Notification of Intent to Submit a Proposal (NISP) for a New Program of Instruction

1. Program Identification

   Degree: Doctor of Philosophy
   Program Title: Ph.D. in Computer Engineering
   CIP Number: 14.0901

2. Proposed Implementation Date

   September 2001

3. Statement of Program Content and Objectives

INTRODUCTION
A shared Doctor of Philosophy (Ph.D.) program in computer engineering is herein proposed by The University of Alabama in Huntsville (UAH) and the University of Alabama at Birmingham (UAB). This shared program would replace the current Ph.D. in Computer Engineering at UAH.

The existing graduate degree programs in the Electrical and Computer Engineering (E&CE) Department at UAH are a Master of Science Engineering (MSE) with several specialties, a Ph.D. in Electrical Engineering and a Ph.D. in Computer Engineering. Those in the E&CE Department at UAB are a Master of Science in Electrical Engineering (MSEE), a Cooperative Ph.D. with UAH and a Cooperative Ph.D. with The University of Alabama. UAB currently offers doctoral courses and has Ph.D. students who participate in a Cooperative Electrical Engineering Ph.D. degree program with UAH. It is proposed that the existing Ph.D. program in Computer Engineering at UAH be changed into a shared Ph.D. program for both UAH and UAB.

The faculty in Computer Engineering at UAH has extensive expertise in computer hardware, while the faculty at UAB has extensive expertise in computer software. The combination of these two essential areas will produce a shared program that exceeds the sum of what could be attained by programs at the institutions acting independently. Thus, the shared Ph.D. program will strengthen doctoral level work at both institutions. It will also merge and utilize the faculty and facilities already available at the two sister universities. Only limited additional state funding will be required since both UAH and UAB already offer doctoral courses, have doctoral students and have appropriate ongoing research in the area of computer engineering.

Furthermore, this shared program is essential to the development of new advanced-technology industries and to the enhancement of many existing industries in the State of Alabama. In Alabama and across the nation there is a shortage of engineers who understand computers including software, networks, and information technology. There is also a corresponding shortage of professors in the same areas. At a recent meeting of the national organization for the heads of electrical engineering departments more than half of those attending were attempting to fill at least one open position in an area related to computers. The shared program will help address these needs for the State of Alabama.
PROGRAM OBJECTIVES

The objectives of the shared Ph.D. program in Computer Engineering are as follows.

1. Academic Excellence. The proposed program will be of the highest academic caliber and, as such, will reflect credit on its graduates, the universities involved, and the State of Alabama. The shared program will create a better educational opportunity for the students than either of the participating university could provide alone.

2. High level of technology. Graduates from the program will possess the highest levels of technical expertise. They will serve as catalysts for high-technology industrial and research activities within the State. Such activities will ultimately result in an improved economy and a higher standard of living for the citizens of Alabama.

3. Combine resources. The Ph.D. program herein described will merge and utilize the faculty and facilities already available within this State at two sister universities: The University of Alabama in Huntsville and the University of Alabama at Birmingham. By designing the shared Ph.D. program such that the two sets of faculty and facilities blend and enhance one another, an outstanding program can be achieved with limited additional funding. In this manner the shared program will eliminate undue replication of expensive research equipment and graduate course offerings at participating universities. This proposed shared Ph.D. program has already earned the enthusiastic endorsement of the faculty and administrators of the E&CE Departments at the two universities involved.

4. Consistent philosophy. The shared Ph.D. program in Computer Engineering is consistent with the philosophies and objectives of both universities as well as The University of Alabama System. It will provide an immediate mechanism for this State to more fully participate in, and have an impact upon, the high-technology movement rapidly spreading across this country. The immediate and visible impact will involve quality doctoral-level teaching, advanced research activities, and service/assistance to industrial research and development concerns. The shared program is unique because it merges the resources at two sister universities while satisfying the objectives of both universities—excellence in teaching, research and service.

SHARED ASPECTS

In order to achieve these objectives, the faculty members are committed to a spirit of sharing and working together for the common good. Moreover, upon approval of this Ph.D. program, the following specific elements of cooperation will be initiated.

1. The Computer Engineering faculty with primary appointments in Electrical and Computer Engineering (E&CE) at each participating institution will be considered to have adjunct faculty appointments in E&CE at the other participating institutions and will be included in the shared program faculty.

2. The Supervisory Committee responsible for developing and supervising a student's program of study and research at one institution will have at least one member from the faculty of another participating institution.

3. In preparing a program of study for a doctoral student, the committee will consider the anticipated course offerings at all participating universities.
4. Plans to acquire research and advanced instructional equipment will be shared. A student or faculty member from one institution will have the same accessibility to equipment at the other institution as that enjoyed by the students and faculty at that institution. This cooperation will maximize the utilization of expensive equipment and ensure that new equipment expenditures are not unnecessarily duplicative.

5. A joint Electrical and Computer Engineering research seminar will be held twice each year. This seminar will consist of presentations by faculty and graduate students on their most recent research developments and interests. Joint faculty meetings will be held on the same days. The research seminars and the joint faculty meetings will strengthen collaboration among the faculty at all participating institutions. For example, these activities will certainly foster the pursuit of joint research projects and grant proposals. In addition, the availability of broadened research collaboration will enhance each institution’s ability to attract high-quality faculty.

ADMINISTRATION

Administratively, the shared Computer Engineering Ph.D. program will be managed by the Graduate Schools of the participating institutions under the policies specified in this document. Students will be admitted into the program by the respective Graduate Schools under the requirements set forth by their graduate programs and the requirements stated below. Similarly, students will be graduated from the program, when all degree requirements, as specified below, are satisfied. The degree granted to the successful candidate will be the Doctor of Philosophy degree in Computer Engineering and will be presented by the campus where candidacy was obtained and the dissertation was written. At each participating institution the Ph.D. program will be housed within the Department of Electrical and Computer Engineering.

IDENTIFICATION OF RESIDENT CAMPUS

The campus at which the student applies for and is admitted into the shared program shall be designated as the student’s resident campus. The general rules and requirements of the Graduate School of a student’s resident campus shall be in effect in addition to the requirements put forth herein.

INTER-CAMPUS PROGRAM COORDINATING BOARD

Because of the unique nature of this degree, an Inter-Campus Program Coordinating Board (the Board) will be created and will be responsible for the shared aspects of the program. The Board will have two members from each campus. These members will represent the Electrical and Computer Engineering Departments and will be members of the Graduate Faculty at each institution. The E&CE Chairs will select their respective graduate faculty representatives. The Board will have one additional member who will be the Chair of the Board and the Director of the Shared Program. The Board Chair will also be a graduate faculty member recommended by the E&CE Chair and appointed by the President at one of the participating institutions. The institution providing the Board Chair will annually rotate among all participating institutions. The Board will meet at least twice each year to discuss program activities, student progress and research activities. The Board will work to promote program coordination, faculty development and facility development. It will make recommendations to minimize the duplication of facilities and equipment in the program. The primary charges for this Board include: (a) coordinating research efforts, (b) coordinating graduate instruction and course offerings, (c) overseeing the
shared nature of the shared Ph.D. program, and (d) reviewing and approving exceptions or waivers for individual students to the policies stated herein where appropriate and justified. In all instances, a simple majority of the Board is sufficient for a decision.

The Board will be required to create a standard process for students to petition for variances to the policies put forth herein, while still honoring the Graduate School rules of the designated resident campus. When future needs arise for substantive changes to the rules and regulations governing this shared Ph.D. program, such changes shall be initiated by the Board and shall be approved by a majority vote of the graduate faculty members in E&CE on each campus.

ADMISSION REQUIREMENTS

The E&CE Department on the student’s intended resident campus reviews each applicant on an individual basis in view of multiple factors including, but not limited to grades, grade point average (GPA), prior academic experience, references, independent and supervised research, and test scores. All admission decisions shall reflect these multi-faceted criteria, and no one factor is determinative. Minimal GPA and test scores do not guarantee admission since applicants are judged on their overall qualifications. Applicants must submit complete transcripts from all colleges and universities attended. Specific admission requirements are as follows:

1. A bachelor's degree in an accredited electrical or computer engineering program or a bachelor's degree in a related program acceptable to the graduate faculty in E&CE;
2. A total score of at least 550 on each of the three sections (verbal, quantitative, and analytical) of the Graduate Record Examination (GRE);
3. A score of at least 500 on the Test of English as a Foreign Language (TOEFL) examination for international students whose native language is not English;
4. An overall grade point average of at least 3.0 on a 4.0 point scale, or at least 3.0 for the last 60 semester hours completed; and
5. Three letters of evaluation concerning the applicant's previous academic and professional work.

Under exceptional circumstances, a student not meeting all the above admission requirements may be admitted into the program on conditional admission. Once admitted, the student must satisfy the condition by achieving not less than a “B” average upon completion of 12 semester hours of approved coursework.

ADVISEMENT

Immediately upon admission to the program, the Graduate Program Director at the resident campus will assist each student in initial planning of his or her course of study. The Director will serve as the student's initial, temporary faculty advisor. During this stage, the student will be encouraged to enter discussions with Computer Engineering faculty members in the development of an appropriate course of study and area for dissertation research. When the student has selected a research area acceptable under the shared degree program, a permanent advisor will be assigned.

SUPERVISORY COMMITTEE

A Supervisory Committee will be appointed for the student as early as possible, and no later than the end of the first year of study. The Supervisor Committee for Ph.D. candidates will include
the advisor as chairperson and at least four other members. The graduate committee members will be selected based on the student’s academic interest and area of research. At least one of the committee members will be from a non-resident institution in the shared Ph.D. program. These members must be approved by the Deans of the Graduate Schools of all campuses involved. The Supervisory Committee is charged with supervision and approval of the student’s examinations, course of study, research, dissertation and performance in the completion of all requirements leading to award of the degree.

DEGREE REQUIREMENTS

The doctor of philosophy degree is regarded as a research degree and is granted on the basis of scholarly proficiency, distinctive achievement in a sub-field of Computer Engineering, and capacity for independent, original investigation. The first two criteria will be tested in coursework and examinations, the last in a dissertation that must present clearly and effectively the results of substantial research. A combination of these accomplishments, rather than the mere accumulation of residence and course credits, is the essential consideration in awarding the Ph.D. degree. The course of study leading to the Ph.D. in Computer Engineering for an entering student with a baccalaureate degree will include the following elements:

1. A major consisting of a minimum of 18 semester hours of approved coursework in Computer Engineering;
2. A minor consisting of a minimum of 15 semester hours of approved coursework in mathematics, theoretical or formal methods as related to Computer Engineering;
3. A minor consisting of a minimum of 12 semester hours of approved coursework in Electrical or Computer Engineering;
4. Additional coursework consisting of a minimum of 15 semester hours of approved coursework in supportive fields;
5. Successful completion of required examinations; and
6. A research dissertation consisting of a minimum of 18 semester hours in Electrical and Computer Engineering.

TRANSFER OF CREDIT

Courses of full graduate-level credit earned in an accredited institution where a student was enrolled in the graduate school may be submitted for review for inclusion in the doctoral program. A request for transfer of credit must be initiated by the student immediately upon arrival and addressed to the Graduate Program Director of the E&CE Department at his or her resident campus. It is also the responsibility of the student to assure that an official transcript of the credit concerned is received by the graduate school of the student’s resident campus. Acceptance of credit requires the approval of the Supervisory Committee and the Graduate School Dean of the resident campus. Credit will only be given for coursework for which a grade of at least a “B” was attained.

If a student wishes to transfer from one participating institution to another participating institution, the student must reapply for admission into the shared program at the new institution. A new supervisory committee will be appointed including a new advisor.
RESIDENCY REQUIREMENTS

For the award of a doctoral degree, residence at a campus as a graduate student is required for evaluation of the student’s investigative abilities, independent thought, and scholastic progress by faculty members other than the major advisor. This residency shall be one academic year, with the exact requirements set by the student’s resident campus. Students may continue to register as long as they remain in good standing, here defined as maintaining a cumulative grade point average of at least 3.0 on all graduate course work.

QUALIFYING EXAMINATION

A Qualifying Examination is required of all doctoral candidates. This examination is given after the student’s Supervisory Committee deems the student to have adequate preparation in the major and minor fields of study. A dissertation proposal is normally presented by the student to the Supervisory Committee following the conclusion of the Qualifying Examination. The Examination is conducted by the student’s Supervisory Committee and administered on the resident campus. Since one of the purposes of the Qualifying Examination is to determine the student’s research competence, the Examination should be completed at least six months before the degree is to be awarded. The Qualifying Examination may be taken only twice.

ADMISSION TO CANDIDACY

When the student has successfully passed the Qualifying Examination and when the student’s Supervisory Committee has approved the proposal for the dissertation, the Electrical and Computer Engineering Department on the resident campus will recommended the student to the Graduate School Dean for admission to candidacy for the doctoral degree. A copy should be provided to the Graduate School(s) of the non-resident campus(es). The student must be admitted to candidacy at least six months before graduation. All requirements for the doctoral degree must be completed within the five-year period following admission to candidacy. Any deviation in this rule must be approved by the Board upon the recommendation of the student’s advisor.

CONTINUOUS REGISTRATION

Once a student has been admitted to candidacy for a doctoral degree, the student is expected to pursue completion of the dissertation, without interruption, by enrolling each academic term for at least three (3) semester hours of dissertation research. The amount of dissertation research for which a student enrolls in any given semester should be commensurate with the progress a student is expected to make on the dissertation as well as reflective of the extent to which resident campus facilities and faculty time are invested in the proposed activities.

SCHOLASTIC REQUIREMENTS

In order to assess progress in the program, each student will be evaluated by his or her Supervisory Committee at least once a year. If the evaluation process concludes that probation is necessary, the Director of the Graduate Program will write the student a letter notifying him or her of the evaluation results and the conditions required to reestablish good standing. The evaluation process will be based on the following criteria: (a) satisfactory academic performance (requiring at least a B overall average), (b) satisfactory performance of duties associated with an assistantship or fellowship and (c) satisfactory rate of progress toward the degree. The evaluation will also include a review of the student's professional attitudes and ethical behavior.
Students may be placed on probation if they fail to earn at least a 3.0 overall grade point average in their first 12 hours of study or at any point thereafter. The student may also be placed on probation, upon the recommendation of his or her Supervisory Committee, in instances of unsatisfactory performance on an assistantship or fellowship or of unethical conduct. Decisions concerning probation, readmission or termination will be made according to the Graduate School rules of the resident campus and are subject to appeal procedures within the program and the Graduate School.

**Dissertation**

A dissertation showing an ability to conduct independent research and skill in organization and presentation must be prepared on a topic in the major field. It must constitute a definite contribution to knowledge. Dissertation results are expected to be submitted for refereed scholarly publication. All dissertations are expected to be accessible to the general public. The dissertation must be approved by the Supervisory Committee and by the Graduate School Dean of the resident campus. The dissertation must comply with the regulations set forth in the student’s resident campus dissertation preparation guide.

**Final Examination**

The final examination is an oral presentation of the dissertation in the form of a seminar before the student’s Supervisory Committee and other members of the University community. A student may take the final examination no more than twice.

**Graduation**

Each candidate for a doctoral degree must apply for the degree through the Office of the Graduate School at the resident campus no later than the registration period of the semester or the first term of the summer session in which requirements for the degree are to be completed. The Application for Degree form is required for this purpose, and a copy of it must be sent to the Graduate School at each participating institution. Successful candidates should participate in graduation exercises at the resident campus. The diploma and official records will identify the degree granted as a Doctor of Philosophy degree in Computer Engineering.

4. **Program Relationship to Other Programs Within the Institution**

The existing undergraduate and graduate degree programs in the Electrical and Computer Engineering (E&CE) Departments at UAH and UAB are listed in Table 1.

<table>
<thead>
<tr>
<th>Degree</th>
<th>Area</th>
<th>Institution</th>
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<tbody>
<tr>
<td>B.S.E.</td>
<td>General Engineering</td>
<td>UAH</td>
</tr>
<tr>
<td>B.S.E.E.</td>
<td>Electrical Engineering</td>
<td>UAB</td>
</tr>
<tr>
<td>M.S.E.</td>
<td>General Engineering</td>
<td>UAH</td>
</tr>
<tr>
<td>M.S.E.E.</td>
<td>Electrical Engineering</td>
<td>UAB</td>
</tr>
<tr>
<td>Ph.D.</td>
<td>Electrical Engineering</td>
<td>UAH</td>
</tr>
<tr>
<td>Ph.D.</td>
<td>Computer Engineering</td>
<td>UAH</td>
</tr>
<tr>
<td>Cooperative Ph.D.</td>
<td>With UAH in Electrical or Computer Engineering</td>
<td>UAB</td>
</tr>
<tr>
<td>Cooperative Ph.D.</td>
<td>With The University of Alabama in Electrical Engineering</td>
<td>UAB</td>
</tr>
</tbody>
</table>

Table 1. Existing Degree Programs
Bachelor and Master’s degree programs currently exist at both UAH and UAB, and two Ph.D. programs exist at UAH. UAB currently offers doctoral courses and has Ph.D. students who participate in a cooperative Electrical Engineering Ph.D. degree program with UAH. The proposed shared Ph.D. program in Computer Engineering would replace the existing Ph.D. program in Computer Engineering at UAH.

5. Brief Description of Current Resources for the Program

Both UAH and UAB are currently teaching courses and performing research at the doctoral level using their existing resources. These resources include the extensive expertise of the faculty, the large investment in computer laboratories, and the campus and regional computer network infrastructure. The faculty and laboratories are summarized in Tables 2, 3, and 4. Then the computer network infrastructure is described.

FACULTY WITH EXPERTISE IN COMPUTER ENGINEERING

<table>
<thead>
<tr>
<th>Faculty Name</th>
<th>Areas of Expertise</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>B. Earl Wells</td>
<td>Parallel Processing, Computer Architecture, Responsive Systems, Digital Design</td>
<td>UAH</td>
</tr>
<tr>
<td>William E. Cohen</td>
<td>Computer Architecture, Parallel Processing, Compilers, Performance Measurement, Java</td>
<td>UAH</td>
</tr>
<tr>
<td>Emil S. Jovanov</td>
<td>Real-Time and Embedded Systems, Medical Imaging, Hardware Accelerators, Parallel Processing, Digital Signal Processing</td>
<td>UAH</td>
</tr>
<tr>
<td>Jeffrey H. Kulick</td>
<td>Real-Time and Embedded Systems, Computer-Generated Holography, Medical Image Processing, Optical Networks, Parallel and Distributed Processing</td>
<td>UAH</td>
</tr>
<tr>
<td>William A. Porter</td>
<td>Neural Networks, Pattern Recognition, Systems Theory</td>
<td>UAH</td>
</tr>
<tr>
<td>David G. Green</td>
<td>Digital Systems, Computer Networks, Software Engineering, Computer Applications</td>
<td>UAB</td>
</tr>
<tr>
<td>Stan A. McClellan</td>
<td>Digital Communication Networks, Communications, Digital Signal Processing, Speech Compression</td>
<td>UAB</td>
</tr>
<tr>
<td>Dennis G. Smith</td>
<td>Digital Systems, Digital Logic Design, Electronics, Microprocessors</td>
<td>UAB</td>
</tr>
<tr>
<td>Murat M. Tanik</td>
<td>Computer Systems, Communication Systems</td>
<td>UAB</td>
</tr>
<tr>
<td>FACULTY WITH EXPERTISE IN APPLICATIONS OF COMPUTER ENGINEERING</td>
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<td></td>
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</tr>
<tr>
<td><strong>Reza R. Adhami</strong></td>
<td>Digital Signal Processing, Imaging Processing, Speech Recognition, Data Compression</td>
<td>UAH</td>
</tr>
<tr>
<td><strong>Laurie L. Joiner</strong></td>
<td>Error Control Coding, Data Communications</td>
<td>UAH</td>
</tr>
<tr>
<td><strong>Gary J. Grimes</strong></td>
<td>Telecommunications, Virtual Reality, Optical Communications, Fiber Optics, Telepresence</td>
<td>UAB</td>
</tr>
<tr>
<td><strong>Tom C. Jannett</strong></td>
<td>Digital Control Systems, Electronics, Biomedical Instrumentation, Industrial Controls</td>
<td>UAB</td>
</tr>
<tr>
<td><strong>David A. Conner</strong></td>
<td>Electromagnetics, Electrical Networks, Telecommunications</td>
<td>UAB</td>
</tr>
<tr>
<td><strong>James R. Jones</strong></td>
<td>Commercial Power Systems, Controls, Energy, Lighting, Machinery</td>
<td>UAB</td>
</tr>
<tr>
<td><strong>Dalton S. Nelson</strong></td>
<td>Biomedical Instrumentation, Electronics, Controls, Machinery, Electrical Networks</td>
<td>UAB</td>
</tr>
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</table>

Table 3. Faculty with Expertise in Applications of Computer Engineering

<table>
<thead>
<tr>
<th>GRADUATE LABORATORIES</th>
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<tbody>
<tr>
<td><strong>Laboratory for Integrated Computing and Opto-electronic Systems</strong></td>
</tr>
<tr>
<td><strong>Computer Research in Architectures and Systems in Huntsville Laboratory</strong></td>
</tr>
<tr>
<td><strong>Computer Networks Laboratory</strong></td>
</tr>
<tr>
<td><strong>Real Time Systems, Digital Signal Processing Laboratory</strong></td>
</tr>
<tr>
<td><strong>VLSI and Reconfigurable Systems Laboratory</strong></td>
</tr>
</tbody>
</table>
logic devices, 12 Pentium workstations, a variety of SUN workstations.

| Computer Networks Laboratory | Two Windows NT servers, two Linux servers, 8 workstations all connected via Ethernet switch | UAB |
| Communications Networks Laboratory | Newbridge 36170 ATM switch; two NET Promina 4000 ATM switches; Newbridge VIVID ATM Workgroup switch, Route server, and two Yellow Ridges; Fore ASX200BX ATM switch, Adtech AX 4000Broadband test system; copper and fiber optic interfaces to the campus infrastructure and to the campus Internet 2 ATM switch | UAB |
| Computer Applications Laboratory | Ten networked Pentium workstations with specialized applications software | UAB |
| Engineering Computation Laboratory | 70 networked Pentium workstations with general-purpose software | UAB |
| Unix Laboratory | 21 SUN workstations, SUN server all networked to the campus infrastructure | UAB |
| Digital Logic Laboratory | Eight workstations, Hewlett Packard logic analyzers, software for support of imbedded computing applications | UAB |

Table 4. Graduate Laboratories for Computer Engineering

COMPUTER NETWORK INFRASTRUCTURE

Both UAH and UAB are served by campus Ethernet infrastructure that provides network access to every server and workstation in Engineering. Both institutions are connected to the commodity Internet that makes a wealth of knowledge available to students and faculty. The Internet is routinely used by faculty and students for communications by electronic mail and online discussions by newsgroups. In addition, the connection of computers at UAH to those at UAB is greatly aided by the Internet 2 connection that currently exists between the two institutions. This Internet 2 connection is an all ATM service that uses a direct optical path between UAH and UAB. An OC-3 optical fiber path with the capability of sending data at 155 Mb/s links the campus of UAH to the campus of UAB. Thus, both institutions are connected to the Internet 2 through the OC-12 link between UAB and Atlanta Georgia. With this advanced networking, the sharing of computer resources between the two institutions is greatly facilitated.

6. Brief Description of Additional Resources Required for the Program

ADDITIONAL RESOURCES REQUIRED AT UAH

The enrollment in Computer Engineering programs, particularly at the undergraduate level has grown substantially over the past several years, from 34 students in 1990 to over 200 in 1999. This growth is placing undue stress on the faculty because of teaching loads. It is anticipated that the number of faculty members in the computer engineering area will increase by three over the next three years. Some of these positions will result from faculty retirements in other areas.
of the department. Others will be new faculty positions. It is the commitment of the UAH Department of Electrical and Computer Engineering with the backing of the School of Engineering to make every effort to fill these new positions with faculty members in the computer engineering area.

While the current research laboratories can serve the needs of graduate level courses, it is anticipated that these laboratories will require expansion and upgrading as the enrollment increases. In addition, the research interests of the new faculty members may necessitate additional laboratories in specific topic areas.

**ADDITIONAL RESOURCES REQUIRED AT UAB**

UAB has also experienced an increase of interest in the computer engineering area similar to that experienced by UAH. The E&CE Department was fortunate to hire Dr. Murat M. Tanik, an internationally recognized expert in software and information systems. It is anticipated that there will be at least two faculty vacancies in the next few years because of retirements. It is the commitment of the UAB Department of Electrical and Computer Engineering with the support of the School of Engineering to attempt to fill at least one of these positions with a faculty member in the software engineering area.

Laboratory and office space for graduate student research is becoming an issue at UAB. Priority will be given to doctoral students in the assignment of space.

**SHARED GRADUATE COURSES**

A facility for distance learning at UAH and UAB has existed for several years. The Intercampus Interactive Television System (IITS) allows students at one institution to actively participate in a class at the other institution. The system uses two-way video teleconferencing equipment. However, the classrooms equipped with the IITS system are not in the engineering buildings at UAH or UAB. The competition for times on the IITS system is keen. A better solution for engineering students would be to provide distance education directly from one engineering building to the other using the large capacity of Internet 2 digital communications. Some additional equipment is needed at both sites to make such shared courses a reality.
7. Approvals

This Notification of Intent to Submit a Proposal for a New Program of Instruction of a Doctor of Philosophy Degree in Computer Engineering carries the approval of faculty and administrators at UAH and UAB as indicated below.

<table>
<thead>
<tr>
<th>Name</th>
<th>Title/Position</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reza R. Adhami, Ph.D.</td>
<td>Chair</td>
<td>The University of Alabama in Huntsville</td>
</tr>
<tr>
<td>Gregg L. Vaughn, Ph.D., P.E.</td>
<td>Chair</td>
<td>The University of Alabama at Birmingham</td>
</tr>
<tr>
<td>Jorge I. Auñón, Sc.D., P.E.</td>
<td>Dean</td>
<td>The University of Alabama in Huntsville</td>
</tr>
<tr>
<td>Stephen A. Szygenda, Ph.D., P.E.</td>
<td>Dean</td>
<td>The University of Alabama at Birmingham</td>
</tr>
<tr>
<td>Samuel P. McManus, Ph.D.</td>
<td>Provost and Vice President for Academic Affairs</td>
<td>The University of Alabama In Huntsville</td>
</tr>
<tr>
<td>Peter V. O’Neil, Ph.D.</td>
<td>Provost</td>
<td>The University of Alabama at Birmingham</td>
</tr>
<tr>
<td>Frank A. Franz, Ph.D.</td>
<td>President</td>
<td>The University of Alabama In Huntsville</td>
</tr>
<tr>
<td>W. Ann Reynolds, Ph.D.</td>
<td>President</td>
<td>The University of Alabama at Birmingham</td>
</tr>
</tbody>
</table>
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