to meeting professional component:

An engineering topic

Relation to outcomes:

a,c,e,k

Prepared by: William R. Frensley, May 25, 2005

EE 4340 Analog Integrated Circuit Analysis and Design

Course Catalog Description: 2004-2006

Course Designation: Elective

EE 4340 Analog Integrated Circuit Analysis and Design (*3 semester hours*) Analog integrated circuits and systems. Analysis and design of linear amplifiers, including operational, high-frequency, broad-band and feedback amplifiers. Use of monolithic silicon systems. Prerequisite: EE 3311. (3-0) T

Prerequisites: EE 3311

Textbook: Microelectronics Circuits by Sedra and Smith

Course Objectives: This course teaches students the design of Analog Integrated Circuits

Topics covered:

- Device characteristics, device models, and simple amplifier configurations: Diode, MOSFET, BJT
- Single stage integrated circuit amplifiers
- Differential and multistage amplifiers
- Feedback
- Operational amplifier
- Filter and tuned amplifier

Class/Laboratory Schedule:
Class meets Monday, Wednesday, and Friday's for 50 minutes or Tuesday and Thursday's for one hour and fifteen minutes.

Contribution of course to meeting professional component:
An engineering topic

Relation to program outcomes:
a,c,e,k

Prepared by: Gil Lee, March 31, 2005

EE 4341 Digital Integrated Circuit Analysis and Design

Course catalog Description: 2002-2004

Course Designation: Elective

EE 4341 Digital Integrated Circuit Analysis and Design (*3 semester hours*) Digital integrated circuits. Large signal model for bipolar and MOS transistors. MOS inverters and gates. Propagation delay and noise margin. Dynamic logic concepts. Bipolar transistor inverters and gates, regenerative logic circuits, memories.

Prerequisites EE 3311, EE 3320 (3-0) T

Textbook: Digital Microelectronics, H. Hazmedar

Course Objectives: Understand various digital integrated circuits

Topics covered:

- Introduction to Digital Design
- Review of semiconductor fundamentals
- Semiconductor Diodes
- MOS Transistor
- CMOS Technology
- Bipolar Transistor Technology
- Bipolar Logic Families
- Buffers, Drivers, and Interfacing
- Digital Regenerative Circuits
- Semiconductor Memories
- Analog Interface Circuits
- Noise in Digital Circuits

Class/Laboratory Projects:

Contribution of course to meeting professional component:

An engineering topic

Relation to outcomes:

a,c,e,k,

Prepared by: Dinesh Bhatia 5-16-05

EE 4360 Digital Communications

Course Catalog Description: 2000-2004 Catalog

Course Designation: Elective

EE 4360 Digital Communications (*3 semester hours*) Information, digital transmission, channel capacity, delta modulation, and differential pulse code modulation are discussed. Principles of coding and digital modulation techniques such as Amplitude Shift Keying (ASK), Frequency Shift Keying (FSK), Phase Shift Keying (PSK), and Continuous Phase Frequency Shift Keying (CPFSK) are introduced. M-ary signaling such as Quadrature amplitude and phase shift keying, and M-ary PSK and FSK are also discussed. Prerequisite: EE 3350. (3-0) T

Prerequisite: EE3350

Textbook: [1] "Digital Communications: Fundamentals and Applications" (2-nd Edition), Bernard Sklar, *Prentice Hall*, 2001, ISBN 0-13-084788-7.
[2] "Fundamentals of Communication Systems" (1st Edition), John G. Proakis, Masoud Salehi, *Prentice Hall*, 2005, ISBN: 013147135X

Course Objective: This course discusses the basic elements of digital communication systems. Main topics to be covered are digitally modulated signals, PCM, the baseband and bandpass modulation, demodulation, coherent/non-coherent detection methods (and receiver structures) in AWGN channel, their error performance, communication over band-limited channels with ISI and AWGN, channel capacity, bandwidth efficiency, comparison of modulation techniques, link budget, introduction to source coding, channel coding, spread-spectrum and multiple access techniques.

Topics Covered:

- PCM (sampling, uniform and non-uniform quantization, PCM waveforms)
- Signal Space
- Baseband and bandpass Modulations (PAM, ASK, FSK, PSK, QAM, MSK, CPFSK, DPSK, OQPSK, π/4-shifted DQPSK)
- Demodulation (Matched-filters, correlation-demodulator)
- Detection (ML, MAP)
- Error performance calculation
- Non-coherent detection (envelope or square-law detector)
- Comparison of Modulation and Bandwidth efficiency
- Signal design for band-limited channels (Zero-ISI condition, Raised-cosine filter, Partial-response signaling)
- Channel Capacity
- Link budget
- Introduction to channel coding (coding gain, Linear block codes and convolutional codes (encoder))
- Introduction to source coding (Information, entropy, Huffman's coding algorithm, Modified Huffman's code for CCITT Facsimile Standard, Lempel-Ziv coding algorithm)
- Introduction to spread-spectrum and multiple access techniques (if time permits)

Class/laboratory Schedule:
Class meets Monday, Wednesday, and Friday's for 50 minutes or Tuesday and Thursday's for one hour and fifteen minutes.

Contribution of Course to meeting professional component:

Relation to outcomes:

An engineering topic

Relation to outcomes:

a,c,e,k,

Prepared by: Dr. Hlaing Minn

EE 4361 - Introduction to Digital Signals Processing

Course Catalog Description: 2002-2004

Course Designation: Elective

EE 4361 Digital Signals and Systems (3 semester hours) An introduction to the analysis and design of discrete, linear systems and the processing of digital signals. Topics include time and frequency domain approaches to discrete signals and systems, the Discrete Fourier Transform and its computation, and the design of digital filters.

Prerequisites: EE 3302.

Textbook: DIGITAL SIGNAL PROCESSING, Principles, Algorithms, and Applications, 3rd Edition, by John G. Proakis, and Dimitris G. Manolakis, Prentice Hall 1996. ISBN: 0 - 13 - 373762- 4

Course Objectives: An introduction to the analysis and design of discrete linear time invariant systems, and to the processing of digital signals.

Topics Covered:

- Basic sequences.
- Properties of systems.
- Linear shift-invariant systems
- Difference equations and their solutions.
- Discrete convolution and the impulse response of linear systems.
- Frequency response and transfer equations of digital filters
- z-transform
- Discrete time Fourier Transforms and their computation
- Filter design;FIR filters, IIR filters

Class/Laboratory Projects:
Class meets Monday, Wednesday, and Friday's for 50 minutes or Tuesday and Thursday's for one hour and fifteen minutes.

Contribution of Course to meeting professional component:

An engineering topic

Relation to outcomes:

a,c,e,k,

Prepared by: Issa Panahi, May 2005

EE 4365 - Introduction to Wireless Communication

Course Catalog Description: 2002-2004

Course designation: Elective

EE 4365 Introduction to Wireless Communications: *(3 semester hours)* Introduction to the basic system concepts of cellular telephony. Mobile standards, mobile system architecture, design, performance and operation. Voice digitization and modulation techniques; PCS technologies.

Prerequisite:. EE 4350 (3-0) Y

Textbook: Introduction to Wireless Systems, P. Mohana Shankar, John Wiley & Sons

Course Objectives: Introduce students to systems, standards, and architectures of high tier and low tier telecommunications systems

Topics:

- History and Overview of Wireless Communications
- Review: Communications System Design and Probability
- Propagation Characteristics of Wireless Communications
- Modems for Wireless Communications
- Cells and Cellular Traffic
- Fading Mitigation in Wireless systems
- Multiple Access Techniques; FDMA, TDMA, CDMA
- Wireless Standards and Mobility in Wireless networks

Class/Laboratory Projects:
Class meets Monday, Wednesday, and Friday's for 50 minutes or Tuesday and Thursday's for one hour and fifteen minutes.

Contribution of Course to meeting professional component:

An engineering topic

Relation to outcomes:

a,c,e,k,

Prepared by: Muhammad A. Kalam, May 15, 2005

EE 4367 – Telecommunications Switching and Transmission

Course Catalog: 2002-2004

Course Designation: Elective

EE 4367 Telecommunications Switching and Transmission: *(3 semester hours)* Telephone basics, switching technologies: circuit switching and packet switching, transmission technologies, transmission media, Fiber optics transmission, SONET and digital hierarchy, network synchronization, advanced protocol and architecture: ATM, Frame Relay and VoIP.

Prerequisite or Co requisite: EE 3350 (3-0) Y

Text Book: John Bellamy, Digital Telephone, 3rd Edition, John Wiley, 2000.

Goals: Introduce students to switching and transmission of voice, video and data in the telephone infrastructure.

Topics:

- Telephone Basics
- Telephone Networks architecture
- Modulation and voice digitization
- Line coding
- Multiplexing and de-multiplexing
- Telephone switching architectures
- Timing and synchronization
- Network synchronization, control and management
- Fiber Optics transmission
- SONET (Synchronous Optical Network)
- Broadband access, DSL and cable-modem
- ATM, Frame Relay and VoIP (Voice over Internet)

Computer Usage: Analysis and design of a simple TST and an STS switch.

Class/Laboratory Projects:
Class meets Monday, Wednesday, and Friday's for 50 minutes or Tuesday and Thursday's for one hour and fifteen minutes.

Contribution of Course to meeting professional component:

An engineering topic

Relation to outcomes:

a,c,e,k,

Prepared by: Muhammad A. Kalam

Date: May 15, 2005.

EE 4368 RF Circuit Design Principles

Course Catalog Description: 2004-2006

Course Designation: Elective

EE 4368 RF Circuit Design Principles (*3 semester hours*) Transmission lines, the Smith chart, impedance matching, simple amplifier design, power coupling, waveguides and lossy transmission lines. Prerequisite: EE4301, Co-requisite: EE 3311. (3-0) Y

Prerequisites: EE 4301.

Textbook: Reinhold Ludwig and Pavel Brectchko, RF Circuit Design: Theory and Applications, Prentice Hall ,2000

Course Objectives:
Demonstrate the following: An understanding of the circumstances which require RF design techniques; an understanding of the variation of impedance along a loaded transmission line problems; the ability to use the Smith chart to solve loaded transmission line problems; the ability to design impedance-matching networks using lumped components; the ability to design impedance matching networks using distributed components; the ability to design a single-stage microwave amplifier using impedance-matching networks.

Topics covered:
- Background on RF design requirements
- Transmission lines
- The Smith Chart
- Network theory
- Active RF components
- Matching and biasing networks
- RF transistor amplifier design

Class/Laboratory Schedule:
Class meets Monday, Wednesday, and Friday's for 50 minutes or Tuesday and Thursday's for one hour and fifteen minutes.

Contribution of course to meeting professional component:

An engineering topic

Relation to outcomes:

a,c,e,k,

Prepared by: William R. Frensley, May 25,2005

EE 4380 Microprocessor Design Project I

Course Catalog Description: 2004-2006

Course Designation: Elective

EE 4380 Microprocessor Design Project I (*3 semester hours*) Detailed design, architecture and interfacing of a microprocessor-based system. A balanced view of hardware techniques (e.g. using development board) and software strategies (e.g. using assembler, simulator) for developing an embedded system. All students must do laboratory experiments, propose and implement a limited microprocessor-based project, submit a written report and make an oral presentation at the culmination of the project. EE 3320. (3-0) Y

Prerequisites: EE 3320

Textbook: Determined by Instructor

Course Objectives: This course prepares students for engineering practice. It is the culminating major design experience based on the knowledge and skills acquired in earlier course work and incorporating engineering standards and realistic constraints that include most of the following considerations as appropriate: economic; environmental; sustainability; manufacturability; ethical; health and safety; social; and political.

The purpose of this course is to provide an opportunity for senior electrical engineering students to synthesize the information gathered in previous courses into a group project or independent effort in specification, design, fabrication, and test of an engineering device or system that is representative of the type of activity they would be expected to perform in industry.

Topics covered: Each project is individualized to the group or person performing the design.

Class/Laboratory Schedule:

Contribution of course to meeting professional component:

An engineering topic

Relation to outcomes:

a,c,d,e,g,h,j,k,

Prepared by: Philip Loizou , May 2005

EE 4381 - Mobile Communications System Design Project

EE 4381 Mobile Communications System Design Project: *(3 semester hours)* Radio frequency system design, propagation, antennas, traffic and trunking, technology issues, channel modeling, link budget, cell design principles, demographics and capacity analysis, project management, and regulatory issues. This can be used to satisfy Senior Design Project. All students must submit a written report and make an oral presentation at the culmination of the project.

Prerequisites: Senior standing, EE 4365. (3-0) Y

Textbook: Theodore Rappaport, Wireless Communications: Principles and Practice, Prentice Hall, 1996.

Course Objectives: This course prepares students for engineering practice. It is the culminating major design experience based on the knowledge and skills acquired in earlier course work and incorporating engineering standards and realistic constraints that include most of the following considerations as appropriate: economic; environmental; sustainability; manufacturability; ethical; health and safety; social; and political.

The purpose of this course is to provide an opportunity for senior electrical engineering students to synthesize the information gathered in previous courses into a group project or independent effort in specification, design, fabrication, and test of an engineering device or system that is representative of the type of activity they would be expected to perform in industry.

This course enables student to analyze/synthesize design/implementation of wireless communication networks.

Topics Covered:

- Traffic Theory and analysis
- Decibel calculations for communications systems
- Antennas and free space propagation
- Propagation models frequency planning
- Diversity reception, Path balance and Project planning
- The error function and the Q-function

Class/Laboratory Schedule: Class meets once a week for three hours

- Design wireless communications systems using UNIX computer with PlaNET software
- Record and Analyze RF coverage using Laptop PC, IS-136 handset with PC interface, Global Positioning System, using TEMS software

Contribution of course to meeting professional component:

An engineering topic

Relation to outcomes:

a,c,d,e,g,h,j,k,

Prepared by: Philip Loizou, May 2005

EE/TE 4382 Individually Supervised Senior Design Project I (Microelectronics)

Course Catalog Description: 2002-2004 Catalog

Course Designation: Elective

EE 4382 Individually Supervised Senior Design Project I (Microelectronics) (*3 semester hours*) Detailed design assembly and testing of a system or component under the guidance of a faculty member. Specific technical requirements will be set by the faculty member. All students must submit a written report and make an oral presentation of the culmination of the project. Prerequisite: senior standing. (Same as TE 4382) (3-0) R

Prerequisites: Senior Standing (Same as TE 4382) (3-0) R. Written Permission of Instructor required

Textbook:

Reference: Written Permission of Instructor required

Course Objectives: This course prepares students for engineering practice. It is the culminating major design experience based on the knowledge and skills acquired in earlier course work and incorporating engineering standards and realistic constraints that include most of the following considerations as appropriate: economic; environmental; sustainability; manufacturability; ethical; health and safety; social; and political.

The purpose of this course is to provide an opportunity for senior electrical engineering students to synthesize the information gathered in previous courses into a group project or independent effort in specification, design, fabrication, and test of an engineering device or system that is representative of the type of activity they would be expected to perform in industry.

Topics covered: Each project is individualized to the group or person performing the design.

Class/Laboratory Projects:

Contribution of course to meeting professional component:

An engineering topic

Relation to outcomes:

a,c,d,e,g,h,j,k,

Prepared by: Larry Overzet, May 2005

EE 4383 Microprocessor Design Project II

Course catalog Description: 2002-2004 Catalog

Course Designation: Elective

EE 4383 Microprocessor Design Project II: *(3 semester hours)* Advanced topics in microprocessor design, architecture, I/O, memory and interfacing. Specification and design of embedded systems. Advanced hardware and software techniques (e.g. using simulator, emulator, compiler and other sophisticated test equipment) for developing microprocessor-based system. All students must do a market survey, propose and implement a complete microprocessor-based project, submit a written report and make an oral presentation at the culmination of the project.

Prerequisite: EE4380 (3-0) Y

Textbook:
Course Objectives: This course prepares students for engineering practice. It is the culminating major design experience based on the knowledge and skills acquired in earlier course work and incorporating engineering standards and realistic constraints that include most of the following considerations as appropriate: economic; environmental; sustainability; manufacturability; ethical; health and safety; social; and political.

The purpose of this course is to provide an opportunity for senior electrical engineering students to synthesize the information gathered in previous courses into a group project or independent effort in specification, design, fabrication, and test of an engineering device or system that is representative of the type of activity they would be expected to perform in industry.

Topics covered: Each project is individualized to the group or person performing the design.

Class/Laboratory Projects:

Contribution of course to meeting professional component:

An engineering topic

Relation to outcomes:

a,c,d,e,g,h,j,k

Prepared by: Poras Balsara, May 2005

EE 4384 Mobile Communications System Design Project II

Course Catalog Description: 2002-2004

Course Designation: Required

EE 4384 Mobile Communications System design Project II: (*3 semester hours*) Radio frequency system design, propagation, antennas, traffic and trunking, technology issues, channel modeling, link budget, cell design principles, demographics and capacity analysis, project management, and regulatory issues. All students must submit a written report and make an oral presentation at the culmination of the project.

Prerequisite:

Co requisite: EE 4390 or CS/TE 4390 (Same as TE 4383) (3-0) Y

Textbook: Theodore Rappaport, Wireless Communications: Principles and Practice, Prentice Hall, 1996.

Course Objectives: This course prepares students for engineering practice. It is the culminating major design experience based on the knowledge and skills acquired in earlier course work and incorporating engineering standards and realistic constraints that include most of the following considerations as appropriate: economic; environmental; sustainability; manufacturability; ethical; health and safety; social; and political.

The purpose of this course is to provide an opportunity for senior electrical engineering students to synthesize the information gathered in previous courses into a group project or independent effort in specification, design, fabrication, and test of an engineering device or system that is representative of the type of activity they would be expected to perform in industry.

Topics Covered:

- Traffic Theory and analysis
- Decibel calculations for communications systems
- Antennas and free space propagation
- Propagation models frequency planning
- Diversity reception, Path balance and Project planning
- The error function and the Q-function

Class/Laboratory Projects:

Contribution of course to meeting professional component:

An engineering topic

Relation to outcomes:

a,c,d,e,g,h,j,k,

Prepared by: Gerald Burham, May 2005

EE 4385 - DSP-BASED DESIGN PROJECT I

Course Catalog Description: 2004-2006

Course Designation: Elective

EE 4385 DSP-Based Design Project I (*3 semester hours*) Basic discrete-time signal processing concepts, hands-on experience in real-time digital communications systems, digital signal processor architectures, programming, and interfacing with external systems. All students must finish laboratory experiments, submit a written report, and make an oral presentation at the culmination of the project. Prerequisites: EE 2310 and EE 3350 (or EE/TE 4361). (Same as TE 4385) (3-0) Y.

Prerequisites: EE 2310 and EE3350.

Textbook: Determined by instructor

Course Objectives: This course prepares students for engineering practice. It is the culminating major design experience based on the knowledge and skills acquired in earlier course work and incorporating engineering standards and realistic constraints that include most of the following considerations as appropriate: economic; environmental; sustainability; manufacturability; ethical; health and safety; social; and political.

The purpose of this course is to provide an opportunity for senior electrical engineering students to synthesize the information gathered in previous courses into a group project or independent effort in specification, design, fabrication, and test of an engineering device or system that is representative of the type of activity they would be expected to perform in industry.

This course is developed to fulfill three design hours of the undergraduate curriculum. It is devised to teach students how to design signal processing systems in a graphical programming environment and how to implement and optimize signal processing algorithms on DSP processors using C and DSP assembly programming. The emphasis in the course is placed on hands-on lab and project work.

Topics covered: Each project is individualized to the group or person performing the design.

Class/Laboratory Schedule:
Project (35%) – The project will be assigned after completion of the lab assignments.

Contribution of course to meeting professional component:
An engineering topic

Relation to outcomes:

a,c,d,e,g,h,j,k,

Prepared by: Murat Torlak, May 2005

EE 4386 - DSP-BASED DESIGN PROJECT II

Course Catalog Description: 2004-2006

Course Designation: Elective

EE 4386 DSP-Based Design Project II - (3 semester hours) Implementation of signal processing algorithms on DSP processors, DSP chip architecture, DSP software development tools, DSP assembly programming, code optimization, fixed-point versus floating-point, design projects (2-3) Y

Prerequisites: EE 4361 or EE4385, and knowledge of C.

Textbook: *Real-Time Digital Signal Processing based on the TMS320C6000*
by N. Kehtarnavaz, Elsevier, ISBN #0-7506-7830-5, 2005
Supplementary reference materials:
National Instruments, *LabVIEW User Manual*, Part Number 320999E-01, 2003
Texas Instruments, *Code Composer Studio User's Guide*, Literature ID# SPRU,2000

Course Objectives: This course prepares students for engineering practice. It is the culminating major design experience based on the knowledge and skills acquired in earlier course work and incorporating engineering standards and realistic constraints that include most of the following considerations as appropriate: economic; environmental; sustainability; manufacturability; ethical; health and safety; social; and political.

The purpose of this course is to provide an opportunity for senior electrical engineering students to synthesize the information gathered in previous courses into a group project or independent effort in specification, design, fabrication, and test of an engineering device or system that is representative of the type of activity they would be expected to perform in industry.

This course is developed to fulfill three design hours of the undergraduate curriculum. It is devised to teach students how to design signal processing systems in a graphical programming environment and how to implement and optimize signal processing algorithms on DSP processors using C and DSP assembly programming. The emphasis in the course is placed on hands-on lab and project work.

Topics covered:
- LabVIEW graphical programming of DSP systems
- Analog to digital signal conversion
- TMS320C6000 DSP architecture
- Code Composer Studio DSP software tool
- DSP C and assembly programming
- Fixed-point versus floating-point DSP implementation
- FIR/IIR digital filtering
- DSP code optimization
- Interfacing DSP and LabVIEW
- Adaptive filtering and frequency transformations
- Design project

Class/Laboratory Schedule:

Project (35%) – The project will be assigned after completion of the lab assignments.

Contribution of course to meeting professional component:

An engineering topic

Relation to outcomes:

a,c,d,e,g,h,j,k,

Prepared by:

Nasser Kehtarnavez, March 31, 2005

EE 4390 – Introduction to Telecommunications Network

Course Catalog: 2002-2004

Course Designation: Elective

EE 4390 Introduction to Telecommunications Networks: *(3 semester hours)* Data Networking basics, Internet architecture: OSI and TCP/IP layers and IP addressing, LAN, MAN and WAN technologies, Gigabit and Fiber optics transmission, advanced protocol and architecture: ATM, Frame Relay, MPLS and WLAN, Multimedia and next generation Internet architecture: IPv6 and convergent network with VoIP.

Prerequisite or Co requisite: EE 3350 (3-0) Y

Text Book: Kurose & Ross, Computer Networking, 3rd Edition, Addison Wesley, 2005.

Course Objectives: Introduce students to data networking infrastructures and transmission of voice, video and data in the convergent network.

Topics Covered:

- Computer Networks and Internet
- Internet architecture and TCP/IP
- Internet Applications and Applications Layer Protocols
- Transport Layer – TCP and UDP
- Network Layer and routing
- IP addressing – Ipv4 and IPv6
- Data link layer – PPP, Ethernet and WLAN
- Packet switching and data link layer – ATM and Frame Relay
- Multimedia Networking
- VoIP (Voice over Internet) and network convergence
- Broadband access and next generation internet

Class/Laboratory Schedule: Class meets Monday, Wednesday and Friday for 50 minutes or Tuesday and Thursday for one hour and fifteen minutes.

Contribution of course to meeting professional component:

An engineering topic

Relation to outcomes:

a,c,e,k,

Prepared By: Muhammad A. Kalam, May 2005

EE 4387 Individually Supervised Senior Design Project II

Course catalog Description: 2002-2004

Course Designation: Elective

EE 4387 Individually Supervised Senior Design Project II: (*3 semester hours*) Detailed design assembly and testing of a system or component under the guidance of a faculty member. Specific technical requirements will be set by the faculty member. All students must submit a written report and make an oral presentation of the culmination of the project.

Prerequisite: EE/TE 4382. (Same as TE 4387) (3-0) R

Textbook: Determined by instructor

Course Objectives: This course prepares students for engineering practice. It is the culminating major design experience based on the knowledge and skills acquired in earlier course work and incorporating engineering standards and realistic constraints that include most of the following considerations as appropriate: economic; environmental; sustainability; manufacturability; ethical; health and safety; social; and political.

The purpose of this course is to provide an opportunity for senior electrical engineering students to synthesize the information gathered in previous courses into a group project or independent effort in specification, design, fabrication, and test of an engineering device or system that is representative of the type of activity they would be expected to perform in industry.

Topics covered: Each project is individualized to the group or person performing the design.

Class/Laboratory Projects:

An engineering topic

Relation to outcomes:

a,c,d,e,g,h,j,k,

Prepared by: Gerald Burnham, May 2005

EE 4399 Senior Honors in Electrical Engineering

Course Catalog Description: 2002-2004 Catalog

Course Designation: Elective

EE 4399 Senior Honors in Electrical Engineering: (*3 semester hours*) For students conducting independent research for honors theses or projects. (0-3) R

Prerequisites: Written permission of the Instructor and the EE Department Head

Textbook: Determined by instructor

Course Objectives: This course give the student more in depth, intensive exposure to engineering topics.

Topics covered: Each project is individualized to the group or person performing the design.

Class/Laboratory Projects:

Contribution of course to meeting professional component:

An engineering topic

Relation to outcomes:

a,c,d,e,g,h,j,k,

Prepared by: Gerald Burnham, May 2005

EE 4V95 Undergraduate Topics in Electrical Engineering

Course Catalog Description: 2002-2004 Catalog

Course Designation: Elective

EE 4V95 Undergraduate Topics in Electrical Engineering: (*1-9 semester hours*) Subject matter will vary from semester to semester. May be repeated for credit (9 hours maximum). ([1-9]-0) R

Prerequisites: Written permission of the Instructor and the EE Department Head

Textbook: Determined by instructor

Course Objectives: This course is used to introduce new course materials into the engineering curriculum.

Topics covered:
Each project is individualized to the group or person performing the design.

Class/Laboratory Projects:

An engineering topic

Relation to outcomes:

a,c,e,k,

Prepared by: Gerald Burnham, May 2005

EE 4V97 Independent Study in Electrical Engineering

Course Catalog Description: 2002-2004 Catalog

Course Designation: Elective

EE 4V97 Independent Study in Electrical Engineering: (*1-9 semester hours*) Independent study under a faculty member's direction. May be repeated for credit (9 hours maximum). Consent of instructor required. ([1-9]-0) R

Prerequisites: Written permission of the Instructor and the EE Department Head

Textbook: Determined by instructor

Course Objectives: Independent study of relevant engineering topics

Topics covered:
Each project is individualized to the group or person performing the design.

Class/Laboratory Projects:

Contribution of course to meeting professional component:

An engineering topic

Relation to outcomes:

a,c,d,e,g,h,j,k,

Prepared by: Gerald Burnham, May 2005

EE 4V98 Undergraduate Research in Electrical Engineering

EE 4V98 Undergraduate Research in Electrical Engineering: (*1-9 semester hours*) May be repeated for credit. ([1-9]-0) R

Prerequisites: Written permission of the Instructor and EE Department Head

Textbook: Determined by instuctor

Course Objectives: Provide research opportunity for undergraduate engineering students.

Topics covered: Each project is individualized to the group or person performing the design.

Class/Laboratory Projects:

An engineering topic

Relation to outcomes:

a,c,d,e,g,h,j,k,

Prepared by: Gerald Burnham, May 2005

C. Electrical Engineering Faculty Curriculum Vitae

NAME:	Noafal Al-Dhahir
ACADEMIC RANK:	Associate Professor
DEGREES WITH FIELDS, INSTITUTIONS AND DATES:	Bachelor of Science, Electrical Engineering, 1989, Kuwait University. Master of Science, Electrical Engineering, 1990, Stanford University. Doctor of Philosophy, Electrical Engineering, 1994, Stanford University.
YEARS IN SERVICE AT UT DALLAS:	2 years
OTHER RELATED EXPERIENCE:	AT&T Labs-Research; Principal Member Technical Staff, Florham Park , NJ ‘99-‘03 General Electric R&D Labs; Member Technical Staff, Schenectady, NY, ‘94-‘99 Stanford University; Instructor, Palo Alto, California, Winter Quarter ‘93
CONSULTING, PATENTS, ETC.:	Amati Communications Inc, Consultant; June 1992-September ‘92; Topic: Digital Subscriber Line (DSL) modem design 13 issued U.S. Patents
STATE(S) IN WHICH REGISTERED:	N/A
PRINCIPAL PUBLICATIONS IN THE LAST FIVE YEARS:	N. Al--Dhahir and S.N. Diggavi,``Optimum Guard Sequence for block Transmission over Linear Frequency-Selective Channels", in IEEE Transactions on Communications, p. 938-946, June 2002  N. Al--Dhahir, ``Overview and Comparison of Equalization Schemes for Space-Time-Coded Signals with Application to EDGE", IEEE Transactions on Signal Processing, pages 2477-2488, October 2002. A. Stamoulis and N. Al-Dhahir, ``Impact of Space-Time Block Codes on 802.11 Throughput", IEEE Transactions on Wireless Communications, p. 1029-1039,September 2003  S. Diggavi, N. Al-Dhahir, and A.R. Calderbank, ``Algebraic

Properties of Space-

Time Block Codes in Intersymbol Interference Multiple Access Channels", IEEE

Transactions on Information Theory, pages 2403-2414, October 2003

SCIENTIFIC AND PROFESSIONAL SOCIETIES (WHICH A MEMBER:	IEEE
HONORS & AWARDS:	Senior Member of the IEEE since 1998
INSTITUTIONAL AND PROFESSIONAL SERVICE IN THE LAST 5 YEARS	Chairperson, EE Adhoc committee for promotion of Dr. Murat Torlak Member, EE teaching assignment committee Member, EE computer equipment committee Editor for IEEE Transactions on Communications Elected Member of IEEE Signal Processing for Communications Technical Committee Elected Member of IEEE Signal Processing Theory & Methods Technical Committee
COURSES TAUGHT 2003-2004:	EE 6343 Detection and Estimation Theory, Fall ’04 (Graduate) EE 7v81 Theory and Practice of Equalization, Spring '04 (Graduate)
PROFESSIONAL DEVELOPMENT ACTIVITIES I THE LAST FIVE YEARS:	Served on Technical Program Committee of the following IEEE Conferences : ICASSP, Globecom, WCNC, Asilomar, ISSPIT, ICC. Delivered a tutorial on “space-time coding” at PIMRC’02 and ICECS’03. Regular participant in IEEE conferences on signal processing. Served on NSF panels to review technical proposals Developed and presented a short course on “Equalization Methods” at UCLA extension

NAME:	Poras T. Balsara
ACADEMIC RANK:	Professor of Electrical Engineering
DEGREES WITH FIELDS, INSTITUTIONS AND DATES:	Ph.D., Computer Science, Penn State University, Aug. 1989 M.S., Computer Science, Penn State University, Aug. 1985 B.E., Electrical Engineering, University of Bombay, July 1983 L.E.E., Electronics, Victoria Jubilee Tech. Institute, July 1980
YEARS IN SERVICE AT UT DALLAS:	15 years, Assistant Professor (9/89-8/95), Associate Professor (9/95-8/00), Professor (9/00 – present).
OTHER RELATED EXPERIENCE:	9/83 to 8/89 Graduate Assistant, Penn State University Spent few summers working in industry.
CONSULTING, PATENTS, ETC.:	Consultant for IC design companies P. T. Balsara & K. Koshy: *"Design of Basic Digital Logic Gates using Resonant Tunneling Diodes (RTDs) and Standard MOSFETs"* and *"Design of a Binary Full Adder Circuit using Resonant Tunneling Diodes (RTDs) and Standard MOSFETs"*, United States Patent Number 6,130,559, October 10, 2000
STATE(S) IN WHICH REGISTERED:	Licensed Professional Engineer in the State of Texas
PRINCIPAL PUBLICATIONS IN THE LAST FIVE YEARS:	R. Bharadwaj, R. Konar, P. T. Balsara & D. Bhatia: "Exploiting Temporal Idleness to Reduce Leakage Power in Programmable Architectures," *Asia and South Pacific Design Automation Conference* (*ASP-DAC*), Shanghai, China, Jan. 18-21, 2005. pp. 651-656 M. J. Akhbarizadeh, M. Nourani, Deepak-Sarathi V., & P. T. Balsara: "PCAM: A Ternary CAM Optimized for Longest Prefix Matching Tasks," *Proceedings of the IEEE International Conference on Computer Design* (*ICCD*), San Jose, CA, Oct. 11-13, 2004. pp. 6-11. *Best paper award.* R. B. Staszewski, C. Fernando & P. T. Balsara: "Event-driven Simulation and Modeling of an RF Oscillator," *Proceeding of the IEEE International Symposium on Circuits and Systems*, Vancouver, Canada, May 2004, pp. 641-644.

R. B. Staszewski, C-M Hung, Ken Maggio, J. Wallberg, D. Leipold & P. T. Balsara: "All-Digital Phase-Domain TX Frequency Synthesizer for Bluetooth Radios in 0.13µm CMOS," *Proceedings of the IEEE International Solid-State Circuits Conference*, San Francisco, CA, Feb. 2004, pp. 272-273,527.

R. Staszewski, D. Leipold, K. Muhammad & P. T. Balsara: "Digitally-Controlled Oscillator (DCO)-Based Architecture in a Deep-Submicron CMOS Process for Wireless Applications," *IEEE Transactions on Circuits and Systems-II*, Vol. 50, No. 11, Nov. 2003, pp. 815-828.

SCIENTICIC AND PROFESSIONAL SOCIETIES (WHICH A MEMBER:	IEEE,IEEE Solid-State Circuits Society
HONORS & AWARDS:	Senior Member, IEE Best Paper Award at the IEEE International Comference on Computer Design, 2004 UTD Erik Jonsson School Outstanding Service Award
INSTITUTIONAL AND PROFESSIONAL SERVICE IN THE LAST 5 YEARS	Associate Chair for Graduate Studies. Served on the following committees: EE Faculty Search committee, EE Dept. graduate committee, EE Dept. TA assignment committee, Computer Engineering graduate committee, Jonsson school Dean's Search committee, Jonsson school Personnel Review committee, Jonsson school Academic Affairs committee, UTD Faculty Senate, UTD Committee on Educational Policy (CEP), UTD Special Faculty Hearing Tribunal, and UTD IP Committee. Reviewed papers for IEEE journals and conferences.
COURSES TAUGHT 2003-2004:	EE 3320 Digital Circuits EE 3120 Digital Circuits Laboratory EE 6325 VLSI Design Individual Studies / Research Senior Design Project
PROFESSIONAL DEVELOPMENT ACTIVITIES I THE LAST FIVE YEARS:	Regularly attend conferences in my research areas Attend local seminars

NAME:	Charles P. Bernardin
ACADEMIC RANK:	Senior Lecturer
DEGREES WITH FIELDS, INSTITUTIONS AND DATES:	Bachelor of Science, Mathematics, 1973, Villanova University. Doctor of Philosophy, Biomedical Engineering, 1979, The Johns Hopkins University.
YEARS IN SERVICE AT UT DALLAS:	3 years
OTHER RELATED EXPERIENCE:	Over 20 years experience in solving engineering and mathematical problems with digital methods which included: ▪ Radar and Digital Systems division of Texas Instruments. ▪ Advanced Technology Lab of RCA. ▪ Image processing consultant for NASA, ▪ Digital signal processing staff specialist for Tandy Corporation ▪ Manager for Wireless RF engineering, Sprint Account ▪ Senior Manager for Broadband Wireless product development at Nortel Networks ▪ Author of two books concerning numerical computation for engineering and scientific applications. ▪ Author of several research papers covering a broad range of technical areas which include image processing, radar, spectral estimation and wireless communications.
CONSULTING, PATENTS, ETC.:	"*Method and Apparatus for a Radio Telephone System Optimized for Cell Boundary Coverage Reliability*," Patent # 5,966,661 October 12, 1999 "Method and Apparatus for Minimizing the Number of Samples Needed to Determine *Cell Radius Coverage Contour Reliability in a Radio Telephone System*," Patent # 5,983,106 November 9, 1999 "*Method and Apparatus for Estimating Cell Radius and Area* *Coverage Reliability in a Radio Telephone System*," Patent # 6,006,095 December 21, 1999 "*Method and Apparatus for Minimizing the Number of Samples Needed to Determine Cell Area Coverage Reliability in a Radio Telephone System*," Patent # 6,041,236 March 21, 2000 "*Method and Apparatus for Selecting Drive Routes for Testing RF Coverage in a Radio Telephone System*," Patent # 6,052,583 April 18, 2000

STATE(S) IN WHICH REGISTERED:	N/A
PRINCIPAL PUBLICATIONS IN THE LAST FIVE YEARS:	"The Post-Processing Resolution Required for Accurate RF Coverage Validation and Prediction," with Kanagalu Manoj, IEEE Trans on Vehicular Tech, vol. 49, No. 5, September 2000, pp. 1516-1521. "Coverage Prediction for Cellular Networks from Limited Signal Strength Measurements," with Kanagalu Manoj, and Lakshman Tamil, 9th IEEE Symposium PIMRC, Boston, Mass., 9/8-11/98, pp. 1147-1151 "Cell Radius Inaccuracy: A New Measure of Coverage Reliability," with Meng Yee and Tom Ellis, IEEE Trans on Vehicular Tech, vol. 47, No. 4, November 1998, pp.1215-1226.
SCIENTIFIC AND PROFESSIONAL SOCIETIES (WHICH A MEMBER:	Senior Member IEEE
HONORS & AWARDS:	
INSTITUTIONAL AND PROFESSIONAL SERVICE IN THE LAST 5 YEARS	1998-1999 Vice Chair of Dallas Chapter of IEEE Communications and Vehicular Technology Society
COURSES TAUGHT 2003-2004:	Fall 2004 TE 3307 Discrete Math for Computing, Fall 2004 EE 3302 Signals and Systems Summer 2004 EE 4361 Intro to Digital Signal Processing Spring 2004 EE 4365 Intro to Wireless Communications Spring 2004 EE 4365 Intro to Wireless Communications Fall 2003 TE 3307 Discrete Math for Computing Fall 2003 EE 4361 Intro to Digital Signal Processing Summer 2003 CS 5333 Discrete Structures Spring 2003 EE 4365-01 Intro to Wireless Communications Spring 2003 EE 4365-02 Intro to Wireless Communications
PROFESSIONAL DEVELOPMENT ACTIVITIES THE LAST FIVE YEARS:	Recent Industrial experience working with many different wireless technologies such as UMTS and GPRS.

NAME:	Dinesh K. Bhatia
ACADEMIC RANK:	Associate Professor
DEGREES WITH FIELDS, INSTITUTIONS AND DATES:	Ph.D. in Computer Science, University of Texas at Dallas, 1990. Thesis:Wafer Scale Integration of Mesh Connected Architectures. (Part of the work was supported by the ACM-SIGDA/IEEE-DATC academic scholarship) M.S. in Computer Science, University of Texas at Dallas, 1987 B.E. in Electrical Engineering, Regional Engineering College, Suratkal, India, 1985. Thesis: Speed Control of Brushless DC Motors
YEARS IN SERVICE AT UT DALLAS:	5 Years
OTHER RELATED EXPERIENCE:	UTD Program Head, Computer Engineering Program, Erik Jonnson Scholl of Engineering and Computer Science, University of Texas at Dallas, January 2004-Present Associate Professor, Department of Electrical Engineering, University of Texas at Dallas, September 2000-present UC Associate Professor, Department of Electrical and Computer Engineering and Computer Science , University of Cincinnati, September 97-present. Director, Design Automation Laboratory, University of Cincinnati, June 91-Present Assistant Professor, Department of Electrical and Computer Engineering and Computer Science, University of Cincinnati, June 91-August 97. SMU Visiting Asistant Professor, Department of Computer Science and Engineering, Southern Methodist University, September 1990-May 1991. UTD Research Assistant, Computer Science Department, University of Texas at Dallas, January 87-August 90.
CONSULTING, PATENTS, ETC.:	N/A
STATE(S) IN WHICH REGISTERED:	N/A
PRINCIPAL PUBLICATIONS IN THE LAST FIVE YEARS:	Shankar Balachandaran and Dinesh Bhatia, “A-priori Wirelength and Interconnect Estimation based on Circuit Characteristics”, IEEE Transactions on Computer Aided Design of Integrated Circuits and Systems (accepted) Manjunath Gangadhar and Dinesh Bhatia, “FPGA based EBCOT Architecture for JPEG 2000”, Journal of Microprocessors and Microsystems (accepted) Shankar Balachandaran, Parivallal Kannan, and Dinesh Bhatia, “On Metrics for Routability Estimation for FPGAs”, IEEE Transactions

on VLSI Systems, April 2004, pp. 381-385.
J. M. Emmert, S. Lodha, and Dinesh Bhatia, “On Using Tabu Search for Design Automation of VLSI Systems, Journal of Heuristics 9(1), pp. 75-90, January 2003, Kluwer Academic Publishers.

Parivallal Kannan and Dinesh Bhatia, “Estimating Pre-Placement FPGA Interconnection Requirements”, 17th International Conference on VLSI Design, IEEE Press, January 2004.

Manjunath Gangadhar and Dinesh Bhatia, “FPGA Based EBCOT Architecture for JPEG 2000”, IEEE International Conference on Field Programmable Technology, Tokyo, Japan, December 2003.

SCIENTICIC AND PROFESSIONAL SOCIETIES OF WHICH A MEMBER:

Institute of Electrical and Electronics (IEEE),
IEEE computer society
IEEE Circuits and Systems Society
Eta-Kappa-NuInstitute of Electrical and Electronics (IEEE),
IEEE computer society
IEEE Circuits and Systems Society
Eta-Kappa-Nu

HONORS & AWARDS:

Associate Editor, IEEE Transactions on Computer,July 1999-Present.
Best MS Thesis Award, ECE Department, 1998-99. Karthik Gajjalapurna, Advisee.
William H. Middendorf Award for Research Excellence, ECECS Department, 1995.
Guest Editor, VLSI Design Journal, special issue on Field-Programmable Gate Arrays, Gordan Breach Scientific Publishing.1996.
Shapiro Visting Scholar , Dartmouth College, spring 1992. (Honorary assignment for research at Dartmouth)

INSTITUTIONAL AND PROFESSIONAL SERVICE IN THE LAST 5 YEARS

Program Head, Computer Engineering, January 2004-
Chair, University Library Committee, 2004-05.
Chair, Faculty Search Committee, Computer Engineering (Search 767), 2004-05.
Member, Executive Committee of Industrial Advisory Board on Reseach, Erik Jonsson School of Engineering and Computer Science, December 2004-
Member, Faculty Search Committee, Electrical Engineering Department, 2004-05.
Chair, Computer Engineering Program Governance Committee, January 2004-
Member, Faculty Search Committee, Computer Engineering Program, 2003-04.
Member, Faculty Search Committee, Electrical Engineering Department, 2003-04.
Chair, Computing Resources Committee, EE Department, September 2002-present.
Chair, Computer Engineering Graduate Program Committee,

January 2001-Present.

Member, Power Outage Committee, Erik Jonsson School of ECS, 2002-2003.
Member, Faculty Senate, The University of Texas at Dallas, 2002-2003.
Chair, Electrical Engineering Faculty Search Committee, 2002-2003.

COURSES TAUGHT 2003-2004:	EE 3320 Digital Circuits, EE 3120 Digital Circuits Laboratory, Design and Analysis of Reconfigurable Systems, CAD Algorithms
PROFESSIONAL DEVELOPMENT ACTIVITIES I THE LAST FIVE YEARS:	Attended various workshops and tutorials at conferences and by industrial tool vendors for integrating technology in classroom.

NAME:	Andrew Blanchard
ACADEMIC RANK:	Professor
DEGREES WITH FIELDS, INSTITUTIONS AND DATES:	Ph.D. Electrical Engineering,1977, Texas A&M University M.S. Electrical Engineering, 1973, Colorado State University B.S. Electrical Engineering, 1972, University of Southwestern Louisiana
YEARS IN SERVICE AT UT DALLAS:	5 years
OTHER RELATED EXPERIENCE:	Vice President Technology, Clean Earth Technologies, LLC, June 2002 – June 2004. Senior Associate Dean, Erik Jonsson School of Engineering and Computer Science, Director of Research, College of Engineering, University of Missouri-Columbia, December 1995-December 2000 Director, Strategic Technology Applications Research Center (STAR Center), Houston Advanced Research
CONSULTING, PATENTS, ETC.:	CET, LLC 2004-present Symtrex, LLC, 2002 Oceanography International, Inc., 1980-1981. Vitronics Inc., 1980 - 1982
STATE(S) IN WHICH REGISTERED:	Texas
PRINCIPAL PUBLICATIONS IN THE LAST FIVE YEARS:	Book Chapter: Progress in Electromagnetics Research, Editor J. A. Kong, Elsevier Press, Polarimetric Remote Sensing Chapter 3, pp 143-231, Fung, Blanchard, Chen, 1990 Mesh Sensor Network Design", *Proceedings of the IGARSS*, Toulouse, France; July 20-25.2003 Blanchard, A. J., Morgan, R., Golden, J, "On the concept of all digital sensor design", *Proceedings of the IGARSS*, Toulouse, France; July 20-25.2003. Blanchard, A. J., Cai, J., Morgan, R., Golden, J., Fumagalli, A., Maloberti, F. "Mega-Mesh Sensor Network Design", *Proceedings of the IGARSS*, Toulouse, France; July 20-25.2003 Blanchard, A. J., Morgan, R., Golden, J, "On the concept of all digital sensor design", *Proceedings of the IGARSS*, Toulouse, France; July 20-25.2003.

Blanchard, A. J., “Advanced Imaging Technology Lecture Series”, National University of Singapore, March 9-April 1, 2000. (**I**nvited Lecturer**)**

SCIENTICIC AND PROFESSIONAL SOCIETIES (WHICH A MEMBER:	IEEE Eta Kappa Nu Geoscience and Remote Sensing Society American Geophysical Union
HONORS & AWARDS:	Fellow, Institute of Electrical and Electronics Engineers (IEEE), 1995-present Elected Member of The Electromagnetics Academy, 1993-present Elected Member, Union of Radio Science Inc. Commission F Invited Professorship, National University of Singapore, March 2000 1996 Recipient of the IEEE GRSS Outstanding Service Award 1994 GRSS Interactive Prize Paper Award, “Demonstration of 3D Microwave Holography,” Byrd, Jersak, Krenek, Blanchard 1985 C. Holmes MacDonald Award, Presented by the National Eta Kappa Nu Association to the Outstanding Electrical Engineering Professor in the United States of America.
INSTITUTIONAL AND PROFESSIONAL SERVICE IN THE LAST 5 YEARS	Senior Associate Dean Project Emmitt Project Manager
COURSES TAUGHT 2003-2004:	EE 4382 Senior Project, fall ‘04 EE 4301 Electromagnetism and Waves, spring ‘05
PROFESSIONAL DEVELOPMENT ACTIVITIES LAST FIVE YEARS:	Science and Technology Conference 2003, Fort Leonard Wood, Missouri, August 19 –21, 2003, Invited Technical Presentation Workshop on Applications of Remote Sensing--Mid America GIS Conference, Missouri, June- 2000 Workshop on Applications of Remote Sensing to the Department of Transportation, NASA Stennis Space Center, February 14-15, 2000

NAME:	William Boyd
ACADEMIC RANK:	Senior Lecturer
DEGREES WITH FIELDS, INSTITUTIONS AND DATES:	Ph.D. Mechanical Engineering Texas A. & M. University, 1969 M.S. Engineering, University of Washington, 1964 B.S. Civil Engineering, Lamar University, 1962
YEARS IN SERVICE AT UT DALLAS:	4 Years
OTHER RELATED EXPERIENCE:	▪ 1997-1999 Raytheon Systems Company ▪ 1969-1997 Texas Instruments Inc. ▪ 1964-1997 National Aeronautics and Space Administration, Johnson Spacecraft Center ▪ 1962-1963 The Boeing Company
CONSULTING, PATENTS, ETC.:	N/A
STATE(S) IN WHICH REGISTERED:	Texas
PRINCIPAL PUBLICATIONS IN THE LAST FIVE YEARS:	N/A
SCIENTICIC AND PROFESSIONAL SOCIETIES WHICH A MEMBER:	Tau Beta Pi
HONORS & AWARDS:	Phi Kappa Phi honor society
INSTITUTIONAL AND PROFESSIONAL SERVICE IN THE LAST 5 YEARS	N/A
COURSES TAUGHT 2003-2004:	Engineering Mechanics 2000-2001 Signals and Systems 2001-2004 Signals and Systems Laboratory 2001 - 2004 Systems and Control 2002-2004
PROFESSIONAL DEVELOPMENT ACTIVITIES LAST FIVE YEARS:	N/A

NAME:	Gerald O. Burnham
ACADEMIC RANK:	Associate Professor
DEGREES WITH FIELDS, INSTITUTIONS AND DATES:	California State University at Los Angeles B.A. Mathematics 1967, California State University at Los Angeles M.S. Mathematics 1968, University of Southern California M.S. Computer Science 1970, University of Southern California Ph.D Electrical Engineering 1973
YEARS IN SERVICE AT UT DALLAS:	9 Years, Appointed Associate. Prof. 9/1/99
OTHER RELATED EXPERIENCE:	Texas Instruments, Senior Member of Technical Staff 1977-1998 Cal Tech Jet Propulsion Laboratory, Technical Group Supervisor 1973-1977 Hughes Aircraft Company, Design Engineer 1966-1973
CONSULTING, PATENTS, ETC.:	Digitally Coded Incremental Stroke Generator, Hughes Aircraft Electronic Navigation Chart, Texas Instruments
STATE(S) IN WHICH REGISTERED:	Texas
PRINCIPAL PUBLICATIONS IN THE LAST FIVE YEARS:	" Increasing Interactivity in Electrical Engineering", Millard, D.L., Burnham,G., IEEE frontiers in Education Conference, Boulder, CO, November 2003. " The First Telecommunications Engineering Program in the United States", Journal of Engineering Education, pp 653-651, October 2001. "Cool" Interactive Media for Electrical Engineering Education", Millard, D.L., Burnham, G.,ASEE Annual Conference, St. Louis, MO. June 2001.
SCIENTICIC AND PROFESSIONAL SOCIETIES WHICH A MEMBER:	Sigma Xi Eta Kappa Nu IEEE ASEE
HONORS & AWARDS:	Howard Hughes Doctoral Fellow, 1970-1973.
INSTITUTIONAL AND PROFESSIONAL SERVICE IN THE LAST 5 YEARS	Electrical Engineering Department Head 2001-2004 Associate Dean, Research 1996-2001 Associate Dean, Accreditation and Outreach 2004-Present

COURSES TAUGHT 2003-2004:	EE 3301, Spring '04 EE 3301, Fall '04
PROFESSIONAL DEVELOPMENT ACTIVITIES I THE LAST FIVE YEARS:	Administative Chairman, Dallas IEEE Section Executive Committee Active funded research programs in telecommunications digital signal processing, array processing and nonlinear signals and systems. Regular participant in IEEE conferences on signal processing. Program chairman, Dallas Section of IEEE Signal Processing Society. Treasurer of Dallas Section of IEEE Circuits and Systems Group.

NAME:	Dale M. Byrne
ACADEMIC RANK:	Associate Professor
DEGREES WITH FIELDS, INSTITUTIONS AND DATES:	BS, Physics, Florida Institute of Technology, 1968 MS, Physics, Florida Institute of Technology, 1970 MS, Optical Sciences, University of Arizona, Optical Sciences Center, 1975 Ph. D., Optical Sciences, University of Arizona, Optical Sciences Center, 1978
YEARS IN SERVICE AT UT DALLAS:	18 years
OTHER RELATED EXPERIENCE:	Taught in physics department at Florida Institute of Technology, 1968 to 1972 Taught short courses in Optics for Texas Instruments (professional development) Taught short courses in Optics for Texas Instruments (foreign engineering professionals)
CONSULTING, PATENTS, ETC.:	Consulted with various companies in the metroplex – TI, Verity Instruments, Optek, New ID
STATE(S) IN WHICH REGISTERED:	N/A
PRINCIPAL PUBLICATIONS IN THE LAST FIVE YEARS:	"Frequency Selective Surfaces with Multiple Apertures within a Periodic Cell", Jeffrey A. Reed and D. M. Byrne, *Journal of the Optical Society of America, A,* Vol. 15, No. 3, March 1998. "Analytical Far-field Divergence Angle of a Truncated Gaussian Beam", Emmanuel M. Drege, Neal G. Skinner, and Dale M. Byrne, *Applied Optics*, Vol. 39, No. 27, 20 September 2000. "Lithographic Process Monitoring Using Diffraction Measurements", Emmanuel M. Drege and Dale M. Byrne, in *Metrology, Inspection, and Process Control for Microlithography XIV,* Neal T. Sullivan, ed., Proc. of SPIE 3998, pp. 147-157, 2000. "Linearized Inversion of Scatterometric Data to obtain Surface Profile Information", Emmanuel M. Drege, Jeffrey A. Reed, and Dale M. Byrne, *Optical Engineering*, Vol. 41, No. 1, pp.225-236, Jan. 2002. "Profile Parameter Accuracy Determined from Scatterometric

Measurements", Rayan M. Al Assaad, Emmanuel M. Drege, and Dale M. Byrne, *Design, Process Integration, and Characterization for Microelectronics,* Alexander Starikov, and Kenneth W. Tobin, eds., Proc. of SPIE 4692A, pp.17-28, 2002.

SCIENTIFIC AND PROFESSIONAL SOCIETIES OF WHICH A MEMBER:	Optical Society of America IEEE SPIE
HONORS & AWARDS:	N/A
INSTITUTIONAL AND PROFESSIONAL SERVICE IN THE LAST 5 YEARS	EE undergraduate curriculum committee Health professions advisory committee EE Honors courses committee
COURSES TAUGHT 2003-2004:	EE 3300 Advanced Engineering Mathematics
PROFESSIONAL DEVELOPMENT ACTIVITIES THE LAST FIVE YEARS:	Regularly attend annual meeting of Optical Society of America (annually Attend SPIE Micro-lithographic Conference, (alternate years) Regularly serve as reviewer for journals (average 3 reviews per year) • Applied Optics • Optics Letters • Journal of the Optical Society of America: A • Journal of Optics • Optical Engineering

NAME:	Cyrus D. Cantrell
ACADEMIC RANK:	Professor
DEGREES WITH FIELDS, INSTITUTIONS AND DATES:	Bachelor of Arts (cum laude), Physics, 1962, Harvard University. Master of Arts, Physics, 1964, Princeton University. Doctor of Philosophy, Physics, 1968, Princeton University.
YEARS IN SERVICE AT UT DALLAS:	25 years
RELATED EXPERIENCE:	Swarthmore College, Assistant Professor to Associate Professor 1967-1973 Los Alamos, Staff Member, National Laboratory, 1973–1979 University of Paris, France Visiting Professor, 1980
CONSULTING, PATENTS, ETC.:	Recent Consulting: Alcatel Americas, Consultant, 2001 Winstead & Minick, Sechrest ,Expert witness,2005 US Patents: 4,061,921, Infrared laser system, 1982 Re. 30,898 4,690,742 Method & apparatus for laser isotope separation, 1987 4,879,532 Method & apparatus for phase conjugate optical modulation,1989
STATE(S) IN WHICH REGISTERED:	Texas
PRINCIPAL PUBLICATIONS THE LAST FIVE YEARS:	“Multiple-vibrational –mode model for fiberoptic Raman gain spectrum and response function”, *Journal of the Optical Society f America* B 19, 2886-2892 (2002) [with Dawn Hollenceck]. “Continuous and discrete wavelet transform analysis of nonlinear pulse propagation in single mode fibers”, *Optical Fiber Technology: Materials, Devices and Systems* 7, 65-83 (2001) [with T. Landoisi and L.S. Tamil]. “ The first Telecommunications Engineering Program in the United Sates”, *Journal of Engineering Education*, October 2001, 653-657 [with Gerald O. Burnham, Andras Farago, Andrea Fumagalli, Kamran Kiasaleh, William P. Osborne, and Ravi Prakash].
SCIENTIFIC AND PROFESSIONAL SOCIETIES OF WHICH A MEMBER:	Institute of Electrical and Electronics Engineers Optical Society of America American Physical Society
HONORS & AWARDS:	Third Millennium Medal , Institute of Electrical and Electronics

	Engineers, 2000 Fellow , Institute of Electrical and Electronics Engineers, 1985 Fellow, American Physical Society, 1982 Fellow, Optical Society of America,1978
COURSES TAUGHT 2003-2004:	EE 4301, Electromagnetic Engineering I EE 6345, Engineering of Packet-Switched Networks
PROFESSIONAL DEVELOPMENT ACTIVITIES LAST FIVE YEARS:	Seminars in the Dallas Chapter of the IEEE Lasers and Electro-Optics Society: 2 Seminars in the Department of Electrical Engineering: 7 Distinguished Lectures in the School of Engineering and Computer Science: 21 University-wide Colloquia:1

NAME:	Andrew Cilia
ACADEMIC RANK:	Senior Lecturer
DEGREES WITH FIELDS, INSTITUTIONS AND DATES:	BSEE, Electrical Engineering, Auburn University, AL Aug 1988 MSEE , Electrical Engineering, University of Texas at Arlington. Dec 1996
YEARS IN SERVICE AT UT DALLAS:	4 years
OTHER RELATED EXPERIENCE:	N/A
CONSULTING, PATENTS, ETC.:	• Over 20 LMDS related patents disclosed in USA, Europe and Asia, among them: • Local Multipoint Distribution Service Base Station Architecture (US pat.6,501,768). • Common Control Channel Dynamic Frequency Assignment Method and Protocol (US pat. 6,404,751). • Allocating and De-allocating transmission resources in a Local Multipoint Distribution Services System (US pat 6,226,280
STATE(S) IN WHICH REGISTERED:	
PRINCIPAL PUBLICATIONS IN THE LAST FIVE YEARS:	
SCIENTIFIC AND PROFESSIONAL SOCIETIES (WHICH A MEMBER:	Member of IEEE and Eta Kappa Nu Honor Society
HONORS & AWARDS:	
INSTITUTIONAL AND PROFESSIONAL SERVICE IN THE LAST 5 YEARS	
COURSES TAUGHT 2003-2004:	EE-4380 Microprocessor Senior Design Project I EE-4381 Mobile Comm. System Design Project I EE-4387 Indiv Supervised Senior Design Project I EE-4384 Mobile Comm. System Design Project II EE-4381 Mobile Comm. System Design Project I EE-4382 Indiv. Supervised Senior Design Project I

	EE-4387 Mobile Comm. System Design Project II EE-8V40 Individual Instruction in EE EE-3102 Signals and Systems Lab EE-4380 Microprocessor Senior Design Project I EE-4381 Mobile Comm. System Design Project I EE-4387 Mobile Comm. System Design Project II
PROFESSIONAL DEVELOPMENT ACTIVITIES LAST FIVE YEARS:	N/A

NAME:	Nathan Dodge
ACADEMIC RANK:	Senior Lecturer
DEGREES WITH FIELDS, INSTITUTIONS AND DATES:	BSEE, 1963, Southern Methodist University, MSEE, 1966 and Ph.D. EE, 1969, The University of Texas at Austin.
YEARS IN SERVICE AT UT DALLAS:	7 years
OTHER RELATED EXPERIENCE:	1998 – Present: University of Texas at Dallas. Joined UTD as Senior Instructor III. Major responsibilities have been teaching and assisting with undergraduate advising 1973 – 1998: Texas Instruments, Dallas, TX: Director, University Research. 1995-1998 Responsible for strategy development related to university research investments at the corporate level. 1983-1995 : Various Management Assignments at TI 1969-1973 – General Dynamic Fort Worth, TX: Project Aerosystems Engineer,
CONSULTING, PATENTS, ETC.:	N/A
STATE(S) IN WHICH REGISTERED:	Texas
PRINCIPAL PUBLICATIONS IN THE LAST FIVE YEARS:	N/A
SCIENTIFIC AND PROFESSIONAL SOCIETIES OF WHICH A MEMBER:	IEEE
HONORS & AWARDS:	Won teaching excellence award for electrical engineering 2004-2005
INSTITUTIONAL AND PROFESSIONAL SERVICE IN THE LAST 5 YEARS	Serves on a number of school committees.
COURSES TAUGHT 2003-2004:	EE 2310 Digital Fundamentals EE 2110 Digital Fundamentals Lab EE 1102 Introduction to Experimental Techniques Lab

PROFESSIONAL DEVELOPMENT ACTIVITIES I THE LAST FIVE YEARS:	Activities mainly limited to a Xilinx class/lab in Palo Alto in 1992 and seminars on the UTD campus. Typically 15-20 hour-long seminars per year.

NAME:	Edward J. Esposito
ACADEMIC RANK:	Assistant Dean for Industrial Relations Senior Lecturer
DEGREES WITH FIELDS, INSTITUTIONS AND DATES:	Bachelor of Science, Physics, 1971, Polytechnic University, Brooklyn, NY Master of Science, Physics, 1971, Polytechnic University , Brooklyn, NY Doctor of Philosophy, Applied Physics, 1979, Harvard University Cambridge, MA
YEARS IN SERVICE AT UT DALLAS:	3 years
OTHER RELATED EXPERIENCE:	Alcatel USA (Richardson/Plano, TX): External Affairs Manager, Research & Innovation Center 1998-2002 Texas Instruments (Dallas, TX): Manager, Ph.D. Recruitment & University Pgms., Central Research Labs. 1993-98 Research Scientist & Program Manager, Sensors & Infrared Laboratory 1980-1993 CMOS Process Development Engineer, DMOS-II Wafer Fab 1979-1980
CONSULTING, PATENTS, ETC.:	Occasional technical consultant in legal cases
STATE(S) IN WHICH REGISTERED:	N/A
PRINCIPAL PUBLICATIONS IN THE LAST FIVE YEARS:	N/A
SCIENTIFIC AND PROFESSIONAL SOCIETIES OF WHICH A MEMBER:	American Physical Society/American Institute of Physics
HONORS & AWARDS:	Dennard Visiting Scholar, St. Marks' School of Texas, , 1998
INSTITUTIONAL AND PROFESSIONAL SERVICE IN THE LAST 5 YEARS	Assistant Dean for Industrial Relations Facilitator/coordinator of Jonsson School Industrial Advisory Board Executive Committee (IAB ExCom) Principal champion, liaison and administrative contact for current and future industrial partnerships Organizer/chairman of ACE 2005 (Jonsson School research/education forum);

Section chair of ACE 2004
Member of NS&ERB planning committee Jan.-Mar. 2004
Created numerous materials for the ECS and ACE websites, and other PR materials.

Compiled/published faculty research abstracts (book and CD-ROM format) for distribution to industry partners.
Faculty advisor to UTD's AUV (Autonomous Underwater Vehicle) competition team.

COURSES TAUGHT 2003-2004:	EE 2300 Applied Linear Algebra, Fall 2004 EE 2300 Applied Linear Algebra, Spring 2004 EE 2300 Applied Linear Algebra, Fall 2003 EE 2300 Applied Linear Algebra, Summer 2003 EE 2300 Applied Linear Algebra, Spring 2003 EE 3300 Advanced Engineering Math, Spring 2003
PROFESSIONAL DEVELOPMENT ACTIVITIES THE LAST FIVE YEARS:	AIP (American Institute of Physics): Advisory Committee on Education and Employment, Career Network Divis**ion** Alliance GigaPoP (North Texas Internet 2 consortium), Advisory Council member and Research Steering Committee co-chair. Center for Advanced Computing and Communication (NCSU/Duke Univ.), Industrial Advisory Board Embedded Software Center (Univ. of Texas at Dallas): Governing Board (acting) AAPT (American Association of Physics Teachers) national and regional panels on science education and industrial careers

NAME:	John Foneska
ACADEMIC RANK:	Professor
DEGREES WITH FIELDS, INSTITUTIONS AND DATES:	B.Sc. (Hons.), Electronics and Telecommunications Engineering, University of Moratuwa, 1980 M. Eng.., Electrical Engineering, Memorial University of Newfoundland, Canada, 1985 Ph.D., Electrical Engineering, Arizona State University, 1988
YEARS IN SERVICE AT UT DALLAS:	16 years
OTHER RELATED EXPERIENCE:	N/A
CONSULTING, PATENTS, ETC.:	Consulting: Intelligent Automation, Inc. (IAI), Project Title: High performance, low complexity, and bandwidth efficient receiver, Duration: 7/1/04 – 12/31/04 Patent pending – A Multi-Interval Line Coding Technique for High Speed Transmissions; SRC Patent ID: P0477; Inventors: John Fonseka and Jin Liu, Filed December 2004
STATE(S) IN WHICH REGISTERED:	N/A
PRINCIPAL PUBLICATIONS IN THE LAST FIVE YEARS:	Y. Yin, J.P. Fonseka and I. Korn, "Sensitivity to timing errors in EGC and MRC combining techniques", IEEE Transactions on Communications, pp. 530-534, April 2003 C.-C. Teng, J.P. Fonseka and I. Korn, "Noncoherent sequence detection of trellis coded CPFSK with MRC diversity over fading channels", IEE Proceedings-Communications, pp. 92-98, April 2002 J.P. Fonseka, Y. Yin and I. Korn, "Sensitivity to fading estimates in maximal ratio combining", IEE Proceedings-Communications, pp. 269-274, August 2003 I. Korn and J.P. Fonseka, "Optimal binary communication with nonequal probabilities", IEEE Transactions on Communications, pp. 1435-1438, Sept. 2003

SCIENTIFIC AND PROFESSIONAL SOCIETIES (WHICH A MEMBER:	N/A
HONORS & AWARDS:	"Excellence in Teaching" in Electrical Engineering, 2000-2001 academic year
INSTITUTIONAL AND PROFESSIONAL SERVICE IN THE LAST 5 YEARS	
COURSES TAUGHT 2003-2004:	3300 (Advanced Engineering Mathematics) 3341 (Probability and Statistics) 3350 (Communication Systems) 3150 (Communications Systems laboratory) 4360 (Digital Communications) 6352 (Digital Communications) 6344 (Coding Theory I)
PROFESSIONAL DEVELOPMENT ACTIVITIES THE LAST FIVE YEARS:	Committee on Qualifications Chair of Electrical Engineering Graduate Committee Electrical Engineering Department Chair Search Committee Electrical Engineering Faculty Search Committee

NAME:	William R. Frensley
ACADEMIC RANK:	Professor
DEGREES WITH FIELDS, INSTITUTIONS AND DATES:	Ph.D., Physics, University of Colorado, 1976. B.S., Physics, California Institute of Technology, 1973.
YEARS IN SERVICE AT UT DALLAS:	15 years
OTHER RELATED EXPERIENCE:	Texas Instruments, Inc. Senior Member, Technical Staff 1986-1990 Member, Technical Staff 1977-1986 University of California at Postdoctoral Researcher 1976-1977 Santa Barbara
CONSULTING, PATENTS, ETC.:	U. S. Patent 6,359,520, G. A. Frazier and W. R. Frensley, "Optically Powered Resonant Tunneling Device," issued Mar. 19, 2002. U. S. Patent 5,059,545, W. R. Frensley and M. A. Reed, "Three Terminal Tunneling Device and Method," issued Oct. 22, 1991. U. S. Patent 4,959,696, W. R. Frensley and M. A. Reed, "Three Terminal Tunneling Device and Method," issued Sept. 25, 1990. U. S. Patent 4,866,488, W. R. Frensley, "Ballistic Transport Filter and Device," issued Sept. 12, 1989. U. S. Patent 4,803,537, A. J. Lewis and W. R. Frensley, "Infrared Detector System Based Upon Group III-V Epitaxial Material," issued Feb. 7, 1989 U. S. Patent 4,705,361, G. A. Frazier, W. R. Frensley and M. A. Reed, "Spatial Light Modulator," issued Nov. 10, 1987. U. S. Patent 4,539,528, B. Bayraktaroglu, B. Kim and W. R. Frensley, "Two-Port Amplifier," issued Sept. 3, 1985.
STATE(S) IN WHICH REGISTERED:	N/A
PRINCIPAL PUBLICATIONS IN THE LAST FIVE YEARS:	• Rivas, R. Lake, W. R. Frensley, G. Klimeck, P. E. Thompson, K. D. Hobart, S. L. Rommel, and P. R. Berger, "Full Band Modeling of the Excess Current in a Delta-Doped Silicon Tunnel Diode," *J. Appl. Phys*., vol. 94, pp. 5005-13 (2003). • K. V. Loiko, I. V. Peidous, T. E. Harrington, and W. R.

Frensley, "Stress-induced redistribution of point defects in silicon device structures," Proc. of the 9th Internat. Conf. on Gettering and Defect Engineering in Semiconductor Technology, *Solid*

- *State Phenomena*, vol. 82--84, pp. 225-230 (2002).

- C. Rivas, R. Lake, G. Klimeck, W. R. Frensley, M. V. Fischetti, P. E. Thompson, S. L. Rommel, and P. R. Berger, "Full-band simulation of indirect phonon assisted tunneling in a silicon tunnel diode with delta-doped contacts," *Appl. Phys. Lett.*, vol. 78, pp. 814-6 (2001).

- K V. Loiko, G. Nallapati, K. M. Jarreau, S. S. Ekbote, R. A. Hensley, D. Simpson, T. E. Harrington, W. R. Frensley, and I. V. Peidous, "The Impact of Point Defects on Stress-Induced Dislocation Generation in Silicon," Proceedings of the Materials Research Society, vol. 610, pp. B6.13.1-6 (2001).

- M. Kao, E. A. Beam III, M. Muir, P. Saunier, H. Tserng, and W. R. Frensley, "High Performance Metamorphic HEMTs on 100-mm GaAs Substrate," 2000 International Conference on Gallium Arsenide Manufacturing Technology, Washington D.C., pp. 225-227, May 1-4, 2000.

- E. S. Daniel, X. Cartoixà, W. R. Frensley, D. Z.-Y. Ting and T. C. McGill, "Coupled Drift-Diffusion/Quantum Transmitting Boundary Method Simulations of Thin Oxide Devices with Specific Application to a Silicon Based Tunnel Switch Diode," *IEEE Trans. Electron Devices*, vol. 47, pp. 1052-60 (2000)

SCIENTIFIC AND PROFESSIONAL SOCIETIES (WHICH A MEMBER:	IEEE, Fellow American Physical Society, Member Institutional and Professional Service in the Last Five Years Chairman, Dallas Section of the IEEE Electron Devices Society, 1996-7
HONORS & AWARDS:	N/A
INSTITUTIONAL AND PROFESSIONAL SERVICE IN THE LAST 5 YEARS	N/A
COURSES TAUGHT 2003-2004:	EE 4330 Integrated Circuit Technology EE 4368 Radio Frequency Circuit design EE 6319 Quantum Physical Electronics
PROFESSIONAL DEVELOPMENT ACTIVITIES I THE LAST FIVE YEARS:	

NAME:	Andrea Fumagalli
ACADEMIC RANK:	Associate Professor
DEGREES WITH FIELDS, INSTITUTIONS AND DATES:	Ph.D., Electrical Engineering, Politecnico di Torino, 1992 Laurea, Electrical Engineering, Politecnico di Torino,1987
YEARS IN SERVICE AT UT DALLAS:	7 years
OTHER RELATED EXPERIENCE:	Assistant Professor , Politecnico di Torino, 1996-1997 Assistant Professor, Politecnico di Torino , 1992-1995
CONSULTING, PATENTS, ETC.:	*Boston Communications Networks Inc*. software tools for optimal design of telecommunications network, 1998-1999. *Tunnel of Mont Blanc*, fiber based communications system in support of intergrated data, voice and video transmissions, 1993-1995 Sandretto, communication protocol for flexible manufacturing system in accordance to the European standard EUROMAP, 1988-1989. CSELT, coummunication protocol for ISDN environment developed under ESPRIT Project 169 (LION), 1987-1988. *A. Fugmagalli, S. Darisala, P.Kothandataman,M.Tacca, L. Valcarenghi, M. Ali,D. Elie-Dit-Cosaque,* Method and Apparatus for Dynamic Provisioning of Reliable Connections in the Presence of Multiple Failures, Full Application filed with the U.S. Patent Office, Fall 2003, Full Application filed with U.S. Patent Office, February 2002.
STATE(S) IN WHICH REGISTERED:	N/A
PRINCIPAL PUBLICATIONS IN THE LAST FIVE YEARS:	*A.Fumagali*, M. Tacca, Differtiated Reliability (Dir) in Wavelength Division Multiplexing Rings, to appear in *ACM/IEE Transaction on Networking.* I. Cerutti, A. Fumagalli,Traffic Grooming in Static Wavelength Division Multiplexing Networks, IEEE Communications Magazine, vol.43, no. 1,pp.101-107, January 2005. P. Monti, M. Tacca, A. Fumagalli
SCIENTICIC AND PROFESSIONAL SOCIETIES OF WHICH A MEMBER:	Member IEEE, 1999-present IFIP Working Group 6.10 on Optical Networks, 2004- present

HONORS & AWARDS:	Best Teaching Award, Electrical Engineering, UTD, 2002 Best Thesis Award to Ph.D. Advisee Isabell Cerutti, 2002 On a Distinguished Lecturer Tour for IEEE ComSoc, 2000 Best Paper Award-I. Chlamtac, A. Fumaglli, J.Carruthers, G. Wedzinga, "An Optimal Design Algorithm for Photonic Slot Routing Networks Migrating to Optical Packet Switching," in *Proc. SPIE vol.3843* Boston, MA, September 1999.
INSTITUTIONAL AND PROFESSIONAL SERVICE IN THE LAST 5 YEARS	Steering Committee of the Center of Excellence for Photonic Networks and Technologies of Scuola Superiore Sant ' Anna,Pisa Italy, 2002-2004. Technical Activities Chair, IEEE Technical Committee on High-speed Networking, 2001-present Chair of the TA Committee for EE, TE, and CE Programs, UTD, 2000-present Intellectual Property Committee,UTD, 1999-present. Editorial Board Member of ACM/ IEEE Transaction on Networking,2002-Present Editorial Board Member of Elsevier Optical Swicthing and Networking (OSN),2004-present Editorial Board Member of Elsevier Computer Networks,2001-present
COURSES TAUGHT 2003-2004:	EE 6340-OT1 Intro. To Telecom. Networks, Summer 2004 EE 3302-501 Signals and Systems , Spring 2004. EE 6340-OT1 Introduction to Telecommunication Networks,Spring 2004 EE 4360-501 Digital Communications, Fall 2003. EE 6340-OT1- Intro. To Telecom. Networks, Fall 2003.
PROFESSIONAL DEVELOPMENT ACTIVITIES LAST FIVE YEARS:	Intellectual Property Committee, UTD, 1999-Present TE Program Governing Committee,UTD, 01/01/2003-present Established the "Telecommunications Applied Research in Gigabit and Emerging Technologies" Lab. At UTD, 2003 Intieated and contributed to the cooperation MoU between UTD and Scuola Superiore di Perfezinamento Sant'Anna di Pisa, Italy, in July 2001. Developed the Telecampus course"EE 6340 Intro. To Telecom. Networks"' UTD,2000. Developed the core course for the EE Graduate Program; " EE 7340 Optical Network Architecture and Protocols", UTD, 1999. Faculty Committee for the definition of the core courses of TE Master's Program, UTD,1997.

NAME:	Bruce Gnade
ACADEMIC RANK:	Professor of Electrical Engineering and Chemistry
DEGREES WITH FIELDS, INSTITUTIONS AND DATES:	Ph.D.Nuclear Chemistry Georgia Institute of Technology,1982 B.A.Chemistry,St. Louis University, 1976
YEARS IN SERVICE AT UT DALLAS:	2 Years
OTHER RELATED EXPERIENCE:	N/A
CONSULTING, PATENTS, ETC.:	R.M. Wallace and **B.E. Gnade**, "Gate Structure and Method", U.S. Pat. # 6,784,507 B2 (2004). D.M. Smith, P. Johnston, W.C. Ackerman, R.A. Stoltz, A. Maskara, T. Ramos, S.P. Jeng, **B.E. Gnade**, "Low Volatility Solvent-Based Method for Forming Thin-Film Nanoporous Aerogels on Semiconductor Substrates", U.S. Pat. # 6,645,878 B2 (2003). S.R. Summerfelt, H.R. Beratan, and **B.E. Gnade**, "Lightly donor doped electrodes for high-dielectric-constant materials", U.S. Pat. #6,593,638 (2003). D.M. Smith, G.P. Johnson, W.C. Ackerman, S.-P. Jeng, **B.E. Gnade**, "Aerogel Thin Film Formation from Multi-Solvent Systems", U.S. Pat. # 6,437,007 B1 (2002). D.M. Smith, G.P. Johnson, W.C. Ackerman, S.-P. Jeng, **B.E. Gnade**, "Aerogel Thin Film Formation from Multi-Solvent Systems", U.S. Pat. # 6,437,007 B1 (2002). W.P. Kirk, J.X. Zhou, **B.E. Gnade**, C.-C. Cho, "Method of Forming Lattice Matched Layer over a Surface of a Silicon Substrate", U.S. Pat. # 6,419,742 B1 (2002).
STATE(S) IN WHICH REGISTERED:	N/A
SCIENTIFIC AND PROFESSIONAL SOCIETIES OF WHICH A MEMBER:	Materials Research Society, American Physical Society, Society for Information Displays IEEE
HONORS & AWARDS:	Sigma Xi award for outstanding doctoral thesis, Ga. Tech
INSTITUTIONAL AND PROFESSIONAL SERVICE IN THE LAST 5 YEARS	Co-Chair SPIE Conference on Liquid Crystal Materials, Devices, and Flat Panel Displays, Jan. 2000 Technical Committee, International Display Research Conference, Sept. 2000, 2003 United States Civilian Research and Development Foundation, Proposal review panel, 2000-2004 Guest Editor, Proceedings of the IEEE **90,** Special Issue on Flat Panel Display Technology, April 2002. Symposium Organizer, "Flexible Electronics: Materials and Device Technology", Spring MRS 2003-2004. Session Organizer, "Front-End Materials and Processes for Scaled Silicon CMOS", Spring APS 2003. National Academies Board of Assessment of NIST Programs – EEEL (2004-2005) Associate Editor, IEEE/OSA Journal of Display Technology (2004-present).
COURSES TAUGHT 2003-2004:	Fall 2004 EE 4304 Computer Architecture Fall 2004 EE/CE 7304 Advanced Computer Architecture
PROFESSIONAL DEVELOPMENT ACTIVITIES IN THE LAST FIVE YEARS:	Attended several scientific conferences

NAME:	Matthew J. Goeckner
ACADEMIC RANK:	Associate Professor
DEGREES WITH FIELDS, INSTITUTIONS AND DATES:	B. S., Mathematics, Southern Illinois University, 1983 B. S., Physics, Southern Illinois University, Carbondale,1983 M. S., Physics , UCLA , 1984 Ph. D., Physics,University of Iowa, 1990
YEARS IN SERVICE AT UT DALLAS:	7 years
OTHER RELATED EXPERIENCE:	Associate Professor in Electrical Engineering, University of Texas at Dallas, Sept. 1999 - Current Research Scientist, Varian Research Center, 1998-99 Research Physicist, Princeton University, Plasma Physics Lab, 1994-97 Research Associate, University of Wisconsin, Plasma ERC, 1991-94 Research Associate, University of Iowa, Physics Department, 1991
CONSULTING, PATENTS, ETC.:	N/A
STATE(S) IN WHICH REGISTERED:	N/A
PRINCIPAL PUBLICATIONS IN THE LAST FIVE YEARS:	M.J. Goeckner and R.A. Breun "Using Fourier transform infrared absorption spectrometry to probe the injected neutral gas in a plasma having a high ionization fraction," *Journal of Vacuum Science and Technology A* **11**, 689-693 (1993) M. J. Goeckner, J.M. Marquis, B.J. Markham, A.K. Jindal, E.A. Joseph, B.-S. Zhou, A modified Gaseous Electronics Conference Reference Cell for the study of plasma-surface-gas interactions, *Review of Scientific Instrumentation* **75**, 884-891 (2004) E. A. Joseph, B. Zhou, S. P. Sant, L. J. Overzet, and M. J. Goeckner, Investigation and modeling of plasma-wall interactions in inductively coupled fluorocarbon plasmas, *Journal of Vacuum Science and Technology A* **22**, 689-697 (2004). Baosuo Zhou, E. A. Joseph, L. J. Overzet, and M. J. Goeckner,

Spectroscopic study of gas and surface phase chemistries of fluorocarbon plasma in an inductively coupled modified gaseous electronics conference (mGEC) reactor, *Journal of Vacuum Science and Technology A*, Accepted with revisions

B.S. Zhou, E. A. Joseph, S. P. Sant, L. J. Overzet, and M. J. Goeckner Effect of surface temperature on plasma-surface interactions in an inductively coupled modified gaseous electronics conference (mGEC) reactor, *Journal of Vacuum Science and Technology A*, Accepted with revisions (2004).

M.J. Goeckner, J. Goree and T.E. Sheridan, "Monte Carlo simulation of ions in a magnetron plasma," *IEEE Transactions on Plasma Science* **19**, 301-308 (1991).

M.J. Goeckner and N.A. Goeckner "Fourier-Transform Infrared Measurements of CHF_3/O_2 discharges in an electron cyclotron resonance reactor," *Journal of Vacuum Science and Technology A*, 2586-2592 (1999).

SCIENTICIC AND PROFESSIONAL SOCIETIES (WHICH A MEMBER:	Senior member Institute of Electrical and Electronic Engineers. American Vacuum Society
HONORS & AWARDS:	
INSTITUTIONAL AND PROFESSIONAL SERVICE IN THE LAST 5 YEARS	Class/lab development (Plasma Tech, Plasma Science, Graduate and Undergraduate) American Vacuum Society. (Plasma Science & Technology Division Executive Committee 98-00) (Manufacturing Science and Technology Group Program Committee 00) (Thin Films Division Program Committee 96) Research Experience for Undergraduates Program – Student Supervisor (Through Plasma ERC, University of Wisconsin 92-94) University of Texas at Dallas 03 Historically Black Universities and Colleges Program - Lab Teacher (Princeton 96-97)
COURSES TAUGHT 2003-2004:	N/A

PROFESSIONAL
DEVELOPMENT ACTIVITIES I
THE LAST FIVE YEARS:

NAME:	C. Robert Helms
ACADEMIC RANK:	Full Professor
DEGREES WITH FIELDS, INSTITUTIONS AND DATES:	Bachelor of Science, Engineering Physics, 1968, Southern University of California Berkley Master of Science, Electrical Engineering, 1970, Stanford University. Doctor of Philosophy, Electrical Engineering, Minor in Material Science, 1973, Stanford University
YEARS IN SERVICE AT UT DALLAS:	2 years
OTHER RELATED EXPERIENCE:	International SEMATECH, Austin, Texas., President and CEO 2001-2004 Texas Instruments, Dallas, Texas, Corp. Vice President 1999-2001 Texas Instruments, Dallas, Texas, Director, Component & 1999-2001 Material Research Center, Stanford University, Stanford, California Research Professor,1980-2000 Stanford University,Stanford, California, Sr. Research Associate, 1976-1980 Exxon Research & Engineering ,Stanford, California Research Physicist,1973-1980
CONSULTING, PATENTS, ETC.:	N/A
STATE(S) IN WHICH REGISTERED:	N/A
PRINCIPAL PUBLICATIONS IN THE LAST FIVE YEARS:	
SCIENTICIC AND PROFESSIONAL SOCIETIES OF WHICH A MEMBER:	Phi Beta Kappa Tau Beta Pi IEEE
HONORS & AWARDS:	N/A

INSTITUTIONAL AND PROFESSIONAL SERVICE IN THE LAST 5 YEARS	Dean, Erik Jonsson School of Engineering and Computer Science
COURSES TAUGHT 2003-2004:	N/A
PROFESSIONAL DEVELOPMENT ACTIVITIES LAST FIVE YEARS:	N/A

NAME:	Louis R. Hunt
ACADEMIC RANK:	Professor
DEGREES WITH FIELDS, INSTITUTIONS AND DATES:	B.S., Mathematics, Baylor University, 1964 Ph.D., Mathematics, Rice University, 1970
YEARS IN SERVICE AT UT DALLAS:	21 years
OTHER RELATED EXPERIENCE:	Faculty, Texas Tech University, NASA Ames Research Center
CONSULTING, PATENTS, ETC.:	System, Method and Apparatus for Controlling Converters Using Input-Output Linearization
STATE(S) IN WHICH REGISTERED:	Texas
PRINCIPAL PUBLICATIONS IN THE LAST FIVE YEARS:	Stable inversion for nonlinear discrete time systems, IEEE Transaction on Automatic Control, 45 (2000), 1216-1220, with G. Zeng. Parameter variations, relative degree, and stable inversion, Automatica, 37 (2001), 871-880, with V. Ramakrishma and G. Meyer Frequency domain computations for nonlinear steady-state solutions, IEEE Transaction: on Signal Processing, 49 (2001), 1728-1733, with N. Telang Approximations of trajectories of non-linear systems by iterates of systems with linear state dynamics, Systems and Control Letters, 51 (2004) , 377-381, with E. Sally Ward, and Raimund J. Ober Extended lattice filters enabled by four-directional couples, Applied Optics, 43 (2004), 6124-6133, with D.L. MacFarlane, J.Tong, C. Fafadia, V.Govindan, I.Panahi
SCIENTICIC AND PROFESSIONAL SOCIETIES OF WHICH A MEMBER:	IEEE (Fellow) Control Systems, Circuits and Systems, Signal Processing, Power Electronics Societies
HONORS & AWARDS:	IEEE Fellow Chancellor’s Council Outstanding Teaching Award 2002-2003 Erik Jonsson School Outstanding Service Award 2003 Electrical Engineering Outstanding Teaching Award 2003-2004

INSTITUTIONAL AND PROFESSIONAL SERVICE IN THE LAST 5 YEARS	Director of the Center for Systems, Communications, and Signal Processing Committee on Qualifications Chancellor's Outstanding Teaching Award Committee Chair of Electrical Engineering Graduate Committee Electrical Engineering Personnel Review Committee Erik Jonsson School Research Advisory Committee Erik Jonsson School Peer Review Committee Erik Jonsson School Course Evaluation Committee Erik Jonsson School Research Advisory Committee Erik Jonsson School Industrial Advisory Board Executive Committee Erik Jonsson School Academic Advisory Committee Erik Jonsson School Teaching Effectiveness
COURSES TAUGHT 2003-2004:	EE 3330 Advanced Engineering Mathematics I EE 4300 Advanced Engineering Mathematics II EE 4310 System and Control EE 6331 Linear System and Signals EE 6336 Nonlinear Control Systems EE 6360 Digital Signal Processing I
PROFESSIONAL DEVELOPMENT ACTIVITIES LAST FIVE YEARS:	Regularly attend Colloquia and Distinguished Lecture Series Associate Editor of Systems and Control Letters Reviewers for many professional journals

NAME:	Muhammad A. Kalam
ACADEMIC RANK:	Senior Lecturer
DEGREES WITH FIELDS, INSTITUTIONS AND DATES:	Ph.D., Engineering Mechanics (Computer Aided Analysis), Univ. of Kentucky, 1979 (GPA 3.92). M.S., Aircraft Structures, University of Wyoming, 1971. B.S., Aerospace Engineering (minor- Aviation Electronics), University of Karachi, 1969.
YEARS IN SERVICE AT UT DALLAS:	3 Years
OTHER RELATED EXPERIENCE:	2 years of Teaching at Lexington Technical Institute, Lexington, Kentucky. 3 years at Westinghouse Nuclear Power Division – computer aided structural analysis. 2 years at Microsoft - providing testing & development support for Windows NT as a Networking Operating System 3 years at Texas Instruments – Testing and managing changes in enterprise network's LAN, WAN and SNA. 3 years at WorldCom and its subsidiary Accelerated Networks – Testing ATM, Frame Relay switches and Integrated Access Devic
CONSULTING, PATENTS, ETC.:	9 years as networking consultant to medium to large size corporations including HL&P and Texas Instruments
STATE(S) IN WHICH REGISTERED:	N/A
PRINCIPAL PUBLICATIONS IN THE LAST FIVE YEARS:	N/A
SCIENTIFIC AND PROFESSIONAL SOCIETIES (WHICH A MEMBER:	Member, IEEE
HONORS & AWARDS:	Received BS with Honors
INSTITUTIONAL AND PROFESSIONAL SERVICE IN THE LAST 5 YEARS	N/A

COURSES TAUGHT 2003-2004:	EE4367 – Telecommunications and Switching EE4390 – Introduction to Telecommunications Networks EE3111 – Electronics Circuit Lab
PROFESSIONAL DEVELOPMENT ACTIVITIES I THE LAST FIVE YEARS:	Attended two day long seminars presented by HP and 3 Com on VoIP and Internet Data Communications. Completed a week long course on Network Design by Accelerated Networks. Completed a week long course on ATM Switch and Router Technology by Cisco.

NAME:	Nasser Kehtarnavaz
ACADEMIC RANK:	Professor
DEGREES WITH FIELDS, INSTITUTIONS AND DATES:	PhD, Electrical and Computer Engineering, Rice University, 1987 MS, Electrical and Computer Engineering, Rice University, 1984 BS (Honors), Electronic and Communication Engineering, University of Birmingham (England), 1982
YEARS IN SERVICE AT UT DALLAS:	3 years
OTHER RELATED EXPERIENCE:	18 years academic experience – Joined Department of Electrical Engineering at Texas A&M University in 1986 as Assistant Professor, later became Associate Professor and Professor. Research areas: Signal and Image Processing, Real-Time Imaging, Biomedical Image Analysis and Pattern Recognition
CONSULTING, PATENTS, ETC.:	Served as a consultant to Texas Instruments, Raytheon, Invocon, Physical Research Patents filed (status pending): Automatic White Balancing, Automatic Exposure, Color Filter Array Interpolation
STATE(S) IN WHICH REGISTERED:	Texas
PRINCIPAL PUBLICATIONS IN THE LAST FIVE YEARS:	- N. Kehtarnavaz and N. Kim, *Digital Signal Processing System-Level Design Using LabVIEW*, Elsevier, to appear in 2005. - N. Kehtarnavaz, *Real-Time Digital Signal Processing Based on the TMS320C6000*, Elsevier, 2004. - N. Kehtarnavaz and M. Keramat, *DSP System Design: Using the TMS320C6000*, Prentice-Hall, 2001. - P. Ainsleigh, S. Greineder, and N. Kehtarnavaz, “Classification of nonstationary narrowband signals using segmented chirp features and hidden Gauss-Markov models,” *IEEE Trans. on Signal Processing*, vol. 53, pp. 147-157, Jan. 2005. - C. Gope, N. Kehtarnavaz, G. Hillman, and B. Wursig, “An affine invariant curve matching method for photo-identification of marine mammals, *Pattern Recognition Journal*, vol. 38, pp. 125-132, Jan. 2005. - A. Garcia-Uribe, N. Kehtarnavaz, G. Marquez, V. Prieto, M. Duvic, and L. Wang, “Skin cancer detection by spectroscopic oblique-incident reflectometry: classification and physiological origin,” *Journal of Applied Optics*, vol.43, pp. 2643-2650, May 2004. - N. Kehtarnavaz, H-J. Oh, and Y. Yoo,”Color filter array interpolation using color correlation and directional derivatives,” *SPIE Journal of Electronic Imaging,* vol. 12, pp. 621-632, Oct. 2003. - N. Kim, N. Kehtarnavaz, M. Yeary, and S. Thornton, “DSP based neural network hierarchical modulation signal classification,” *IEEE Trans.*

on Neural Networks, vol. 14, pp. 1065-1071, Sept. 2003.

- N. Kehtarnavaz, H-J. Oh, "Development and real-time implementation of a rule-based auto-focus algorithm," *Journal of Real-Time Imaging,* vol. 9, pp. 197-203, June 2003.
- G. Hillman, B. Wursig, G. Gailey, N. Kehtarnavaz, et. al, "Computer-assisted photo-identification of individual marine vertebrates: a multi-species system," *Journal of Aquatic Mammals*, vol. 29, pp. 117-123, 2003.
- P. Ainsleigh, N. Kehtarnavaz, and R. Streit, "Hidden Gauss Markov models for signal classification," *IEEE Trans. on Signal Processing,* vol.50, pp.1355-1367, June 2002.
- K. Gunnam, D. Hughes, J. Junkins, and N. Kehtarnavaz, "A vision based DSP embedded navigation sensor," *IEEE Sensors Journal*, vol.2, pp.428-442,Oct 2002. - S. Baeg and N. Kehtarnavaz, "Classification of breast mass abnormalities using denseness and architectural distortion," *Electronic Letters on Computer Vision and Image Analysis*, vol.1, pp.1-20, http://www.cvc.uab.es/elcvia, Aug2002.
-

SCIENTIFIC AND PROFESSIONAL SOCIETIES (WHICH A MEMBER:	Fellow of SPIE, Senior Member of IEEE
HONORS & AWARDS:	Outstanding Achievement Award, Texas A&M University, 2000 Outstanding Professor Award, Eta Kappa Nu, 1989 National Excellence Recognition Award, The Space Foundation, 1987
INSTITUTIONAL AND PROFESSIONAL SERVICE IN THE LAST 5 YEARS	Editor-in-Chief, Journal of Real-Time Imaging, Elsevier Chair, Dallas Section of IEEE Signal Processing Society Conference Chair, SPIE Real-Time Imaging Conference, 2001-05 Associate Editor, IEEE Transactions on Image Processing,2000-04. Associate Editor, SPIE Journal of Electronic Imaging, 1998-2001 General Chair, IEEE Symposium on Computer-Based Medical Systems, 2000
COURSES TAUGHT 2003-2004:	EE 4386 – DSP-based Design Project II (undergraduate) EE 6364 – Pattern Recognition (graduate) EE 6363 – Digital Image Processing (graduate) EE 6367 – Applied Digital Signal Processing (graduate
PROFESSIONAL DEVELOPMENT ACTIVITIES I THE LAST FIVE YEARS:	Visiting Scientist, Imaging Business Unit, Texas Instruments, 2001 ABET Training Workshop, UTD, 2003

NAME:	Kamran Kiasaleh
ACADEMIC RANK:	Professor
DEGREES WITH FIELDS, INSTITUTIONS AND DATES:	Ph.D., Electrical Engineering, *Communications Sciences Institute*, University of Southern California, 1986 Thesis Advisor: Dr. William C. Lindsey Dissertation: Time and Frequency Transfer between Master and Slave Clocks. Master of Science, Electrical Engineering, *Communications Sciences Institute*, *University of Southern California*, 1982 Bachelor of Science, Electrical Engineering, *University of Southern California, 1981 (Cum Laude)*
YEARS IN SERVICE AT UT DALLAS:	17 years
OTHER RELATED EXPERIENCE:	?
CONSULTING, PATENTS, ETC.:	Consulting: Telecommunications Research Associates (TRA) Jet Propulsion Laboratory Harris Corporation Patents: Channel-aided, decision-directed delay-locked loop (USPTO:6,373,862, April 16, 2002)Synchronization and clock recovery (USPTO:6,324,234, Nov. 27, 2001) Interferometric, self-homodyne optical receiver and method and optical transmission system incorporating same (USPTO:5,319,438, June 7, 1994)
STATE(S) IN WHICH REGISTERED:	Texas

PRINCIPAL PUBLICATIONS IN THE LAST FIVE YEARS:	G. Burnham, C. D. Cantrell, A. Farago, A. Fumagalli, K. Kiasaleh, W. O. Osborne, and R. Prakash, “The first Telecommunications Engineering program in the United States,” *IEEE Journal of Engineering Education*, pp. 653-657, Oct. 2001. M. Cole and Kamran Kiasaleh, “Signal intensity estimators for free-space optical communications through turbulent atmosphere,” *IEEE/JOSA Photonics Technology Letters,* Vol. 16, No. 10, 2395-2397, Oct. 2004. K. Kiasaleh, “Scintillation index of a multi-wavelength beam in turbulent atmosphere,” *Journal of Optical Society of America A*, Volume 21, Issue 8, 1452-1454, August 2004. K. Kiasaleh, “Performance analysis of free-space on-off-keying optical communication systems impaired by turbulence,” in proceedings of *Free-Space Laser Communication Technologies XIV*, (San Jose, CA), vol. 4635, pp. 150-161, Jan. 2002. M. Simon and K. Kiasaleh, "Performance of computationally efficient multiple-symbol differential detection scheme in the presence of phase noise," in proceedings of *IEEE Global Telecommunication Conference (GLOBECOM 2004)*, (Dallas, TX), Vol. 1, pp. 304 – 307, Nov. 2004. M. Cole and K. Kiasaleh, "Signal estimators for p-i-n and APD-based free-space optical communication systems," in proceedings of *IEEE Global Telecommunication Conference (GLOBECOM 2004)*, (Dallas, TX), Vol. 2, pp. 1221-1224, Nov. 2004.
SCIENTIFIC AND PROFESSIONAL SOCIETIES OF WHICH A MEMBER:	Senior Member of IEEE Communications Society Member of Eta Kappa Nu Member of Sigma Xi Reviewer for the IEEE Transactions on Communications Reviewer for the IEEE Transactions on Vehicular Technology Reviewer for the IEEE Transactions on Information Theory Reviewer for the IEEE Transactions on Wireless Communications Reviewer for the IEEE/OSA Journal of Lightwave Technology Reviewer for the Optics Communications Reviewer for the Optical
HONORS & AWARDS:	NASA Group Achievement Award for GOPEX (Galileo Optical Communications from an Earth-Based Transmitter) demonstration, first optical communications demonstration with a deep-space vehicle
INSTITUTIONAL AND PROFESSIONAL SERVICE IN THE LAST 5 YEARS	Associate Editor for IEEE Communications Letters Technical Program Committee Chair for Vehicular Technology Conference (VTC 05) ,Academic Affairs Committee (Chair) Faculty Search (Chair),Chaired 5 searches, Space Committee Strategic Planning Committee, Personnel Review Committee Teaching Lab Committee • Ad-Hoc committees for tenure and promotion of several

faculty members in the Engineering Department
- EE/CS committee for the development of the Telecommunications Engineering (TE) program
- TE Graduate (Chair) and Admissions Committees

University Wide Committees Served on:
Academic Program Review Committee

COURSES TAUGHT 2003-2004:	EE 6349 Random Processes (Fall 2004)
PROFESSIONAL DEVELOPMENT ACTIVITIES I THE LAST FIVE YEARS:	

NAME:	Moon J. Kim
ACADEMIC RANK:	Associate Professor
DEGREES WITH FIELDS, INSTITUTIONS AND DATES:	Arizona State University, Materials Science, B.S.,1984 Arizona State University, Materials Science, M.S.,1986 Arizona State University, Materials Science, Ph.D.,1988 Arizona State University, Materials Science, Postdoc,1988-1990
YEARS IN SERVICE AT UT DALLAS:	2 years
OTHER RELATED EXPERIENCE:	Associate Professor , Department of Materials Science, UNT, Denton, TX 2002-2003 Director, Facility for Electron Microscopy, University of North Texas (UNT) , 2002-2003 Assistant Professor, Department of Materials Science, UNT, Denton, TX 2001-2002 Associate Research Scientist, Center for Solid State Science Arizona State University (ASU), Tempe, AZ 1996-2001
CONSULTING, PATENTS, ETC.:	
STATE(S) IN WHICH REGISTERED:	
PRINCIPAL PUBLICATIONS IN THE LAST FIVE YEARS:	Dopant penetration studies through Hf silicate, " M. Quevedo-Lopez, MR. Visokay, J.J. Chambers, M.J. Bevan, A. LiFatou, L.Colombo, M.J. Kim, B.E. Gnade and R.M. Wallace, J. Appl. Phys. 97, 043508 (2005) " A novel methodology of tuning work function of metal gate using stacking bi-metallic layers," I.S. Jeon,J.Lee, Zhao,.Sivasurbrammani, T.Oh, H.J. Kim, D.K. Cha,J. Huang, M.J. Kim, B.E. Gnade, J.Kim and R.M. Wallace, 2004 IEEE *International Electron Devices Meeting* 04-303-306 (2004). "Reinforcement mechanism for mechanically enhanced xerogel films," H. Dong, B.P. Gorman, Z. Zhang, R.A. Orozco-Teran, J.A. Roepsch D.W. Mueller,M.J. Kim, and R.F. Reidy, J. *Noncrystalline Solids* 350, 345-350 (2004) " The electrical properties and stability of the hafnium silicate-

Si08Ge0.2 (100) interface, "S.Addepalli, P. Sivasubramani,M.J. Kim,B.E.Gnade, and R.M. Wallace, Journal of Electronic Materials 33, 1016-1021 (2004).

" Wafer level and chip size direct wafer bonding at room temperature, " M.M.R. Howlander, T. Suga and M.J.Kim, Electrochemical Society Proc.Vol. 2004-06, 150-160 (2004)

SCIENTICIC AND PROFESSIONAL SOCIETIES OF WHICH A MEMBER:

HONORS & AWARDS:

INSTITUTIONAL AND PROFESSIONAL SERVICE IN THE LAST 5 YEARS

COURSES TAUGHT 2003-2004:

PROFESSIONAL DEVELOPMENT ACTIVITIES LAST FIVE YEARS:

NAME:	Gil Lee
ACADEMIC RANK:	Professor
DEGREES WITH FIELDS, INSTITUTIONS AND DATES:	Ph.D. in Electrical Engineering - August 1987. North Carolina State University, Raleigh, NC. M.S. in Electrical Engineering - December 1983. University of Texas at Austin, Austin, TX. M.E. in Electronics - August 1977. Kyungpook National University, Korea. B.E. in Electronics - February 1975. Kyungpook National University, Korea.
YEARS IN SERVICE AT UT DALLAS:	4 years
OTHER RELATED EXPERIENCE:	Assistant (87-92) and Associate Professor, Louisiana State University. 8/87-7/01: Visiting Scientist, Naval Research Laboratory, Washington, DC. 6/91-11/91 Assistant Professor , Kyungil University, Korea,8/77-8/81 Consultant for the Optek Technology, Carrollton, Texas., 7/95-8/96
CONSULTING, PATENTS, ETC.:	"Low-temperature plasma-enhanced chemical vapor deposition of silicon oxide films and fluorinated silicon oxide films using disilane as a silicon precursor," G.S. Lee and Juho Song. Patent number 5660895, Aug. 26, 1997.
STATE(S) IN WHICH REGISTERED:	
PRINCIPAL PUBLICATIONS IN THE LAST FIVE YEARS:	M. Feldman, G. S. Lee, and D. Noel, C. Khan Malek, and R. Bass "Generation of Arbitrary Three Dimensional Surfaces by X-ray Lithography," *J. of Vacuum Science of Technology* B, vol. 18, p. 2976, 2000. Y. Jin, K. Kim, and G.S. Lee, "Preparation of low dielectric constant silicon containing fluorocarbon films by plasma enhanced chemical vapor deposition," *J. of Vacuum Science of Technology* B,

vol. 19, p. 314, 2001.

S.H. Pyun, Y. Jin, and G.S. Lee, "Dielectric Properties of PMN-PT/Polyurethane 0-3 Composites," *J. of Materials Science Letters*, vol. 21, p. 243, 2002.

E.E. Erickson, D. Gray, K. Taylor, R.T. Macaluso, L.A. LeTard, G.S. Lee, and J.Y. Chan, "Synthesis, Structure and Dielectric Characterization of Ln2Ti2-2xM2xO7 (Ln = Gd, Er; M = Zr, Sn, Si)," *Material Research Bulletin*, vol37, p. 2077, 2002.

B.M. Park, S.W. Ha, S.K. Yun, and G.S. Lee, "Piezoelectric Actuation and Micro-Domain Behaviors in the Monolithically Patterned PMN-PT Single Crystal," *Integrated Ferroelectrics*, vol. 69, p. 193, 2004.

SCIENTICIC AND PROFESSIONAL SOCIETIES OF WHICH A MEMBER:	Institute of Electrical and Electronics Engineers American Vacuum Society Tau Beta Pi
HONORS & AWARDS:	Senior Member in IEEE
INSTITUTIONAL AND PROFESSIONAL SERVICE IN THE LAST 5 YEARS	Editorial Advisory Board of KIEE International Transactions on Electrophysics and Application. 1/01 – present: Journal Reviewer of Thin Solid Films, Journal of Crystal Growth, Applied Physics Letters, Journal of Vacuum Science and Technology, J. of Electro-Chemical Society, and Electronics Letters
COURSES TAUGHT 2003-2004:	EE 4340 Analog Integrated Circuits EE 3310, Electronic Devices
PROFESSIONAL DEVELOPMENT ACTIVITIES LAST FIVE YEARS:	N/A

NAME:	Hoi Lee
ACADEMIC RANK:	Assistant Professor
DEGREES WITH FIELDS, INSTITUTIONS AND DATES:	B.S. Eng. Electronic Engineering , Hong Kong University of Science and Technology, 6/98 M. Philosophy, Electrical and Electronic Engineering, Hong Kong University of Science and Technology, 8/00 Ph. D. Electrical and Electronic Engineering, Hong Kong University of Science and Technology, 8/04
YEARS IN SERVICE AT UT DALLAS:	1 Year
OTHER RELATED EXPERIENCE:	Postdoctoral Research Associate 09/04-12/04 Research Assistant 01/03-08/04 Hong Kong University of Science and Technology Teaching Assistant 09/98-12/02 Hong Kong University of Science and Technology
CONSULTING, PATENTS, ETC.:	N/A
STATE(S) IN WHICH REGISTERED:	N/A
PRINCIPAL PUBLICATIONS IN THE LAST FIVE YEARS:	H. Lee, P. K. T. Mok, and K, N. Leung, “Design of Low-Power Analog Driver Based on Slew-Rate-Enhancement Circuit for CMOS Low-Dropout Regulators,” *IEEE Transactions on Circuits and Systems-II*, accepted Feb. 2005. H. Lee and P. K. T. Mok, “Switching Noise and Shoot-Through Current Reduction Techniques for Switched-Capacitor Voltage Doubler,” *IEEE Journal of Solid-State Circuits*, accepted Jan. 2005. H. Lee and P. K. T. Mok, “Advances in Active-Feedback Frequency Compensation with Power Optimization and Transient Improvement,” *IEEE Transactions on Circuits and Systems-I*, vol. 51, pp. 1690-1696, Sept. 2004. H. Lee, K. N. Leung, and P. K. T. Mok, “A Dual-Path Bandwidth Extension Amplifier Topology with Dual-Loop Parallel Compensation,” *IEEE Journal of Solid-State Circuits*, vol. 38, pp. 1739-1744, Oct. 2003. H. Lee and P. K. T. Mok, “Active-Feedback Frequency-Compensation Technique for Low-Power Multistage Amplifiers,”

IEEE Journal of Solid-State Circuits, vol. 38, pp. 511-520, March 2003

SCIENTIFIC AND PROFESSIONAL SOCIETIES WHICH A MEMBER:	Member of IEEE Solid-State Circuits Society Member of IEEE Circuits and Systems Society Member of IEEE
HONORS & AWARDS:	Best Student Paper Award of 2002 IEEE Custom Integrated Circuits Conference , 2003 Full Postgraduate Studentship, 1998-2004 Motorola Semiconductors Hong Kong Scholarships, 1998
INSTITUTIONAL AND PROFESSIONAL SERVICE IN THE LAST 5 YEARS	Reviewer of IEEE Transactions on Circuits and Systems II, 2005 Reviewer for IEEE International Symposium on Circuits and Systems, 2003 Member of Ph.D. dissertation committee for Xu Chen, dissertation advisor: Prof. Jin Liu Member of Ph.D. dissertation committee for Yunlei Li, dissertation advisor: Prof. Jin Liu
COURSES TAUGHT 2003-2004:	
PROFESSIONAL DEVELOPMENT ACTIVITIES THE LAST FIVE YEARS:	N/A

NAME:	Jeong-Bong Lee
ACADEMIC RANK:	Assistant Professor
DEGREES WITH FIELDS, INSTITUTIONS AND DATES:	Ph.D. in Electrical Engineering, Georgia Institute of Technology, Atlanta, Georgia, June 14, 1997
YEARS IN SERVICE AT UT DALLAS:	3 years
OTHER RELATED EXPERIENCE:	Adjunct Assistant Professor, Louisiana State University Assistant Professor, Louisiana State University, 11/99 to 5/01: Research Engineer II, Georgia Institute of Technology, 11/97 to 12/98 Postdoctoral Research Fellow Georgia Institute of Technology, 6/97 to 11/97
CONSULTING, PATENTS, ETC.:	Kabseog Kim and J-B. Lee, "Method for tapered hollow metallic microneedle array" *U. S. Patent* (pending) filed in 2004. W. Park and J-B. Lee, "Dynamically configurable photonic crystals using micro-electro-mechanical systems" *U. S. Patent* (pending) filed in 2004.E. Nilsen, M. Ellis, C. Goldsmith, T. Huang, A. Nallani, K. Kim, J-B. Lee, G. Skidmore, "Method for electrical interconnects between assembled micro-components utilizing post-assembly activation" *U. S. Patent* (pending) filed in 2003. J-B. Lee, Sang Won Park, Kabseog Kim, and Harish Manohara, "Methods of rapid reproduction of metallic micromold inserts," *U. S. Patent 6,692,680*, Feb. 2004. M. G. Allen, S. P. Chang, and J-B. Lee, "Robust substrate-based micromachining techniques and their application to micromachined sensors and actuators," *U. S. Patent 6,458,618*, Oct, 2002. Consultant, Samsung Telecommunications America, May 2004 - present
STATE(S) IN WHICH REGISTERED:	N/A
PRINCIPAL PUBLICATIONS IN THE LAST FIVE YEARS:	Mark Tinker and J-B. Lee, "Thermo-optic photonic crystal light modulator," *Applied Physics Letters* (*accepted, in revision*) E. Schonbrun, Mark Tinker, W. Park, and J-B. Lee, "Negative refraction in 2D slab Si/polymer photonic crystal," *IEEE Photonics Technology Letter*(*accepted, in press*) June 2005. Jeong-Soo Lee, Daniel S. Park, Arun Nallani, Gil Lee, and J-B. Lee, "Sub-micron metallic electrothermal actuators," *Journal of Micromechanics and Microengineering*, vol. 15, no. 2, pp. 322-327, February 2005.

Kabseog Kim, Erik Nilsen, Trent Huang, Andrew Kim, Matt Ellis, George Skidmore, J-B. Lee, "Metallic microgripper with SU-8 adaptor as end-effectors for heterogeneous micro/nano assembly applications," *Microsystem Technologies*, vol. 10, no. 10, pp. 689~693, December 2004.

W. Park and J-B. Lee, "Mechanically tunable photonic crystal structure," *Applied Physics Letters,* vol. 85, no. 21, pp. 4845-4847, November 22, 2004. (*featured on the cover page of the APL*

SCIENTICIC AND PROFESSIONAL SOCIETIES OF WHICH A MEMBER:	IEEE, SPIE, MRS
HONORS & AWARDS:	College of Engineering Best Ph.D. dissertation award (Dr. Kabseog Kim, advisor: J-B. Lee), Univ. of Texas at Dallas, 2004 National Science Foundation's Faculty Early Career Development Award (CAREER AWARD), January 2001 Donald Cecil & Elaine T. Delaune Endowed Professorship, Louisiana State University, 2000 Southeastern Center for Electrical Engineering Education (SCEEE) Junior Faculty Development Award, 2000 First Prize (a total of $ 21,000 prize award), Samsung Human Tech Thesis Contest, Seoul, Korea, 1996 Best Poster Paper Award, International Symposium on Advanced Packaging Materials, Atlanta, GA , 1995
INSTITUTIONAL AND PROFESSIONAL SERVICE IN THE LAST 5 YEARS	
COURSES TAUGHT 2003-2004:	EE 3310, Electronic Devices, Fall, 2004 EE 3311, Electronic Devices Laboratory, Fall, 2004 EE 7v82, Introduction to MEMS , Spring, 2004 EE 6322, Semiconductor Processing Technology, Fall, 2003 EE 3310, Electronic Devices, Fall, 2003 EE 7v82, Introduction to MEMS, Spring, 2003
PROFESSIONAL DEVELOPMENT ACTIVITIES LAST FIVE YEARS:	N/A

NAME:	Philipos C. Loizou
ACADEMIC RANK:	Professor
DEGREES WITH FIELDS, INSTITUTIONS AND DATES	• **B.S**., May 1989, Arizona State University, Tempe, AZ, Electrical Engineering • **M.S.,** August 1991, Arizona State University, Tempe, AZ, Electrical Engineering • **Ph.D.**, August 1995, Arizona State University, Tempe, AZ, Electrical Engineering
YEARS IN SERVICE AT UT DALLAS:	7 years
OTHER RELATED EXPERIENCE:	N/A
CONSULTING, PATENTS, ETC.:	N/A
STATE(S) IN WHICH REGISTERED:	N/A
PRINCIPAL PUBLICATIONS IN THE LAST FIVE YEARS:	• Y. Hu and P. Loizou (2004). "Incorporating a psychoacoustic model in frequency domain speech enhancement," *IEEE Signal Processing Letters,* 11(2), 270-273. • Hu, Y. and Loizou, P. (2004). "Speech enhancement by wavelet thresholding the multitaper spectrum," *IEEE Transactions on Speech and Audio Processing*, 12(1), 59-67. • A. Mani, P. Loizou, A. Shoup, P. Roland and P. Kruger (2004). "Dichotic speech recognition by bilateral cochlear implant users," in *Cochlear Implants*, International Congress Series 1273, ed. R. Miyamoto, Elsevier Science, 466-469 • Hu and P. Loizou (2003) "A generalized subspace approach for enhancing speech corrupted with colored noise," *IEEE Transactions on Speech and Audio Processing*, 11(4), 334-341.
SCIENTIFIC AND PROFESSIONAL SOCIETIES OF WHICH A MEMBER:	• Member of Institute of Electrical and Electronics Engineers (IEEE) 1989- • Member of Acoustical Society of America 1994 – • Member of Eta Kappa Nu, Phi Kappa Phi
HONORS & AWARDS:	• National Institutes of Health (NIH) **Shannon award** (1998) • F.V. Hunt Research Fellowship by the Acoustical Society of America (1996) • Intel award for "contributing to the development of the 60172 processor architecture" (1992

INSTITUTIONAL AND PROFESSIONAL SERVICE THE LAST 5 YEARS

- Invited member of NIH Grant Review Panel (ZDC1 SRB-A) for R03 applications, Apr 2004, Nov 2004
- Associate Editor of *IEEE Transactions of Speech and Audio Processing*, 1999-2002.
- Member of IEEE Industrial Technology Track technical committee for ICASSP conference, 2001-
- Member of IEEE Speech Technical Committee, 1999-2002

COURSES TAUGHT 2003-2004:

PROFESSIONAL DEVELOPMENT ACTIVITIE IN THE LAST FIVE YEARS:

NAME:	Jin Liu
ACADEMIC RANK:	Assistant Professor
DEGREES WITH FIELDS, INSTITUTIONS AND DATES:	Doctor of Philosophy, Electrical and Computer Engineering, Georgia Institute of Technology, Atlanta, GA, June 1999 Master of Science, Electrical and Computer Engineering, University of Houston, Houston, TX, August 1995 Bachelor of Science, Electronics and Information Systems, Zhongshan,University, Guangzhou, P. R. China, July 1992
YEARS IN SERVICE AT UT DALLAS:	5 years
OTHER RELATED EXPERIENCE:	Summer 2000, Analog IC Designer, Texas Instruments
CONSULTING, PATENTS, ETC.:	Improved Filtering, Equalization, and Power Estimation for Enabling Higher Speed Signal Transmission; SRC Patent ID: P0407; Inventors: Xiaofeng Lin and Jin Liu; Filed Nov. 2003 A Multi-Interval Line Coding Technique for High Speed Transmissions; SRC Patent ID: P0477; Inventors: John Fonseka and Jin Liu, Filed January 2005 Time Stamped Architecture for Visual Motion Sensor; Inventors: Guangbin Zhang and Jin Liu; Filed January 2005
STATE(S) IN WHICH REGISTERED:	?
PRINCIPAL PUBLICATIONS IN THE LAST FIVE YEARS:	A CMOS 0.25-µm Continuous-Time FIR Filter with 125ps per Tap Delay as Fractionally Spaced Receiver Equalizer for 1Gbps Data Transmission X.F. Lin, S. Saw, and J. Liu *IEEE Journal of Solid-state Circuits*, to appear in March 2005 A Digital Power Spectrum Estimation Method for the Adaptation of High-speed Equalizer X.F. Lin and J. Liu *IEEE Transactions on Circuits and Systems I*, Vol. 51, pp. 2436-2443, December 2004 Equalization in High-speed Communication Systems J. Liu and X.F. Lin

IEEE Circuits and Systems Magazine, pp. 4-17, Second Quarter, 2004 (invited)

A 13.56MHz RFID Transponder Front-End with Merged Load Modulation and Voltage Doubler-Clamping Rectifier Circuits
Y.L. Li and J. Liu
Proceedings of IEEE International Symposium on Circuits and Systems, May 2005

A Delay Compensation Technique for N-phase Clock Generation with 2(N-1) Delay Units

X. Chen and J. Liu
Proceedings of IEEE International Symposium on Circuits and Systems, May 2005

Novel time-stamped pixel structure for high-speed 2D CMOS visual motion sensor

G.B. Zhang and J. Liu
IS&T/SPIE Symposium on Electronic Imaging, January 2005

Electronic Dispersion Compensation for 10Gbps Data Transmission over Multi-mode fibers
H. Liu, X.F. Lin, Y. Kim, J. Liu, and S. Jung
Proceedings of IEEE Dallas workshop on High performance circuit design, pp. 159-162, September 2004

A 2.45 GHz Power and Data Transmission for a Low-Power Autonomous Sensors Platform
S. Gregori, Y.L. Li, H.J. Li, J. Liu and F. Maloberti
Proceedings of ACM/IEEE International Symposium on Low Power Electronics and Design, pp. 269-273, August 2004

SCIENTIFIC AND PROFESSIONAL SOCIETIES OF WHICH A MEMBER:	IEEE Circuits and Systems IEEE Solid State Circuits
HONORS & AWARDS:	2004 New Faces of Engineering for National Engineers Week Member of IEEE Circuits and Systems Society and IEEE Solid-state Circuits Society
INSTITUTIONAL AND PROFESSIONAL SERVICE IN THE LAST 5 YEARS	Member of Graduate Committee, 2004 – present Member of Undergraduate Committee, 2004 – present Member of Search Committee for candidates in analog integrated circuit design area, 2004 Member of Qualify Exam committee in Circuits and Systems Domain, 2004 Member of Honor Curriculum committee, 2002-2004 Members of the Core Committee for the Support of Women and Minorities, 2001-2002

COURSES TAUGHT 2003-2004:	EE6326 Analog Integrated Circuits Design EE7326 Analog Integrated Systems Design EE3311 Electronic Circuits

NAME:	Duncan L. MacFarlane
ACADEMIC RANK:	Professor
DEGREES WITH FIELDS, INSTITUTIONS AND DATES:	Portland State University, Portland, Oregon, Ph.D. Electrical Engineering, June 1989. Brown University, Providence, Rhode Island, Sc.M. Electrical Engineering, June 1985. Brown University, Providence, Rhode Island, Sc.B., Honors, Electrical Engineering, June 1984. (honors) Southern Methodist University, Dallas, Texas, M.B.A., May, 1998. (second in class).
YEARS IN SERVICE AT UT DALLAS:	8 years
OTHER RELATED EXPERIENCE:	• Director, Product Management, (11/2001–1/2002) Celion Networks, Richardson, Texas. • Product Line and Engineering Manager, (10/1999–11/2001) JDS Uniphase, Richardson, Texas. • Senior Staff Scientist (7/85-9/86) W. J. Schafer Associates, Inc., Chelmsford, Massachusetts.
CONSULTING, PATENTS, ETC.	**CONSULTING** • Texas Instruments, Dallas, Texas. Led and contributed to design and manufacture of digital mirror device (DMD) based optical displays and printers. Supervisor: James Florence. • University Instructor (9/87 - 6/89) Portland State University, Portland, Oregon. Supported graduate studies by teaching undergraduate and graduate courses in Mode-Locked Lasers, Engineering Electromagnetics, Physics with Calculus, and Quantum Mechanics. Department Heads: Lee W.Casperson, Matsuo Takeo and Rolf Schaumann. • Senior Staff Scientist (7/85 - 9/86) W. J. Schafer Associates, Inc., Chelmsford, Massachusetts. Led and contributed to theoretical and empirical studies on the effects of high power optical radiation including laser damage and UV photochemistry. Gained practical highvoltage engineering experience. Supervisors: James P. Reilly and Ray B. Schaefer **PATENTS** • Duncan L. MacFarlane and Dale M. Byrne, "Beam alignment device and method" U.S. Patent 5,307,210 issued April 26, 1994. • Duncan L. MacFarlane, "Three dimensional monitor," U.S. Patent 5,801,666 issued September 1, 1998. • Duncan L. MacFarlane and Eric M. Dowling, "Active optical lattice filters," U.S. Patent 6,687,461 issued 2/3/2004 • Texas Instruments, Dallas, Texas, MicroFab Technologies, Inc, Plano, Texas, Jones, Day, Reavis and Pogue, Dallas,

Texas, Specialty Devices Inc, Plano, Texas, Amtech, Dallas, Texas, E-Systems, Garland, Texas, Tektronix Inc, Beaverton, Oregon, Akin, Gump, Strauss, Hauer and Feld, L.L.P., Woolen, Ridley, Miller, LLP, Carstens, Yee and Cahoon, LLP, Foley Lardner, LLP, D. Woodward Glenn, LLP

- Eric M. Dowling, Duncan L. MacFarlane, and Mark Anastasi "Geographical Web Browser, Methods, Apparatus and Systems" US Patent 6,522,875 issued 2/18/2003.
- Duncan L. MacFarlane, "Surface Acoustic Wave Shaping System," U.S. Patent 6,407,650 issued June 18, 2002.
- Duncan L. MacFarlane, "Two Dimensional active optical lattice filters," filed August, 2003.

STATE(S) IN WHICH REGISTERED:	Texas
PRINCIPAL PUBLICATIONS IN THE LAST FIVE YEARS:	• Cristian Penciu and D. L. MacFarlane, "Fabrication and Characterization of a Volumetric Three-Dimensional Display Using Ion Exchanged Integrated Waveguides," Optical Engineering 39, 565 (2000). • Brian T. Teipen and D. L. MacFarlane, "Liquid crystal display projector based modulation transfer function measurements of charge coupled device video camera systems," Applied Optics 39, 515, (2000). • Duncan L. MacFarlane, Jian Tong, Chintan Fafadia, Vishnupriya Govindan, L. Roberts Hunt, and Issa Panahi "Extended Lattice Filters Enabled by Four Directional Couplers" Applied Optics 43, 6124 (2004). • L. Roberts Hunt, Vishnupriya Govindan, Issa Panahi, Jian Tong, Govind Kannan Duncan L. MacFarlane, "Active Optical Lattice Filters" to be published in EURASIP Journal on Applied Signal Processing, 2005. • Duncan L. MacFarlane and Clarel Thevenot, Invited "Minimizing Operational Costs for Optical Transmission Systems" Optical Fiber Conference (OFC) 2002, Anaheim, CA.
SCIENTIFIC AND PROFESSIONAL SOCIETIES OF WHICH A MEMBER:	• Beta Gamma Sigma, honor society for AACSB accredited business programs. • IEEE, Lasers and Electro-Optics Society. Dallas Chairman, 2002-present, Dallas Section Vice-Chairman, 1990--1992, Dallas Section Chairman, 1992--1994, Dallas Section Committee member, 1998-present. • Optical Society of America. • American Society for Engineering Education
HONORS & AWARDS:	N/A
INSTITUTIONAL AND PROFESSIONAL SERVICE IN THE LAST 5 YEARS	

COURSES TAUGHT 2003-2004:	EE/TE 3341 Probability and Statistics, EE 6312 Lasers and Modern Optics, EE 6316 Fields and Waves
PROFESSIONAL DEVELOPMENT ACTIVITIES I THE LAST FIVE YEARS:	In addition to the above activities: Attended national workshops and conferences on signal processing, lasers, and optics. Attended monthly seminars on Lasers and Electro-Optics. Attended seminars (approximately 1/week) on engineering, math and science.

NAME:	Hlaing Minn
ACADEMIC RANK:	Assistant Professor
DEGREES WITH FIELDS, INSTITUTIONS AND DATES:	Ph.D. ,Electrical Engineering, University of Victoria, Canada ,2001 M. Eng., Telecommunications, Asian Institute of Technology, Thailand, 1997 B. E. ,Electronics, Yangon Institute of Technology, Yangon, Myanmar , 1995
YEARS IN SERVICE AT UT DALLAS:	3 years
OTHER RELATED EXPERIENCE:	Post-Doctoral Research Fellow (*Jan. 2002 – Aug. 2002*) Department of Electrical and Computer Engineering, University of Victoria, Victoria, B.C., Canada Research Assistant (*Jan. 1999 – Dec. 2001*) Department of Electrical and Computer Engineering, University of Victoria, Victoria, B.C., Canada Laboratory Supervisor (*Feb. 1998 – Dec. 1998*) Telecommunications Program, Asian Institute of Technology , PO Box 4, Klong Luang, Pathumthani 12120, Thailand
CONSULTING, PATENTS, ETC.:	
STATE(S) IN WHICH REGISTERED:	
PRINCIPAL PUBLICATIONS IN THE LAST FIVE YEARS:	• H. Minn and S. Xing, "An Optimal Training Signal Structure for Frequency Offset Estimation," accepted in *IEEE Transactions on Communications*. • P. Tarasak, H. Minn and V. K. Bhagava, "Improved Approximate Maximum Likelihood Receiver for Differential Space-Time Block Codes over Rayleigh Fading Channels," *IEEE Transactions on Vehicular Technology,* Vol. 53, No. 2, Mar. 2004, pp. 461-468. • P. Tarasak, H. Minn and V. K. Bhagava, "Linear Prediction Receiver for Differential Space-Time Block Codes with Spatial Correlation," *IEEE Communications Letter*s, Vol. 7, No. 11, Nov. 2003, pp. 543-545. • H. Minn, V. K. Bhargava and K. B. Letaief, "A Robust Timing and Frequency Synchronization for OFDM Systems," *IEEE Transactions on Wireless Communications,* Vol. 2, No. 4, July 2003, pp. 822-839. • H. Minn , D. I. Kim and V. K. Bhargava, "A Reduced Complexity Channel Estimation for OFDM Systems with

Transmit Diversity in Mobile Wireless Channels," *IEEE Transactions on Communications,* Vol.50, No. 5 , May 2002, pp. 799-807.

SCIENTICIC AND PROFESSIONAL SOCIETIES OF WHICH A MEMBER:	IEEE, IEEE Communications Society, IEEE Information Theory Society, IEEE Signal Processing Society, IEEE Vehicular Technology Society
HONORS & AWARDS:	
INSTITUTIONAL AND PROFESSIONAL SERVICE IN THE LAST 5 YEARS	Doctoral dissertation committee member of 6 graduated doctoral students Reviewer in IEEE Transactions on Communications, IEEE Transactions on Wireless Communications, IEEE Transactions on Vehicular Technology, IEEE Communications Letters, IEEE Signal Processing Letters, IEEE Globecom, ICC, WCNC, VTC, ICCCAS, ICCS. Session Chair in IEEE VTC *2002* (Fall), Canada; VTC 2003 (Spring), Korea, ICC 2004 (France), WCNC 2005. Technical Committee Member in IEEE WCNC'04, WCNC'05, VTC'05 (Fall), Globecom' 05.
COURSES TAUGHT 2003-2004:	H. Minn, "Insights on OFDM Technology, Applications and Research Issues," presented at *IEEE VTC 2002 (Fall)*, Canada, Sept. 2002 H. Minn and Vijay K. Bhargava, "Insights on OFDM Technology, Applications and Research Issues," presented at *IEEE VTC 2003* (*Fall)*, Orlando, Florida, Oct., 2003. H. Minn, "Synchronization and Channel Estimation in OFDM Systems," 5-days short course offered at *Telekom Malaysia Research & Development*, Kuala Lumpur, Malaysia, Dec. 8-12, 2003. H. Minn, Training Signal Designs (Invited Talk), Southern Methodist University, Dallas, TX, Mar. 2, 2005.
PROFESSIONAL DEVELOPMENT ACTIVITIES LAST FIVE YEARS:	N/A

NAME:	Aria Nosratinia
ACADEMIC RANK:	Associate Professor
DEGREES WITH FIELDS, INSTITUTIONS AND DATES:	Ph.D., 1996,University of Illinois at Urbana-Champaign, M.S. , 1991, University of Windsor B.S., 1989, University of Tehran, Department of Electrical Engineering
YEARS IN SERVICE AT UT DALLAS:	3 years
OTHER RELATED EXPERIENCE:	Visiting Assistant Professor, Dept. Electrical Engineering, Rice University, 1996-99 Visiting Scholar, Dept. Electrical Engineering, Princeton University, 1995-1996
CONSULTING, PATENTS, ETC.:	N/A
STATE(S) IN WHICH REGISTERED:	N/A
PRINCIPAL PUBLICATIONS IN THE LAST FIVE YEARS:	T. Hunter and A, Nosratinia, " Diversity through coded cooperation," accepted, *IEEE Transaction on Wireless Communications.* H. Shah, A. Hedayat, and A, Nosratinia, "Performance of concatenated channel codes and orthogonal spacetime block codes," accepted, *IEEE Transaction on Wireless Communications.* A. Hedayat, H.Shah, and A. Nosratinia, " Analysis of space-time coding in correlated fading channels," accepted, *IEEE Transaction Wireless Communications.* A.Hedayat and A,Nosratinia, " Iterative list decoding of concentrated source/channel codes, " accepted, *EURASIP Journal of Applied Signal Processing.* S.Sanayei and A. Nosratinia, " Attenna selection in MIMO systems, " IEEE Communications Magazine,vol.42,no.10, October 2004, p.74-80.
SCIENTICIC AND PROFESSIONAL SOCIETIES (WHICH A MEMBER:	Senior Member, IEEE

HONORS & AWARDS:	National Science Foundation Career Award,2000 Outstanding Service Award, IEEE Signal Processing Society, Dallas Chapter, 2001-2002
INSTITUTIONAL AND PROFESSIONAL SERVICE IN THE LAST 5 YEARS	Graduate Committee Faculty Search Committee Computer Committee In charge of EE Ph.D. qualifying exam
COURSES TAUGHT 2003-2004:	Digital Communications, EE4360 Probability/Statistics, EE3341 Random Processes, EE6349 Signal Theory, EE6350 Information Theory, EE6341 Coding Theory, EE6344 Source Coding and Compression, EE7v89
PROFESSIONAL DEVELOPMENT ACTIVITIES LAST FIVE YEARS:	Associate Editor, IEEE Transaction on Image Processing Associate Editor, Journal of Circuits, Systems, and Computing Chairman, IEEE Signal Processing Society, Dallas Chapter, 2003 Technical Program Committee, Globecom 2004 Publications Chair, IEEE Signal Processing Workshop,2004.

NAME:	Mehrdad Nourani
ACADEMIC RANK:	Associate Professor of Electrical Engineering
DEGREES WITH FIELDS, INSTITUTIONS AND DATES:	Ph.D in Computer Eng., Case Western Reserve Univ., Cleveland, Ohio, Nov. 1993 M.S. in Electrical Eng., Univ. of Tehran, Iran, Jan.1986 B.S. in Electrical Eng., Univ. of Tehran, Iran, June 1984
YEARS IN SERVICE AT UT DALLAS:	5 years, Assistant Professor (9/99-9/04), Associate Professor (9/04-Present)
OTHER RELATED EXPERIENCE:	6/98 to 8/99 and 1/94: Visiting Assistant Prof. in Dept. of EECS, Case Western Reserve Univ., 8/95 to 6/98 Assistant Prof in Dept. Of ECE, University of Tehran, Iran
CONSULTING, PATENTS, ETC.:	N/A
STATE(S) IN WHICH REGISTERED:	N/A

PRINCIPAL PUBLICATIONS IN THE LAST FIVE YEARS:

- M. Nourani and M. Tehranipour, “RL-Huffman Encoding for Test Compression and Power Reduction in Scan Applications,” in *ACM Transactions on Design Automation of Electronic Systems*, vol. 10, no. 1, pp. 91-115, Jan. 2005.
- M. Nourani and J. Chin, “Test Scheduling with Power-Time Tradeoff and Hot-Spot Avoidance Using MILP,” in *IEE Proceedings-Computers & Digital Techniques*, vol. 151, no. 5, pp. 341-355, Sept. 2004.
- M. Tehranipour, N. Ahmed and M. Nourani, “Testing SoC Interconnects for Signal Integrity Using Extended JTAG Architecture,” in *IEEE Transactions on Computer Aided Design*, vol. 23, no. 5, pp. 800-811, May 2004.
- M. Tehranipour, M. Nourani, S. Fakhraie, M. Movahedin and Z. Navabi, “Embedded Test for Processor and Memory Cores in System-on-Chips,” in *International Journal of Scientia Iranica*, vol. 10, no. 4, pp. 486-494, Sept. 2003.
- M. Nourani and M. Akhbarizadeh, “Reconfigurable Memory Architecture for Scalable IP Forwarding Engines,” in *Elsevier Microprocessor and Microsystems Journal*, vol. 27, no. 5-6, pp. 253-263, June 2003.
- M. Akhbarizadeh, M. Nourani and C. Cantrell, “TCAM-Based Packet Forwarding Engine Using Prefix Segregation Scheme,” in *Proceedings of the IEEE Globecom Conference*, (Dallas, TX), pp. GI10-5: 1-5, Nov. 2004.

- M. Akhbarizadeh, M. Nourani, D. Vijayasarathi and P. Balsara, “PCAM: A Ternary CAM Optimized for Longest Prefix Matching Tasks,” in *Proceedings of International Conference on Computer Design (ICCD)*-**Received Best Paper Award**, (San Jose, CA), pp. 6-11, Oct. 2004.
- K. Baker and M. Nourani, “Interconnect Test Pattern Generation Algorithm for Meeting Device and Global SSO Limits with Safe Initial Vectors,” in *Proceedings of the International Test Conference (ITC)*, (Charlotte, NC), pp. 163-172, Oct. 2004.
- B. Robatmili, N. Yazdani and M. Nourani, “NPSMT: A Simulation Environment for SMT Packet Processors,” in *Proceedings of the International Conference on Parallel and Distributed Computing Systems (PDCS)*, (San Francisco, CA), pp. 151-156, Sept. 2004,
- M. Akhbarizadeh and M. Nourani, “Efficient Prefix Cache for Network Processors,” in *Proceedings of the IEEE Symposium on High Performance Interconnects (HOTI)*, (Palo Alto, CA), pp. S2: 13-18, Aug. 2004.
- M. Tehranipour, M. Nourani, K. Arabi and A. Afzali-Kusha, “Mixed RL-Huffman Encoding for Power Reduction and Data Compression in Scan Test,” in *Proceedings of the International Symposium on Circuits and Systems (ISCAS)*, (Vancouver, Canada), pp. II681-II684, May 2004.
- N. Ahmed, M. Tehranipour and M. Nourani, “Low Power Pattern Generation for BIST Architecture,” in *Proceedings of the International Symposium on Circuits and Systems (ISCAS)*, (Vancouver, Canada), pp. II689-II692, May 2004.

SCIENTICIC AND PROFESSIONAL SOCIETIES (WHICH A MEMBER:	IEEE, IEEE Computer Society.
HONORS & AWARDS:	Senior Member, IEEE Best Paper Award at the IEEE International Conference on Computer Design, 2004
INSTITUTIONAL AND PROFESSIONAL SERVICE IN THE LAST 5 YEARS	TA assignment committee, CE graduate committee, CE faculty search committee, EE Dept. chair search committee, Computer equipment committee, Ad-hoc committee, Abet undergraduate committee, English proficiency committee. Reviewed papers for several IEEE journals and conferences
COURSES TAUGHT 2003-2004:	Advanced Digital Logic (EE6301) Microprocessor Systems (EE/CE6302) Digital Systems Testing (EE6303) Digital Circuits Laboratory (EE4220) Microprocessor Design Project (EE4380)

Hardware Modeling Using HDL (EE5325)

PROFESSIONAL DEVELOPMENT ACTIVITIES IN THE LAST FIVE YEARS:	Regularly attend conferences in my research areas Attend local seminars Regularly interact with contacts in industry.

NAME:	Raimund Ober
ACADEMIC RANK:	Professor
DEGREES WITH FIELDS, INSTITUTIONS AND DATES:	M.Phil, Operations Research and Control Engineering, Cambridge University, 1985. Ph.D, Engineering, Cambridge University, 1987.
YEARS IN SERVICE AT UT DALLAS:	12 years
OTHER RELATED EXPERIENCE:	1993 Associate Professor with tenure, Programs in Mathematical Sciences and Department of Electrical Engineering 1997 Full Professor with tenure, Programs in Mathematical Sciences and Department of Electrical Engineering
CONSULTING, PATENTS, ETC.:	
STATE(S) IN WHICH REGISTERED:	
PRINCIPAL PUBLICATIONS IN THE LAST FIVE YEARS:	V. Ramakrishna, R.J. Ober, X. Sun, O. Steuernagel, H.Rabitz, and J. Botina.Explicit generation of unitary transformations in a single atom or molecule. Physical Reviews A, 61:032106--1, 2000. Qadri, C.G. Radu, J. Thatte, P. Cianga, B.T. Ober, R.J. Ober, and E.S. Ward.A role for the region encompassing the c" strand of a T cell receptor Vα domainn in T cell activation events. Journal of Immunology, 165:820--829, 2000. A. Gheondea and R.J. Ober. On the existence, uniqueness and symmetry of par-balanced realizations for infinite dimensional systems. Integral Equations and Operator Theory, 37:423--436, 2000. V. Ramakrishna, K. Flores, H. Rabitz, and R.J. Ober. Quantum control by decomposition of SU(2). Physical Review A, 6205(5):3409, 2000. K.C. Garcia, C.G. Radu, J. Ho, R.J. Ober, and E.S. Ward. Kinetics and thermodynamics of T cell receptor-autoantigen interactions in murine experimental autoimmune encephalomyelitis. Proceedings of the National Academy of Sciences, 98:6818--6823, 2001

SCIENTICIC AND PROFESSIONAL SOCIETIES (WHICH A MEMBER:	IEEE, Biophysical Society, American Society for Cell Biology
HONORS & AWARDS:	Senior member, IEEE
INSTITUTIONAL AND PROFESSIONAL SERVICE IN THE LAST 5 YEARS	Associate Editor, Systems and Control Letters Associate Editor, Mathematics of Control, Signals and Systems Organizer (with V. Ramakrishna) of invited sessions 'Control of Quantum Phenomena I and II', 39th IEEE Conference on Decision and Control, Sidney, Australia, 2000. Member, International Program Committee, Fifteenth International
COURSES TAUGHT 2003-2004:	N/A
PROFESSIONAL DEVELOPMENT ACTIVITIES LAST FIVE YEARS:	N/A

NAME:	Lawrence Overset
ACADEMIC RANK:	Professor
DEGREES WITH FIELDS, INSTITUTIONS AND DATES:	• B. S. in Electrical Engineering, May, 1983, University of Illinois, College of Engineering, Urbana, IL. E. C. Jordan award, Schlumberger Scholarship award, Bronze Tablet (Summa Cum Laude) with High Honors. • M. S. in Electrical Engineering, January, 1986, University of Illinois, College of Engineering, Urbana, IL. “Electron Density Dependencies of RF Discharges in Silane and Helium.” under Dr. Joseph T. Verdeyen. American Electronics Association Fellowship. • Ph.D. in Electrical Engineering, October, 1988, University of Illinois, College of Engineering, Urbana, IL. “Enhancement of the Negative Ion Flux to Surfaces from Radio Frequency Processing Discharges.” under Dr. Joseph T. Verdeyen.
YEARS IN SERVICE AT UT DALLAS:	1988 Assistant Professor at UTD 1994 Associate Professor 2000-Present Full Professor
OTHER RELATED EXPERIENCE:	Undergraduate: Solid State Electronic Devices and Laboratory; Introduction to Electromagnetic Fields I and II , Plasma Technology and Laboratory; Graduate: Semiconductor Device Theory I: Physical Properties of Semiconductors; Lase Electronics I; Semiconductor Processing; Semiconductor Process Integration; Plasma Processing Technology; Plasma Science for Materials Processing, and Current Topics in Plasma Processing.
CONSULTING, PATENTS, ETC.:	• Consultant on Plasma Based Semiconductor Cleaning Technologies and Liaison to the Sandia National Laboratories CRADA Team, Sept.-Dec. 1999, Beta Squared Incorporated, Allen TX. Patents: • High Density Plasma Source for Semiconductor Processing. # 6,028,285. • Plasma Apparatus for Ion Energy Control. #6,097,157. • Transmission Line Based Inductively Coupled Plasma Source with Stable Impedance. # 6,459,066 • Particle Contamination Cleaning from Substrates Using Plasmas, Reactive Gases, and Mechanical Agitation. #6,676,800. • Ion-Ion Plasma Processing with Bias Modulation Synchronized to Time-Modulated Discharges. Filed 8/29/00. Accepted but not yet given a number
STATE(S) IN WHICH REGISTERED:	Registered Professional Engineer in the State of Texas.

PRINCIPAL PUBLICATIONS IN THE LAST FIVE YEARS:	• Chlorine Plasma and Polysilicon Etch Characterization in an Inductively Coupled Plasma Etch Reactor." M. Khater and L. Overzet. Plasma Sources Sci. Technol. 13, 466–483 (2004). • "Investigation and Modeling of Plasma-Wall Interactions in Inductively Coupled Fluorocarbon Plasmas." E. Joseph, B. Zhou, S. Sant, L. Overzet and M. Goeckner. J. Vac. Sci. Technol. A 22, 689-697 (2004). • "Comparison of Negative Ion and Positive Ion Assisted Etching of Silicon." S. K. Kanakasabapathy, M. H. Khater and L. J. Overzet. Appl. Phys. Lett. 79, 1769-1771 (2001). • "Alternating fluxes of positive and negative ions from an ion-ion plasma." Sivananada K. Kanakasabapathy, Lawrence J. Overzet, Vikas Midha and Demetre Economou. Appl. Phys. Letts., 78, 22-24 (2001). • "A new inductively coupled plasma source design with improved azimuthal symmetry control" Marwan H. Khater and Lawrence J. Overzet. Plasma Sources Sci. Technol. 9, 545-561 (2000).
SCIENTICIC AND PROFESSIONAL SOCIETIES (WHICH A MEMBER:	Member of the American Vacuum Society Senior Member of IEEE
HONORS & AWARDS:	Polykarp Kusch Lecturer for UTD 2005
INSTITUTIONAL AND PROFESSIONAL SERVICE IN THE LAST 5 YEARS	• Plasma Science Research at UTD: From Fluorocarbons to CNTs." L. Overzet, M. Goeckner and G.-S. Lee. University of Orleans - GREMI seminar. Orleans, France May 2004. • "Can you use electron-free plasmas to generate 'new' etch chemistries using 'old' gases?" L. J. Overzet, Northern CA Chapter of the American Vacuum Society - Plasma Etch Users Group meeting 8/9/01. • An Inductively Coupled Plasma Source: Design and Characterization." L. J. Overzet, University of Wisconsin Center for Plasma Aided Manufacturing Seminar. Madison WI, 12/00. • "Why Would You Want to Use Plasma to Process Materials?" L. J. Overzet, University of Texas at Dallas Chemistry Program Seminar. Dallas TX 11/00. • "Experimental measurements of ion-ion plasma formation." L. J. Overzet, Sivananda K. Kanakasabapathy, Marwan H. Khater and Jennifer L. Kleber. 53rd Gaseous Electronics Conference, Houston TX, 10/2000. Bull. Amer. Phys. Soc. 45, 12 (2000).
COURSES TAUGHT 2003-2004:	"Solid State Electronic Devices" at both the undergraduate (EE3310 and EE3210) and graduate (EE6320) levels, "Semiconductor Processing Technology" (EE6322), "Process Integration" (EE8320) and three courses on "Plasma Processing of Materials" UTD's plasma related courses are expanding as we expand our lab capabilities to form an integrated package of 7 classes. EE5383 "Plasma Technology" and its Laboratory (EE5283) comprise a hardware oriented study of useful laboratory plasmas. designed to introduce both beginning graduate students and upper level undergraduates to vacuum system hardware, basic plasma theory and some uses of plasma. EE6383 "Plasma Science" and its Laboratory (EE6283)

comprise a study of the fundamental properties, chemistry, diagnostics and equations of plasmas. intended to move students one step closer to cutting edge research. EE7383 "Advanced Plasma Processing Systems" and its laboratory (EE7283) comprise an in-depth study of advanced plasma processing environments. Finally, EE7171 is a seminar in which we read and discuss current literature on plasma processing

PROFESSIONAL DEVELOPMENT ACTIVITIES I THE LAST FIVE YEARS:	UTD Clean Room Director Over 10 different committee for EE and UTD each year McDermott Scholars Faculty Member Secretary for Plasma Science and technology Division of AVS (elected position) Spent month of May at GREMI in Orleans France working with colleagues there (2004,2005)

NAME:	Issa M. S. Panahi
ACADEMIC RANK:	Assistant Professor
DEGREES WITH FIELDS, INSTITUTIONS AND DATES:	Ph.D. in Electrical Engineering, University of Colorado, Boulder, Colorado, 1988 M.S. in Electrical Engineering, Florida Institute of Technology, Melbourne, Florida, BS in Electrical Engineering, Electronics and Control Systems, Tehran Polytechnic U 1974.
YEARS IN SERVICE AT UT DALLAS:	2 years
OTHER RELATED EXPERIENC	Visiting Associate Professor, Department of Electrical Engineering, UTD 2001-2003 Lecturer, Department of Electrical Engineering, University of Colorado, Boulder 1986-1987
CONSULTING, PATENTS, ETC.:	Consultant to Texas Instruments Inc. 2004-2005 Patent: US Patent # : 6,069,808, May 2000. Issa M.S. Panahi, Stefan Beierke, Texas Instuments,Inc., " Symmetric 4-Space Vector Pulse Width Modulation Waveform Generation",
STATE(S) IN WHICH REGISTERED:	Texas
PRINCIPAL PUBLICATIONS IN THE LAST FIVE YEARS:	I. Panahi, Z. Zhenyu, M. Arefen, "TMS320F243/F241/C242 DSP Controller, Systems and Peripherals", Application Book, Texas Instruments, Digital Signal Processing Solotions, 2000. I. Panahi, Z. Zhenyu, M.Arefeen, David Figoli, "TMS320LF240x DSP Controller, Systems and Periphals", Application Book , Texas Instuments, Digital Signal Processing Solutions, 2000. M.Hajiaghajani,H.A.Toliyat,I.M.S. Panahi, " Advanced Fault Diagnosis of a DC Motor", IEEE Transaction on Energy Conversion, VOL.1, NO.1pp 60-65, March 2004. D.L. MacFarlane, J. Tong, C .Fafadia, V. Govindan, L.R. Hunt, and I. Panahi, "Extended Lattice Filters Enabled by four Directional Couplers", Applied Optics, vol.43, issue 33, Nov.2004 L.R. Hunt, V.Govindan, I. Panahi, J.Tong, G.Kannan, D.L. Macfarlane,and G.A. Evans " Active Optical Lattice Filters" , accepted, EURASIP Jour. Applied Signal Processing, Nov.2004.
SCIENTIFIC AND PROFESSIONAL SOCIETIES C WHICH A MEMBER:	Member, IEEE Signal Processing Society Treasurer, Signal Processing Society, Dallas Chapter of IEEE Reviewer for IEEE Transaction on Communication, Circuits and Systems

HONORS & AWARDS:	N/A
INSTITUTIONAL AND PROFESSIONAL SERVICE IN THE LAST 5 YEARS	N/A
COURSES TAUGHT 2003-2004:	N/A
PROFESSIONAL DEVELOPMENT ACTIVITIES IN THE LAST FIVE YEARS:	N/A

NAME:	William Pervin
ACADEMIC RANK:	Professor
DEGREES WITH FIELDS, INSTITUTIONS AND DATES:	B.S., Mathematics, University of Michigan, 1952 M.S., Mathematics, University of Michigan, 1952 Ph.D., Mathematics, University of Pittsburgh, 1957
YEARS IN SERVICE AT UT DALLAS:	30 years
OTHER RELATED EXPERIENCE:	Professor, Drexel University, 6 years Associate Professor, University of Wisconsin-Milwaukee, 3 years Assistant/Associate Professor, Pennsylvania State University, 7 years
CONSULTING, PATENTS, ETC.:	
STATE(S) IN WHICH REGISTERED:	
PRINCIPAL PUBLICATIONS IN THE LAST FIVE YEARS:	"Optimized Implementation of the FFT Algorithm on the TMS320C62x and the TMS320C64x DSP", International Signal Processing Conference, 2002 [with Sankaran, Cantrell] "Optimized Implementations of the Convolution Algorithm in the TMS320C64x and the TMS320C62x DSP", International Signal Processing Conference, 2003 {with Sankaran, Cantrell]
SCIENTICIC AND PROFESSIONAL SOCIETIES (WHICH A MEMBER:	IEEE, ACM, AMS
HONORS & AWARDS:	Outstanding Service Award, IEEE-Computer Society Dallas Section, 2000
INSTITUTIONAL AND PROFESSIONAL SERVICE IN THE LAST 5 YEARS	N/A
COURSES TAUGHT 2003-2004:	Spring 2003: EE2300, EE2310, TE3346

PROFESSIONAL DEVELOPMENT ACTIVITIES LAST FIVE YEARS:	Taking SFDA during 2003-2004 Academic Year

NAME:	Periagaram K. Rajasekaran
ACADEMIC RANK:	Senior Lecturer
DEGREES WITH FIELDS, INSTITUTIONS AND DATES:	Ph.D. (EE), Southern Methodist University, 1971 M.S. (Eng.), Indian Institute of Science, 1968 B.S. (Eng.), Madras Institute of Technology, 1965 B.S. (Phy), University of Madras, 1962
YEARS IN SERVICE AT UT DALLAS:	3
OTHER RELATED EXPERIENCE:	Prior Faculty experience at the Indian Institute of Technology, Madras, India and the Instituto de Astrofisica, Optica y Electronica, Mexico (5 years) 23 years of R&D experience at Texas Instruments from being an individual contributor to Director, Media Technologies Laboratory supervising Ph.D. level research staff.
CONSULTING, PATENTS, ETC.:	8 patents, all in signal and speech processing while at Texas Instruments
STATE(S) IN WHICH REGISTERED:	
PRINCIPAL PUBLICATIONS IN THE LAST FIVE YEARS:	
SCIENTIFIC AND PROFESSIONAL SOCIETIES WHICH A MEMBER:	IEEE
HONORS & AWARDS:	Editorial Board, Marcel-Dekker Publishers (past) Editorial Board, Eurosip Journal on Applied Siganl
INSTITUTIONAL AND PROFESSIONAL SERVICE IN THE LAST 5 YEARS	
COURSES TAUGHT 2003-2004:	EE 3350: Communication Systems EE/TE 3302: Signals & Systems EE/TE3301: Signals & Systems Laboratory
PROFESSIONAL DEVELOPMENT ACTIVITIES I THE LAST FIVE YEARS:	

NAME:	Ricardo Saad
ACADEMIC RANK:	Senior Lecturer
DEGREES WITH FIELDS, INSTITUTIONS AND DATES:	Ph.D. in Electrical Engineering, University of Toronto, Canada, Jan. 1996.- Master in Electrical Engineering, State University of Campinas, Brazil, Oct. 1989
YEARS IN SERVICE AT UT DALLAS:	4 years
OTHER RELATED EXPERIENCE:	• Lecturer, University of Texas at Dallas. (September – December 2000) -Lecture a graduate course in optical communication • Adjunct Professor: Cordoba National University, Cordoba, Argentina (Dec. 1995- Dec. 2000). -Lectured short courses in optical communications at the graduate level and for industry. • Research Associate: CIMLab, University of Toronto, Canada (Mar. 1996-Jun. 1996).Research and development of optical sensors. • Research Assistant: CIMLab. University of Toronto, Canada (Sept. 1991-February 1996). • Research and development of optical sensors. • Teaching Assistant: ECE, University of Toronto, Canada 1990, 1991,/1992, 1992 and1994)
CONSULTING, PATENTS, ETC.:	US patent 6594071: Method and apparatus for amplifier control. Issue date: 7/15/2003
STATE(S) IN WHICH REGISTERED:	N/A
PRINCIPAL PUBLICATIONS IN THE LAST FIVE YEARS:	• R. E. Saad, A. Bonen, K. C. Smith and B. Benhabib, *Proximity Sensing for Robotics*, Chapter 8, The Measurement, Instrumentation, and Sensors Handbook, Ed. John G. Webster, CRC Press, Boca Raton, Florida, 1999, ISBN 0-8493-8347-1, pp. 8-1 to 8-16. • -R. E. Saad, A. Bonen, K. C. Smith and B. Benhabib, *Tactile Sensing*, Chapter 25, The Measurement, Instrumentation, and Sensors Handbook, Ed. John Webster, CRC Press, Boca Raton, Florida, 1999, ISBN 0-8493-8347-1, pp. 25-1 to 25-17.
SCIENTIFIC AND PROFESSIONAL SOCIETIES OF WHICH A MEMBER:	Member of the Institute of Electrical and Electronics Engineers (IEEE). (1992-Present) -IEEE Communications Society -IEEE Microwave Theory and Techniques Society.

HONORS & AWARDS:	• Alcatel 1680 Optical Gateway Manager Achievement Award in recognition for “outstanding effort and dedication during the development of the 10 Gbps optical receiver”. • 1997 Harmonic Lightwaves Research & Development Award in recognition for “outstanding contribution to the company and to technical advancement.” • 1997 Harmonic Lightwaves Award to acknowledge that under my leadership the PWRLinkII project was kept “on time and under budget.” • 1995 ECE Department Scholarship, University of Toronto. • 1994-1995 ECE Department Scholarship, University of Toronto. • 1993 V. C. Smith Fellowship in EE, University of Toronto. • University of Toronto Open Fellowship. • CNPq Scholarship (Brazilian Government). • University of Toronto Open Fellowship. • Master’s thesis approved with Distinction Award. The State University of Campinas, Sao Paulo, Brazil. • CAPES Scholarship (Brazilian Government). • 1986 First Place in the 1986 Dean’s List - Award granted by Cordoba National University in recognition for obtaining the highest average grade of the 1986 Electrical Engineering Class
INSTITUTIONAL AND PROFESSIONAL SERVICE IN THE LAST 5 YEARS	Added an undergraduate course to the catalog (Introduction to Optical Systems)
COURSES TAUGHT 2003-2004:	
PROFESSIONAL DEVELOPMENT ACTIVITIES I THE LAST FIVE YEARS:	Attended the following conferences: 2005 Fiber Optic Expo, Tokyo, Japan 2004 European Conference on Optical Communication, Stockholm, Sweden 2004 Optical Fiber Communication Conference, Los Angeles, California 2002 Optical Fiber Communication Conference, Anaheim, California. 2001 Optical Fiber Communication Conference, Anaheim, California.

2001 NFOEC, Anaheim, California.
2000 Optical Fiber Communication Conference, Anaheim, California.
Paticipated in high level technical meetings in industry to set up industry standards

NAME:	Rama Sangireddy
ACADEMIC RANK:	Assistant Professor
DEGREES WITH FIELDS, INSTITUTIONS AND DATES:	• Ph.D. in Computer Engineering, August 2003 Iowa State University, Ames, Iowa, USA Dissertation: On-Chip Adaptive Components for Balanced Computing • M.S. in Electrical Engineering, May 1999 University of Missouri-Rolla, USA. • B.S. *(distinction)* in Electrical & Electronics Engineering, May 1996 • National Institute of Technology (formerly Regional Engineering College), Warangal, India
YEARS IN SERVICE AT UT DALLAS:	2 Years
OTHER RELATED EXPERIENCE:	N/A
CONSULTING, PATENTS, ETC.:	N/A
STATE(S) IN WHICH REGISTERED:	N/A
PRINCIPAL PUBLICATIONS IN THE LAST FIVE YEARS:	• Rama Sangireddy, Natsuhiko Futamura, Srinivas Aluru, and Arun K. Somani, "Scalable, Memory Efficient, High-Speed Algorithms for IP Lookups", accepted and to appear in IEEE/ACM Transactions on Networking, August 2005 • Rama Sangireddy, Huesung Kim, and Arun K. Somani, "Low-Power High-Performance Reconfigurable Computing Cache Architectures", in IEEE Transactions on Computers, Vol.53, No.10, October 2004, pp. 1274-1290. • Rama Sangireddy and Arun K. Somani, "High-Speed IP Routing with Binary Decision Diagrams Based Hardware Address Lookup Engine", in IEEE Journal on Selected Areas in Communications, IEEE J-SAC, Vol. 21. No. 4, May 2003, pp. 513-521. • Rama Sangireddy and Arun K. Somani, "On-Chip Adaptive Circuits for Fast Media Processing", submitted and in review with IEEE Transactions on Circuits and Systems -II. • Rama Sangireddy "Operand Load Based Approach for Reducing Register Port Complexity in Wide-issue Processors", submitted and in review with IEEE

Transactions on Computers.

- Rama Sangireddy "Reducing Rename Logic Complexity for Low-power High-speed Front-end Architectures", submitted and in review with IEEE Transactions on Computers

SCIENTIFIC AND PROFESSIONAL SOCIETIES OF WHICH A MEMBER:	Since October 2003, serving as member of Graduate committee in Department of Electrical Engineering at University of Texas at Dallas
HONORS & AWARDS:	Received Research Excellence Award for accomplishments in Ph.D. at Iowa State University
INSTITUTIONAL AND PROFESSIONAL SERVICE IN THE LAST 5 YEARS	
COURSES TAUGHT 2003-2004:	• Currently, in spring 2005, teaching Computer Architecture for graduate students • In fall 2004, taught Computer Architecture for undergraduate students • Also, in fall 2004, taught Advanced Computer Architecture for graduate research students • In spring 2004, taught Fault Tolerant Digital Systems for graduate students
PROFESSIONAL DEVELOPMENT ACTIVITIES IN THE LAST FIVE YEARS:	Had established the High Performance Dependable Computing Laboratory in October 2003, after joining the EE department at UTD. Currently responsible to supervise a team of graduate students to conduct research in the areas of Computer Architecture, Computer Communications and Dependable Computing.

NAME:	Mohammad Saquib
ACADEMIC RANK:	Assistant Professor
DEGREES WITH FIELDS, INSTITUTIONS AND DATES:	Bachelor of Science, 05/1991, Electrical Engineering, Bangladesh University of Engineering and Technology, Bangladesh Master of Science, 01/1995, Electrical and Computer Engineering, Rutgers University Doctor of Philosophy, 01/1998, Electrical and Computer Engineering, Rutgers University
YEARS IN SERVICE AT UT DALLAS:	5 years
OTHER RELATED EXPERIENCE:	Donald Ceil & Elaune T. Delaune Endowed Assistant Professor, 01/00 - 06/00, Louisiana State University Assistant Professor, 01/99 - 06/00, Louisiana State University Technical Staff, 01/98 - 12/98, MIT Lincoln Laboratory System Engineer, 06/91-01/92, Energy Research Corporation
CONSULTING, PATENTS, ETC.:	Method and Apparatus for Parallel Information Transmission in Wireless Communication Systems, M. Saquib, US Patent Registration No. 40552 (December 2003)
STATE(S) IN WHICH REGISTERED:	N/A
PRINCIPAL PUBLICATIONS IN THE LAST FIVE YEARS:	Soft-length Symbol Protocols for Wireless Networks O. Jegbefume, M. Saquib and M. Z. Win IEEE Communications Letters (accepted for publication, April 2005) – Pilot-aided Chip-Interleaved DS-CDMA Transmission over Time-varying Channels Y. Na, M. Saquib and M. Z. Win, IEEE Journal on Selected Areas in Communications (accepted for publication, April 2005) – Fade Resistant Transmission over Time-Varying

Wireless Channels
M. Saquib and M. Win,IEEE Signal Processing Letters, 11 6 (June 2004) 561 - 564
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SCIENTIFIC AND PROFESSIONAL SOCIETIES OF WHICH A MEMBER:	IEEE
HONORS & AWARDS:	• Best Teaching Award for "excellence in teaching Electrical Engineering and Telecommunications Classes", Dean of the School of Engineering, The University of Texas at Dallas, 2002 - 2003 • Donald Ceil & Elaune T. Delaune Endowed Professorship for "excellence in research and teaching", Dean of the College of Engineering, Louisiana State University, January 2000 – December 2004 • James Leroy Potter Award for original investigation of the joint-work "An Asynchronous Multi-rate Decorrelator" received by the undergraduate student A. Ganti, Department of Electrical & Computer Engineering, Rutgers University, 1996 Government Merit Scholarship, Board of Secondary and Higher Secondary Education, Dhaka, Bangladesh, 1986-1991
INSTITUTIONAL AND PROFESSIONAL SERVICE IN THE LAST YEARS	Member, Graduate Admission Committee - TE Program Served on four Doctoral thesis committees and six Masters thesis committees
COURSES TAUGHT 2003-2004:	Semester Prefix Number Course Name Enrollment Fall 2004 EE 4365 Introduction to Wirless Communications Systems 29 Fall 2004 EE 6365 Adaptive Signal Processing 14 Spring 2004 EE 6349 Random Process 39 Fall 2003 EE 4365 Introduction to Wirless Communications Systems 24 Fall 2003 EE 6365 Adaptive Signal Processing 25 Spring 2003 EE 6349 Random Process 56
PROFESSIONAL DEVELOPMENT ACTIVITIES IN THE LAST FIVE YEARS:	Associate Editor, IEEE Transactions on Wireless Communications (EDICS: Wireless Communications Associate Editor, IEEE Communications Letter (EDICS: Wireless Communications - UWB, MIMO channel, Wireless Techniques and Fading, Interference Suppression, etc.) NSF Panelist, Theoretical Foundation (TF) Cluster Review Panel, Computer and Information Science and

Engineering (CISE) Division
Technical Program Committee Member, Digital Signal Processing Symposium, IEEE Vehicular Technology Conference (Fall) 2004

- Reviewer for IEEE Transactions on Communications, Vehicular Technology, Information Theory, Signal Processing and Wireless Personal Communications, Systems and Control Letters, and others
- Reviewer for various conferences, including IEEE International Conference on Communications, IEEE Vehicular Technology Conference, IEEE Military Communications Conference, IEEE International Symposium on Circuits and Systems, andIEEE International Symposium on Information Theory

NAME:	Don Shaw
ACADEMIC RANK:	Professor
DEGREES WITH FIELDS, INSTITUTIONS AND DATES:	B.S. Chemistry and Mathematics, East Texas State University,1958 Ph.D.Physical Chemistry, Baylor University, 1965
YEARS IN SERVICE AT UT DALLAS:	8 years
OTHER RELATED EXPERIENCE:	Member of the Technical Staff, Central Research Laboratories, 1965-1972 Senior Scientist, Central Research Laboratories, 1972-1978 Manager, Exploratory Materials Branch, Physical Sciences Research Laboratory,1978-1979
CONSULTING, PATENTS, ETC.:	N/A
STATE(S) IN WHICH REGISTERED:	N/A
PRINCIPAL PUBLICATIONS IN THE LAST FIVE YEARS:	
SCIENTICIC AND PROFESSIONAL SOCIETIES OF WHICH A MEMBER:	N/A
HONORS & AWARDS:	Electrochemical Society Electronics Division Award, 1983 National Academy of Engineering, 1988 International Gallium Arsenide Symposium Award, 1989 Heinrich Welker Gold Medal, 1989 Distinguished Alumnus Award, East Texas State University, 1989 TI Principal Fellow, 1993 Regents Lecturer, University of California at San Diego, 1998 Harry C. Gatos Prize, Massachusetts Institute of Technology, 1998 Wilfred T. Doherty Award, American Chemical Society, DFW Section, 1999 Salute to Excellence Award, American Chemical Society, DFW Section, 2003
INSTITUTIONAL AND PROFESSIONAL SERVICE IN THE LAST 5 YEARS	N/A

COURSES TAUGHT 2003-2004:	N/A
PROFESSIONAL DEVELOPMENT ACTIVITIES LAST FIVE YEARS:	Chemical Abstracts, Russian language abstractor,1965-1975 International Conference on Vapor Growth and Epitaxy, 1981, (Co-Chairman) International Symposium on Compound Semiconductors, 1986,Chairman Journal of the Electrochemical Society (Divisional Editor, 1981-1991 Journal of Crystal Growth , Associate Editor, 1978-present Journal of Material Research, Principal Editor, 1997-present

NAME:	Marco Tacca
ACADEMIC RANK:	Senior Lecturer
DEGREES WITH FIELDS, INSTITUTIONS AND DATES:	Laurea Degree. Electrical Engineering, 1998, Politecnico di Torino, Torino Italy Doctor of Philosophy, Electrical Engineering, 2002, University of Texas at Dallas
YEARS IN SERVICE AT UT DALLAS:	3 years
OTHER RELATED EXPERIENCE:	N/A
CONSULTING, PATENTS, ETC.:	US-patent 139136, â€œ*Method and Apparatus for Dynamic Provisioning of Reliable Connections in Presence of Multiple Failures",* inventors: A. Fumagalli, S. Darisala, P. Kothandaraman, M. Tacca, L. Valcarenghi, M. Ali, D. Elie-Dit-Cosaque Patents: EU-patent 04002521.5-, â€œ*Method and Apparatus for Dynamic Provisioning of Reliable Connections in Presence of Multiple Failures",* inventors: A. Fumagalli, S. Darisala, P. Kothandaraman, M. Tacca, L. Valcarenghi, M. Ali, D. Elie-Dit-Cosaque
STATE(S) IN WHICH REGISTERED:	N/A
PRINCIPAL PUBLICATIONS IN THE LAST FIVE YEARS:	P. Monti, M. Tacca, and A. Fumagalli, *â€œResource-efficient path-protection schemes and online selection of routes in reliable WDM networksâ€*, The Journal of Optical Networking Vol. 3, pp. 188-203, April 2004 M.Tacca, A. Fumagalli, A. Paradisi, S. Lakshmanan, S.M. Rossi, A. de Campos Sachs, D.S. Shah, F. Unghvary, *â€œDifferentiated Reliability in Optical Networks: Theoretical and Practical Resultsâ€*, OSA/IEEE Journal of LightWave Technology, special issues on Optical Networks vol. 21, no. 11, pp. 2576-2586, November 2003 A. Fumagalli, I. Cerutti, M. Tacca, *â€œOptimal Design of Survivable Mesh Networks Based on Line Switched WDM Self-Healing Ringsâ€*, ACM/ IEEE Transactions of Networking vol. 11, no. 3, pp. 501-512, June 2003. M. Burzio, J. Cai, A. Carena, I. Cerutti A. Fumagalli, R. Gaudino, N. Portinaro, M. Tacca, L. Valcarenghi, *â€œNetworkPlanning* -- *Artifex* -- *OptSim: A Suite of Integrated Software Tools for Synthesis and Analysis of High Speed*

Networksâ€ , Optical Network Magazine, special issue on modeling and simulation techniques Vol. 2, No. 5, pp. 27-41, September/October 2001
I. Cerutti, A. Fumagalli, M. Tacca, A. Lardies, R. Jagannathan The Multi-Hop Multi-Rate Wavelength Division Multiplexing Ring IEEE/OSA JLT special issue on Optical Networks Vol. 18, No. 12, pp. 1649-1656, December 2000

SCIENTICIC AND PROFESSIONAL SOCIETIES WHICH A MEMBER:	IEEE
HONORS & AWARDS:	N/A
INSTITUTIONAL AND PROFESSIONAL SERVICE IN THE LAST 5 YEARS	• feature editor for SPIE/Kluwer â€œOptical Network Magazineâ€ • IEEE GLOBECOM '03 - Technical program committee of the *Optical Networking and Systems Symposium* at IEEE GLOBECOM 2003 • IEEE DRCN 03 - Exhibit chair. • IEEE DRCN 03 - Session Chair • Broadnets 2004 - Technical program committee IEEE GLOBECOM '04 - Technical program committee of the *Optical Networks Symposium* at IEEE
COURSES TAUGHT 2003-2004:	• EE 3120 (Co-instructor) Digital Systems Lab (Fall 2004) • EE 4381 Senior Design Project (Fall 2004) • EE 6340 Introduction to Telecommunications Network (Spring 2003, Fall 2003, Spring 2004) • EE 6360 Digital Signal Processing I (Spring 2003, Spring 2004) EE 7340 Optical Network Architectures and Protocols
PROFESSIONAL DEVELOPMENT ACTIVITIES LAST FIVE YEARS:	N/A

NAME:	Lakshman Tamil
ACADEMIC RANK:	Professor
DEGREES WITH FIELDS, INSTITUTIONS AND DATES:	Ph.D. 1989 University of Rhode Island, Electrical Engineering, Dissertation: Inversere Scattering Theory Applications to optical Waveguides M.S. 1989 University of Rhode Island, Mathematics Master of Technology 1983 Indian Institute of Technology, Kharagpur, India Thesis: Synthesis of Microwave Planar Circuits Using Time Domain Techniques B.E. 1981 Madurai Kamaraj University, Madurai, India, Electronics and Communications Engineering
YEARS IN SERVICE AT UT DALLAS:	16 years
OTHER RELATED EXPERIENCE:	UTD , School of Engineering and Computer Science *Full Professor of Electrical Engineering, Sept. 1999*-Present Yotta Networks, Inc. *Founder, CEO & CTO, Jan. 2*000-Sept. 2003 Alcatel, Richardson, TX *Senior Scientist and Unit Manager,* Sep. 1997-Jan. 1999. UTD , School of Engineering and Computer Science ,*Associate Professor of Electrical Engineering*, Sept..1993-Sep. 1999 UTD , School of Engineering and Computer Science, *Assistant Professor Electrical Engineering*, June 1988-Sept. 1993
CONSULTING, PATENTS, ETC.:	Spike Technologies, Inc. ,Alcatel, Raytheon, Lighthouse Capital Partners,McKool Smith, L.L.P. Patents: • All-optical networking optical fiber line delay buffering apparatus and method, **U.S. Patent 6,819,870**, Nov. 16, 2004. co-inventor: An Ge.. • Non-Blocking , scalable optical router architecture and method for routing optical traffic, **U.S. patent 6,665,495** , Dec. 16, 2003. co-inventors: L. Miles, S. Rothrock, N. Posey and G. Aicklen, • Focused narrow beam communication system," **U. S. patent 6,169,910** issued on Jan 02, 2001, Co-inventors: A. Chapman and D. Carey. • Optical Logic Gates with High Extinction Ratio Using Inverse Scattering Technique,**U.S. Patent 5,414,789**, issued on May 9, 1995, co-inventor: A. K. Jordan. • Optical Communication System Having A Wide Core Planar Waveguide, (**U.S. Patent 4,961,618,** Oct. 09, 1990), co-inventor: A. K. Jordan.
STATE(S) IN WHICH REGISTERED:	N/A
PRINCIPAL PUBLICATIONS IN THE LAST FIVE YEARS:	• M. M. Zhou, and L. S. Tamil, "Optimized design methodologies of hierarchical optical networks, APOC-2004, Beijing, China, Nov.7-11, 2004. *(Invited Paper)* [5626-47] • H. Shi, L.S. Tamil, "A wavelength locking scheme for semiconductor

laser systems based on an interpolation algorithm," Photonics Technology Letters, IEEE, vol. 16, no.17, pp.1622 -1624, July 2004.

- T. Landolsi, L.S. Tamil, C.D.Cantrell, "Continuous and discrete wavelet transform analysis of nonlinear pulse propagation in single mode fibers," *Opt. Fiber Technol., Mater. Devices Syst.* vol.7, no.2, pp. 65-83, Apr. 2001.
- A. Ge, F. Callegati, and L.S. Tamil, "On optical burst switching and self-similar traffic," *IEEE Communications Letters* , vol. 4, no. 3, pp. 98-100, Mar. 2000.
- L. Tancevski, S. Yegnanarayanan, G. Castanon, L. Tamil, F. Masetti, and T. McDermott, "Optical routing of asynchronous, variable length packets, *IEEE J. Sel. Areas Commun.*, vol. 8, pp.2084-2093, Oct. 2000.
- E. A. Qaddoura, R. Prakash, L. Tamil, "Aggressive error recovery for TCP over wireless links," *Integr. Comput.-Aided Eng.,*vol. 7, pp. 287-296, 2000.
- L. Tancevski, G. Castanon, L. Tamil, "A granularity based analysis of optical IP packet transport," in *Proc. Photonics in Switching Topical Meeting (OSA Trends in Optics and Photonics Series),* vol. 32, P. R. Prucnal, and D. J. Blumenthal, Ed. Washington, DC: OSA, pp.77-82, 2000.
- G. Castanon, L. Tancevski, L. Tamil, "Deflection routing in all-optical packet switched irregular networks," in *Proc. Photonics in Switching Topical Meeting (OSA Trends in Optics and Photonics Series)* vol. 32, Ed. P. R. Prucnal and D. J. Blumenthal, Washington, DC: OSA, pp. 59-64, 2000.
- Ge, L. Tancevski, G. Cantanon, L.S. Tamil, "WDM fiber delay line buffer control for optical packet switching," in *Proc. SPIE - OptiComm 2000: Optical Networking and Communications*, vol. 4233, pp.247-256, 2000.
- S. Yegnanarayanan, L. Tancevski, G. Castanon, L. Tamil, "Low-jitter asynchronous optical packet regenerator using wavelength sampling
- Technique," presented at Proc. Opt. Fiber Commun. Conf. 2000, Baltimore, MD, Mar. 7-10, 2000. Published in post Conference Technical Digest, *Trends in Optics and Photonics*, vol. 37, Ed. T. Li, pp. 353-355 in vol.2.

SCIENTICIC AND PROFESSIONAL SOCIETIES OF WHICH A MEMBER:	Senior Member of IEEE, Optical Society of America
HONORS & AWARDS:	Alcatel Award of recognition for his scientific and management contributions to Terabit IP Optical Router Project
INSTITUTIONAL AND PROFESSIONAL SERVICE IN THE LAST 5 YEARS	Engineering School Committee Served on: Academic Affairs Committee, Personal Review Committee, Chair, Ad-hoc committee for Promotion, In-charge of developing joint Engineering and Management graduate degree programs

COURSES TAUGHT 2003-2004:	Fall 2004 EE 2300 Applied Linear Algebra Fall 2004 EE 7V86 RF Identification & Sensing: Systems and Networks
PROFESSIONAL DEVELOPMENT ACTIVITIES I THE LAST FIVE YEARS:	N/A

NAME:	Murat Torlak
ACADEMIC RANK:	Assistant Professor
DEGREES WITH FIELDS, INSTITUTIONS AND DATES:	B.S. Electrical & Electronics Engineering, Hacettepe University, 1992 M.S. Electrical & Computer Engineering, The University of Texas at Austin, 1995 Ph.D. Electrical & Computer Engineering, The University of Texas at Austin
YEARS IN SERVICE AT UT DALLAS:	6 years
OTHER RELATED EXPERIENCE:	Principal Engineer, Cwill Telecommunications, Inc. Austin,TX,1998 Software Engineer, Cwill Telecommunications, Inc., Austin,TX,1997
CONSULTING, PATENTS, ETC.:	N/A
STATE(S) IN WHICH REGISTERED:	N/A
PRINCIPAL PUBLICATIONS IN THE LAST FIVE YEARS:	"Space-Time Blind Adaptive Processing with Block Shannon Constant Modulus Algorithm", D. Paik, R.M. Golden, M.Torlak, and E.M. Dowling, IEEE Trans. On Signal Processing, accepted pending minor revisions. "Packet Combining with Adaptive Re-transmission Control in DS-CDMA Random Access Network," M.Z. Ali and M. Torlak, IEEE Communications Letters, vol. 8, No.11, pp. 659-661, Nov. 2004. "Reduced-Rank RAKE receivers for asynchronous CDMA Signals," O. Ozdemir and M.Torlak, Signal Processing,vol.84, no. 8, pp.1385-1395, August 2004. "Performance of Beamspace Transmit Diversity Technique in Two Beam Rayleigh Fading Channels", M. Torlak, International Journal of Wireless Personal Communications, pp. 277-286, vol. 28, no.4, March 2004. "Vector channels for smart antennas: measurements, statistical modeling, and directional properties in outdoor environments," A. Kavak,M. Torlak, W.J.Vogel, and G. Xu, IEEE Trans. On Microwave Theory and Techniques,vol.48,no.6, pp. 930-937, June 2000.

SCIENTICIC AND PROFESSIONAL SOCIETIES OF WHICH A MEMBER:	Senior member IEEE Member of IEEE Signal Processing Society and IEEE Communications Society Editorial Board, Journal of Naval Science and Engineering
HONORS & AWARDS:	Outstanding Service Award, IEEE Signal Processing Society Dallas Chapter,2004 Best Paper Award 5th World Multi-conf. on Systemics, Cybernetics and Infor,2001
INSTITUTIONAL AND PROFESSIONAL SERVICE IN THE LAST 5 YEARS	Program Chair, IEEE Signal Processing Society Dallas Chapter, 2003-present Session Chair ,IEEE Asilomar Conf.,2004, IEEE ICC,2004,IEEE WCNC, 2004 TPC, IEEE ISCAS, 2002, IEEE ICC, 2003 IEEE VTC(Fall) 2003,2005, and IEEE SPS, 2004 Reviewer, IEEE Trans. On Signal Processing, IEEE Trans.on Wireless Comm., IEEE Signal Processing Letters, IEEE Trans. On Comm., IEEE Trans. On Veh.Tech. and IEEE Comm. Letters. EURASIp Journals, IEEE Globecom, ICC, WCNC,ISCAS,SPS Member, EE Computer Committee, EE Senior Design Project Committee, EE Honors Committee
COURSES TAUGHT 2003-2004:	N/A
PROFESSIONAL DEVELOPMENT ACTIVITIES LAST FIVE YEARS:	N/A

NAME:	T.R. Viswanathan
ACADEMIC RANK:	Research Professor
DEGREES WITH FIELDS, INSTITUTIONS AND DATES:	Bachelor of Science, Physics, 1956 ,Master of Science, Electrical Engineering, 1961, University of Saskatchewan, Canada Doctor of Philosophy, Electrical Engineering, 1964, University of Saskatchewan
YEARS IN SERVICE AT UT DALLAS:	1 year
OTHER RELATED EXPERIENCE:	Texas Instruments, Director R&D 1995-2000 AT&T Bell Laboratories, Technical Manager 1985 -1995 Jan. 86 to Feb. 95 - Adjunct Professor at the Moore School, University of Pennsylvania, Philadelphia. Jan. 83 to Dec. 85 - Professor of Electrical Engineering, University of Waterloo, Waterloo, Ontario, Canada.
CONSULTING, PATENTS, ETC.:	28 US Patents granted
STATE(S) IN WHICH REGISTERED:	N/A
PRINCIPAL PUBLICATIONS IN THE LAST FIVE YEARS:	Viswanathan, T.R. et al. “A 700 M Samples /sec. 6b Read Channel A/D Converter with 7b Servo Mode” IEEE International Solid -State Circuits Conference, San Francisco, February 2000. Viswanathan, T.R. et al. “A CMOS Band-Gap Reference Without Resistors” IEEE International Solid -State Circuits Conference, San Francisco, February 2000. A paper based on this work appeared in the IEEE Journal of Solid-State Circuits, Vol.37, No.1, January 2002
SCIENTICIC AND PROFESSIONAL SOCIETIES OF WHICH A MEMBER:	Fellow of IEEE
HONORS & AWARDS:	Darlington Award of the Circuits and Systems Society 1998. Jack Kilby Best Paper Award at IEEE ISSCC 2002 IEEE Third Millennium Medal
INSTITUTIONAL AND PROFESSIONAL SERVICE IN THE LAST 5 YEARS	Member of the IEEE Solid State Circuits Society Member of the BOG of the IEEE Circuits and Systems Society Member of the IEEE International Solid-State Circuits Conference Committee

COURSES TAUGHT 2003-2004:	EE 4340 Analog Integrated Circuits Fall '04
PROFESSIONAL DEVELOPMENT ACTIVITIES LAST FIVE YEARS:	Regular participant in IEEE Conferences on Solid-State Circuits

NAME:	Robert Wallace
ACADEMIC RANK:	Professor
DEGREES WITH FIELDS, INSTITUTIONS AND DATES:	B.S./1982,University of Pittsburgh ,Physics, Mathematics M.S./ 1984 University of Pittsburgh, Physics Ph.D./1988 University of Pittsburgh, Physics
YEARS IN SERVICE AT UT DALLAS:	2 years
OTHER RELATED EXPERIENCE:	Director Clean- room Research Laboratory 2004- Professor Depts. of EE and Physics, UTD2003- Sr. Member Inst. Electrical and Electronic Engineers 2002- Professor Dept. of Materials Science, UNT 1999-2003
CONSULTING, PATENTS, ETC.:	Texas Instruments, Inc. R. Merrett, Attorney Infinite Photonics, Patents**:** 38 U.S and 27 Foreign, 317 citations to date
STATE(S) IN WHICH REGISTERED:	N/A

PRINCIPAL PUBLICATIONS IN THE LAST FIVE YEARS:

- S. Jeon, J. Lee, P. Zhao, P. Sivasubramani, T. Oh, H. J. Kim, M. J. Kim, B. E. Gnade, J. Kim, R. M. Wallace, "Novel Methodology on Tuning Work Function of Metal Gate UsingStacking Bi-Metal Layers," IEEE International Electron Devices Meeting Technical Digest (2004)
- M. Quevedo-Lopez, M. El-Bouanani, S. Addepalli, C. Huang, J. L. Duggan, B. E. Gnade, R. M. Wallace, M.R.Visokay, M.Douglas, and L. Colombo, "Hafnium interdiffusion studies from hafnium silicate into Silicon," *Applied Physics Letters* **79** (2001) 4192.
- G.D.Wilk, R.M.Wallace and J.M.Anthony, "Hafnium and Zirconium silicates for advanced gate dielectrics", *Journal of Applied Physics* **87** (2000) 484 (*288 independent citations to date*).
- G.D.Wilk, R.M.Wallace and J.M.Anthony, "High-κ Gate Dielectrics: Current Status and Materials Properties Considerations", *Journal of Applied Physics* **89** (2001) 5243. (*Invited Review Article – over 700 independent citations to date*)
- R.M.Wallace and G. Wilk, "High-k Dielectric Materials for Microelectronics," Critical Reviews in Solid State and

Materials Sciences 28, 231 (2003) (Invited Review Article).

SCIENTIFIC AND PROFESSIONAL SOCIETIES OF WHICH A MEMBER:	Institute of Electrical and Electronic Engineers American Vacuum Society Material Research Society Electrochemical Society
HONORS & AWARDS:	Elected Senior Member of Technical Staff, Texas Instruments, 1996 Elected IEEE Senior Member 2002
INSTITUTIONAL AND PROFESSIONAL SERVICE IN THE LAST 5 YEARS	Appointed Cleanroom Director (2004) EE Department Faculty Search Committee EE Department Chair Search Committee Symposium organizer on Materials for Advanced Electronics, Materials Research Society (Spring 2004) IEEE Semiconductor Interface Specialists Conference Program/Executive Committee (1997-2004)
COURSES TAUGHT 2003-2004:	N/A
PROFESSIONAL DEVELOPMENT ACTIVITIES THE LAST FIVE YEARS:	Editorial Board - Journal of Materials Science: Materials in Electronics (2002-2004) Associate Editor, Journal of Vacuum Science and Technology A (2000-2003) Guest Editor for Bulletin of Materials Research Society – Advanced Dielectrics Issue (March, 2002)

NAME:	Dian Zhou
DATE OF BIRTH:	
ACADEMIC RANK:	Professor
DEGREES WITH FIELDS, INSTITUTIONS AND DATES:	B.S. degree in physics M.S. degree in Electrical Engineering from Fudan University, China, in 1982 and 1985, respectively, and the Ph.D. degree in Electrical and Computer Engineering from the University of Illinois in 1990.
YEARS IN SERVICE AT UTD DALLAS:	1999-2004
RELATED EXPERIENCE:	He joined the University of North Carolina at Charlotte as an assistant professor in 1990, where he became an associate professor in 1995.
CONSULTING, PATENTS, ETC.:	
STATE(S) IN WHICH REGISTERED:	
PRINCIPAL PUBLICATIONS IN THE LAST FIVE YEARS:	His research interests include: High-speed VLSI systems, CAD tools, mixed-signal ICs, and algorithms. Dr. Zhou received the Research Initiation Award from National Science Foundatio IEEE Circuits and Systems and Society Darlington Award in 1993, and the Nationa Foundation Young Investigator Award in 1994. He also served as a panel member CAREER Award in 1996. He was a Guest Editor for the International Journal of C Design, Simulation and Testing, and was an Associate Editor for IEEE TRANSAC CIRCUITS AND SYSTEMS from 1996 to 1998. He received Chinese NSF Overse Outstanding Young Scientist Award in 2000, and Chinese Yangzi River Scholar in Specialization VLSI, CAD tools and Circuits & Systems
SCIENTIFIC AND PROFESSIONAL SOCIETIES OF WHICH A MEMBER:	Publications: My Publications A fast Wavelet Collacation Method for High-Speed Circuit Simulation ----- D.Zhou and W.Cai (Appeared in IEEE Transactions on Circuits and Systems I: Fundamental Theory and Applications, August 1999, Volume 46, Number 8, Pg 920.) An Adaptive Wavelet Method for Nonlinear Circuit Simulation ------ D.Zhou and W.Zhang (Appeared in IEEE Transactions on Circuits and Systems I: Fundamental Theory and Applications, August 1999, Volume 46, Number 8, Pg 931.) Publications related to VLSI and CAD tools
HONORS & AWARDS:	

COURSES TAUGHT 2000-2005:	Courses: EE 3120 Digital Circuits Lab EE 4381 Mobile Communications System Design I EE 5325 Hardware Modeling Using VHDL EE 6375 CAD Algorithms EE 7v81 Special Topics in Digital Systems Physical Design - High Speed VLSI EE 7v81 Special Topics - ASIC Design
OTHER ASSIGNED DUTIES:	
SPECIFIC PROGRAMS IN WHICH INVOLVED TO IMPROVE TEACHING & PROFESSIONAL COMPETENCE:	

Appendix II- Institutional Profile

The Erik Jonsson School of
Engineering and Computer Science
The University of Texas at Dallas
Richardson, Texas 75083

Engineering Accreditation Commission
Accreditation Board for Engineering and Technology

111 Market Place, Suite 1050
Baltimore, Maryland 21202-4012
Phone: 410-347-7700
Fax: 410-625-2238
e-mail: eac@abet.org
www: http://www.abet.org/

A. Background Information Relative to the Institution

1. General Information

Institution name and address:

The University of Texas at Dallas

P.O. Box 830688

Richardson, Texas 75083-0688

Chief Executive Officer:

Dr. David E. Daniel, President

Chancellor:

Dr. Mark Yudoff

Person submitting the completed questionnaire:

Dr. Robert Helms, Dean

Erik Jonsson School of Engineering and Computer Science

2. Type of Control

The University of Texas at Dallas is a state institution. The university is governed by the Board of Regents for The University of Texas System. It is composed of nine members who are appointed by the Governor and confirmed by the Senate. Terms are six years each and staggered with the terms of three members expiring on February 1 of odd-numbered years.

Throughout the more than 100 year history of the U.T. System, the Board has been composed of dedicated and distinguished Texans who have been strong advocates of excellence in academic programs, scientific inquiry, and responsible public service.

Additional information regarding the Board of Regents may be found at www.utd system.edu/bor.

3. Regional or Institutional Accreditation

Southern Association of Colleges and Schools
Initial accreditation: 1972
Most recent accreditation: December 8, 1998
Next Review: 2007

4. Faculty and Students

Information regarding faculty and student headcounts is provided in Table II-1.

Table II-1 Faculty and Student Count for the University of Texas at Dallas

	HEAD COUNT		FTE**	TOTAL STUDENT CREDIT HOURS
	FT	PT		
Tenure Track Faculty[1]	323	21	330	
Other Teaching Faculty (excluding student assistants)	149	204	217	
Student Teaching Assistants	0	486	76	
Undergraduate Students	2471	6599	6002	90,037
Graduate Students	2247	2775	2455	36,830
Professional Degree Students	N/A	N/A	N/A	N/A

** For faculty, 1 FTE is the equivalent of 18 credit hours per academic year.
For student teaching assistants, 1 FTE equals 20 hours of work per week.
For undergraduate and graduate students, 1 FTE equals 15 credit hours of institutional course work.

5. Mission Statement for the University

The mission of The University of Texas at Dallas is to provide Texas and the nation with the benefits of educational and research programs of the highest quality. These programs address the multi-dimensional needs of a dynamic, modern society driven by the development, diffusion, understanding and management of advanced technology.

Strategic Intent
To be a nationally recognized top-tier university sculpted within a model of focused excellence. The university emphasizes education and research in engineering, science, technology and management while maintaining programs of focused excellence in other academic areas. Within the context of this mission, the goals of the university are as follows:

- To provide able, ambitious students with a high quality, cost-effective education that combines the nurturing environment of a liberal arts college with the intellectual rigor and depth of a major research university.
- To discover new knowledge and to create new art that enriches civilization at large and contributes significantly to economic and social programs.
- To enhance the productivity of business and government with strategically designed, responsively executed programs of research, service and education.

The university intends to achieve these objectives by investing in students and faculty, building upon its programs, policies and operations and enhancing institutional character and excellence in education. The major points of UTD's strategic plan to accomplish these goals are as follows:

- Continue to strengthen the identity of the university as a leader in higher education in terms of excellent faculty and superior students.

- Enhance the quality of its students' learning experiences and its employees' work environment.

- Emphasize education and research in science and technology and in leadership and management while maintaining concurrent programs of focused excellence in other fundamental fields of art and knowledge.

- Expand and intensify partnerships relations with business, governmental and educational neighbors.

- Enhance programmatic quality and institutional balance while adhering to rigorous quality standards.

- Actively pursue external support of and funding for the ambitious academic and service programs integral to its mission.

6. Institutional Support Units

The University of Texas at Dallas has many institutional support units which are requisite to achieving the objectives of the engineering programs. A few of these include: computing facilities, the McDermott Library, career center, international student services and disability services.

Computing Facilities
See section II-3 for information on computing facilities for the institution and the Erik Jonsson School.

Library

Library materials supporting the Jonsson School of Engineering/Computer Science are held in the Eugene McDermott Library, the main library of the University of Texas at Dallas. The book and periodical collections are arranged by standard Library of Congress call number. Books, including most conference proceedings, are located on the 4th level and are available for users to borrow. Library users have electronic access to thousands of e-books, conference proceedings and e-journals when the library is not open.

The paper journal/periodical and the reference collections are shelved on the 2nd level. These volumes must be used in the library, but are available for reproduction within the guidelines of the copyright code. All engineering-related government publications and electronic services are available on the 2nd level in the Reference area. Electronic sources are available remotely with a valid University ID.

Table 6.1.1 shows the acquisition history for the McDermott Library.

TABLE 6.1.1 Library Acquisitions

	COLLECTION RESOURCES 2002--2003 TITLES Acquisitions		COLLECTION RESOURCES 2003-2004 TITLES Inclusive		CURRENT COLLECTION RESOURCES 2004 TITLES	
	Books	Periodicals**	Periodicals	Books	Periodicals	Books
Entire Institutional Library In the following fields (included above	90,000	12,403	11,655	781,021	27,887	812,929
Engineering and Computer Science	2,352	4,100	4,836	209,456	8,220	21,241
Chemistry	320	300	327	5,420	555	4,769
Mathematics	336	317	337	1,046	572	9,906
Physics	274	163	199	3,264	338	7,626
Other Specialty Areas (Specify)						

The mission of the Eugene McDermott Library Reference and Information Services Department is to provide faculty, students and staff of the University of Texas at Dallas with the information necessary to support instruction and research.

The Public Services Department provides a range of services to library users. Librarians and support staff handle nearly 100,000 questions per year at four service desks. In addition, the reference librarians provide answers to reference questions submitted on a department WWW page and through a UT System collaborative online chat reference initiative.

The reference staff is actively involved in the overall educational goals of the University through its instructional and service approach to the provision of information. Professional librarians create instructional sessions providing basic and advanced assistance in conducting library research. Faculty members can request customized instruction to support a particular project or to familiarize students with research tools in a discipline, including the library catalog, electronic databases, the Internet, reference sources and government publications. Liaison librarians are exploring the possibility of incorporating a library/librarian presence within the class management software being used by faculty.

The Eugene McDermott Library offers a full range of online resources to support the Erik Jonsson School of Engineering and Computer Science. The Library operates an Information Commons with 36 workstations and 32 wireless-Web enabled laptops designed to support database and Internet research activities and to provide access to a collection of compact disc materials.

At present, the Library subscribes to over 200 Internet-based resources, many of which include the full text of periodical or newspaper articles and complete statistical/numerical data from major publishers such as the U.S. federal government, the Institute of Electrical and Electronics Engineers (IEEE), the Institute of Electrical Engineers (IEE), the Association of Computing Machinery

(ACM), and Elsevier Engineering Information, Inc. Engineering/Computer Science related databases include ACM Digital Library, Compendex (Engineering Village), Computer Source, General Science Abstracts, IEEE/IEE Xplore, INSPEC, Optics InfoBase, Personal Computing Abstracts, Science Citation Index, Web of Science and Academic Search Premier. The Internet database collection is available off-campus to UTD students and faculty except when the information provider updates their systems. This mode of access supports all distance learning activities. The library continues to acquire electronic journals over paper whenever possible. Most compact disc products must be used in the library, although the department actively facilitates the transition of products to the Internet as needed.

The library also offers database search capabilities of online resources available from DIALOG and WESTLAW. Fees are charged for searching the former, on a cost recovery basis.

Library materials for the School of Engineering and Computer Science are acquired through a campus-wide process. The library orders monographs as they are published through an approval program with Blackwell. The monographs are received based on a well-detailed profile representing the faculty research and course instruction programs.

The Engineering and Computer Science Library Liaisons are responsible for the monitoring of this program and order materials that complement the approval plan after consultation with the faculty. Separate accounts are made available for media items, replacements, databases and journals.

The library building is open for study and access to materials in the open stacks 91 hours per week.

Library Building and Stacks Hours:

Mon-Fri	8:00am – midnight
Sat	9:00am – 8:00pm
Sun	1:00pm – midnight

The library is open 24/7 during midterm and finals weeks but closed during some holidays and intersession.

Reference Desk Hours:

Mon – Thur	8:00am – 10:00pm
Fri	8:00am – 8:00pm
Sat	10:00am – 6:00pm
Sun	1:00pm – 10:00pm

Reference hours are reduced during the summer semester.

UT System “Ask-a-Librarian” Online Chat Reference Services (available on the Internet):

Mon – Thurs	12:00pm-6:00pm
Fri	12:00pm-4:00pm

McDermott Library has assigned two reference librarians as liaisons to the faculty, students and staff of the Jonsson School of Engineering and Computer Science. They are responsible for ordering materials for the faculty in support of the curriculum and research efforts. They also provide several levels of library instruction – orientation tours, classroom instruction and individual appointments with a librarian. The librarians are available to assist faculty with library research as needed. Table 6.2.2 show the history of library expenditures since FY2002.

	FY 2002	FY 2003	FY 2004	FY 2005
Total Library Current Funds	$1,940,378	$2,310,710	$2,313,841	$2,757,391
Expenditures for the Engineering Unit (Total)	$427,520	$441,434	$450,297	$551,478
Books	$14,657	$12,297	$11,751	$13,787
Periodicals-paper	$150,000	$160,000	$100,000	$118,568
Periodicals-Electronics	$88,242	$94,306	$153,316	$181,988
Other Engineering-Related Services	$174,621	$174,831	$185,230	$220,590

Table 6.2.2 Library Expenditures

The Eugene McDermott Library has a seating capacity of 640 seats and can seat approximately 5% of the student enrollment. The reading room in the School of Engineering and Computer Science provides seating for 20+ students. The library is willing to provide a librarian and a laptop for approximately 10 hours per week.

The McDermott Library continues to work with its professional staff and UTD faculty advisory committee to improve services and explore changes in policy that impact students. Space limitations restrict the number of seats available for study within the building, although access to online library resources and services is available through several other computer labs on campus.

The library maintains a Multimedia Center that includes VHS, CD and DVD formats in support of classroom instruction. 32 wireless-Web enabled laptops are available for check out at this desk.

McDermott Library also maintains a map collection, a large microfilm collection and a growing collection of cd-roms which accompany computer science and engineering monographs.

Career Center

The UTD Career Center strives to help students succeed and make the most of their college experience. The career center provides a comprehensive career development program which includes the following services and programs to assist students in developing and implementing a strategic career plan:

- Interactive Career Center Web Site
- Career Counseling and Assessments
- Career Resource Library
- Electronic Career Exploration Tools
- Career Seminars and Workshops
- Job Search Skill Development
- Career Panels and Speakers
- Resume Assistance and Mock Interview Training
- Cooperative Education and Internships
- Career and Graduate School Fairs
- On-campus student employment opportunities
- Electronic Job Listing and Resume Referral Services
- On-campus Interview Opportunities

Whether or not students are sure of their direction, the UTD Career Center serves as a valuable resource. The career center works with students to empower them for a lifetime of effective career decisions.

In addition to the Career Center, engineering students also have access to the Industrial Practice Programs (IPP) office in the Erik Jonsson School of Engineering and Computer Science. IPP is discussed in more detail in section 2.10 Non-academic Support Units for the Erik Jonsson School of Engineering and Computer Science.

Disability Services

The goal of Disability Services is to provide students with disabilities educational opportunities equal to those of their non-disabled peers. The Disability Services office also provides guidelines to faculty for handling the special needs of disabled students. Students are responsible for providing documentation of his or her disability to the Disability Services office.

International Student Services

The International Student Services Office coordinates and administers programs that serve international students at The University of Texas at Dallas.

Advisers are aware of the demands associated with studying in another country and are available to assist international students with matters not specifically within the realm of the student's academic adviser. Information and assistance in matters related to employment, housing, health insurance, legal matters, banking services, automobiles, social security, immigration status and personal concerns are provided.

B. Background Information Relative to the Jonsson School

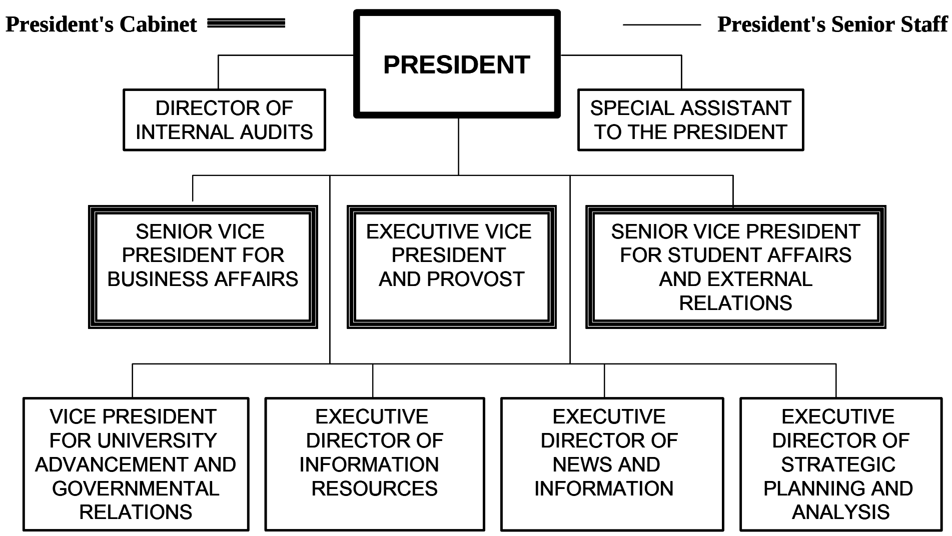
1. Engineering Educational Unit

The University of Texas at Dallas consists of seven schools each headed by a dean. The schools, in turn, consist of teaching and research programs that provide the disciplinary foundations of the university. In addition to the usual disciplinary approaches, the university has a strong commitment to interdisciplinary study at both the graduate and undergraduate levels.

The Erik Jonsson School of Engineering and Computer Science is the engineering educational unit. The Erik Jonsson School has two educational departments, the Department of Computer Science and the Department of Electrical Engineering. Interdisciplinary engineering programs are headed by the Associate Dean of Interdisciplinary Engineering Programs. The organizational structure of the university is shown in Table II-2a and the organizational structure for the engineering school is shown in Table II-2b.

UT Dallas Administrative Structure

The central administrative organization at U.T. Dallas is shown below. The President and Vice Presidents meet regularly to discuss university policy and administration.



David E. Daniel, The President is the chief executive officer of the University and exercises broad delegated authority for campus administration.

Serving as the chief academic officer for the University is B. Hobson Wildenthal. The Provost serves as deputy to the President and is responsible for the formulation and implementation of educational policy. The Provost also has a significant role in fund raising and external relations for the university.

With general oversight and responsibility for planning, implementation, management, and operation of various departments, the Interim Vice President for Business Affairs, Larry Terry, acts as the designated Custodian of Records for the University and as the University's Ethics Officer.

The Vice President for Student Affairs and External Relations is Darrelene Rachavong, This office is responsible for issues affecting prospective and current students. Specifically, the Office of Student Affairs provides oversight for recruitment, admissions, registration, financial aid and other related student services.

The department of Information Resources provides the resources for information technologies that support the University in accomplishing its research, instructional, and public service functions and is managed by William Hargrove.

Realizing the University's concern for alumni as well as current students, the Office of University Advancement, managed by Carlos Pena, promotes awareness of U. T. Dallas in the community, attracts financial support to fund university-wide initiatives, and provides alumni with meaningful opportunities for involvement in the life of the University.

The Office of Strategic Planning and Analysis supports the achievement of U. T. Dallas' mission in learning, teaching, research and public service through effective strategic planning, institutional research and evaluation.

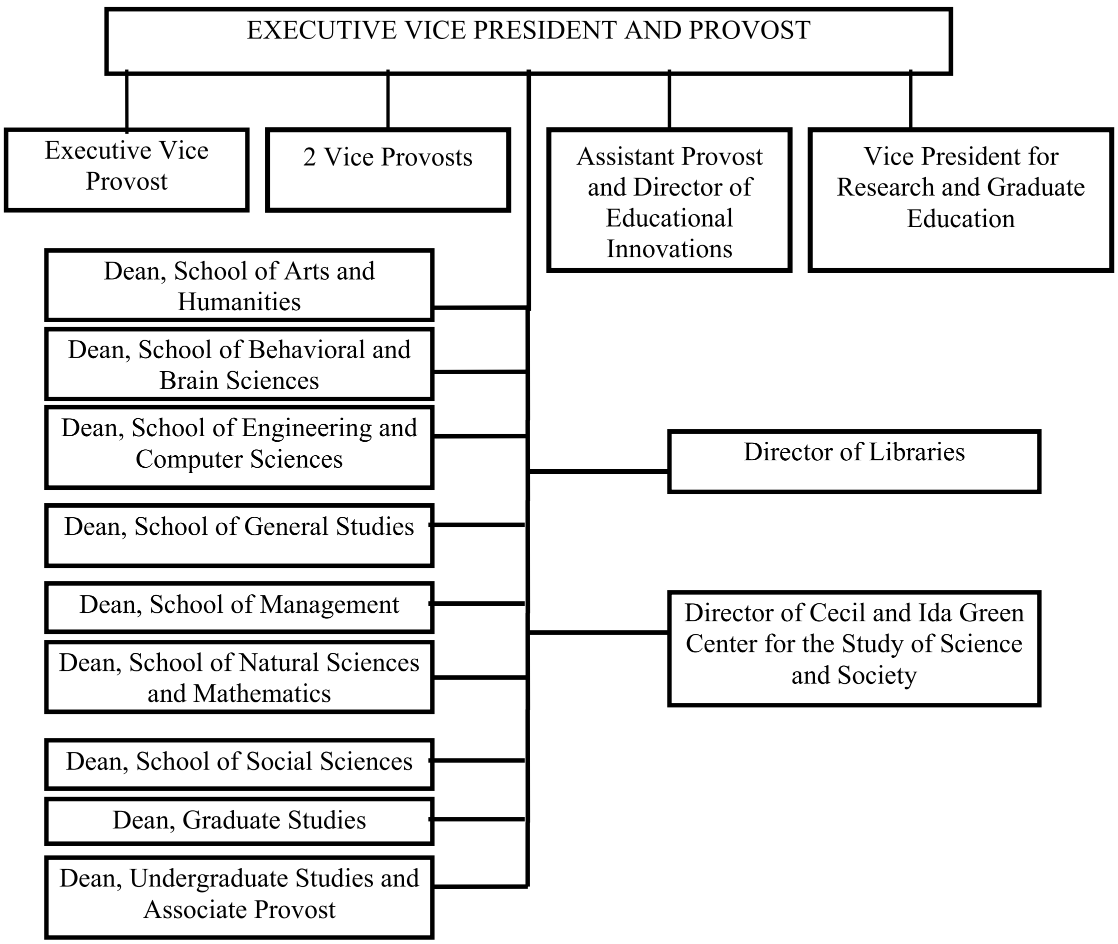
Provides independent and objective assurance and consulting services designed to add value and improve UTD’s operations. Internal Audits helps UTD accomplish its mission in learning, research, and public service by bringing a systematic, disciplined approach to evaluate and improve the effectiveness of risk management, control, operational, and governance processes.

The following is a list of Central Administration Officers:
President, David E. Daniel, Ph.D.
Executive Vice President and Provost, B. Hobson Wildenthal, Ph.D.
Interim Vice President for Business Affairs, Larry D. Terry, Ph.D
Interim Vice President for Student Affairs, Darrelene Rachavong, Ed.D.
Executive Vice Provost for Academic Affairs, Larry D. Terry, Ph.D.
Vice President for Research and Graduate Education, Da Hsuan Feng, Ph.D.
Vice President for University Advancement and Governmental Relations, Carlos González Peña, M.P.A.
Executive Director, Information Resources, William W. Hargrove, M.P.A.
Executive Director, Strategic Planning and Analysis, Lawrence Redlinger, Ph.D.
Executive Director, University Information and Publications, Jon Senderling
Director, Internal Audits, Toni R. Messer, B.B.A., C.P.A., C.I.A

.

Academic Organization

The academic organization, under the Executive Vice President and Provost, is shown below. It contains seven schools whose Dean's meet with and advise the Provost in regularly scheduled meetings of the Council of Deans. The Provost is responsible to the President for all policies and practices related to the conduct of resident instruction, including teaching, research and associated supporting activities. The Deans are the principal academic and fiscal officers for the academic programs which they lead, and are responsible to the Provost.



Academic Unit Administrators are:

School of Arts and Humanities, Dean Dennis M. Kratz, Ph.D.
School of Behavioral and Brain Sciences, Dean Bert S. Moore, Ph.D.
Erik Jonsson School of Engineering and Computer Science, Dean C. Robert Helms, Ph.D.
School of General Studies, Dean George W. Fair, Ph.D.
School of Management, Dean Hasan Pirkul, Ph.D.
School of Natural Sciences and Mathematics, Interim Dean John P. Ferraris, Ph.D.
School of Social Sciences, Dean James C. Murdoch, Ph.D.
Graduate Studies, Dean Austin Cunningham , Ph.D
Undergraduate Studies , Dean and Associate Provost, Michael Coleman, Ph.D
Director of Libraries, Larry Sall, Ph.D

The Erik Jonsson School of Engineering and Computer Science

The Mission of Erik Jonsson School of Engineering and Computer Science is to be responsive to the educational and research needs of the nation as exemplified by the technologically sophisticated and managerially intensive economy of the Dallas Metroplex. The Jonsson School plays play a distinctive and productive role in engineering and computer science, and delivers value to our students and research sponsors by closing the gap between academic research and industrial practice.

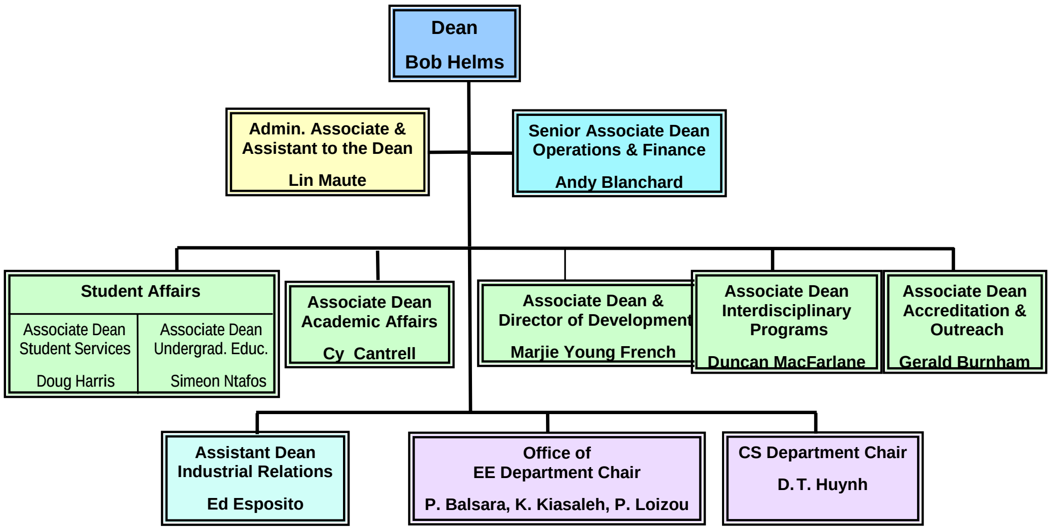
We achieve excellence by recruiting faculty members who are outstanding in research and who are able and willing to collaborate with others in academia, industry and government, and by maintaining high standards for students and for faculty promotion and tenure.

The principal objective of the engineering program is to provide a rational educational foundation for the broad practice of engineering. Being aware of the rapid growth and changes in the field, we seek to provide a baccalaureate education including a comprehensive treatment of important and basic topics..

While developing its curriculum, the Erik Jonsson School is particularly aware of the perceived future needs of the industries of North Texas related to information systems and electronics manufacturing. The engineering program prepares individuals for direct entry at the baccalaureate level into professional practice, but the program emphasizes a strong analytical preparation for continued formal education at the masters and doctoral level. A specific mission of the University of Texas at Dallas and the Erik Jonsson School is to provide opportunities for persons employed full time in local industry to continue and complete their education at both undergraduate and graduate levels. The Erik Jonsson School also strives to use modem computing and telecommunications technology to enhance the quality of education.

The Jonsson School programs provide an interdisciplinary approach to training engineers with the requisite knowledge to meet the needs of the industries in these fields.

Table II-2b. Engineering Organizational Chart



Academic Subdivisions and Department/Program Heads

1. Erik Jonsson School of Engineering and Computer Science, Dr. Robert Helms, Dean
2. Department of Computer Science, Dr. D.T. Huynh
3. Department of Electrical Engineering, New Department Head starts September 2005.
4. Telecommunications Engineering Program, Dr. S. Venkatesan, Program Head and Professor in Electrical Engineering
5. Computer Engineering, Dr. Dinesh Bhatia, Program Head and Professor in Electrical Engineering
6. Software Engineering, this program is under Computer Science, Dr. Simeon Ntafos

Several research centers and labs have been established in the Erik Jonsson School of Engineering and of Computer Science. These centers have acquired large scale projects through cooperation with industry, government and other academia institutions.

Formal Research Centers in the Erik Jonsson School

1. Photonic Technology and Engineering Center (PhoTEC), directed by Dr. Cy Cantrell, Professor of Electrical Engineering.
2. Center for Systems, Communications and Signal Processing (CSCSP), directed by Dr. Bob Hunt, Professor of Electrical Engineering.
3. Center for Integrated Circuits and Systems (CICS), directed by Dr. Poras Balsara, Professor in Electrical Engineering.

4. Embedded Software Center (ECS), directed by Dr. Farokh Bastani, Professor in Computer Science
5. Human Language Technology Research Institute (HLTRI), directed by Sanda Harabagiu, Associate Professor in Computer Science.
6. Digital Forensic and Emergency Preparedness Institute (DFEPI), directed by Dr. E. Douglas Harris, Associate Dean, Erik Jonsson School of Engineering and Computer Science.

2. Programs Offered and Degrees Granted

See Tables II-3 Part 1 and Part 2 for a summary of programs and degrees offered by the Erik Jonsson School of Engineering and Computer Science.

* Co-op opportunities are available to engineering and computer science students through the Industrial Practice Program; however, participation in the co-op program is not required as part of the degree program.

**Alternative, distance courses are available to graduate students; however, the entire degree lan is not offered through an alternative mode.

Notes Regarding Accreditation:

- The computer engineering program currently offers graduate degrees only; therefore, undergraduate accreditation is not applicable.
- The computer science and Software Engineering programs are seeking initial accreditation under the ABET Computing Accreditation Commission.
- The electrical engineering and telecommunications engineering programs are accredited by the ABET Engineering Accreditation Commission.

Table II-3 (Part I) Engineering Programs Offered

Program Title[1]	Modes Offered[2]: Day	Modes Offered[2]: Co-op	Modes Offered[2]: Off Campus	Modes Offered[2]: Alternative Mode	Nominal Years to Complete	Administrative Head	Administrative Unit or Units (e.g. Dept.) Exercising Budgetary Control	Submitted for Evaluation[3]: Now Accred.	Submitted for Evaluation[3]: Not Now Accred.	Offered, Not Submitted for Evaluation[4]: Now Accred.	Offered, Not Submitted for Evaluation[4]: Not Now Accred.
Computer Engineering	X				4	Dinesh Bhatia	Electrical Engineering and Computer Science				X
Computer Science	X				4	D.T. Huynh	Computer Science		X		
Electrical Engineering	X				4	Andrew J. Blanchard	Electrical Engineering	X			
Software Engineering	X				4	Simeon Ntafos	Computer Science		X		
Telecommunications Engineering	X				4	S. Venkatesan	Electrical Engineering and Computer Science	X			

Table II-3 (Part 2) Degrees Awarded and Transcript Designations

Program Title[1]	Modes Offered[2]				Name of Degree Awarded[3]	Designation on Transcript[4]
	Day	Co-op	Off Campus	Alternative Mode		
Computer Engineering	X				Master of Science, Doctor of Philosophy	Master of Science in Computer Engineering, Doctor of Philosophy in Computer Engineering
Computer Science	X				Bachelor of Science, Master of Science, Doctor of Philosophy	Bachelor of Science in Computer Science, Master of Science in Computer Science, Doctor of Philosophy in Computer Science
Electrical Engineering	X				Bachelor of Science, Master of Science, Doctor of Philosophy	Bachelor of Science in Computer Science, Master of Science in Computer Science, Doctor of Philosophy in Computer Science
Software Engineering	X				Bachelor of Science, Master of Science, Doctor of Philosophy	Bachelor of Science in Software Engineering, Master of Science in Computer Science with a major in Software Engineering, Doctor of Philosophy in Software Engineering
Telecommunications Engineering	X				Bachelor of Science, Master of Science, Doctor of Philosophy	Bachelor of Science in Telecommunications Engineering , Master of Science in Telecommunications Engineering, Doctor of Philosophy in Telecommunications Engineering

3. Information Regarding Administrators

The summary curriculum vitae for administrators in the Erik Jonsson school are provided below.

Robert Helms, Dean, Eric Jonsson School of Engineering and Computer Science

Andrew J. Blanchard, Senior Associate Dean

Dung T. Huynh, Professor of Computer Science and Department Head of Computer Science.

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New Department Head Starts September 2005, Department Head of Electrical Engineering

Duncan Macfarlane, Professor of Electrical Engineering and Associate Dean for Interdisciplinary Programs

S. Venkatesan, Professor and Program Head for Telecommunications Engineering

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Simeon Ntafos, Associate Dean, Undergraduate Education and Program Head for Software Engineering

Dinesh Bhatia, Professor of Electrical Engineering and Program Head of Computer Engineering

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Gerald Burnham, Associate Professor of Electrical Engineering and Associate Dean for Accreditation and Outreach.

Cy Cantrell, Associate Dean, Academic Affairs, Professor in Electrical Engineering

E. Douglas Harris, Associate Dean

Janet Lind, Assistant Dean, Student Enrollment

Sharon Allen, Director, Industrial Practice Programs

Sook Kim, Assistant Dean for Assessment

NAME:
C. Robert Helms

ACADEMIC RANK:
Full Professor with Tenure / Full-time

DEGREES WITH FIELDS, INSTITUTIONS AND DATES:
Bachelor of Science, Engineering Physics, 1968, University of California Berkley
Master of Science, Electrical Engineering, 1970, Stanford University.
Doctor of Philosophy, Electrical Engineering, minor in Material Science, 1973, Stanford University

YEARS IN SERVICE AT UT DALLAS:
2 Years, Appointed Dean. April 2003

OTHER RELATED EXPERIENCE:

International SEMATECH	Austin, Texas	President and CEO	2001-2004
Texas Instruments	Dallas, Texas	Corp. Vice President	1999-2001
Texas Instruments	Dallas, Texas	Director, Component & Material Research Center	1999-2001
Stanford University	Stanford, California	Research Professor	1980-2000
Stanford University	Stanford, California	Sr. Research Associate	1976-1980
Exxon Research & Engineering	Stanford, California	Research Physicist	1973-1980

SCIENTIFIC AND PROFESSIONAL SOCIETIES OF WHICH A MEMBER:
Phi Beta Kappa
Tau Beta Pi
IEEE

INSTITUTIONAL AND PROFESSIONAL SERVICE IN THE LAST 5 YEARS
Dean, Erik Jonsson School of Engineering and Computer Science

NAME:
Andrew James Blanchard

ACADEMIC RANK:
Full Professor with Tenure / Full-time

DEGREES WITH FIELDS, INSTITUTIONS AND DATES:
Ph.D. Electrical Engineering,1977, Texas A&M University
M.S. Electrical Engineering, 1973, Colorado State University
B.S. Electrical Engineering, 1972, University of Southwestern Louisiana

YEARS IN SERVICE AT UT DALLAS:
5 Years

OTHER RELATED EXPERIENCE:
Vice President Technology, Clean Earth Technologies, LLC, June 2002 – June 2004.
Senior Associate Dean, Erik Jonsson School of Engineering and Computer Science,
Director of Research, College of Engineering, University of Missouri-Columbia, December 1995-December 2000
Director, Strategic Technology Applications Research Center (STAR Center), Houston Advanced Research Center (HARC), The Woodlands Texas, June 1990- 1995
Associate Director, Wave Scattering Research Center, College of Engineering, University of Texas at Arlington, September 1984-1988.

SCIENTIFIC AND PROFESSIONAL SOCIETIES OF WHICH A MEMBER:
IEEE
Eta Kappa Nu
Geoscience and Remote Sensing Society
American Geophysical Union

HONORS & AWARDS:
Fellow, Institute of Electrical and Electronics Engineers (IEEE), 1995-present
Elected Member of The Electromagnetics Academy, 1993-present
Elected Member, Union of Radio Science Inc. Commission F
Invited Professorship, National University of Singapore, March 2000
1985 C. Holmes MacDonald Award, Presented by the National Eta Kappa Nu Association to the Outstanding Electrical Engineering Professor in the United States of America.

INSTITUTIONAL AND PROFESSIONAL SERVICE IN THE LAST 5 YEARS
Senior Associate Dean
Project Emmitt Project Manager

PROFESSIONAL DEVELOPMENT ACTIVITIES IN THE LAST 5 YEARS
Presented Workshops on Applications of Remote Sensing

NAME:
Dung T. Huynh

ACADEMIC RANK:
Full Professor with Tenure / Full-time

DEGREES WITH FIELDS, INSTITUTIONS AND DATES:
M.S., Computer Science Department, University of Saarbracken, Germany, 1977
Ph.D., Computer Science Department, University of Saarbracken, Germany, 1978

EARS IN SERVICE AT UT DALLAS:
17 Years,

OTHER RELATED EXPERIENCE:
Postdoctoral Research Associate, University of Saarbracken, Germany, 1978-1982
Assistant Professor of Computer Science, Iowa State University 1983-1986
Visiting Assistant Professor of Mathematics and Computer Science, University of Chicago, 1982-1983
Postdoctoral Research Associate, University of Saarbracken, Germany, 1978-1982

SCIENTIFIC AND PROFESSIONAL SOCIETIES OF WHICH A MEMBER:
Phi Beta Kappa
Tau Beta Pi
IEEE

INSTITUTIONAL AND PROFESSIONAL SERVICE IN THE LAST 5 YEARS
Y Program Head, University of Texas at Dallas, 1997-Present
Reviewer: National Science Foundation
Natural Sciences and Engineering Research Council of Canada Information and Computation
Acta Informatica
SIAM Journal on Computing
Journal of Computer and System Science
Theoretical Computer Science
Mathematical Systems Theory
International Journal of Foundations of Computer Sciences
Dean, Erik Jonsson School of Engineering and Computer Science

NAME:
Duncan L. MacFarlane

ACADEMIC RANK:
Full Professor with Tenure / Full-time

DEGREES WITH FIELDS, INSTITUTIONS AND DATES:
Portland State University, Portland, Oregon, Ph.D. Electrical Engineering, June 1989.
Brown University, Providence, Rhode Island, Sc.M. Electrical Engineering, June 1985.
Brown University, Providence, Rhode Island, Sc.B., Honors, Electrical Engineering, June 1984. (honors)
Southern Methodist University, Dallas, Texas, M.B.A., May, 1998. (second in class).

YEARS IN SERVICE AT UT DALLAS:
8 Years

OTHER RELATED EXPERIENCE:
Director, Product Management, (11/2001–1/2002) Celion Networks, Richardson, Texas.
Product Line and Engineering Manager, (10/1999–11/2001) JDS Uniphase, Richardson, Texas.
Senior Staff Scientist (7/85-9/86) W. J. Schafer Associates, Inc., Chelmsford, Massachusetts.

SCIENTIFIC AND PROFESSIONAL SOCIETIES OF WHICH A MEMBER:
Beta Gamma Sigma, honor society for AACSB accredited business programs.
IEEE, Lasers and Electro-Optics Society. Dallas Chairman, 2002-present, Dallas Section Vice-Chairman, 1990--1992, Dallas Section Chairman, 1992--1994, Dallas Section Committee member, 1998-present.
Optical Society of America.
American Society for Engineering Education

INSTITUTIONAL AND PROFESSIONAL SERVICE IN THE LAST 5 YEARS
Associate Dean, Interdisciplinary Programs

NAME:
S. Venkatesan

ACADEMIC RANK:
Associate Professor with Tenure / Full-time

DEGREES WITH FIELDS, INSTITUTIONS AND DATES:
PhD, Computer Science, University of Pittsburg, 1985
M. Technology, Indian Institute of Technology, Madras 1983
B. Technology, Indian Institute of Technology, Madras 1981

YEARS IN SERVICE AT UT DALLAS:
16 Years

OTHER RELATED EXPERIENCE:

Consultant for Raytheon E-Systems

SCIENTIFIC AND PROFESSIONAL SOCIETIES OF WHICH A MEMBER:
IEEE

INSTITUTIONAL AND PROFESSIONAL SERVICE IN THE LAST 5 YEARS
Program Head, Telecommunications Engineering
Chair, Intellectual Property Committee, 2004
Member of Faculty Senate

NAME:
Simeon Ntafos

ACADEMIC RANK:
Full Professor with Tenure / Full-time

DEGREES WITH FIELDS, INSTITUTIONS AND DATES:
B.S. in Electrical Engineering, Wilkes College, 1974;
M.S. in Electrical Engineering, Northwestern, 1977
Ph.D. in Computer Science, Northwestern, 1979

YEARS IN SERVICE AT UT DALLAS:
25 Years

OTHER RELATED EXPERIENCE:

1978-1979 Visiting Assistant Professor, Northwestern
1979-1984 Assistant Professor, Computer Science, UTD
1984-1994 Associate Professor, Computer Science, UTD
1985-1987 Program Head, Computer Science, UTD
1994- Professor, Computer Science, UT-Dallas.
1998 - Associate Department Chair, CS, UTD

SCIENTIFIC AND PROFESSIONAL SOCIETIES OF WHICH A MEMBER:
ACM, ACM SIGACT, ACM SIGSOFT

INSTITUTIONAL AND PROFESSIONAL SERVICE IN THE LAST 5 YEARS
ABET Coordinator for BS-CS (3/04) and BS-SE (5/92);
Faculty Senate (1997-);
Academic Council (2003-)
Secretary of the faculty (2004-)
Committee on Qualifications of Academic Personnel (2002-vice Chair; 2001-member)
PhD Committee – CS (Chair 2001-2003; Ex-officio 2003-)
2001-02 CS Search Committee
2000-01 CS Search Committee (Chair)
1999-01 Admissions Committee (Chair)
1999-01 EE&CS Personnel Review Committee (elected)

NAME:
Dinesh K. Bhatia

ACADEMIC RANK:
Associate Full Professor with Tenure / Full-time

DEGREES WITH FIELDS, INSTITUTIONS AND DATES:
Ph.D. in Computer Science, University of Texas at Dallas, 1990.
M.S. in Computer Science, University of Texas at Dallas, 1987
B.E. in Electrical Engineering, Regional Engineering College, Suratkal, India, 1985

YEARS IN SERVICE AT UT DALLAS:
5 Years

OTHER RELATED EXPERIENCE:

UTD Program Head, Computer Engineering Program,	January 2004-Present
Associate Professor, University of Texas at Dallas,	September 2000-present
UC Associate Professor, University of Cincinnati,	September 1997
Director, Design Automation Laboratory, University of Cincinnati,	June 1991
Assistant Professor, University of Cincinnati,	June 91-August 97.

SMU Visiting Asistant Professor, Southern Methodist University, September 1990-May 1991.

SCIENTIFIC AND PROFESSIONAL SOCIETIES OF WHICH A MEMBER:
IEEE
Eta Kappa Nu

INSTITUTIONAL AND PROFESSIONAL SERVICE IN THE LAST 5 YEARS
Program Head, Computer Engineering, January 2004-
Chair, University Library Committee, 2004-05.
Chair, Faculty Search Committee, Computer Engineering (Search 767), 2004-05.
Member, Executive Committee of Industrial Advisory Board on Research, Erik Jonsson School of Engineering and Computer Science, December 2004-
Member, Faculty Search Committee, Electrical Engineering Department, 2004-05.
Chair, Computer Engineering Program Governance Committee, January 2004-
Member, Faculty Search Committee, Computer Engineering Program, 2003-04.
Member, Faculty Search Committee, Electrical Engineering Department, 2003-04.
Chair, Computing Resources Committee, EE Department, September 2002-present.
Chair, Computer Engineering Graduate Program Committee, January 2001-Present.

NAME:
Gerald O. Burnham

ACADEMIC RANK:
Associate Professor with Tenure / Full-time

DEGREES WITH FIELDS, INSTITUTIONS AND DATES:
California State University at Los Angeles B.A. Mathematics 1967,
California State University at Los Angeles M.S. Mathematics 1968,
University of Southern California M.S. Computer Science 1970,
University of Southern California Ph.D Electrical Engineering 1973

YEARS IN SERVICE AT UT DALLAS:
9 Years

OTHER RELATED EXPERIENCE:
Texas Instruments, Senior Member of Technical Staff 1977-1998
Cal Tech Jet Propulsion Laboratory, Technical Group Supervisor 1973-1977
Hughes Aircraft Company, Design Engineer 1966-1973

SCIENTIFIC AND PROFESSIONAL SOCIETIES OF WHICH A MEMBER:
Sigma Xi
Eta Kappa Nu
IEEE
ASEE

INSTITUTIONAL AND PROFESSIONAL SERVICE IN THE LAST 5 YEARS
Electrical Engineering Department Head 2001-2004
Associate Dean, Research 1996-2001
Associate Dean, Accreditation and Outreach 2004-Present
Administrative Chairman, Dallas IEEE Section Executive Committee Active funded research programs in telecommunications digital signal processing, array processing and nonlinear signals and systems. Regular participant in IEEE conferences on signal processing. Program chairman, Dallas Section of IEEE Signal Processing Society. Treasurer of Dallas Section of IEEE Circuits and Systems Group.

NAME:
Cyrus D. Cantrell

ACADEMIC RANK:
Full Professor with Tenure / Full-time

DEGREES WITH FIELDS, INSTITUTIONS AND DATES:
Bachelor of Arts (cum laude), Physics, 1962, Harvard University.
Master of Arts, Physics, 1964, Princeton University.
Doctor of Philosophy, Physics, 1968, Princeton University.

YEARS IN SERVICE AT UT DALLAS:
25 Years

OTHER RELATED EXPERIENCE:
Swarthmore College, Assistant Professor to Associate Professor
1967-1973
Los Alamos, Staff Member, National Laboratory, 1973–1979
University of Paris, France Visiting Professor, 1980

SCIENTIFIC AND PROFESSIONAL SOCIETIES OF WHICH A MEMBER:
IEEE
Optical Society of America
American Physical Society

INSTITUTIONAL AND PROFESSIONAL SERVICE IN THE LAST 5 YEARS
Third Millennium Medal, Institute of Electrical and Electronics Engineers, 2000
Fellow, Institute of Electrical and Electronics Engineers, 1985
Fellow, American Physical Society, 1982
Fellow, Optical Society of America,1978

NAME:
E. Doug Harris

ACADEMIC RANK:
Associate Dean, Clinical Professor

DEGREES WITH FIELDS, INSTITUTIONS AND DATES:
Doctor of Engineering (D.Eng.), Southern Methodist University, Dallas, TX 1985
Master of Science (MS) in Engineering, Methodist University, Dallas, TX 1980
Master of Business Administration (Executive MBA), Methodist University, Dallas, TX 1978

YEARS IN SERVICE AT UT DALLAS:
9 Years

OTHER RELATED EXPERIENCE:
Assistant Dean at Southern Methodist University. 19xx-1995

- Assistant Dean of Undergraduate Studies
- Assistant Dean for External Affairs
- Assistant Dean for Engineering Enrollment Services

Manager of computer graphics or corporate manager of automation at Texas Instruments 19xx-9-19xx

SCIENTIFIC AND PROFESSIONAL SOCIETIES OF WHICH A MEMBER:
Member of Tau Beta Pi, National Engineering Honor Society
Member of Omega Rho, Operations Research Honor Society
Honorary Member of Golden Key, National Honor Society

INSTITUTIONAL AND PROFESSIONAL SERVICE IN THE LAST 5 YEARS
Executive Director, Cyber Security and Emergency Preparedness Institute

NAME:
Janet Lind

ACADEMIC RANK:
Senior Lecturer

DEGREES WITH FIELDS, INSTITUTIONS AND DATES:

Ph.D., Computer Science, Tulane University		1984
MS, Computer Science, University of Arizona		1977
BS, Computer Science, Louisiana State University	Magna cum Laude	1975

YEARS IN SERVICE AT UT DALLAS:
1 Years

OTHER RELATED EXPERIENCE:

SPATIAL WIRELESS, Richardson, TX	VP, Engineering	2003 - 2004
CYNETA NETWORKS, Richardson, TX	VP, Engineering and CTO	2001- 2003
NORTEL NETWORKS, Richardson, TX	VP, Wireless Internet Development	1998-2004

SEIMENS, Richardson, TX
Director, GSM Mobile Development 1996-1997

NORTEL NETWORKS, Richardson, TX
Director, Cellular Switch Development and System Test 1991-1995
Senior Manager, Cellular System Test and Test Tool Development 1987-1991

LITTON DATA SYSTEMS, New Orleans, LA
Senior Manager, Development 1984-1987
HEWLETT PACKARD
Member of Technical Staff 1977-
1984

SCIENTIFIC AND PROFESSIONAL SOCIETIES OF WHICH A MEMBER:
IEEE

INSTITUTIONAL AND PROFESSIONAL SERVICE IN THE LAST 5 YEARS
Assistant Dean, Senior Lecturer, School of Engineering and Computer Science (ECS)
- Lecture for Computer Science undergraduate coursework including networking and software engineering
- Manage ECS undergraduate scholarship programs
- Prime ECS undergraduate recruiting activities
- Participate in ECS graduate recruiting activities
- Participate / prime special projects as assigned by Dean’s office

NAME:
Sharon Allen

ACADEMIC RANK:
Director of Industrial Practices Programs

DEGREES WITH FIELDS, INSTITUTIONS AND DATES:

Master of Science, Texas A&M Commerce, TX	19XX
Bachelor of Arts, Texas Tech University	19xx

YEARS IN SERVICE AT UT DALLAS:
1 year

OTHER RELATED EXPERIENCE:

Assistant Director/Internship Coordinator, University at Albany, State University of New York	2000-2004
Coordinator Internships and Experimental Learning, The Sages College, Albany, NY	1998-2000
Director of Career services, The College of Saint Rose, Albany, NY	1989-1996
Placement Coordinator, Pennsylvania State University, Altoona, PA	1984-1986
Placement Counselor, East Texas State University, Commerce, TX	1976-1977

SCIENTIFIC AND PROFESSIONAL SOCIETIES OF WHICH A MEMBER:

INSTITUTIONAL AND PROFESSIONAL SERVICE IN THE LAST 5 YEARS
National Certified Counselor, Center for Credentialing & Education, Inc., (NBCC)
National Certified Career Counselor, Center for Credentialing & Education, Inc., (NBCC)
Distance Credentialed Counselor, Center for Credentialing & Education, Inc., (NBCC)

NAME:
Sook Kim

ACADEMIC RANK:
Assistant Dean

DEGREES WITH FIELDS, INSTITUTIONS AND DATES:

Ph.D., Developmental Psychology, University of Texas at Dallas, Richardson, Texas	1998
B.A., Psychology, Cum Laude, Baldwin-Wallace College, Berea, Ohio	1992

YEARS IN SERVICE AT UT DALLAS:
7 Years

OTHER RELATED EXPERIENCE:

Research Assistant, University of Texas at Dallas, Richardson, Texas	1993-1997
Licensed Social Worker, Justice Affairs Department, Cleveland, Ohio	1992-1993
Intern/Evaluator, Court Psychiatric Clinic, Cleveland, Ohio	1991-1992
Intern/Counselor, Berea Children's Home, Family Life Center, Berea, Ohio	1991- 1992

SCIENTIFIC AND PROFESSIONAL SOCIETIES OF WHICH A MEMBER:
American Psychological Association
American Evaluation Association

INSTITUTIONAL AND PROFESSIONAL SERVICE IN THE LAST 5 YEARS

Director of Advising and Assessment, University of Texas at Dallas, Richardson, Texas	2000-2004
Manager of Undergraduate Advising, University of Texas at Dallas, Richardson, Texas	1999-2000
Reviewer, American Psychological Association Convention Abstracts, Division 5	2004
Board of Directors, UTD Alumni Association	2002
Member, Erik Jonsson School Committee on Effective Teaching	2002-Present
Member, Erik Jonsson School Committee on ABET	2000-Present

4. Supporting Academic Departments

The supporting departments are summarized in table II-4.

Table II-4. Supporting Academic Departments

For Academic Year 2004

Department or Unit	Full-time Faculty Head Count	Part-time Faculty Head Count	FTE Faculty**	Teaching Assistants	
				Head Count	*FTE***
Art and Humanities	50	45	65	40	40
Chemistry	15	2	15.7	0	0
Computer Science	55	6	57	0	0
Mathematical Sciences	20	8	22.7	20	20
Physics	15	5	16.7	0	0
Social Sciences	48	13	52.3	6	6

** For faculty, 1 FTE is the equivalent of 18 credit hours.
For student teaching assistants, 1 FTE equals 20 hours of work per week.

5. Engineering Finances

Expenditures for the Erik Jonsson School and each of its programs which are under evaluation are provided in Tables II-5a through II-5.

	Erik Jonsson School of Engineering & Computer Science Total for All Programs			
	2001-2002	2002-2003	2003-2004	2004-2005
Expenditure Category				
Operations[1] (not including staff)	4,184,358	4,125,844	4,816,900	5,638,921
Travel[2]	393,079	304,920	488,916	342,814
Equipment[3]	1,077,180	1,791,304	5,097,064	4,875,894
Institutional Funds	1,400,394	1,570,515	5,360,284	2,972,589
Grants and Gifts[4]	4,254,223	4,656,553	5,042,596	7,885,040
Graduate Teaching Assistants	1,554,174	1,718,671	1,729,682	1,343,331
Part-time Assistance[5] (other than teaching)	688,038	652,459	1,381,157	1,185,434

[1] These are the general operating expenses.
[2] This is institutionally sponsored travel, excluding special program grants.
[3] Major equipment, excluding equipment primarily used for research.
[4] Includes special non-recurring equipment purchase programs
[5] Does not include graduate teaching and research assistants or permanent part-time personnel.

	Undistributed Central School			
	2001-2002	2002-2003	2003-2004	2004-2005
Expenditure Category				
Operations[1] (not including staff)	2,701,485	2,000,027	2,179,722	3,086,020
Travel[2]	191,743	115,166	218,483	131,550
Equipment[3]	767,877	1,425,402	4,870,723	4,793,984
Institutional Funds	847,558	995,113	4,296,168	2,622,434
Grants and Gifts[4]	2,813,547	2,545,482	2,972,760	5,389,120
Graduate Teaching Assistants	0	0	0	78,546
Part-time Assistance[5] (other than teaching)	393,068	305,128	612,263	700,395

	Computer Science			
	2001-2002	2002-2003	2003-2004	2004-2005
Expenditure Category				
Operations (not including staff)	527,118	681,156	938,951	1,389,496
Travel	70,415	75,537	125,730	129,221
Equipment:	19,703	103,237	46,577	27,003
Institutional Funds	259,931	277,442	683,832	118,871
Grants and Gifts	357,305	587,488	427,426	1,426,849
Graduate Teaching Assistants	1,070,858	993,693	1,058,647	678,436
Part-time Assistance (other than teaching)	186,110	217,169	337,098	183,842

	Electrical Engineering			
	2001-2002	2002-2003	2003-2004	2004-2005
Expenditure Category				
Operations (not including staff)	955,755	1,444,661	1,698,227	1,163,405
Travel	130,921	114,217	144,703	82,043
Equipment:	289,600	262,655	179,764	54,907
Institutional Funds	292,905	297,960	380,284	231,284
Grants and Gifts	1,083,371	1,523,583	1,642,410	1,069,071
Graduate Teaching Assistants	483,316	724,978	671,035	586,349
Part-time Assistance (other than teaching)	108,860	130,162	431,796	301,197

6. Engineering Personnel and Policies

a. Personnel

The number of full-time and part-time employees for the entire Erik Jonsson School and for each of its programs which are under evaluation is provided in Tables II-6a through II-6f. NOTE: All numbers are for the fall term.

Table II-6a. Personnel and Students

Erik Jonsson School of Engineering Academic Year 2003-2004

	HEAD COUNT		FTE[2]	RATIO TO FACULTY[3]
	FT	PT		
Administrative[4]	0	0		
Faculty (tenure-track)	80	0		
Other Faculty (excluding student Assistants)	29	13		
Student Teaching Assistants	---	98	.5	
Student Research Assistants	---	141	.5	
Technicians/Specialists	15	0		
Office/Clerical Employees	17	0		
Others[5]	17	0		
Undergraduate Student Enrollment*	1330	510		
Graduate Student Enrollment	599	415		

NOTE: All numbers are reported at the start of the fall term.
For faculty, 1 FTE equals 18 credit hours.
For student teaching assistants, 1 FTE equals 20 hours of work per week.
For undergraduate and graduate students, 1 FTE equals 15 credit hours of institutional course work.
* Undergraduate student enrollment includes freshmen and sophomores.

Table II-6b. Personnel and Students

Computer Science Academic Year 2003

	HEAD COUNT		FTE[2]	RATIO TO FACULTY[3]
	FT	PT		
Administrative	0	0		
Faculty (tenure-track)	41	0		
Other Faculty (excluding student Assistants)	14	4		
Student Teaching Assistants	---	47	.5	
Student Research Assistants	---	53	.5	
Technicians/Specialists	5	0		
Office/Clerical Employees	11	0		
Others				
Undergraduate Student Enrollment	758	244		
Graduate Student Enrollment	319	237		

Table II-6c. Personnel and Students

Electrical Engineering Academic Year 2003- 2004

	HEAD COUNT		FTE[2]	RATIO TO FACULTY[3]
	FT	PT		
Administrative	0	0		
Faculty (tenure-track)	39	0		
Other Faculty (excluding student Assistants)	15	9		
Student Teaching Assistants	---	51	.5	
Student Research Assistants	---	88	.5	
Technicians/Specialists	10	0		
Office/Clerical Employees	6	0		
Others	17	0		
Undergraduate Student Enrollment	572	266		
Graduate Student Enrollment	280	178		

*enrollment numbers currently listed are only for EE students.

Faculty Salaries, Benefits and Other Policies

Faculty salary data is provided in Table II-7. Note that all salaries are reported on an annual basis before any deductions and normalized for a nine-month academic year.

Table II-7 Faculty Salary Data Academic

1. For the University of Texas at Dallas, 2004-Spring 2005

	Professor	Associate	Assistant	Instructor
Number	152	102	83	0
High	$129,789.00	$87,500.00	$63,010.00	$0.00
Mean	$53,457.00	$38,313.00	$38,830.00	$0.00
Low	$19,207.00	$19,830.00	$23,000.00	$0.00

Average % Salary Raises Given to Continuing Faculty Members for the Past Six (6) Years.

Unit	1998-1999	1999-2000	2000-2001	2001-2002	2002-2003	2003-2004
Institution as a Whole (all of UTD)	5.92	4.9	7.53	4.37	0.27	4.6
Erik Jonsson School of ECS (CS & EE)	9.73	4.96	9.23	4.34	0.31	3.61

2. For the Erik Jonsson of Engineering and Computer Science Fall 2004-2005

Program		Professor	Associate	Assistant	Instructor
Computer Science	Number	13	16	13	14
	High	135242	98000	81996	53783
	Mean	116933	88276	79432	47192
	Low	105109	78977	75000	42656
Electrical Engineering	Number	20	9	8	8
	High	142500	107000	82800	66165
	Mean	114309	94258	77650	63703
	Low	86118	81516	72500	61242

NOTE: All faculty in the Erik Jonsson School of ECS are given an appointment in either the Department of Computer Science or the Department of Electrical Engineering.

Faculty Workload

Faculty workload is outlined in the faculty handbook and is restated here. The minimum academic workload for faculty on 100% "Faculty Salaries" appointments is 18 units, equivalent to 18 semester credit hours (SCH) of organized classroom instruction in undergraduate-level (UG) courses, per nine-month academic year. Faculty members not actively involved in a program of research and publication or in equivalent academic service should typically carry a teaching load greater than the minimum.

Independent of all workload equivalencies, each faculty member is obligated to teach at least three SCH of UG instruction in organized classes each semester and at least six SCH of organized class instruction each academic year. Finally, it must be emphasized that these criteria specify minimum requirements, not average or maximum requirements and that financial and educational priorities of the institution must dictate actual workloads.

Teaching equivalency credit may be granted for services other than undergraduate teaching, i.e. serving as the head of a program, providing specialized instruction and dissertation supervision. The faculty handbook outlines the policy regarding teaching equivalencies in detail.

The provost is responsible for tracking workload reports and assesses each faculty member's compliance with the minimum workload requirements. For additional information regarding faculty workload requirements, see Policy Memorandum 76-III.23-5 in Appendix I of the faculty handbook.

Fluency of Communication

The University of Texas at Dallas is very concerned that each faculty member be able to communicate clearly to students. A major criterion for a faculty appointment is fluency in English as tested through personal interviews and a mandatory seminar by faculty candidates. The most common reason for rejecting faculty candidates invited to campus has been an inability to communicate clearly. Our fundamental assurance, then, is not to hire faculty that cannot communicate clearly.

In addition, the University Of Texas Board Of Regents, upon Texas legislative mandate, requires a formal evaluation of teaching proficiency of faculty, lecturers and teaching assistants. At UT Dallas, the Graduate Dean interviews and certifies all teachers whose native language is not English. As an alternative, individuals may take the SPEAK test to certify English proficiency.

Consulting and Research Policies

Consulting with local industries is encouraged, but is limited to the traditional "one day a week" and must be reported to the Dean and Vice-President for Academic Affairs (VPAA).

Policies are described in Appendix C.

Faculty members are expected to attract externally sponsored research which is governed either by industrial contract or government regulation that are supervised through the Office of Sponsored Projects.

In general, faculty may not receive extra compensation for extra university duties except for sharply limited extra income for courses offered for continuing education.

Professional Meetings and Travel
Faculty members are encouraged to be active as participants and organizers of professional society activities. Generally, support is available for attendance at one major conference per year and possibly two. Faculty members are expected to support their own travel from research grants or contracts when available.

Supervision of Part-Time Faculty
Part-time faculty members, primarily industrial lecturers, are supervised by the department head or other administrative officer and have mandatory student teaching evaluations that are available to the administration.

Part-time faculty members are requested to schedule times usually before or after the lectures to meet with students. Usually each part-time faculty member is assigned a graduate teaching assistant to provide access for students when the part-time faculty member is not on campus.

7. Engineering Enrollment and Degree Data

Enrollment and degree statistics for the Erik Jonsson School of ECS are provided in Table II-8a. Statistics for each of the programs under review are provided in Tables II-8b through II-8e. All enrollment numbers are for the fall term; degrees conferred are for the entire academic year.

Table II-7a. Engineering Enrollment and Degree Data
Degrees for the Erik Jonsson School (as a whole)

Year	AY	FT/PT	Enrollment Year					Total UG	Total Grad	Degrees Conferred			
			1st	2nd	3rd	4th	5th*			BS	MS	PhD	Other
04	2005	FT	417	207	331	369	6	1330	599	397	433	24	
		PT	25	53	145	254	33	510	415				
03F	2004	FT	422	218	372	392	0	1404	727	330	441	14	
		PT	33	67	185	294	8	625	493				
02F	2003	FT	472	231	370	378	17	1468	802	372	357	9	
		PT	38	69	184	291	67	649	493				
01F	2002	FT	518	222	345	358	22	1465	786	321	318	15	
		PT	64	77	202	310	71	724	381				
00F	2001	FT	378	189	301	325	16	1209	549	327	307	10	
		PT	58	62	191	276	69	656	380				
99F	2000	FT	323	128	283	319	19	1072	352	241	311	9	
		PT	40	77	173	276	42	608	366				
98F	1999	FT											
		PT											

* The fifth enrollment year is the number of post-baccalaureate students taking undergraduate courses.

Table II-7b. Engineering Enrollment and Degree Data

Degrees for Computer Science

Year	AY	FT/ PT	Enrollment Year					Total UG	Total Grad	Degrees Conferred			
			1st	2nd	3rd	4th	5th*			BS	MS	PhD	Other
04	2005	FT	204	96	151	194	3	648	274	266	218	6	
		PT	10	19	55	123	13	220	182				
03F	2004	FT	197	108	208	237	0	750	342	234	265	10	
		PT	17	30	82	169	0	321	239				
02F	2003	FT	243	120	221	242	9	835	460	267	207	3	
		PT	24	31	105	177	43	380	248				
01F	2002	FT	309	137	219	248	13	926	537	214	160	10	
		PT	42	53	126	183	45	449	222				
00F	2001	FT	253	127	201	201	11	793	386	246	178	1	
		PT	40	41	123	166	46	416	199				
99F	2000	FT	202	90	172	215	14	693	261	155	236	3	
		PT	27	56	113	181	32	409	183				
98F	1999	FT											
		PT											

Table II-7c. Engineering Enrollment and Degree Data

Degrees for Electrical Engineering

Year	AY	FT/ PT	Enrollment Year					Total UG	Total Grad	Degrees Conferred			
			1st	2nd	3rd	4th	5th			BS	MS	PhD	Other
04F	2005	FT	144	68	139	145	2	498	219	89	104	18	
		PT	13	30	66	105	16	230	140				
03F	2004	FT	140	78	132	113	0	463	239	77	79	4	
		PT	9	27	80	92	7	229	151				
02F	2003	FT	161	88	108	99	4	460	192	92	49	6	
		PT	9	31	65	90	13	208	142				
01F	2002	FT	159	60	87	82	6	394	163	106	48	5	
		PT	18	16	53	119	15	221	110				
00F	2001	FT	82	53	80	118	3	336	108	80	70	9	
		PT	12	16	57	109	16	210	147				
99F	2000	FT	111	35	111	104	3	364	81	86	74	6	
		PT	12	18	59	94	10	193	176				

Table II-7d. Engineering Enrollment and Degree Data

Degrees for Software Engineering

Year	AY	FT/ PT	Enrollment Year					Total UG	Total Grad	Degrees Conferred			
			1st	2nd	3rd	4th	5th			BS	MS	PhD	Other
04	2005	FT	51	25	21	12	1	110	45	6	79	0	
		PT	1	2	7	13	1	24	55				
03F	2004	FT	62	15	13	9	0	99	68	4	79	0	
		PT	5	3	7	7	1	24	74				
02F	2003	FT	28	9	5	3	3	48	86	0	75	0	
		PT	2	3	7	5	5	22	72				
01F	2002	FT	2	1	0	1	0	4	54	0	91	0	
		PT	0	2	5	0	3	10	33				
00F	2001	FT	0	0	0	0	0	0	43	0	36	0	
		PT	0	0	0	0	2	2	24				
99F	2000	FT	0	0	0	0	0	0	8	0	0	0	
		PT	0	0	0	0	0	0	2				

Table II-8e. Engineering Enrollment and Degree Data

Degrees for Telecommunications Engineering

Year	AY	FT/ PT	Enrollment Year					Total UG	Total Grad	Degrees Conferred			
			1st	2nd	3rd	4th	5th			BS	MS	PhD	Other
04F	2005	FT	18	18	20	18	0	74	34	36	19	0	
		PT	1	2	17	13	3	36	24				
03F	2004	FT	23	17	19	33	0	92	46	15	13	0	
		PT	2	7	16	26	0	51	18				
02F	2003	FT	40	14	36	34	1	125	47	13	16	0	
		PT	3	4	7	19	6	39	17				
01F	2002	FT	48	24	39	27	3	141	23	1	2	0	
		PT	4	6	18	8	8	44	13				
00F	2001	FT	43	9	20	6	2	80	11	1	1	0	
		PT	6	5	11	1	5	28	9				
99F	2000	FT	10	3	0	0	2	15	2	0	0	0	
		PT	1	3	1	1	0	6	5				

8. Definition of Credit Unit

One semester credit hour represents one class hour per week in a lecture section for one semester. In advanced level engineering laboratories, one semester credit hour represents one and one-half hours in the engineering laboratory.

During the academic year, there are two semesters of 15 weeks duration excluding vacation periods. The summer session has a duration of 12 weeks.

9. Admission and Graduation Requirements, Basic Program

Data and information in this section apply to all programs in the Erik Jonsson School of Engineering and Computer Science. Any exceptions to this are noted where applicable and described in detail in the Self-Study Report specific to that program.

Admission of Students

In 1990, we received authorization to enroll freshmen at UT Dallas, and we still have a very large fraction of our current engineering students as transfer students, predominantly from local community colleges. We will therefore describe admissions for both freshmen and upper division transfers.

Freshman Admissions

Texas resident freshmen will be admitted if they score 1100 or above on the SAT and rank in the top 25% of their graduating class *or* if they rank in the top 10% of their graduation class. Other residents will be reviewed for admission if they rank in the top 50% of their graduating class and score 1000 or above on the SAT. In addition, applicants must be graduates of an accredited high school and have completed the following high school course units:
4 units of language arts including at least one unit of writing skills.
2 units in a single foreign language.
3 units in mathematics beginning with algebra I or higher, and including any course dealing with trigonometry.
3 units of laboratory science not including physical science 3 units of social sciences, not including work study.
1 unit of fine arts.
1 unit of general education.

Requirements for non-resident students are more stringent. Freshman admissions are handled entirely by the university admissions office. Statistics on the history of admission standards for freshman students are provided in Table II-9.

Table II-9 History of Admission Standards for EE/TE Freshman Students

Academic Year	Composite ACT		Composite SAT		Percentile Rank in High School		Number of New Students Enrolled
	MIN	AVG	MIN	AVG	MIN	AVG	
2005-2006	N/A						N/A
2004-2005	20	27.7	900	1275.2	0	75.9	360
2003-2004	14	26	1070	1255.2	0	72.8	339
2002-2003	18	25.2	780	1243.9	0	73	359
2001-2000	17	25.6	840	1214.1	0	70.6	453
2000-2001	19	25.8	830	1204.1	0	71.2	336
1999-2000	18	26.7	870	1222.1	0	71.9	293

Upper Division Transfers

For upper division transfers, prior to admissions to electrical engineering, students must complete the following science, mathematics, computer programming and pre-engineering courses:

- Chemistry for science majors, with laboratory - 8 hours
- Calculus based physics, with laboratory - 8 hours
- Calculus through multivariable - 9-12 hours
- Differential equations - 3 hours
- Computer programming in a structured language such as Pascal or C/C++ - 3 hours engineering mechanics/static's - 3 hours
- Computer programming in a structured language such as Pascal or C/C++ - 3 hours engineering mechanics/static's - 3 hours
- Engineering mechanics-dynamics - 3 hours (or a combined static's-dynamics course) electrical systems analysis - 3 hours
- Electrical engineering laboratory (if available) - I hour

It is assumed that the student will also complete the traditional English composition requirements and the state mandated requirements in history and political science.

A grade point average of 2.5, on a 4.0 scale, is required for all college work attempted and all required lower division courses in mathematics, science, computer programming and engineering must be completed with no grade lower than a "C".

The procedures involve checking each application against these criteria by the university admissions office and again by the undergraduate secretary and Assistant Dean. A "Transfer Student Course Evaluation" check sheet is used.

Table II-10 History of Transfer of Students

Academic Year	Number of Transfer Students Enrolled		
	2 Year College	4 Year College	Total
2005	0	0	0
2004	118	36	154
2003	151	50	201
2002	145	81	226
2001	235	52	287
2000	264	45	309

Requirements for Graduation

Note: ABET criteria regarding curricular content are expressed in terms of "years of study" or fractions thereof. Two definitions of "one-half year" are available, either of which may be selected by the institution to evaluate a specific engineering program. These definitions are: (1) one-half year of study equals one eight (12.5%) of the credit hours required to receive the basic-level degree, or (2) one-half year of study equals 16 semester hours or 24 quarter hours.

The curriculum has been designed so that the completion of the required courses automatically satisfies the ABET requirements. We use two work sheets for each student to verify compliance. The first is the “Undergraduate Graduation Checklist”. The other is the “Degree Plan of Study” which monitors the completion of course requirements.

These documents are checked by the undergraduate secretary and certified by the Assistant Dean and School Master prior to graduation. The Registrar's office reviews all final degree plans for conformity with requirements for graduation, and Dr. Michael Coleman, Dean for Undergraduate Studies, reviews all files for candidates for graduation with honors. Copies of these documents can be found in Appendix F: Graduation Compliance Worksheets.

Alternative Modes

There are no alternative modes or routes to completing an undergraduate degree in the engineering programs. A significant fraction of the course work is offered in the evening to accommodate undergraduate students who are employed full-time in local industry; however, the graduation requirements are the same.

The student may also choose to participate in the Industrial Practice Programs to obtain a relevant co-op/internship in industry; but this does not change the degree plans or graduation requirements.

GPA Requirements for Graduation

- The minimum grade point average for graduation is a 2.0 (C average). In addition, a 2.0 GPA is required in the student's major and related fields.
- Graduation Cum Laude requires a GPA of 3.5 in the major and upper division.
- Graduation Magna Cum Laude requires a GPA of 3.75 in the major and upper division. A senior honors thesis or project must be completed with an evaluation of magna.
- Graduation Summa Cum Laude requires a GPA of 3.9 in the major and upper division. A senior honors thesis or project must be completed with an evaluation of summa.

10. Non Academic Support Units

A number of groups are dedicated to providing service only to the Erik Jonsson School of Engineering and Computer Science.

Engineering Reading Room

The engineering reading room is located in the north engineering building. The reading room provides a quiet environment in which students can study uninterrupted. The reading room also houses the private engineering collections of Dr. Jan van der Ziel, the late distinguished chair of Microelectronics and Dr. Bernard List, the first Associate Dean for the Erik Jonsson School, as well as other books and journals, which are donated by various engineering professionals. The engineering reading room is maintained by the electrical engineering librarian, Marjorie Henderson.

Industrial Practice Programs

The Industrial Practice Programs (IP Programs or IPP) are optional, but formal activities at the graduate and undergraduate levels. The IP Programs combine classroom study with career-related work experience. Students have the opportunity to earn a college degree plus practical on-the-job experience within their chosen field of study. Students must have a declared major and be in good academic standing to qualify for an IPP assignment.

IPP Objectives Include:

- Enhancing student learning through the combination of theory and practical application by combining work experiences with classroom study
- Developing student maturity, responsibility and self-dependence
- Improving student skills in human relations, teamwork and communications
- Heightening student motivation to excel in both the workplace and the classroom
- Providing employers with a source of highly qualified, pre-professional personnel available on a year round basis
- Strengthening the relationship and cooperation between industry and academe

Each student is required to submit a work report for each IPP work semester. The purpose of the report is to review the educational value of the IPP experience. In preparation, the student should evaluate his or her assignment in terms of the principles learned in the classroom. Many students find it useful to keep a journal of projects and experiences, which can be drawn from for the final work report. Additional information can be found in Appendix II-4.

Office of Undergraduate Advising

The primary purpose of the Office of Undergraduate Advising (OUGA) is to assist students in the development of meaningful educational plans that are compatible with their life goals. Our goal is to help students become a responsible, accountable and active member in their educational decision making. OUGA also serves as a liaison between students, faculty and staff by providing timely and accurate information about institutional requirements, policies, procedures, resources and programs.

Technical Support for ECS

There are two technical support groups in the school of engineering and computer science, one for the Department of Electrical Engineering (EE-tech) and one for the Department of Computer Science (CS-tech). The head of each technical support group reports to a faculty committee and to the dean of the Erik Jonsson School; EE-tech reports to the Electrical Engineering Computer Committee and CS-tech reports to the Computer Science Computer Committee.

EE-tech has four technicians who specialize in one of the following areas: networks and security, UNIX, windows and Linux. Although each technician is considered the master in one area, they each cross-train in the other areas. EE-tech provides support to the electrical engineering faculty, students and staff, including the computer labs in the engineering north building.

Computing Facilities for ECS

The majority of the Electrical Engineering Department is housed in the engineering north building. This building has two computer labs which are available to engineering students who are enrolled in particular engineering courses. Both labs are open 24 hours per day, seven days per week.

- The CAD lab has 35 workstations and is primarily used for CAD design and VLSI.
- The Solarium has 56 workstations available and is primarily used by students who need access to MATLAB.

Equipment and software upgrades are based on the school's needs and must be approved by the EE Computer Committee. A new 12 processor, computational server with 22 gigabytes of memory is currently being installed.

Outreach Programs

The Department of Electrical Engineering has one full-time staff member who is dedicated solely to outreach programs. The Outreach Program Coordinator builds partnerships with local school districts and community colleges. Through these partnerships, the department provides summer programs which enhance the skills of students who are scientifically and mathematically inclined. Examples of these programs include TexPREP (Texas Pre-freshman Engineering Program) and MIS (Mathematically Inclined Students).

Student Organizations

Erik Jonsson School of Engineering and Computer Science actively supports various professional societies including IEEE, SWE, ACM, NSBE, International Honor Society for Electrical Engineers, Sigma Xi and the Texas Society of Professional Engineers.

Technical Staff

The Department of Electrical Engineering has two technical staff associates, one technical staff assistant and two engineering technicians.

Fiscal Officer

The Erik Jonsson School of ECS has one fiscal officer who assures the financial health of the school and its departments. The fiscal officer reports to the dean of the Erik Jonsson School of ECS. The fiscal officer also has two assistants who aid in managing the budget process and help manage the ECS facilities and classrooms.