

UNIVERSITY FACULTY SENATE FORMS

Academic Program Approval

This form is a routing document for the approval of new and revised academic programs. Proposing department should complete this form. For more information, call the Faculty Senate Office at 831-2921.

Submitted by: Jackson F. Gillespie phone number 1790

Department: Accounting and MIS email address: gillespj@lerner.udel.edu

Action: Request for permanent status
(Example: add major/minor/concentration, delete major/minor/concentration, revise major/minor/concentration, academic unit name change, request for permanent status, policy change, etc.)

Effective term 07F
(use format 04F, 05W)

Current degree MS
(Example: BA, BACH, BACJ, HBA, EDD, MA, MBA, etc.)

Proposed change leads to the degree of: MS in Info. Systems and Tech. Management
(Example: BA, BACH, BACJ, HBA, EDD, MA, MBA, etc.)

Proposed name: _____
Proposed new name for revised or new major / minor / concentration / academic unit
(if applicable)

Revising or Deleting:

Undergraduate major / Concentration: _____
(Example: Applied Music – Instrumental degree BMAS)

Undergraduate minor: _____
(Example: African Studies, Business Administration, English, Leadership, etc.)

Graduate Program Policy statement change: _____
(Must attach your Graduate Program Policy Statement)

Graduate Program of Study: _____
(Example: Animal Science: MS Animal Science: PHD Economics: MA Economics: PHD)

Graduate minor / concentration: _____

Note: all graduate studies proposals must include an electronic copy of the Graduate Program Policy Document, highlighting the changes made to the original policy document.

List new courses required for the new or revised curriculum. How do they support the overall program objectives of the major/minor/concentrations)?

(Be aware that approval of the curriculum is dependent upon these courses successfully passing through the Course Challenge list. If there are no new courses enter "None")

Explain, when appropriate, how this new/revised curriculum supports the 10 goals of undergraduate education: <http://www.ugs.udel.edu/gened/>

Identify other units affected by the proposed changes:

(Attach permission from the affected units. If no other unit is affected, enter "None")

Describe the rationale for the proposed program change(s):

(Explain your reasons for creating, revising, or deleting the curriculum or program.)

Program Requirements:

(Show the new or revised curriculum as it should appear in the Course Catalog. If this is a revision, be sure to indicate the changes being made to the current curriculum and include a side-by-side comparison of the credit distribution before and after the proposed change.)

ROUTING AND AUTHORIZATION: (Please do not remove supporting documentation.)

Department Chairperson Jackie F. D'Allespie Date 12/3/06
Dean of College [Signature] Date 12/4/06
Chairperson, College Curriculum Committee [Signature] Date 12/4/06
Chairperson, Senate Com. on UG or GR Studies _____ Date _____
Chairperson, Senate Coordinating Com. _____ Date _____
Secretary, Faculty Senate _____ Date _____
Date of Senate Resolution _____ Date to be Effective _____
Registrar _____ Program Code _____ Date _____
Vice Provost for Academic Programs & Planning _____ Date _____
Provost _____ Date _____
Board of Trustee Notification _____ Date _____

TO: Havidan Rodriguez, Vice Provost
Academic Affairs and International Programs

FROM: Jeff Gillespie, Interim Chair
Department of Accounting and MIS

RE: PSPR – MS in Information Systems and Technology Management
Response to PSPR Report by Dr. Opila and Dr. Hofstetter

The Department of Accounting and MIS appreciates the time and thought that Dr. Opila and Dr. Hofstetter put into their report on the Permanent Status Program Review for the Master's degree in IS&TM. Their efforts have truly made this a worthwhile exercise that will hopefully improve the program as we go forward.

During the next cycle of curriculum changes for the University, the Department will make sure that corrections are made so that the program listing for the dual degree (IS&TM and MBA) in the University catalog will agree with the actual program being offered to the students. We certainly agree that this oversight (59 credits vs. 60 credits) needs to be corrected.

Also, there is no reason why we can't be consistent with other graduate programs on campus and have 3 faculty members read and critique the research paper required of all students as part of their capstone experience, rather than the current practice of having the review done only by the faculty advisor.



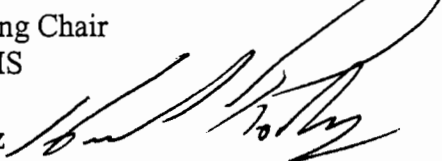
OFFICE OF THE VICE PROVOST
FOR ACADEMIC AFFAIRS AND
INTERNATIONAL PROGRAMS

101 HULLIHEN HALL
UNIVERSITY OF DELAWARE
NEWARK, DELAWARE 19716-1520
PH: 302/831-2147
FAX: 302/831-2020

March 6, 2007

MEMORANDUM

TO: Jeff Gillespie, Acting Chair
Accounting and MIS

FROM: Havidán Rodríguez 
Vice Provost for Academic Affairs and International Programs

SUBJECT: Permanent Status Program Review (PSPR)

Attached are the PSPR internal reviews for the M.S. in Information Systems and Technology Management. As part of the PSPR process (see <http://www.udel.edu/facsen/course/index.html#Final>, Timeline for PSPR), we request that the department write a brief response to these reviews and forward the documents to the appropriate college committee and/or the Dean's Office no later than March 16, 2007. The Dean's Office will then forward all the documents to the Faculty Senate (c/o Karren Helsel-Spry) so it can be considered for approval by the University Faculty Senate.


Please let me know if you have any questions.


dld
Attachments

cc: Dallas Hoover, Faculty Senate President
Karren Helsel-Spry, Faculty Senate Office
Dean's Office, Alfred Lerner College of Business and Economics

To: Havidán Rodríguez
Associate Provost

March 4, 2007

From: Robert L. Opila 
Professor of Materials Science

Fred T. Hofstetter 
Professor of Education

Subject: PSPR of the M.S. in Information Systems and Technology
Management (IS&TM)

As requested, we have reviewed the two-page Self Study report submitted by the Department of Accounting and MIS (see Attachment A), which seeks permanent status for the Master of Science degree in Information Systems and Technology Management (IS&TM). On 17 January 2007, we sent you a memo (see attachment B) posing fifteen questions regarding the Self Study report. On 22 February 2007, we received a reply from Professor Gillespie (see attachment C) in which he responded effectively to all fifteen of our concerns. In addition, Professor Gillespie provided the spreadsheet we requested (see Attachment D) showing demographics and projecting graduation dates of the 55 students who have enrolled in the program since its inception in September of 2001.

Our summary judgment and recommendation is that the IS&TM program should be granted permanent status. Although it has not met the aggressive target of 30 to 35 students per year that was established in the 29 November 2001 proposal to create the program (see attachment E), the program is enrolling an average of 10 students per year and may grow to 15 students annually. We believe the IS&TM program fills a strategic curricular need that CBE and ECE are able to sustain from existing resources that simultaneously support related programs, thereby making it both academically justifiable and economically sound to grant permanent status to the IS&TM program.

Objectives, Strengths, and Weaknesses

After careful review of (1) the 29 November 2001 proposal to create the program, (2) the Self Study report submitted by the Department of Accounting and MIS, and (3) Professor Gillespie's response to the fifteen questions we posed regarding the Self Study report, we believe the IS&TM program is addressing and meeting its originally stated goals and objectives. Moreover, we probed whether the program is keeping up with changes that are occurring in this fast-paced technological field, and we were impressed by the manner in which the IS&TM program is continually revising the courses to include emerging technologies and standards for information systems and technology management.

We find the IS&TM program compatible not only with the mission of CBE and ECE, but also with the academic priorities of the University as a whole. Information Systems and Technology Management are important fields in which the University, according to its mission, has a responsibility to prepare students to communicate, participate, and compete in the global information economy of the 21st Century.

The IS&TM program strengths include (1) the continual incorporation of changes in technology to keep IS&TM courses relevant and up-to-date; (2) the capstone experience that leads to an action research project; (3) the participation of five CBE faculty, one ECE faculty, and one adjunct, for a total FTE of 2.5 faculty devoted to the program; and (4) synergy through sharing courses with the M.S. in Accounting and the MBA, which are two of the strongest programs in CBE.

The primary weakness of the IS&TM program has been its inability to meet the aggressive goal of enrolling 30 to 35 students per year, as established in the 29 November 2001 proposal to create the program. Corporate downsizing and outsourcing of IT jobs may be factors that keep the program from reaching this ambitious goal.

Impact and Demand

The IS&TM program has good synergy with other programs in CBE. Because the IS&TM program shares courses with the MS in Accounting and the MBA degree, none of the courses in the IS&TM program exist solely for IS&TM students. This is why we are not overly concerned that the program has leveled at a relatively modest enrollment average of 10 students per year as compared to the initial goal of 30 to 35 students per year.

The IS&TM admission requirements are clearly stated and fairly implemented. An issue that concerned us was how the department would judge whether incoming students may need to take additional foundation courses beyond those normally required in the program. When we asked Professor Gillespie about this, he replied that Professor Clinton White, Area Head of MIS, interviews personally each student before admittance into the IS&TM program. After discussing the applicant's background, goals, and expectations, Professor White recommends a set of foundation courses for the student to take. So far, however, no students have been required to take additional foundation courses; thus, the issue of fairness we had raised turned out moot.

Professor White is an expert in IS&TM, and we are impressed that he personally takes time to interview each applicant and mentor each student through the program.

At present, there are only two graduate fellowships funded for the IS&TM program. Professor Gillespie reports that the department is receiving an increasing number of applications from highly qualified international candidates who would like to study full-time in the program. Most of these students require financial aid or other funding arrangements, however, that CBE does not have. Professor Gillespie therefore believes that the program will max out at about 15 student admissions per year, as opposed to the original target of 30 to 35 students per year.

As noted above, IS&TM is a cooperative program offered jointly by CBE and ECE. The ECE faculty teach two of the program's courses, namely, BUEC/CPEG 810 (Telecommunications and Networks I) and BUEC/CPEG 811 (Telecommunications and Networks II). The rest of the courses are taught by CBE faculty. Because all of the courses in the program are also taken by students in other majors, it appears that existing resources are sufficient to support and maintain the IS&TM program.

Evaluation

CBE has an Assurance of Learning Task Force (ALTF) that is aligning the IS&TM program (along with other CBE programs) to requirements of the Association to Advance Collegiate Schools of Business (AACSB), which is the accreditation body for CBE. The College is working to decide which tools will best assess the IS&TM program's learning objectives. Under consideration are the Educational Testing Service (ETS) field tests that contain items on IS topics, surveys by Educational Benchmarking Inc. (EBI), and course-embedded materials to assess whether the program goals are being achieved. We are confident that this ALTF process will result in an appropriate program assessment plan, especially since this is required of CBE for Middle States accreditation as well.

Our major question about evaluation had to do with the capstone course, which introduces the students to guest speakers who are experts on various IT topics. We wondered, in what sense is this course a capstone? Is there some kind of internship or portfolio evaluation of the capstone experience? The original proposal stated that the program will not require a comprehensive examination, thesis, or dissertation. We wondered, therefore, how it is determined that candidates have met the standards and performances required for granting the degree.

Professor Gillespie responded by explaining that the capstone course is actually made up of two parts: a 2-credit seminar series and a 1-credit research paper. The seminars are led by invited speakers from industry who present lectures on current IT topics. Students must ask questions and participate actively in each seminar. Students who complete the program with satisfactory grades in their individual courses, attend the IT seminars, and satisfactorily complete their IT research paper are considered to have met the standards and performances required for granting the degree. The research paper must be written in a manner acceptable to the faculty supervisor.

We believe this is adequate but would suggest that the department consider having the research paper read and critiqued by a jury consisting of three faculty instead of just one, as is typical in other master's programs across the campus.

Finally, as Professor Gillespie noted in his response to our list of questions, this PSPR has made the department realize that they need to obtain Faculty Senate approval for the change in the total number of required credits from the original 60 that the Faculty Senate had approved, to the current 59 that resulted from course modifications in programs with which IS&TM shares its courses.

Attachment A



ALFRED LERNER COLLEGE OF BUSINESS AND ECONOMICS

DEPARTMENT OF ACCOUNTING
AND MANAGEMENT
INFORMATION SYSTEMS

University of Delaware
Newark, Delaware 19716-2715
Ph: 302/831-2961
Fax: 302/831-4676

To: Dan Rich
University Provost

Dallas G. Hoover, President
University Faculty Senate

From: Jackson F. Gillespie, Interim Chair
Department of Accounting and MIS

A handwritten signature in cursive script that reads "Jackson F. Gillespie".

Re: Permanent Status Program Review
MS in Information Systems and Technology Management

In the Fall of 2001, the Lerner College of Business and Economics and the Department of Accounting and Management Information Systems proposed a new masters degree in Information Systems and Technology Management (IS&TM). This program was approved at the March 4, 2002 meeting of the Faculty Senate and came into being at the beginning of the 2002-2003 academic year. The program now needs to undergo a Permanent Status Program Review (PSPR).

The MS in IS&TM combines the study of information systems with information technology management in business. It includes core management information systems (MIS) courses such as data management, systems analysis and design, telecommunications, data mining, information security, and current issues in information systems in business. The objective of the program is to produce students who possess the combination of management and technical skills needed to bring about the effective deployment and administration of information technology to achieve business success in today's highly competitive global environment. The program is primarily designed for 2 types of students: those with a background in business who want to move into a more technology-oriented role in their organization, and those with a background in a technical field who want to move into an IT/management role.

The program can be thought of as a series of 5 building blocks. The foundation block provides the fundamentals of business and programming. The second building block covers the core concepts of IT, and the third block advances these core concepts. The fourth block allows the student to choose electives and tailor the program to an area of interest or to gain practical experience. The capstone block draws from all previous course work to complete the students' experience.

Some students have recognized the career potential of having an even stronger background in the business area. These students have completed or are working towards a dual degree in IS&TM and a Masters in Business Administration. Students in the MBA program are allowed to choose a concentration, one of which is information technology. By taking extra courses in the MIS curriculum, these students can also complete the dual degree.

Students in the IS&TM program are required to complete 6 credits of foundation courses in business plus 30 credits in masters-level MIS courses. These courses include a two-credit "high-tech seminar series" conducted by invited speakers from business and a one-credit research project related to an information systems problem or current opportunity in business.

Enrollment. There are currently 30 students in various stages of completing the MS in IS&TM, plus another 10 students who are working on the dual degree in IS&TM and the MBA. Since the inception of the program, there have been 17 students who graduated with the MS in IS&TM and 5 students who have completed the dual degree.

Placement. Some of the students who have graduated with the IS&TM degree have gotten jobs with public accounting firms, mainly in the business consulting side of the company. Other students have taken positions with information systems consulting firms and in a variety of in a variety of information systems management and administrative positions.

Curriculum. There have been no major curriculum changes since the inception of the program. One example of a minor change was when one of the required courses (ACCT 803 - Systems Analysis, Design, and Implementation) was renumbered to ACCT 806 with ACCT 804 - Database Design, Networks and Implementation as a prerequisite. The change was made to give the students a stronger background before going into the systems analysis and design course.

Accreditation. The accrediting body for accounting and business programs is the Association to Advance Collegiate Schools of Business - International (AACSB). The guidelines for being accredited by AACSB have become very consistent with the requirements for Middle States accreditation that the University is facing. Developing learning goals and then assessing whether a program is achieving these learning goals has become extremely important in the accreditation process for both bodies. The Department of Accounting and MIS has developed learning objectives for the IS&TM program, but has not begun the process of assessing whether these objectives are being achieved.

Resources. The IS&TM program appears to be in very good shape from the standpoint of resources, particularly faculty resources. Since the program was established, the Department of Accounting and MIS has had 1 tenure-track faculty member (Dr. Thomas Hofferd) and 1 adjunct faculty member (Claudio Spiguel) in the MIS area leave the University. However, the Department has gained 4 tenure-track MIS faculty members during the same time. Three of these faculty members are new hires within the last 2 years: Dr. Jon Blue, Dr. Jinwei Cao, and Dr. Harry Wang. The fourth, Dr. Jack Baroudi, was Associate Dean of the College of B&E for the last few years, and has now joined the faculty of the Department. These lines have put the program in excellent shape to handle the MS in IS&TM.

Attachment B



INTERDEPARTMENTAL
MEMORANDUM

To: Havidán Rodríguez
Associate Provost

From: Robert L. Opila *RO*
Professor of Materials Science

January 17, 2007

Fred T. Hofstetter *FH*
Professor of Education

Subject: PSPR Questions for IS&TM Self Study

As requested, we have reviewed the two-page Self Study report submitted by the Department of Accounting and MIS, which seeks permanent status for the Master of Science degree in Information Systems and Technology Management (IS&TM). We are puzzled by the brevity of this report in comparison to the number of issues we must address as per the PSPR guidelines at www.udel.edu/facsen/course/PSPRsample.html. We believe it may be possible that the Department was not aware of these guidelines or did not have enough time to respond in the level of detail the guidelines require. In any case, we need more information before we can complete this review. We would like to request that you ask the Department of Accounting and MIS to answer the questions enumerated below and send us their reply in order that we can proceed to conduct a proper PSPR review.

- 1) What is the IS&TM program evaluation plan? Upon what local, regional, national, or professional standards are the program's assessments based?
- 2) When students opt for the dual degree described at the top of page 2 of the Self Study report, how many credits of coursework must the students complete in order to earn the dual degree?
- 3) We would like to see a table that lists each student that has been enrolled in the IS&TM program. For each student, we would like the table to show the following information, and we suggest the column heads read as follows: date of admission, years in the program, full or part-time student, single or dual degree, and date of graduation.
- 4) The 30 November 2001 proposal to create the IS&TM program stated on page 5 that the accrediting agency is the "International Association for Management Education (formerly the American Association of Collegiate Schools of Business (AACSB)." The self-study report, however, continues to refer to AACSB. We request clarification regarding what is the proper accrediting agency for the IS&TM program.

- 5) In the section on resources, the Self Study discusses the departure of two IS&TM program faculty and the acquisition of four others. How many faculty are currently teaching courses in the IS&TM program, and what is the total FTE of faculty time actually devoted to the IS&TM program?
- 6) The IS&TM program was established through a partnership of the College of Business and Economics with the Department of Electrical and Computer Engineering. How many of the courses in the IS&TM program are being taught by the Department of Electrical and Computer Engineering, and how many are being taught by the College of Business and Economics?
- 7) The IS&TM program concludes with a capstone that "introduces the students to guest speakers who are experts on various IT topics." In what sense is this a capstone? Is there some kind of internship or portfolio evaluation of the capstone experience? The 30 November 2001 proposal to create the IS&TM program stated on page 11 that "the program will not require a comprehensive examination, thesis, or dissertation." How is it determined that candidates have met the standards and performances required for granting the degree?
- 8) The 30 November 2001 proposal to create the IS&TM program stated on page 3 that "when fully implemented, it is anticipated that 30 – 35 students will be admitted to the part-time program each year, with a full-time program being added as demand warrants." The proposal goes on to state that when fully implemented "it is reasonable to expect approximately 30 students to graduate from the part-time program each year." From the Self Study report, it appears as though the program has not hit this mark. We believe the Department should address this issue and revise the target if necessary.
- 9) The 30 November 2001 proposal to create the IS&TM program stated on page 4 that "there are no similar programs in the state of Delaware." Is this still true?
- 10) The 30 November 2001 proposal to create the IS&TM program stated on page 6 that two required courses (Telecommunications and Networks I and II) will be designed and taught by ECE, and that a course in Security and Control will be jointly developed by ECE and CBE faculty. Have these courses been created, and with what national or professional standards are their assessments aligned?
- 11) The 30 November 2001 proposal to create the IS&TM program stated on page 9 that "all students will be expected to understand an object-oriented programming language." How is this assessed?
- 12) The 30 November 2001 proposal to create the IS&TM program states on page 11 that students "who do not have a business background may be asked to take additional foundation courses, resulting in a maximum of 42 credits." What are

the criteria used to determine whether students need to take additional foundation courses? How many students have been required to take these additional courses?

- 13) Have the two labs referred to in the Learning Resources section of the 30 November 2001 proposal to create the IS&TM program proven adequate to meet the students' computing needs?
- 14) How have changes in technology impacted the IS&TM program? Since its creation, the W3C invented "Web Services" that now power most businesses. How has Web Service technology been incorporated into the program? To what extent have Ajax and other Web 2.0 technologies been incorporated?
- 15) Does the Department have the financial resources needed to sustain the IS&TM program given its current enrollment levels?

Attachment C

1. What is the IS&TM evaluation plan? Upon what local, regional, national, or professional standards are the program=s assessments based?

For over a year, the College of Business and Economics had an Assurance of Learning Task Force (ALTF). The goal of this task force was to develop learning objectives for all programs in the College. The initial report of the ALTF was presented to the Dean on June 15, 2005. This exercise was begun in response to requirements of our accreditation body, the AACSB (see question 4 below). It was later that we found out that we also needed to develop learning objectives for the University=s accreditation with Middle States.

In that initial report, the program learning goals of the IS&TM program were stated as:

1. Ability to analyze business problems and recommend, design, and implement solutions for management.
2. Knowledge of current issues in MIS.
3. Skill in managing IS resources and forecasting business needs for information technology.
4. Competence in leading IS project teams.
5. Employers will be highly satisfied with our graduates.

In the last 18 months, the College has worked on deciding which tools would be best able to allow us to assess learning objectives. In the case of the IS&TM program, we feel that we will be able to use Educational Testing Service (ETS) field tests (which contain items on IS topics), surveys by Educational Benchmarking, Inc. (EBI), and course-embedded materials to assess whether the program goals are being achieved. On a more informal basis, we try to meet with representatives of many of the companies who hire our graduates, and ask if there are things that we need to be doing better. We usually do this when the company comes on campus to recruit our students.

At the current time, we are in the process of curriculum mapping our programs, including the MS in IS&TM. This should allow us to determine which courses in the program have specific requirements that help us achieve the stated goals. We hope to complete this process during the current spring semester, and then move on to other assessments.

2. How many credits of course work must a student complete in order to get a dual degree in IS&TM and the MBA?

At this time, the dual degree in IS&TM and the MBA would require 59 credits, as follows (all courses are 3 credits unless otherwise stated):

ACCT 800, 801, 804, 806

BUEC 810, 811, 830, 840, 850, 865 (2 credits), 870 (2 credits), 871 (1 credit)

BUAD 820, 831, 840, 870, 873, 880, 890

ECON 503

FINC 850

The initial documentation for the dual degree stated that 60 credits were required to complete the program. A couple of changes have evolved that have since brought the requirements down to 59 credits, but we now recognize that this change has not been sent through the approval process in the Faculty Senate. This is an oversight that we plan to correct next year.

3. Attachment 1 shows the requested information on each of the students in the program since its inception.
4. What is the proper accrediting agency for the IS&TM program?

Although there were a couple of short-lived name changes, our accrediting body has not changed. The current name is The Association to Advance Collegiate Schools of Business International, and the body is back to using the familiar initials AACSB. The website for the organization is www.aacsb.edu.

5. How many faculty are currently teaching courses in the IS&TM program, and what is the total FTE of faculty time actually devoted to the program?

The IS&TM program piggybacks both the MS in Accounting program and the MBA degree. The following faculty have recently taught the required courses for the IS&TM program:

Dr. Jon Blue	2 sections	1 section of ACCT 804 and 1 section of BUEC 840
Dr. Jinwei Cao	1 section	ACCT 804
Dr. Mark Serva	1 section	ACCT 806
Dr. Michael Davis	2 sections	1 section of BUEC 810 and 1 section of BUEC 811
Dr. John Wragge	2 sections	1 section of BUEC 830 and 1 section of BUEC 850
Dr. Andrea Everard	1 section	BUAD 873
Mr. Peter Wood	1 section	BUEC 840

Of the 7 faculty listed above, 5 are from the Department of Accounting and MIS. Dr. Davis is from the Department of Electrical and Computer Engineering, and Mr. Wood is an adjunct who sometimes teaches the BUEC 840 class during winter session.

So based on the above listing (10 sections), it might be considered that the IS&TM program uses roughly 10/4, or 2.5 FTE equivalents to teach its required courses. However, that would be very misleading. For example, ACCT 804 and 806 (a total of 3 sections per year) are required courses in both the MS in Accounting program and the MBA program when the student is pursuing a concentration in Information Technology (IT). BUEC 840 and BUAD 873 (another 3 sections per year) are also required by students in the MBA - IT concentration. BUEC 810, 811, 830 and 850 are acceptable electives for students in the MBA - IT concentration. Thus, none of the required courses in the program exist solely for IS&TM students. This can also be said about any of the elective courses in the program. Because of this, it is difficult to state that a specific number of FTE=s are devoted to the IS&TM program.

6. How many of the courses in the IS&TM program are being taught by the Department of Electrical and Computer Engineering, and how many are being taught by the College of Business and Economics?

Only 2 courses are taught by the Department of Electrical and Computer Engineering: BUEC/CPEG 810 (Telecommunications and Networks I) and BUEC/CPEG 811 (Telecommunications and Networks II). All other courses are taught by faculty in the College of Business and Economics.

7. A capstone course Aintroduces the students to guest speakers who are experts on various IT topics.≡ In what sense is this a capstone? Is there some kind of internship or portfolio evaluation of the capstone experience? The original proposal stated that Athe program will not require a comprehensive examination, thesis, or dissertation.≡ How is it determined that candidates have met the standards and performances required for granting the degree?

The capstone course is actually made up of two parts X a 2-credit seminar series and a 1-credit research paper. Students in the IS&TM program and the MBA/IS&TM dual degree program are expected to attend IT seminars in which invited guest speakers from industry present lectures on current IT topics. Below is a list of seminars that have been presented to date. Two to three 60-90 minute seminars are scheduled each semester. Attendance is taken, and students are expected to ask questions and otherwise actively participate in each seminar. Students register for BUEC 870 in their final semester and get two credits for having attended the seminars. Students in both programs, under the supervision of a faculty member, must complete a research project on an IT topic of the own choosing. The results must include a written paper acceptable to the faculty supervisor. Students register for BUEC 871 near the end of their program and get one credit for completing the research and the paper. Those who complete the program with satisfactory grades in their individual courses, attend the IT seminars, and satisfactorily complete their IT research paper are considered to have met the standards and performances required for granting the degree.

Seminars presented to date:

Emerging wireless technologies
Critical success factors for ERP
Networks and network monitoring
Library archiving systems
Fraud and IT audit
Self-defending networks (I and II)
Trustworthy computing
The ERP market

Disruptive technologies
Business and IT integration
Identity solutions
XBRL in the real world
Web governance
Emerging technologies
Change management
Business value with IT

8. The original proposal stated that Awhen fully implemented, it is anticipated that 30-35 students will be admitted to the part-time program each year, with a full-time program being added as demand warrants,≡ and that roughly 30 students would graduate each year. Should these targets be revised?

Yes, the targets should be revised. It is now anticipated that admitting roughly 15 students to the part-time program each year is more realistic. This number is based on current demand for the program. From a supply standpoint, we still feel like we could handle 30 students per year if the demand were to increase. However, this increase will probably not occur unless we can increase publicity and/or funding for the program. We are beginning to get a number of applications from increasingly well-qualified full-time applicants, mostly international students. Most of these, however, are looking for scholarships and/or other funding arrangements that we do not have. At this point in time, we have only 2 funded graduate fellowships, and we do not see the number of fellowships or full-time admittances increasing.

9. Is it still true that there are no programs similar to the IS&TM in the State of Delaware?

According to their catalog, Wilmington College now has a Masters of Science in Information Systems Technologies, with concentrations in (1) Management and Management Information Systems, (2) Corporate Training Skills, (3) Internet/Web Design, or (4) Information Resource Management. The program is a minimum of 36 credits for students with Aconsiderable preparation,≡ up to 54 credits for students with Ano preparation.≡ The amount of preparation has to do with the business and systems background of the student. It is our opinion that this degree is more skills-based and less academic than our program.

In its MBA program, Goldey-Beacom College has a concentration in information technology. This concentration includes one course that all of their MBA=s take (Technology in Management) and 2 courses to complete the concentration (Database Management Systems and Technology of Electronic Commerce). The MBA program at Delaware State University has an information systems concentration that also includes one course that all MBA=s take (Management Information Systems), plus 3 electives from a list of 5 possible courses. We do not feel that either of these programs is comparable to the IS&TM program.

10. The proposal for the program stated that two required courses (Telecommunications and Networks I and II) would be designed and taught by ECE, and that a course in Security and Control would be jointly developed by ECE and CBE. Have these courses been created, and with what national or professional standards are their assessments aligned?

All 3 courses have been developed and are currently being taught in the program. The 2 telecommunications courses (BUEC/CPEG 810 and 811) are taught by the ECE Department. The Security and Control course (BUEC 850) is taught by the Department of Accounting and MIS.

11. The original proposal stated that Aall students will be expected to understand an object-oriented programming language.≡ How is this assessed?

Unless they can show a background in an object-oriented language, students are required to take a 2-credit BUEC 865 seminar in Programming I - Object Oriented. The need for this course is determined at an entrance interview with the program administrator. If the student has had a course in object-oriented programming, or if the student can show that they have worked extensively with a language such as C++, then they would be excused from this particular section of BUEC 865, and would be required to take a different 2-credit section of the course.

12. The original proposal stated that students who do not have a business background may be asked to take additional foundation courses, resulting in a maximum of 42 credits. What are the criteria used to determine whether students need to take additional foundation courses? How many students have been required to take these courses?

Each student with a reasonably complete application is interviewed by Professor Clinton White, Area Head of MIS, before admittance into the IS&TM program. Professor White discusses with the applicant his or her background, personal goals, and expectations for the degree program. At that time, Professor White recommends a set of foundation courses for the student to take. The criteria used to determine whether a student needs to take additional foundation courses are (1) their undergraduate degree, (2) their work experience, and (3) other educational and professional qualifications.

As of this point in time, no students have been required to take additional foundation courses.

13. Have the two computer labs that are referred to in the original proposal been adequate to meet the needs of the students in the IS&TM program?

The two computer labs in the basement of Purnell Hall are more than adequate to meet the needs of the IS&TM students. If anything, the demand for the labs has decreased as more students have acquired their own laptop computers. The capabilities of these laptops allow the students to access the College's network from anywhere.

14. How have changes in technology impacted the IS&TM program. Since its creation, the W3C invented Web Services that now power most businesses. How has Web Service technology been incorporated into the program? To what extent have Ajax and other Web 2.0 technologies been incorporated?

Changes in technology are constantly being incorporated into courses in the MS program. Some examples include the following:

ACCT 805 - Current Issues in MIS. This course is an elective and is offered once per year with the content varying depending on the current issues in the profession. Currently, a 5-week module on XML and its supporting languages (including XML Schema, Xlink, XML Namespaces, and XSLT) and XBRL (the XML vocabulary for financial and business operations reporting) are included. This is followed by a two-week

module on Web Services (including the book *Out of the Box* by Hagel) and their role in a variety of business activities. The course also includes case work and discussion of SOA versus the new REST approach to system architecture.

ACCT 806 - Systems Analysis and Implementation. This is a required course and is taught once each year with the content changing based on current developments and analysis techniques. It is currently being taught with an emphasis on business process modeling, including exposure to state-of-the-art modeling software (Ultimus).

ACCT 850 - Security and Control. This is also a required course that is offered once each year. It is currently focused on networked information systems security and corporate policy and oversight procedures.

Our focus in the courses in the IS&TM program is management and IT always with an eye on changes that are occurring in the business world and staying current and relevant. To directly address your question about Ajax and Web 2.0 technologies, we always discuss new techniques, but we do not necessarily offer specific instruction in them. Ajax and Web 2.0 technologies, for example, are relatively new techniques for developing interactive applications. They will come up in discussions and cases, but we do not include instruction in them in our MS curriculum.

15. Does the department have the financial resources needed to sustain the IS&TM program given its current enrollment levels?

We are confident that the Department of Accounting and MIS does indeed have the financial resources to sustain the IS&TM program. This is particularly true at its current enrollment levels, which are lower than original projections. The department offers an undergraduate minor in MIS, as well as an undergraduate major in MIS (also undergoing permanent status review). We also contribute to the MBA program by offering an IT concentration. The graduate degree in IS&TM complements the range of information technology programs available in the department, and does not constitute a specific drain of resources.

Attachment D

IS&TM Student Summary - January 29, 2007

Attachment 1		Date	Yrs in program:	Full or part-time:	Single or dual degree:	Changed to:	Date of graduation:	Status	Hours	Notes
Name:	admitted:	program:	part-time:	dual degree:				Credits		
Leo Genyuk	9/1/2001	4	PT	Dual	05F	5/28/2005	63	63	63	Graduated
Pierre Anderson	9/1/2001	5	PT	Dual	06S	5/27/2006	70	67	67	Graduated
Anita Schwartz	7/29/2002	2	PT	Single		5/29/2004	36	36	36	Graduated
Christopher Clement	7/29/2002	5	PT	Single		07S	37	29		No Info
Iris Sun	7/29/2002		PT	Single						
Paul Pinckney	7/29/2002	5	PT	Single		07S	27	24	24	
Richard Kimball	7/29/2002	2	PT	Single		5/29/2004	36	36	36	Graduated
Rodney Rivera	7/29/2002	2	PT	Single		5/29/2004	36	36	36	Graduated
Ivaylo Hristov	9/1/2002	4	PT	Dual	05S	1/7/2006	60	60	60	Graduated
Oya Bekzac	9/1/2002	2	PT	Dual	04S	5/29/2004	57	48	48	Graduated
Vincent Jackson	9/1/2002	5	PT	Dual	05S	07S	59	56		
Melissa Austin	6/2/2003	2	PT	Single	Public Admin	5/28/2005	48	43	43	Graduated
Rexford Booth	6/2/2003	2	PT	Single		5/28/2005	36	36	36	Graduated
John William Carson	6/2/2003	4	PT	Single		08S	27	27		
Daniel Saggione	7/2/2003	4	PT	Single		07S	31	31	31	Graduated
Amith Nikam	7/11/2003	2	PT	Single		8/12/2005	36	36	36	Graduated
Carl Whyte	7/24/2003	4	PT	Single		08s	6	6		
Oluwaseun Oduneye	8/12/2003	3	Full	Single		5/27/2006	36	36	36	Graduated
Eric Pusey	8/13/2003	4	PT	Single		07S	36	36	36	
Gregory Cressman	8/14/2003	4	PT	Single		08S	31	35	35	
Michael Parisi	8/14/2003	3	PT	Single		9/1/2006	36	36	36	Graduated
Albert Krauss	8/18/2003	4	PT	Single		08S	9	9		
David Dyar	8/29/2003	3	PT	Single		5/27/2006	36	36	36	Graduated
Bradley Moore	9/3/2003	3	PT	Single		08S	26	23		
Chandrashekar Rajashekar	9/3/2003		PT	Single						No Info
Angela Cooper	1/14/2004	3	PT	Single		09S	5	5	5	Academic Probation
Saroja Vallury	1/21/2004	3	PT	Single		08F	11	11	11	
Jonathan Meade	1/27/2004	2	PT	Single		1/7/2006	36	36	36	Graduated
Eric Garrison	4/5/2004	2	PT	Single		5/26/2006	36	36	36	Graduated
Matthew Huggins	4/30/2004	2	PT	Single	MBA 04F	09S	48	39		
Christopher Chandler	6/3/2004	2	PT	Single		5/26/2006	36	36	36	Graduated
Kimberly Edam Melandez	6/15/2004		PT	Single	Dual					No Info
Sheetal Mehta	1/4/2005	2	Full	Single	MBA 06S	07S	40	27	27	
Jeffery Whisler	1/17/2005	2	PT	Single		07W	32	26	26	
Wayne Welsh	2/2/2005	1	PT	Single			10	7	7	W/drew 12/30/05
Trevor Moore	2/4/2005	2	PT	Single		07S	32	26	26	
Gregory Perrine	5/20/2005	2	PT	Single		10S	5	2	2	
Chockalingam Subramanian	6/23/2005	2	PT	Single	MBA 06S	10S	24	18	18	
Partha Pratim	7/1/2005	2	PT	Single		07W	37	22	22	
Ejimofo Amobi	7/11/2005	2	PT	Single		10S	6	6	6	
Robert Gibson	7/13/2005	2	PT	Single		10S	23	17	17	
Mihir Sheth	7/25/2005	2	PT	Single		10S	18	12	12	
Rayon Pinnock	8/3/2005	2	PT	Single	Dual/MBA	10S	32	17	17	



ALFRED LERNER COLLEGE OF BUSINESS AND ECONOMICS

DEPARTMENT OF ACCOUNTING
AND MANAGEMENT
INFORMATION SYSTEMS

University of Delaware
Newark, Delaware 19716-2715
Ph: 302/831-2961
Fax: 302/831-4676

TO: Dan Rich
University Provost

Dallas G. Hoover, President
University Faculty Senate

FROM: Jackson F. Gillespie, Interim Chair
Department of Accounting and MIS *Jackson F. Gillespie*

RE: Permanent Status Program Review for the
Graduate Major in Information Systems and Technology Management (IS&TM)

The Department of Accounting and MIS is seeking permanent status for the graduate major in Information Systems and Technology Management. I believe that everything in the self-study report portrays a major that indeed deserves to be permanent. There were roughly 40 students in the program at the beginning of the current Fall Semester, and 22 students have already graduated from the program. I see no reason to believe that the student demand for this program will decrease. Also, there is ample evidence that the students are getting jobs in the IT area. They are being hired by public accounting firms and by information systems consulting firms, among others. The faculty resources in the Department of Accounting and MIS are available to handle any reasonable increase in student demand.

With no reservations whatsoever, I recommend that the program in Information Systems and Technology Management (IS&TM) be given permanent status. The major is an asset to the Department of Accounting and MIS, the College of Business and Economics, and the University of Delaware.



ALFRED LERNER COLLEGE OF BUSINESS AND ECONOMICS

DEPARTMENT OF ACCOUNTING
AND MANAGEMENT
INFORMATION SYSTEMS

University of Delaware
Newark, Delaware 19716-2715
Ph: 302/831-2961
Fax: 302/831-4676

To: Dan Rich
University Provost

Dallas G. Hoover, President
University Faculty Senate

From: Jackson F. Gillespie, Interim Chair
Department of Accounting and MIS

Re: Permanent Status Program Review
MS in Information Systems and Technology Management

A handwritten signature in cursive script that reads "Jackson F. Gillespie".

In the Fall of 2001, the Lerner College of Business and Economics and the Department of Accounting and Management Information Systems proposed a new masters degree in Information Systems and Technology Management (IS&TM). This program was approved at the March 4, 2002 meeting of the Faculty Senate and came into being at the beginning of the 2002-2003 academic year. The program now needs to undergo a Permanent Status Program Review (PSPR).

The MS in IS&TM combines the study of information systems with information technology management in business. It includes core management information systems (MIS) courses such as data management, systems analysis and design, telecommunications, data mining, information security, and current issues in information systems in business. The objective of the program is to produce students who possess the combination of management and technical skills needed to bring about the effective deployment and administration of information technology to achieve business success in today's highly competitive global environment. The program is primarily designed for 2 types of students: those with a background in business who want to move into a more technology-oriented role in their organization, and those with a background in a technical field who want to move into an IT/management role.

The program can be thought of as a series of 5 building blocks. The foundation block provides the fundamentals of business and programming. The second building block covers the core concepts of IT, and the third block advances these core concepts. The fourth block allows the student to choose electives and tailor the program to an area of interest or to gain practical experience. The capstone block draws from all previous course work to complete the students' experience.

Some students have recognized the career potential of having an even stronger background in the business area. These students have completed or are working towards a dual degree in IS&TM and a Masters in Business Administration. Students in the MBA program are allowed to choose a concentration, one of which is information technology. By taking extra courses in the MIS curriculum, these students can also complete the dual degree.

Students in the IS&TM program are required to complete 6 credits of foundation courses in business plus 30 credits in masters-level MIS courses. These courses include a two-credit "high-tech seminar series" conducted by invited speakers from business and a one-credit research project related to an information systems problem or current opportunity in business.

Enrollment. There are currently 30 students in various stages of completing the MS in IS&TM, plus another 10 students who are working on the dual degree in IS&TM and the MBA. Since the inception of the program, there have been 17 students who graduated with the MS in IS&TM and 5 students who have completed the dual degree.

Placement. Some of the students who have graduated with the IS&TM degree have gotten jobs with public accounting firms, mainly in the business consulting side of the company. Other students have taken positions with information systems consulting firms and in a variety of in a variety of information systems management and administrative positions.

Curriculum. There have been no major curriculum changes since the inception of the program. One example of a minor change was when one of the required courses (ACCT 803 - Systems Analysis, Design, and Implementation) was renumbered to ACCT 806 with ACCT 804 - Database Design, Networks and Implementation as a prerequisite. The change was made to give the students a stronger background before going into the systems analysis and design course.

Accreditation. The accrediting body for accounting and business programs is the Association to Advance Collegiate Schools of Business - International (AACSB). The guidelines for being accredited by AACSB have become very consistent with the requirements for Middle States accreditation that the University is facing. Developing learning goals and then assessing whether a program is achieving these learning goals has become extremely important in the accreditation process for both bodies. The Department of Accounting and MIS has developed learning objectives for the IS&TM program, but has not begun the process of assessing whether these objectives are being achieved.

Resources. The IS&TM program appears to be in very good shape from the standpoint of resources, particularly faculty resources. Since the program was established, the Department of Accounting and MIS has had 1 tenure-track faculty member (Dr. Thomas Hoffer) and 1 adjunct faculty member (Claudio Spiguel) in the MIS area leave the University. However, the Department has gained 4 tenure-track MIS faculty members during the same time. Three of these faculty members are new hires within the last 2 years: Dr. Jon Blue, Dr. Jinwei Cao, and Dr. Harry Wang. The fourth, Dr. Jack Baroudi, was Associate Dean of the College of B&E for the last few years, and has now joined the faculty of the Department. These lines have put the program in excellent shape to handle the MS in IS&TM.



COLLEGE OF BUSINESS AND ECONOMICS

COPY

OFFICE OF THE DEAN

MBNA America Hall
University of Delaware
Newark, Delaware 19716-2701
Ph: 302/831-2551
Fax: 302/831-6750

November 29, 2001

Dr. James G. Richards
President Faculty Senate
University of Delaware
Newark, DE 19716

Dear Dr. Richards:

The College of Business & Economics respectfully submits the attached proposal to add a new graduate program, the Master of Science in Information Systems & Technology Management. As you will note while reviewing the proposal, it has been developed in collaboration with the Department of Electrical & Computer Engineering and is based on industry feed back, academic benchmarking and alumni surveys.

As the proposal indicates, we plan to begin on a part-time basis with 10 - 15 students, growing the program over time and adding a full-time program as demand indicates and additional resources support. The program will be administrated through the Department of Accounting & MIS in the College of Business & Economics.

The attached packet contains:

- The Academic Program Approval Checklist;
- The Proposal in the format suggested by the Faculty Senate which includes the proposed curriculum in a format consistent with the Graduate catalog; and
- A listing of the relevant faculty expertise available in the College of Business & Economics to support this new program appears as Appendix G.

Please contact me directly if you have any questions or concerns.

Sincerely,

Michael J. Ginzberg, Dean and
Chaplin Tyler Professor of Business

Enclosures

ACADEMIC PROGRAM APPROVAL



CHECKLIST

This form is a routing document for the approval of new and revised academic programs. Page 2 will serve as an attachment to the Faculty Senate agenda. Proposing department should complete form, attach as a cover page and forward to the college dean. Documentation should include copy of curriculum as it is to appear in the Undergraduate and Graduate Catalog. Proposals must arrive to the Undergraduate/Graduate Committee by November in order to reach the Faculty Senate by March 1. Proposals received after this date cannot be implemented the following year nor included in the catalog for that year.

1. Proposed change leads to the degree of

- Bachelor of Arts Master of Arts Doctor of Philosophy
 Bachelor of Science Master of Science Other _____

2. New major/curriculum

Title to be entered in record of students who select this program
 Degree: Master of Science in Information Systems and Technology Management

New minor
 Title to be entered in record of students who select this program

Change from provisional to permanent status.

3. Revision of existing: major minor concentration

Present title

Records System Program Code

Add/delete required courses/credit hours

Add concentration

Title

Delete concentration

Title

4. Deletion of existing/disestablish: major minor Other _____

Title _____ Code _____

ROUTING AND APPROVALS: (Please do not remove supporting documentation.)

Department Chairperson *[Signature]* Date 11/29/01

Dean of College *[Signature]* Date 11/29/01

Chairperson, Senate Com. On UG or GR Studies _____ Date _____

Chairperson, Senate Coordinating Com. _____ Date _____

Secretary, Faculty Senate _____ Date _____

Date of Senate Resolution _____ Date to be Effective _____

Registrar _____ Program Code _____ Date _____

Vice Provost for Academic Programs & Planning _____ Date _____

Provost _____ Date _____

Board of Trustee Notification _____ Date _____

a. Rationale for creation, revision, or deletion:

The proposed Master of Science in Information Systems and Technology Management (MS in IS&TM) is an interdisciplinary program jointly developed by the College of Business and Economics (CBE) and the Department of Electrical and Computer Engineering (ECE). The proposed program combines an understanding of business processes with a solid understanding of both the technical side of information technology (IT) and the business side of IT. The curriculum is based on feedback from industry, an extensive review of programs at other institutions, and faculty contacts in industry and at other academic institutions. The industry feedback was gathered via focus groups held throughout the summer, primarily in Wilmington and Philadelphia. Comments from industry representatives repeatedly stressed the need for individuals who understand both IT and business processes and can blend them in the effective deployment and administration of IT in a modern organization.¹ No program at the University provides this blend. The proposed program is primarily designed for two types of students – those with a background in business (who want to move into a more technology-oriented role in their organization) and those with a background in a technical field (engineers, scientists, etc. who want to move into an IT/management role in their organization). The proposed curriculum leverages many of the strengths of both the College of Business and Economics and the Department of Electrical and Computer Engineering. These include an outstanding faculty that possesses an understanding of both the technical side of IT and the business side of IT, premiere computing facilities, and a commitment to being leaders in IT education and implementation.

b. Summary of program:

The proposed MS in IS&TM is a unique 36-credit interdisciplinary program.² The degree will be granted by the College of Business and Economics with several of the courses being taught by the Department of Electrical and Computer Engineering.

The program can be thought of as a series of five building blocks, each of which builds on what has come before (see next page for a detailed curriculum). The foundation of the program is an understanding of the fundamentals of business and programming. Students then complete a fundamental core of four courses that cover the core concepts of IT. These core courses serve as the basis for an advanced core of four courses that build on the material from the fundamental core. An elective allows the student to tailor the program to an area of interest or gain practical experience in IT. Finally, there is a capstone set of courses that considers strategic IT management and introduces the students to guest speakers who are experts on various IT topics. Communication skills are stressed throughout the program through presentations, written reports, group work, etc.

¹ Approximately 97% of the participants indicated they would be either *likely* or *highly likely* to hire an M.S. in IS&TM graduate. Further, approximately 97% of the participants indicated they would be *likely* or *highly likely* to support their employees in pursuing the M.S. in IS&TM on a part-time basis.

² Depending on their background, students may be required to take additional *Foundation* courses, resulting in a program of up to 42 credit hours.

COPY

AUTHORIZED DEGREE TITLES

Please check the appropriate degree:

- Bachelor of Applied Science
- Bachelor of Arts
- Bachelor of Arts in Educational Studies
- Bachelor of Arts in Liberal Studies
- Bachelor of Chemical Engineering
- Bachelor of Civil Engineering
- Bachelor of Computer Engineering
- Bachelor of Electrical Engineering
- Bachelor of Environmental Engineering
- Bachelor of Fine Arts
- Bachelor of Liberal Studies
- Bachelor of Mechanical Engineering
- Bachelor of Music
- Bachelor of Science
- Bachelor of Science in Accounting
- Bachelor of Science in Agriculture
- Bachelor of Science in Business Administration
- Bachelor of Science in Education
- Bachelor of Science in Nursing
- Master of Applied Sciences
- Master of Arts
- Master of Arts in Liberal Studies
- Master of Business Administration
- Master of Chemical Engineering
- Master of Civil Engineering
- Master of Education
- Master of Electrical Engineering
- Master of Environmental and Energy Policy
- Master of Fine Arts
- Master of Instruction
- Master of Marine Policy
- Master of Materials Science and Engineering
- Master of Mechanical Engineering
- Master of Music
- Master of Physical Therapy
- Master of Public Administration
- Master of Science
- Master of Science in Nursing
- Doctor of Education
- Doctor of Philosophy

This document will be retained permanently in the Faculty Senate Office.

Revised 04/23/01

MASTER OF SCIENCE IN INFORMATION SYSTEMS
& TECHNOLOGY MANAGEMENT

Submitted by the College of Business & Economics

I: DESCRIPTION

This document proposes the creation of a new graduate degree, the Master of Science in Information Systems & Technology Management (M.S. in IS&TM), which will be granted by the College of Business and Economics. The degree program will require students to complete a rigorous 36-credit program that incorporates traditional business disciplines with cutting-edge information technology (IT) knowledge.

Today, successful organizations use information technology (IT) to produce a sustainable competitive advantage. This requires effectively blending the very technical aspects of information technology with the business processes of the organization. During six Industry Feedback Forums¹ conducted during June, July and August 2001, it became very apparent that individuals who can do this are in high demand because a communication gap exists between people who work in the very technical functions and people who work in the business processes, i.e., the two groups cannot communicate in an effective way. Therefore, the purpose of the Master of Science in Information Systems & Technology Management is to provide its students with a solid understanding of both IT and business management so that they can bridge this gap in the organizations in which they work. The formal purpose of the program can be stated as follows:

To produce students who possess the combination of management and technical skills needed to bring about the effective deployment and administration of information technology to achieve business success in today's highly competitive global environment.

II: RATIONALE AND DEMAND

A. Institutional Factors

1. Mission Compatibility

In 1998, the *Information Technology Initiative*² included the following recommendation:

“Working closely with business and industry, post-secondary institutions should develop business-relevant IT curriculums to meet the IT needs of Delaware business. ... The University of Delaware should set the pace and be an example to other higher education institutions in Delaware.”

¹ *Appendix A: Summary of Graduate Feedback Forums* further discusses these responses.

² *Information Technology Initiative: A Challenge for Delaware*, November, 1998. A report to Gov. Tom Carper prepared by more than 60 individuals from business, industry, government, and education addressing the demand by Delaware business for individuals with IT skills.

In 1999, the College of Business and Economics in its *Vision 2000* document stated:

"...the College of Business and Economics will develop the programs necessary to become a leader in the integration of information technology into management practice."³

The M.S. in IS&TM is completely compatible with both of these recommendations.

The Mission Statement of the University of Delaware includes the following:

"The central mission of the University of Delaware is to cultivate both learning and the free exchange of ideas. ... Our graduates should know how to reason critically and independently yet collaborate productively. They should understand the cultural and physical world, communicate clearly in writing and speech, and develop into informed citizens and leaders. ..."⁴

As this document will show, the proposed M.S. in IS&TM is completely compatible with this mission. Further, it is very consistent with the University of Delaware's objective to be a leader in IT education and implementation.

2. Planning Process

The *Information Technology Initiative*⁵ (*IT Initiative*) documented the challenge the state of Delaware faces in meeting the demand by business for individuals with IT skills. Knowing that a number of outstanding educational institutions (e.g., Arizona State University, University of Arizona, Case Western Reserve University) have created graduate programs to meet the need for more graduates who can effectively manage in an IT environment, a subcommittee of the Information Systems and Management committee was created to assess the feasibility and need for such a program at the University of Delaware. The subcommittee consisted of five faculty members from the College of Business and Economics and one from the Department of Electrical and Computer Engineering.

Based on the results of the six Industry Feedback Forums conducted during June, July and August, 2001⁶, as well as individual industry contacts, it was determined that a significant demand exists in the state of Delaware and the region for the type of individual who would graduate from an M.S. program in IT. The subcommittee based the design of the M.S. in IS&TM on the feedback received during the Industry Feedback Forums, an extensive review

³ *Vision 2000*, College of Business and Economics, University of Delaware, June, 1999, pg. 32.

⁴ *Undergraduate & Graduate Catalog, 2001-2002*, University of Delaware, pg. 2.

⁵ *Information Technology Initiative: A Challenge for Delaware*, November, 1998.

⁶ *Appendix A: Summary of Graduate Feedback Forums* further discusses these responses

of programs at other institutions⁷ and faculty contacts. The full Information Systems and Management Committee accepted the proposal on August 31, 2001.

3. Impact on Other Programs & Utilization of Existing Resources

The M.S. in IS&TM will not have any direct impact on programs outside of the College of Business and Economics. Within the College, it will enhance the MBA program by providing elective classes for students who are pursuing a concentration in IT. Also, the *High Tech Seminar* will provide a strong speaker series to compliment the Tyler Lecture Series currently offered.

The proposed program leverages the technological strength and leadership of both the College of Business and Economics and the University of Delaware. It utilizes the existing resources of a strong business program, unsurpassed technological expertise, outstanding faculty, and premiere computing facilities.

B. Student Demand

1. Enrollment Projections

Based on feedback from the Industry Feedback Forums, inquiries of prospective students, a recent survey of alumni of the College's Minor in MIS program, and the success of similar programs at other institutions, it is anticipated that the program will be very popular. The initial plan is to implement the program on a part-time basis, limiting enrollment to 10 – 15 students (because of resource constraints discussed later). When fully implemented, it is anticipated that 30 – 35 students will be admitted to the part-time program each year, with a full-time program being added as demand warrants. Therefore, allowing for normal attrition (e.g., job transfers and changes in time demands of work), when fully implemented it is reasonable to expect approximately 30 students to graduate from the part-time program each year. As Appendix D shows, a part-time student will be able to complete the program in two calendar years. A student will take six credits during the initial summer, six credits each fall and spring semester, three credits during the first winter term, and three credits during the second summer.

2. Specific Student Clienteles

It is likely that a significant number of those attracted to the part-time program will be seeking to move from their current position into IT (within their current organization), i.e., they will be seeking to enhance their value to their organization. Some of the students attracted to the M.S. in IS&TM will be new students to the University, while others will be returning to pursue graduate study. A smaller number of students will

⁷ Appendix E: Academic Benchmarking discusses this review

have just completed an undergraduate degree at the University. In the Feedback Forums (see Appendix A), 97% of the attendees indicated their firm was either *likely* or *highly likely* to support their employees in pursuing the M.S. in IS&TM. A recent survey of alumni of the College's Minor in MIS program found that 86% felt the M.S. in IS&TM would be a valuable addition to the University's offerings, and 33% felt it was a *fairly good possibility* to a *certainty* that they would return to pursue this degree. Demand for the courses offered will also come from other programs. As mentioned above, it is anticipated that courses in the program will serve as electives in the MBA program.

C. Transferability

As indicated later, there are no similar programs in the state of Delaware. Therefore, transferability is not an issue.

D. Graduate & Professional Access

Not applicable.

E. Demand and Employment Factors

Since a cornerstone of the Governor's agenda is to maintain quality jobs for Delawareans, the Strategic Economic Council is identifying areas that will support tomorrow's workforce. Rapidly changing technology makes definitive projections of specific markets almost impossible. However, information technology is guaranteed to grow through the next decade. In Delaware, more than 4,000 well-paying IT jobs have been created since 1993.

Businesses in Delaware and the greater Philadelphia/Baltimore/Washington, D.C. area are concerned about the lack of personnel with both business and information technology expertise. This was evidenced by comments from participants in the six Industry Feedback Forums held during formulation of the proposed new program (see Appendix A) and by the work of the Greater Philadelphia First taskforce and the Delaware IT Initiative.

Graduates of the proposed M.S. in IS&TM will possess the skills business is looking for. This was evidenced in the Feedback Forums (see Appendix A) where 97% of the attendees indicated their firm was either *likely to hire* or *would hire* graduates of the proposed program. These skills include: an understanding of both business (its languages and processes) and IT; the ability to leverage information technology to enhance productivity and potentially profitability; and the strategic thinking and communication skills needed to work with management to make it happen. Graduates will be prepared to work in IT groups and business groups in a variety of organizations such as the financial services industry, manufacturing firms, non-profit organizations, and consulting firms. Specific responsibilities will include project leadership, liaison between IT and business functions, requirements verification, project costing, and strategic planning.

F. Regional, State, and National Factors

1. Advantages Over Regional Programs

To our knowledge, there are not any similar programs offered in the state of Delaware. On a more regional basis, Widener University offers the Master of Science in Management & Technology. Although located in the School of Business Administration, the program is geared to professionals in the fields of engineering and basic and applied sciences, while the proposed program is much more business-oriented. The University of Pennsylvania offers an Executive Master's in Technology Management, which is again oriented towards engineers with experience. Temple University offers an MS in MIS, which does not appear to offer the breadth of business management that the proposed MS in IS&TM does.⁸ The University of Maryland offers an MS in Information Systems but requires up to seven prerequisite classes for those with no business background.

2. Accreditation

As an MS program within a College of Business and Economics, the program will need to be accredited by the International Association for Management Education (formerly the American Association of Collegiate Schools of Business (AACSB)). The College of Business and Economics already has this accreditation at both the undergraduate and graduate levels, as does the Department of Accounting. In April, 2001, this accreditation was reaffirmed for ten years. The M.S. in IS&TM has been designed to meet the accreditation standards.

G. Other Strengths/Collaborative Arrangements

Significant strengths/highlights of the proposed program include the following:

- It is an interdisciplinary program jointly developed by the College of Business and Economics (CBE) and the Department of Electrical and Computer Engineering (ECE);
- The program design is based on feedback from focus forums, and benchmarking with leading programs around the country;
- The program builds on a solid understanding of business, business processes, and programming;
- The program provides a solid understanding of both the technical side of IT and the business side of IT;

⁸ In Temple's program, students can satisfy the business fundamentals requirement by having two years of full-time work experience. Nor does there appear to be any courses such as *BUAD 873: Managing in an IT Environment*, *BUEC 870: Strategic IT Management*, or the costing element of *BUEC 840: Project Management and Costing*.

Undergraduate GPA

An undergraduate GPA of at least 2.75 is expected.

Work Experience

Work experience provides a context for graduate study. Therefore, it is strongly recommended, but not required, that incoming students have one or more years of meaningful work experience. As indicated above, for those with meaningful work experience, this experience should be weighed in the admission decision.

Prior Degree Requirements

Applicants for the M.S. in IS&TM must possess an undergraduate degree from an accredited college or university. While the program is designed for those with a background in either business or a technical area, persons with a degree in any field who possess an aptitude and desire to pursue graduate study in IT are encouraged to apply.

Application Deadlines

Because of course sequencing, admission will be once per year. Students will begin the *Foundation* courses in August, with the *Fundamental Core* beginning in the fall semester. Therefore, all application material should be received no later than May 1st of the year coursework is to begin. Admission material received after this date will only be processed on a space available basis.

Admission Categories

Conditional admission for one academic semester will be allowed in the following cases:

1. The applicant has not taken the GMAT/GRE but has met all other admission requirements. An acceptable test score will be required before the applicant is allowed to register for additional coursework; and
2. The applicant has furnished all of the admission material but his/her performance in one of the areas is judged to be of such a nature that unconditional admission is not warranted but rejection is not appropriate. For example, an individual who graduated a number of years ago with a low undergraduate GPA but who has meaningful and successful work experience and acceptable test scores. Such an individual would be granted conditional admission for one semester with continued registration conditional on satisfactory performance during that semester.

Other Documents Required

Each applicant will provide three letters of recommendation from individuals qualified to assess his/her potential for succeeding in the program.

Admission Decision

Admission will be decided by the director of the program, in consultation with an admissions committee (composed of faculty who participate in the program) when appropriate.

University Statement

The following statement will apply to admissions and will be included in all materials relating to admissions:

“Admission to the graduate program is competitive. Those who meet stated minimum requirements are not guaranteed admission, nor are those who fail to meet all of the requirements necessarily precluded from admission if they offer other appropriate strengths.”

C. Student Expenses & Financial Aid

Since the program will initially be part-time, it is anticipated that students will be responsible for their own financial support, either through employer reimbursement programs or from their own resources. Students will be expected to have access to a laptop computer.

IV: CURRICULUM SPECIFIC

A. Degree Awarded

A Master of Science in Information Systems & Technology Management is the degree to be awarded to students who successfully complete the curriculum. The College of Business & Economics currently offers an Master of Science in Accounting & MIS and an Master of Science in Economics. However, the Master of Science in Information Systems & Technology Management will be a new degree.

B. Curriculum

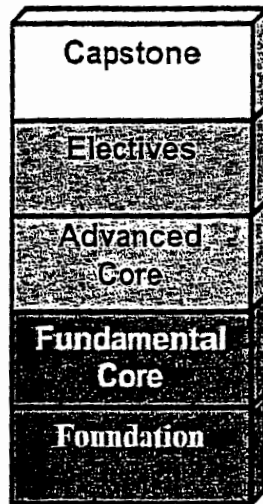
1. Requirements

The M.S. in IS&TM is a unique 36-credit interdisciplinary program which was jointly developed by the College of Business and Economics and the Department of Electrical and Computer Engineering.⁹ It will provide students with a solid understanding of both IT and the management processes needed to effectively manage in this environment. Because of the combination, the M.S. in IS&TM is primarily designed for two types of students – those with a background in business (who want to move into a more technology-oriented role in their organization) and those with a background in a technical field (who want to move into an IT/management role in their organization). Examples of the type of students with technical background we hope to attract include engineers, scientists, and those involved in biotechnology.

⁹ Depending on their background, students may be required to take additional *Foundation* courses, resulting in a program of up to 42 credit hours.

2. Sample Curriculum

The program can be thought of as a series of five building blocks, each of which builds on what has come before. The foundation of the program is an understanding of the fundamentals of business and programming. Students then complete a fundamental core of four courses, which cover the core concepts of IT. These core courses serve as the basis for the Advanced Core of four courses, which build on the material from the fundamental core. An elective allows the student to tailor the program to an area of interest or gain practical experience in IT. Finally, there is a capstone set of courses, which draw from the material throughout the program. Each of these blocks will be considered in more detail below. An outline of the proposed program (including proposed course numbers and an indication of whether each course currently exists or will be a new course) appears in Appendix B. Descriptions of the contents of each course appear in Appendix C. Communication skills are stressed throughout the program through presentations, written reports, group work, etc.



Foundation

It is very important that our students understand business and the processes that comprise it. Therefore, all students, regardless of academic and work experience, will be required to complete the following two business foundation courses:

- *Accounting for an IT Environment* (2 credits)
- *Business Processes and Operations Management* (2 credits)

In addition, all students will be expected to understand an object-oriented programming language.

Each student will meet with a faculty advisor who will evaluate their background in both business and programming (including prior coursework and experience). Based on this evaluation, each student will take at least one of the following courses:

- *Finance* (2 credits)
- *Marketing* (2 credits)
- *Management* (2 credits)
- *Programming I – Object-oriented* (2 credits)

Fundamental Core

The following courses which build on the business fundamentals and programming, are considered to be IT building blocks:

- *Data Management* (3 credits)
- *Systems Analysis and Implementation* (3 credits)
- *Telecommunications and Networks I* (3 credits)
- *Decision Support and Analysis* (3 credits)

Advanced Core

The following courses build on the material presented in the fundamental core:

- *Telecommunications and Networks II* (3 credits)
- *Managing in an IT Environment* (3 credits)
- *Project Management and Costing* (3 credits)
- *Security and Control* (3 credits)

While all courses in the program have a business-orientation, there are several things that should be noted about the advanced core:

- Two of the four courses are clearly management-oriented and will be taught by the College of Business and Economics;
- *Project Management and Costing* will include a strong module on the costing of IT projects;
- A strong technical component is represented by *Telecommunications and Networking I* and *II*, both of which will be developed and taught by the Department of Electrical and Computer Engineering; and
- *Security and Control* will be co-developed and co-taught by faculty from the College of Business and Economics and the Department of Electrical and Computer Engineering.

Elective

Upon entering the program, students will meet with a faculty advisor who will assess their IT experience. Those students with insufficient experience in IT will take either a three-credit *Consulting Project* or *High Tech Entrepreneurship* as their elective. Students with sufficient IT experience will be able to choose one elective course. Appendix B includes a list of appropriate courses. Other courses may be substituted with the approval of the faculty advisor.

Capstone

Strategic IT Management draws on the material previously covered in the program to provide the student with an understanding of the importance of IT in the strategic management processes of the organization. The *High Tech Seminar* will bring to campus a series of speakers who will broaden the student's understanding of the modern IT world. [Note: The two capstone courses may be combined into one three-credit course for administrative reasons.]

Program Length

The program will be 36 credits, including the required six-credits of **Foundation** courses. Students will meet with a faculty advisor who will assess their background. Those who do not have a business background may be asked to take additional **Foundation** courses, resulting in a maximum program of 42 credits.

Course Substitution

Course substitutions will not be allowed except in the choice of elective.

Full-time and Part-time Programs

Because of the University's unique location in the heart of a large corporate environment, it is anticipated that the M.S. in IS&TM will begin as a part-time, evening program. Ideally, a full-time day program would be added at such time as enrollment warrants.

Size of the Program

The initial goal is to enroll 10-15 students in the part-time program, growing to 30-35 students. If a full-time program is added, enrollment is targeted at 20-25 students.

Grade Requirements

An overall GPA of 3.00 is required for graduation from the program. Students will be allowed one grade of "C" in courses counted towards the degree.

Comprehensive Exam and Thesis

The program will not require a comprehensive examination, thesis, or dissertation.

Timetable

It is expected that part-time students will usually take 6 credit hours during regular academic semesters (although fewer will be allowed with the permission of the program director). The first column of Appendix D shows how a part-time student can complete the program within two calendar years. It is expected that full-time students will carry a course load of 12 credit hours during regular academic semesters. The second column of Appendix D shows how a full-time student can complete the program within one calendar year. Pursuant to University requirements,

all students will be required to complete the entire program within 5 calendar years of date of entry.

Satisfactory Progress

Each year the director of the program will review each student's academic progress. Students are expected to maintain at least a 3.0 GPA in the program and make satisfactory academic progress toward graduation. Any student whose GPA in the program has dropped below a 3.0 will be placed on academic probation. If the student does not raise the overall graduate GPA to at least a 3.0 during their next academic semester, they will be terminated from the program. Students may appeal this termination through regular University grievance channels. Any full-time student who does not satisfactorily complete 24 credit hours during the academic year will be reclassified as part-time. Part-time students are expected to complete a minimum of 6 credits during each academic year in order to maintain their part-time classification.

Filing Requirements

All students are responsible for filing the appropriate graduation forms with the University of Delaware's Graduate Office.

3. Approval from Affected Departments

This degree is proposed in collaboration with the Department of Electrical & Computer & Engineering. Appendix G contains a letter of support from that department.

4. University/College/Department Requirements

The proposed curriculum satisfies all of the University's academic requirements as well as the requirements of the Colleges of Business & Economics.

V: RESOURCES AVAILABLE

A. Learning Resources

The primary Learning Resource required for this proposed program is an educational computer lab with appropriate software where several of the courses can be taught. The College of Business and Economics currently has two of these labs. Since the part-time nature of the program will necessitate late-afternoon and evening classes, these labs should suffice.

The proposed program will not require any additional library resources. The academic resources (i.e., journals, books, etc.) are already available. Students will not require any networked or electronic journal access beyond that of a normal graduate student in the College of Business and Economics nor will they need to make any additional use of library computer resources.

B. Faculty/Administrative Resources

The faculty of the College of Business & Economics and the faculty of the Department of Electrical & Computer Engineering will oversee and teach the requisite courses. (Appendix F contains a list of faculty expertise in the area.) The College of Business & Economics is currently recruiting a faculty member in the information systems area as well as several in other areas who have an IT interest. The program will be administered through the Department of Accounting & MIS in the College of Business & Economics. The Department has existing resources in place to accommodate admissions functions for the M.S. in Accounting and can absorb the additional administrative tasks of this program.

C. External Funding

The resources needed to develop the program have been secured through a Unidel Foundation grant. Course coverage for a program admitting 30 part-time students per year can be accommodated by existing faculty resources.

VI: RESOURCES REQUIRED**A. Learning Resources**

As indicated above, software will be required in one of the College's teaching labs to support students in several courses. Specifically, half of the machines will need an instructional engineering software package to support the *Telecommunications and Networks I and II* courses.

B. Personnel Resources

The Dean of the College of Business and Economics has studied the resource requirements for a quality program of 25 part-time students and has determined that it can be offered utilizing existing resources. To increase enrollments to an additional 30 - 35 full-time students per year, three new tenure-track faculty positions will be required in the College of Business and Economics (with IT/MIS backgrounds) and one will be required in the Department of Electrical and Computer Engineering (with a telecommunications/networking background). In addition, an existing faculty member will be needed part-time to administer the program. The Dean is working to develop or allocate resources to accommodate future expansion as needed.

C. Budgetary Needs

Due to the initial size of the program indicated above, no additional budgetary resources are required at this time.

VII: IMPLEMENTATION PLAN**A. Implementation Plan**

The plan is to initially admit 10 -15 students for the Fall of 2002. (Initial coursework at the Foundation level will take place in August of 2002.) The curriculum will be implemented as the students progress through the program

B. Evaluation Plan

A faculty director will oversee the quality of the program. Indications of success will include the level of student and employer interest (number of applications and degree of employer sponsorship), the quality of students accepted (undergraduate GPA, GMAT score, and level of current position in their organization), and feedback from both students and employers.

APPENDIX A

Summary of the Graduate Feedback Forums

Between June 27 and August 7, 2001, six (6) Industry Feedback Forums were held in Wilmington, Newark, Philadelphia, and New York. More than 70 individuals represented over 30 firms. Our target audience was professionals who hire and promote MIS and IT (information technology) professionals in their organizations. Each session lasted more than 90 minutes and five (5) of the sessions were working lunches. The purpose of the sessions was (1) to solicit those factors the participants felt were important for our graduates to possess and (2) to assess interest in the proposed program by soliciting information as to how likely the participant's would be to either hire a graduate of the M.S. program or to send current employees to the program. The following first considers interest in the proposed program and then summarizes those factors, which were considered important.

INTEREST IN THE PROGRAM

At the end of the session, each participant was asked the following two questions:

Likelihood that you would hire an M.S. in Information Systems & Technology Management graduate.

Responses:

Highly likely to employ this type of graduate	28.1%
Likely to employ this type of graduate	68.8%
Unlikely to employ this type of graduate	3.1%
Not at all likely to employ this type of graduate	0.0%

Likelihood that you would send your current employees to the University of Delaware to receive an M.S. in Information Systems & Technology Management.

Responses:

Highly likely that my firm would support our employees in pursuing the M.S. in IS&TM	38.7%
Likely that my firm would support our employees in pursuing the M.S. in IS&TM	58.1%
Unlikely that my firm would support our employees in pursuing the M.S. in IS&TM	3.2%
Not at all likely that my firm would support our employees in pursuing the M.S. in IS&TM	0.0%

Therefore, approximately 97% of the participants indicated they would be either *likely* or *highly likely* to hire an M.S. in IS&TM graduate. Further, approximately 97% of the participants indicated they would be *likely* or *highly likely* to support their employees in pursuing the M.S. in IS&TM (most likely on a part-time basis).

CRITICAL FACTORS FOR OUR GRADUATES TO POSSESS

GENERAL COMMENTS / EXECUTIVE SUMMARY

- Strong demand for a person who can "bridge the gap" between the technical person with no understanding of business and the business person with no understanding of technology
- Needs to thoroughly understand business processes so knows what the system is supposed to accomplish and can clearly specify requirements

GENERAL COMMENTS / EXECUTIVE SUMMARY (continued)

- Needs to understand technology so can apply appropriate technological solution to business problem
- Needs to be able to manage a project in an IT environment
- Needs to understand structured programming so can interact with programmers but does not need to program
- Strong demand for management of IT skills including vendor management, negotiation, change management, etc.
- Strong demand for individuals who can do a cost analysis on proposed/existing systems using NPV, etc.
 - It was suggested that this may be one way for UD to differentiate its program
- Communication skills are extremely important

TECHNICAL KNOWLEDGE/TECHNICAL SKILLS**Hardware:**

- Server – Desktop system integrating
- Networks
- WAN and LAN skills
- Understand middleware
- Server – Desktop system integrating
- Deal with mainframe applications

Programming:

- Understand structured programming language (C++, Java)
 - Need to understand application/limitations so can communicate with programmers
 - Ability to learn
 - One group had no particular preference (e.g., Java, HTML); another preferred JAVA
- Suggested that programming language should be a prerequisite for M.S.
 - Understand SQL/database level
 - Optimization, ER diagrams, etc.
 - Performance implications

Systems Analysis and Design:

- Systems Development Lifecycle
 - Design, development, deployment, evaluation, etc.
 - Test plans, deliverables
 - Control of cycle
- Analytical skills
- Structured methodology for systems analysis
- Requirements management
- Ability to describe business process and translate to system development
- Business Process Engineering – organization analysis, systems design
- Quality Assurance
- Troubleshooting and providing corrective action
- Ability to identify appropriate technique to solve problem

TECHNICAL KNOWLEDGE/TECHNICAL SKILLS (continued)

e-Business/e-Commerce:

- Programming fundamentals
- Different models of e-business/e-commerce infrastructure
- Security
- Server requirements

Other Skills:

- "Office" program skills
- Quantitative skills (e.g., statistics)

BUSINESS KNOWLEDGE/BUSINESS SKILLS

Management of IT/Management:

- Leadership skills -- Managing people
- Vendor management / Outsourced supply
- Evaluative
 - Ability to compare
- Change management skills
 - Implementation process
 - Organization understanding
 - Organizational psychology
- Contract management/negotiation
 - Business law for IT management – elements of 3rd party negotiations (i.e., with consultants, etc.)
 - Specifically contracting issues
 - Focus on IT issues
- Risk analysis
- Security – system level risk management
- IT economics
 - Cost/benefit analysis of IT
 - Utility, etc.
 - Business budget fit
 - Life cycle cost
 - Cost management
 - Financial accounting
- Audit/Evaluation skills
- Entrepreneurial skills
 - Understand strategy
 - Moving idea to action
- Strategic thinking -- Larger context-orientation
- IT enabler – Business solutions provider
- Understanding emerging trends and their application
- Knowledge management
- Data warehousing and data mining
- Understanding of TQM

BUSINESS KNOWLEDGE/BUSINESS SKILLS (continued)**Business Processes:**

- Business fundamentals/domain information
 - Supply chain
 - Marketing
 - Finance
 - Strategic planning
- Clear business orientation
- Understanding business processes and application architecture
 - Analytics, org development
 - Business problem solving
- Clear understanding of balance between IT and business
 - Are businesses needs being met?
- Process Engineering

Project Management:

- Project management
 - Budgeting
 - Business sense
 - Communication skills
 - Integration with diverse techniques
 - IT specific

Experience:

- Work experience
- "Project" work

PERSONAL SKILLS**Communication skills:**

- Special issues for internet (e-mail)
- Interpersonal
- Team building
- Facilitation skills
- Presentation
- Written skills
- Listening

Relationship skills:

Expect "additional polish" from graduate students:

Cross-cultural skills:**Non-technical writing skills:**

Selling skills – ability to sell ideas, etc.:

Clearly identified functional skills:

- Example: e-Learning

Ability to learn and adapt:

Ethics:

OTHER

Overview and history of IT:

- Particularly recent developments

Clear orientation for specific industries:

- Ex.: Financial services; chemical industry
- Maybe through projects/internships

Capitalize on accountancy resources:

Differentiate the product:

APPENDIX B

**M.S. in Information Systems & Technology Management
Curriculum Overview**

Foundation (a minimum of 6 credits)	6 credits
Offered as <i>BUEC 865: Seminar in . . .</i>	[See Notes 1-5]
All students will take:	
- <i>Accounting for an IT Environment</i>	(2 cr.; new)
- <i>Business Processes and Operations Management</i>	(2 cr.; new)
A faculty advisor will evaluate the background of each student. Each student will take at least one of the following:	
- <i>Finance</i>	(2 cr.; new)
- <i>Marketing</i>	(2 cr.; new)
- <i>Management</i>	(2 cr.; new)
- <i>Programming I – Object-oriented</i>	(2 cr.; new)
(Taught by Electrical & Computer Engineering (ECE))	
Fundamental Core (required)	12 credits
<i>ACCT 804: Data Management</i>	(3 cr.; exists)
<i>ACCT 803: Systems Analysis and Implementation</i>	(3 cr.; exists)
<i>BUEC 810: Telecommunications and Networks I</i>	(3 cr.; new)
(Course to be taught by ECE and cross-listed as <i>CPEG 810</i>)	
<i>BUEC 830: Decision Support and Analysis</i>	(3 cr.; new)
Advanced Core (required)	12 credits
<i>BUEC 811: Telecommunications and Networks II</i>	(3 cr.; new)
(Course to be taught by ECE and cross-listed as <i>CPEG 811</i>)	
<i>BUAD 873: Managing in an IT Environment</i>	(3 cr.; exists)
<i>BUEC 840: Project Management and Costing</i>	(3 cr.; new)
<i>BUEC 850: Security and Control</i>	(3 cr.; new)
(Course to be co-developed and taught with ECE)	
Electives ¹⁰	3 credits
<i>BUEC 860: High Tech Entrepreneurship</i>	(3 cr.; exists)
(Currently offered as <i>BUAD 867</i> ; co-taught with ECE)	
<i>BUAD 884: E-Commerce</i>	(3 cr.; exists)
<i>ACCT 805: Current Issues In MIS</i>	(3 cr.; exists)
<i>BUAD 871: Managing for Creativity and Innovation</i>	(3 cr.; exists)
<i>BUAD 899: Consulting Project</i>	(1–3 cr.; new)
<i>Special Topics</i>	(1–3 cr.; new)
Capstone (required)	3 credits
<i>BUEC 870: Strategic IT Management</i>	(2 cr.; new)
<i>BUEC 871: High Tech Seminar</i>	(1 cr.; new)
	36 credits

¹⁰ Upon entering the program, each student will meet with a faculty advisor who will assess their IT experience. Those students with insufficient experience in IT will take three credits of either *BUAD 860: High Tech Entrepreneurship* or *BUAD 899: Consulting Project* as their elective.

Communication skills are stressed throughout the program through presentations, written reports, group work, etc.

Explanatory Notes

- Note 1: *BUEC* is a course rubric administered by the Dean's Office and denoting inter-departmental course offerings in the information systems area. This rubric is currently used to denote courses in the College's MIS minor.
- Note 2: The Graduate Office has recommended the use of *BUEC 865: Seminar in ...* as a way to handle multiple courses of this type. For example, there would be *BUEC 865: Seminar in Accounting for an IT Environment*; *BUEC 865: Seminar in Business Processes and Operations Management*; and *BUEC 865: Seminar in Finance*. The MBA program is proposing to handle a number of courses in this manner and it is a commonly used practice in the College of Engineering.
- Note 3: The *Foundation* courses would be taken during the summer preceding the student beginning the *Fundamental Core*. The intent is that each course would extract those aspects of the subject-area that students in the M.S. need, given the IT-orientation of the program. This allows them to be taught as 2 cr. courses.
- Note 4: *ECE* refers to the Department of Electrical and Computer Engineering.
- Note 5: A student who is required to take all six of the *Foundation* courses would have a program of 42 credits.

APPENDIX C
MS in Information Systems & Technology Management (IS&TM)
Course Descriptions

Foundation¹¹

These courses are taught from an IT perspective and provide a background for understanding the information needs of an organization's business processes and strategies. They are listed as *BUEC 865: Seminar in ...*

All students, regardless of academic background and work experience, will take:

- *Accounting for an IT Environment* (2 credits)
- *Business Processes and Operations Management* (2 credits)

Each student will meet with a faculty advisor who will evaluate their background in both business and programming (including prior coursework and experience). Based on this evaluation, each student will take at least one of the following courses:

- *Finance* (2 credits)
- *Marketing* (2 credits)
- *Management* (2 credits)
- *Programming I – Object-oriented* (2 credits) See the description below.

***Programming I – Object-oriented* (2 credits)**

Designed for students without prior programming experience, this course is designed to help students understand the role of programming in solving business problems. It covers the fundamental concepts of data and programming structures, and how to employ these concepts in developing and implementing software applications. Using an object-oriented programming language (e.g., Java, Java Script, C++, or Visual Basic), students complete a variety of projects designed to strengthen their understanding of object-based, event-driven programming. May be satisfied by coursework or experience

Fundamental Core (required)***ACCT 804: Data Management* (3 credits)**

Overview of database management concepts and technologies and how they fit into a modern networked information system environment. Emphasis on a manager's approach to planning and implementing information requirements for an organization. Considers both theoretical and practical enterprise wide database methodologies. Focus areas include organizational data resource management, physical and logical database models, design and development of a database application, managerial and technical dimensions in a client/server environment, database security and integrity, and emerging database technologies and issues.

***ACCT 803: System Analysis and Implementation* (3 credits)**

Provides a conceptual basis for the analysis of business information problems and the design and implementation of systems to solve those problems. Considers alternative methodologies for analyzing, designing and implementing management information systems. Emphasis on

¹¹ Communication skills are stressed throughout the program through presentations, written reports, group work, etc.

documenting business processes, requirements definition, problem definition, and implementation within an object-oriented framework.

BUEC 810: Telecommunications and Networks I (3 credits) (Cross-listed as *CPEG 610*)

Covers leadership skills in information technology, telecommunications, and Internet technology for technology management. Reviews binary representation of information, audio and video. Introduces concepts in data and image compression, digital audio and digital cellular telephony. Provides fundamental knowledge of transmission and storage technology. Provides a system-level understanding of computer networks and the Internet. Hands on experiments on MatLab environments as well as Java-based virtual laboratory experiments are provided allowing students to experience the underlying components of information technology. Taught by ECE.

BUEC 830: Decision Support and Analysis (3 credits)

Focuses on how business decisions are made and the role of information in the decision process. Consideration is given to how to structure and define complex business decision problems; the analytical framework (and techniques) required to understand the problem; and where the data needed for the analysis resides in the organization (and the tools and techniques needed to obtain it). Topics include creating sophisticated financial models, obtaining and analyzing samples from large data sets, importing data from (and exporting data to) external sources, and the presentation of results.

Advanced Core (required)

BUEC 811: Telecommunications and Networks II (3 credits) (Cross-listed as *CPEG 611*)

Course draws on the material of previous course to provide students on technology trends and the impact these will have on industry and the global economy. Addresses the increasingly important convergence of computation and communications including voice over IP and the principles of information security. Covers emerging standards in high-capacity cellular telephony and the supporting protocol standards interfacing these with the Internet. The future capabilities of the Internet and their effect on business are discussed. Provides knowledge of Blue-tooth technology and its impact on consumer electronics and human-computer interaction. The impact of global positioning systems on business applications. Taught by ECE.

BUAD 873: Managing in an IT Environment (3 credits)

The focus of this course would involve exploration of unique challenges (and solutions) presented by technology rich organizational environments. Ideally, it would build on technological issues raised in previous classes, and would develop managerial skills in implementation and change management, particularly in relationship to IT processes developed in other parts of core. Some specific topics that may be covered here are vendor relationship management, CRM implementation, inter-organizational connectivity, etc.

BUEC 840: Project Management and Costing (3 credits)

Provides the technical knowledge and skills for successfully planning, executing, and evaluating IT projects. Topics include proposal and contract management, risk management, requirements management, user-centered design management, standards adherence, standards management, configuration management, project planning, effort estimation and scheduling, project monitoring and control, project audits, project closure, peer review, stress testing, quality planning, defect estimation and quality assurance. There will be a strong emphasis on the costing of IT projects.

BUEC 850: Security and Control (3 credits)

The study of state-of-the-art technological and organizational approaches to enhancing the security and integrity of corporate information resources. Topics include: risk analysis and management, physical security, network and database security, access controls (identification and authentication), disaster control and recovery, contingency planning, backup, internet security, secure business transactions, viruses, firewalls, computer crime, multinational security and control issues, and managing security in a cost-effective manner. Co-taught with ECE.

Electives¹²***BUEC 860: High Technology Entrepreneurship*** (3 credits) (Currently *BUAD 867*)

Course focuses on the critical financial, legal, scientific and engineering issues that must be confronted during the initial planning stages of a start-up enterprise. A range of speakers from finance, marketing, engineering, law and the Delaware's Economic Development Office provide a perspective on the challenges of launching a new business venture. Students from engineering and technology management will work in teams to develop an R&D strategic and a business plan for a real world business product offering. Lectures cover: developing a successful business model, business and professional ethics, intellectual property, leadership and management, financial options for funding a new business, employee compensation (stock-options, profit sharing, etc.), e-Commerce issues, legal proprietorship (LLC, S-corporation, etc.), new product innovation, programs and assistance available through the Delaware Economic Development Office.

BUAD 884: E-Commerce (3 credits)

This course focuses on the business implications of the transformation to doing business on the Internet. Both the possibilities and limitations of e-commerce systems are explored as well as the technological and organizational issues that are presently faced and need to be solved in the future. It will consider such things as new information products and services (e.g., electronic shopping, one-on-one marketing, and electronic distribution), the relevant legal issues, and the development of a strategic plan for implementing e-commerce

ACCT 805: Current Issues In Management Information Systems (3 credits)

Addresses current information technology challenges facing today's corporate management. Although content will constantly change to reflect current technology and emerging issues, topics include: ethics, management of the impact of new information systems on corporate environments, implementation issues, and changing systems in a global environment.

BUAD 871: Managing for Creativity and Innovation (3 credits)

Focuses on individual characteristics and group and organizational factors that influence the ability of organizations to generate new products and/or processes, and to implement new products/processes. Students practice skills to diagnose barriers and develop creative organizations.

BUAD 899: Consulting Project (1-3 credits)

Students work in teams on a real IT problem

¹² Upon entering the program, each student will meet with a faculty advisor who will assess their IT experience. Those students with insufficient experience in IT will take three credits of either *BUAD 860: High Tech Entrepreneurship* or *BUAD 899: Consulting Project* as their elective.

Special Topics (1-3 credits)

This course is an in-depth study of important technologies and issues in MIS. Topics will include areas such as AI, biotechnology, IT personnel management, data mining/CRM, and ERP.

- May be repeated when topic changes

Capstone (required)

BUEC 870: Strategic IT Management (2 credits)

Ideally, this course would occur late in the curriculum, as it necessarily builds on a well-developed technological and managerial vernacular for maximum value for the student. The course would explore how information technologies (broadly defined) are used to enhance the strategic goals of the organization. To accomplish this, the course would examine the relationship between broad strategic goals and organizational mission, and specific tactical IT responses to assist in the achievement of these goals. This course would provide coverage of the strategic importance of ERP, CRM, corporate intelligence, knowledge sharing, etc.

BUEC 871: High Tech Seminar (1 credit)

The idea of the high tech seminar is to introduce our students to active managers and to allow them to develop a dialogue with these managers that addresses the challenges that active managers face in organizations. By creating this interface, we add a "real" dimension to our students' preparation, and also help them develop their professional network as they prepare to leave the program and enter the workforce. This course would also be in a student's final semester of study.

APPENDIX D

Sample Part-time Program

Sample Full-time Program

Summer - Year 1

Accounting for an IT Environment
Business Processes & Operations
Management
Finance/Marketing/Management/
Programming I

Accounting for an IT Environment
Business Processes & Operations
Management
Finance/Marketing/Management/
Programming I

Fall - Year 1

Data Management
Telecommunications & Networks I

Data Management
Systems Analysis & Implementation
Telecommunications & Networks I
Project Management & Costing

Winter - Year 1

Decision Support and Analysis

Decision Support and Analysis

Spring - Year 1

Telecommunications & Networks II
Systems Analysis & Implementation

Telecommunications & Networks II
Managing in an IT Environment
Elective
Strategic IT Management
High Tech Seminar

Summer - Year 2

Security & Control

Security & Control

Fall - Year 2

Managing in an IT Environment
Project Management & Costing

Spring - Year 2

Elective
Strategic IT Management
High Tech Seminar

**APPENDIX E
ACADEMIC BENCHMARKING**

Purpose

A number of schools offer M.S. in Information Systems (or similarly titled) programs. It was our intent to review these programs in order to learn from their curriculum design and, in the process, confirm (or modify) our own ideas.

Procedure

The websites of the following schools were visited:

- The top 32 MIS graduate programs in the U.S.;
- Schools in the Philadelphia area which might offer M.S. in IS programs (including St. Joseph, Villanova, Drexel, LaSalle, Temple, and Widener);
- The other four-year schools in Delaware -- Delaware State University, Wilmington College, and Goldey-Beacom; and
- Several additional schools because of faculty interest (ex.: University of Central Florida, University of South Florida, and Brigham Young University).

In addition, faculty visited Penn State University and The University of Michigan.

Summary of Results

The following summarize the results of the benchmarking:

- The way IT/IS is included in the graduate curriculum varies:
 - Some schools have an M.S. in Information Systems (or similar degree). The most prominent include Arizona State University, the University of Arizona, Indiana University, New York University and Case Western Reserve University. In some cases, the degree is offered by the Department of Accounting and MIS (ASU and Indiana University). NYU combines courses from the Stern School of Business with those from the Department of Computer Science (in Arts and Sciences);
 - Some offer concentrations within the MBA program (e.g., University of Michigan, University of Minnesota, Penn State). It is interesting that the University of Michigan is now moving to add an M.S. in I.S. The University of Texas, Temple University, and Northeastern are among schools offering a techno-MBA (an MBA with a strong technology emphasis, often emphasizing an aspect of IT such as eBusiness); and
 - Some offer management of technology programs jointly with engineering. The Sloan School at MIT has a Management of Technology degree designed for executives with 8 – 15 years experience. The University of Pennsylvania offers the Executive Master's in Technology Management where the graduate receives an M.S. in Engineering in the Management of Technology. Widener University offers an M.S. in Management and Technology which is designed for engineers and scientists.

- Most of the established programs offer a full-time option which can usually be completed in one year. (There often is also a part-time program covering the same curriculum, although ASU only offers a full-time program). While the number of credits required varies, most are in the 30 – 36 semester credit hour range. However, it is difficult to determine actual program length since most have a prerequisite of some business coursework or experience. For those deficient in this area, there are a number of options:
 - An intensive summer session (Indiana uses 5 weeks);
 - Some offer specially designed core business courses (Case Western Reserve University); and
 - Many require students without a business background to take anywhere from 3 or more MBA core courses.
- M.S. programs take on different orientations. While leading programs such as ASU, the University of Arizona, and Case Western balance business and IT, other are very technically-oriented (i.e., a CIS-orientation) without much, if any, management coursework. Bentley College, for example, designs its program for IT professionals with 2 years system development experience who want more technical work.
- Most programs have a common core consisting of work in data management, systems analysis and design, and networking. Many require one or more programming courses in an object-oriented language (e.g., Java, C++).
- Most programs allow at least one elective, although ASU has a lock-step program with no electives. Some, such as Temple, require a student to choose one course from each of several groups.
- Some, such as NYU, require a significant project. Others integrate significant project work into various courses.
- Finally, some schools (e.g., ASU, Case Western) enable a student to earn an M.S. and an MBA in two years of full-time study.

**APPENDIX F
FACULTY RESOURCES**

The following is a list of current faculty in the College of Business & Economics who have expertise in the area of information systems and technology management. In addition, the College is currently recruiting a faculty member in the area as well as several in other areas who have an IT interest.

Michael J. Ginzberg

Ph.D. Management Science, Massachusetts Institute of Technology, Cambridge, MA

Dissertation Topic: A Process Approach to Management Science Implementation

Master of Business Administration: Economic Analysis, Iona College, New Rochelle, NY

Bachelor of Science: Management, Massachusetts Institute of Technology, Cambridge, MA

Research Focus: Information systems strategy and management; management of technical personnel

Courses Taught: Change management; decision support systems

Scott Jones

Ph.D. Accounting and Statistics, Drexel University, Philadelphia, PA

Dissertation Topic: The Detection Risk Properties of Analytical Procedures That Use Orthogonal Polynomial Regressions

Master of Business Administration: Shippensburg University, Shippensburg, PA

Bachelor of Science: Accounting, Shippensburg University, Shippensburg, PA

Research Focus: Cost modeling of composite materials and processes

Courses taught: Management control systems, cost accounting, entrepreneurship

John Kmetz

DBA: University of Maryland, College Park, MD

Dissertation Topic: Technology and organization structure: the relationship between contextual variables and structure variables in manufacturing and service organizations

Masters in Business Administration: University of Maryland, College Park, MD

Bachelor of Science: Accounting, Pennsylvania State University, State College, PA

Research Focus: The Information Processing Theory of organization, and its application to international business, technology accession and technology transfer in global business

Courses Taught: International business, project management and systems management.

Christine T. Kydd

Ph.D. Decision Sciences, The Wharton School, University of Pennsylvania, Philadelphia, PA

Dissertation Topic: Analysis of organizational decision making regarding the decision to remain with the current firm or leave to join another firm based on signals received from the current firm.

Masters in Business Administration: Drexel University, Philadelphia., PA;

Bachelor of Arts: Mathematics, Bucknell University, Lewisburg, PA

Research Focus: Use of various electronic communication media in the workplace

Courses Taught: Problem Structuring and the Analysis of Decision Making (graduate); High Tech Business Issues and Decision Making (undergraduate); Decision Support Systems (graduate and undergraduate)

Clinton E. White, Jr.

DBA: Accounting & Management Information Sciences, Indiana University, Bloomington, Indiana

Dissertation Topic: "An Evaluation of the Decision Making Effects of The Aggregation of Accounting Numbers in Management Accounting Reports: A Field Experiment"

Master of Business Administration: Finance & Economics, University of Louisville, Louisville, KY

Bachelor of Arts: History & Government, Western Kentucky University, Bowling Green, KY

Research Focus: Internet-based business models, Internet-based business education, Advanced Internet-based educational models, XML-based technologies, IS audit and control, ERP in business curriculums

Courses Taught: Current Issues in MIS, Strategic Accounting & Information Systems Auditing in an IT Environment

John Wragge

Ph.D. Accounting & Management Information Sciences, University of Houston, Houston, TX

Dissertation Topic: Comprehensive Simulation Modeling in Higher Education.

Master of Arts: Accounting, University of Missouri-Columbia, Columbia, MO.

Bachelor of Science: Business Administration, University of Nebraska-Lincoln, Lincoln, NE.

Research Focus: Technology supported learning.

Courses Taught: Management Control Systems (Graduate), Information Management: i.e., database, strategic IT

Dan Freeman

Ph.D. Management (Marketing), University of Arizona, Tucson, AZ

Dissertation Topic: Social Information Processing

Master of Arts: Communication, University of Arizona, Tucson, AZ

Bachelor of Arts: Economics, Grinnell College, Grinnell, IA

Research Focus: Assessing the potential of digital gaming environments to enhance brand equity.

Courses Taught: Information Technology Applications in Marketing

Guido L. Geerts

Ph.D. Accounting Information Systems, Free University of Brussels, Brussels, Belgium

Dissertation Topic: Toward a new Paradigm in Structuring and Processing Accounting Data

Bachelor of Science: Economics, Free University of Brussels, Brussels, Belgium

Research Focus: Enterprise Ontology, Interactive Internet Learning

Courses Taught: Accounting Information Systems, Object-Oriented Analysis and Design

Thomas J. Hofferd

Ph.D. Accounting and MIS, University of Central Florida, Orlando, FL

Dissertation Topic: An Empirical Comparison of Neural Networks and Traditional Statistical Techniques in Forecasting General Ledger Accounting Balances In The Auditing Domain

Master of Sciences: Taxation, Golden Gate University, San Francisco, CA

Bachelor of Science: Accounting, California State University, Bakersfield, CA

Research Focus: Internet Security and Control, Web Enable Education

Courses Taught: Accounting Information Systems, Management Information Systems, Database Design and Development, Auditing and Control Systems, Traditional Auditing -- Undergraduate and Graduate, Rigos CPA Review Course in Auditing, Financial Accounting

Hermant Kher

Ph.D. Production & Operations Management, University of South Carolina, Columbia, SC

Dissertation Topic: Strategic workforce management in dual resource constrained job shops under conditions of learning and forgetting

Master of Arts: Industrial Administration, Lynchburg College, Lynchburg, VA

Bachelor of Science: Physics, Bombay University, Bombay, India

Research Focus: Assessing the effects human learning/forgetting on shop floor management, and, evaluating effectiveness of group technology layouts

Courses Taught: Quality Management and Data Analysis and Quality Management

Mark A. Serva

Ph.D. Management Information Sciences, University of Texas - Austin, Austin, TX

Dissertation Topic: Effective Compensation Strategies for MIS Employees Working in Advanced Technologies

Master of Business Administration: Syracuse University, Syracuse, NY

Bachelor of Science: Business Administration and Computer Science, Mansfield University, Mansfield, PA

Research Focus: Formation of Trust and Social Capital in MIS Development Projects, Outsourcing and its alternatives

Courses Taught: Systems Analysis and Implementation (graduate and undergraduate), Database (graduate and undergraduate), Programming (C++, Visual Basic), and MIS Strategy (graduate)

Claudio P. Spiguel

Ph.D. Computer & Communication Sciences, University of Michigan, Ann Arbor, MI
Dissertation Topic: Computer-aided Modeling: An Application to Decision Support in Business Environments
Master of Science: Computer & Communication Sciences, University of Michigan, Ann Arbor, MI
Engineer: Naval Architecture & Marine Engineering, University of Sao Paulo, Sao Paulo, Brazil
Research Focus: Strategic IT Management
Courses Taught: Technological Problem Solving, Problem Solving Project Management, Systems Analysis & Implementation

Tony Townsend

Ph.D. Organizational Behavior, R. B. Pamplin College of Business, Virginia Polytechnic Institute and State University, Blacksburg, Virginia.
Dissertation Topic: The Antecedents of Goal Commitment in an Industrial Workforce.
Master of Science: Organizational Behavior, R.B. Pamplin College of Business, Virginia Polytechnic Institute and State University, Blacksburg, Virginia.
Bachelor of Arts: English, University of Virginia, Charlottesville, Virginia.
Research Focus: Virtual work, and IT & Organizational Policy
Courses Taught: Management of Information Technology (graduate and undergraduate)

Joseph A. Brady

Ph.D. Education, University of Delaware, Newark, DE
Dissertation Topic: Neural network that learned to read and spell
Master of Science: Computer Science, University of Delaware, Newark, DE
Thesis: Expert system for industrial credit analysis
Master of Business Administration: Drexel, Philadelphia, PA
Bachelor of Science: Clarkson College, Potsdam NY
Research Focus: N/A
Courses Taught: MIS principles; Business programming (VB, desktop packages); Systems Analysis and Design

Ellen Fischer Monk

Masters in Business Administration: University of Delaware, Newark, DE
Bachelor of Science: Chemical Engineering, Rutgers University, New Brunswick, NJ
Research Focus: Enterprise Resource Planning
Courses Taught: Business software, Decision support, databases, database design, E-Commerce, Security, ERP, General computer literacy, Web programming

APPENDIX G

Letter of Support from Dr. Gonzalo Arce, Chairperson
Department of Electrical & Computer Engineering



DEPARTMENT OF ELECTRICAL
AND COMPUTER ENGINEERING

140 Evans Hall
University of Delaware
Newark, Delaware 19716-3130
Ph: 302/831-2405
Fax: 302/831-4316

Dr. Michael Ginzberg
Dean, College of Business and Economics
303 MBNA Hall
University of Delaware
Newark, DE 19716

Dear Dr. Ginzberg:

The Masters degree program in Information Technology Management that you are establishing in the college of Business and Economics is a very timely and much needed initiative for the University of Delaware. This educational program that bridges information and telecommunications technology with management tools will produce graduates with highly desirable skills.

I foresee a significant demand for this program within the engineering student population at UD and nationwide. Anecdotally, prospective UG engineering students, and their parents often ask me, if such program in information technology management exists at UD! I expect a strong demand for this program within the business student population as well. The success and raving student course evaluations we received last year in the course "Entrepreneurship and Risk Taking" jointly taught by engineering and business faculty, is an indicator of the strong demand of the proposed Masters program.

The Department of Electrical and Computer Engineering strongly supports this cross-disciplinary program and our faculty in the networks and telecommunications area will enthusiastically collaborate with faculty in the business college in developing a top-rated information technology management Masters program. We welcome the opportunity and we look forward to working with you in this exciting educational thrust.

Sincerely yours,

A handwritten signature in black ink, appearing to read "Gonzalo R. Arce".

Gonzalo R. Arce
Chairman, Dept. of Electrical and Computer Engineering

AN EQUAL OPPORTUNITY UNIVERSITY