Information Systems Management

APRC 2005-2006

section 1 of 4

APRC Questions for ISM PRP

I. Program Overview

1. How did the onset of the MBA program affect the ISM program's enrollment?
   No real impact. They are very different programs with different target markets.
2. Is there an accrediting body for ISM programs? Would affiliation be valuable for the program? How will COB accreditation affect the ISM program?
   No accrediting body to our knowledge. COB accreditation is necessary for all COB programs for the same reasons...college respect and public perception of integrity.
3. If 9/11 reduced international enrollment in the ISM program after 2001, what dropped domestic enrollment?
   Outsourcing. It gutted the lower tier of the IT jobs and the bad press exasperated student concern with IT as a viable career choice and even career path for IT professionals.
4. What kind of support has the program received from International Programs? What efforts in recruiting internationally has ISM made on its own?
   International programs were a vital and indispensable service for our international grad students. Services from admission, transcript translation, keeping us abreast of INS regulations, issuing student VISAs, approval for OPTs, dealing with CPT issues, even acting on behalf of the university on legal issues affecting internationals. The ISM has made no efforts in international recruiting, nor are such plans under consideration currently.
5. What suggestions do program faculty have for marketing the ISM program? For improving Ferris' image?
   We are just now starting to address marketing issues. Very clear we will have to assume more responsibility in this effort. As for institutional image, I believe we sell the gems in the crown Optometry and Pharmacy, two world-class programs and place that also offers other very good graduate programs. The institutional message is that Ferris have evolved into a diverse institution of higher education that has earned a place of respect and parity with our sister institutions.

II. Collection of Perceptions

1. What plans does ISM have to address the pedagogical issues raised in the student survey?
   With the decline in international students, we are targeting a domestic, non-traditional, working adult. They want accessible classes. Our offering is weekend/internet or internet classes offered in a seven week format, that facilitates completion of two classes a semester.
2. How does COB faculty lack of awareness of the ISM program affect the viability of the ISM program?
   The major problem is advising. What do you tell a student who might be considering grad school when you know nothing about the educational opportunities available at FSU. We need to do a better job of keeping our colleagues aware and informed.

III. Program Profile

1. Please provide a program checksheet.
   See attachment.
2. How long does it take the average student to finish the ISM program? How many don't finish?

It takes a working adult taking one class every seven week session nearly two years. A full-time student can comfortably complete the MS in 15 months.

To date, we've had 750 students enter the MS-ISM. 80% graduate. The breakdown for non-graduates are as follows: 14 withdraws, 19 transferred, 11 academically dismissed, 118 are either inactive (admitted but not taking classes or unknown).

3. How does the tuition rate of the ISM program compare to its competitors?
   Tuition increases have been very favorable for FSU grad students. Our tuition rate are comparable to most other state university and a bargain compared to private schools.
4. As enrollment in the ISM program has decreased, has staffing declined? If not, what duties are assigned to the unneeded faculty?
   All ISM faculty have full loads. Staff declines have been adjunct faculty.
5. How many adjunct and graduate assistants are used? What are their qualifications?
   Graduate assistants do not teach grad classes. We do however currently employ two grad students for tech support. Adjunct faculty have a minimum of a masters degree and substantive experience related to their course responsibilities. All adjunct faculty are approved by similarly skilled ISM faculty members.
6. Discuss the ISM program's service to other programs.
   - ISM is a concentration in the MSN
   - MS-ISM is an option for the five year 150 hour Accounting/MS CPA program
   - ISM offers four courses in the six course Homeland Security Minor
   - ISM offers two techno-MBA options concentrations
   - ISM provides a one course MBA core class and another MBA elective course

IV. Facilities and Equipment

1. Discuss the adequacy of library resources.
   On-line database resources are an integral part of the ISM. IT periodicals are adequate and timely.
2. Please provide an evaluation of the program's facilities.
   Program facilities are adequate. Further, the administration (COB Dean, VPAA, and IS&T) has been supportive of all our requests and needs. UCEL and ATC profit sharing provide the funds for faculty development.

NINE CORE COURSES REQUIRED

COURSE #	TITLE	CREDITS	TERM	GRADE
MMBA 601	Professional Skills Development	3		
MISM 610	Database Management and Administration	3		
MISM 629	Legal and Ethical Issues in Business	3		
MMBA 640	Project Management	3		
MISM 661	Principles of Information Security Management *(co-requisite MISM 670)*	3		
MMBA 665	Information and Analysis Systems	3		
MISM 670	Network Management & Design	3		
MISM 740	Business Intelligence *(prerequisite MISM 610)*	3		
MISM 799	Integrated Capstone Project	3		
	NINE CORE COURSES REQUIRED	**27**		

TWO ELECTIVE COURSES REQUIRED*

COURSE #	TITLE	CREDITS	TERM	GRADE
MMBA 612	Introduction to Performance Metric Systems	3		
MMBA 615	Quality Improvement Principles and Applications	3		
MMBA 705	Business Process Reengineering	3		
MISM 646	Systems Integration *(prerequisite MMBA 665)*	3		
MISM 659	Application Development *(prerequisites MISM 610)*	3		
MISM 662	Incident Response and Cyber Forensics *(prerequisite MISM 670)*	3		
MISM 671	Advanced Network Management & Design *(prerequisite MISM 670)*	3		
MISM 680	Current Topics in Information Systems Management	3		
	TWO ELECTIVE COURSES REQUIRED	**6**		
	TOTAL	**33**		

**Electives for the MS-ISM degree may be selected in combination with core courses to complete any of the following five Advanced Studies Certificates offered by the College of Business Graduate Programs.*

Descriptions of CBGP Advanced Studies Certificates

ASQM – ADVANCED STUDIES CERTIFICATE IN QUALITY MANAGEMENT TOOLS AND TECHNIQUES – 12 Credits
The *Management Tools and Techniques* certificate is designed to prepare business leaders sensitive to current legal and ethical issues that exist in today's business world and to facilitate the use of technical tools to aid in understanding business systems, developing improvement strategies, and leading and managing the change process.

COURSE #	TITLE	CREDITS	TERM	GRADE
MMBA 615	Quality Improvement Principles and Applications	3		
MISM 629	Legal and Ethical Issues in Business	3		
MMBA 640	Project Management	3		
MMBA 705	Business Process Reengineering	3		
	TOTAL	**12**		

ASSN - ADVANCED STUDIES CERTIFICATE IN SECURITY & NETWORKING – 12 Credits
The *Security & Networking* certificate is designed to prepare individuals with both theoretical and practical experience in designing and protecting local area networking systems, incorporating principles of information security, incident detection/reaction, and computer forensic tools and techniques (ranging from the servers to personal digital assistants).

COURSE #	TITLE	CREDITS	TERM	GRADE
MISM 661	Principles of Information Security Mgmt *(prerequisite MISM 670)*	3		
MISM 662	Incident Response and Cyber Forensics *(prerequisite MISM 670)*	3		
MISM 670	Network Management & Design	3		
MISM 671	Advanced Network Management & Design *(prerequisite MISM 670)*	3		
	TOTAL	**12**		

ASSI - ADVANCED STUDIES CERTIFICATE IN E-BUSINESS AND SYSTEMS INTEGRATION – 15 Credits
The *E-Business and Systems Integration* certificate is designed to prepare individuals to select and determine information systems components, applications, database design and development, web application design and development, and to acquire the skills to develop and implement e-business applications.

COURSE #	TITLE	CREDITS	TERM	GRADE
MISM 610	Database Management and Administration	3		
MISM 646	Systems Integration *(prerequisite MISM 610 & MMBA 665)*	3		
MISM 659	Application Development *(prerequisites MISM 610)*	3		
MMBA 665	Information and Analysis Systems	3		
	TOTAL	**12**		

ISM Program -- Dean's Analysis

It is my assessment that the ISM program is confronted with significant ongoing challenges. The faculty have labored to find solutions, but have been confronted with major environmental hurdles; specifically, the impact of 9/11 on international student enrollment (who accounted for half of the program enrollment pre-9/11), and a national shift away from enrollment in IS/IT programs at all levels (despite industry calls for appropriately educated graduates). In the face of such adverse elements, an ISM offering must be developed whose curriculum and delivery mode are perceived of as a distinctive and desirable source of career enhancement. Not only does our offering need to be geared to serving needs/interests of a specific target market, but we have to find a way to achieve sufficient market awareness to promote enrollment. It appears we haven't found the desired combination of curriculum and market in recent years.

While striving for successful reengineering of the ISM offering, the faculty have been noteworthy in their concurrent efforts to create distinctive collaborative offerings (e.g., MBA tracks, MSN modules, Homeland Security coursework) that benefit from their particular expertise. These provide a valuable alternative use of our faculty resources, as well as opportunities to develop critical masses of students for courses that can be offered in multiple programs.

It is also notable that the ISM faculty has pioneered in the development of compressed course offerings, as well as on-line and blended delivery, all of which has been pursued with an eye to educational integrity. Their willingness to extend their pedagogy in such a fashion has enabled greater responsiveness to the specific needs and availability of working adult students.

The ISM faculty have, in general, articulated outcomes and means of assessment for each of the program courses. That puts them ahead of many. I hope they will explicitly focus on the assessment results and work on improving our students' level of achievement. Concurrently, they need to continue to confirm the appropriateness of the outcomes with our advisory boards, the workplace, and other industry sources. Our capacity to point at the alignment of our curriculum with industry needs, and our ability to demonstrate that graduates do possess the competencies that employers want, will, I believe, contribute to the future health of the program.

It is my sense that the ISM faculty invest a commendable amount of time in professional development. In a field characterized by as much change as theirs, that is imperative if our program is to have integrity. They are encouraged to involve themselves with both practitioner and academic forums, as they both provide valuable insight for our educational endeavor. The College is committed to providing support for faculty efforts in this regard.

September 1, 2005

Master of Science
Information Systems Management
Academic Program Review

Committee Members:

Bill Boras – CBGP Chair
Doug Blakemore - MS-ISM faculty
Greg Gogolin - MS-ISM faculty
Laksma Tirtohai - MS-ISM faculty
Kathleen Poindexter - Faculty member outside the College of Business
Dave Nicol – College of Business Dean

Academic Program Review
Master of Science - Information Systems Management (MS-ISM)
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College of Business Graduate Programs (CBGP)
Master of Science - Information Systems Management (MS-ISM)
Academic Program Review 2005-06

Preface

Fall 2005 will mark commencement of the third reengineered MS-ISM in three years. This APR focuses on the events, processes, and rationale guiding us to where we are.

Program Overview

Program mission is to train persons in management, leadership, and technical skills necessary for effective leadership in a highly outsourced industry.

Target market consists of IT professionals wishing to acquire or upgrade leadership and/or technical skills for career advancement as well individuals interested in acquiring career enhancing or entry skills in networking/security and/or e-business application.

Program delivery is targeted to accommodate non-traditional students who must balance work, family, and other obligations. Courses are seven week double paced. Eight of the required eleven classes are delivered in a one or two weekend /internet format; the remaining three are entirely delivered via the internet.

The MS-ISM is distinctive among the state universities. It is the only one of its type with a core focus on the knowledge and skills for effective management in an outsourcing environment. Three concentrations in management, networking and security, and e-business design and implementation are specialized, targeting specific domestically needed skill sets that may be chosen by our students based upon their particular educational needs and objectives.

History

1998 Academic Program Review

The MS-ISM commenced fall 1987. It was the only graduate program in the College of Business. There were no cross programmatic options or service courses. The first APR was submitted fall 1998. Included in the 1998 report was SCH production for 1996-97 and 1997-98 presented below.

Sem/Year	Total SCHs*
Fall 1996	319
Fall 1997	561

*SCHs were not separated into international and domestic. None-the-less, it was obvious to all that the MS ISM was beginning to emerge as a viable graduate program with institutional value.

The recommendation of the 1998-1999 APR was to "Enhance the Program." That recommendation proved to be well founded.

The chart that follows documents the continued growth of the MS ISM. Of significance was the dramatic increase of international SCHs. This aspect of MS ISM growth cannot be understated.

MS ISM SCH Production			
Sem/Year	International	Domestic	Total SCHs
Fall 1998	266	494	760
Fall 1999	301	528	829
Fall 2000	608	563	1117
Fall 2001	606	525	1131

2001-02

Fall 2001 the MS-ISM was a graduate level cutting edge technical skills focused program. The target market was individuals seeking to acquire advanced technical and application level training. The MS-ISM was the single graduate program in the College of Business devoid of cross programmatic options or service courses. Fall 2001 was also the semester of peak enrollment producing 1131 SCHs, 606 of which were international and 525 domestic. In fact, enrollment exceeded our production capacity and 25 MS-ISM admitted international students were forced to delay commencement of studies till winter 2002.

Following the events of September 11, 2001 the CBGP anticipated a significant negative impact on international student enrollment. In response the CBGP Department set a strategy to increase domestic enrollment. That was to be achieved by reengineering the MS ISM to a graduate program aimed at training persons for entry into the IT profession or enhancing the skills of practicing IT professionals. Additionally, we began exploration of new graduate degree programs, and expansion of graduate level service course work.

2002-03

Following institutional approvals, a new MS ISM commenced fall 2002.

Our anticipation of decreased international student enrollment became reality and impacted the MS ISM immediately. New INS restrictions eliminated student VISAs from some countries and severely curtailed the total number of VISAs issued. The impact of these decisions has had a significant negative impact on MS ISM international SCH production.

Sem/Year	International	Domestic	Total SCHs
Fall 2002	487	439	926
Fall 2003	273	327	600
Fall 2004	231	255	486
Fall 2005			

Reflecting the difficulty of acquiring a student VISA, international applications have also steadily declined.

MS ISM International Applications		
Sem/Yr	Accepted	Enrolled
Fall 01	143	35
Fall 02	86	8
Fall 03	61	10

Fall 04	33	5
Fall 05		

While the CBGP focused on addressing the negative enrollment impact of 9/11, an evolution in the IT industry would soon present new program enrollment challenges.

We had been watching and listening to the rumblings of outsourcing in the IT industry for several months. What at first appeared to be a limited exploration of industry possibilities quickly became an avalanche of change. Worst of all (for us) was that avalanche gutted the lower tier of IT jobs, software developers...the group for whom we had built an entirely new MS ISM that was in its first year of implementation. The reality of outsourcing was IT job loss estimates ranging from 403,300 to 724,320 (depending on source) from 2001 to mid-2004. Press coverage of these job losses accelerated a nation-wide decline in college students majoring in IT. Domestic enrollment in the MS-ISM paralleled the decline in international enrollment. We had to respond.

2003-04

We spent the 2003-04 academic year consulting with our advisory committee, program alumni, scanning the literature, and listening to the working IT students in the program. What we discovered was that not only had overall domestic need for IT workers significantly decreased, so to have the skill set for domestic IT professionals.

With as clear a picture as could be gleaned from available sources, we again reengineered MS ISM with core courses focusing on the new IT skills paradigm, strategic and operations outsourcing management skills and tools. Included were two modified advanced study certificates in "quality management," and "information security and network management," and three new advanced study certificates in "outsourcing management," "systems integration," and "business intelligence," utilizing courses from the MS-ISM, MBA, and newly created courses. The new MS ISM received final approval in May 2004 for implementation winter 2005.

Fall 2004-05

The MS-ISM program approved by the University just three months earlier was again reviewed by the advisory committee, as well as alumni, and current students, COB personnel, and the MS-ISM faculty.

Final revisions to the MS-ISM were completed the academic year 2004-05.

2005-06

The 33 hour MS-ISM program that has emerged consists of a 27 hour (9 courses) core focusing on skills and tools for managing in an outsourced IT industry and 6 hours of electives with concentration focuses in management, networking and security, and e-business application and development. Three 12 hour advanced certificates in the same areas have been packaged for IT professionals interested in focused post-baccalaureate skill development.

In addition to a newly consolidated and domestic skills focus the MS-ISM has ventured into cross programmatic and service course initiatives that can best be served by the MS-ISM faculty. Following is a list of these initiatives.

Approved MS-ISM Initiatives

- Informatics option for the MSN
- MS-ISM with an MSN option
- Techno-MBA option from MS-ISM concentrations

- CPA program (BS Accountancy and MS-ISM)

At Approval Stage

- Homeland Security Minor (joint undergrad partnership with CJ)

The remainder of this report chronicles the process that has lead to the MS ISM program reflected on the current checksheet (next page) effective summer 2005 and assesses the current health and long term prognosis of the MS-ISM.

MS-ISM APR Organization

Section 2	Program Assessments a) Advisory Committee Evaluation Process b) Alumni Committee Evaluation Process c) Current Student Opinions d) College of Business Perception
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College of Business Graduate Programs (CBGP)
Master of Science - Information Systems Management (MS-ISM)
Academic l Program Review 2005-06

Section 2

Program Assessment

Following the events of September 11, 2001 the MS-ISM sought to aggressively engage program stakeholders in determining future direction. The MS-ISM assessments of 2002-03, 2003-04, were essentially the same as 2004-05, the process documented for purposes of this academic program review.

MS-ISM Advisory Committee is a valued and respected external stakeholder resource whose responsibility is assisting us in monitoring IT industry trends and defining expected competencies of existing and new employees. The MS-ISM committee consists of six members, all senior managers from differing industries and IT specialties (people involved in strategic planning, budget responsibility, and hiring IT staff).

The advisory committee program/course review process for the 2003-04, 2004-05 was to have each advisory committee member review the outcomes for each MS-ISM course and suggest additions, modifications, and deletions to courses, core, and elective courses.

Fall 2003 the CBGP faculty met with the MS-ISM Advisory committee to review the latest MS-ISM program and seek their advice on program focus and content. From that meeting emerged a significant number of suggestions. Academic year 2003-04 MS-ISM faculty addressed these suggestions with major program/course revisions. The revised MS-ISM program/courses were reviewed by the advisory committee 2004-05. We had addressed every suggestion to the MS-ISM advisory committee's satisfaction. 2004-05 MS-ISM program adjustments included content adjustment to the core and three concentrations and the elimination of two concentrations.

MS-ISM Alumni followed the same format as the MS-ISM advisory committee. During the fall 2004 semester a focus group of alumni were asked to review and recommend improvements to the revised MS-ISM courses and program endorsed by the MS-ISM Advisory Committee. Like the advisory committee alumni participants reviewed the course outcomes and assessments for all MS courses. Despite our best effort to guide them toward content, they generally choose to offer suggestions that were pedagogical in nature. While not intended, these suggestions are important and valuable. Opportunities for improving instructional delivery are being reviewed, considered, and implemented or rejected.

Current MS-ISM Students: fall 2004 current CBGP students were surveyed on a variety of programmatic and pedagogical issues. On issues of pedagogy, the results are frequently bimodal; what is rated highly by some is rated low by others (i.e. they either do or don't prefer on-line classes, no ambivalence). Perhaps the most significant finding was that on-average current students have more positive feelings for the MS-ISM program when compared to the previous survey of current MS-ISM students.

COB Survey: winter 2005 COB faculty, staff, and administration were surveyed. The focus of this survey was to ascertain their knowledge and impression of the MS-ISM program and faculty. Results indicate that the CBGP needs to spend more time and effort on interacting with COB personnel and sharing the CBGP objectives and activities.

As a result of the above and preceding efforts the following has emerged as the guiding principals for the MS-ISM.

- Program mission is to train persons with management, leadership, and technical skills necessary for effective leadership in a highly outsourced industry.

- Target market is current IT professionals wishing to acquire or upgrade management and/or technical skills for career advancement as well individuals interested in acquiring the skills for entry to an IT career.

- Three concentrations have emerged which fit University and program mission, are the in-demand choice of students, and which are particularly compatible with faculty skill sets and expertise, and institutional resources. These concentrations include concentrations in management, networking and security, and e-business design and implementation.

- Program delivery is a balance between accommodating non-traditional students who must balance work, family, and other obligations with the skill set promised. Survey and discussion outcomes indicate continuation of seven week double paced class delivery. Eight of the required eleven classes that are technical, hands-on will be delivered in a one or two weekend /internet format; the remaining three can be delivered entirely via the internet.

- Opportunities to partner and providing service courses should be explored and implemented when appropriate.

The details for each assessment group located in the appendices.

College of Business Graduate Programs (CBGP)
Master of Science - Information Systems Management (MS-ISM)
Academic Program Review 2005-06

Section 3

Program Profile

Student Profile

Admission requirements to the MS-ISM include:

- A bachelor's degree from a regionally accredited university
- Overall GPA of 2.75 or better on a 4.0 scale
- GMAT score of 500 or greater, or GRE score in the upper 50th percentile with an analytical writing score of 2.5 or higher.
- A completed FSU MBA/MS-ISM application
- Official transcripts (in English) from all colleges and universities attended
- A current resume
- A word processed writing sample explaining your reasons seeking admission to the MS-ISM
- Three letters of recommendation attesting to applicants academic capabilities and motivation to succeed in graduate studies
- International students require all the above and a TOEFL of 500 or higher, copy of passport, financial statement, and official bank statement

Following is the SCH production by international and domestic students since the last MS-ISM APR in 1998.

A more complete student and program profile is located in appendix x.

MS-ISM Production

MS ISM SCH Production			
Sem/Year	**International**	**Domestic**	**Total SCHs**
Fall 1998	266	494	760
Fall 1999	301	528	829
Fall 2000	608	563	1171
Fall 2001	606	525	1131
Fall 2002	487	439	926
Fall 2003	273	327	600
Fall 2004	231	255	486

Employability of Graduates

This has not been tracked. Many of our graduates are international and while some may do an OPT, nearly all return to their native countries within twelve months and when for the most part contact is lost. Domestic students are frequently entering the program already employed. For those students who pursue the MS-ISM full time and seek employment after graduating, we know of no one seeking employment.

Program Capacity

We are comfortably staffed and have enough adjunct faculties to cover the CBGP programs. Obviously, as enrollment grows additional faculty will be needed. The challenge facing the university and our program is identifying doctorally qualified persons, in sync with quality founded programs/systems/courses, which have or can be delivered via the internet or internet supported classes.

Retention and Graduation

Since fall 2000 398 students have commenced graduate studies. Of that number 83 have not enrolled in a class during the past twelve months, an 80% retention rate for this period.

That said graduate program retention is a tough number to calculate. Lot's of reasons, but let's start with the most obvious, they're mostly non-traditional students balancing work, family, and life commitments with graduate education. Frankly, if the student's priorities are properly aligned, grad school is the first obligation sacrificed when conflicts in life demands arise. We have students who only get two employer paid classes a year and have taken both in a single semester then wait. We've lost at least four grad students who where called in active service. And on it goes. Many of the 83 above will reenter and complete MS degree requirements.

Facilities and Equipment Evaluation

Attached is the "CBGP Server Configuration."

These servers are the technical foundation of all CBGP activity including:

- Server space for all MS ISM classes
- Student web space
- Faculty web space
- CBGP web and DB sites and files
- CIS Department server space
- Student organization space

The servers also support the on-line MBA program.

Servers are adequate at this time for their intended purpose.

CBGP Server Configuration

COBNT1 – Application Development Server/Back up server
161.57.24.12

-Microsoft Windows 2000 Server SP4
-Norton Anti-Virus Corporate Edition 7.6
-Oracle 9i
-Coldfusion MX 6.1
Supports:
Grad classes

COBNT2 – Undergrad
161.57.24.7

-Microsoft Windows 2000 Server SP4
-Microsoft .NET FrameWork
-Norton Anti-Virus Corporate Edition 7.6
-Coldfusion MX 6.1
-SQL Server 2000 SP3
Grad
Supports:
Undergrad classes
Undergrad Faculty's website
EDUC 205 + 206
International Student Organization

COBNT3 – Graduate Student Web Server
161.57.24.8

-Microsoft Windows 2000 Server SP4
-Norton Anti-Virus Corporate Edition 7.6
-Coldfusion 4.5
-SQL Server 2000 SP3
Undergrad
-ServerU
Supports:
Grad websites
Grad

COBNT4 – Production Web server
161.57.24.20
161.57.24.11 (sparsa)
161.57.24.6 (cbgp.ferris.edu)
161.57.24.18 (mba.ferris.edu)
161.57.24.19 (aitp website)

-Microsoft Windows 2000 Server SP4
-Microsoft .NET FrameWork SDK
-Norton Anti-Virus Corporate Edition 7.6
-Coldfusion 4.5
CBGP website

Section 5

Summary, Conclusions, and Recommendations

A. Relationship to Mission

The MS-ISM is in sync with the FSU Mission as an innovative cutting edge graduate level career oriented technical program serving the state's non-traditional students and delivered in a manner that accommodates these stakeholders.

B. Program Visibility and Distinctiveness

The Ferris State University MS-ISM is distinctive among the state universities. It is the only one of its type that focuses on the knowledge and skills for effective management in an outsourcing environment. The technical concentrations options are specialized, targeted, and focus on domestically in-demand skills.

C. Program Value

The MS-ISM provides institutional value in a number of ways. The program has built a reputation as a quality, relevant, and value-added career and technical skills enhancing degree that enhances institutional image. The MS-ISM has long been a cutting edge innovator in pedagogy. The program is an institutional source of valued and frequently used university faculty expertise and training. The MS-ISM program attracts academically talented and technically skilled students that serve as a campus-wide short-term economical employment pool. The MS-ISM faculty have built corporate partnerships with major international vendors and secured hundreds of thousands of donated equipment and software.

D. Enrollment

Enrollment in the MS-ISM appears to have stabilized at its current level. The current focus on domestically needed skills and an aging IT industry work force holds the promise of a brighter enrollment picture in the next few years. Beyond that MS-ISM faculty have expanded their skill sets, forged ahead in preparing for and developing new courses in response to emerging trends and needs, and have engaged the pillar of more cross discipline programs and partnerships.

E. Characteristics, Quality and Employability of Students

The quality of MS-ISM students is exceptional. What one expects from competitive graduate program admission. While the program's primary objective is not entry level job training (most students have jobs) there have been some instances where that has not been the case. To the best of our knowledge all have found employment.

F. Quality of Curriculum and Instruction

Program quality as judged by stakeholders is correctly targeted and for the most part properly focused. Quality of instruction is very good and has improved since 2004. That said, there's always room for improvement and the CBGP Department will continue to seek out improvement opportunities.

G. Composition and Quality of the Faculty

The MS-ISM is delivered by three full-time tenured or tenure track faculty. Current staffing is at equilibrium with current enrollment and new initiatives. The quality of these three faculties is in every way exemplary. All are highly skilled in their particular areas of expertise. All are committed to and strive to produce graduates that possess current and relevant business and organization skills. The MS-ISM faculty responds rapidly to changes in the information technology industry and are commitment to outcomes assessment (all graduate courses have defined outcome and assessment components), and continuous quality improvement. Additionally all serve the university and colleges in a host of ways.

Funding, Facilities, and Faculty

The MS-ISM shares S&E and graduate assistantship (GA) budget with the MBA and departmental service course offerings. Current S&E and GA funding levels have been adequate to meet operational needs. Over the past few years, one-time institutional funding has responsive to departmental needs. Profit sharing from off-campus programs offered through UCEL and ATC provide the funding for faculty training, conferences, software and hardware purchases, and as an emergency supplement to S&E.

Summary, Conclusion, and Recommendations

Over the past three years, the MS-ISM has been reengineered several times in respond to unforeseen challenges. The current program is the accumulative outcome from three years of effort that included input from stakeholders and best information. It is expected that focusing on the new program mission, target market, expanded service course offerings will reverse a three-year downward trend in SCH production.

The MS-ISM program remains a viable graduate program and the faculty a valuable institutional resource. Program marketing and promotion could however, increase product awareness and accelerate SCH growth.

I. Vita

A. Name: Greg E. Gogolin, Ph.D.
Rank: Professor
Tenure/Non-Tenure: Tenured
Department or Division: College of Business/Graduate Programs

Teaching Experience:
Areas of Involvement (in teaching)

2004 – present:	Ferris State University, Professor: Project Management, Database Administration, ISM/MBA Capstone, Information Systems, Business Intelligence.
2001 – 2004:	Ferris State University, Associate Professor: e-Commerce, Database Administration, ISM Capstone, Project Management, Human Aspects.
1999 – 2001:	Ferris State University, Assistant Professor: e-Commerce, Database Administration, Client/Server, Human-Computer Interaction.
1988 – 1999:	Ferris State University, Instructor (Part-time): Introduction to Data Processing, Personal Computers, Client/Server.
1992 – 1993:	Davenport College, Instructor (Part-time): Personal Computers.

B. Educational Background

2004	P.M.P., Project Management Institute Certified Project Manger
2000	Ph.D., Michigan State University Major: College and University Administration Cognate: Instructional Technology
2000	20 doctoral credits, Nova Southeastern University Major: Computer Information Systems
1991	M.S., Ferris State University Major: Computer Information Systems Management
1987	B.S., Ferris State University Major: Computer Information Systems
1987	B.S., Ferris State University Major: Applied Biology
1983	A.A., Ferris State University Major: Arts

Submitted: September 30, 2004

C. Prior Experience not in Education

1991 – 1999	Amway Corporation Systems Analyst, Database Administrator, Project Manager Grand Rapids, MI
1987 – 1991	Gerber Products Computer Programmer, Senior Analyst/Programmer Fremont, MI
1987	Advanced Systems Applications Computer Programmer Chicago, IL
1984 – 1987	ShortStop, Inc. Retail Store Manager Reed City, MI

D. Professional Organizations

Currently:
Academic Computing Machinery (ACM)
International Alliance of Teacher Scholars
Project Management Institute

Formerly:
Information Systems Student Association
Information Technology Management Association
Institute of Electrical and Electronics Engineers (IEEE)
West Michigan PowerBuilder User Group
International Sybase User Group
ABT Project Management User Group

E. Professional Meetings Attended

American Marketing Association: 2003
Lilly Conference on Teaching: 2001
Information Technology Management Association: 1999 – 2000
Lilly Conference on Teaching: 2000
IBM Lotusphere: 1999
Project Management Institute: 1999
ABT Project Management User Group: 1998

Submitted: September 30, 2004

G. Publications

"The Difference Between Here and There," The Grand Rapids Press, June 2, 2003.
"A Case Study of an Approach to Nursing Education using a Mixed Model of Distance and Live Instruction," Dissertation, June 2000.
"An Evaluation of CASE Technology compared to traditional Third-Generation Development Methodologies," Thesis, December 1990.
Submitted/In Process
"Developing a Backup and Recovery Strategy," submitted to SQL Magazine, September, 2003.
"Intranets," submitted to Internet Encyclopedia, John Wiley & Sons, Fall 2002.

H. Other Research Activity

Extensive: study of effectiveness of distance education (Internet based).

Extensive: have directed 65 capstone projects, the majority of which have a research component. 2002-present.

Extensive: related to dissertation (A Case Study of an Approach to Nursing Education using a Mixed Model of Distance and Live Instruction).

Extensive: study of Internet students (Learners with a Quiet Voice).

I. Consulting

Consulting to public and private school systems in the use of databases and Internet technology to support instruction, 1999 – present.

Self-employed web technology and database consultant, Rockford Files, LLC, 1999 – present.

J. Professional Growth Activities

Attended more than 3 dozen seminars, workshops and conferences, 1991 – present.

Reading of related professional materials published by leading computer industry sources including Journal of the ACM, IEEE, Que, Business Week, DM Review, Internetworld, Wired and Communications of the ACM.

Frequent visitor to various web sites and subscriber to multiple list-serves.

Submitted: September 30, 2004

K. Seminars, Training Programs, etc., Conducted for Business and Industry

Oracle 9i Advanced Database Administration, 2004
Banner Oracle PL/SQL Training, 2004
Banner Oracle Advanced Training, 2004
Banner Oracle Intro Training, 2004
Oracle 9i Database Administration, updated. 2003
Advanced Microsoft .Net, 2003.
Oracle 9i Database Administration, 2002.
Oracle 9i SQL, 2002.
Fastrack to ColdFusion, 2001.
Database training, Newaygo County ISD employees and consultants, 2001-present.
e-Commerce workshop for Ferris State University president and vice-presidents, 2002.
Database training, Sagestone Corporation, 2001.
e-Commerce workshop at Grand Rapids Community College, 2000.
Web training for teacher and students in Rockford Public School System.
Project Management Training: Amway Corporation, 1999.
Information Systems Development Methodology Training: Amway Corporation, 1999.

L. Professional Presentations, Speeches, etc.

The Effectiveness of Distance Education (LILY Conference, Big Rapids); Is Your Organization Ready For e-Commerce (ITMA, Grand Rapids); e-Business (Grand Rapids); Information Systems Project Management (ITMA, Grand Rapids); e-Commerce in business classes (Ferris business students)

M. Institutional Services Performed

University-Wide Committees: Banner Steering Committee (2003 – present), Banner Oracle License Committee (2003-2004), University Curriculum Committee (2003), Web Advisory Board (2001- 2003), ERP Committee (2003), Web Policy Board (2000-2001), Chief Technology Officer search committee (2002), Nursing faculty search committee (2001).

College-Wide Committees: chair of College Curriculum Committee (2002 – present), co-chair of Curriculum and Assessment Committee (2004 – present), College of Business Strategy Committee (2003 – present), promotion and merit committee (2004), development of bachelor's degree in e-Commerce (2001), nursing faculty search/recruitment committee (2001)

Department-Wide Committees: New ISM Curriculum Committee chair (2002), Program Advisory Board chair (2003 - present), Graduation Committee, New ISM Student Orientation Committee.

Advisor: faculty mentor, former Information Systems Management Student Association

Submitted: September 30, 2004

N. Professionally Related Community Activities

Event Directory – Special Needs Fundraiser, Osceola County Community Foundation, (2003-present).

Board of Christian Education, St. Peter's Lutheran Church and School, Rockford, MI.

Bi-monthly participant in Rockford Public Schools classroom volunteer (VIP) program (6 years).

II. Educational Background to document graduate course work in the field of Information Systems Management sufficient to support doctoral level preparation.

The following specific courses are presented to document graduate course work in the field of Information Systems Management sufficient to support doctoral level preparation:

a) Coursework taken as part of Ph.D. in Educational Administration (College and University Administration) from Michigan State University:

1. Planning, Budgeting and Evaluation
2. Research Practicum
3. Educational Inquiry
4. Training in Industry
5. Strategies for Teaching Adults
6. Teaching and Learning with Technology
7. Introduction to the Learning Society
8. Organizational Theory
9. Instructional Design
10. Quantitative Methods
11. Doctoral Research to support Dissertation titled "A Case Study of an Approach to Nursing Education using a Mixed Model of Distance and Live Instruction."

b) Coursework taken as part of a Ph.D. program in Computer Information Systems from NOVA Southeastern University:

1. Software Engineering
2. Human-Computer Interaction
3. Project in Human-Computer Interaction
4. Networking
5. Decision Support Systems
6. Project in Decision Support Systems

c) Master of Science in Computer Information Systems Management.

Submitted: September 30, 2004

III. Teaching Experience sufficient to document doctoral level expertise

Curriculum development activities include the following: chair of College of Business Curriculum Committee, co-chair of College of Business Curriculum and Assessment Committee, member of University Curriculum Committee, chairing the review and modification of the Information Systems Management curriculum; serving on committee to develop multi-disciplinary e-Commerce degree.
Course development activities include the following: developed new graduate courses in Business Intelligence, Advanced Database, Information and Analysis Systems, Graduate Capstone, Client/Server Management, e-Commerce Business Design, Human-Computer Interaction, e-Commerce Architecture, e-Commerce Seminar, Database Administration.

Courses taught include the following: Database Administration, Advanced Database Administration, Capstone, Project Management, e-Commerce Business Design, Human-Computer Interaction, Client/Server Management, e-Commerce Architecture, Client/Server, Microcomputer Applications.

Teaching Techniques include the following: emphasize active learning by employing techniques including applied learning, cooperative learning, teams, research, case studies, presentations, and critical analysis. Internet, interactive video, streaming video (commercial and self-produced), course web pages, on-line discussion databases, chat, computers and a variety of other technologies are heavily integrated.

IV. Documented Practical Experience

In addition to participating in program and course development and using a variety of teaching techniques (documented in III above), activity includes the following: faculty member teaching in ISM, MBA and CIS (2000) programs, program coordinator for Information Systems Management graduate program, active professional consulting.

Work experience outside of teaching has been directly related to teaching assignments as follows: sixteen years of recent full-time work experience in Information Systems, which included software development, systems analysis, database administration, web development, Intranet management and design, project management, department management, contract negotiation, use of third-party resources, outsourcing, hiring & termination, and international business experience.

Submitted: September 30, 2004

V. Consulting Experience

Consulting experience ties in to teaching in the classroom as follows: assist in development and integration of database and web technologies into curriculum for public school systems, project management of ongoing projects, refine computer skills by developing software and providing hardware and networking assistance, remaining current in the field by actively working with people and organizations in Information Systems Management.

VI. Scholarly Activity

Scholarly activity includes the following: submission of professional article on database backup/recovery, submission of professional article on Intranet technology, developing and conducting a study on the effectiveness of two-way interactive video in an educational setting; working on study of the effectiveness of Internet instruction, developing a study evaluating learning styles, personalities, and their appropriateness in an Internet classroom; participate in faculty learning communities; developing web-based materials to be used as on-line textbooks in support of classroom instruction; conducting secondary research in support of curriculum development in e-Commerce and e-Business; general research and reading which permit involvement in curricular change and in the development of new programs; supervision of several dozen graduate capstone and thesis projects.

Submitted: September 30, 2004

1. Vita

A. Name: Douglas L. Blakemore

Rank: Assistant Professor

Tenure/Non-Tenure: Tenure

Department or Division: College of Business/Information Systems Management

Teaching Experience:
Areas of Involvement (in teaching)

1992 - 1993: Baker College of Cadillac, Instructor (Part-time): Introduction to Information Systems, Database Management, Systems Analysis.

1993 - 1997: Baker College of Cadillac, Instructor (Full-time): Programming in Basic, Windows, Introduction to the Internet, Database Management, Networking with Novell, Systems Analysis and Design, Microsoft Office, Computer Architecture.

1997 - 1999 Ferris State University, (Part-time): Microcomputer Applications, Local Area Networks, Software Systems, Systems Analysis and Design, Network Management, Data Communications, Database Management Systems, PC Strategic and Operational Management Issues.

1999 - Present Ferris State University, Assistant Professor: Database Management, Local Area Networks, Strategic E-commerce concepts, E-commerce Architecture, Data Communications, Linux, Unix, Legal and Ethical issues, Cold Fusion, Multimedia Design, Information Systems Management, Small Business Management (for Davenport University)

B. Educational Background

2003 Ph. D., Capella University – Organization and Management

1993 C.I.S.M., Ferris State University

1979 B.A. Spring Arbor College
Major: Philosophy and Religion

C. Prior Experience not in Education

1982 - Present Owner, Cornerstone Services
Computer sales,
repair,
network installation and management
consulting in:
network design and installation.
e-commerce issues
web design concepts
telework

1996 - Cadillac Leadership Program - established an adult day care facility

D. Professional Memberships

Currently:
Information Technology Management Association
Idea Group, Information Resources Management Association
ACM, GLIMA

E. Professional Meetings Attended

Comdex Chicago - 1998
Novell Authorized Reseller 1985
ITMA meetings - 1998, 1999
Leadership Program - Cadillac 1996
GLIMA – Greenville – 2004
AICPA – Traverse City - 2004

F. Papers Presented:
Online Education - 1997 Capella University
Managing the technology explosion - 1997 Capella University
Emerging Technologies and the changing face of the Human Race - 1998 Capella University
Organizational Group Dynamics In A New Era - 1998 Capella University

G. Publications

"Introduction to DOS", Published and sold at Baker College, 1996, 1997
"Impact of Gender and Race on Attitudes Towards Telework" 2003

H. Other Research Activity
Upper class college students awareness of and attitudes towards telework.

I. Consolation

Self-employed computer consultant 1982 - Present

J. Professional Growth Activities

Developed skills in programming in PHP, Perl, MySQL, PostGRESQL - 2000 - present
Developed several Linux systems to study Linux operating system including:
Red Hat 5.2, 6.0, 6.1, 6.2, 7.0,7.1, 7.2 2000- present
Caldera Linux - 2000
Suse Linux - 2000
Corel Linux - 2000
Developed several Samba configurations on Linux to examine capability, 2000 - present
Developed DHCP services on Linux and Windows platforms – 2001 – present
Developed skills in setting up Windows 2003 Server - 2003
Developed skills in setting up Windows 2000 Server – 2001
Enhanced skills in managing Windows NT 4.0
Enhanced skills in managing Windows 98
Enhanced skills in Novell 5.0 and 5.1
Attended a number of seminars, workshops and conferences, 1982 – present in areas such as E-commerce, networking, management and accounting.
Certified Dyslexia Instructor - 1994
Interactive Video Classroom techniques using Picturetel - 1996
Fraud Examination – 2004

K. Seminars, Training Programs, etc,. Conducted for Business and Industry

Basic Linux configurations
Samba for NT networks using Linux
Introduction to the Internet
Distance Education
Managing the networked environment
Microsoft Excel 2000 advanced functions for accounting
Windows 95
Microsoft Works
Network design considerations
Database concepts
Solaris Unix for Oracle managers
Multimedia

L. Professional Presentations, Speeches, etc.

Internet for Education -
Public debate on the benefits of Online Education
E-commerce
Y2K readiness
Using Turnitin.com for educators
Linux – Current and future potential for server and desktop Operating Systems

M. Institutional Services Performed

University-wide Committees:
BTC advisory committee
Search committee for Director of Grand Rapids campus
Program Review Committee
College Council Committee
ISM department development committee
ISM department program coordinator
Researched and promoted the institution purchase of plagiarism checking software
Sabbatical Request Review committee
Training in Solaris 9 for the Banner project
Faculty Advisor for Delta Chi

N. Recognition and Honors

CISM degree - Graduated with full honors - 4.0 GPA

O. Professionally Related Community Activities

Consulted with various public schools on network design
Made numerous presentations to various businesses and organizations on selected information management and computer systems topics

II. Educational Background to doctument graduate course work in the field of Management sufficient to support docotoral level preparation.

The following specific courses are presented to document graduate course work in the field of Management sufficient to support doctoral level preparation:

a) Coursework taken as part of Ph.D. in Organization and Management from Capella University.

1. Management & Organizational Behavior (4 credits)
2. Accounting & Financial Management (3 credits)
3. Survey of Research in Societal and Cultural Change. (4 credits)

4. Survey of Research in Human Development and Behavior (4 credits)
5. Survey of Research in Organizational and Group Dynamics (4 credits)
6. Advanced Study in Research Methods (4 credits)
7. Marketing Strategy and Practice (4 credits)
8. Strategic Planning (4 credits)
9. Proseminar in Effective Distance Education (4 credits)
10. Special Topics in Novell Administration (4 credits)
11. Special Topics in Emerging Technologies for Business (4 credits)
12. Special Topics in Managing the Technology Explosion (4 credits)
13. Special Topics in International and Intercultural Opportunities in Business (4 credits)

III. Teaching Experience sufficient to document doctoral level expertise

Curriculum development activities include the following:

Developed courses in both an on ground and on-line environment for the Masters in Information Systems at Baker College Online and for the Masters in Information Systems Management program at Ferris State University; on the curriculum committee at Baker College for the Computer Science department. As the department head, chaired the conversion of all of the core and elective courses in the ISM department to the new course prefixes.

Course development activities include the following:

Network design and management 1, 2, 3 (at Ferris State University),
Network Management, Introduction to Networking with Novell (at Baker College),
Systems Analysis and Design (at Baker College),
Introduction to the Internet, courses in various office packages including:
Microsoft Office,
Word Perfect Office and
Lotus Smart Suite (at baker College).

Converted the Database Administration course into an online format.

Courses taught include the following:

Ecommerce Architecture
Ecommerce Strategy
Legal and Ethical Issues
Small Business Management
Advanced Unix/Linux
Introduction to Information Systems
Data Communications
E-Commerce Design with Cold Fusion

Network Management (With Novell, Windows NT and Linux)
Microsoft Office
Word Perfect
Lotus 123, Basic Programming
Computer Architecture
Database Management
Microsoft Access
Multimedia Instruction for Educators
Information Systems Management for Educators.
Systems Analysis and Design
Software Systems
PC Strategic and Operational Management Issues
Telecommunications
Undergraduate Capstone Project.

Teaching Techniques include the following:
emphasizing active learning by employing a variety of techniques including:
group projects
teams
hands-on projects
journals,
periodical reviews
student presentations of research findings
case analysis
discussions of current events and trends
inviting guest speakers
using whiteboards, overhead transparencies, computer programs such as power point with projectors
online chat rooms,
email
discussion boards
web pages

IV. Documented Practical Experience

In addition to participating in program and course development and using a variety of teaching techniques (documented in (III above), current activities include the following:

preparing to convert more on ground courses to an online environment,

responding to student requests in our department for more technology,

designing more courses in understanding and using current technology such as E-commerce, E business, Advanced Network Management and Systems Analysis.

V. Consulting Experience

Consulting experience ties in to teaching in the classroom as follows: consulted with various departments and with various schools techniques related to teaching classes in an online environment. This relates to classroom experience in that interacting with other faculty interested in delivering online courses helps to promote higher quality standards in training and classroom management.

1982 - present I am the owner of Cornerstone Services. As such I have and continue to consult with several companies in Michigan and around the country on issues of telework, technology enhancements, networking and e-commerce.

VI. Scholarly Activity

Scholarly activity includes activities such as the following: developing and conducting student and employer surveys for program development. Ferris State University study in the area of students attitudes of telework (as part of my dissertation).

VITA

A. Name: Laksma Tirtohadi
Rank: Assistant Professor
Tenure/Non-Tenure: Non-Tenure (in tenure track)
Department: College of Business Graduate Programs

Teaching Experience:

2001 – present:	Ferris State University (Assistant Professor) Business Process Reengineering, Integrated Capstone Project, ASP.NET Development for e-Business, e-Business Implementation, e-Business Strategy, Software Engineering, Web Management and Development, Database Management and Administration, Introduction to Information Systems Management (technical session).
2000 – 2001:	Ferris State University (Part-time Instructor) Web Management and Development, Introduction to Information Systems Management (technical session).

B. Education Background

Present	Nova Southeastern University, Florida (Candidate) Ph.D. in Information Systems
1998	Ferris State University, Michigan M.S. in Information Systems Management
1996	Sekolah Tinggi Teknik Surabaya, Indonesia B.S. in Computer Science

C. Prior Experience not in Education

3/1999 – 8/2000	Ferris State University, Michigan Technical Content Developer
8/1998 – 3/1999	Ferris State University, Michigan Assistant Lotus Notes Administrator
5/1998 – 7/1998	Ferris State University, Michigan Assistant Network Technician
1/1998 – 4/1998	Ferris State University, Michigan Assistant Computer Resource Manager
1995 – 1996	Gracia Inti Computer, Indonesia Database Programmer
1994 – 1995	Sonic Computer, Indonesia C Programmer

D. Professional Memberships

Currently:
Association for Computing Machinery (ACM)
Institute of Electrical and Electronics Engineers (IEEE)
Fusebox Framework User Group
IBM Software Premier Club
West Michigan .NET User Group

Formerly:
Lotus Developer Network
Information Systems Management Student Association
Information Technology Management Association (ITMA)

E. Professional Meetings Attended

2004	ACBSP Conference Region 4
1997 - 2002	Information Systems Management Student Association
1999	Information Technology Management Association

F. Papers Presented
Teaching Business Process Reengineering with a Simulation Game and Process Simulation Software (with Sid Sytsma), October 2004.

G. Publications

"SSI City: The Virtual Community", Thesis, December 1998.
"Design and Implement an Electronic Chess Board and the Software to Solve Checkmate Problem", Thesis, December 1996.

H. Other Research Activity

Measuring Web Site Performance in Education Settings
A Survey in Complex Adaptive Systems and Social Networks

I. Consulting

2004 Michigan Society for Repository Care (with a student)
Provide directions for redeveloping the Web site.

2003 Ferris State University (with a former student)
Provide feedback and solution for Millennium project and other internal applications.

2003 Life's Portal (with a former student)
Provide general Web usability and Web Service programming solutions.

2003 Schuberg Agency (with a former student)
Provide general Web site development solutions.

2003 Grand Rapids Press (with a former student)
Provide general Web programming solutions for its intranet.

2002 Meta0
Design and develop a startup e-Commerce site.

2002 Presque Isle County Advance (with a former student)
Provide general Web usability and Web Service programming solutions.

2002 Ferris State University
Design and develop College of Business's Web site.

2002 Greenville Public School (with Greg Gogolin and Rick Mislan)
Install and setup Microsoft SQL and DNS servers.

2001 Newaygo County Intermediate School District (with Greg Gogolin and Rick Mislan)
Develop complex reports using Microsoft SQL Server and ASP scripting language.

2000 Bates and Associates (with Greg Gogolin)
Work with a partner in designing and implementing a database-driven Web site.

2000 – present
Consultant in Web application development.

J. Professional Growth Activities

Regularly take certifications in work related area.

Frequently attend regional and national seminars, workshops, and conferences related to the information technology.

Read professional journals and articles published by ACM, IEEE, Informs, and Interfaces.

Active member of Macromedia ColdFusion Forum and Microsoft Developer Network.

K. Seminars, Training Programs, Conducted for Business and Industry

Web development training for Ferris Web developers.

L. Professional Presentations, Speeches

2004 Teaching Business Process Reengineering with a Simulation Game and Process Simulation Software (with Sid Sytsma)
ACBSP Conference Region 4 in Schaumburg, IL.

2002 Microsoft .NET Technology
Ferris State University graduate students.

1999 Introduction to Distance Learning (with Doug Blakemore)
Information Technology Management Association in Novi and Grand Rapids.

M. Institutional Service Performed

College Committee: Data Collection and Management committee member (2004), Mission and Vision Statements committee member (2004), and Sabbatical Leave committee member (2003)

Department Committee: ISM Technical Directional committee member (2002 – present)

Advisor: Information Systems Management Student Association (2000 – 2002)

N. Recognition and Honors

Facilitated half a million dollars donation from IBM Software Engineering for Educational Development program (2003).
Awarded to receive Professional Development Incentive from Center for Teaching, Learning, and Faculty Development (2003).
Facilitated the Ferris Library to subscribe Association for Computing Machinery Digital Library (2004).

O. Professionally Related Community Activities

Volunteer at the Intel International Engineering and Science Fair in Cleveland, OH (2003).

NEW COURSE INFORMATION FORM

Course Identification:

Prefix:	Number	Title
MISM	610	Database Management and Administration

Course Description:
Students investigate progressive database management and administration principles. Topics include design, implementation, and management techniques. Students utilize data definition and manipulation languages on leading database platforms. Emerging trends in database technology are also scrutinized.

Course Outcomes and Assessment:
Upon completing this course, students will be able to:

1. Understand database systems and their environment.
   Assessment: Students will be able to identify and explain in writing: key components of database systems, such as platforms, DBMS software, purpose and applications in creating information systems, and tools such as queries, reports, and views.
2. Understand responsibilities and tasks of a database administrator.
   Assessment: Given a case study, students will be able to develop standards and procedures for the assigned database design challenge addressing security issues, DBMS upgrade policies, backup/recovery strategies, and process as well as database implementation strategies.
3. Design and implement a database system.
   Assessment: Given a case study, students will be able to:
   a. Write the conceptual framework for the database system.
   b. Create the logical design, which includes relations, attributes, keys, and relationships.
   c. Using a current DBMS tools, students will create physical design including tables, data types, primary and foreign keys, field integrity, database integrity, create views, data access, and manipulation routines.
   d. Using a physical design tool, students will create necessary queries, reports, and views to implement a fully functional database system solution.

Course Outline including Time Allocation:
1. Database fundamentals. (3 hours)
   a) Hardware b) Software c) Tools

2. Database administration. (15 hours)
   a) Standards b) Installation and upgrading policies c) Security issues d) Backup/recovery strategies and disaster planning e) Database implementation strategies f) Migration

3. Database design. (15 hours)
   a) Conceptual b) Logical c) Physical d) Tuning

4. Data languages and tool integration. (6 hours)
   a) Data Definition Language b) Data Manipulation Language c) Stored procedures d) Integration

5. Evaluation framework. (6 hours)
   a) Emerging trends b) Impact analysis c) Related issues

database management and administration

course number and title

MISM 610 Database Management and Administration

course time and place

WebCT (7 weeks): Oct 22 - Dec 9, 2005
Big Rapids (BUS 116): Oct 22-23, Nov 12, and Dec 3 from 9:00 a.m. to 5:00 p.m.

course textbook

- Connolly, T. M., & Begg, C. E. (2001). *Database Systems: A Practical Approach to Design, Implementation, and Management (3th ed.).* Harlow, England: Addison Wesley Publishing.
- Mullins, C. S. (2002). *Database Administration: The Complete Guide to Practices and Procedures.* Boston, MA: Addison Wesley Publishing.

other course readings

- Mauer, L., Solomon, D., & McEwan, B. W. (2001). *Sams Teach Yourself Transact-SQL in 21 Days.* Indianapolis, IN: Sams Publishing.
- Waymire, R., & Sawtell, R. (2000). *Sams Teach Yourself Microsoft SQL Server 2000 in 21 Days.* Indianapolis, IN: Sams Publishing.

course materials

- DreamHome.mdb
- DH instance
- DH database
- DH tables
- DH data
- DH constraints
- DH additional tables
- DH domain PropertyRooms
- DH trigger OwnerNumber
- DH permissions
- Backup/Restore
- Backup/Restore with Log

Please check "Resources" in WebCT for other course materials.

tools

You may use any tools you feel comfortable with. However, in the class I am going to introduce Microsoft SQL Server.

course description

Students investigate progressive database management and administration principles. Topics include design, implementation, and management techniques. Students utilize data definition and manipulation languages on

leading database platforms. Emerging trends in database technology are also scrutinized.

course outcomes and assessments

Upon completing this course, students will be able to:

- Understand database systems and their environment.
  Assessment: Students will be able to identify and explain in writing: key components of database systems, such as platforms, DBMS software, purpose and applications in creating information systems, and tools such as queries, reports, and views.
- Understand responsibilities and tasks of a database administrator.
  Assessment: Given a case study, students will be able to develop standards and procedures for the assigned database design challenge addressing security issues, DBMS upgrade policies, backup/recovery strategies, and process as well as database implementation strategies.
- Design and implement a database system.
  Assessment: Given a case study, students will be able to:
  1. Write the conceptual framework for the database system.
  2. Create the logical design, which includes relations, attributes, keys, and relationships.
  3. Using a current DBMS tools, students will create physical design including tables, data types, primary and foreign keys, field integrity, database integrity, create views, data access, and manipulation routines.
  4. Using a physical design tool, students will create necessary queries, reports, and views to implement a fully functional database system solution.

attendance policy

Student must come to the class on time.
Student should not miss more than one regular session (One weekend session equals two regular sessions).

grading policy

Discussions in WebCT: 20%
Assignments: 30%
Exercises (team work): 20%
Final Exam: 30%

Late assignment will be marked down 20 points.
No submission will be accepted after the class ends.
There will be no grade changes after the class ends.
To pass this course, all assignments must be the original work of the student or team.

Grade	Point
A	95 - 100
A-	90 - 94
B+	85 - 89
B	80 - 84
B-	75 - 79
C+	70 - 74
C	65 - 69
C-	60 - 64
F	0 - 59

course dishonesty policy

Refer to FSU Student Handbook.

course outline

1. Database fundamentals.
    a. Hardware
    b. Software
    c. Tools
2. Database administration.
    a. Standards
    b. Installation and upgrading policies
    c. Security issues
    d. Backup/recovery strategies and disaster planning
    e. Turnover management
    f. Migration
3. Database design.
    a. Conceptual
    b. Logical
    c. Physical
    d. Tuning
4. Data languages and tool integration.
    a. Data Definition Language
    b. Data Manipulation Language
    c. Stored procedures
    d. Integration
5. Evaluation framework.
    a. Emerging trends
    b. Impact analysis
    c. Related issues

assignments

All assignments and exercises are in WebCT.
Students may expect feedback for their assignment within 24 - 48 hours after the due date.

Week 1 (Oct 22 - 28). Face-to-face meeting on Saturday-Sunday, Oct 22-23 from 9:00 a.m. to 5:00 p.m.

Activities

- Read Database Systems by Connolly and Begg.
    - Chapter 1
    - Chapter 2
    - Chapter 3 (You may skip the mathematical notations.)
- Prior meeting, read Database Systems by Connolly and Begg.
    - Chapter 9 and 10.
- Participate discussions in WebCT.

Face-to-face Meeting Activities

- Lectures on Conceptual and Logical Database Design.
- Do Exercise 1 (team work).

Week 2 (Oct 29 - Nov 4).

Activities

- Read Database Administration by Craig Mullins.
  - Chapter 1 and 2
- Participate discussions in WebCT.

Week 3 (Nov 5 - 11)

Activities

- Read Database Administration by Craig Mullins.
  - Chapter 7, 8, and 9.
- Do Assingment 1. Due on Nov 9 at 09:00 a.m.
- Participate discussions in WebCT.

Week 4 (Nov 12 - 18). Face-to-face meeting on Saturday, Nov 12 from 9:00 a.m. to 5:00 p.m.

Activities

- Read Database Administration by Craig Mullins.
  - Chapter 10, 11, and 12.
- Participate discussions in WebCT.

Face-to-face Meeting Activities

- Lectures on Physical Database Design and Data Manipulation Language.
- Do Exercise 2 (team work) .

Week 5 (Nov 19 - 25)

Activities

- Read Database Administration by Craig Mullins.
  - Chapter 14, 15, and 16.
- Do Assignment 2. Due on Nov 23 at 09:00 a.m.
- Participate discussions in WebCT.

Week 6 (Nov 26 - Dec 2)

Activities

- Read Database Administration by Craig Mullins.
  - Chapter 19, 20, and 22.

- Read Database Systems by Connolly and Begg.
  - Chapter 22
- Do Assignment 3. Due on Nov 30 at 09:00 a.m.
- Participate discussions in WebCT.

Week 7 (Dec 3 - 9). Face-to-face meeting on Saturday, Dec 3 from 9:00 a.m. to 5:00 p.m.

Activities

- Final exam.

miscellaneous

Any student who feels he or she may need an accomodation based on the impact of a disability should contact me privately to discuss your specific needs. Please contact the Disabilities Services Office at Arts and Sciences Commons 1017K or call (231) 591-3772 to coordinate reasonable accomodations for students with documented disabilities.

disclaimer

I reserve the right to make necessary and appropriate adjustments in this syllabus.

MISM 610 Database Management and Administration
Student Suggestions for Course Delivery Improvement

The exit competencies for this course (below) were defined on the course syllabus given to you early on in this course. Relative to these exit competencies, please assist us with course delivery improvement by responding to the following questions.

Thank you in advance as we strive to deliver the best course possible.

Exit Competency:

1. Understand database systems and their environment.
   Assessment: Students will be able to identify and explain in writing: key components of database systems, such as platforms, DBMS software, purpose and applications in creating information systems, and tools such as queries, reports, and views.

We are asking you to assist us in improving our delivery strategy. What worked well and what suggestions could you offer us that would enhance your understanding, knowledge, and/or efficiency in achieving these competencies?

Exit Competency:

2. Understand responsibilities and tasks of a database administrator.
   Assessment: Given a case study, students will be able to develop standards and procedures for the assigned database design challenge addressing security issues, DBMS upgrade policies, backup/recovery strategies, and process as well as database implementation strategies.

We are asking you to assist us in improving our delivery strategy. What worked well and what suggestions could you offer us that would enhance your understanding, knowledge, and/or efficiency in achieving these competencies?

Exit Competency:

3. Design and implement a database system.
   Assessment: Given a case study, students will be able to: Write the conceptual framework for the database system. Create the logical design, which includes relations, attributes, keys, and relationships. Using a current DBMS tools, students will create physical design including tables, data types, primary and foreign keys, field integrity, database integrity, create views, data access, and manipulation routines. Using a physical design tool, students will create necessary queries, reports, and views to implement a fully functional database system solution.

We are asking you to assist us in improving our delivery strategy. What worked well and what suggestions could you offer us that would enhance your understanding, knowledge, and/or efficiency in achieving these competencies?

Information Systems Management

APRC 2005-2006

Section 2 of 4

application development

course number and title

MISM 659 Application Development

course time and place

Tuesdays (Oct 25 - Dec 6, 2005) from 6:00 p.m. to 9:50 p.m. at College of Business room 116 with on-line requirements at http://www.ferris.edu/webct/

course textbook

No textbook, but highly recommended to have:

- Walther, S. (2003). *ASP.NET Unleashed (2nd ed.)*. Indianapolis, IN: Sams Publishing.

other course readings

- Conallen, J. (2003). *Building Web Applications with UML (2nd ed.)*. Boston, MA: Addison-Wesley.
- Howard, R. & Gibbs, M. (2003). *Microsoft ASP.NET Coding Strategies with the Microsoft ASP.NET Team*. Redmond, WA: Microsoft Press.

course materials

-

tools

Microsoft Visual Studio .NET 2003 (Get it from MSDNAA)
Microsoft ASP.NET Web Site
.NET Framework Home
Visual Studio .NET 2003 Posters
Microsoft .NET Framework 1.1 Software Development Kit
Microsoft .NET Framework 1.1 Redistributable Package

course description

This course is designed for students who want to use the most current tools and technology to create e-business applications. It covers platform architecture, object-oriented programming, class libraries, web form controls, data controls, universal data interchange format, and web services. Hands-on experience will be included throughout the sessions.

course outcomes and assessments

Upon completing this course, students will be able to:

1. Develop skills to use object-oriented technology and to build applications for e-business.
   Assessment: Students will be able to choose and use classes, methods, and properties to develop applications.
2. Develop skills to create database-driven Web applications.

Assessment: Students will be able to access data in database system and display them in browsers.

3. Develop skills to design and develop multi-tiered applications.
   Assessment: Students will be able to identify and separate presentation layer from business logic and data layer.
4. Develop skills to utilize universal data interchange format and to create Web-based application interface.
   Assessment: Students will be able to share data from one system to another by using universal data interchange format.
5. Develop skills to recognize future trends of application development.
   Assessment: Students will be able to discuss on-going development technology, standards, and issues by investigating academic and professional journals/articles.

attendance policy

Students must come to the class on time.
Student who misses class responsibles for catching up materials by her/himself.

grading policy

Attendence and activity in the class: 10%
Assignments: 60%
Final Exam: 30%

Late assignment will be marked down 10 points each day.
There will be no grade changes after the semester ends.
To pass this course, all assignments must be the original work of the student or team.

Grade	Point
A	95 - 100
A-	90 - 94
B+	85 - 89
B	80 - 84
B-	75 - 79
C+	70 - 74
C	65 - 69
C-	60 - 64
F	0 - 59

course dishonesty policy

Refer to FSU Student Handbook.

course outline

1. Overview of platform architecture and object-oriented technology.
   a. Features of the language runtime,
   b. Class libraries,
   c. Client/server technology,
   d. Object-oriented terms and concepts
2. Understanding and using server controls.
   a. HTML form controls,

   b. Web form controls,
   c. Server and client validation controls
3. Accessing, displaying, and formatting data from database.
   a. Data access,
   b. Data controls and bindings
4. Designing multi-tiered applications.
   a. Component-based model,
   b. Code-behind,
   c. Presentation layer,
   d. Business Logic,
   e. Data layer
5. Concept of accessing data in universal format and integrating applications.
   a. eXtensible Markup Language (XML),
   b. Document Object Model (DOM),
   c. eXtensible Stylesheet Language Transformations (XSLT),
   d. Web Services Description Language (WSDL)
6. Future trends in software development for e-Business.
   a. Technology trends,
   b. Software development methodology,
   c. Standard issues,
   d. Open-source code

assignments

Details of the first five assignments will be given in the classroom. In the meantime, you can start doing Assignment 6.

Students may expect feedback for their assignment within 24 - 48 hours after the due date.

Assignment	Due Date
Assignment 1: Form and Validation Controls	Nov 1, 2005
Assignment 2: ADO.NET and Data Controls	Nov 8, 2005
Assignment 3: Component-based Model	Nov 15, 2005
Assignment 4: Web Services and XML	Nov 22, 2005
Assignment 5: Advanced Web Services and XML	Nov 29 , 2005
Assignment 6: Survey Paper on Application Development Write a 15-page survey paper (excluding title page and reference list) that summarizes and organizes recent research results related to the topic. The source must come from peer-reviewed journals, such as ACM, Computer Database, and so on. The journals are available in the FLITE library and can be accessed electronically from on/off-campus. The paper must be written using APA format. All citations and references must be formatted properly. Submit the paper including all references through WebCT. You might want to compress them into a single file in ZIP format.	Dec 6 , 2005
Final Exam	*Dec 6 , 2005*

miscellaneous

Any student who feels he or she may need an accomodation based on the impact of a disability should contact me

privately to discuss your specific needs. Please contact the Disabilities Services Office at Arts and Sciences Commons 1017K or call (231) 591-3772 to coordinate reasonable accomodations for students with documented disabilities.

disclaimer

I reserve the right to make necessary and appropriate adjustments in this syllabus.

MISM661 Information Security

Tentative Syllabus - Instructor reserves right to modify when deemed appropriate

Instructor: Greg Gogolin, Ph.D.
Work/Phonemail: (231) 591-2437 FAX: (231) 591-2973 (WebCT e-mail preferred)
e-mail: Use WebCT ONLY
Office hours: 9am-1pm Wednesdays.

Prerequisites: MISM 670 or Instructor Permission.

Text
Principles of Information Security – Whitman & Mattord - ISBN 0619063181 (Required)
Cuckoo's Egg: Tracking a Spy Through the Maze of Computer Espionage - Stoll - ISBN 0743411463 (Required)

Tentative Schedule
Class meets Jan 10 - Feb 25 on-line, Fri 2/11 & Sat 2/12 in classroom. Course website in WebCT.

Course Format
This course will include a combination of research, evaluation, discussion, team and individual work. Some course cases for discussion are presented via instructor-created streaming video. The goal is to develop skills and understanding related to the critical issues surrounding Information Security.

Course Outcomes
Upon completing this course, students will be able to:

1. Research, evaluate and differentiate the legal, ethical and professional issues of Information Security.
2. Research, assess, and develop measures to control risks of Information Security.
3. Research, evaluate, and develop an Information Security Blueprint.
4. Research, evaluate, and develop an Information Continuity Plan.
5. Research, evaluate, and differentiate the various potential human, physical, and virtual security risks and threats to information systems. This is a main focus of the weekend meeting. Students will gain experience with a variety of security techniques including biometrics.

Assignments: The written portion of all projects must be turned in via WebCT using 12 point Times New Roman, Ariel or Georgia font. Headings may be larger font and/or bold. Assignments 2, 3, and the presentation are team based.

Deliverable	Description	Max Point Value	Due Date
Case 1	Complete in WebCT	5	Jan 19
Assignment 1	Detailed in WebCT	15	Jan 21
Case 2	Complete in WebCT	5	Jan 26
Assignment 2 - team	Detailed in WebCT	15	Jan 30
Case 3	Complete in WebCT	5	Feb 2
Assignment 3* - team	Detailed in WebCT	15 or 10*	Feb 6
Presentation - team	Presented to Class	10	Feb 12
Choice Proposal	Proposal for student	2	Feb 12

	choice assignment		
Assignment 4	Detailed in WebCT	15	Feb 15
Choice Assignment	Submit to WebCT	8	Feb 20
Course Assessment	Detailed in WebCT	5	Feb 25
Course Engagement	Regular and consistent interaction in all discussion topics.	21 (3 points/week)	Feb 25

***student has option of Information Continuity Plan worth up to 15 points or Journal worth up to 10 points.**

Cases:
Cases are to be done individually. There will be 3 cases presented in the course via WebCT using text and/or streaming video. These cases will outline a number of legal, ethical and professional issues related to the practice of information security. Each student is required to respond to each case via discussion thread in the time alloted for each case. Responses for each case must include the following components for a total of 5 points:

1) **Be professional and of sufficient depth to contribute to the advancement of the concepts raised (not just say 'I agree with Sue').**
2) **At least one of the posted responses for each case must cite (APA format) and summarize pure research (a journal from the ACM Digital Library in FLITE, not something simply Googled) that supports or refutes an argument presented in the original case or by a student posting.**
3) **Be an original response to the case**
4) **Be an original response to a student contribution**
5) **Be a follow-up response to a student contribution**

Presentation:
Each team will present their second assignment to the class on February 11. The weekend session will include a hand's-on component of biometric devices and other hardware and software security tools. Later in the session, each team will give an overview demonstration of one these tools or explain a different technology or procedure to the class.

Assignment 1:
There were a number of legal, ethical and professional issues and threats related to information security in the Cuckoo's Egg. Reconstruct the procedures that were established for detecting and reacting to the information security threats presented in the case and evaluate the appropriateness of these procedures. Additionally, contrast the legal and ethical issues presented from the perspective of Lawrence Berkeley Lab (the hackee) and from Markus Hess (the hacker). Finally, with the gift of hindsight, what would you do differently if you were Lawrence Berkeley Lab to catch Markus Hess earlier - and what would you do differently if you were Markus Hess to avoid detection. This project is to be done individually.

Assignment 2 (ISM and MBA students):
Develop an Information Security Blueprint for Ferris State University's IT department based on SP800-14 of the Computer Security Resource Center of the National Institute for Standards and Technology (csrc.nist.gov). With instructor approval, a blueprint may be developed for a different organization. Exchange teams are specified in the Team Assignment discussion thread. Teams must submit their assignment for exchange by January 25 to their exchange team and return the reviews by

January 28. Assignments and reviews must be exchanged via WebCT email with all four students and myself on the distribution list. If an assignment is not submitted for review by January 25, three points will be deducted from that team's assignment. If a review is not returned by January 28, three points will be deducted from that team's assignment. If the specified WebCT email procedure is not followed, three points will be deducted from that team's assignment. Teams should contact me for alternative arrangements if they do not receive an assignment for review from their exchange team. Reviews should include constructive feedback and suggestions for assignment improvement. The review is worth 3 points and the assignment is worth 12 points.

Assignment 2 (option for CJ students):
Develop an Incidence Response Plan from a law enforcement perspective for an entity approved by the instructor. The response plan must be developed based on a standard or precedent that is cited within the plan. Realize that responses probably include a substantial amount of survelience (similar to what was done in the Cuckoo's Egg) and this should be reflected in the plan. Exchange teams are specified in the Team Assignment discussion thread. Teams must submit their assignment for exchange by January 25 to their exchange team and return the reviews by January 28. Assignments and reviews must be exchanged via WebCT email with all four students and myself on the distribution list. If an assignment is not submitted for review by January 25, three points will be deducted from that team's assignment. If a review is not returned by January 28, three points will be deducted from that team's assignment. If the specified WebCT email procedure is not followed, three points will be deducted from that team's assignment. Teams should contact me for alternative arrangements if they do not receive an assignment for review from their exchange team. Reviews should include constructive feedback and suggestions for assignment improvement. The review is worth 3 points and the assignment is worth 12 points.

Assignment 3:
Develop an Information Continuity Plan that includes encompasses the following areas: business continuity, disaster recovery, incident response, and contingency. This should integrate with your Assignment 2. A student can submit Assignment 3 or Assignment 3 Option B for credit, but not both. Exchange teams are specified in the Team Assignment discussion thread. Teams must submit their assignment for exchange by February 1 to their exchange team and return the reviews by February 4. Assignments and reviews must be exchanged via WebCT email with all four students and myself on the distribution list. If an assignment is not submitted for review by February 1, three points will be deducted from that team's assignment. If a review is not returned by February 4, three points will be deducted from that team's assignment. If the specified WebCT email procedure is not followed, three points will be deducted from that team's assignment. Teams should contact me for alternative arrangements if they do not receive an assignment for review from their exchange team. Reviews should include constructive feedback and suggestions for assignment improvement. The review is worth 3 points and the assignment is worth 12 points.

Assignment 3 Option B:
Keep a journal of security issues in the news that impact business continuity. Summarize the issues and implications to business continuity, disaster recovery, incident response and contingency. Describe and evaluate the solution, if it exists, or describe a solution if one does not currently exist. There must be a minimum of 4 issues in your journal for each team member. A maximum of 10 points is possible for this assignment. A student can submit Assignment 3 or Assignment 3 Option B for credit, but not both. Exchange teams are specified in the Team Assignment discussion thread. Teams must submit their assignment for exchange by February 1 to their exchange team and return the reviews by February 4. Assignments and reviews must be exchanged via WebCT email with all four students and myself on the distribution list. If an assignment is not submitted for review by February 1, three points will be deducted from that team's assignment. If a review is not returned by February 4, three points will be deducted from that team's assignment. If the specified WebCT email procedure is not followed, three points will be deducted from that team's assignment. Teams should contact me for alternative arrangements if they do not receive an assignment for review from their exchange team. Reviews should include constructive feedback and suggestions for assignment improvement. The review is worth 3 points and the assignment is worth 7 points.

Assignment 4:
Develop a Risk Management Plan for the organization you utilized in Assignment 2. This should include risk planning, identification, analysis, monitoring, and response. At least 5 journal references are required. This project is to be done individually.

Choice Assignment:
Student will propose a project relevant to the course and upload to WebCT by February 12. The student is free to determine what form the project will take subject to instructor approval. The final project will be uploaded to WebCT by February 20.

Course Assessment:
Complete the course assessment that is described in WebCT. This project is to be done individually.

Optional Contract:
If there is an area of interest that a student would like to investigate, a project contract may be proposed to be substituted for one or more assignments. A contract must be submitted and approved by January 20. Contracts will not be entertained beyond this date.

Grading

Percent	Points	Grade
95-100	115	A
90-94	109	A-
88-89	106	B+
85-87	103	B
80-84	97	B-
78-79	94	C+
70-77	85	C

Course Notes:

Students must conduct themselves in a professional manner at all times. Audible cell phones, pagers or similar electronic devices are not permitted in class. Interruptions will result in point deduction. Email shall not be accessed during instruction time. Due dates must be adhered to. Late assignments will not be accepted. No projects or course work will be accepted after posted due dates. Grades will be posted in WebCT approximately 1 week after they are due. There will be no grade changes after the semester ends. Frequent interaction in the course is expected. Students missing more than one week of course interaction, any weekend meetings, or more than one assignment will not pass the course. Extenuating circumstances or unforeseen events will be handled at the discretion of the instructor and arrangements must be made prior to the absence. To pass this course, all assignments must be the original work of the student or team. Plagiarism is fraud and will be referred to Judicial Services. Students must have completed at least 80% of course material to receive an incomplete. Any student who feels s/he may need an accommodation based on the impact of a disability should contact me privately to discuss your specific needs. Please contact the Disabilities Services Office, Arts and Sciences Commons, 1017k, (231) 591-3772 to coordinate reasonable accommodations for students with documented disabilities. Instructor reserves the right to make modifications to the course or this syllabus to accommodate unforeseen circumstances. The dates in this syllabus supercede any discrepancies from any other source.

MISM 670
Syllabus
On-ground/Online – Fall 2004

Instructor: Douglas Blakemore
IRC 212H (Door 1)
Contact info: ismdoug@yahoo.com, 832-9657(home) 591-2451(office)
Office Hours: Tuesdays from 1 until 5pm or by appointment

Integrity: Each person is expected to do his/her own work. **Any copying, plagiarism or aiding anyone else on copying or plagiarism in projects, the individual's portion of a team project, papers, quizzes, tests will mean an automatic failure of that project regardless of the outcome of the students grade for the course.** There will be no opportunity to make up the work, or extra credit opportunity given other than what is available (if any) to the entire class. Each paper and/or project has the potential to be submitted to search tools such as turnitin.com to check for plagiarism. Your submission of homework implies your agreement for your homework to be inspected for plagiarism violations. On quizzes and tests, if a person is caught helping another person both will be given a zero for the quiz or test.

This syllabus is a work in progress and as such, is subject to change without advance notice if the instructor determines it is necessary. However, all attempts will be made never to make changes – especially in adding extra work beyond what is listed in this syllabus.

NOTE: There is no guarantee going into this class that you will receive any particular grade. If you are expecting to get a good grade out of this course it will be much easier to put in significant effort during the class to get a good grade than it will be to beg for more time and/or redoing poor quality work over again after the course is over or after an assignment is due.

Text: Network + Certification, THIRD EDITION Meyers. 2004. ISBN 0-07-225345-2

Meeting Dates: **January 10 – February 25 Online.**
In Class (Saturdays) January 15, January 29, February 12

Grading Scale:

A: 95-100	**C+: 77-79**
A-: 90-94	**C: 74-76**
B+: 87-89	**C-: 70-73**
B: 84-86	**F: Below 72**
B-: 80-83	

Tentative Schedule

Face – to Face meetings:

First Saturday (January 15, 2005):

Peer-to-peer network design.

By the end of the day, students will have completed Project 1 (see below) as well as installation of Linux and Windows 2003 Server Software (as time permits)

Second Saturday (January 29, 2005):

Linux Server Installation. By the end of the day, students will have completed Project 2 (see below) – Install and configure a Linux Network Server using TCP/IP and Samba.

Quiz 1: over chapters **2,3,4,5,6, 8**

Third Saturday (February 12, 2005):

Windows Server Installation. By the end of the day, students will have completed Project 3 (see below) – Install and configure a Windows Network Server Using TCP/IP.

Quiz 2: over chapters **9, 10, 12, 13, 19**

Assignment 1 due (Conceptual design paper)

Online meetings (January 10 – February 25, 2005):

Week 1: January 10 - 16

Reading Assignment	**Periodical report (Due Saturday)**
Chapter 2, 3, 12	Topics (choose at least 1) Servers NOS Cabling

Week 2: January 17 - 23

Reading Assignment	**Periodical Reports (Due Saturday)**
Chapters 4, 5, 6	Topics (choose at least 1) NIC, HUB/ Switch, Routers SOHO

Week 3: January 24 - 30

Reading assignments	**Periodical Report (Due Saturday)**
Chapters 8, 9	Topics (choose at least 1) Wireless networking

Week 4: January 31 – February 6

Reading Assignments:
Chapter 10, 11

Periodical Report (Due Saturday):
Topics: (choose at least 1)
- User Management
- DNS server
- DHCP server

Week 5: February 7 - 13

Reading Assignments:
17, 18

Periodical Reports:
Topics (choose at least 1):
- Security
- Interconnectivity

Week 6: February 14 - 20

Reading Assignments:
Chapters 13, 14 15

Periodical Reports:
Topics (choose at least 1)
- File Servers – Sharing Resources
- TCP/IP
- Application Servers

Week 7: February 21 - 25

Reading Assignments:
Chapters 19, 20

Periodical Reports:
Topics (choose at least 1)
- SAN
- Troubleshooting

Points possible:

Weekly Participation (on-line): 10 points per week = 80 points

> Note: To get participation points, students must be actively participating (adding value to the course). Viewing/reading other students comments only will not count for points.

Periodical Reports: 10 points per article = 80 points

> Note: Periodical reports are to be 1 page, single spaced and the periodical is to be within 1 – 1½ year of the date it is due. Undated periodicals are not acceptable. Web pages that are advertisements or faculty web pages, student web pages, encyclopedia type references are also unacceptable (like www.howthingswork.com)

Assignment 1: drawing	50 points	
Project 1: Peer to Peer network	40 points	
Project 2: Linux Server with Samba	75 points	
Project 3: Windows Server	75 points	
Quiz 1 :	50 points	(25 questions each worth 2 points)
Quiz 2 :	50 points	(25 questions each worth 2 points)

Total possible points for the course = 500 points

Project 1

Project Definition:

The goal of this project is to experience hands on peer-to-peer networking. Specifically, the project includes:

Installing and/or configuring the TCP/IP protocol
Installing and/or configuring a network card driver
Make your own networking cable with an RJ-45 end on each end
Installing and/or configuring a peer-to-peer client
Installing and/or configuring a network sharing service
Share 1 directory with full rights
Share 1 directory with read-only rights
Connect to another user's computer and create a file in their directory.

Project 2

Project Definition:

The goal of this project is to experience hands on Server based networking.

1. Install Linux server software
2. Installing and/or configuring the TCP/IP protocol on the server
3. Installing and/or configuring a network card driver on the server
4. Configure a DHCP server
4. Configure Samba for sharing a directory with various rights
5. Installing and/or configuring a client for Server-based networking on a workstation.
6. Configuring the server for user logins
7. Create 5 groups for different departments (using appropriate naming conventions)
8. Create at least 5 different users for each group created in step 5 (using appropriate naming conventions)

Project 3

Project Definition:
The goal of this project is to experience hands on Server based networking.

1. Install Windows server software
2. Installing and/or configuring the TCP/IP protocol on the server
3. Installing and/or configuring a network card driver on the server
4. Installing and/or configuring a client for Server-based networking on a workstation.
5. Configure a DHCP server
5. Configuring the server for user logins
6. Create 5 groups using an appropriate naming convention.
7. Create at least 5 different users for each group using an appropriate naming convenction

Assignment 1

Assignment Definition:

The goal of this project is to extend the learning in projects 2 and 3 (no hands on).

Design (draw) a local area network for a company with at least 40 workstations, 5 servers in a building with at least 25 rooms and has at least 3 stories tall.
In your design, identify the location (including distances – right on the drawing) of:

- The servers
- Each workstation
- each switch, hub and/or router and/or access point
- wiring

Give the specifications of the server, switches, hubs, routers and wiring used
Show all Servers and ALL cable runs.

Give an estimated cost of your entire network.

Include cover page and table of contents

MISM 740 Business Intelligence

Tentative Syllabus - Instructor reserves right to modify when deemed appropriate

Instructor: Greg Gogolin, Ph.D.
Work/Phonemail: (231) 591-2437 FAX: (231) 591-2973 (WebCT e-mail preferred)
e-mail: Use WebCT ONLY
Office hours: 1pm-5pm Mondays.

Prerequisites: MISM 610 or Instructor Permission.

Text
Data Mining A tutorial-based primer – Roiger & Geatz – ISBN 0201741288 (Required)
Business Intelligence Roadmap – Moss & Atre - ISBN 0201784203 (Required)

Tentative Schedule
Class meets Mondays, March 14 – April 29 & on-line. Course website in WebCT.

Course Format
This course will include a combination of research, evaluation, discussion, team and individual work with a hands-on component. The goal is to develop skills and understanding related to the critical issues surrounding Business Intelligence.

Course Outcomes
Upon completing this course, students will be able to:

1. Develop an understanding of the complexity of business intelligence.
   Assessment: Students will be able to identify and explain key components of business intelligence systems, including data challenges, software, and tools.
2. Demonstrate an understanding of data warehouse design.
   Assessment: Given a case study, students will be able to identify key metric requirements and design a high level solution.
3. Develop skills to interrogate data warehouses for key metric data and demonstrate appropriate decision making.
   Assessment: Given a problem set, students will be able to interrogate a data warehouse using current tools and draw appropriate conclusions.

Assignments: The written portion of all projects must be turned in via WebCT using 12 point Times New Roman, Ariel or Georgia font. Headings may be larger font and/or bold. Assignments 2, 3, and the presentation are team based.

Deliverable	Description	Max Point Value	Due Date
Case 1	Complete in WebCT	5	March 21
Case 2	Complete in WebCT	5	March 28
Assignment 1 – use dw	Detailed in WebCT	15	April 4
Case 3	Complete in WebCT	5	April 4
Assignment 2 – team – dw design	Detailed in WebCT	15	April 11
Presentation - team	Presented to Class	Part of assign 3	April 25
Assignment 3* - team – build & use dw	Detailed in WebCT	26	April 26

Course Assessment	**Detailed in WebCT**	7	**April 29**
Course Engagement	**Regular and consistent interaction in all class activities**	7 (1 point/week)	**April 29**

Cases:
Cases are to be done individually. There will be 3 cases presented in the course via WebCT using text and/or streaming video.

Presentation:
Each team will present their third assignment to the class on April 26. These presentations are a major component of the class and considerable preparation should be made.

Optional Contract:
If there is an area of interest that a student would like to investigate, a project contract may be proposed to be substituted for one or more assignments. A contract must be submitted and approved by March 21. Contracts will not be entertained beyond this date.

Grading

Percent	Grade
95-100	A
90-94	A-
88-89	B+
85-87	B
80-84	B-
78-79	C+
70-77	C

Course Notes:
Students must conduct themselves in a professional manner at all times. Audible cell phones, pagers or similar electronic devices are not permitted in class. Interruptions will result in point deduction. Email shall not be accessed during instruction time. Due dates must be adhered to. Late assignments will not be accepted. No projects or course work will be accepted after posted due dates. Grades will be posted in WebCT approximately 1 week after they are due. There will be no grade changes after the semester ends. Frequent interaction in the course is expected. Students missing more than one week of course interaction, any weekend meetings, or more than one assignment will not pass the course. Extenuating circumstances or unforeseen events will be handled at the discretion of the instructor and arrangements must be made prior to the absence. To pass this course, all assignments must be the original work of the student or team. Plagiarism is fraud and will be referred to Judicial Services. Students must have completed at least 80% of course material to receive an incomplete. Any student who feels s/he may need an accommodation based on the impact of a disability should contact me privately to discuss your specific needs. Please contact the Disabilities Services Office, Arts and Sciences Commons, 1017k, (231) 591-3772 to coordinate reasonable accommodations for students with documented disabilities. Instructor reserves the right to make modifications to the course or this syllabus to accommodate unforeseen circumstances. The dates in this syllabus supersede any discrepancies from any other source.

Administrative Program Review 2005 Program MS-ISM

Purpose of Administrative Program Review

1. to facilitate a process led by the deans and department heads/chairs to assess and evaluate programs under their supervision
2. to facilitate long term planning and recommendations to the VPAA
3. to collect and analyze information that will be useful in the University's accreditation efforts; Academic Program Review deliberation; and assessment.

Instructions: Please prepare a report following the outline below.

I. Program Assessment/Assessment of Student Learning

a) What are the program's learning outcomes?
- The MS ISM commenced seventeen years ago. The MS ISM is targeted for domestic IT professionals interested in upgrading technical and acquiring management skills, or individuals interested in acquiring the skills for entering the IT profession. The program is built around a core of skills required in the world of outsourced coding as well domestically demanded technical concentrations in business intelligence, systems networking/security, and e-business.

b) What assessment measures are used, both direct and indirect?
- The CBGP incorporates two measurements. The first is focused on assessing the course/program content and future directions. Assessment for this purpose include:
  1. Advisory Committee
  2. Industry trend sources
  3. MS Alumni
  4. Institutional Program Partners
- The second type of assessment focuses on graduate student satisfaction with instruction, course materials, and program/administrative support.
- Students are assessed each course relative to achieving outcomes and a program outcomes assessment is the focus of the capstone project.

c) What is the assessment cycle for the program?
- Student Assessment of Instruction (SAI) is conducted for each course, each semester. Course/program by faculty is continuous. Advisory assessment of courses and programs is annual.

d) What assessment data were collected in the past year?
1. Advisory committee.
2. Alumni
3. Literature and industry trend review
4. Partner assessment
5. CBGP faculty assessment
6. COB faculty assessment
7. Student Assessment of Instruction (SAI)

e) How have assessment data been used for programmatic or curricular change?
   - We implemented a reengineered MS ISM fall 2002 following assessments. We implemented a reengineered MS ISM again fall 2004. We haven't had a single academic year without an MS ISM course/program add, change, or delete. CBGP action speaks volumes to our serious attention to assessments.

II. Course Outcomes Assessment

a) Do all multi-sectioned courses have common outcomes?
   - Yes

b) If not, how do you plan to address discrepancies?

c) How do individual course outcomes meet programmatic goals?
   - They are evaluated in context relative to program outcomes.

III. Program Features

1. Advisory Board

a) Does the program have a board/committee? When did it last meet? When were new members last appointed? What is the composition of the committee (how many alumni, workplace representatives, academic representatives, etc.)
   - The MS ISM advisory committee met in November 2004. By design advisory committee membership is limited to six members representing six different types of industries (manufacturing, IT services, health care, etc). One new member was added prior to the fall 2004 committee meeting. Members must hold a significant management position that includes strategic and operational planning, budgeting, and hiring. At least one is an MS ISM alumnus. Our goal is best current and future IT practices that may impact our response to need.

b) If no advisory board exists, please explain by what means faculty receives advice from employers and outside professionals to inform decisions within the program.

c) Has feedback from the Advisory Board affected programmatic or curricular change?
   - Yes, in every major programmatic initiative.

2. Internships/Cooperative or Experiential Learning

a) Is an internship required or recommended?
   - No.

b) If the internship is only recommended, what percentage of majors elects the internship option?

c) What challenges does the program face in regard to internships? What is being done to address these concerns?

d) Do you seek feedback from internship supervisors?

If so, does that feedback affect pedagogical or curricular change?

3. **On-Line Courses**

a) Please list the web-based courses, both partial internet and fully online, offered last year.
   - All MS ISM courses have an internet component. Four of the nine core courses are 100% internet.

b) What challenges and/or opportunities has web-based instruction created?
   - Many challenges, but the CBGP has offered internet classes for several years. The internet component combined with weekend face-to-face classroom experiences is a best fit for our target market of working professionals interested in upgrading skills and/or career advancement.

c) What faculty development opportunities have been encouraged/required in order to enhance web-based learning within the program?
   - Every new MS ISM faculty has a team of mentors assigned to them. That team assists with meeting course outcomes and assessments, internet tools and best practices, and college and university professional expectations.

d) How has student feed-back been used to enhance course delivery?
   - Our survey of students and alumni were the basis of our course delivery model.

e) Is there any plan to offer this program on-line? If yes, what rationale is there to offer this program online?" (emerging market opportunity?, expand enrollment?, demand for niche program offering?, etc.)
   - No, but not for lack of effort. We have considered and on occasion even attempted on-line course strategies and delivery. Very simply we have not been successful in on-line delivery of some complicated high tech instruction.

4. **Accreditation**

a) Is the program accredited or certified?
   - No

b) By whom?

c) When is the next review?

d) When is the self-study due?

e) How has the most recent accreditation review affected the program?

5. **Student/Faculty Recognition**

a) Have students within the program received any special recognition or achievement?
   - Given our program goal of upgrading professional and career enhancement skills we have been successful.

b) Have faculty within the program received any special recognition or achievement?

- Professor Blakemore
  1. Linux certification.
  2. Training certificate in Windows 2003.
  3. Training certificate in Windows security.
  4. Training certificate in Security+.
  5. Training certificate in Fraud Examination.
  6. Staff trainer for the Banner project.
- Professor Gogolin
  1. PMP - Project Management Professional certification through Project Management Institute.
  2. "Memoirs of a Masochist: Five Years of the Trials and Tribulation of Distance Ed" accepted for presentation at Lilly Conference of Teaching Scholars.
  3. Attended week long Oracle DBA class in Detroit.
  4. Attended week long ASP.Net class in Detroit.
  5. Received in-kind software donation from Quest Software.
  6. Received in-kind software and hardware donation from Paraben for forensics. Staff trainer for the Banner project.
  7. Selected for FSU Faculty Learning Community.
  8. Appointment to the 2005 Michigan Quality Council Board of Examiners.
- Professor Tirtohadi
  1. Attended ASP.Net class.
  2. Security+ certification.
  3. Staff trainer for the Banner project.

6. **Student Engagement**

a) Is volunteerism and student engagement a structured part of the program?

- Students have done several projects for various organizations.

b) Does the program utilize service learning in the curriculum?

- No

c) Does the program participate in the American Democracy Project?

- No

Areas of Strength:

- The MS ISM prides itself on state-of-the-professional technical and career advancement management training. Based upon feedback from our advisory committee, alumni, and industry trends our core focus on outsourcing management with technical options in networking and security, business intelligence, and e-business are the appropriate focus for domestic IT professionals.

Areas of Concern (and proposed actions to address them)

- Enrollment. The MS ISM has been responsive to the new IT professional skill set brought about with outsourcing and a shrinking IT workforce and all the press coverage that has received. Despite the fact that our advisory committee, our alumni, and our current students agree that we are preparing students with the skill set needed in the IT industry, we've found it challenging to convince potential students. Our strategy is to develop a programmatic response to domestic students in areas where careers and employment are clearly growing.

Future Goals:

- The MS ISM is working on Homeland Security and law enforcement skills and practices related to digital criminology and forensics. In addition a five year Accounting/MBA or MS-ISM that meets professional licensing requirements for the CPA is in approval stage.

Other Recommendations:

- We need a programmatic marketing and promotion strategy and funds. That said, we're also of the opinion that the MS ISM would benefit substantially from a conscious and focused effort to enhance the image of FSU. There are some "jewels in the crown" most notably Optometry and Pharmacy that need to be leveraged for institutional benefit. We need to have the citizens of Michigan associate the name of Ferris State University the institution renown for its' professional programs. Coincidently, its' an institution that also offers state-of-the-art graduate and undergraduate degrees in a host of relevant and high demand professional and technical programs many of which are available at no other state university, etc. But this is not something within the scope of our charge to affect.

William Boras/FSU
10/15/2004 02:05 PM

To: jwilt@sagestone.com, Robinsoe@meijer.com, jsacco@gfs.com, Cheryl_Rosloniec@accessbusinessgroup.com
cc: Richard Mislan/FSU@FERRIS, sytsmas@netonecom.net@Ferris, Anita Fagerman/FSU@FERRIS, ismdoug@yahoo.com@FERRIS,
bcc:
Subject: Fw: MS ISM Advisory Committee Meeting

Good Morning,

Missed one detail in my email below. The MS ISM Advisory Committee Meeting will be next Friday, October 22, 2004 (8:00 am)at Amway.
Everyone have a great weekend.

Bill

William Boras, Ph.D
Chair, College of Business Graduate Programs
borasb@ferris.edu

----- Forwarded by William Boras/FSU on 10/15/2004 11:16 AM -----

William Boras/FSU
10/14/2004 12:23 PM

To: jwilt@sagestone.com, Robinsoe@meijer.com, jsacco@gfs.com, Cheryl_Rosloniec@accessbusinessgroup.com
cc: Richard Mislan/FSU@FERRIS, sytsmas@netonecom.net@Ferris, Anita Fagerman/FSU@FERRIS, ismdoug@yahoo.com@FERRIS, Greg Gogolin/FSU@Ferris, Laksma Tirtohadi/FSU@Ferris, Shannon Yost/FSU@FERRIS
Subject: MS ISM Advisory Committee Meeting

Dear Advisory Committee Members,

Thank you for agreeing to serve as a member of the MS ISM advisory committee. This year we will welcome a new member, Ms. Cheryl Rosloniec,
CIO Access Business Group/Amway who has also graciously agreed to host this year's meeting.

The meeting will be held at Amway starting at 8:00 am. Our goal is to complete our meeting no later than 10:30 am.

There are three attachments with this communication. First are the minutes from last year's meeting. Those minutes identify challenges that were to be considered by the MS ISM faculty. The second is our response to those challenges which is essentially an entirely reengineered graduate degree. Core and elective courses are identified along with the course description and objectives for each. The third attachment are directions to Amway.

The agenda and issues for the meeting are:

1. Does the new MS ISM program address advisory committee suggestions specified in 2003?
   - Are the courses and objectives relevant?

- What improvement changes could be made?
- Are there suggestions regarding relative importance among the objectives?

2. What industry trends need monitoring within the next couple years and beyond.
3. Volunteer to host next years meeting.

Special thanks to Ms. Rosloniec for volunteering to host this years advisory committee meeting. We look forward to seeing you all again and are anxious to hear your opinions on the MS ISM program.

Bill


10-28-03 Report.doc

MaptoAmway.pdf

ISM Course Descriptions&Outcomes.doc

William Boras, Ph.D
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College of Business Graduate Programs (CBGP)
Academic Program Review 2004-05
Advisory Committee Survey

Preface

You have been selected to participate in the Master of Science in Information Systems Management (MS ISM) Academic Program Review. This is a very important process that focuses on our effort to meet the graduate level educational need of information systems professionals.

Presented below is a brief history of the MS ISM program development efforts from fall 2001 to the current program which takes effect winter 2005.

We value your input as an alumnus of the MS ISM program and as significantly as an IT professional. Our goal for the MS ISM program has always been to the training of IT professionals with state-of-the-art relevant and career enhancing skills. You are the best judge of that effort and your assistance is greatly appreciated.

Historical Perspective

Fall 2001

Fall 2001 international students accounted for 60% of MS ISM enrollment and student credit hours (SCHs) produced. Following the events of September 11, 2001 the College of Business Graduate Programs (CBGP) anticipated a significant negative impact on international student enrollment. In response the CBGP Department set a strategy to increase domestic enrollment. That was to be achieved by reengineering the MS ISM to a graduate program aimed at training persons for entry into the IT profession and/or enhancing the skills of practicing IT professionals. Following institutional approvals, the new MS ISM commenced fall 2002.

Fall 2003

Our anticipation of decreased international student enrollment became reality and impacted the MS ISM immediately. Fall 2002 international SCHs fell to 40% of total production. Our strategy to increase domestic enrollment was correct. However, the winds of IT change brought into question our tactical response.

We had been watching and listening to the rumblings of outsourcing in the IT industry for several months. What at first appeared to be a limited exploration of industry possibilities quickly became an avalanche of change. Worst of all (for us) was that avalanche enveloped the lower tier of IT jobs, software developers...the group, in part, that we were attempting to prepare for career entry in the MS ISM, the group that for whom we had built an entirely new MS ISM. We had to respond.

We spent the 2003-04 academic year listening to our advisory committee, program alumni, scanning the literature, and listening to the working domestic IT students in the MS ISM program. With as clear a picture that could be gleaned from available sources, we again reengineered MS ISM with a core course focus on knowledge and skills to effectively function in an outsourcing environment. Additionally we modified advanced study certificates in "management tools and techniques," and "information security and network management," and created three new advanced study certificates in "outsourcing management," "e-business and systems integration," and "business intelligence," utilizing courses from the MS-ISM, MBA, and newly created courses. The new MS ISM received final approval in May 2004 for implementation winter 2005.

Following is a brief description and objectives for the core and certificate courses. Please review each course and certificate option giving us your opinion and opportunities for improvement.

The final part of this review is to seek your input on industry trends that may have to be reflected in the MS ISM and/or monitored by the CBGP faculty.

Thanks in advance for your participation.

Ferris State University

College of Business Graduate Programs Department
Advisory Committee Report
October 28, 2003

Attendees

Advisory Members
- Kurt Ludlow, Amway/Quixtar, Director of Global IT Infrastructure
- Elmer Robinson, Meijer, Director of Application Development
- Joe Sacco, Gordon Foods, IT Manager
- Jim Wilt, SageStone, Senior Architect

CBGP Members
- William Boras
- Doug Blakemore
- Greg Gogolin
- Rick Mislan
- Sid Sytsma
- Laksma Tirtohadi

College of Business Deans Office
- Van Edgerton

Agenda

Advisory committee view of current and future IT needs and trends and appropriate educational responses.

Summary of Comments and Suggestions

Trends

- Offshore development is the trend, IT professionals need skills in articulating problems, capturing requirements, and defining specifications
- Individuals must have a fundamental understanding that IT is about meeting business needs and the challenge is turning IT solutions involving multiple platforms/vendors into business solutions
- Applications must be deliverable to multiple devices using mobile technologies
- Organizations are purchasing software applications and customizing to gain competitive advantages

General Skills

- Individuals must understand business and possess an enterprise view of systems
- An understanding that web architecture and applications have to fit the process model
- Understand security as well pre-implementation front-end testing strategies
- Analytical and project management skills are critical
- Must be able to function and contribute as a team member
- Must develop the skills and tenacity to reach project closure
- Must be service oriented
- Must be a willing learner and be able to accept new challenges
- Understand that IT has 24/7 job responsibility
- Must be able to direct team effort and establish achievable and measurable team objectives
- IT professionals must be able to manage multiple projects concurrently

Program Suggestions

- An internship is recommended for those individuals without an IT background.
- Communications including written, oral, and presentation skills are vital. Every effort should be made to incorporate as many of these experiences as possible into an individual's program of study
- Identify and incorporate a strategy to have students develop facilitating skills presented in business terms rather than IT jargon
- Incorporate business intelligence which involves data warehousing, online analytical processing (OLAP), decision support, and data mining
- To maintain current industry skills, we should explore potential for faculty internships with businesses
- Work with Suse and RedHat in corporate resource management, user management, directory management, and security issues

Future Meetings

The next MS ISM advisory committee meeting will be scheduled in the spring at Amway/Quixtar at a time acceptable to committee members. In addition, the MS ISM advisory committee will be expanded to our target membership of six with inclusion with a representative from manufacturing and health care.

MASTER OF SCIENCE IN INFORMATION SYSTEMS MANAGEMENT
Core Courses

BA 601 PROFESSIONAL SKILLS DEVELOPMENT

Course Description:
An introduction to performance metrics, team skills, executive presentations, research, and writing in APA format. A written assessment of prior knowledge of the seven areas of the MBNQA-based core, writing, and presentation skills will take place in the course.

Course Outcomes:
At the conclusion of this course, the student will be able to
1. make appropriate course and emphasis area selection decisions within the MBA program;
2. communicate effectively in written form, with few grammatical, spelling, or punctuation errors in APA format;
3. make effective presentations using presentation software;
4. perform efficient and effective Internet research using a variety of search tools;
5. describe the basic characteristics of performance metric systems; and
6. describe several ingredients for successfully working in a team environment.

In addition, each student will have participated in a pre-assessment of writing, presentation, and the seven core MBA competency areas.

MISM 610 DATABASE MANAGEMENT AND ADMINISTRATION

Course Description:
Students investigate progressive database management and administration principles. Topics include design, implementation, and management techniques. Students utilize data definition and manipulation languages on leading database platforms. Emerging trends in database technology are also scrutinized.

Course Outcomes and Assessment:
At the conclusion of this course, the student will be able to
1. Understand database systems and their environment.
   Assessment: Students will be able to identify and explain key components of database systems, such as platforms, software, and tools.
2. Understand responsibilities and tasks of a database administrator.
   Assessment: Given a case study, students will be able to develop standards and procedures for their database systems to deal with security issues, upgrade policies, and backup/recovery strategies as well as turnover management.
3. Design and implement a database system.
   Assessment: Given a problem set, students will be able to design a database in three phases: conceptual, logical, and physical using standard methodology and the most current tools.
4. Define database structure and access data from database.
   Assessment: Students will be able to define data types, integrity constraints, create views, and build data access and manipulation routines.
5. Evaluate database issues.
   Assessment: Given a problem set, students will be able to develop a framework to evaluate database issues.

MISM 629 LEGAL AND ETHICAL ISSUES IN BUSINESS

Course Description:
This course is intended to investigate the legal and ethical issues in Information Systems. Ethicical practices, privacy, copyright and licensing issues are researched. This issues dealing with proprietary and personal information, as well as electronic technologies will be studied. An understanding of current and future impact on information systems and management strategies will be explored.

Course Objectives:
At the conclusion of this course, the student will be able to
1. Analyze the moral and legal dilemmas that arise in the areas of free speech, intellectual property, privacy, licensing and security.
2. Develop an understanding of the ever-increasing global nature of IT ethics and how ethical/unethical decisions impact the global community.
3. Gain a better understanding of various generational differences which people possess based on the historical events that occurred during their childhood and how those differences shape individual values as a basis for personal decision making.

4. Investigate and provide practice in applying a code of ethics and professional conduct to actual or hypothetical case studies.

MBA 640 PROJECT MANAGEMENT

Course Description

This course examines the role of project management and it's use in businesses and organizations today. Each of the following constituent elements for successful project management is included in the course including: defining a project, working with project teams, performing project budgeting, performing a work breakdown analysis, creating a project schedule, and performing project monitoring and evaluation.

The instructor is the lead learner, an expertise resource, and the learning facilitator. A variety of individual, group, and team-based learning activities are utilized throughout the course with an emphasis on collaboration. The learning process is evaluated with the view to continuously improve the learning process for future learners

Course Objectives

1. To enable the student to successfully manage a project in the business environment.
2. To have the students understand and able to integrate both the customer and the quality tools into project management.
3. To enable the student to select and use project management software to manage a project.
4. To examine the unique aspects of organizational information systems in project management.

Course Outcomes

At the conclusion of this course, the student will be able to

1. Define a project;
2. Understand and use the skills and tools required to work with, participate in, and lead a project team;
3. Create and track a project budget and perform a variance analysis;
4. Take global project activities and perform a work breakdown analysis;
5. Create and monitor a project schedule, using a commercial project scheduling software;
6. Understand and be able to implement strategies for dealing with constrained resources, shortening a project to fit within time requirements [crashing], and understanding the probabilistic nature of projects and how to deal with uncertainty and risk;
7. Perform periodic project auditing and a final project evaluation,
8. Recognize and understand the major causes for failure in projects and strategies for dealing with each of them.

MISM 661 PRINCIPLES OF INFORMATION SECURITY MANAGEMENT

Course Description:

Students investigate concepts and methodologies of information security and the Information Security Lifecycle (Protection). Topics include information security administration and Security+ and CISSP.

Course Outcomes and Assessment:

Upon completing this course, students will be able to:

1. Understand the legal, ethical and professional issues of Information Security.
   Assessment: Given a case study, students will be able to identify and explain the various legal, ethical and professional issues related to the practices of Information Security.
2. Develop a Risk Assessment Plan for Information Security.
   Assessment: Given a case study, students will be able to research various methodologies, assess each for applicability, and create a Risk Assessment Plan to mitigate and/or control risks related to Information Security.
3. Develop an Information Security Blueprint.
   Assessment: Given a case study, students will be able to research various Security theories and methodologies, evaluate each for applicability, and create an Information Security Blueprint.
4. Develop an Information Continuity Plan.
   Assessment: Given a case study, students will be able to research various Information Continuity theories and methodologies, evaluate each for applicability, and create an Information Continuity Plan.
5. Identify and mitigate the various Information Security threats and vulnerabilities.
   Assessment: Given a case study, students will be able to research the various Information Security threats and vulnerabilities, and create physical and virtual defense systems to prevent loss.

MMBA 665 INFORMATION AND ANALYSIS SYSTEMS

Course Description:

The use of information systems and information technology to support a performance-metric-based information system is developed. Course considerations include the role of database technology and specialized software systems (e.g., SAP,

Oracle, PeopleSoft, etc.) in providing these information resources. The management of information systems within the framework of a performance-metric-based management system is considered. An integrating course project is required.

Course Outcomes:

asurement and Analysis of Organizational Performance

At the conclusion of this course, the student will be able to

1. describe and utilize methods to gather and integrate information from all sources to support daily operations and organizational decision making;
2. select appropriate measures and align them for tracking daily operations and overall organizational performance;
3. select and effectively use key comparative data and information;
4. assess the performance measurement system and describe strategies and methods to keep it current with business needs and directions;
5. describe strategies to communicate the results of organizational-level analysis to work groups and other functional level operational groups to enable support for decision making;
6. describe strategies and methods to align results of organizational analysis with key business results, strategic objectives, and action plans; and,
7. describe how to provide data and analysis to provide the basis for continuous improvement and breakthrough improvements in performance.

Information Management

At the conclusion of this course, the student will be able to

1. describe strategies, methods, and systems for providing data and information and making it accessible to employees, suppliers/partners, and customers as appropriate;
2. describe strategies and methods for ensuring data and information integrity, reliability, accuracy, timeliness, security and confidentiality;
3. describe strategies and methods for assessing the effectiveness of data and information availability mechanisms and keeping them current with business needs and directions;
4. describe strategies and methods to insure that hardware and software are reliable and user friendly; and,
5. describe strategies and methods for assessing the effectiveness of hardware and software systems and keeping them current with business needs and directions.

SM 670 NETWORK MANAGEMENT AND DESIGN

Course Description:

Students will examine the basic components of Local Area Networks including topologies, protocols, and wiring schemes. Operating environments explored will be both peer to peer and at least one server based network. Once exposed to managing these environments, the student will employ their analytical skills in determining the strengths and weaknesses of each of the environments.

Course Outcomes and Assessments:

Upon completing this course, students will be able to:

1. Understand the design, function, and role of a network in a globally competitive organization.
   Assessment: Students will be able to explain the benefits and the need for a local area network and the value it has for business.
2. Understand the function of network components and be able to diagram a network design.
   Assessment: Given design requirements, students will be able to develop a conceptual design of a local area network to support a business model.
3. Describe the function of CSMA/CD, TCP/IP and other protocols.
   Assessment: Students will be able to identify TCP/IP address classes and subnet masks and be able to discuss network packet collisions and give possible solutions.
4. Install a working peer-to-peer network.
   Assessment: Students will be able to take a stand-alone computer and share directories, files and printers in a small network. Also, students will be able to explain the benefits and drawbacks of a peer-to-peer network.
5. Install and configure server for at least two network operating systems.
   Assessment: Students will install and configure a file server using two network operating systems. Once developed, students will be able to compare and contrast the two operating systems and the peer-to-peer model.
6. Set user rights and describe net effective rights and relationship directory structures.
   Assessment: Students will be able to describe the rights that are available in the network operating systems they are working in, be able to set various levels of access rights and explain how inheriting rights has an effect on a users rights in a given directory.

MISM 740 BUSINESS INTELLIGENCE

Course Description:

An investigation of business intelligence and evaluation of analytical data used in strategic decision making. Topics include tracking, managing and understanding organized data, as well as identifying and measuring performance metrics. Includes applied decision making using appropriate tools and techniques. Decision support systems, data warehousing and emerging topics are explored.

Course Outcomes and Assessment:

Upon completing this course, students will be able to:

1. Develop an understanding of the complexity of business intelligence.
   Assessment: Students will be able to identify and explain key components of business intelligence systems, including data challenges, software, and tools.
2. Demonstrate an understanding of data warehouse design.
   Assessment: Given a case study, students will be able to identify key metric requirements and design a high level solution.
3. Develop skills to interrogate data warehouses for key metric data and demonstrate appropriate decision making.
   Assessment: Given a problem set, students will be able to interrogate a data warehouse using current tools and draw appropriate conclusions.

MISM 799 MISM INTEGRATED CAPSTONE PROJECT

Course Description:

MISM 799 is a team-based course designed to integrate the team, technical, and management skills developed in the ISM program. Teams will be assigned and will develop a complete technical and management solution of either a real-world or simulated real world problem or they will the develop a future system for an organization. Each semester, a variety of potential problems to be solved or systems to be developed will be available for selection by the teams in the course.

Course Objectives:

1. Team analysis of project challenge. Areas of focus will include strategic and operational issues including but not limited to financial, human resources, and technical issues.
2. Project management issues including project components, work assignments, critical paths, deadlines, and checkpoints.
   Project design and technical specs.
4. Project development and implementation.
5. Project presentation.

MMBA 799 INTEGRATED BUSINESS EXPERIENCE

Course Description:

This capstone course integrates the seven core areas of the MBA program—performance metrics, human resources, organizational leadership, information systems, strategic planning, customer/market systems, and value stream management. This integration is accomplished through a robust computer simulation of real-world B-to-B competition that includes analysis, modeling competitive outcomes, and decision making.

Course Outcomes & Assessments:

At the conclusion of this course, students will be expected to...

1. Demonstrate an understanding of the seven major MBA competency areas through the application of metrics-based analysis to all facets of decision-making embodied in the managerial simulation.
2. Assess attractiveness of an industry through HHI calculation, supply & demand analysis, etc...
3. Assess implications of dynamic market conditions by modeling / reasoning scenario outcomes.
4. Assess firm's competitive strengths & weaknesses by sensitivity testing resource capabilities.
5. Develop and execute integrated, functional-level strategies & business decisions via written reports identifying fact-basis for all functional-level decisions.
6. Perform effectively in a collaborative setting given real-time competitive pressures evidenced via peer review process.
7. Create economic value while adhering to the highest ethical standards of business competition evidenced by standard measures of growth and profitability, while avoiding even the appearance of anti-competitive behavior or other impropriety.

MASTER OF SCIENCE IN INFORMATION SYSTEMS MANAGEMENT
Elective Courses

MBA 612 INTRODUCTION TO PERFORMANCE METRIC SYSTEMS
Course Description:
The concepts of performance metric-based management systems is developed, including the concepts of leading and lagging performance metrics, and the interrelationships between the four major systems in every organization: financial, organizational learning, process, and customer systems. The interrelationship between the Balanced Scorecard and Malcolm Baldrige National Quality Award criteria as performance metric systems will be explored. The course will include an integrating project.

Performance-Metric-Based Management Outcomes
At the conclusion of this course, the student will be able to
1. define and describe models of organizational systems, how they interrelate with each other, their contribution toward meeting organizational goals, and how key leading and lagging measures/indicators are used to measure their internal and external performance;
2. describe and compare major performance metric systems, including the *Balanced Scorecard*, and the *Criteria* for the Malcolm Baldrige National Quality Award; and other domestic and international performance metric systems,
3. identify and utilize the major resources, including professional journals, organizations, and on-line sources, for remaining current in the field of performance metrics, and
4. explain why an organization would choose a performance-metric-based management system.

Customer-Focused Systems Outcomes
At the conclusion of this course, the student will be able to
1. identify and select appropriate measures/indicators for measuring and tracking customer satisfaction and dissatisfaction;
2. identify and select appropriate strategies methods for comparing customer satisfaction levels with those of key competitors;
3. identify and select appropriate measures/indicators of customer-perceived value, retention, and positive referrals; and
4. identify and select appropriate measures/indicators of levels and identifying developing trends of product and service performance in areas important to customers.

Financial and Market Systems Outcomes
At the conclusion of this course, the student will be able to
1. identify, develop and maintain strategies and systems for measuring and tracking current levels and trends in key measures/indicators of financial performance including aggregate measures of financial return an/or economic value; and
2. identify, develop and maintain strategies and systems for measuring current levels and trend in key measures/indicators of market performance, including market share/position, business growth, and new markets entered.

Human Resource Systems Outcomes
At the conclusion of this course, the student will be able to
1. identify, develop and maintain strategies and systems for measuring and tracking key measures/indicators of employee well-being, satisfaction, dissatisfaction, and development; and,
2. identify, develop and maintain strategies and systems for measuring and tracking key measures of work system performance and effectiveness.

Organizational Effectiveness Systems Outcomes
At the conclusion of this course, the student will be able to
1. identify, develop and maintain strategies and systems for measuring/tracking levels and trends in key measures/indicators of organizational performance of key design, production, delivery, business, and support processes;
2. identify, develop and maintain strategies and systems for utilizing measures of productivity cycle time, supplier/partner performance and other measures of effectiveness and efficiency; and,
3. identify, develop and maintain strategies and systems for measuring/tracking key measures/indicators for regulatory/legal compliance and other measures of citizenship.

MMBA 615 QUALITY IMPROVEMENT PRINCIPLES AND APPLICATIONS

Course Description:

Participants explore the philosophy, principles and practices of continuous quality improvement through the four lenses of Deming's system of profound knowledge systems thinking, understanding variation and diversity, practical psychology of leadership and management, and generation and leverage of knowledge. Learners typically complete a mix of projects, readings, cases, papers, as well as design, implement and evaluate a practical rapid cycle improvement project.

Course Outcomes:

At the conclusion of this course, the student will be able to

1. Investigating the various ways in which organizations implement quality systems
2. Looking specifically at the Deming prize, the Malcolm Baldrige National Quality Award and the related state awards, the European Forum for Quality Management, and ISO-9000, and the Balanced Scorecard as potential vehicles for implementing quality in organizations worldwide
3. Learning specifically how the Malcolm Baldrige National Quality Award [MBNQA] works, how organizations apply, and how the criteria is applied
4. Getting experience in applying MBNQA criteria to a specific case

---

MMBA 705 BUSINESS PROCESS REENGINEERING

Course Description:

Compare and contrast business process reengineering (BPR) with continuous quality improvement. Addresses common systems/process analysis and BPR tools. Examines implications of information on BPR processes.

Course Outcomes:

1. To introduce the student to what business process reengineering comprises
2. To have the students learn and use some of the common systems/process analysis and BPR tools.
3. To have the students learn how to simulate a business process.
4. To understand the implications of information systems on the BPR process.

MISM 645 OBJECT-ORIENTED ANALYSIS

Course Description:

This course is designed to teach students how to analyze software requirements and express them in standard formats. Instruction covers requirements specification using standard languages and notation such as Unified Modeling Language and Use Case diagrams. Students will also investigate object-oriented software development methodologies, outsourcing, third party collaboration, and emerging technologies.

Course Outcomes and Assessment:

Upon completing this course, students will be able to:

1. Develop an understanding of the software development lifecycle.
   Assessment: Students will be able to list and describe major steps of software development process, from problem definition to testing and maintenance.
2. Develop skills in capturing software requirements to meet business goals and users.
   Assessment: Students will be able to identify and generate a list of requirements from a specified case study.
3. Develop ability to present events, functions, tasks, and dataflow using Unified Modeling Language, Use Case diagram, and other standard notations.
   Assessment: Students will demonstrate the ability to draw diagrams and notate to model requirements.
4. Develop communication and collaboration methodologies.
   Assessment: Students will explain versioning and documentation techniques, as well as current methodologies.

MISM 646 SYSTEMS INTEGRATION

Course Description:

This course investigates concepts, technologies, and solutions for integrating multiple applications and platforms. Strategies dealing with multiple platforms, domains, technologies, and their challenges are explored. Students will learn Web service integration and other middleware techniques.

Course Outcomes and Assessment:

Upon completing this course, students will be able to:

Develop an understanding of systems integration and its technologies.
Assessment: Given a case study, students will be able to explain levels of complexity in systems integration, identify appropriate technologies, and describe appropriate solutions.

2. Develop skills to develop strategies and choose the right technologies.
   Assessment: Given a case study, students will be able to identify procedures and develop plans to integrate various systems using the appropriate technologies.

3. Develop skills to work with universal data interchange formats, Web services, and middleware.
   Assessment: Students will be able to use universal standards to develop a prototype and implement the solution in a specified project.
4. Develop an understanding of emerging technologies in systems integration.
   Assessment: Students will be able to explain middleware and platform evolution, and evaluate the challenges they present.

MISM 659 APPLICATION DEVELOPMENT

Course Description:

This course is designed for students who want to use the most current tools and technology to create e-business applications. It covers platform architecture, object-oriented programming, class libraries, web form controls, data controls, universal data interchange format, and web services. Hands-on experience will be included throughout the sessions.

Course Outcomes and Assessment:

Upon completing this course, students will be able to:

1. Develop skills to use object-oriented technology and to build applications for e-business.
   Assessment: Students will be able to choose and use classes, methods, and properties to develop applications.
2. Develop skills to create database-driven Web applications.
   Assessment: Students will be able to access data in database system and display them in browsers.
3. Develop skills to design and develop multi-tiered applications.
   Assessment: Students will be able to identify and separate presentation layer from business logic and data layer.
4. Develop skills to utilize universal data interchange format and to create Web-based application interface.
   Assessment: Students will be able to share data from one system to another by using universal data interchange format.
5. Develop skills to recognize future trends of application development.
   Assessment: Students will be able to discuss on-going development technology, standards, and issues by investigating academic and professional journals/articles.

MISM 662 INCIDENT RESPONSE AND CYBER FORENSICS

Course Description:

Students investigate concepts and methodologies of incidence response, cyber forensics (acquisition, preservation, analysis, and presentation of evidence) and the information security lifecycle. Topics include: cyber laws, cyber crimes, incidence response, pre-incident preparation, detection, notification, initial response, strategic decisions, response, recovery, and reporting.

Course Outcomes and Assessment:

Upon completing this course, students will be able to:

1. Understand the various types of Cyber Crime
   Assessment: Given a case study, students will be able to identify and explain the various types of cyber crimes.
2. Utilize the Computer Crime Investigation Process
   Assessment: Given a case study, students will be able to utilize the Computer Crime Investigation Process to gather necessary digital evidentiary data.
3. Design an Incident Detection and Response Plan.
   Assessment: Given a case study, students will be able to research various techniques methodologies, evaluate each for applicability, and create an Incident Detection and Response Plan.
4. Acquire, Preserve, Analyze and Present Digital Evidentiary Data.
   Assessment: Given a case study, students will be able to research and evaluate the various forensic hardware and software applications, evaluate each for applicability, and then acquire, preserve, analyze and present the digital evidentiary data.

MISM 671 ADVANCED NETWORK MANAGEMENT AND DESIGN

Course Description:

Students study the components of local area networks including an in-depth examination of the TCP/IP protocol and Internet, Intranet and Extranet connectivity. At least two server-based network operating environments will be explored. Students will receive hands-on exposure to tools available to manage resources on the network such as users and user accounts, disk space, various server functions such as file server, web server, firewalls and ftp server.

Course Outcomes and Assessments

Upon completing this course, students will be able to:

1. Configure a working DHCP server in two different network operating systems and describe its function
   Assessment: Students will be able to explain the function of a DHCP server and configure it in two different network operating systems

2. Configure a working DNS server in two different network operating systems and describe the function of a DNS server including reverse lookups and root authority.
   Assessment: Students will be able to explain the function of a DNS server and configure it in two different network operating systems.
   Configure a working web server in two different network operating systems including setting up multiple virtual web servers.
   Assessment: Students will install and configure two different web servers for hosting primary domains and virtual domains in both environments.
4. Explain how a subnet works and be able to configure a network into multiple subnets.
   Assessment: Students will understand the use of the subnet mask and be able to explain how to divide a class of IP addresses into multiple subnets based on the needs of the corporate structure.
5. Develop basic scripts in support of users and various server functions.
   Assessment: Students will be able to develop basic scripts in support of network management needs.
6. Install and configure a firewall to block various activities while allowing others to take place based on configuring firewall settings and rules tables.
   Assessment: Given a set of requirements, students will install and manage a firewall to block certain network traffic while allowing other traffic through.

Ferris State University

College of Business Graduate Programs Department

Advisory Committee Report

October 25, 2004

The MS-ISM Advisory Committee Meeting met from 8:00am until 10:15am on October 22, 2004. The meeting was held at Altercore Corporate Headquarters in Ada, Michigan.

Attendees

Advisory Members

Cheryl Rosloniec - Access Business Group/Amway
Elmer Robinson - Meijer, Director of Application Development
Joe Sacco - Gordon Foods, IT Manager
Jim Wilt - SageStone, Senior Architect

CBGP Members

William Boras
Greg Gogolin
Rick Mislan
Sid Sytsma
Laksma Tirtohadi
Anita Fagerman

The Reengineered MS-ISM

Following last year's advisory committee meeting and recommendations, the MS-ISM faculty completely reengineered the MS-ISM curriculum. After review and discussion of course outcomes for every MS-ISM course, the MS-ISM Advisory Committee made the following specific recommendations.

- MISM 640 should include project management metrics (covered not listed in outcomes)
- MISM 670 should include wireless technology

General comments and recommendations

- Package systems integration concepts should be included in the core
- Technical specifications are critical for individuals in that concentration, but purpose and function should be incorporated in the core
- Relationship management skills are a crucial component of outsourcing management and should be incorporated as a topic in the core

There were several topical areas that should be incorporated in the core

- Relationship management as part of outsourcing/offshore management
- Software configuration management
- Need to have an enterprise view of software implementation
- Analyzing company information needs in the purchase vs. build decisions
- The role of IT in providing real time legacy information access
- Management and participation in virtual teams
- Software testing methodology

Trends

- Service Oriented Architecture is the next trend that needs to be monitored.
- Service Level Agreement (SLA) development
- Radio Frequency Identification (RFID)

We wish to thank Ms. Cheryl Rosloniec and Altercore for hosting this year's meeting. The next meeting of the MS ISM Advisory Committee will be scheduled during the 2004-2005 academic year. Mr. Jim Wilt and StageStone have graciously agreed to host that meeting.

Ferris State University

College of Business Graduate Programs Department

MS ISM Advisory Committee Response to 2003 Recommendations

October 25, 2004

Attendees

Advisory Members

Cheryl Rosloniec - Access Business Group/Amway
Elmer Robinson - Meijer, Director of Application Development
Joe Sacco - Gordon Foods, IT Manager
Jim Wilt - SageStone, Senior Architect

CBGP Members

William Boras
Greg Gogolin
Rick Mislan
Sid Sytsma
Laksma Tirtohadi
Anita Fagerman

Agenda

The MS ISM Advisory Committee in its October 28, 2003 meeting made the specific program recommendations below. The CBGP spent the remainder of the 2003-2004 reengineering the MS ISM based upon advisory committee recommendations, alumni suggestions, and industry trends identified in the industry literature.

The primary purpose of the October 25, 2004 MS ISM Advisory Committee meeting Advisory committee was review of CBGP response to specific recommendations and industry trends. The program officially commences winter semester 2005.

Summary of MS ISM Advisory Committee Comments and Their Evaluation of CBGP Response

Trends	CBGP Response	Comments
Offshore development is the trend, IT professionals need skills in articulating problems, capturing requirements, and defining specifications	Done	
Individuals must have a fundamental understanding that IT is about meeting business needs and the challenge is turning IT solutions involving multiple platforms/vendors into business solutions	Done	
Applications must be deliverable to multiple devices using mobile technologies	Done	
Organizations are purchasing software applications and customizing to gain competitive advantages	Done	

General Skills	CBGP Response	Comments
Individuals must understand business and possess an enterprise view of systems	Done	
An understanding that web architecture and applications have to fit the process model	Improve	Need an enterprise view
Understand security as well pre-implementation front-end testing strategies	Done	
Analytical and project management skills are critical	Done	
Must be able to function and contribute as a team member	Done	
Must develop the skills and tenacity to reach project closure	Done	
Must be service oriented	Done	
Must be a willing learner and be able to accept new challenges	Done	
Understand that IT has 24/7 job responsibility	Done	
Must be able to direct team effort and establish achievable and measurable team objectives	Improve	Cover virtual teams
IT professionals must be able to manage multiple projects concurrently	Done	

Program Suggestions	CBGP Response	Comments
An internship is recommended for those individuals without an IT background.	Done	
Communications including written, oral, and presentation skills are vital. Every effort should be made to incorporate as many of these experiences as possible into an individual's program of study	Done	
Identify and incorporate a strategy to have students develop facilitating skills presented in business terms rather than IT jargon	Done	
Incorporate business intelligence which involves data warehousing, online analytical processing (OLAP), decision support, and data mining	Done	
To maintain current industry skills, we should explore potential for faculty internships with businesses	Done	Covered by on-going faculty consulting
Work with Suse and RedHat in corporate resource management, user management, directory management, and security issues	Done	

Advisory Committee Review Summary

The CBGP responded responsibly, thoughtfully, and thoroughly to the advice from all input sources and the new IT career paradigm. That effort was applauded by the MS ISM Advisory Committee members at the October 25, 2004 meeting.

Laksma Tirtohadi
11/16/2004 02:03 PM

To William Boras/FSU
cc
bcc
Subject RE: MS Survey

The checksheet is also at

http://cbgp.ferris.edu/afg/ism_chksheet.pdf

From: William Boras
Sent: Tuesday, November 09, 2004 9:55 AM
To: Laksma Tirtohadi
Subject: MS Survey

Hello,

In an effort to insure that the Master of Science in Information Systems Management (MS-ISM) remains the best program of its kind, the College of Business Graduate Programs (CBGP) department conducts an extensive review whenever significant program changes occur. That has occurred.

Based upon input from alumni, advisory committee members, and published industry trends, we have reengineered the MS-ISM. The core has been expanded to include coverage of interrelated IT functions, technology, business practices, and management tools. Options include advanced coursework in e-business, networking and security, business intelligence, and outsourcing management.

We are asking valued program stakeholders to review the new MS ISM program. Specifically, we seek your advice and council on opportunities for improvement. Alumni opinions are particularly important. You afterall, have a vested interested in the program's reputation and future viability. Our responsibility is to insure you can be proud of your graduate program.

To participate in the MS-ISM review:

1. First read the attached course descriptions and outcomes for the new MS ISM. Alternatively you may access them at: http://cbgp.ferris.edu/afg/ism.courses.pdf
2. Complete the on-line course evaluation at: http://cbgp.ferris.edu/afg/sform.cfm

This is a thorough examination that will take approximately two hours. My hope is that the time commitment to this process doesn't discourage you from participating. The deadline for completing this evaluation is November 19, 2004.

On behalf of the CBGP faculty, I want to thank you in advance for participating in this important process.

William Boras, Ph.D
Chair, College of Business Graduate Programs
borasb@ferris.edu
231.591.2168

<< File: Checksheet BLANKISM-05W.doc >> << File: ISM Course Descriptions&Outcomes.pdf >>

William Boras /FSU
11/16/2004 02:24 PM

To

cc

afzalmemon@yahoo.com; aldricht@ferris.edu; amandaghill@hotmail.com; amy.marsh@pfizer.com; bbaker@gfs.com; bill.pribble@haworth.com; binodbh@hotmail.com; brian.bridson@baker.edu; d_bone62@hotmail.com; danam158@yahoo.com; davidhilt@acm.org; ddmulhol@hotmail.com; dejsj@hotmail.com; dgsharma@yahoo.com; drakshit@hotmail.com; dubraskab@hotmail.com; dvradha@yahoo.com; eak_tan33@hotmail.com; ebubekirugur@hotmail.com; ergunarsal@hotmail.com; flahertyw@dteenergy.com; g_sanstra@hotmail.com; gregory@freedom.orbrosolutions.net; igor@igorsoljan.com; iremcan95@yahoo.com; ishitbhatt@rediffmail.com; isikozen@hotmail.com; j_kiestra@hotmail.com; jk_anitashalni@yahoo.co.in; jledezma@gfs.com; jnjngolf547@cs.com; kathy_l_fisher@ferris.edu; kevin@kevinvr.com; khushpin@hotmail.com; kim_graboskey@ferris.edu; kristen@stafford.net; lek_usa@hotmail.com; liulily@hotmail.com; maciverm@ferris.edu; mastmd@hotmail.com; mckennaj@co.oakland.mi.us; michael_kehoe@spartanstores.com;

bcc michelle_balliet@ferris.edu; muma_kimberly@yahoo.com; murtazam@hotmail.com; napat@hotmail.com; nat5884547@hotmail.com; nedra@tucker-usa.com; nomitapaul@hotmail.com; NorihiroKondo@yahoo.com; p_eichelsheim@hotmail.com; pathakbhavani@yahoo.com; pereiraa@hotmail.com; poojasn78@yahoo.com; priyawadee@yahoo.com; pstloui@yahoo.com; pstloui@yahoo.com; putnamba@ism.ferris.edu; Ravikorn@yahoo.com; realjnus@yahoo.com; renshu@direcway.com; rob_tuck_ferris@hotmail.com; robert@lifesportal.com; rudolf182@hotmail.com; rwilli@ncats.net; sabari_nathan@lycos.com; samer_sadek@hotmail.com; sandrac63@hotmail.com; scott@sunrisejunction.com; shams1@hotmail.com; shannonmbritton@hotmail.com; sivamvs@yahoo.com; sonic_lord@hotmail.com; sonicgun@hotmail.com; spiker99_1999@yahoo.com; suchunyi@yahoo.com; sudeep76@hotmail.com; sudrak_d@hotmail.com; sukumar99@yahoo.com; sun_tien@zdnetmail.com; Terrance.Campbell@phoenix.edu; tetolauris@hotmail.com; Thirajed@usa.net; vinhvu@vinhthuy.net; vj5000@yahoo.com; woodsy01@yahoo.com; xuanliu36@hotmail.com

Subject MS Survey

Dear Alumnus,

In an effort to insure that the Master of Science in Information Systems Management (MS-ISM) remains the best program of its kind, the College of Business Graduate Programs (CBGP) department conducts an extensive review whenever significant program changes occur. That has occurred.

Based upon input from alumni, advisory committee members, and published industry trends, we have reengineered the MS-ISM. The core has been expanded to include coverage of interrelated IT functions, technology, business practices, and management tools. Options include advanced coursework in e-business, networking and security, business intelligence, and outsourcing management.

We are asking valued program stakeholders to review the new MS ISM program. Specifically, we seek your advice and council on opportunities for improvement. Alumni opinions are particularly important. You afterall, have a vested interested in the program's reputation and future viability. Our responsibility is to insure you can be proud of your graduate program.

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2. Complete the on-line course evaluation at: http://cbgp.ferris.edu/afg/lform.cfm

This is a thorough examination that will take approximately two hours. My hope is that the time commitment to this process doesn't discourage you from participating. The deadline for completing this evaluation is November 26, 2004.

On behalf of the CBGP faculty, I want to thank you in advance for participating in this important process.

William Boras, Ph.D
Chair, College of Business Graduate Programs
borasb@ferris.edu
231.591.2168


ism_chksheet.pdf


ISM Course Descriptions&Outcomes.pdf

College of Business Graduate Programs (CBGP)
Academic Program Review 2004-05
Alumni Survey

Preface

You have been selected to participate in the Master of Science in Information Systems Management (MS ISM) Academic Program Review. This is a very important process that focuses on our effort to meet the graduate level educational need of information systems professionals.

Presented below is a brief history of the MS ISM program development efforts from fall 2001 to the current program which takes effect winter 2005.

We value your input as an alumnus of the MS ISM program and as significantly as an IT professional. Our goal for the MS ISM program has always been to the training of IT professionals with state-of-the-art relevant and career enhancing skills. You are the best judge of that effort and your assistance is greatly appreciated.

Historical Perspective

Fall 2001

Fall 2001 international students accounted for 60% of MS ISM enrollment and student credit hours (SCHs) produced. Following the events of September 11, 2001 the College of Business Graduate Programs (CBGP) anticipated a significant negative impact on international student enrollment. In response the CBGP Department set a strategy to increase domestic enrollment. That was to be achieved by reengineering the MS ISM to a graduate program aimed at training persons for entry into the IT profession and/or enhancing the skills of practicing IT professionals. Following institutional approvals, the new MS ISM commenced fall 2002.

Fall 2003

Our anticipation of decreased international student enrollment became reality and impacted the MS ISM immediately. Fall 2002 international SCHs fell to 40% of total production. Our strategy to increase domestic enrollment was correct. However, the winds of IT change brought into question our tactical response.

We had been watching and listening to the rumblings of outsourcing in the IT industry for several months. What at first appeared to be a limited exploration of industry possibilities quickly became an avalanche of change. Worst of all (for us) was that avalanche enveloped the lower tier of IT jobs, software developers…the group, in part, that we were attempting to prepare for career entry in the MS ISM, the group that for whom we had built an entirely new MS ISM. We had to respond.

We spent the 2003-04 academic year listening to our advisory committee, program alumni, scanning the literature, and listening to the working domestic IT students in the MS ISM program. With as clear a picture that could be gleaned from available sources, we again reengineered MS ISM with a core course focus on knowledge and skills to effectively function in an outsourcing environment. Additionally we modified advanced study certificates in "management tools and techniques," and "information security and network management," and created three new advanced study certificates in "outsourcing management," "e-business and systems integration," and "business intelligence," utilizing courses from the MS-ISM, MBA, and newly created courses. The new MS ISM received final approval in May 2004 for implementation winter 2005.

Following is a brief description and objectives for the core and certificate courses. Please review each course and certificate option giving us your opinion and opportunities for improvement.

The final part of this review is to seek your input on industry trends that may have to be reflected in the MS ISM and/or monitored by the CBGP faculty.

Thanks in advance for your participation.

MMBA 601 Professional Skills Development

Are the courses and objectives relevant with current or professional industry trends? If you agree, please respond with "OK".

OK
this is a test
OK. Would highly recommend the introduction of this course in the curriculum.
Hi LT!
OK
OK
OK
OK
OK
While writing papers in APA format needed to appropriately communicate graduate level papers, many of the additional skills listed in the course description are much closer in line with industry. Presentations, teamwork, Internet & periodical research are all useful in the IT profession.
OK

What improvements or changes could be made? If you agree, please respond with "OK".

More programming and technical courses
this is a test
Would be great if you can include more of 'personality development' type of courses. For example, along with the topic - 'effective presentation', including a few points on business ethics/corporate mannerism would make it even more interesting.
Delete
Ok
A brief discussion/description of the Core Courses and what students should expect would be helpful during MMBA601
Some details into the documenting of an information systems' project such as critical design review, testing procedures, pilot phase documentation, results analysis, etc. Not so much the actual process as exploring superficially the massive amount of documentation and emphasizing its importance and purpose(s).
NO
OK
OK
Using real time case study(ies) would be helpful.

Are there suggestions regarding relative importance among the course objectives? If you agree, please respond with "OK".

OK
this is a test
OK
test
OK

OK
OK
NO
I'm going to say the same thing in every spot here, don't have another course where students merely read the chapter and write a summary. There is nothing more boring than that. Give them something to apply what they learned into a project of some kind. Changing this course from a 1 credit weekend course to a three credit course makes the process of understanding the program curriculum much more comprehensive. Plus the new curriclum makes the choice of electives much less important than learning the core IT skills of the required courses.
OK

MISM 610 Database Management and Administration

Are the courses and objectives relevant with current or professional industry trends? If you agree, please respond with "OK".
OK
OK
OK
Ok
OK
OK
OK
Database Management and Administration is a core class that should be required as a core class. The only change to this course is that the content has improved from its previous description.

What improvements or changes could be made? If you agree, please respond with "OK".
Exploring more technologies/systems - eg. Including Oracle along with the existing MS SQL
Add multiple platforms to this class. Although it would be cumnbersome, it is important.
More practice with the Physical Database phase.
Working with a real world data sets (may be scramblled) and produce some standard reports and relate to the requirements in decision making process.
More emphasis on documenting database structure, dictionary, etc. Most of my projects require more time on documenting and defending documentation than actually inventing clever solutions.
Create databases that work with web pages and make practic exerises.
SQL is nice, and so is the other big database systems out there, but the practical side of things is that most places use Access because it's cheaper and easier to give to most employees for use. Everywhere I have worked now, they all have access and most people do not know how to use it.
OK

Are there suggestions regarding relative importance among the course objectives? If you agree, please respond with "OK".
OK
OK
This is an important class that definately belongs in the Core.
Ok
OK
OK
I'm going to say the same thing in every spot here, don't have another course where students merely read the chapter and write a summary. There is nothing more boring than that. Give them something to apply what they learned into a project of some kind.
The course objectives are comprehensive, yet important to understand for a job in the IT profession.

MISM 629 Legal and Ethical Issues in Business

Are the courses and objectives relevant with current or professional industry trends? If you agree, please respond with "OK".
OK
OK
OK
OK
There should be some real life local interjection here. Maybe a trip to a real company in Chicago or Detroit to get a talking to from a CEO on actual REAL issues faced and how they were resolved. Either that or at least some reasearch into actual issues. I had this class a long time ago but it seemed mostly text based and not very current.
Legal and Ethical Issues in Business are two fields that were not even mentioned when I was in the MISM Program. Look no further than the rash of ethical failures recentlyin the business community and the many legal issues being played out currently related to Information Technology and their importance is obvious.
Yes, very much so
This course was great with Kim Muma taught it.

What improvements or changes could be made? If you agree, please respond with "OK".
OK
OK
More interactive 'in class-room case study sessions' - using videos, demos.
Many case studies involved "gray area" situations that could go either way. Often there was no right or wrong answer. I would maybe concentrate on more Black and White issues. As we have seen with Enron, WorldCom and others, we can't assume anything anymore.
I appreciate the need to have a global analysis but I suspect many of even the foreign students plan to work in the US. There needs to be an analysis of ethical/cultural differences in regions of the US.

OK
Create real life case studies for groups in which someone is a cop, someone is a bad guy. They need to work out the effects of the theft/piracy/etc, and what the important issues are. It could even be a classroom role play where people are given a list of pertinent facts and act out on their own. This makes people think on the fly and will come up with some creative situations.
Stay with her pattern, she had a great course that held everyone's interest to include guest speakers.

Are there suggestions regarding relative importance among the course objectives? If you agree, please respond with "OK".
OK
OK
OK
Extremely important.
I really think there could be a greater emphasis on how you have to live with your decisions for yourself, beyond your employment/company, beyond your degree. There needs to be an emphasis that all of the other classes should incorporate this class' introspective anaylsis almost on each project. This class is really the best chance you have to stress the importance of personal academic and work integrity.
By making this a core couse, it forces all students to acknowledge that legal and ethical business concerns a real and important to address. Business does not operate in vaccum where the difference between wrong and right is clear or even questioned. Thank you for adding this course the the core curriculum.
OK
I'm going to say the same thing in every spot here, don't have another course where students merely read the chapter and write a summary. There is nothing more boring than that. Give them something to apply what they learned into a project of some kind.

MMBA 640 Project Management

Are the courses and objectives relevant with current or professional industry trends? If you agree, please respond with "OK".
OK
OK
While I liked the software this class used I know of no company that uses it. I'm not even sure I remember the name of it. Use MS Project. Good or bad that's what the majority uses.
OK
OK
Project Management, like Database Management and Administration, is a ubiquitous part of Information Technology.
OK.
OK

What improvements or changes could be made? If you agree, please respond with "OK".

Teach this course using Microsoft Project Manager because it is very relevant to the business world, we all use it. Make sure the students get a chance to build a project or two with timelines, etc. Also, they need to know how to find the critical path, yes, but also what to do when the program doesn't meet the timeline, because that frequently happens.

To create a project for a real company, support the project with numbers and research. Most of my projects have documentation that would baffle the imagination. Discuss HOW to present documentation of a MS project so others can understand it. If you're talking to subordinates most of them won't know the details of a Project Gantt chart and most won't care. The portion on how current trends fudge projects to pad them with extra time needs to be emphasized.

OK

Examples of actual projects would be helpful

OK

OK. Excellent course. Very practical and informative.

A large section on change management needs to be added. Also an emphasis needs to be placed on critical path thinking, not just how to follow it on piece of software. Everything is project management, but you don't always need a program to outline the steps.

Are there suggestions regarding relative importance among the course objectives? If you agree, please respond with "OK".

I'm going to say the same thing in every spot here, don't have another course where students merely read the chapter and write a summary. There is nothing more boring than that. Give them something to apply what they learned into a project of some kind.

This course is very important in the real world and should use a book different than "Project Management for Dummies", there are many interesting book about this subject.

There could be some tie in to how important project management is regarding the rest of the projects students will be working on in their other classes. Ways they can apply their skills from this class to other classes not just projects at work.

OK

OK

OK

OK

OK

MISM 661 Principles of Information Security Management

Are the courses and objectives relevant with current or professional industry trends? If you agree, please respond with "OK".

OK

Ok

Need a greater emphasis on physical security. My company recently posted little posters about not admitting people with IDs. Does that psychological reinforcement work? How

Information Systems Management

APRC 2005-2006

section 3 of 4

well? What are the best ways to enlist employees into security.
Ok, very important these days, wish you would have had it when I attended.
Security management is a field I am only familiar with by reading a number of articles and writing papers on the subject. Based on the course objects, the content appears to cover security issues relevant to professional industry tends. However, I have limited expierience directly in the field.
OK

What improvements or changes could be made? If you agree, please respond with "OK".
OK
OK. More hands-on approach.
Most students haven't seen a real security system or have spoke to a facilities/security manager. Field trip!! or at least a guest speaker or two and a follow up project. Something that ties it in to reality.
OK
Try to make it as hands on as possible beyond case studies when possible.
OK

Are there suggestions regarding relative importance among the course objectives? If you agree, please respond with "OK".
OK
OK
There are plenty of local companies that could benefit from an application of these course objectives. Have the students apply them to a local company in GR/area.
I'm going to say the same thing in every spot here, don't have another course where students merely read the chapter and write a summary. There is nothing more boring than that. Give them something to apply what they learned into a project of some kind.
Security is an area often overlooked prior to the new security focus that followed the terrorist attacks of September 11, 2001. Based on many of IT jobs available related to security, the course objects make it a useful field for people who end up working in securty.
OK

MMBA 665 Information and Analysis Systems

Are the courses and objectives relevant with current or professional industry trends? If you agree, please respond with "OK".
OK
This course and objects seems to be more comprehensive than the balanced scorecard approach of the previous course offering. By examining enterprise resource planning, etc. the course is more IT related than management related as the course used to be.
OK
OK
OK

Also a good course, wish it was available when I was around.
OK

What improvements or changes could be made? If you agree, please respond with "OK".
OK
OK
OK. Is there an option for students to go for a certification in any of the tracks - like SAP/PeopleSoft etc? There should be a certification option available.
A good class - Team relationships should be monitored a little closer.
OK
You could let me teach??
OK

Are there suggestions regarding relative importance among the course objectives? If you agree, please respond with "OK".
The measuring of information is easy, it is finding out the right thing to measure that is the mose difficult and most important by far.
My experience with management information systems is limited to the few systems that I have experience with three different positions within a company's IT department. Based on that limited experience, the course objectives appear to be adequate.
Ok
OK
OK
I'm going to say the same thing in every spot here, don't have another course where students merely read the chapter and write a summary. There is nothing more boring than that. Give them something to apply what they learned into a project of some kind.
OK

MISM 670 Network Management and Design

Are the courses and objectives relevant with current or professional industry trends? If you agree, please respond with "OK".
Network Management and Design offers course objectives in line with current industry practices. The course objectives have changed since I took the class and appear to be much more focused and well thought out than as the previous course offering.
Very important course now - good.
OK
Be careful not to make this class too technical. Focus on Network analysis and design structure rather than actual implementation. This is a MANAGEMENT degree not a technical degree. If the students want technical classes they should get an applied science bachelors degree and be paid/placed accordingly at work.
OK
OK

What improvements or changes could be made? If you agree, please respond with "OK".
OK
Good job.
It should give the student the opportunity to create a small LAN with real swithches, hubs and cables. The faculty should also realize the importance of Wireless networks and propose projects in this area, i.e. to configure a PC to work with a wireless card and stuff like that.
De-emphasize implementation and emphasize documentation and discovery techniques. Explore BIG PICTURE concepts not the detailed workings of a network. The theory being that IS MANAGERS will be managing the network not actually implementing the day-to-day.
OK
OK. Excellent course.

Are there suggestions regarding relative importance among the course objectives? If you agree, please respond with "OK".
Network Mangement and Design is a core course similar to Database Mangement and Administration as well as Project Management. Network Management and Design proveds the fundamentals of IT infrastructure management and design. The course objects appear to balance hands on experience with nework operating operating systems and network equipment.
I'm going to say the same thing in every spot here, don't have another course where students merely read the chapter and write a summary. There is nothing more boring than that. Give them something to apply what they learned into a project of some kind.
OK
OK
OK
OK

MISM 740 Business Intelligence

Are the courses and objectives relevant with current or professional industry trends? If you agree, please respond with "OK".
OK
Hmmm, don't know about this one.
OK
Real companies, real speakers, etc. would add to current trends
I don't have much experience with Business Intelligence systems.

What improvements or changes could be made? If you agree, please respond with "OK".
OK. A bit concerned about this course being a 'core'.
Not sure it's relevant.
OK

OK
OK

Are there suggestions regarding relative importance among the course objectives? If you agree, please respond with "OK".
OK
I'm going to say the same thing in every spot here, don't have another course where students merely read the chapter and write a summary. There is nothing more boring than that. Give them something to apply what they learned into a project of some kind.
OK
OK
OK

MISM 799 Integrated Capstone Project

Are the courses and objectives relevant with current or professional industry trends? If you agree, please respond with "OK".
OK
OK
OK
OK
The Capstone applies all of the skills and knowledge acquired in the MISM program. As all the core courses are related to industry trends and standards, the Capstone is also relevant.
Obviously necessary and relevant, I don't regret mine at all. My personal project is still on the web and I have had almost 6000 visitors to it now, with comments all the time about the site and material.
OK

What improvements or changes could be made? If you agree, please respond with "OK".
I suggest the capstone project be a project for an organization in the real World. This should be the gate to get future jobs after graduating from the program. It is good to write a project and publish a book in the campus library, but it would be much more useful for the student to have the chance to participate in a real world project within a company.
OK
OK
OK - This is exactly what a Capstone course should be. It gave us an opportunity to incorporate many previous courses. We were allowed to develope the project along our personal interests.
OK
OK
OK

Are there suggestions regarding relative importance among the course objectives? If

you agree, please respond with "OK".
OK
OK
OK
Very important
Team base capstones might be difficult. Not all of the Capstone should be team oriented. In addition, the new Capstone curriculum has gotten away from a research based paper approach which is a change probably for the better for a majority of the students in the MISM program (especially those who struggle with APA format and writing research papers).
Interesting and very vital part of the curriculum.
OK

MMBA 799 Integrated Business Experience

Are the courses and objectives relevant with current or professional industry trends? If you agree, please respond with "OK".
OK
OK
Ok, I take it that this is like an intern position?
OK
I graduated with a degree in MISM not the MBA.
OK

What improvements or changes could be made? If you agree, please respond with "OK".
OK. The course outcomes and assessments seem to make the course sound a bit too complex. But I am sure it will help the students.
OK
OK
OK
OK
OK

Are there suggestions regarding relative importance among the course objectives? If you agree, please respond with "OK".
OK
It seems that this would be substantially more useful than the capstone class. I wish this would have been available for me.
I'm going to say the same thing in every spot here, don't have another course where students merely read the chapter and write a summary. There is nothing more boring than that. Give them something to apply what they learned into a project of some kind.
OK
OK
OK

MMBA 612 Introduction to Performance Metric Systems

Are the courses and objectives relevant with current or professional industry trends? If you agree, please respond with "OK".

OK
Ok
this is a test
OK
I presume this is going to be much like the Balanced Score Card, not enough businesses use it, however, the more that learn to, the more likely they will start using it.
OK
The only experience with performance metric, balanced scorecard, and Malcolm Baldrige National Quality is in the course work in the MSISM program. Because of thise I don't know how the objectives are relevant with current professional trends and o

What improvements or changes could be made? If you agree, please respond with "OK".

This is an extremely helpful class. Tough but helpful.
OK. Since a course on Financial Management doesn't appear in the core section, I guess this one should be moved to the core group. I remember studying these topics (and more) in the Financial Management class (ISM Program-2003) and it surely was an eye opener.
this is a test
OK
OK
The school, not the students, should get actual company data for this one. Surely there could be some tie in with corporations in MI/area that would want some analysis of their metrics?
OK

Are there suggestions regarding relative importance among the course objectives? If you agree, please respond with "OK".

Very important
OK
this is a test
OK
I'm going to say the same thing in every spot here, don't have another course where students merely read the chapter and write a summary. There is nothing more boring than that. Give them something to apply what they learned into a project of some kind.
This class is under emphasized. Managers won't take your word for anything. Emphasize having 2-3 different views of your findings.
OK

MMBA 615 Quality Improvement Principles and Applications

Are the courses and objectives relevant with current or professional industry trends? If you agree, please respond with "OK".
OK
OK, make it more quality focused and some of the information that can be generated for quality relative to the real business environment.
OK
Yes and no...MBNQA is something that is a rather lofty goal for most companies around, but it is a very important concept. Issues related to ISO and QS standards, 6 Sigma, and so on are much more applicable to the common company.
OK

What improvements or changes could be made? If you agree, please respond with "OK".
OK. Good its included in the 'elective' section.
OK
OK
Include some real life examples, such as having a Quality Engineer from a local company come in and describe their work and what the actually do.
Great Class - introduces relevant business quality concepts. Quality is the primary focus in so many industries today.

Are there suggestions regarding relative importance among the course objectives? If you agree, please respond with "OK".
OK
I'm going to say the same thing in every spot here, don't have another course where students merely read the chapter and write a summary. There is nothing more boring than that. Give them something to apply what they learned into a project of some kind.
OK
OK
Very Important

MMBA 705 Business Process Reengineering

Are the courses and objectives relevant with current or professional industry trends? If you agree, please respond with "OK".
Ok, this was a good course and I enjoyed it.
We're reorganizing into "service centers" and they're getting away from calling us an IT department.
OK
OK

What improvements or changes could be made? If you agree, please respond with "OK".
Think in terms of more value added/value engineering VAVE type material and please get books that are a little more up to date.

Look at some global trends too.
OK
OK. Would be great if this course if offered via a 'workshop' kind of a process; instead of including it in a three credit elective course. Those interested may refer books or other material if necessary. The workshop can include people for some local industries who can shed more light on their business processes.

Are there suggestions regarding relative importance among the course objectives? If you agree, please respond with "OK".
I'm going to say the same thing in every spot here, don't have another course where students merely read the chapter and write a summary. There is nothing more boring than that. Give them something to apply what they learned into a project of some kind.
We reorg every 3-5 years. This should be viewed with a great deal of importance.
ok
OK

MISM 645 Object-Oriented Analysis

Are the courses and objectives relevant with current or professional industry trends? If you agree, please respond with "OK".
ok, but I don't think it's used much in industry or in the field anymore.
OK
OK
OK

What improvements or changes could be made? If you agree, please respond with "OK".
Consider something different? More networking and security related courses.
OK. Its great that UML and OOP topics are being offered.
OK
OK

Are there suggestions regarding relative importance among the course objectives? If you agree, please respond with "OK".
I'm going to say the same thing in every spot here, don't have another course where students merely read the chapter and write a summary. There is nothing more boring than that. Give them something to apply what they learned into a project of some kind.
OK
OK
OK

MISM 646 Systems Integration

Are the courses and objectives relevant with current or professional industry trends? If you agree, please respond with "OK".
OK
OK
OK
OK, good

What improvements or changes could be made? If you agree, please respond with "OK".
OK
OK
OK
Good course, again, wish it was available when I attended.

Are there suggestions regarding relative importance among the course objectives? If you agree, please respond with "OK".
OK
OK
OK
I'm going to say the same thing in every spot here, don't have another course where students merely read the chapter and write a summary. There is nothing more boring than that. Give them something to apply what they learned into a project of some kind.

MISM 659 Application Development

Are the courses and objectives relevant with current or professional industry trends? If you agree, please respond with "OK".
Careful to not emphasize the technologies because they will most certainly be different no matter where the student goes. Emphasize the concepts.
OK
Good, OK
Database driven websites are the most popular ones in industry, and shoud be given much emphasis.

What improvements or changes could be made? If you agree, please respond with "OK".
Managers don't really DO work they energize workers to do work. While an understanding of the work is essential it shouldn't be the overriding importance of the course. Sections 1, 2 and 3 seem to focus too specifically on a particular type of technology rather than on a concept of implementation.
OK. Sounds like this course has somewhat replaced the 'Web Development and Management' course. Its bad that the Web Development course is no longer in the core section.
Ok, also good course
OK

Are there suggestions regarding relative importance among the course objectives? If you agree, please respond with "OK".
4 and 5 should be most important.
OK
I'm going to say the same thing in every spot here, don't have another course where students merely read the chapter and write a summary. There is nothing more boring than that. Give them something to apply what they learned into a project of some kind.
OK

MISM 662 Incident Response and Cyber Forensics

Are the courses and objectives relevant with current or professional industry trends? If you agree, please respond with "OK".
Ok
This class' applied emphasis is actually appropriate because even applied security is a very young, lucrative field right now. It will become less important as technical expertese separates from security management.
OK
OK

What improvements or changes could be made? If you agree, please respond with "OK".
Ok - you might try having something more to customer relations management - how to respond to customer complaints, design customer surveys, especially related to security breaches, etc.
OK
OK
OK

Are there suggestions regarding relative importance among the course objectives? If you agree, please respond with "OK".
I'm going to say the same thing in every spot here, don't have another course where students merely read the chapter and write a summary. There is nothing more boring than that. Give them something to apply what they learned into a project of some kind.
OK
I wish this was available when I was there.
OK

MISM 671 Advanced Network Management and Design

Are the courses and objectives relevant with current or professional industry trends? If you agree, please respond with "OK".
Ok

OK
I don't agree with steps 1, 2, 3 and 6. Most companies won't let anyone without an MCSE or other cert on to their servers to configure those services. They should have a thorough understanding but they could just as easily watch someone do it and then produce a write up. So yes, having an UNDERSTANDING of the task(s) is important but not necessarily being able to perform the task.
OK

What improvements or changes could be made? If you agree, please respond with "OK".
Good, every company has a network now, and more and more security is needed to prevent virus attacks and people downloading personal stuff into their computers.
OK. Great course
What IT manager installs a firewall? Maybe at smaller companies I guess. They don't where I work. Our IT managers wouldn't dare touch DNS or DHCP. Many don't know what the acronyms mean or do. Yes they should understand the concepts/acronyms but not the details.
OK

Are there suggestions regarding relative importance among the course objectives? If you agree, please respond with "OK".
I'm going to say the same thing in every spot here, don't have another course where students merely read the chapter and write a summary. There is nothing more boring than that. Give them something to apply what they learned into a project of some kind.
OK
focus on varying concepts and applications of these services rather than the how to.
OK

MISM 680 Current Topics in Information Systems Management

Are the courses and objectives relevant with current or professional industry trends? If you agree, please respond with "OK".
OK
OK
OK
OK

What improvements or changes could be made? If you agree, please respond with "OK".
If you make this a current topic of relevance to problems in the industry today, new developments and current issues, this will be a good course.
These should be exclusively applied to real life situations. Classes should be created to address an issue at a company. Local companies would KILL to have a team of graduate students attack a problem for free or some small recognition/mention. Don't limit this to the Big Rapids area or GR. If the project is in Detroit then the class needs to meet three

weekends in Detroit and maybe the prof needs to meet with the company in Detroit OFTEN. Very expensive and a huge hassle but the school/program will have a much more impressive reputation and will be able to point to these projects as actual applications of concepts.
Stay on top of the newest things out there. The newest latest and greatest is always important. It would almost be worthwhile to have a "new releases" class or future release class.
OK

Are there suggestions regarding relative importance among the course objectives? If you agree, please respond with "OK".
I'm going to say the same thing in every spot here, don't have another course where students merely read the chapter and write a summary. There is nothing more boring than that. Give them something to apply what they learned into a project of some kind.
OK
OK
OK

FERRIS STATE UNIVERSITY
COLLEGE OF BUSINESS
GRADUATE PROGRAM
STUDENT SURVEY
PRESENTATION

Problem Statement

Ferris State University offers MISM and MMBA programs to graduate students. These programs are updated regularly to satisfy the needs of the students. An online survey based on students' point of views regarding the MISM program was done in 2002. However, courses and professors have changed since the last survey. Also, the previous survey did not include the MMBA program. This project will show how these changes have affected the MISM program and define the strengths and weaknesses of the programs from current students' point of view.

Purpose

The purpose of the project is to evaluate current students' satisfaction level with MISM and MMBA programs. The results of our survey will be compared to the results of the previous survey in order to show the progresses of the programs and how changes affected students when selecting Ferris State University for their graduate training.

Value

The information acquired from this study will be used to define the strengths and weaknesses of the programs. Therefore, it will provide an opportunity to offer better graduate training to new students.

Research Questions

The research questions that we ask in this project are:

1. How has the current student satisfaction level changed since the previous survey? Satisfaction will be evaluated based on certifications offered at programs, faculty members' service and expertise, and technology resources.
2. What do current students feel about the strengths and weaknesses of the programs? How have their feelings changed since the previous survey?
3. What do current students feel about the improvements that may be made to the programs? What is the change in the class format preference?
4. Do current students believe that these programs provide enough background in related fields of interests to confidently seek employment? What are students' feelings to the topics offered?
5. How has the current student demographics changed since the previous survey?

Survey questions were formulated based on the previous survey and the input of the faculty members. These questions were structured in five ways.

- Rank: Strongly agree to strongly disagree.
- Yes or no.
- Open ended-what and why questions.
- Rank-put in order of importance or preference.
- Check all that apply.

The data collected responses of 18 MISM students out of 51 and 20 MMBA students out of 52. In general, 38 out of 103 or 37% of the students took the survey, which is higher than the targeted respond rate of 34%. On the other hand, the previous survey collected responses of 80 students out of 149 or 54%. College of Business Graduate Programs Office notified students about the surveys in both cases to increase the respond rate.

Research Question 1: How has current student satisfaction level changed since the previous survey?

Survey Question 1: I am generally well satisfied with the program.

Table 1: I am generally well satisfied with the program.

I am generally well satisfied with the program.	N	Mean	Median	Mode	Standard Deviation	Standard Error
MISM Students	18	4.11	4	4	0.96	0.23
MMBA Students	20	4	4	4	0.97	0.22
Previous Survey	80	3.625	4	4	1.25	0.14

Response options: 5 ="Strongly Agree", 4 = "Agree", 3 = "Neutral", 2 = "Disagree", 1 = "Strongly Disagree".

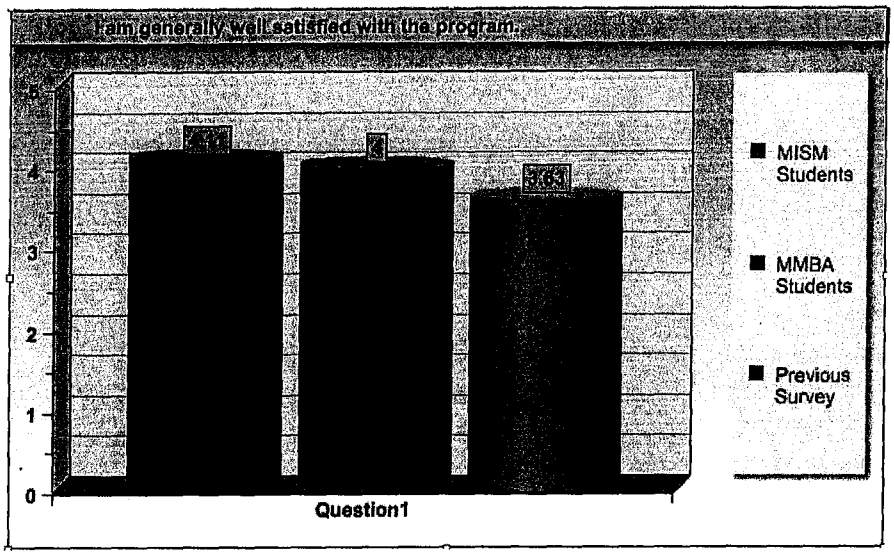

Figure 1: I am generally well satisfied with the program.

As seen in the figure above, new students generally have a higher satisfaction compared to the previous students.

Survey Question 2: Would you choose the Ferris State University College of Business Graduate Program again?

Table 2: Would you choose the Ferris State University College of Business Graduate Program again?

Would you choose the Ferris State University College of Business Graduate Program again?	N	Mean	Median	Mode	Standard Deviation	Standard Error
MISM Students	18	1.83	2	2	0.38	0.09
MMBA Students	20	1.85	2	2	0.37	0.08
Previous Survey	80	1.775	2	2	0.42	0.05

Response options: 2 ="YES", 1 = "NO".

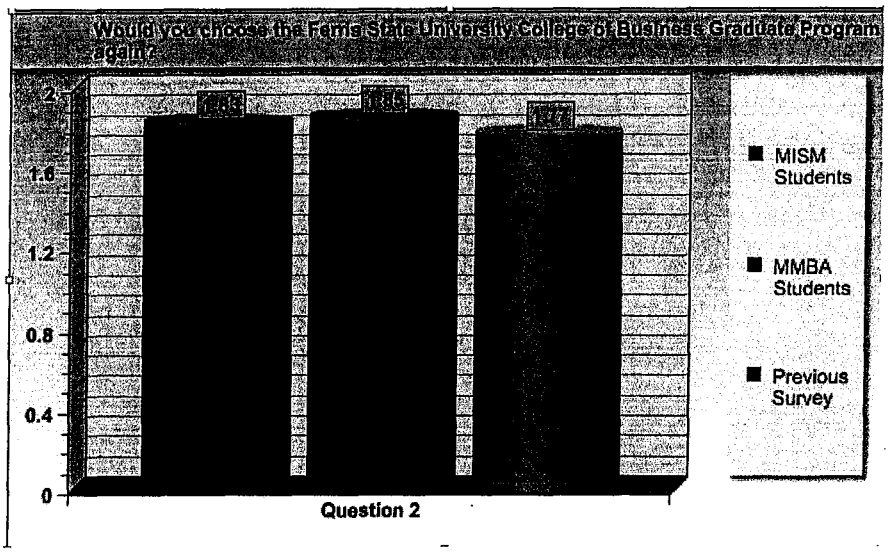

Figure 2: Would you choose the Ferris State University College of Business Graduate Program again?

In all surveys, most of the students gave a positive response to this question. Furthermore, new students are more likely to choose Ferris again compared to the previous students.

Survey Question 4: Certificates offered.

Table 3: Certificates Offered

Certificates offered	N	Mean	Median	Mode	Standard Deviation	Standard Error
MISM Students	18	1.83	2	2	0.62	0.14
MMBA Students	20	1.45	1	1	0.51	0.11
Previous Survey	80	1.55	2	2	0.50	0.06

Response Options: 3 = "Too Many", 2 = "Just Right", 1 = "Not Enough"

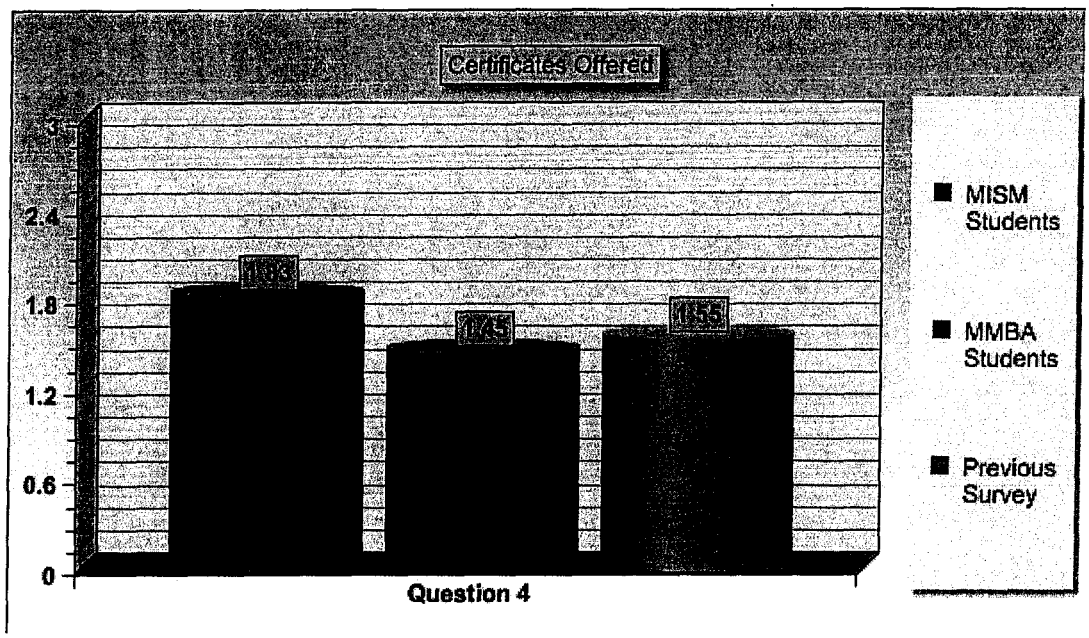

Figure 3: Certificates offered

New MISM students are happier with the offered certificates compared to the previous students. On the other hand, MMBA students are the least pleased group with this statement.

Survey Question 7: Faculty members in the program care about my progress.

Table 4: Faculty members in the program care about my progress.

Faculty members in the program care about my progress.	N	Mean	Median	Mode	Standard Deviation	Standard Error
MISM Students	18	4.33	4.5	5	0.84	0.19
MMBA Students	20	4.45	5	5	0.76	0.16
Previous Survey	80	3.96	4	4	0.92	0.10

Response options: 5 ="Strongly Agree", 4 = "Agree", 3 = "Neutral", 2 = "Disagree", 1 = "Strongly Disagree".

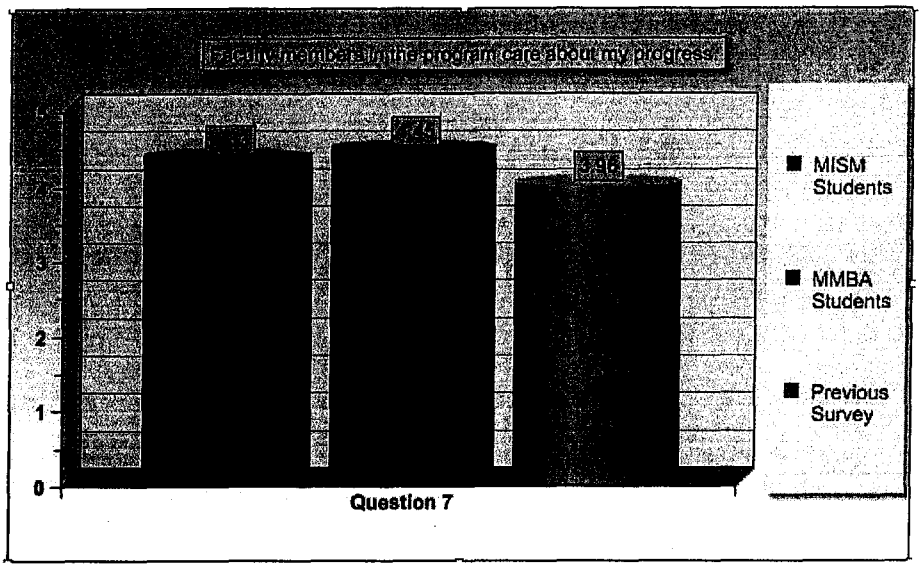

Figure 4: Faculty members in the program care about my progress.

This figure follows the same pattern as the other figures. New students are more pleased with the faculty members care compared to the previous students. MMBA students again have the highest satisfaction.

Survey Question 8: The technology resources are adequate. If lacking, where?

Table 5: The technology resources are adequate.

The technology resources are adequate	N	Mean	Median	Mode	Standard Deviation	Standard Error
MISM Students	18	3.94	4	4	1.06	0.25
MMBA Students	26	4.1	4	4	1.49	0.17
Previous Survey	80	3.5	4	4	1.16	0.13

Response options: 5 ="Strongly Agree", 4 = "Agree", 3 = "Neutral", 2 = "Disagree", 1= "Strongly Disagree".

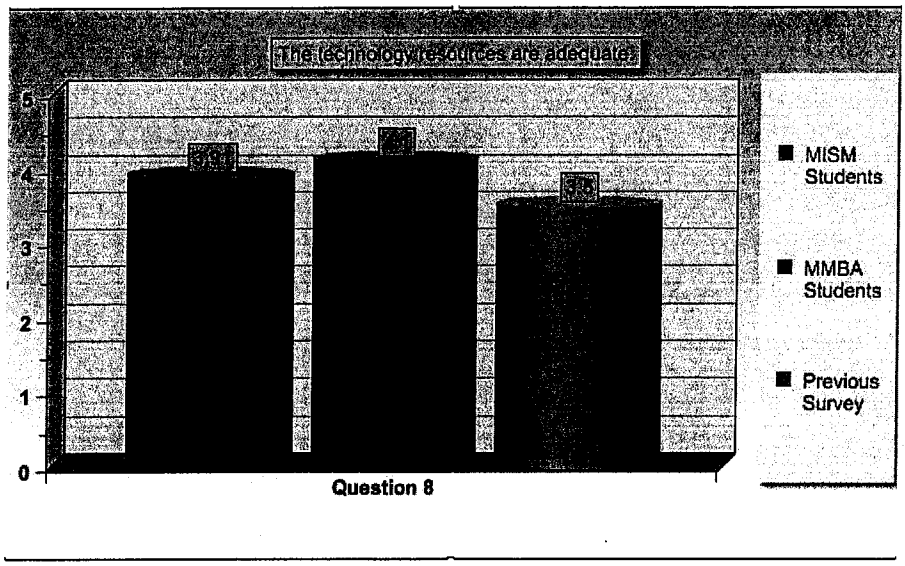

Figure 5: The technology resources are adequate.

Most of the students agreed with this statement. The pattern of the figure is similar to the others. Furthermore, MISM students indicated the following problems.

- Network outages during classroom time and prohibiting access from off campus for distance learners.
- The technology in the networking lab is lacking.
- It would be nice to see a laboratory with 7 to 10 PC's in the ISM department in IRC like the Network laboratory which of course would be open 24 hours as most of students would want to work till late at nights.

On the other hand, MMBA students specified the following problems.

- WebCT is the pits to use.
- Library sources are lacking, some good databases but is limited in resource projects.

- The database of FSU is lacking of e-version of articles such as Business Week and Fortune which are good for the business major. Need more e-books.
- Classroom 204 has no technology, plus it would be nice if the graduate program had its own computer lab.
- Certain classes need to either meet more in Grand Rapids for those who live far away, or receive more instruction for how to work with programs.
- Consistency between faculty members on the usage of the IT could be improved.

Based on these results, the answer of the first research question, "How has current student satisfaction level changed since the previous survey?" is shown below.

- New students' have a higher satisfaction level compared to the previous students.
- Based on faculty members' care, and the technological resources, MMBA students are a little bit more satisfied than the MISM students. However, they are not satisfied with the certificates offered in their program.

Research Question 2: What do current students feel about the strengths and weakness of the programs? How have their feelings changed since the previous survey?

Table 6: Strengths and Weaknesses of the MISM Program

Strengths	Weaknesses
1. It is very modern and up-to-date. (N=1) 2. The flexible 7 week and online structure of the courses allow students to have full-time employment. (N=2) 3. The focus is on working students who have experience in the real world business. (N=1) 4. The focus is on current market employment trends. (N=2) 5. The classes taught in each area are given by professors who are experts in their field. (N=1) 6. Faculty members usually willing to work with students. (N=2) 7. The capstone being in the first session is a big plus. It is great that students are given the opportunity to do the capstone in their areas of interests. (N=1) 8. In MISM 601 class, Sharon Hamel is a terrific instructor who teaches students how to prepare well written papers. (N=1) 9. In MMBA 640 class, Greg Gogolin offers a very different approach to project management. (N=1) 10. In MISM 661 and 662 classes, Rick Mislan had a tremendous amount of knowledge in the field and put real-world context to the content. (N=1)	1. Courses on Sunday. (N=2) 2. Full-time students need face-to-face relationship with instructors, while part-time students tend to prefer on-line class works. This may cause a problem when all classes are designed likely for having less face-to-face but lots of assignments. (N=3) 3. Disconnection from the university as opposed to a traditional on-campus graduate school experience. Also, not enough interaction with other students and professors. (N=1) 4. International students believe that they could learn more if more classes were hand on instead of online. (N=1) 5. Too many changes in the program over short periods of time. (N=1) 6. MISM 601 is really not required for 3 credits. (N=1) 7. It would not look good if a Masters Degree student graduate without learning much of simple HTML tags. (N=2) 8. Programs are offered mostly in Big Rapids. This makes the program less desirable for those who live far away. (N=1)

Table 7: Strengths and Weaknesses of the MMBA Program

Strengths	Weaknesses
1. The program is parallel to the management level training that is given by an employer. (N=1) 2. Some instructors are exceptional such as Sid Systma, Doug Blakemore, and Sharon Hamel. Especially, Sid Systma is dedicated to his students and teaching. Others are not very engaged. (N=2) 3. Flexibility and willingness of the professors to work one on one with students. (N=3) 4. The 7 week format is great. (N=2) 5. The program reflects real world concerns and real world strategies. It changes as the industry is changing. (N=2) 6. Hands-on discussions and challenging assignments.(N=3) 7. The learning process is well organized. It does not matter whether it is on the internet fully or partially.(N=1) 8. Reading and research materials are current and not from traditional textbooks. This is very appealing. (N=1)	1. WebCT. (N=2) 2. Some instructors are very good at engaging online classes while others not. Not enough feedback from some faculty members. (N=1) 3. Online classes make the students miss the contact and synergy of the traditional classroom setting. (N=1) 4. Fast pace. (N=2) 5. For classes that require students to learn new software, there needs to be more instruction or a weekend learning classes. (N=1) 6. International students want to improve their spoken English. But more than 90 percent of the classes are online which do not allow them to improve their spoken English in a classroom environment. (N=1) 7. Lack of dialogue or discussion of topics of study between student and faculty or other students should be a concern. (N=1) 8. The conflict of schedule for MMBA students who take MISM classes. (N=1) 9. There is too much concentration on sending in deliverables about the materials required to read. The project itself should speak for itself about the type of research and readings. (N=1)

Table 8: Change in MISM Students' Feelings

Topic	Change
Admissions (FSU)	New students have stronger positive feelings compared to previous students. New Survey Mean Value: 4.22 Previous Survey Mean Value: 2.89
Scheduling (FSU)	New students have stronger positive feelings compared to previous students. New Survey Mean Value: 4.22 Previous Survey Mean Value: 2.63
Financial Aid (FSU)	Students' feelings have not changed. They do not know much about this topic. New Survey Mean Value: 1.94 Previous Survey Mean Value: 1.85
International Affairs (FSU)	Students' feelings have not changed. They do not know much about this topic. New Survey Mean Value: 1.33 Previous Survey Mean Value: 1.8
Career Services (FSU)	Students' feelings have not changed. They do not know much about this topic. New Survey Mean Value: 1.06 Previous Survey Mean Value: 1.84
Resource Availability (COB)	New students have stronger positive feelings compared to previous students. New Survey Mean Value: 3.39 Previous Survey Mean Value: 2.54
Class Accommodations (COB)	New students have stronger positive feelings compared to previous students. New Survey Mean Value: 3.56 Previous Survey Mean Value: 2.92
Big Rapids Resources (Program)	New students have stronger positive feelings compared to previous students. New Survey Mean Value: 3.83 Previous Survey Mean Value: 3.04
Grand Rapids Resources (Program)	Students' feelings have not changed. They do not know much about this topic. New Survey Mean Value: 1.28 Previous Survey Mean Value: 1.26
Internet Class Resources (Program)	New students have stronger positive feelings compared to previous survey. New Survey Mean Value: 3.44 Previous Survey Mean Value: 2.31
Faculty (Program)	New students have stronger positive feelings compared to previous students.. New Survey Mean Value: 3.94

	Previous Survey Mean Value: 3.71
Administration Staff (Program)	New students have stronger positive feelings compared to previous students. New Survey Mean Value: 4.22 Previous Survey Mean Value: 3.9
Student Association (Program)	Students' feelings have not changed. They do not know much about this topic. New Survey Mean Value: 0.89 Previous Survey Mean Value: 1.45

Research Question 3: What do current students feel about the improvements that may be made to the programs? What is the change in the class format preference?

Table 9: What do current students feel about the improvements that may be made to the programs?

MISM Program	MMBA Program
Provide more regular class settings for full-time students who like to study with classmates. (N=2)	A more user friendly IT system to take the place of WebCT. (N=2)
Additional distance learning options for those who live away from Big Rapids. (N=1)	Use the model originally proposed for the program and higher level of engagement by faculty. (N=1)
More technical classes such as networking, security, and database. Less theory classes like ethics, management, and finance. MISM program should be more technical. (N=1)	More interactive forums for online classes discussing key issues addressed in the classes. (N=3)
Programming languages like .NET, Advanced Networking, and classes which need more expertise and time should be full sessions rather than being single session. (N=1)	Ten-week course, more class meetings, field visit, conference and talks with successful alumni. (N=1)
More advanced level classes. Introduction level classes are great, but more in depth classes are necessary toward the certificates. (N=1)	More help with job placement. (N=1)
Actual hands on experience closely related	More human resources, finance, and

to current industry standards in some of the classes. For example, network management, computer security, and database. (N=1)	accounting classes. (N=1)
	On campus students want more face to face classes. On the other hand, off campus students want more internet based classes. (N=2)

Table 10: What is the change in the class format preference?

Class Format	Chance in the class format preference
Internet (7 Week)	This is one of the two class formats that are mostly preferred by the new students. MISM Students Mean Value: 3.56 Previous MISM Students Mean Value: 3.81 MMBA Students Mean Value: 4.05 Based on the results, online classes are more suitable for the MMBA program.
Once a Week (11 Week)	Students' preference for this class format has not chanced much since the previous survey. Their feelings are generally close to neutral. MISM Students Mean Value: 2.89 Previous MISM Students Mean Value: 2.85 MMBA Students Mean Value: 2.7
Twice a Week (5 Week, Days)	Most of the students least preferred this class format in all cases. Their preference has not changed much. MISM Students Mean Value: 2.61 Previous MISM Students Mean Value: 2.44 MMBA Students Mean Value: 2.0
Two-Week (Everyday)	It has never been desirable among the students. Furthermore, new students prefer it less compared to the old students. MISM Students Mean Value: 1.72 Previous MISM Students Mean Value: 1.75 MMBA Students Mean Value: 1.89
Weekend (3 Saturday/Sunday)	It is less desired by new students compared to old students. MMBA students' feelings are more close to neutral compared to MISM students.

	MISM Students Mean Value: 2.72 Previous MISM Students Mean Value: 3.44 MMBA Students Mean Value: 2.8
Two Way Interactive Video	It has never been desirable among the students. Furthermore, new students prefer it less compared to the old students. MISM Students Mean Value: 2.22 Previous MISM Students Mean Value: 2.36 MMBA Students Mean Value: 2.5
Once a Week (11 Week, Nights)	It is less desired by new students compared to old students. MMBA students' feelings are more close to neutral compared to MISM students. MISM Students Mean Value: 2.5 Previous MISM Students Mean Value: 3.41 MMBA Students Mean Value: 2.7
Once or More Saturdays	Saturday classes have not been very desirable among the students and their preference to it has not changed much. MISM Students Mean Value: 2.39 Previous MISM Students Mean Value: 2.75 MMBA Students Mean Value: 2.75
Combination Internet and Face to Face (7 Week)	This is the second class format that new students mostly prefer. MISM Students Mean Value: 3.72 Previous MISM Students Mean Value: 3.16 MMBA Students Mean Value: 3.7

Research Question 4: Do current students believe that these programs provide enough background in related fields of interests to confidently seek employment? What are students' feelings to the topics offered?

Survey Question 14: If you have taken a class in one of the topics listed below, please respond to this statement: I have learned a great deal after taking the class. Respond with N/A if you have not taken the related class.

Table 11: Application Development Topic

Application Development	N	Mean	Median	Mode	Standard Deviation	Standard Error
MISM Students	18	0.44	0	0	1.34	0.31

Response options: 5 ="Strongly Agree", 4 = "Agree", 3 = "Neutral", 2 = "Disagree", 1 = "Strongly Disagree" 0 = "N/A".

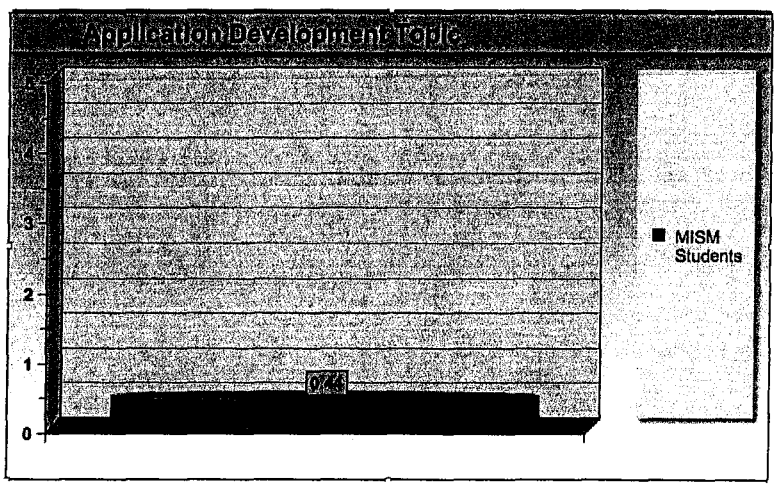

Figure 6: Application Development Topic

Application development is a new topic that is proposed by the MISM program and most of the students do not know much about it.

Table 12: Database Topic

Database	New MISM Students (Actual Value)	New MISM Students (Percentage)	Previous MISM Students (Actual Value)	Previous MISM Students (Percentage)
Strongly Agree	5	28%	19	24%
Agree	0	0	42	53%
Neutral	3	17%	3	4%
Disagree	2	11%	2	2%
Strongly Disagree	0	0	2	2%
N/A	8	44%	12	15%
Total	18	100%	80	100%

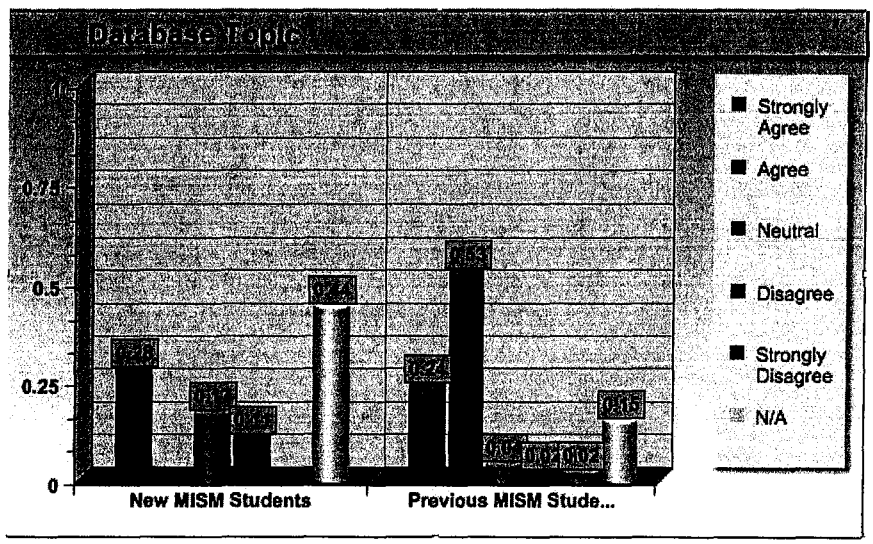

Figure 7: Database Topic

Nearly half of the new students did not take any database class. Drawing a figure based on a scale of five would give a deceiving result. Therefore, the percentage method was used in this case. In the past 77% percent of the students gave a positive response to the statement. However, only 28% of the new students gave a positive response. Also, the percentages of students who are neutral and disagree with this statement have increased.

Table 13: Networking Topic

Networking Topic	New MISM Students (Actual Value)	New MISM Students (Percentage)	Previous MISM Students (Actual Value)	Previous MISM Students (Percentage)
Strongly Agree	5	28%	10	13%
Agree	5	28%	20	25%
Neutral	0	0	12	15%
Disagree	0	0	2	2.5%
Strongly Disagree	0	0	4	5%
N/A	8	44%	32	39.5%
Total	18	100%	80	100%

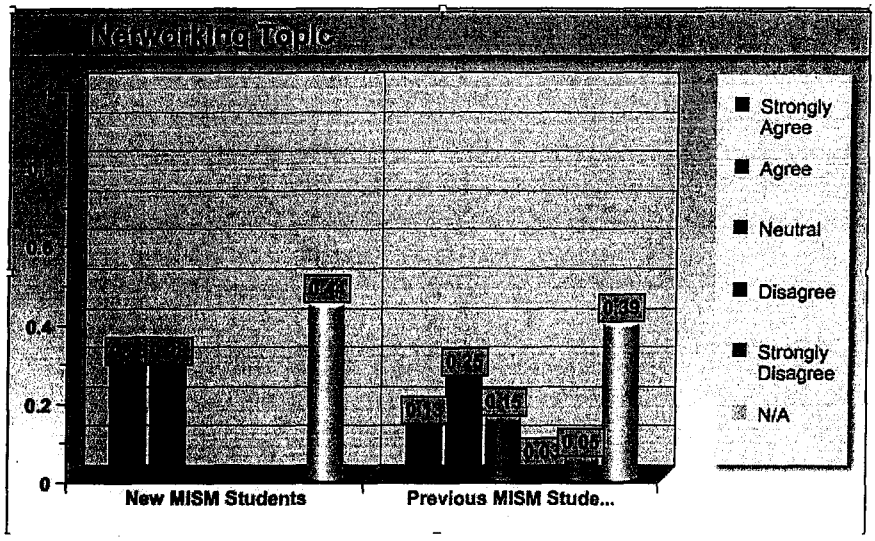

Figure 8: Networking Topic

New MISM students have stronger positive feelings for the networking topic compared to the previous MISM students. Furthermore, nearly half of the new MISM students did not take any Networking class.

Table 14: Security Topic

Security Topic	MISM Students (Actual Value)	MISM Students (Percentage)	MMBA Students (Actual Value)	MMBA Students (Percentage)
Strongly Agree	4	22%	2	10%
Agree	1	6%	0	0
Neutral	2	11%	0	0
Disagree	0	0	0	0
Strongly Disagree	0	0	0	0
N/A	11	7%	18	90%
Total	18	100%	20	100%

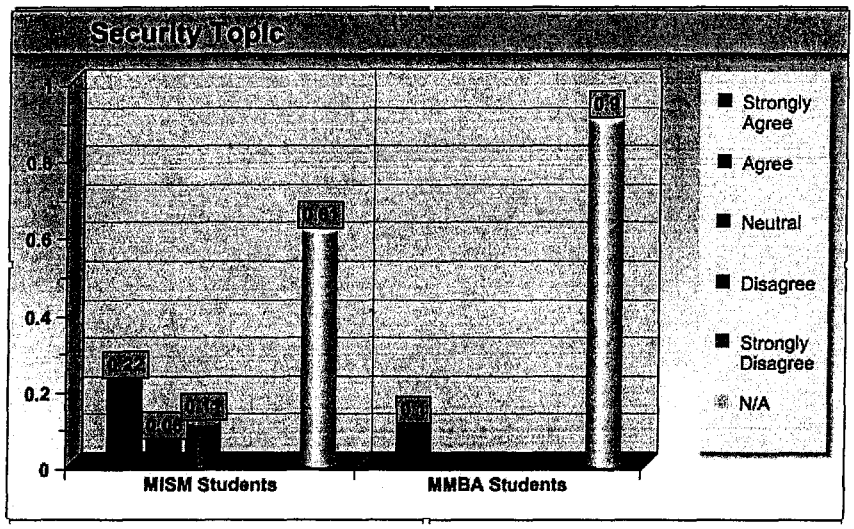

Figure 9: Security Topic

Security is a new topic that previous MISM students did not have. In this case, the comparison was done between MISM and MMBA students. Based on the figure above, it is not a very popular topic among the MMBA students.

61% of the MISM students did not take any security classes and 11% are neutral to it. However, 28% have positive feelings for it.

Table 15: E-Business Topic

E-Business Topic	MISM Students (Actual Value)	MISM Students (Percentage)	MMBA Students (Actual Value)	MMBA Students (Percentage)	Previous Survey (Actual Value)	Previous Survey (Percentage)
Strongly Agree	1	6%	0	0	13	16%
Agree	2	11%	2	10%	25	31%
Neutral	0	0	0	0	11	14%
Disagree	0	0	0	0	4	5%
Strongly Disagree	0	0	0	0	0	0
N/A	15	83%	18	90%	27	34%
Total	18	100%	20	100%	80	100%

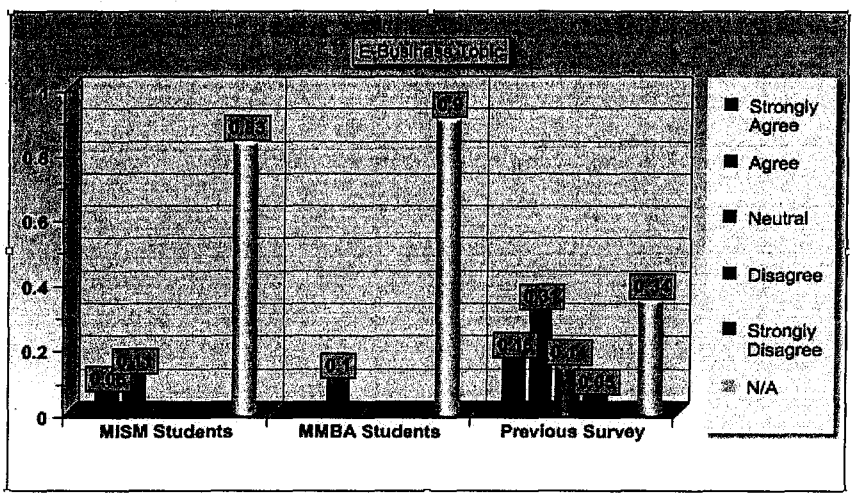

Figure 10: E-Business Topic

In the past, students had various feelings about this topic. But now they either have positive feelings or do not know much about it. 17% of the MISM and 10% of the MMBA students have positive feelings about this topic. Others do not know much about it.

Table 16: Management Technical Tools & Techniques

Management Technical Tools & Techniques	MMBA Students (Actual Value)	MMBA Students (Percentage)
Strongly Agree	7	35%
Agree	6	30%
Neutral	1	5%
Disagree	0	0
Strongly Disagree	0	0
N/A	6	30%
Total	20	100%

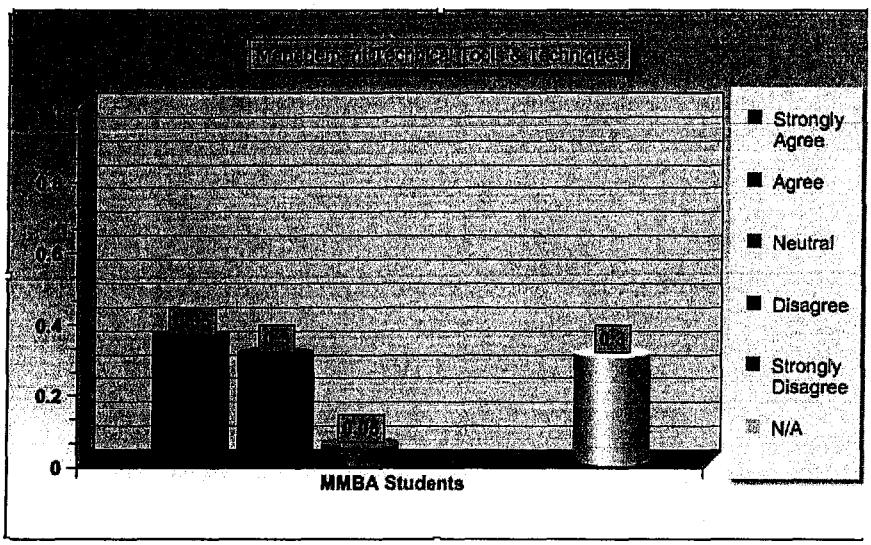

Figure 11: Management Technical Tools & Techniques Topic

This is the most well known topic of the MMBA program. 65% of the MMBA students gave a positive response to the statement. 30% of the students have not taken a class in this topic.

Table 17: Information Systems Topic

Information Systems Topic	MMBA Students (Actual Value)	MMBA Students (Percentage)
Strongly Agree	1	5%
Agree	2	10%
Neutral	2	10%
Disagree	2	10%
Strongly Disagree	0	0
N/A	13	65%
Total	20	100%

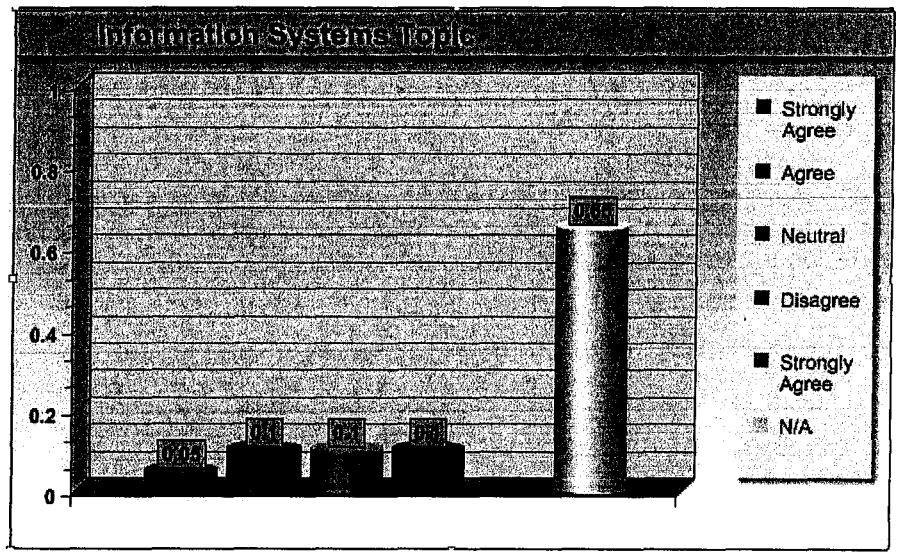

Figure 12: Information Systems Topic

Nearly half of the MMBA students have taken classes in this topic. 15% of these students thought that the topic was beneficial. 10 % are neutral with it. Another 10% disagree with it.

Survey Question 6: I believe the skills taught in the MISM 601(Professional Skills Development) are a valuable part of my graduate training. Why or why not?

Table 18: I believe the skills taught in the MISM 601(Professional Skills Development) are a valuable part of my graduate training.

	N	Mean	Median	Mode	Standard Deviation	Standard Error
MISM Students	18	3.72	4	3	1.07	0.25
MMBA Students	20	3.4	4	4	1.54	0.30
Previous Survey	80	3.16	3	4	1.28	0.14

Response options: 5 ="Strongly Agree", 4 = "Agree", 3 = "Neutral", 2 = "Disagree", 1 = "Strongly Disagree".

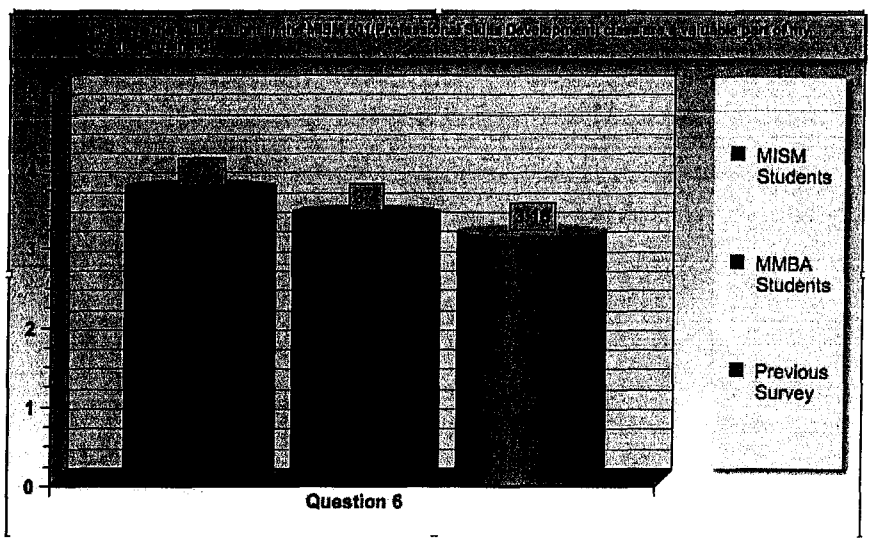

Figure 13: I believe the skills taught in the MISM 601(Professional Skills Development) class are a valuable part of my graduate training.

In all cases, students gave a positive response to this question. Furthermore, new students are happier with it compared to the previous students. MISM and MMBA students' feelings for this class are shown in the tables below.

Table 19: MISM students' feelings for the MISM 601 class

Positive Feelings	Negative Feelings
Strong instruction on research and APA. N=1	Have no clear idea why this would be required for programmers or testers, the areas where most of the students would work on. (N=1)
First time in life I came to know how to write proper business letters. (N=1)	Repetitive for those who already know how to write a research paper. (N=3)
It is a background for studying other classes. (N=1)	
It is a good refresher course for those who haven't been in school for a while. (N=1)	
It gives a good understanding of format that the rest of the courses will follow (for the most part) and also resources available if a student does not live near campus. (N=1)	

Table 20: MMBA students' feelings for the MISM 601 class

Positive Feelings	Negative Feelings
It helps students prepare for future writing assignments.(N=2)	This information should be obtained in the undergraduate program. It is not something that should wait until the graduate program. (N=1)
This class provides an introduction to the program. (N=2)	Research and information organizing skills should be included. (N=1)
Three fundamentals in the class are critical to the balance of the program; Research, writing, and presenting. This class should set the level of expectation for the balance of the classes in the program. (N=1)	It is not challenging enough for a Masters level program. (N=1)
It sharpens up the writing and presentation skills. Especially for those students who have to change from MLA to APA writing format. (N=1)	There needs to be more research on what the student background is in regards to what they have done previously, for example some students had never done an

	entire website in undergraduate work therefore 7 weeks is not enough time to learn to do one sufficiently. (N=1)
It is a great introduction to the campus and all FLITE has to offer. Also, a forewarning of the APA style required for continuing on in the program. (N=1)	

Research Question 5: How has the current student demographics changed since the previous survey?

Survey Question 25: What tuition note do you pay?

Table 21: Tuition note that MISM students pay

MISM Students	Actual Value	Percentage
In-State	13	72%
Out-State	0	0
International	5	28%
Total	18	100%

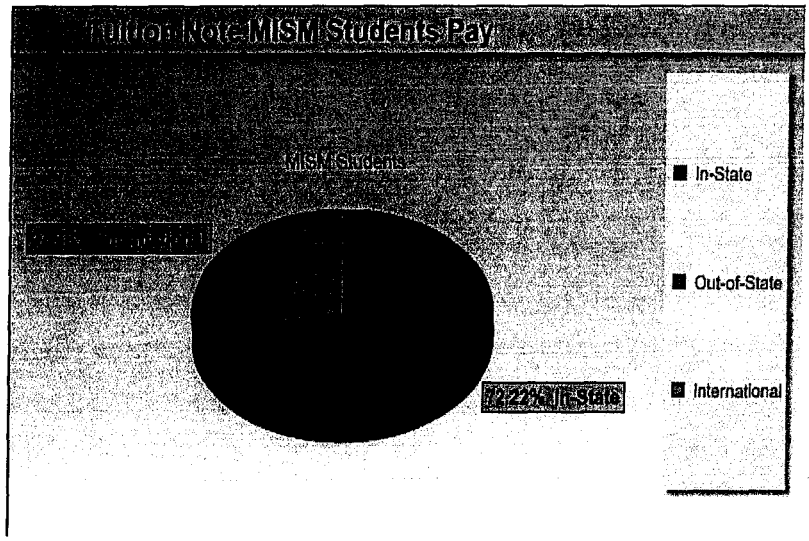

Figure 14: Tuition Note MISM Students Pay

Table 22: Tuition note that MMBA students pay

MMBA Students	Actual Value	Percentage
In-State	18	90%
Out-State	0	0
International	2	10%
Total	20	100%

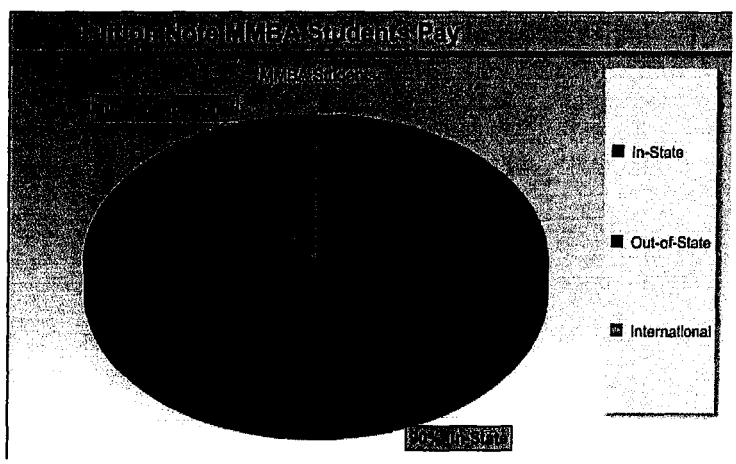

Figure 15: Tuition Note MMBA Students Pay

Table 23: Tuition note that previous students paid

MMBA Students	Actual Value	Percentage
In-State	46	57.5%
Out-State	5	6.25%
International	29	36.25%
Total	80	100%

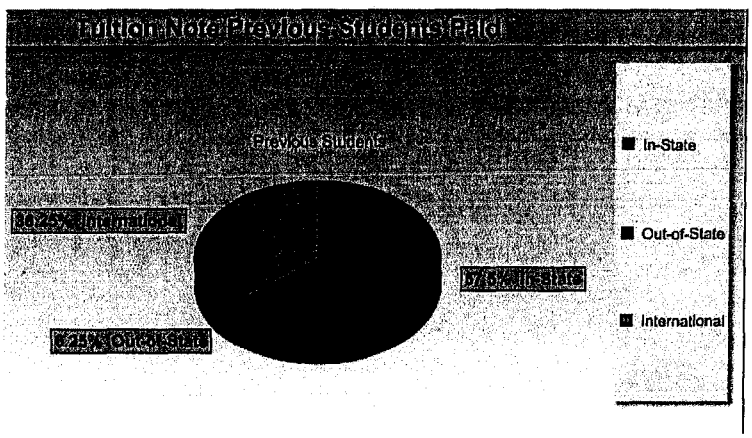

Figure 16: Tuition Note Previous Students Paid

As seen in the pie charts above, current students are either in-state or international. Furthermore, MMBA students are mostly domestic students.

Survey Question 21: Are you considered an On-Campus student (live in or near Big Rapids) or Off-Campus student?

Table 24: MISM Students On-Campus\Off-Campus Ratio

MISM Students	Actual Value	Percentage
On-Campus	9	50%
Off-Campus	9	50%
Total	18	100%

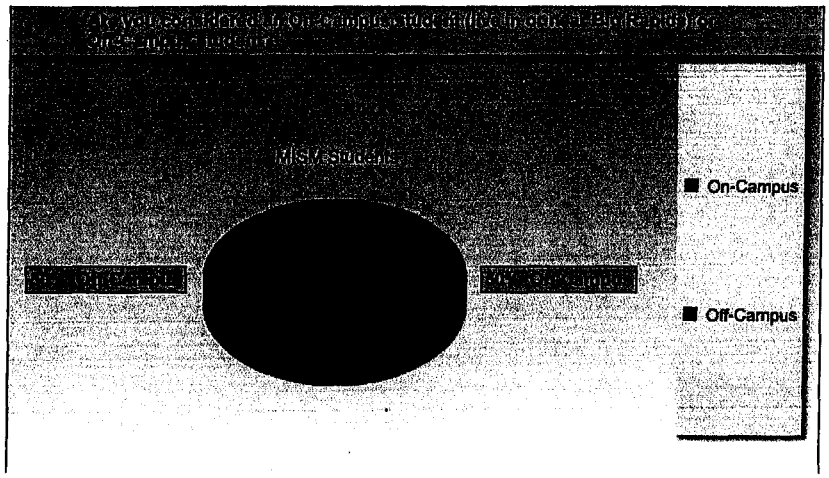

Figure 17: MISM Students On-Campus\Off-Campus Ratio

Table 25: MMBA Students On-Campus\Off-Campus Ratio

MISM Students	Actual Value	Percentage
On-Campus	13	50%
Off-Campus	7	50%
Total	20	100%

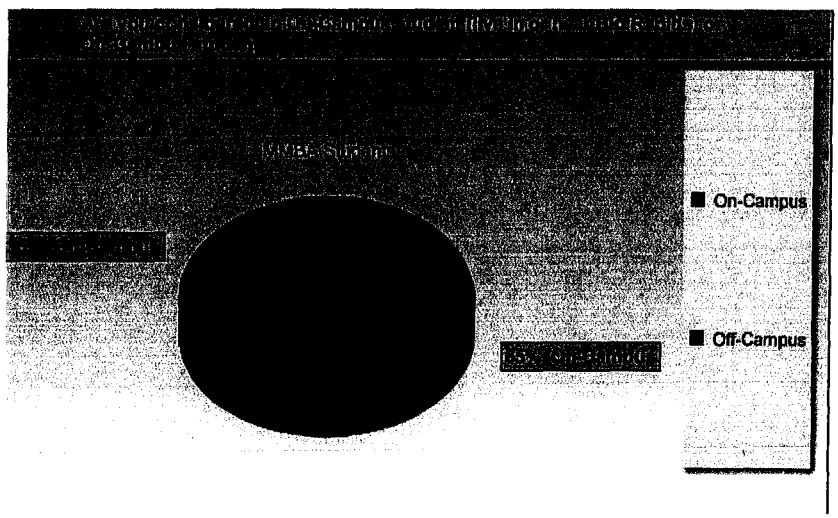

Figure 18: MMBA Students On-Campus\Off-Campus Ratio

Table 26: Previous MISM Students On-Campus\Off-Campus Ratio

Previous MISM Students	Actual Value	Percentage
On-Campus	44	55%
Off-Campus	36	45%
Total	80	100%

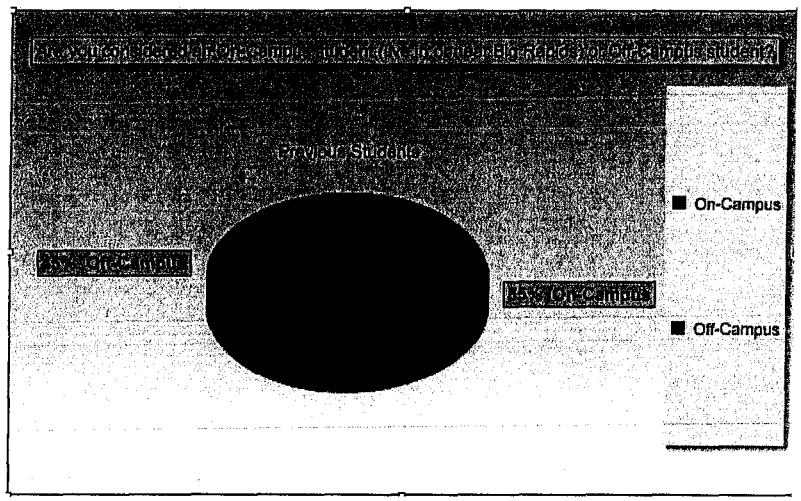

Figure 19: Previous MISM Students' On-Campus\Off-Campus Ratio

The number of off-campus MISM students has increased since the previous survey. Furthermore, MMBA students are mostly on-campus students. However, they prefer internet type classes. This indicates that most of the MMBA students have fulltime jobs.

Survey Question 19: I prefer to do:

Table 27: Current students prefer to do

Current students prefer do	MISM Students (Actual Value)	MISM Students (Percentage)	MMBA Students (Actual Value)	MMBA Students (Percentage)
Individual Projects	10	56%	14	70%
Group Projects	8	44%	6	30%
Total	18	100%	20	100%

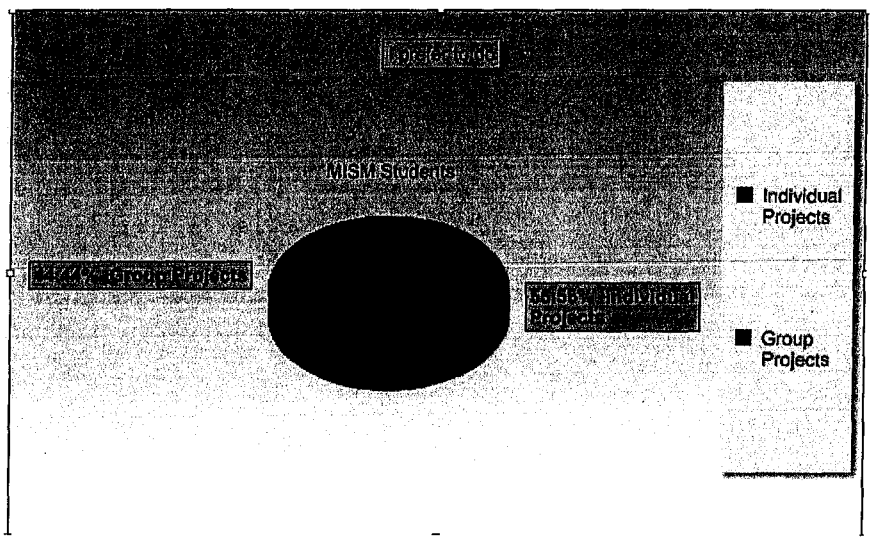

Figure 20: MISM Students Preference

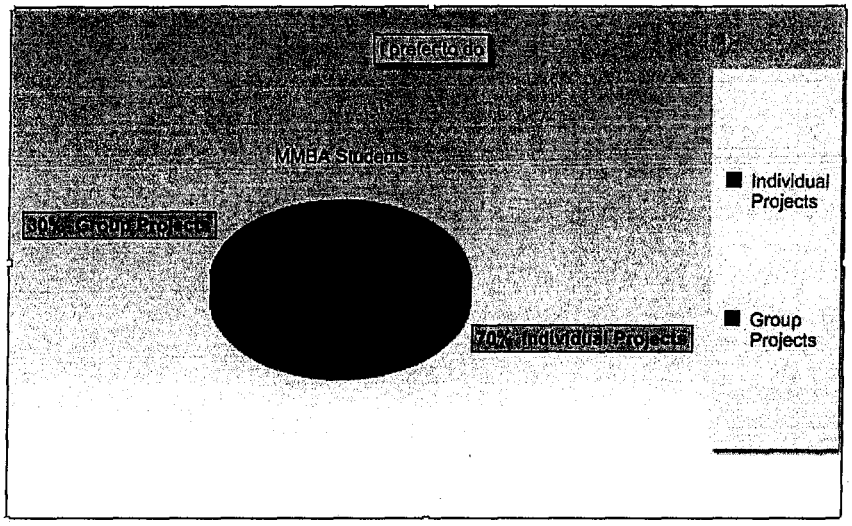

Figure 21: MMBA Students Preference

The figures above indicate that MISM students prefer group projects more than MMBA students. Students' thoughts about the group projects are shown in the tables below.

Table 28: MISM students' thoughts about group projects

Drawbacks of Group Projects	Benefits of Group Projects
Group projects can be great experiences. However, they are more difficult over long distance. (N=2)	Group projects provide a chance to work with other people. This teaches a student to deal with real life situations. (N=1)
Sometimes responsibilities assigned to group members are not done properly by them, and in result it affects the project. (N=2)	Share of visions and opinions broaden students' point of views. (N=1)
Foreign students make communication difficult for group projects. (N=1)	Group projects reflect how work is actually done in the real world. (N=1)
The diversity of students is too great and makes it some times difficult to overcome challenges in a group project. Some students are too young and irresponsible, some students are too busy with work, and some students live in different geographical locations. (N=1)	In group projects, there is more opportunity for dialog and sharing of ideas. (N=2)

Table 29: MMBA students' thoughts about group projects

Drawbacks of Group Projects	Benefits of Group Projects
It's too difficult to get together because of the work and home obligations of everyone involved. (N=3)	Having a diverse work group brings out the best ideas. (N=1)
No accountability for group members that do not follow through. (N=1)	To work within a team becomes more satisfying as one can still have some type of autonomy yet all of the responsibility does not fall on one individual. (N=1)
At this point it is about what you learn not how fast you can get it done and get a good grade. (N=1)	Group projects are good when the professor gives too large of a workload that unless in a group is impossible. (N=2)
Group projects are hard to complete when everyone does not live in the same area. (N=1)	
Unfair share of workload among the group members. (N=2)	
Group projects are very difficult without having a session being presented on remote interaction.(N=1)	

Survey Question 18: I am in the program for

Table 30: Current students are in the program for

Current students are in the program for	MISM Students (Actual Value)	MISM Students (Percentage)	MMBA Students (Actual Value)	MMBA Students (Percentage)
Get a job	4	22%	6	30%
Change career	4	22%	4	20%
Continue in career	10	56%	10	50%
Total	18	100%	20	100%

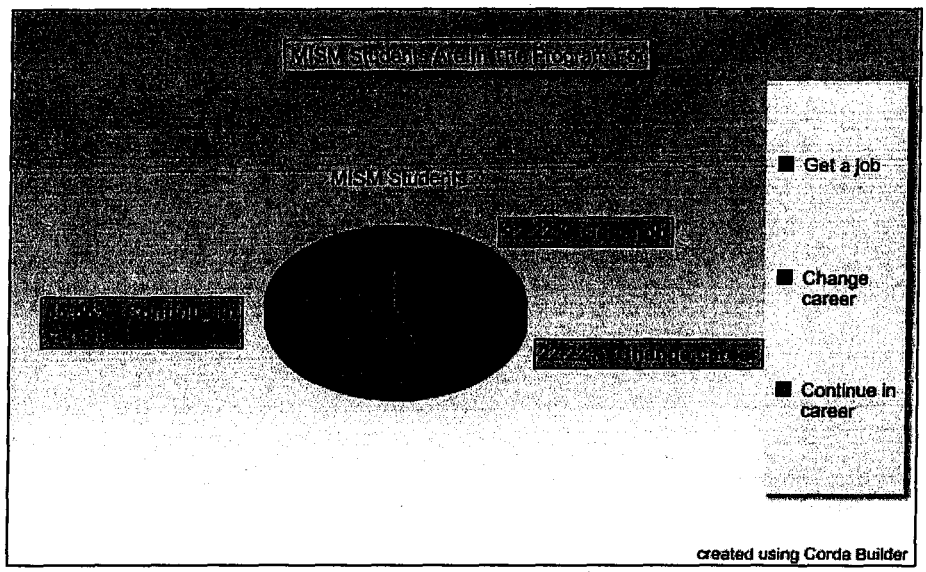

Figure 22: MISM Students Are In the Program For

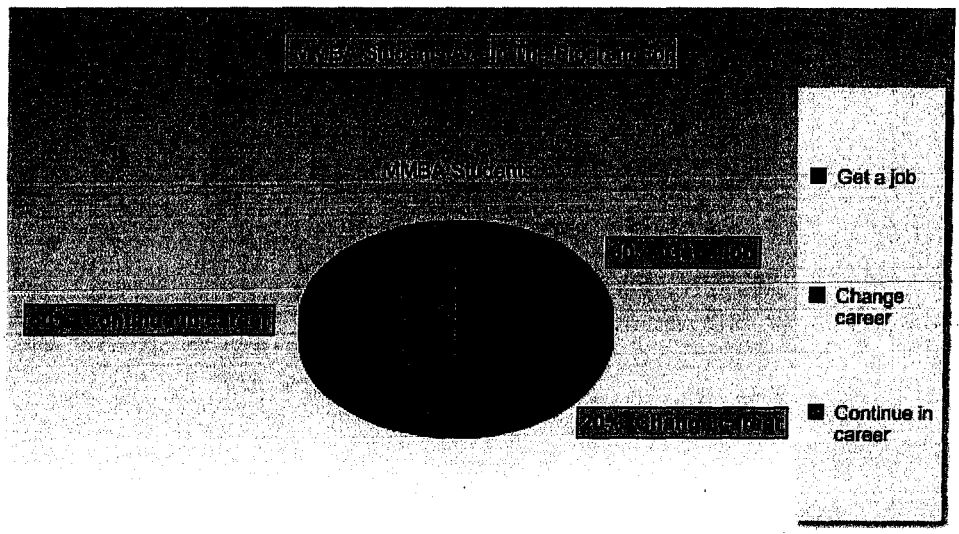

Figure 23: MMBA Students Are In the Program For

In both programs, half of the students are continuing in their fields. The other half is divided into get a job and change career.

Survey Question 17: How much work experience did you have before starting to the program?

Table 31: How much work experience did you have before starting to the program?

	MISM Students (Actual Value)	MISM Students (Percentage)	MMBA Students (Actual Value)	MMBA Students (Percentage)
None	6	33%	2	10%
1-2 Years	2	11%	3	15%
3-4 Years	0	0	2	10%
4-5 Years	3	17%	1	5%
Over 5 Years	7	39%	12	60%
Total	18	100%	20	100%

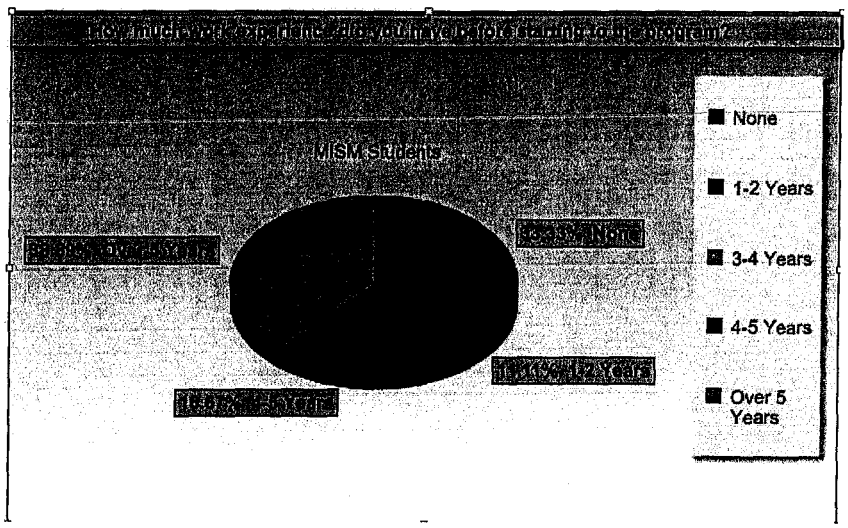

Figure 24: MISM Students' Work Experience

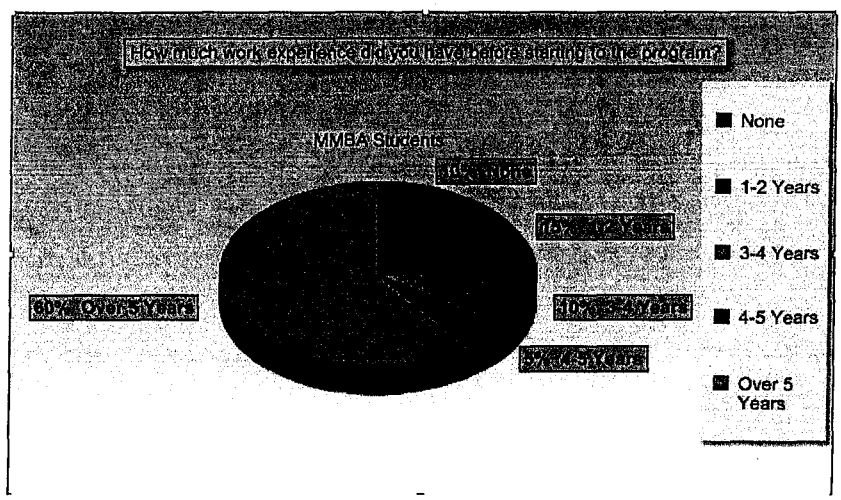

Figure 25: MMBA Students' Work Experience

The figures above indicate that most of the students have some work experience. Furthermore, MMBA students generally have more work experience than MISM students. It should also be considered that the largest percent of students in both cases have work experience over 5 years.

Survey Question 20B: I prefer to submit my assignments via my personal Web site.

Table 32: I prefer to submit my assignments via my personal Web site.

	N	Mean	Median	Mode	Standard Deviation	Standard Error
MISM Students	18	2.56	3	3	0.86	0.20
MMBA Students	20	2.7	2.5	3	1.47	0.32
Previous Survey	80	3.38	4	4	1.10	0.12

Response options: 5 ="Strongly Agree", 4 = "Agree", 3 = "Neutral", 2 = "Disagree", 1 = "Strongly Disagree".

Information Systems Management

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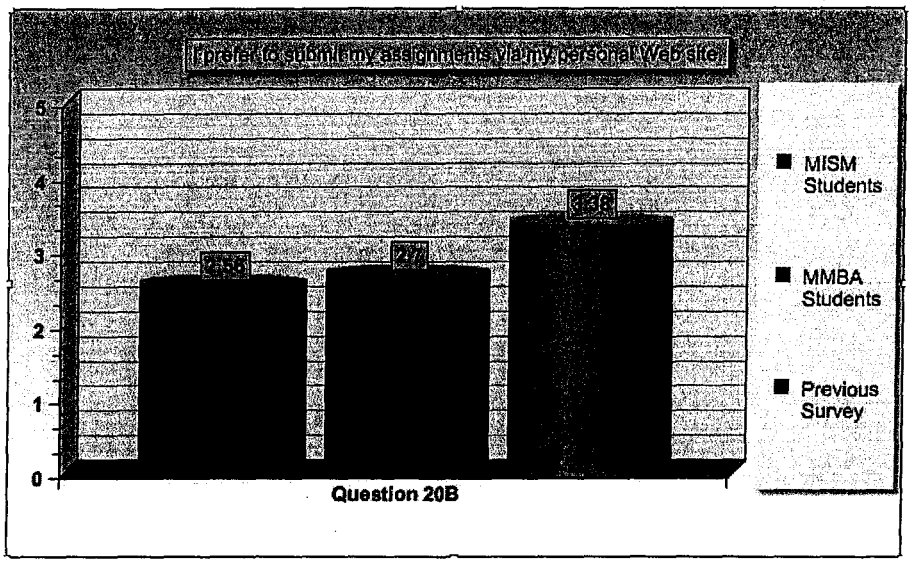


Figure 26: I prefer to submit my assignments via my personal Web site.

In the previous survey, most of the students agreed with this statement. However, new students do not prefer it as much as the previous students.

Survey Question 23: Where have you taken classes?

Table 33: Where have you taken classes?

	MISM Students (Actual Value)	MISM Students (Percentage)	MMBA Students (Actual Value)	MMBA Students (Percentage)
Big Rapids, Internet	11	61%	17	85%
Big Rapids	3	17%	1	5%
Internet	3	17%	0	0
Big Rapids, Grand Rapids, Internet	1	5%	2	10%
Total	18	100%	20	100%

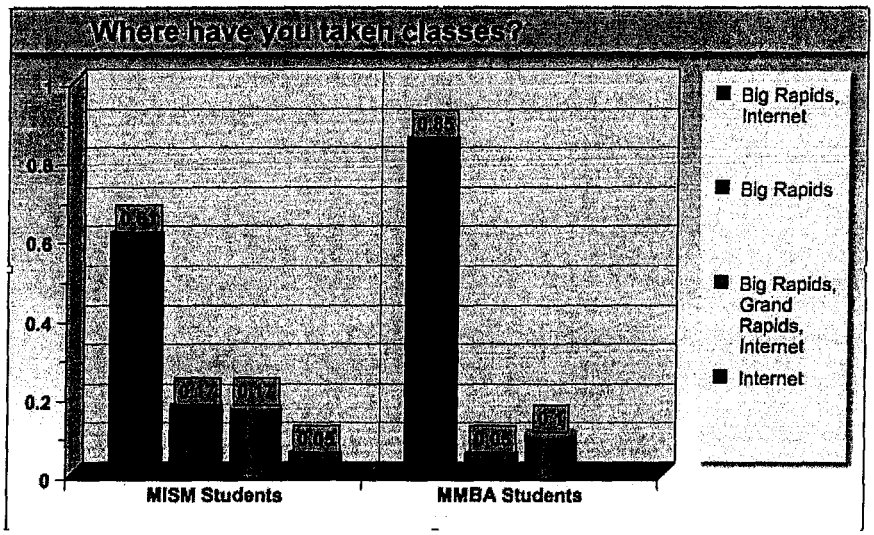


Figure 27: Where have you taken classes?

Current students for the most take classes in Big Rapids and on Internet. In the previous survey, some students indicated that they took classes in Troy or Flint. But, classes are not offered in these cities anymore.

Survey Question 24: Where do you prefer to take classes?

Table 34: Where do you prefer to take classes?

	MISM Students (Actual Value)	MISM Students (Percentage)	MMBA Students (Actual Value)	MMBA Students (Percentage)
Big Rapids, Internet	10	57%	6	30%
Big Rapids	3	17%	3	15%
Big Rapids, Grand Rapids, Internet	1	5%	2	10%
Internet	2	11%	5	25%
Big Rapids, Grand Rapids	1	5%	2	10%
Grand	1	5%	2	10%

Rapids, Internet				
Total	18	100%	20	100%

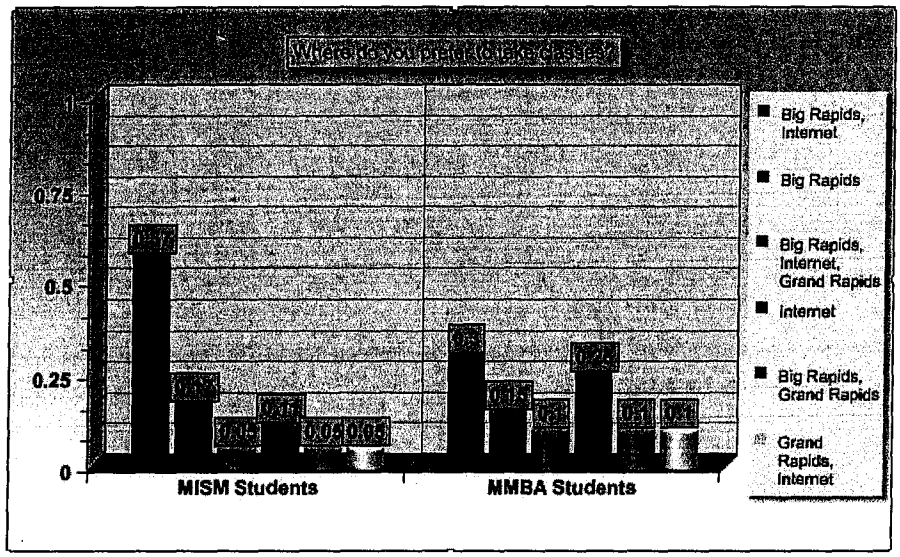


Figure 28: Where do you prefer to take classes?

MISM students generally prefer to take classes in Big Rapids and on Internet. Furthermore, one MISM student requested classes in Flint and Lansing. MMBA also prefer Big Rapids and Internet. But there is also a portion that wants only Internet based classes. These are the ones who live off campus and have full time job.

Survey Question 22: What formats have you taken classes?

Table 35: What formats have you taken classes?

	MISM Students (Actual Value)	MISM Students (Percentage)	MMBA Students (Actual Value)	MMBA Students (Percentage)
Internet 7 Week	14	26%	20	34%
Weekend	9	17%	8	14%

(Saturday/Sunday)				
Once a Week (11 Week)	5	10%	4	7%
Twice a Week	3	6%	3	5%
Combination (Internet, Face to Face)	15	28%	17	29%
Once or More Saturdays	7	13%	4	8%
Two Week (Everyday)	0	0	2	3%
Total	53	100%	58	100%

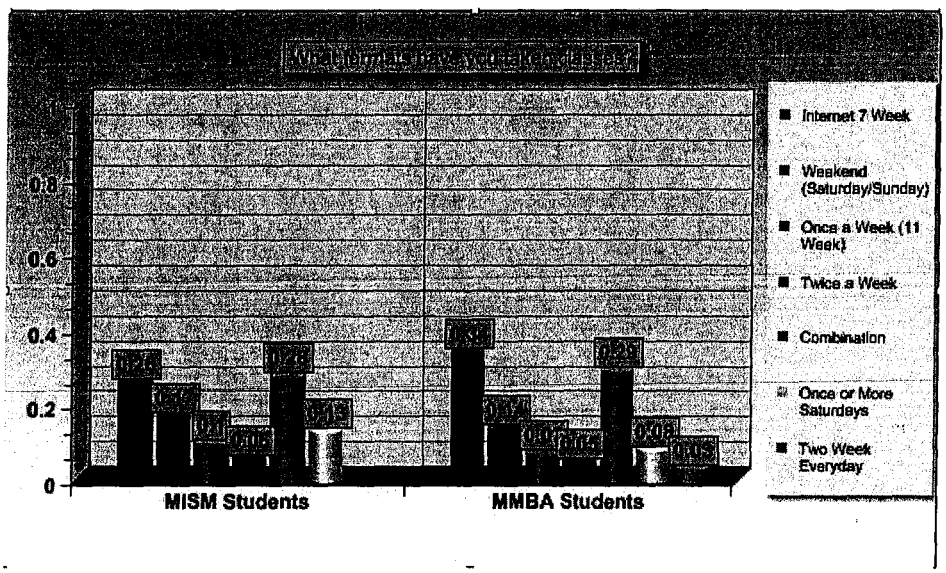


Figure 29: What formats have you taken classes?

New students for the most take Internet (7 Week) and Combination (Internet and Face to Face) type classes. Research question three also states that Internet (7 Week) and Combination Internet and Face to Face (7 Week) are the most desirable class formats among the new students. Furthermore, in the previous survey some students indicated

that they took classes with two way interactive video format. However, new students have not taken any class in this format

Based on these results, the answer of the fifth research question, "How has the current student demographics changed since the previous survey?" is shown in the list below.

- Current students are either in-state or international. Furthermore, 90% of the MMBA students are domestic students.
- The number of off-campus MISM students has increased since the previous survey. Furthermore, MMBA students are mostly on-campus students. However, they prefer internet type classes. This indicates that most of the MMBA students have fulltime jobs.
- Both previous and current students believe that there is a feeling of friendliness in the student body.
- Current students find it less desired to submit assignments via personal Web site.
- Current students have taken classes mostly in Big Rapids and on Internet. Also, most of them prefer to take classes in Big Rapids and on Internet.
- Current students prefer to take Internet (7 Week) and combination (Internet and Face to Face) type classes. They have not taken classes in two way interactive video format. Also, only some MMBA students have taken classes in two week (Everyday) format.

- MMBA students mostly prefer individual projects. On the other hand, MISM students prefer group projects more than MMBA students.
- Current students are generally in the program for continuing in career.
- MMBA students have more work experience than MISM students and most of them have work experience more than five years.

Summary and Recommendations

- **Class Format:** Research question three indicates that on-campus, full time and international students want more face to face classes in order to study with classmates. Especially international students stressed that it was difficult for them to improve their spoken English when most of the classes are offered online. However, off-campus students and students who have fulltime jobs prefer online classes.

  Recommendation: Group projects may be used to create the contact and synergy of the traditional classroom setting. However, 56% of the MISM students and 70% of the MMBA students prefer individual projects because of problems related to the location and dependability of the group members. In this case, both group and individual projects may be given in the classes. Groups should be formed based on where students live. For instance, students who live in Grand Rapids and work at full time jobs may form their own group. This will also allow international students to share their ideas with their classmates, which will allow them to improve their spoken English.

- **Class Schedule:** MISM students pointed that programming classes such as ASP.NET, Advanced Networking, and others that need more expertise and time should not be single session because of the fast pace. They also want more instructions. On the other hand, MMBA students stressed the conflict of schedule when they wanted to take MISM classes.

  Recommendation: For classes that require students to learn new software may be put in full session rather than single session. Class schedules of the programs may also be arranged in a way that allows students to take classes in both programs at the same time without facing a conflict.

- **Classes and Certificates:** Although many current MISM students indicated that the certificates offered in their program was just right, the overall result is still below this level. They stated that they wanted more technical classes instead of theory classes such as hands-on classes on the different operating systems like Novell Netware, UNIX and MAC OS. On the other hand, MMBA students do not want their program to be the repetitive of the MISM program and want more management type classes.

  Recommendation: Classes and certificates that are of need in the marketplace may be added to the programs. For the MISM program, ASP.NET, Java, and PL/SQL certifications and computer forensics and advance network management topics may be added. MISM Students want to have more security, programming, and Web design classes. They also believe that network security track is beneficial to keep. On the other hand, MMBA students want classes on international business logistics,

marketing, e-commerce, and customer relation management, managerial accounting, human resource management, logistics, healthcare administration, and more finance.

- **MISM 601 Class:** The responses to this question were varied. Those did not know APA style found the class and Sharon Hamel very helpful. But others, who had already known the APA style and good at writing academic papers considered it as not challenging.

  Recommendation: Students who know the APA style and good at writing academic papers may be waived from this class. GMAT or GRE test's writing section may be used for this purpose.

- **Help with job placement:** MMBA students requested help with job placement. Second research question also indicate that current students do not much about the career services provided by FSU.

  Recommendation: FSU career services may provide field visits, conferences, and talks with successful alumni for both MISM and MMBA students that may help students with job emplacements.

College of Business Graduate Programs

Master of Science in Information Systems Management

2005 College of Business Survey for MS-ISM Academic Program Review

Respondent Information: ☐ Faculty ☐ Staff ☐ Administration

1. Are you familiar with the type of student that would benefit from entry to the Ferris State University MS-ISM?
   ☐ Yes ☐ No Comments:_____

   _____

2. Are you familiar with the skills (outcomes) being taught in the MS-ISM core courses?
   ☐ Yes ☐ No Comments:_____

   _____

3. Are you familiar with the four concentrations in MS-ISM?
   ☐ Yes ☐ No Comments:_____

   _____

4. Have you visited the College of Business Graduate Programs website in the past year?
   ☐ Yes ☐ No Comments:_____

   _____

5. Have you personally spoken to any of the MS-ISM faculty members within the MS-ISM seniority group this past year?
   ☐ Yes ☐ No Comments:_____

   _____

6. Have you ever spoken to or interacted with a student in the MS-ISM program in the past year?
   ☐ Yes ☐ No Comments:_____

   _____

7. Have you recently (within the last year) heard of any MS-ISM graduate successes?
   ☐ Yes ☐ No Comments:_____

   _____

8. Do you believe that the MS-ISM enhances the reputation of the College of Business and Ferris State University?
   ☐ Yes ☐ No Comments:_____

   _____

College of Business Graduate Programs

Master of Science in Information Systems Management

2005 College of Business Survey for MS-ISM Academic Program Review

9. Do you believe there is value for COB faculty being knowledgeable about the MS-ISM program objectives and educational focus?
☐ Yes ☐ No Comments:_____

_____

10. Have you ever encouraged a COB undergraduate student to pursue a MS-ISM degree at FSU?
☐ Yes ☐ No Comments:_____

_____

11. Do you believe that the skills being taught in the MS-ISM would add career-enhancing value to undergraduate students if they were permitted to enroll in specific MS-ISM courses?
☐ Yes ☐ No Comments:_____

_____

12. Would you support directing high achieving senior FSU Business students into selected MS-ISM courses as an electives?
☐ Yes ☐ No Comments:_____

_____

13. Do you generally believe the COB faculty, staff, and administration respect the contributions by the MS-ISM program to the COB mission and vision?
☐ Yes ☐ No Comments:_____

_____

14. Please provide any comments thoughts, criticisms, and/or suggestions for improvement opportunities that you believe need to be considered by the CBGP Department.
☐ Yes ☐ No Comments:_____

_____

_____

_____

_____

Master of Science in Information Systems Management
MS-ISM Academic Program Review
College of Business Faculty Survey

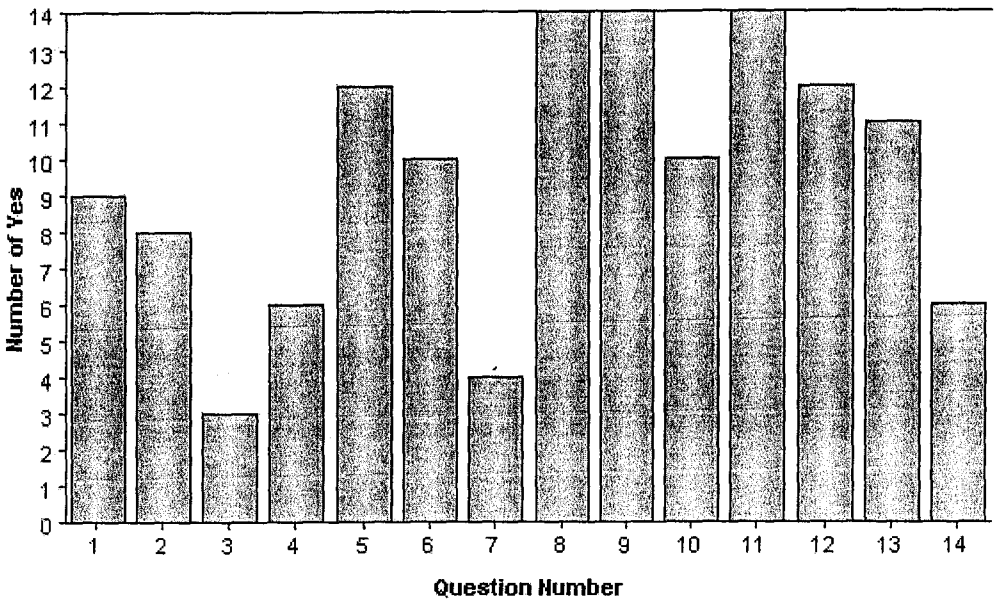
Questions and Submitted Responses

1. Are you familiar with the type of student that would benefit from entry to the Ferris State University MS-ISM?
2. Are you familiar with the skills (outcomes) being taught in the MS-ISM core courses?
    - Not all of the skills since the last changes with the ISM and the new MBA. I felt more knowledgeable before these changes
3. Are you familiar with the four concentrations in MS-ISM?
4. Have you visited the College of Business Graduate Programs website in the past year?
5. Have you personally spoken to any of the MS-ISM faculty members within the MS-ISM seniority group this past year?
6. Have you ever spoken to or interacted with a student in the MS-ISM program?
    - Not a great deal though
    - Not to my knowledge
7. Have you recently (within the last year) heard of any MS-ISM graduate successes?
    - Would like to
8. Do you believe that the MS-ISM enhances the reputation of the College of Business and Ferris State University?
    - Absolutely
    - Yes, it looks very bad if we have no masters level programs
9. Do you believe there is value for COB faculty being knowledgeable about the MS-ISM program objectives and educational focus?
10. Have you ever encouraged a COB undergraduate student to pursue a MS-ISM degree at FSU?
11. Do you believe that the skills being taught in the MS-ISM add career-enhancing value to undergraduate students if they were permitted to enroll in specific MS-ISM courses?
    - Some, not all
    - Its' possible in particular the combination of accounting with computers
12. Would you support directing high achieving senior FSU Business students into selected MS-ISM courses as an elective(s)?
    - MBA, but it has to fit with their goals, it can't be just to say they are taking grad classes to look good
13. Do you generally believe the COB faculty, staff, and administration respect the contributions by the MS-ISM program to the COB mission and vision?
    - faculty: mostly yes, some no.
    - administrators: certain ones only insofar as they believe they will benefit from it, others yes.
    - staff: yes
14. Please provide any comments thoughts, criticisms, and/or suggestions for

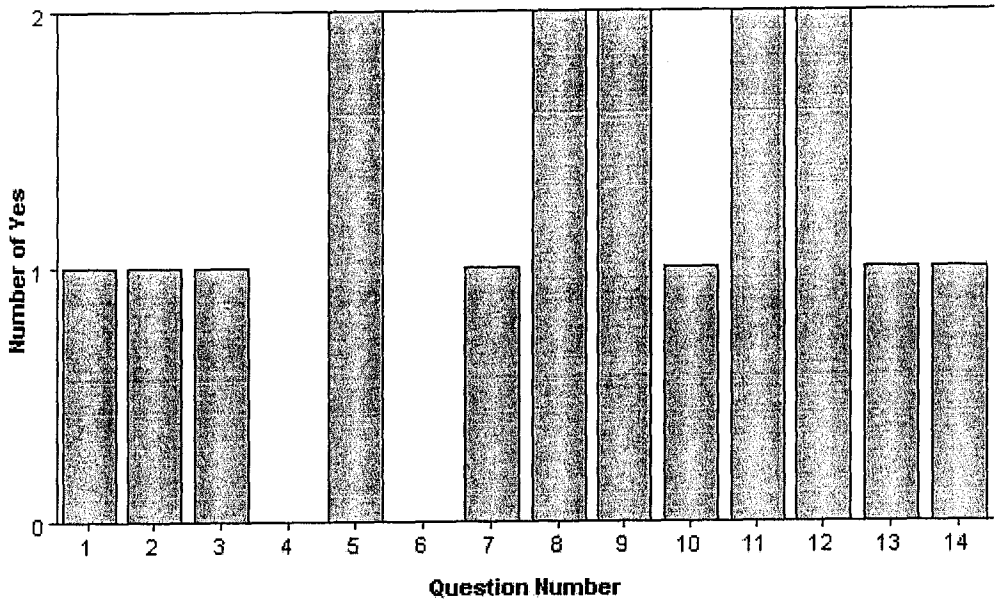
improvement opportunities that you believe need to be considered by the CBGP Department.

- One of my views is that the faculty in the CBGP are on the same page when it comes to overall knowledge that a student should have and that is important
- Perhaps there is a need for publication of success stories of FSU students with MS-ISM degree finding career opportunities
- Make students aware of the recruiters attending the FSU job fair seeking these degrees
- Clearly I need to know more about it. I apologize for my ignorance
- Location and subsequent isolation of graduate faculty is a problem. Out of sight out of mind
- Don't know enough more promotion of it

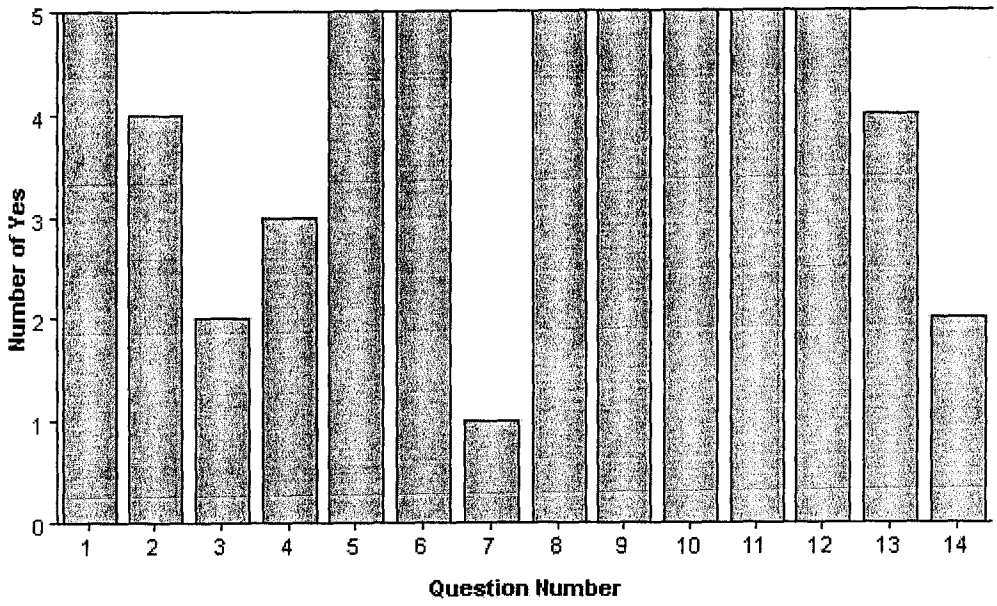
All Responses



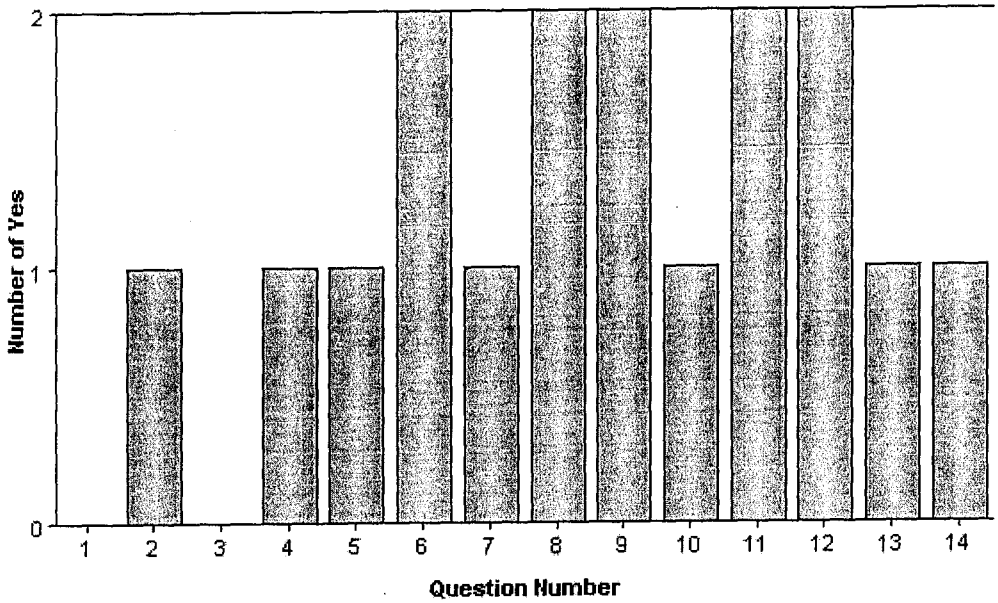
AFES Dept Responses



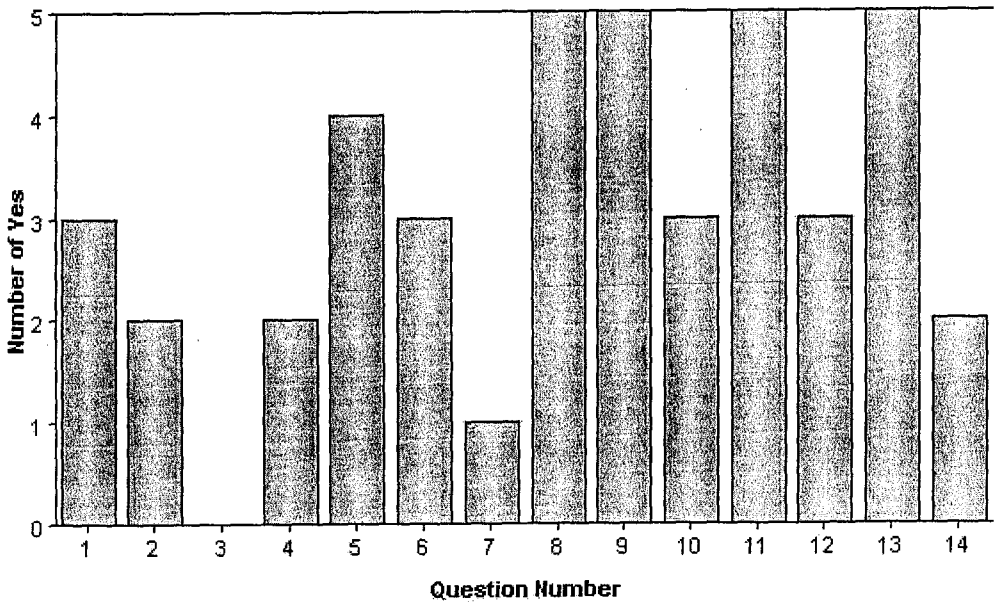
CIS Dept Responses



Management Dept Responses



Marketing Dept Responses



Questions

1. Are you familiar with the type of student that would benefit from entry to the Ferris State University MS-ISM?
2. Are you familiar with the skills (outcomes) being taught in the MS-ISM core courses?
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4. Have you visited the College of Business Graduate Programs website in the past year?
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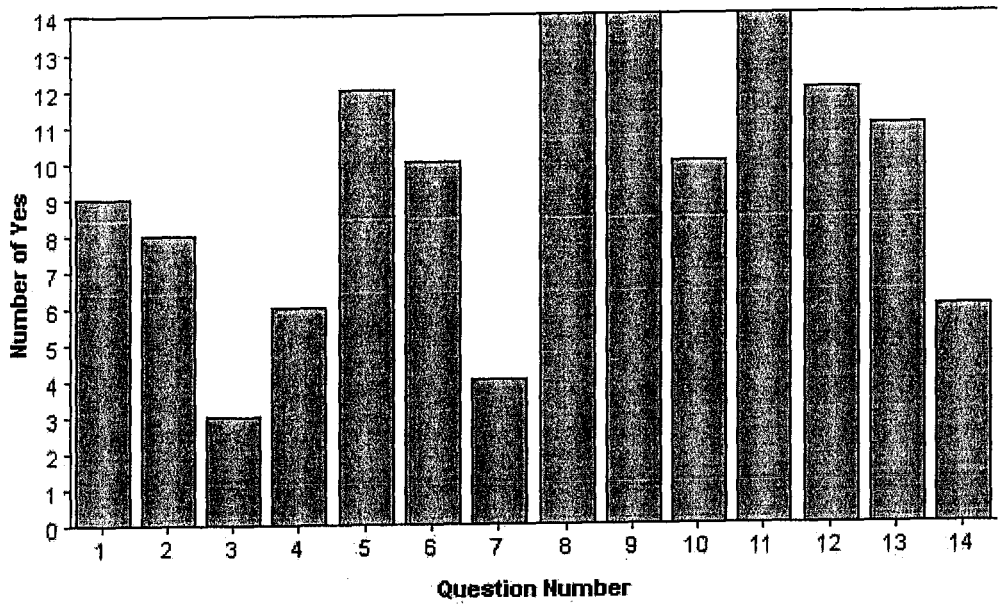
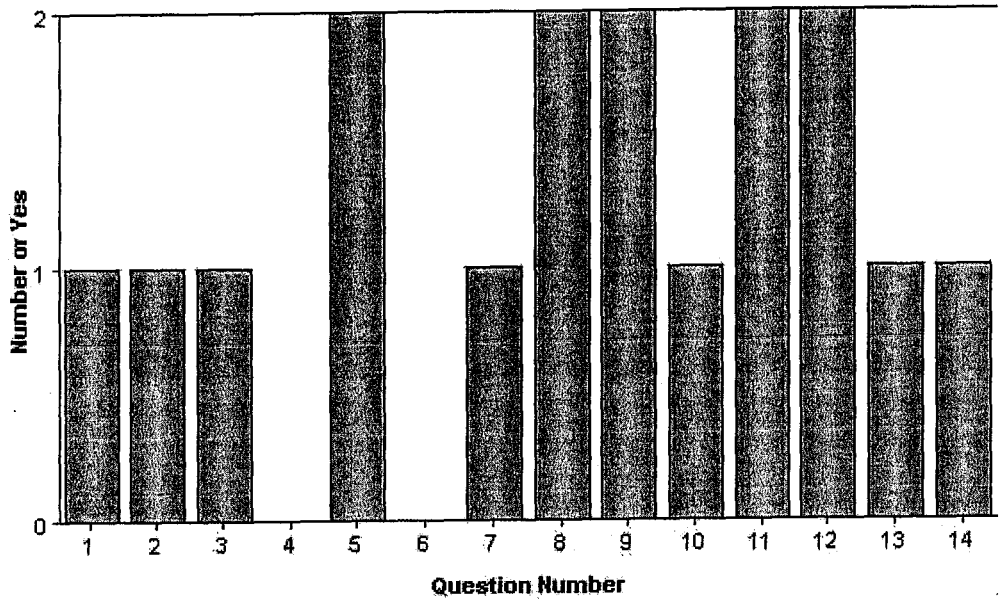
12. Would you support directing high achieving senior FSU Business students into selected MS-ISM courses as an elective(s)?
13. Do you generally believe the COB faculty, staff, and administration respect the contributions by the MS-ISM program to the COB mission and vision?
14. Please provide any comments thoughts, criticisms, and/or suggestions for improvement opportunities that you believe need to be considered by the CBGP Department.

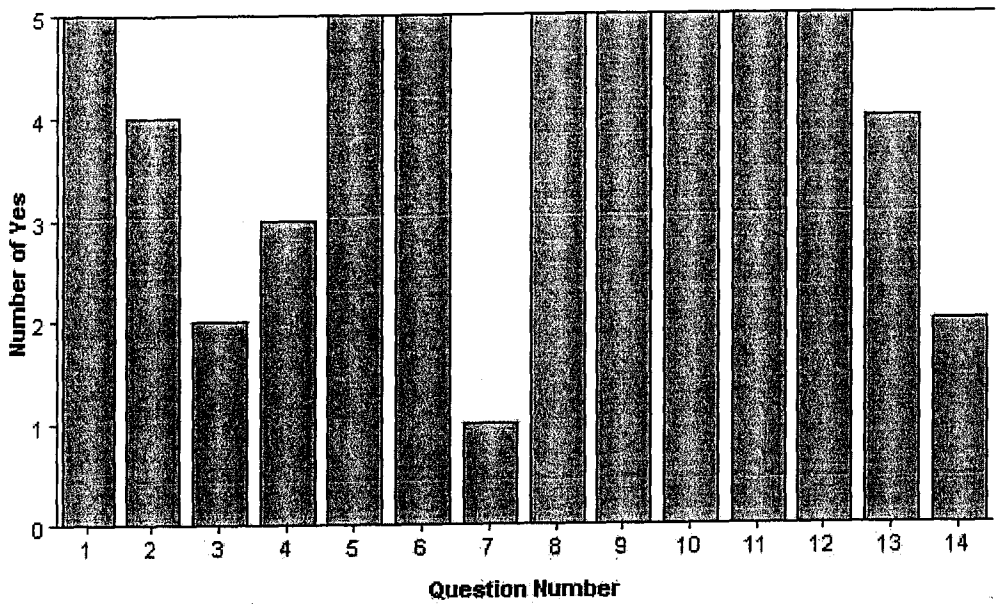
All Responses



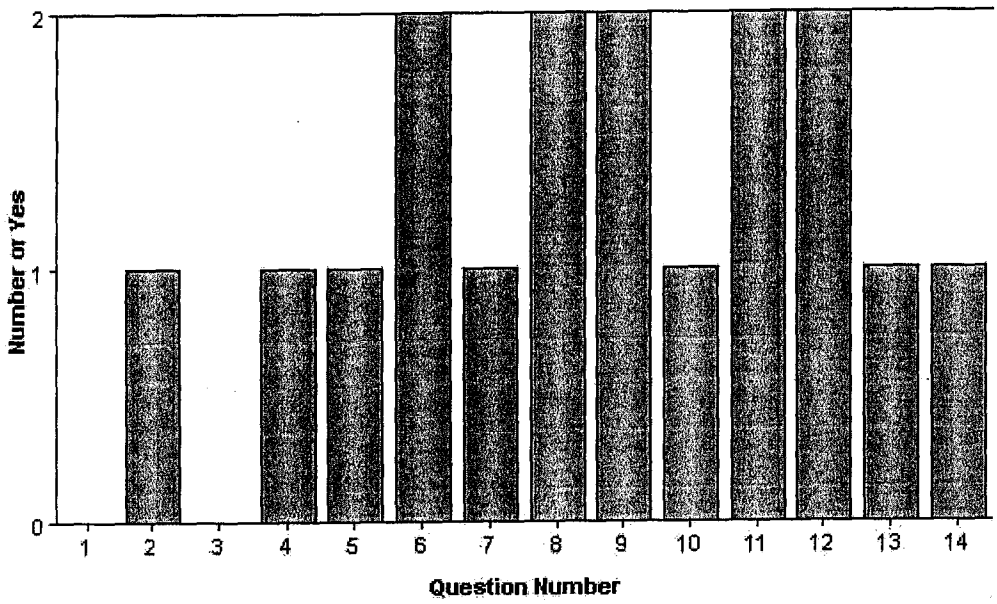
Barchart by individual department: **AFES**



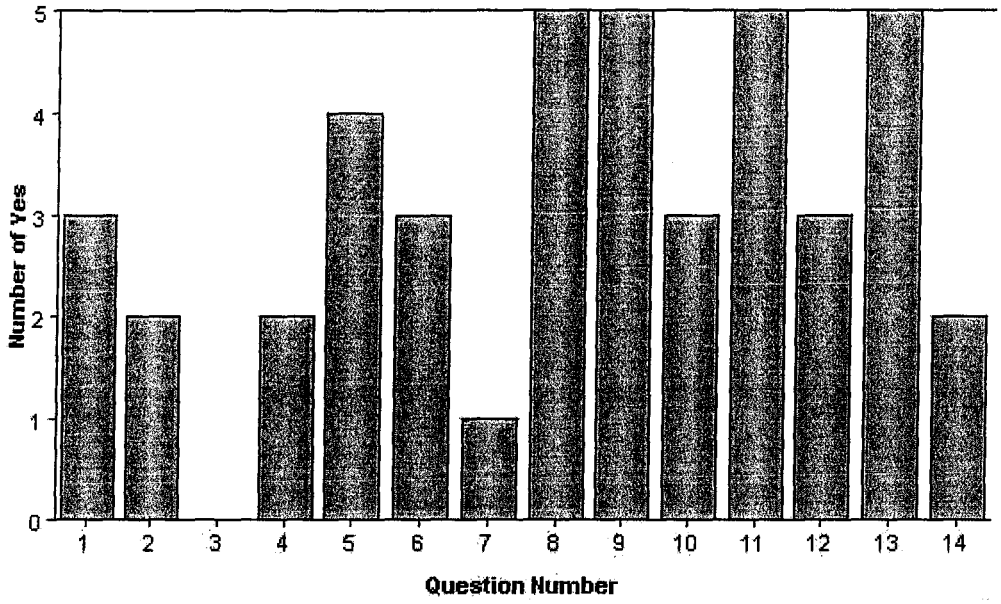
Barchart by individual department: **CIS**



Barchart by individual department: **Management**



Barchart by individual department: **Marketing**



Comments from question number 1.

Comments from question number 2.

- Not all of the skills since the last changes with the ISM and the new MBA. I felt more knowledgable before these changes.

Comments from question number 3.

Comments from question number 4.

- looking at the classes that you have

Comments from question number 5.

- why do they have "cooties"?

Comments from question number 6.

- Not a great deal though
- not to my knowledge

Comments from question number 7.

- would like to

Comments from question number 8.

- absolutely
- Yes, it looks very bad if we have no masters level programs.

Comments from question number 9.

- dah!
- we can help students decide if they should go directly into the program or not

Comments from question number 10.

Comments from question number 11.

- some, not all
- Its' possible
- in particular the combination of accounting with computers

Comments from question number 12.

- MBA
- but it has to fit with their goals, it can't be just to say they are taking grad classes to look good

Comments from question number 13.

- yes & no. faculty: mostly yes, some no. administrators: certain ones only insofar as they believe they will benefit from it, others yes. staff: yes

Comments from question number 14.

- this survey cut me off, will try one more time
- One of my views is that the faculty in the CBGP are on the same page when it comes to overall knowledge that a student should have and that is important.
- Perhaps there is a need for publication of success stories of FSU students with MS-ISM degree finding career opportunities. Make students aware of the recruiters attending the FSU job fair seeking these degrees.
- Clearly I need to know more about it. I apologize for my ignorance.
- Location and subsequent isolation of graduate faculty is a problem. Out of sight out of mind.
- Don't know enough
- more promotion of it

DH/Chair Name S.M Boras

Date

DH/Chair Performance Evaluation

	Strong Agree	Agree	Neutral	Disagree	Strong Disagree
1. Anticipates academic opportunities for the department.....	SA	A	N	D	SD
2. Seeks and involves faculty on academic decisions.....	SA	A	N	D	SD
3. Respects and is responsive to faculty opinions.....	SA	A	N	D	SD
4. Is able to effectively negotiate compromise in differences of academic opinion.....	SA	A	N	D	SD
5. Keeps faculty informed on relevant department matters.....	SA	A	N	D	SD
6. Has a strategic vision for the department and communicates that to faculty.....	SA	A	N	D	SD
7. Is open to new pedagogical ideas and delivery modalities.....	SA	A	N	D	SD
8. Attempts to accommodate faculty teaching and schedule preferences.....	SA	A	N	D	SD
9. Is accessible to faculty and responds in a timely manner.....	SA	A	N	D	SD
10. Is effective in dealings with administration on important department matters.....	SA	A	N	D	SD
11. Does not make excessive or wasteful demands on faculty.....	SA	A	N	D	SD
12. Is approachable in a non-threatening or confrontational manner.....	SA	A	N	D	SD
13. The DH/Chair is an effective advocate of departmental and faculty interests.....	SA	A	N	D	SD
14. I believe that the DH/Chair places the interests of the University, department, and faculty above personal interests.....	SA	A	N	D	SD
15. Generally, I am pleased with departmental leadership.....	SA	A	N	D	SD

16. On a rating scale from 1 to 10 with 10 being highest, how would you rate the performance of your DH/Chair? Comment or explain as necessary.

9. Occasionally will make his mind up before everyone has chance for input. Once mind is made up, it will not change.

17. I would describe the leadership style of the DH/Chair as...

effective and focused.

18. What are your suggestions for the DH/Chair improvement?

Dept. meetings on a lake.

DH/Chair Name S.H Boras

Date

DH/Chair Performance Evaluation

	Strong Agree	Agree	Neutral	Disagree	Strong Disagree
1. Anticipates academic opportunities for the department	(SA)	A	N	D	SD
2. Seeks and involves faculty on academic decisions	SA	A	(N)	D	SD
3. Respects and is responsive to faculty opinions	SA	A	(N)	D	SD
4. Is able to effectively negotiate compromise in differences of academic opinion	SA	(A)	N	D	SD
5. Keeps faculty informed on relevant department matters	SA	(A)	N	D	SD
6. Has a strategic vision for the department and communicates that to faculty	SA	A	(N)	D	SD
7. Is open to new pedagogical ideas and delivery modalities	(SA)	A	N	D	SD
8. Attempts to accommodate faculty teaching and schedule preferences	SA	(A)	N	D	SD
9. Is accessible to faculty and responds in a timely manner	(SA)	A	N	D	SD
10. Is effective in dealings with administration on important department matters	(SA)	A	N	D	SD
11. Does not make excessive or wasteful demands on faculty	SA	(A)	N	D	SD
12. Is approachable in a non-threatening or confrontational manner	SA	A	(N)	D	SD
13. The DH/Chair is an effective advocate of departmental and faculty interests	(SA)	A	N	D	SD
14. I believe that the DH/Chair places the interests of the University, department, and faculty above personal interests	(SA)	A	N	D	SD
15. Generally, I am pleased with departmental leadership	SA	(A)	N	D	SD

16. On a rating scale from 1 to 10 with 10 being highest, how would you rate the performance of your DH/Chair? Comment or explain as necessary.

8 - pretty darn good; not perfect; see

17. I would describe the leadership style of the DH/Chair as...

Directive

18. What are your suggestions for the DH/Chair improvement?

Becoming more participative.

DH/Chair Name S. Y Boras

Date

DH/Chair Performance Evaluation

	Strong Agree	Agree	Neutral	Disagree	Strong Disagree
1. Anticipates academic opportunities for the department	(SA)	A	N	D	SD
2. Seeks and involves faculty on academic decisions	SA	(A)	N	D	SD
3. Respects and is responsive to faculty opinions	SA	(A)	N	D	SD
4. Is able to effectively negotiate compromise in differences of academic opinion	(SA)	A	N	D	SD
5. Keeps faculty informed on relevant department matters	SA	(A)	N	D	SD
6. Has a strategic vision for the department and communicates that to faculty	SA	(A)	N	D	SD
7. Is open to new pedagogical ideas and delivery modalities	SA	(A)	N	D	SD
8. Attempts to accommodate faculty teaching and schedule preferences	(SA)	A	N	D	SD
9. Is accessible to faculty and responds in a timely manner	(SA)	A	N	D	SD
10. Is effective in dealings with administration on important department matters	(SA)	A	N	D	SD
11. Does not make excessive or wasteful demands on faculty	(SA)	A	N	D	SD
12. Is approachable in a non-threatening or confrontational manner	SA	(A)	N	D	SD
13. The DH/Chair is an effective advocate of departmental and faculty interests	(SA)	A	N	D	SD
14. I believe that the DH/Chair places the interests of the University, department, and faculty above personal interests	(SA)	A	N	D	SD
15. Generally, I am pleased with departmental leadership	SA	(A)	N	D	SD

16. On a rating scale from 1 to 10 with 10 being highest, how would you rate the performance of your DH/Chair? Comment or explain as necessary.

9

17. I would describe the leadership style of the DH/Chair as... A take charge person - like to manage "hands on"

18. What are your suggestions for the DH/Chair improvement?

Nothing comes to mind at the moment

DH/Chair Name S.H Baras

DH/Chair Performance Evaluation Date

	Strong Agree	Agree	Neutral	Disagree	Strong Disagree
1. Anticipates academic opportunities for the department.....	(SA)	A	N	D	SD
2. Seeks and involves faculty on academic decisions.....	(SA)	A	N	D	SD
3. Respects and is responsive to faculty opinions.....	SA	(A)	N	D	SD
4. Is able to effectively negotiate compromise in differences of academic opinion.....	(SA)	A	N	D	SD
5. Keeps faculty informed on relevant department matters.....	(SA)	A	N	D	SD
6. Has a strategic vision for the department and communicates that to faculty.....	(SA)	A	N	D	SD
7. Is open to new pedagogical ideas and delivery modalities.....	(SA)	A	N	D	SD
8. Attempts to accommodate faculty teaching and schedule preferences.....	SA	(A)	N	D	SD
9. Is accessible to faculty and responds in a timely manner.....	(SA)	A	N	D	SD
10. Is effective in dealings with administration on important department matters.....	(SA)	A	N	D	SD
11. Does not make excessive or wasteful demands on faculty.....	SA	(A)	N	D	SD
12. Is approachable in a non-threatening or confrontational manner.....	(SA)	A	N	D	SD
13. The DH/Chair is an effective advocate of departmental and faculty interests.....	(SA)	A	N	D	SD
14. I believe that the DH/Chair places the interests of the University, department, and faculty above personal interests.....	(SA)	A	N	D	SD
15. Generally, I am pleased with departmental leadership.....	(SA)	A	N	D	SD

16. On a rating scale from 1 to 10 with 10 being highest, how would you rate the performance of your DH/Chair? Comment or explain as necessary.

9 (very good)

17. I would describe the leadership style of the DH/Chair as...

Democratic

18. What are your suggestions for the DH/Chair improvement?

Allow faculty to prepare a course in a reasonable time.

DH/Chair Name S.H Boras

Date

DH/Chair Performance Evaluation

	Strong Agree	Agree	Neutral	Disagree	Strong Disagree
1. Anticipates academic opportunities for the department.....	(SA)	A	N	D	SD
2. Seeks and involves faculty on academic decisions.....	(SA)	A	N	D	SD
3. Respects and is responsive to faculty opinions.....	(SA)	A	N	D	SD
4. Is able to effectively negotiate compromise in differences of academic opinion.....	(SA)	A	N	D	SD
5. Keeps faculty informed on relevant department matters.....	(SA)	A	N	D	SD
6. Has a strategic vision for the department and communicates that to faculty.....	(SA)	A	N	D	SD
7. Is open to new pedagogical ideas and delivery modalities.....	(SA)	A	N	D	SD
8. Attempts to accommodate faculty teaching and schedule preferences.....	(SA)	A	N	D	SD
9. Is accessible to faculty and responds in a timely manner.....	(SA)	A	N	D	SD
10. Is effective in dealings with administration on important department matters.....	(SA)	A	N	D	SD
11. Does not make excessive or wasteful demands on faculty.....	(SA)	A	N	D	SD
12. Is approachable in a non-threatening or confrontational manner.....	(SA)	A	N	D	SD
13. The DH/Chair is an effective advocate of departmental and faculty interests.....	(SA)	A	N	D	SD
14. I believe that the DH/Chair places the interests of the University, department, and faculty above personal interests.....	(SA)	A	N	D	SD
15. Generally, I am pleased with departmental leadership.....	(SA)	A	N	D	SD

16. On a rating scale from 1 to 10 with 10 being highest, how would you rate the performance of your DH/Chair? Comment or explain as necessary.

10 Very Good!

17. I would describe the leadership style of the DH/Chair as...

18. What are your suggestions for the DH/Chair improvement?

FERRIS STATE UNIVERSITY

Administrative-Professional-Supervisory
Performance Evaluation Overview:

Bill Boras	6/11/2004	Dave Nicol
Employee Name	Date	Reviewed by

Human Relations

Consider extent to which employee functions in a team environment and treats colleagues, administrators, customers, and others with dignity and respect.

Bill respects his colleagues and expects them to carry their portion of the load and to perform in a professional manner. He does not expect any more of others than he expects of himself. He appears to be thoughtful and considerate of those he works with, though his drive to achieve objectives, or to 'cut to the chase', can unintentionally result in some friction.

He appears to have secured colleagial commitment to programmatic goals, which is an accomplishment.

Dependability

Consider extent to which employee can be counted on to carry out instructions and maintain good attendance.

Bill is absolutely dependable. Given an objective, he will find a way to achieve it, and will do so with a maximum of efficiency.

Bill's willingness to take the intiative to enhance his programs is appreciated.

Specific Accomplishments

List activities the employee participated in or specific accomplishments that helped improve job performance or demonstrated commitment to the University (i.e. professional development opportunities, special assignments, or committees)

- Bill has been the primary driver behind development and establishment of the MBA program. Furthermore, he has personally pursued programmatic marketing support, and invested his time in personal recruiting efforts.
- He has taken the initiative to re-reengineer the ISM program to better position it in light of a quickly changing marketplace.

- He has chaired the faculty recruiting process in a sincere effort to identify and hire the individual who would be most capable of contributing to the program in a fashion that would fulfill the current and future needs to ensure the vitality of the MBA program.
- Bill has led his colleagues in efforts to articulate program outcomes and establish outcome measures.

Assistance/Support

List specific assistance and/or support that the supervisor, other employees, or the University may provide to help the employee accomplish specific goals, improve performance, etc.

The Dean will support Bill in his efforts to ensure that faculty perform their duties in a professional manner that best serves our students.

Summary of Evaluation

Comment in narrative form the overall impression of the employee's accomplishments and opportunities for continuous improvement.

Bill's drive is impressive, as is his perserverence. In an environment that tends to be slow to embrace change, these are invaluable qualities.

His commitment to outcomes assessment is admirable. Maintaining the integrity of this process and its integral contribution to continuous improvement of our efforts is key.

Bill strives to build connections across campus and find synergistic opportunities for our curricular offerings.

Bill is demanding in his expectations, driven by his desire for excellence in our programmatic offerings and service to our students.

FERRIS STATE UNIVERSITY

Administrative-Professional-Supervisory
Performance Evaluation

Evaluation of Responsibilities

Please comment on those responsibilities that reflect "excellence" or "continuous improvement" required. Be specific utilizing examples to represent the basis of the evaluation.

Bill Boras	6/11/2004
Employee Name	Date

Current Duty/Responsibility Number and Title (from Position Description):

Department Chair, College of Business Graduate Programs

Factors of "excellence" and (or) "continuous improvement" opportunities:

Bill's long-range curricular scheduling is impressive. The nature of this program staffing necessitates advance commitment of those who are expected to teach to ensure familiarity and comfort with course conduct and delivery mode.

Bill does an outstanding job of securing course coverage. With the evolution of the graduate offerings, he needs to be particularly sensitive to the integrity of that coverage in terms of academic and experiential preparation of those who are teaching the respective courses.

He brings great insight to discussions, though the beneficial impact might sometimes be enhanced by engaging in exploratory give & take. Cutting to the chase can occasionally come across as curt and be misunderstood.

Current Duty/Responsibility Number and Title (from Position Description):

Factors of "excellence" and (or) "continuous improvement" opportunities:

Repeat this sequence as necessary for further Evaluation of Responsibilities:

FERRIS STATE UNIVERSITY

Administrative-Professional-Supervisory
Performance Evaluation

Annual Goals and Objectives

Bill Boras	6/11/2004
Employee Name	Date

Repeat this cycle as often as necessary

1. Goal Objective #
2. Description of annual goal/objective objective with defined measurable for "completion"
3. Date of Review of progress on goal/objective
4. Reviewed by

1) Identify qualified instructors for all courses to b e offered; secure their commitment; assure their preparation in terms of the programmatic objectives, philosophy, and delivery mode. Once a semester, review with the Dean the extent to which this has been accomplished, and the challenges associated with the effort.

2) Seek out and utilize institutional resources to assist in marketing the graduate offerings. Review efforts with Dean once a semester.

3) Continue to develop collaborative opportunities where coursework from other areas can be integrated into the graduate offering, or where the graduate offerings have synergistic prospects when combined with other curricula. Review progress in this regard at least once a semester with the Dean.

4) Develop demographic information regarding who is enrolling in our graduate programs and why they are choosing the Ferris program. Use this information to refine and enhance our marketing efforts. Review this assessment with the Dean once a semester.

5) Work with administrative colleagues and faculty to assist the COB in its effort to embrace the philosophy of outcomes assessment and continuous improvement.

FERRIS STATE UNIVERSITY

Administrative-Professional-Supervisory
Performance Evaluation

Signature Page

1. Print
2. Obtain Signatures
3. Deliver or Send to HRD via inter-office mail

_____ _____
Evaluator's Signature Date

David M. Nicol
Print Name

My signature indicates that this evaluation has been reviewed with me. I understand this evaluation will be part of my permanent personnel file

_____ _____
Employee Date

_____
Print Name

College of Business

Post Tenure Review
Evaluation Form (2004-05)
For William Boras

1. Teaching Effectiveness

Professionalism

Exceeds Expectations X----------Does Not Meet Expectations

Meets expected program/departmental outcomes/objectives for courses taught; is knowledgeable of current developments in discipline, retains clinical/professional competence and skills as appropriate; demonstrates consistency in application of a defined teaching methodology; maintains a classroom atmosphere that is conducive to learning and respectful of differences; participates in departmental deliberations on curricular and pedagogical matters.

Bill's educational professionalism has been evident in his efforts to revise the ISM offering and spearhead development of the MBA program. He has ably confronted the challenges associated with substantial environmental change, and developed solutions that are both responsive to market needs and differentiated from competitive offerings. In doing so, he creatively incorporated new pedagogical approaches, involving multiple delivery mediums, altered course structure and formatting, and a shift in market focus.

Classroom Mechanics

Exceeds Expectations ----------X---------- Does Not Meet Expectations

Meets individual student needs through established office hours; presents material in an organized fashion; provides course guidance through a syllabus with course outline, objectives, basis for evaluation, and grading policy; evaluates student learning consistent with course objectives; provides timely and corrective feedback to students.

Not a lot to go on in this regard since much of Bill's time has been involved in administration, rather than the classroom. SAI's for the sessions that he did teach appear to indicate student comfort with his teaching approach and responsiveness.

Advising

Exceeds Expectations ----------X---------- Does Not Meet Expectations

Advises designated student advisees, attempts to make regular contacts, is available to meet with advisees, gives informed advice about educational and career choices open to students; keeps accurate and useful records.

Little to use for this assessment. As Program Chair, he is called upon to offer guidance to students throughout the program. Unaware of any comments pertaining to his facility in this regard, one way or the other.

2. Scholarship

Exceeds Expectations ----------X---------- Does Not Meet Expectations

Participates in curriculum innovation and development; demonstrates evidence of scholarly activity including research, creative activity or application of research or pedagogy in one's discipline or teaching; remains current in the field as evidenced by attending professional meetings, giving presentations, or publishing papers; participates in professional development activities and demonstrates continued professional growth.

Prof. Boras has been exemplary in his efforts toward curricular innovation and development. He has been the driver behind the development of the MBA program and the reengineering of the ISM program. He has also participated in some consulting projects, though none recently. On the other hand, there is no indication that Bill has engaged in scholarly activities that would enhance his pedagogical and/or discipline-related knowledge or skills (though the administrative demands on his time significantly limit his opportunity to do so).

3. Service

Exceeds Expectations X---------- Does Not Meet Expectations

Serves on departmental, college, and university committees; is a member of appropriate professional organizations; participates in community activities that are professionally related; engages in voluntary service to the university community, including student organizations

As Chair of the COB Graduate Programs, Bill is providing a valuable service for the institution. He has ably guided the logistical aspects of our graduate offerings. Additionally, he has demonstrated exceptional initiative in his efforts to promote the programs, as well as seeking programmatic partners. He is a valuable member of the COB Administrative Council. Bill has served on both College and University committees associated with planning, systems and marketing efforts, plus a number of search committees.

Next Review to occur in :

1 year 2 years 3 years **4 years**

Evaluator/Dean 1/25/05 Date

Faculty Member 1-25-05 Date

Dean's signature indicates the College review process has been completed and that the report will be forwarded to the VPAA

Faculty Member's signature indicates that the Evaluator has discussed the Post Tenure Review with the Faculty Member and that the Faculty Member has received a copy

Professional Development Plan, signed by both the Evaluator and the Faculty Member, is to be attached to this report.

GOLDEN GATE Grad Madore landed a plum Accenture job in San Francisco

TECHNOLOGY

HOME IS WHERE THE WORK IS

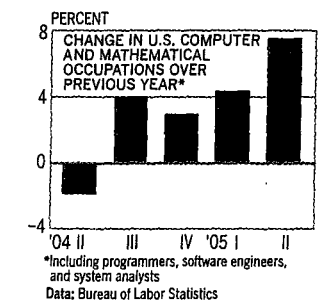
Software writers with solid skills are finding plenty of jobs stateside

REMEMBER TWO YEARS ago when the sky was falling for software programmers? Not only had the tech downturn thinned their ranks, but Indian upstarts were putting tens of thousands of low-salary coders to work on projects that once would have been done by Americans. Forrester Research Inc. predicted more than 3 million U.S. service jobs—including programming—would move offshore by 2015. It seemed like the "giant sucking sound" Ross Perot predicted in 1993 was coming to pass for software writers.

Not so fast. The latest data from the Bureau of Labor Statistics contain a pleasant surprise: The ranks of "computer and mathematical occupations," which include many programmers, actually rose in the second quarter by a robust 7.5%, to 3.2 million, compared with the previous year. While software companies themselves boosted jobs by a modest 3.3%, employment at establishments providing custom programming services increased by 5.6%. By contrast, tech manufacturing jobs were up just a tad and telecoms are still cutting staff.

Why the shift? A couple of reasons. High-end programmers' skills are in demand as corporations and tech companies adopt a slew of new technologies from wireless computing to Web services—pieces of software that fit together like Lego blocks. That makes it easier to add new features and to integrate one program with another. A second factor: While Indian service firms and their Western rivals are hiring lots of programmers overseas, they're also recruiting people with design skills and business knowledge close to their clients in the U.S. and Europe. "You always need programmers on site or nearby," says analyst Gregory Smith of Merrill Lynch & Co.

JOBS WHERE?!



*Including programmers, software engineers, and system analysts
Data: Bureau of Labor Statistics

This is welcome news for American programmers, but they're not out of harm's way. The pressure is still on to avoid getting stuck in routine programming jobs that can easily be moved offshore, and many likely will be in coming years. "This is going to be a less and less attractive occupation for people with entry-level skills," says David Garlan, director of software engineering programs at Pittsburgh's Carnegie Mellon University.

SMART PACKAGE DESIGN

CMU'S ELITE GRADS have had little trouble finding jobs. Vermonter Ben Madore, who graduates in August with a master's degree in information technology, landed a plum assignment with tech consultancy Accenture Ltd. in San Francisco. He's one of 3,000 programmers the company hired in the U.S. in the past nine months. He credits his good fortune partly to the fact that CMU taught him to design software packages, rather than just routine programming. "I don't want to be the guy who's just hacking out code," he says.

But having the latest coding skills is vital, too. Rick A. Kessler, chief information officer of shipper Horizon Lines Inc., is nearly through a five-year project to retool Horizon's run-the-business applications using Microsoft Corp.'s newfangled Web services technologies. He has been hiring two to three highly skilled developers a month to help get the job done. They concentrate on translating business processes into a software design. Then he gets about 60 contract programmers, some in his offices and some in India and the Philippines, to do the routine coding.

The hot strategy for tech services companies these days is delivering services from around the world. This goes for giants like Accenture and IBM as well as the Indian upstarts. They staff software projects with a combination of U.S.-based programmers who make design decisions along with others in Asia, Eastern Europe, or even the U.S. who can produce high-quality programming at a low price. India's Tata Consultancy Services, for instance, has 10 software centers in the U.S., plus eight others outside India.

Software likely won't be a jobs growth engine in the future. Still, so long as U.S. companies continue to innovate and schools produce grads with top-flight skills, many American programmers will find jobs at home. ■

–By Steve Hamm in New York

PHOTOGRAPH BY NANCIE BATTAGLIA; CHART BY RAY VELLA/BW

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Majoring in computers? Move with caution

Bottom falling out of U.S. information technology market

JOYCE LAIN KENNEDY

CAREERS

Q One of my sons, 23, graduated with a bachelor's degree in management information systems and hasn't been able to find an entry-level job. The other will enter college next year and had planned to major in computer science but I've encouraged him to rethink that decision. What's the truth about the IT job market?

— D.D.D.

A "A busted flush" is how a poker player might describe the American IT (information technology) job market. Until the last half-dozen years, the market saw a run of good luck for virtually any new graduate with a technical degree.

Now that winning position is verging on bust (see techsunite.org) as employers look for cheaper labor here or abroad for work that rapidly is becoming a commodity.

Six months ago I wrote a column — "Offshoring Is Scaring Off Students." The outlook for IT majors hasn't improved since then.

University of California/Davis computer science professor Norm Matloff, who has followed the issue carefully for years, said last week, "There will be very few opportunities for technical careers for computer science graduates in the coming years."

In other words, jobs for American programmers are circling the drain.

Are there no bright spots? Yes and no. "Some (computer science) graduates may become system or database administrators, but that's pretty much all there will be. And even a lot of those jobs are already taken by H-1Bs (nonimmigrant work visa holders from other nations)," Matloff adds.

The professor believes that as of today, importation of labor through the visa process is a much bigger problem than offshore job exportation.

Industry veteran Barbara Gomolski reports in a ComputerWorld article, "What to Tell the Kids," about a conference call made last month to peers.

The topic of the call was, "Would you advise your kid to go into IT today?"

The majority said "no" to Gomolski, who is a vice president at Gartner Inc., a leading consulting firm on global information technology.

Gomolski agrees that the job market for IT professionals isn't what it used to be but adds that many of the people on the call, while not saying that they would discourage their kids' interest in IT, would encourage them "to be very clear about what they wanted to do" in the industry rather than "just assume that their computer science degree will open all doors."

Gomolski believes IT can survive by moving in nontraditional directions. I hope she's right, but in my observation, whenever talk turns to "nontraditional roles," an occupation is in troubled waters.

Even if bright IT job market spots materialize, most of the jobs are not the type available to newly minted graduates.

IT skills are always going to be needed. But increasingly they are moving into secondary position to primary expertise — much like fluency in a second language.

True computer geniuses: Don't pay attention to this. Do your thing.

But for everyone else, in poker talk, choosing a computer major today may be a "draw dead." That means trying to make a hand that, even if made, will not win the pot.

E-mail career questions to Joyce Lain Kennedy at jlk@sunfeatures.com. Use "Reader Question" for subject line.

COMPLY OR DIE?

US Sixty-four percent of U.S. panies currently have bu dedicated to financial regulatory pliance projects and related acti according to "Organizational Trei Sarbanes-Oxley and Regulatory pliance Issues," a study by M Group, a Stamford, Conn., USA-information technology research advisory firm.

The July report also noted tha average projected budget woul US$7.2 million in 2005. Among companies without a current bu 54 percent planned to allocate m for compliance initiatives within next 12 months.

A number of compliance issues noted as drivers of this activity, inc ing the Sarbanes-Oxley (SOX) Health Insurance Portability and countability Act (HIPAA) regulati USA PATRIOT Act-related initiat Financial Modernization Act requ ments, Basel II requirements, SEC 1 17a-4, and International Accoun Standards initiatives.

"What makes SOX different is heightened level of security around r compliance," reported Jon Van Dec vice president with META Grou Enterprise Application Strategies. "C as well as other officers of a comp can be liable for inaccurate informat or insufficient controls, with the po bility of fines or prison sentences."

However, the study found that m compliance stakeholders are uncl about where they fit into compliai plans. Only 27 percent of study resp dents indicated reliance on the cl financial officer (CFO) as the prim role for compliance. In addition, only percent of them gave the CFO the t of supervising the chief compliance o cer (CCO) position. Similarly, wl many compliance solutions first are p ceived as services solutions, the ch information officer (CIO) often is involved in the final decision-mak stages, and only 14 percent of CC report to the CIO position.

www.internetnews.com/stats/article.php/3422871

Tech Job Cuts Leap 60%
By Allen Bernard
October 18, 2004

Announced job cuts in the technology sector soared 60% in the third quarter to 54,701, the highest figure since the fourth quarter of 2003 (82,328).

The leading factor behind the increase was a dramatic 127% surge in the number of job cuts among computer-related firms, according to the quarterly report on high-tech job cuts released Monday by Challenger, Gray & Christmas, a global outplacement firm.

Computer-related companies announced 30,624 job cuts in the third quarter, 56% of the 54,701 cuts in the technology sector, which includes computer, electronics, telecommunications, e-commerce, and IT service vendors.

Third-quarter technology cuts were up 60% from 34,213 job cuts in the previous quarter and were 14% higher than the 47,998 job cuts announced by the tech sector in the third quarter a year ago.

So far this year, high-tech firms have announced 118,427 job cuts, which account for 16% of the 724,320 announced job cuts from public and private companies in all industries through September 30.

Job cut numbers reflect announced and planned workforce reductions. This is different from the Bureau of Labor Statistics unemployment figures, which track all unemployed persons in the U.S.

The percentage of high-tech cuts has increased since the second quarter when they represented 13.5% of all job cuts.

The Challenger report shows that in addition to the increase in computer-industry job cuts, employers in telecom, electronics and e-commerce also boosted downsizing activity during the quarter.

Telecommunications saw an eight-percent increase from 18,368 to 19,825; electronic firms cut 4,092 jobs in the third quarter, up 75% from 2,338; and e-commerce went from 42 cuts in the second quarter to 160 in the third.

Making matters worse, is that increased job cutting is not being offset by increased hiring. A recent survey by the Information Technology Association of America (ITAA) found that employers will hire 270,000 fewer business-technology workers this year than in 2003.

A separate report by Robert Half Technology found that only nine-percent of 1,400 CIOs surveyed plan to expand their IT staffs in the fourth quarter of 2004.

"There are certain areas in the technology sector that are thriving. Demand is high for those who specialize in network and IT security," said John Challenger, chief

executive officer of Challenger, Gray & Christmas. "Tech support is another area looking for people. However, it could be some time before overall technology job creation returns to the pace we saw in the late 1990s."

"That may happen only when baby boomers begin leaving the work force en masse due to retirement. At that point, many industries, including technology, could be struggling to find skilled workers," he added.

CNN.com

High-tech job market lost 400,000 jobs

SEATTLE, Washington (AP) -- The U.S. information tech sector lost 403,300 jobs between March 2001 and this past April, and the market for tech workers remains bleak, according to a new report.

Perhaps more surprising, just over half of those jobs -- 206,300 -- were lost after experts declared the recession over in November 2001, say the researchers from the University of Illinois-Chicago.

In all, the researchers said, the job market for high-tech workers shrank by 18.8 percent, to 1,743,500 over the period studied.

According to the study, the job losses were especially pronounced in San Francisco, which saw high-tech employment shrink by 49 percent between March 2001 and April 2004. Boston also suffered disproportionately, with the number of high-tech jobs falling by 34.1 percent.

Researchers Snigdha Srivastava and Nik Theodore compiled the numbers using the Current Employment Statistics survey and the Current Population Survey.

The report, funded by the Ford Foundation, was conducted for the Washington Alliance of Technology Workers, a Seattle organization that wants to unionize workers at Microsoft Corp. and other technology companies.

Theodore, director of the university's Center for Urban Economic Development, said one factor in the staggering high-tech job losses is the familiar lament that businesses have been wary to hire because of uncertainty over how much the economy is improving.

But he also attributes some of the job losses to corporations farming high-tech jobs out to overseas companies whose labor is cheaper.

Theodore said the study shows that high-tech workers "are really bearing the brunt of economic restructuring strategies." It also shows that the end of the recession did not signal the end of high-tech job woes, he said.

"Not only has it not turned around, in many cases it has gotten worse," said Theodore.

However, Sung Won Sohn, chief economist at Wells Fargo Bank, says he has seen some evidence that the high-tech job market began improving in the months after this study was completed.

Overall, Sohn thinks the industry will rebound although the new jobs created might require different skills. That still leaves high-tech workers in better shape than other industries, he said.

"I view the setbacks in tech as temporary," he said, "whereas if you're talking about old-style manufacturing, those jobs are gone forever."

Marcus Courtney, head of the Washington Alliance of Technology Workers, said the tight job market, combined with growing fears that existing jobs will be lost to outsourcing, has increased interest in unionizing from workers at companies including Sun Microsystems, Apple Computer Inc. and Microsoft.

"We are really starting to see the beginnings of a high-tech labor movement in this country," he said

The Seattle metropolitan area lost 10.8 percent of its high-tech jobs during the period, faring better than some other regions.

The employment picture has become a hot-button issue in the U.S. presidential race. Though the overall U.S. economy added 144,000 jobs in August, it still has lost 913,000 positions since President Bush took office.

When the August jobs numbers were released earlier this month, Bush said the figures offered proof that the economy was getting stronger. But Sen. John Kerry's campaign argued that job growth should be faster.

Find this article at:
http://www.cnn.com/2004/TECH/biztech/09/15/techjobslump.ap/index.html

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MARCH 1, 2004

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Will outsourcing hurt America's supremacy?

SPECIAL REPORT (P. 84)

SPECIAL REPORT

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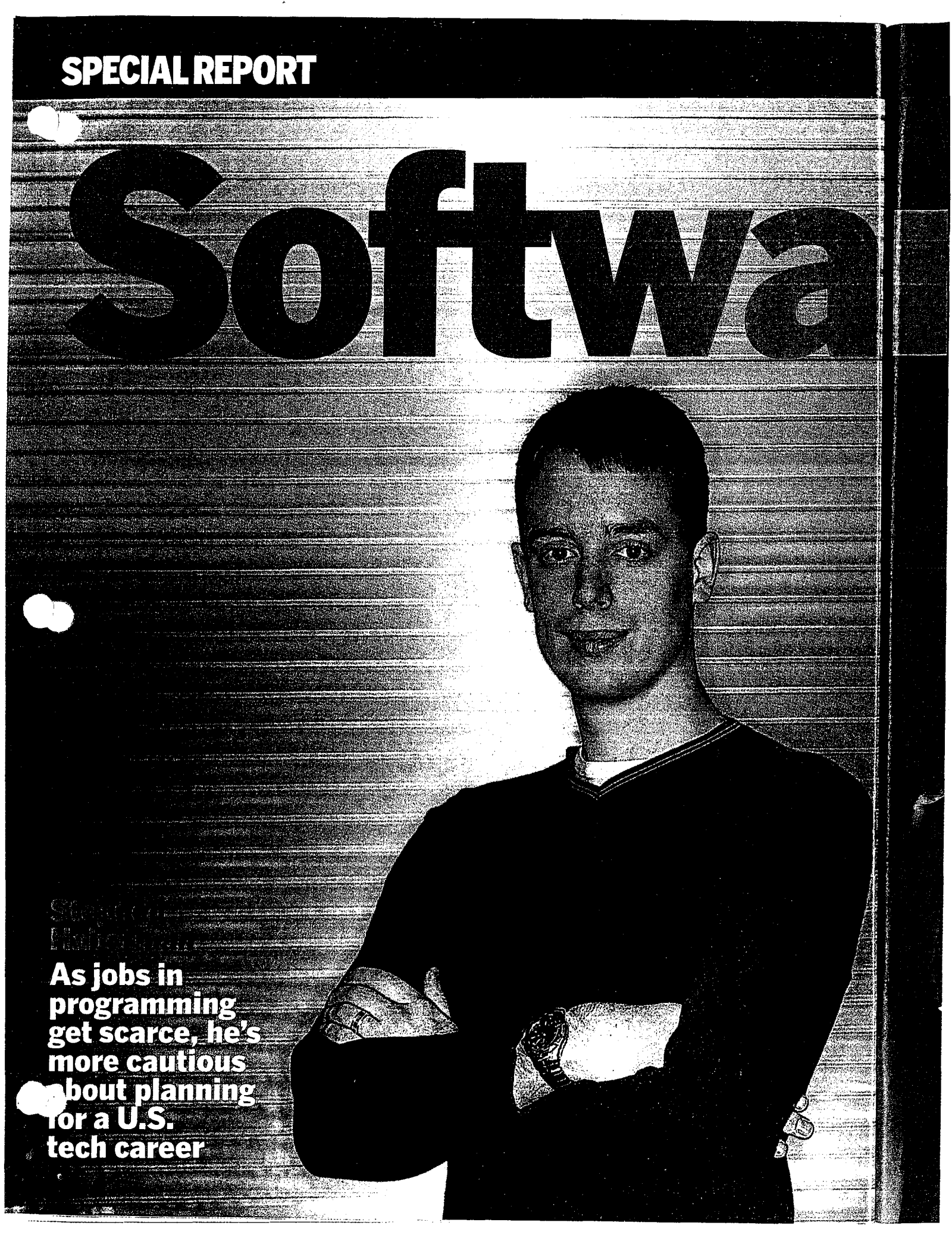


As jobs in programming get scarce, he's more cautious about planning for a U.S. tech career

BY STEPHEN BAKER AND MANJEET KRIPALANI

Will Outsourcing Hurt America's Supremacy?

Deepa Paranjpe

As Indian technology comes into its own, she sees opportunity blossoming around her

(LEFT TO RIGHT) KATHERINE LAMBERT; NAMAS BHOJANI

STEPHEN HABERMAN WAS ONE OF A HANDFUL of folks in all of Chase County, Neb., who knew how to program a computer. In the spring of 1999, at the height of the Internet boom, the 17-year-old whiz wanted to strut his stuff outside of his windswept patch of prairie. He was too young for a nationwide programming competition sponsored by Microsoft Corp., so an older friend registered for him. Haberman wowed the judges with a flashy Web page design and finished second in the country. Emboldened, Stephen came up with a radical idea: Maybe he would skip college altogether and mine a quick fortune in dot-com gold. His mother, Cindy, put the kibosh on his plan. She steered him to a full scholarship at the University of Nebraska at Omaha.

Half a world away, in the western Indian city of Nagpur, a 19-year-old named Deepa Paranjpe was having an argument with her father. Sure, computer science was heating up, he told her. Western companies were frantically hiring Indians to scour millions of software programs and eradicate the much-feared millennium bug. But this craze would pass. The former railroad employee urged his daughter to pursue traditional engineering, a much safer course. Deepa had always respected her father's opinions. When he demanded perfection at school, she delivered nothing less. But she turned a deaf ear to his career advice and plunged into software. After all, this was the industry poised to change the world.

As Stephen and Deepa emerge this summer from graduate school—one in Pittsburgh, the other in Bombay—they'll find that their decisions of a half-decade ago placed their dreams on a collision course. The Internet links that were being pieced together at the turn of the century now provide broadband connections between multinational companies and brainy programmers the world over. For Deepa and tens of thousands of other Indian students, the globalization of technology offers the promise of power and riches in a blossoming local tech industry. But for Stephen and his classmates in the U.S., the sudden need to compete with workers across the world ushers in an era of uncertainty. Will good jobs be waiting for them when they graduate? "I might have been better served getting an MBA," Stephen says.

U.S. software programmers' career prospects, once dazzling, are now in doubt. Just look at global giants, from IBM and Electronic Data Systems to Lehman Brothers and Merrill Lynch. They're rushing to hire tech workers offshore while liquidating thousands of jobs in America. In the past three years, offshore programming jobs have nearly tripled, from 27,000 to an estimated 80,000, according to Forrester Research Inc. And Gartner Inc. figures that by yearend, 1 of every 10 jobs in U.S. tech companies will move to emerging markets. In other words, recruiters

The Software

Software programming is the iconic job of the Information Age, but not all programmers are created equal. Here's the breakdown of software jobs and their prospects

1 ARCHITECTS A few thousand tech visionaries sketch out entire systems to handle complex jobs. Adam Bosworth, for example, is the chief architect at BEA Systems.

PAY $150,000 to $250,000.

OUTLOOK Outsourcing is a nonissue.

2 RESEARCHERS They're key to innovation, which is crucial for the U.S. But there are only about 25,000 in the country, many in academia, where tenure trumps pay.

PAY $50,000 in academia to $195,000 in private sector.

OUTLOOK Prospects should brighten somewhat with the economy, but these jobs can move offshore, too.

3 CONSULTANTS Business-savvy consultants advise corporations about their technology needs, help them install new software, and create new applications from scratch.

PAY $72,000 to $200,000.

OUTLOOK Still bright for Americans. U.S. customers want face time with consultants.

4 PROJECT MANAGERS Crucial cogs in global software factories. They coordinate the work of teams in different countries and time zones and provide dependable products on schedule.

PAY $96,000 to $130,000.

OUTLOOK Good managers can write their own tickets. Pay has jumped 14.3% in the past two years.

5 BUSINESS ANALYSTS Go-betweens. About 100,000 analysts figure out what a business needs and turn it into a spec sheet for programmers. It's a key role now since the company and its programmers are often apart.

PAY $52,000 to $90,000.

OUTLOOK A relatively safe haven for programmers—if they have communications skills and a grip on business.

6 BASIC PROGRAMMERS The foot soldiers in the information economy, they write the code for applications and update and test them. Numbering about 1 million, they are one-third of all U.S. software engineers and programmers.

PAY Has tumbled 15% since 2002. Now $52,000 to $81,000.

OUTLOOK Watch out. Many of these jobs can be done anywhere. Forrester predicts 18% of them will be offshore within six years.

Data: Forrester Research, Foote Partners, Kennedy Information Inc., *BusinessWeek*

NAMAS BHOJANI

who look at Stephen will also consider someone like Deepa—who's willing to do the same job for one-fifth the pay. U.S. software developers "are competing with everyone else in the world who has a PC," says Robert R. Bishop, chief executive of computer maker Silicon Graphics Inc.

For many of America's 3 million software programmers, it's paradise lost. Just a few years back, they held the keys to the Information Age. Their profession not only lavished many with stock options and six-figure salaries but also gave them the means to start companies that could change the world—the next Microsoft, Netscape, or Google. Now, these veterans of Silicon Valley and Boston's Route 128 exchange heart-rending job-loss stories on Web sites such as yourjobisgoingtoindia.com. Suddenly, the programmers share the fate of millions of industrial workers, in textiles, autos, and steel, whose jobs have marched to Mexico and China.

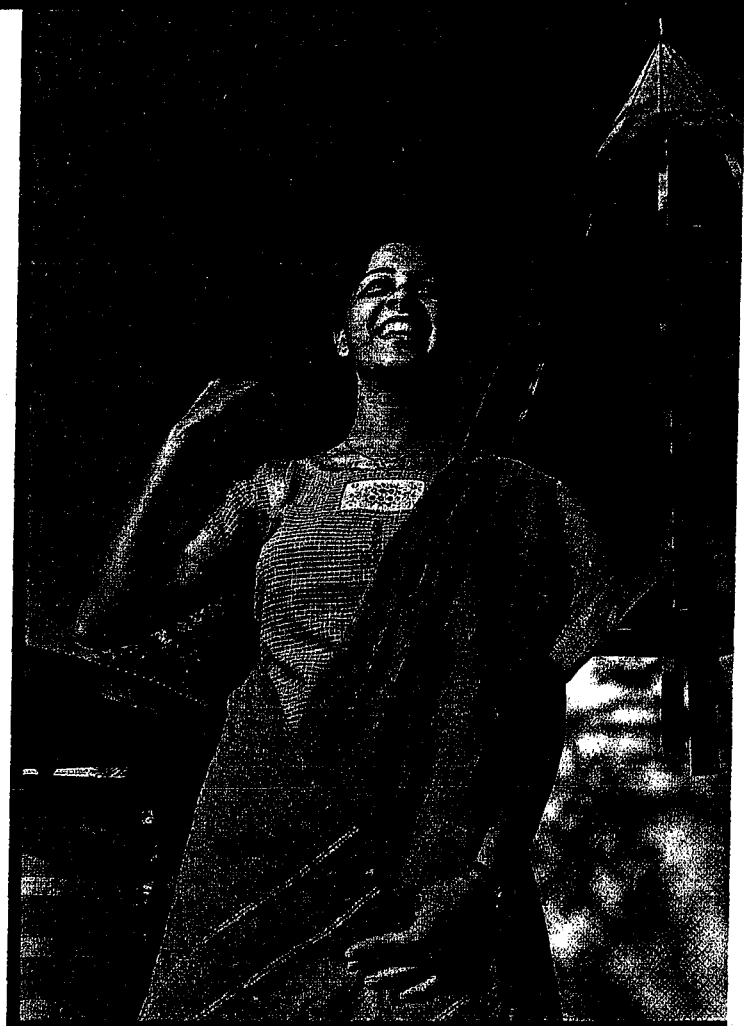
"Leap of Faith"

THIS EXODUS THROWS THE future of America's tech economy into question. For decades, the U.S. has been the world's technology leader—thanks in large part to its dominance of software, now a $200 billion-a-year U.S. industry. Sure, foreigners have made their share of the machines. But the U.S. has held on to control of much of the innovative brainwork and reaped rich dividends, from Microsoft to the entrepreneurial hotbed of Silicon Valley. The question now is whether the U.S. can continue to lead the industry as programming spreads around the globe from India to Bulgaria (page 93). Politicians are jumping on the issue in the election season. And it will probably rage on for years, affecting everything from global trade to elementary-school math and science curriculums.

Countering the doomsayers, optimists from San Jose, Calif., to Bangalore see the offshore wave as a godsend, the latest productivity miracle of the Internet. Companies that manage it well—no easy task—can build virtual workforces spread around the world, not only soaking up low-cost talent but also tapping the biggest brains on earth to collaborate on complex projects. Marc Andreessen, Netscape Communications Corp.'s co-founder and now chairman of Opsware Inc., a Sunnyvale (Calif.) startup, sees this reshuffling of brainpower leading to bold new applications and sparking growth in other industries, from bioengineering to energy. This could mean a wealth of good new jobs, even more than U.S. companies could fill. "It requires a leap of faith," Andreessen admits. But "in 500 years of Western history, there has always been something new. Always always always always always."

This time, though, there's no guarantee that the next earth-shaking innovations will pop up in America. Deepa, for example, has high-speed Internet, a world-class university, and a venture-capital industry that's starting to take shape in Bombay. What's more, her home country is luring back entrepreneurs and technologists who lived in Silicon Valley during the bubble years. Many came home to India after the crash and now are sowing the seeds of California's startup culture throughout the subcontinent. What's to stop Deepa from mixing the same magic that Andreessen conjured a decade ago when he co-founded Netscape? It's clear that in a networked world, U.S. leadership in innovation will find itself under siege.

The fallout from this painful process could be toxic. One danger is that high-tech horror stories—the pink slips and falling wages—will scare the coming generation of American math whizzes away from software careers, starving the tech economy of brainpower. While the number of students in computer-science programs is holding steady—for now—the elite schools have seen applications fall by as much as 30% in two years. If that trend continues, the U.S. will be relying more than ever on foreign-born graduates for software innovation. And as more foreigners decide to start careers and companies back in their home countries, the U.S. could find itself lacking a vital resource. Microsoft CEO Steven A. Ballmer says the shortfall of U.S. tech students worries him more than any other issue. "The U.S. is No. 3 now in the world and falling behind quickly No. 1 [India] and No. 2 [China] in terms of computer-science



NAMAS BHOJANI

Deepa Paranjpe

AGE 24

BIRTHPLACE Nagpur, Maharashtra, India (pop. 2.8 million)

MARRIED Not yet. Will probably have an arranged marriage—but the man must support her career goals.

ACADEMICS Finishing a master's at the Indian Institute of Technology, Bombay.

LANGUAGES English, Hindi, and Marathi

COMPUTER LANGUAGES Nine, including C++ and Java

JOB Starts in June as a data-mining engineer at Veritas Software's facility in Pune. Pay: $10,620 per year.

GOAL To make it big as an entrepreneur.

Stephen [redacted]

AGE: 22

BIRTHPLACE: Chase County, Neb., U.S.A. (pop. 4,385)

MARRIED: Wife, Amy, also a programmer, couldn't find a good tech job and is writing a Christian novel

ACADEMICS: Finishing a master's in software engineering at Carnegie Mellon University

LANGUAGE: English

COMPUTER LANGUAGES: 11 from C to Python

JOB: None yet. He has interviewed with the corporate recruiters who come to the Carnegie Mellon campus

GOAL: To start a software-services company in Omaha and become a millionaire

graduates," he said in late 2003 at a forum in New York.

Fear in the industry is palpable. Some of it recalls the scares of years past: OPEC buying up the world in the '70s and Japan Inc. taking charge a decade later. The lesson from those episodes is to resist quick fixes and trust in the long-term adaptability of the U.S. economy. Job-protection laws, for example, may be tempting. But they could hobble American companies in the global marketplace. Flexibility is precisely what has allowed the U.S. tech industry to adapt to competition from overseas. In 1985, under pressure from Japanese rivals, Intel Corp. exited the memo-

chip business to concentrate all its resources in microproces-

. The result: Intel stands unrivaled in the business today.

While the departure of programming jobs is a major concern, it's not a national crisis yet. Unemployment in the industry is 7%. So far, the less-creative software jobs are the ones being moved offshore: bug-fixing, updating antiquated code, and routine programming tasks that require many hands. And some software companies are demonstrating that they can compete against lower-cost rivals with improved programming methods, more automation, and innovative business models (page 94).

For the rest of the decade, the U.S. will probably maintain a strong hold on its software leadership, even as competition grows. The vast U.S. economy remains the richest market for software and the best laboratory for new ideas. The country's universities are packed with global all-stars. And the U. S. capital markets remain second to none. But time is running short for Americans to address this looming challenge. John Parkinson, chief technologist at Cap Gemini Ernst & Young, estimates that U.S. companies, students, and universities have five years to come up with responses to global shifts. "Scenarios start to look wild and wacky after 2010," he says. And within a decade, "the new consumer base in India and China will be moving the world."

People Skills

TO THRIVE IN THAT WACKY WORLD, programmers like Stephen must undergo the career equivalent of an extreme makeover. Traditionally, the profession has attracted brainy introverts who are content to code away in isolation. With so much of that work going overseas, though, the most successful American programmers will be those who master people skills. The industry is hungry for liaisons between customers and basic programmers and for managers who can run teams of programmers scattered around the world. While pay for basic application development has plummeted 17.5% in the past two years, according to Foote Partners, a consultant in New Canaan, Conn., U.S. project managers have seen their pay rise an average of 14.3% since 2002.

Finding those high-status jobs won't be easy. Last summer, 34-year-old Hal Reed was so hungry for a programming job that he answered an ad in the *Boston Globe* for contract work at cMarkets, a Cambridge (Mass.) startup. The pay was $45,000 —barely more than an outsourcing company charges for Indian labor. But he took it. Fortunately for him, he was able to convince his new boss quickly that he was much more than a programmer. He could lead a team. Within weeks, his boss nearly doubled Reed's pay and made him the chief software architect. "He had great strategic thinking skills," says Jon Carson, cMarkets' chief executive. "You can't outsource that."

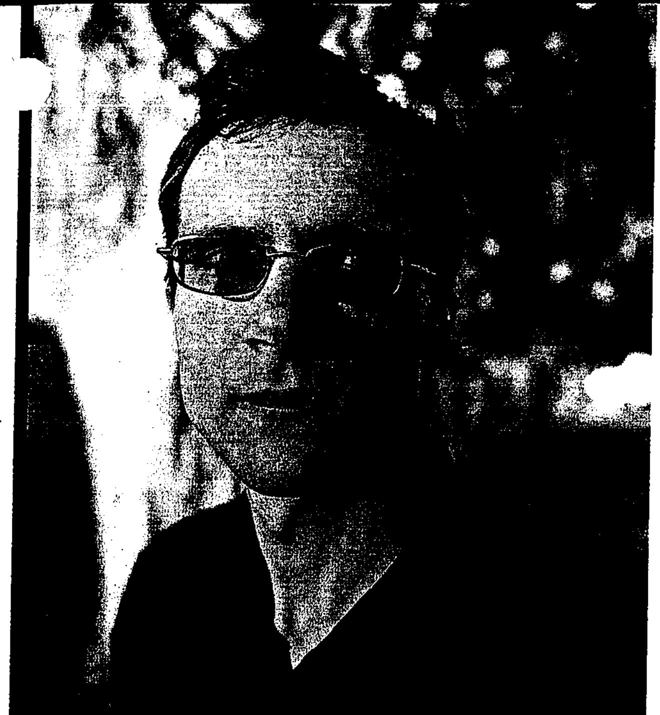
To prepare students for the hot jobs, universities may need to revamp their computer-science programs. Carnegie Mellon University, where Stephen now studies, has already begun that process. His one-year master's program focuses on giving students the skills needed to manage teams and to play the role of software architect. Such workers are the visionaries who design massive projects or products that hundreds or even thousands of programmers flesh out.

Stephen's problem is that Indians will work for one-fifth the pay

The key players in the drama, including these two master's students, Stephen and Deepa, don't have the luxury to wait and see how it turns out. Their time is now. Deepa graduates in May from the Bombay campus of the Indian Institute of Technology, a top university nestled between two lakes. Stephen emerges three months later from the Pittsburgh campus of CMU.

The options they're eyeing illustrate the unfolding map of an

KATHERINE LAMBERT



Florentin Badea

AGE: [illegible]
BIRTHPLACE: Bucharest, Romania (pop. 2.3 million)
ACADEMICS: Bachelor's in Computer Science at Polytechnic University of Bucharest
JOB: Day job designing Web pages for an American tech company, which he declines to name. Finds freelance work on RentACoder.com. Clears $3,000 per month
GOAL: To afford a bigger house, a better car, and to start his own software company in Romania

industry in full mutation. A software career is no refuge for the faint of heart. Deepa, for example, could suffer if the U.S. government moves to block offshore development or if rocky experiences in foreign lands spark an industry backlash. And Stephen, if he misplays his hand, could find himself competing with lowballing Filipinos or Uruguayans.

For now, their stories reflect the moods in their two countries—one with lots to lose, the other with a world to win. Deepa is brimming with optimism about the future, convinced that her opportunities are limited by nothing more than her imagination. She is thinking not only about the next job but about the startup that she'll found after that. Stephen, by contrast, is cautious. Even at 22, he's attuned to the risks of a global market for software talent. While confident he'll make a good living, he's plotting out a career that sacrifices opportunities for a measure of safety. Self-protection, an afterthought five years ago, is a pillar of his strategy.

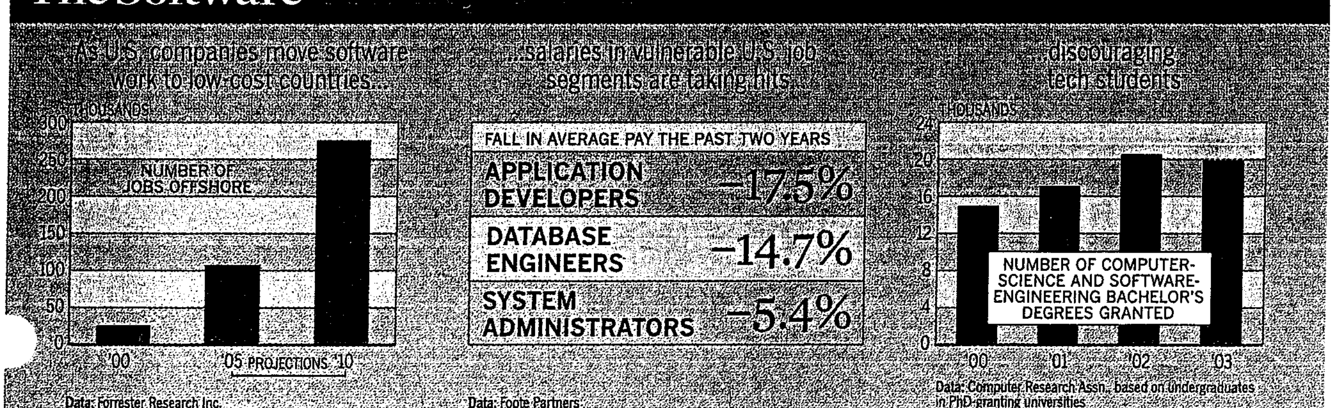
Seeking a Niche

IT'S MIDDAY IN THE WINDOWLESS basement labs at CMU's Wean Hall. Stephen, tall and lanky, wearing a white T-shirt tucked into jeans, leans back in his chair and ponders his future. He signed up for the master's program at CMU on the advice of a professor in Omaha who told him that graduates with an MS could land more interesting jobs and make more money. But now the big recruiters coming onto the snowy Pittsburgh campus—companies such as Microsoft and Amazon.com Inc. —are hiring cheaper undergrads, he says, and barely giving the masters a look. Sure, other recruiters come knocking. Banks, he says with a grimace. Insurance companies. But the idea of working in a finance-industry tech shop leaves him cold. "I'm not even interviewing," he says.

The 17-year-old hotshot who was ready to skip college and make a mint has undergone quite a change. He's married, has witnessed the bumps in the world of software, and plans to establish "an upper-middle-class lifestyle, and maybe more" as a businessman. His plan is to carve out a niche for himself back in Omaha. He'll gather three or four colleagues and produce custom software for businesses in town, from hospitals and steakhouses to law firms. Omaha is plenty big, he says, for a good business, but it's remote enough to insulate his startup from offshore competition—and even from the bigger competitors in Chicago.

Stephen understands the threat posed by smart and hungry programmers in distant lands. He was once such a programmer himself. From his senior year in high school all the way through college, he worked as a freelancer for a New York software-development company, Beachead Technologies Inc. Geoff Brookins, Beachead's young founder, spotted Stephen's prize-winning entry in the 1999 Microsoft Web-site design contest. He called Nebraska, sent Stephen some work, and was blown away. "He did two months of work in three days," he recalls. Brookins quickly signed him on at $15 an hour, ultimately paying him $45 an hour. Like the Indians, Stephen provided a low-cost al-

The Software Vitality Drain



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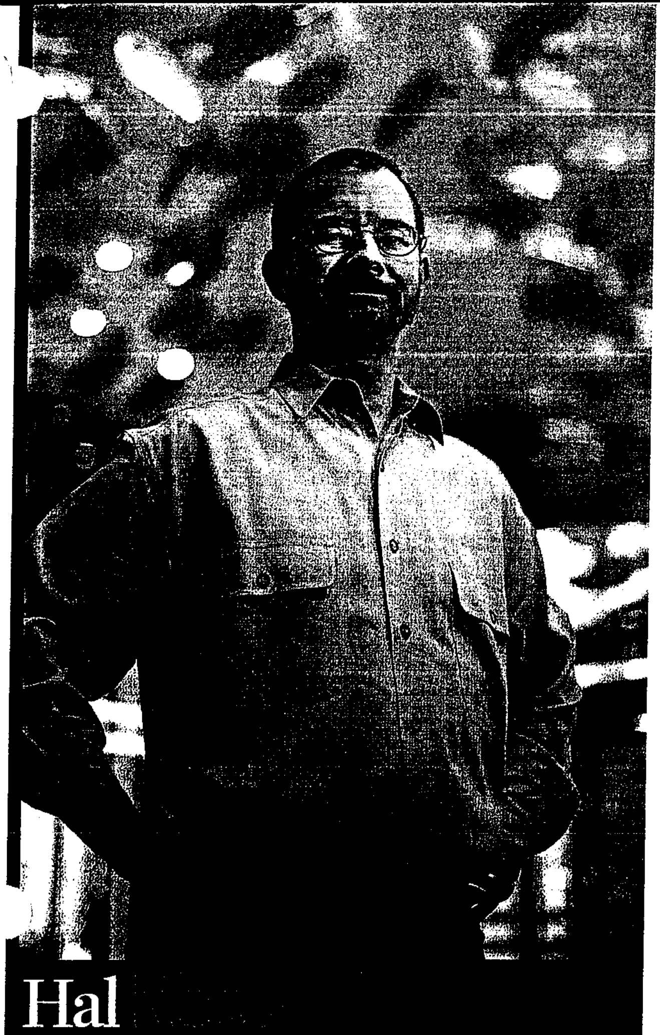


Hal

AGE 34

BIRTHPLACE Outside Wilmore, Ky., U.S.A. (pop. 4,200)

ACADEMICS Bachelor's in math, Wesleyan University, '91

JOB Answered an ad for entry-level programming work at cMarket in Cambridge, Mass., for $45,000. Quick promotion to software architect nearly doubled his pay

GOAL To help cMarket take off like a rocket

ternative to big-city programmers—but he had an advantage because he spoke American English and was only one time zone away from New York.

The job let Stephen work on projects that normally would have been far beyond the reach of a student. One was to create IBM's Web page for its Linux operating-system technology—a crucial arm of Big Blue's business. "Stephen was lead engineer on that project," Brookins says. The student also got to spend much of the summer of 2001 working at Beachead's office in New York City. It was a fun contrast to Nebraska, he recalls. But he stopped working for Beachead after he moved to Pittsburgh last summer.

To Deepa, the future of technology looks like an eight-lane highway

It was there that Stephen got a strong signal that the ospects were dimming for programmers. When his wife, Amy, a fellow computer-science student from Nebraska, began looking for programming work, she came back to their suburban apartment disheartened. The only available jobs, she says, "would have paid me interns' rates." She ditched the profession and is now writing a Christian-themed novel.

Then, Stephen's old boss hammered home the dangers of coding for a living in a wired world. Beachead's competitors were finding cheaper labor offshore, and Brookins, to win contracts, had to match them. Last fall, he logged on to a Web site, RentACoder, a matchmaking service between employers and some 30,000 programmers around the world. There, Brookins found a 27-year-old Romanian named Florentin Badea, a star from Bucharest's Polytechnic University and the 11th-ranked programmer on the whole site. Badea was willing to charge just $250 for a project that would have cost $2,000, Brookins estimates, if Stephen had done it.

Those same global forces, Stephen admits, could eventually hollow out his business in Omaha. Already, Indian tech-services outfits such as Infosys and Wipro are competing head-to-head with U.S. companies in this country. But Stephen is betting that by working closely with customers, he can whip bigger firms on quality and service. He says he'll give the venture six months to a year and then see what happens.

Ultrafast Track

DEEPA SEES A REVERSE IMAGE of Stephen's worldview. Where the prospects for U.S. tech grads seem to narrow as they peer into the future, she's looking down an eight-lane highway. Yet she faces her own set of challenges, she acknowledges, while sipping tea with her classmates in a breezy open-air cafeteria on the Indian Institute of Technology's Bombay campus. They don't want to be cogs in a software-programming factory—India's role to date. Instead, they want India to be a tech powerhouse in its own right. "Good Indian engineers can do good design work, but we need a venture industry" so Indians can start their own companies, says Deepa. Her pals nod in agreement.

Deepa is positioned on India's ultrafast track. The country pins high hopes on the 3,000 students in the six Institutes of Technology. Their alumni are stars locally and worldwide—including Yogen Dalal, a top venture capitalist at Mayfield, and Desh Deshpande, founder of Sycamore Networks and Cascade Communications. Within this elite, Deepa and her friends are a rarified breed. They aced the grueling national exams, ranking in the top 0.2% and winning places in the school of computer science. They're known as "toppers." The challenge for Deepa's small crowd is to move beyond the achievements of Dalal and Deshpande, who notched their successes for U.S. companies, and to make their mark with new Indian companies.

That means bypassing the bread-and-butter service giants, such as Tata, Infosys, and Wipro, that dominate the Indian stage. The jobs they offer, says Deepa, sound boring. To get their hands on exciting research and more creative programming, she and her friends are banking mostly on U.S. companies in India, including Intel, Texas Instruments, and Veritas. This summer, when Deepa graduates, she'll be a software engineer at the Pune operations of Veritas Software Corp., a Silicon Valley storage-software maker. Her pay will start at $10,620 a year—plenty for a comfortable middle-class life in India. "I'm living my dream," she says.

And thrilling her family. Her father, Arun Paranjpe, who grew up in Mhow, a tiny army-base town in central India, could afford only a bachelor's degree, which prepared him for

SHAWN G. HENRY

work as an officer in India's railways. He regretted not advancing further and along with Deepa's homemaker mother, he pushed his two daughters toward advanced professional degrees. So while she studied Indian classical vocal music for nine years and escaped, when she could, to the cricket field, Deepa always finished at the top of her class in mathematics. That helped her land a plum spot in the computer-science program at Nagpur University.

Now Deepa is ITT-Bombay's star in search technology—and she's hoping that this specialty will be her ticket to a rip-roaring career. She routinely works till 3 a.m. in the department's new 20-pod computer lab, doing research on search engines. She admits the work at Veritas, at least initially, will involve more routine database tasks than the cutting-edge work she's hoping for. But if Veritas disappoints, a topper like Deepa will have plenty of other options. Both the search giant Google Inc. and the Web portal Yahoo! are setting up research and development centers in India this year. Deepa hopes to manage a research lab some day, and ultimately, she says, "I'd like to be an entrepreneur."

But she's an entrepreneurial revolutionary and family tradi-

Forget India, Let's Go to **Bulgaria**

Peter Kürpick vividly remembers his first trip to Bulgaria. Traveling into Sofia from the airport two years ago, the executive with German software giant SAP breathed air thick with coal smoke and saw laundry hanging from buildings on dirty, snow-covered streets. Then he pulled up to the gleaming glass-and-marble tower that houses SAP's Bulgarian research lab. It was like "an island of beauty," recalls Kürpick, who became the lab's managing director in 2002. Dedicated that year, SAP's facility has 180 engineers who write vital Java software for SAP's cutting-edge products around the world.

Wait—isn't writing software for foreign companies India's specialty? By the numbers, yes. The outsourcing business there totaled an estimated $12 billion in 2003 out of $25 billion from low-cost locales worldwide. But Bulgaria, Romania, and other locations on the outskirts of Europe are plying a new twist on the craze for sending technology development offshore. They're pushing what pundits call "near-shoring," or shifting work to countries that cost less but are only a short hop away. Finnish companies farm out IT work to Estonia, Germans use contractors in Poland, and Italians ship projects to Serbia. For a lot of European companies, "India seems an awfully long way away," says information technology services analyst Ian Marriott of researcher Gartner Inc.

It was access to nearby talent that convinced SAP to set up its Bulgarian outpost, which has turned into a beacon of hope for a country struggling to lift itself out of communist-era poverty. But it's not the only one. Scattered around the capital are hundreds of small companies doing projects for an impressive list of clients, including Boeing, BMW, General Motors, and Siemens. "There is an exceptionally high level of talent in Eastern Europe," says Kasper Rorsted, managing director for Europe, Middle East, and Africa at Hewlett-Packard Co.

It's not just distance and time zones that motivate the search for alternatives. India struck gold with U.S. and British clients in part because of its workers' English skills and interpersonal ties. But those assets don't hold the same sway for French or German customers. "Cultural, linguistic, and even ethnic connections are very important in near-shoring," says Erran Carmel, an associate professor at American University's Kogod School of Business in Washington. French companies are drawn to Romania, whose Latinate language and historic links make it an appealing alternative to Anglophone locales. German companies are likewise lured by the many German speakers in Hungary and the Czech Republic. "People want to be able to pick up the phone and resolve problems," Carmel says.

That's boosting places like Bucharest. Taking advantage of ample tech talent and engineering wages as low as $6,500 a year—a tenth the norm in Western Europe—companies including IBM, HP, and Alcatel have set up shop there. On Feb. 17, software giant Oracle Corp. announced three new centers in Bucharest to provide European and global support to customers.

As in the U.S., growing use of foreign workers could provoke political backlash. So many companies keep their outsourcing plans quiet—or say they're merely adding employees elsewhere, not laying them off at home. What's more, the cost advantages of some countries—especially those slated to join the European Union on May 1—will likely diminish as their living standards rise. But for now, Europe's poorest countries are looking to technology for an economic lift. If near-shoring keeps growing, many of them could soon sport software palaces as symbolic as Sofia's.

—By Andy Reinhardt in Paris

Where [illegible] Doesn't Rule

European companies are discovering nearby alternatives to farming out software programming to India

BULGARIA

■ Hundreds of small software companies do contract programming for some of the biggest customers in the world, including Boeing, BMW, and Nortel. Other giants, such as SAP and Computer Sciences, have local labs in Sofia.

ROMANIA

■ A favorite destination for tech facilities, Bucharest hosts support centers or software labs for IBM, HP, Oracle, and Alcatel, among others. Software exports and outsourced services topped $215 million in 2003. Programmers are also busy freelancers.

Data: [illegible] BusinessWeek

JAVA JOB Writing software in Sofia

PIOTR MALECKI/GETTY IMAGES

tionalist at the same time. It's part of her balancing act. Consider her eventual marriage. As an attractive, professional woman, she'll make a prize catch in India's conservative marriage market. Deepa expects she will have an arranged marriage: Her parents will chose a suitable husband for her from within her own caste. But she is firm: Her husband would have to be an entrepreneur, or a tech whiz, and preferably in the same field, "so we can have a common platform and he can understand my work," she says.

Maybe one day the couple will be able to raise venture money together. While venture-capital investing didn't exist in India until a few years ago, the industry is starting to take root. In 2003, India's 85 venture-capital firms invested about $162 million in tech companies, according to estimates from the India trade group National Association of Software & Services Cos. That's up from zero in 1998. Still, it's miles short of the financial support available to Stephen and his classmates. The 700 U.S. venture firms poured $9.2 billion into tech startups last year, according to market researcher VentureOne.

Multicultural Edge

DIVERSITY IS ANOTHER advantage the U.S. has over India. Take a stroll with Deepa through the leafy ITT campus, and practically everyone is Indian. Stephen's scene at CMU, by contrast, feels like the U.N. Classmates joke in Asian and European languages, and a strong smell of microwaved curry floats in the air. This atmosphere extends to American tech companies. With their diverse workforces, American companies can field teams that speak Mandarin, Hindi, French, Russian—you name it. As global software projects take shape, with development ceaselessly following the path of daylight around the globe, multicultural teams have a big edge. Who better than U.S.-based workers to stitch together these projects and manage them? "These people can act as bridges to the global economy," says Amar Gupta, a technology professor at Massachusetts Institute of Technology's Sloan School of Management.

The question is whether the technology industry can respond quickly enough to a revolution that's racing ahead on Internet time. Stephen's former boss, Brookins, frets that the pace could overwhelm the coming generation of U.S. programmers, including his former Nebraska star. "He's a genius. He's the future of the country. [But] if the question is whether there's going to be a happy ending for Stephen, there's a big question mark there," Brookins says. Stephen is betting that quality and customer service will offset the cost advantage of having computer programmers 10 time zones away. He still sees software in the U. S. as a path to wealth—"though I won't really know until I get out there," he says.

While Stephen is busy mounting his defenses, Deepa is setting out on the hard climb to build Silicon India. Much like their two countries, the leader is looking cautiously over his shoulder while the challenger is chugging single-mindedly ahead. No matter which way they may zig or zag, both of them are prepared to encounter rough competition from every corner of the globe. There's no such thing as a safe distance in software anymore. ■

–With Robert D. Hof and Jim Kerstetter in San Mateo, Calif.

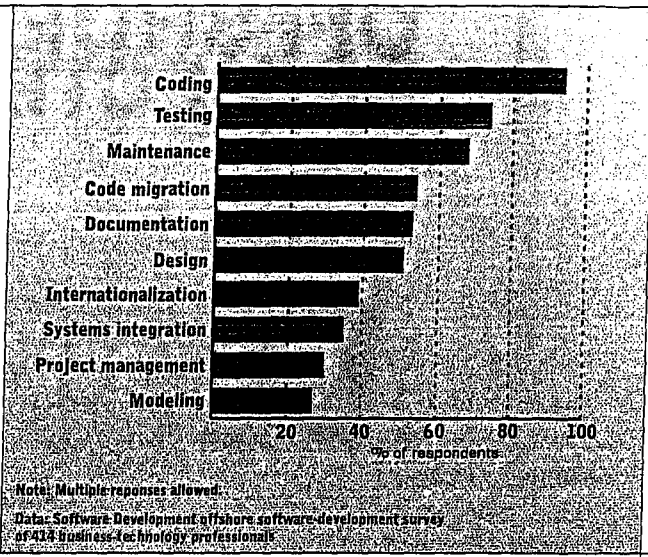
BusinessWeek online For a Q&A with Opsware CEO Marc Andreesen and a story about American startups tapping foreign programmers, go to www.businessweek.com/extra.htm

BEHIND THE NUMBERS

DEVELOPMENT TASKS

Which software-development activities are being outsourced offshore?

There are times when only custom software can get a job done. Yet few technology processes remain static, forcing software to adapt over time to changing business conditions and company objectives. To save money, compensate for missing skill sets, or avoid tying up internal IT resources, companies are turning to offshore software-development outlets for design management. Half of survey respondents say software design is being outsourced offshore.

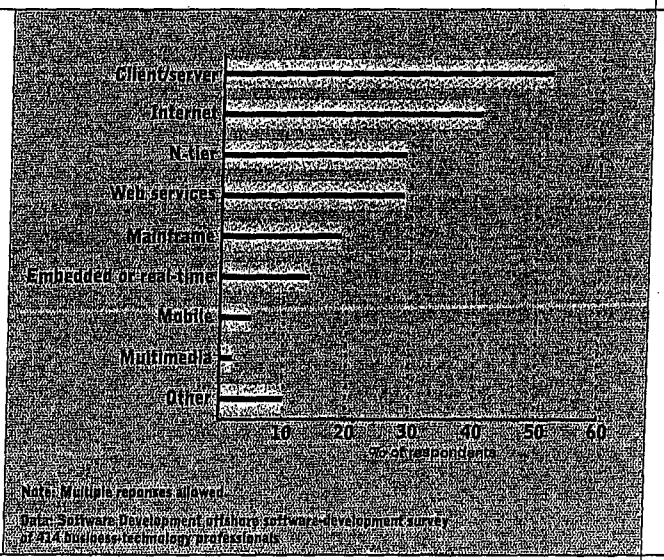


Note: Multiple responses allowed.
Data: Software Development offshore software-development survey of 414 business-technology professionals

APPLICATION SWEEP

What types of applications are involved?

Use of Web services such as Soap, UDDI, WSDL, and XML has been increasing steadily in part because of companies' integration efforts. Of the 400 business-technology executives surveyed in *InformationWeek* Research's recent Outlook 2004 study, three in five report Web services as a core area of concentration for IT divisions. Use of Web services is less prevalent when software is developed overseas. Less than 30% of respondents in *Software Development* magazine's study report use.

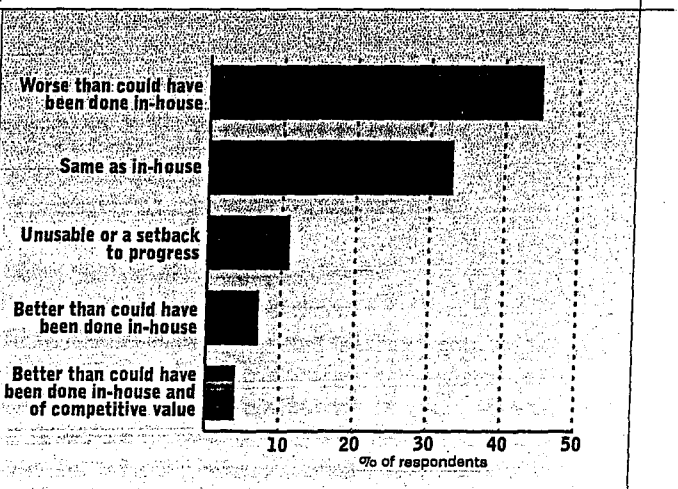


Note: Multiple responses allowed.
Data: Software Development offshore software-development survey of 414 business-technology professionals

DEGREES OF SUCCESS

How would you rate the quality of work done by your offshore team?

Is software development that's farmed offshore proving successful? A resounding 90% of business-technology professionals report no competitive advantage from the software-development work being done offshore by their companies. Only 7% report the quality of the most recent development project as being better than could have been done in-house. More telling is the fact that only 4% report better quality and also say tasks had high strategic or competitive value due to the efforts of the offshore team.



Data: Software Development offshore software-development survey of 414 business-technology professionals

DELIVERABLES

Project Management in Demand

More than one-third of chief information officers (CIOs) surveyed were actively hiring information technology (IT) professionals as of January 2004, and project management is a high priority.

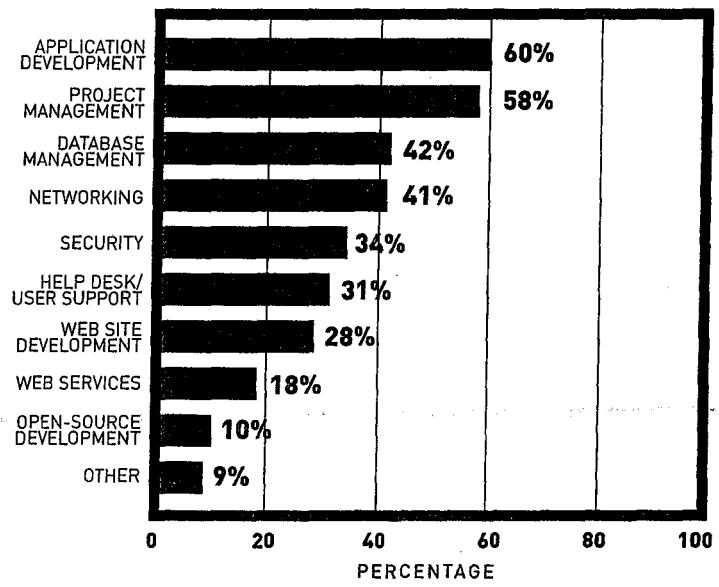
23%

Increase in demand for project management skills as CIOs hire IT staff in 2004, compared to mid-2003 demand

Drop in demand for help-desk skills as a "needed skill" since July 2003

11%

Stay Savvy: Most Sought-After Skill Bases

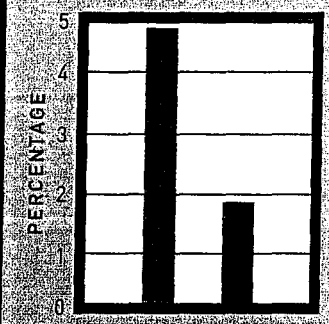


Source: "January 2004 IT Staffing Update," from a survey of 340 IT executives by www.cio.com.

E on the Rise

E-commerce budgets will outpace other information technology (IT) budgets in 2004, with 75 percent of companies expecting to maintain or increase their investments in e-commerce initiatives.

IT Spending Growth Projections



Among e-commerce with either a sell- or buy-side technology role:

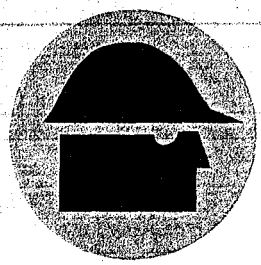
40%

Firms that will increase spending on customer-facing initiatives

Companies that will increase spending on supplier-facing initiatives

28%

Source: Forrester's Business Technographics 2004 Outlook For eCommerce Tech Spending data overview, January 2004



80%

PERCENTAGE OF **ARCHITECTURE, ENGINEERING, CONSTRUCTION AND INTEGRATED DESIGN/BUILD FIRM LEADERS** WHO EXPECT AN INCREASE IN DESIGN/BUILD IN THE NEXT FIVE YEARS

DESIGN/BUILD ADVANTAGES	DESIGN/BUILD DISADVANTAGE
• Lower costs • Single point of responsibility	• Higher level of risk

Source: ZweigWhite's "2004 Design/Build Survey of Design & Construction Firms."

Top 10 Myths of Project Management

1	Seasoned project managers planned to become project managers.
2	The best project managers are those that are certified or have a degree in it.
3	We can tell that a project is destined for trouble once it is really cranking along.
4	The principal role of the project manager is to ensure that the schedule is met.
5	Project management is just the science of figuring out where to use your heroes versus where to use your rookies.
6	A seasoned project manager is a silver bullet.
7	The best project managers are those that are promoted from within the technical ranks of the organization.
8	Project management is just a more acceptable term for micromanagement.
9	Project management is just the next management fad.
10	Project management is rigidly based on processes and prescribed documentation. As such, it'll take more time to get anything done.

Source: "The Top 10 Myths of Project Management," by Tim Arthur, Gantthead.com, August 2003.

CMP United Business Media

Supercomputing Studies
Navy, NASA attack high-end problems differently PAGE 30

Hospitality Plus Hilton looks to leverage $50M customer-data system PAGE 34

Case For Convergence
Loading up networks with voice and data PAGE 43

InformationWeek
Business Innovation Powered By Technology
Aug. 2, 2004

The Shrinking IT Workforce

THERE ARE 160,000 FEWER TECH PROS TODAY THAN THREE YEARS AGO. WHERE'S THE JOB MARKET HEADED?

20

TECH-JOB UPHEAVAL

While the total number of IT pros is down, the future is looking better for the highly skilled

BY MARIANNE KOLBASUK MCGEE AND ERIC CHABROW

I.T. EMPLOYMENT IN THE UNITED STATES IS IN THE MIDST of fundamental change. Joblessness has nearly doubled in the last three years, while the number of Americans calling themselves IT professionals has decreased by nearly 160,000.

Behind the overall stats—the latest from the Bureau of Labor Statistics—is a shift in the makeup of the nation's IT labor force. The number of programmers, analysts, and support specialists has fallen 15% since the first six months of 2000, while the ranks of managers and administrators grew 56%, according to *InformationWeek*'s analysis of the bureau's numbers (see chart, p. 22).

The market for IT people with specialized expertise is on the upswing, says Larry Stofko, VP of IT strategy and innovation at St. Joseph Health System, which runs 15 hospitals in California, New Mexico, and Texas. The hospital group is looking for a few people with health-care expertise in WANs, Web-based enterprises, and thin clients; it also needs as many as seven high-end project managers and process specialists with expertise in the clinical, business reengineering, and IT side of health care, Stofko says.

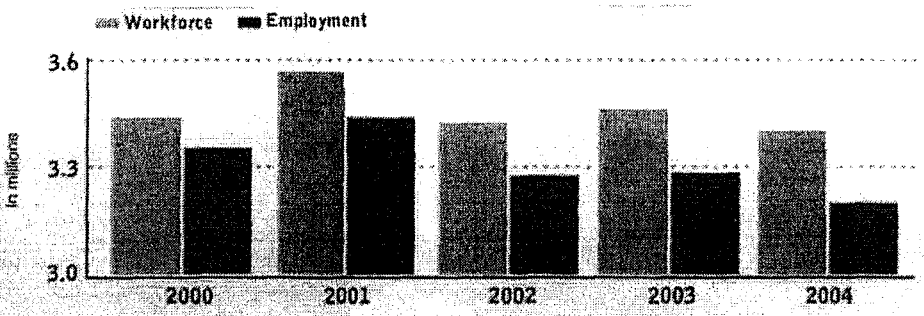
"It's very tough to find solid, qualified subject-expertise people," he says. That's the sort of talent a company typically would contract out, but St. Joseph wants to hire that expertise in-house.

At the job market's apex three years ago, 3.47 million of the 3.57 million Americans identifying themselves as IT workers held jobs; this year, that's down to 3.23 million employed out of 3.41 million.

Widening Gap

Size of IT workforce vs. actual employment in first half of year

Data: InformationWeek analysis of Bureau of Labor Statistics data



IT unemployment, which was less than 3% in 2000 and 2001, has stabilized between 5.5% and 6% in the past three years. Tech manager jobs have grown faster than any other IT job category, up 54% in the last four years. Still, managers account for only 10% of employed IT workers, up from 6% four years ago.

Project managers are in demand in Utah, says Joel Erickson, a senior project manager at a national beauty-products distributor. As a member and former president of the north Utah chapter of the Project Management Institute, he's seeing an uptick in demand for people with these skills. Erickson's company has had two IT staff reductions in the last few years and a two-year IT hiring freeze. Now it's adding staff, including a project manager.

The number of employed software engineers—the largest IT job category, accounting for nearly a quarter of IT workers—grew nearly 7% to 791,000. Other categories with increasing numbers are database administrators and network- and computer-systems administrators.

Some companies need to fill critical positions vacated by foreign IT workers whose H-1B visas expired earlier this year and couldn't be renewed because fewer of those visas were available as of last year. That's the case at Sutter Health, which runs hospitals in California and is looking nationwide for "hard-to-find talent" with clinical-systems expertise, says senior VP of IS and CIO John Hummel. "We've recognized there are a lot of people here in the U.S. to hire."

Where employment is down—programmers, computer scientists and systems analysts, network-systems and data-communications analysts, and support specialists—offshore outsourcing gets much of the blame. This is particularly true for programmers. "There's been hundreds of thousands of these jobs created in India, the Philippines, and other places," says Howard Rubin, executive VP at Meta Group and professor emeritus of computer science at the City University of New York.

In a recent study of the 100 largest New York companies, Rubin found that 70% offshore some work—predominately programming and support—and, within the next two years, 90% plan to do so. Most companies look at the potential cost savings of outsourcing only in terms of salary differentials, Rubin says. When other costs, such as remote management and infrastructure, are figured in, moving to nonurban U.S. locations can be a more cost-competitive option.

St. Joseph Health is looking for people with expertise in multiple areas, Stofko says.

But offshoring is well entrenched and not limited to lower-skilled jobs. The Washington Alliance of Technology Workers, a labor group trying to unionize high-tech workers, last week said it had obtained internal Microsoft documents that indicate the company is increasing the number of offshore contractors working on projects, including its Longhorn operating system. "It's a product several years away from release; it's a next-generation product that's the backbone of the company," says Marcus Courtney, WashTech's president and organizer.

Microsoft says all development work on Longhorn is done by its own employees, although they aren't necessarily U.S. based. Any work done by offshore contractors is on tasks that don't involve development or the creation of intellectual property, a company spokeswoman says.

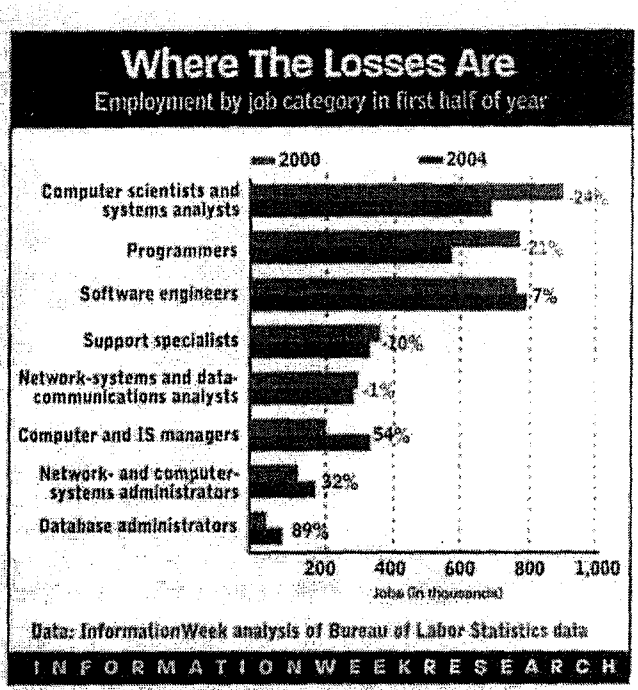
There are signs of impending domestic IT job growth. In a recent

study, Meta Group concluded that the best IT jobs are staying in the country and that IT hiring should pick up at the end of this year or early next.

Last week, IBM said it would retrain 3,000 employees whose jobs were sent overseas rather than lay them off. Microsoft plans to hire 7,000 employees—4,000 in the United States—during the fiscal year that started July 1, and CEO Steve Ballmer said at the company's annual meeting with financial analysts last week that it's beating IBM by a large margin in hiring candidates with job offers from both companies and nabbing more than half of those with offers from Microsoft and Google Inc.

Twelve percent of CIOs in the Western North-Central and mid-Atlantic regions plan to increase hiring this quarter, but nationwide only 5% plan increases, says Katherine Spencer Lee, executive director of RHI Consulting, an IT staffing firm. Among the hottest skills sought are security, .Net, Java 2 Enterprise Edition, and areas related to technology refreshes. "We're not on a rocket ship to the moon," she says, "but there's been a fairly significant uptick" in the placement requests.

That's good news for Mike Meder, who was laid off nine months ago from his senior programmer and project manager job at the mainframe disaster-recovery center of a major insurance company in New Jersey. With 30 years in IT, 50-year-old Meder plans to move to Greenville County, S.C., where housing costs are 60% less than in New Jersey. The region is "growing by leaps and bounds," Meder says, and he hopes to find an IT job. Short of that, he'll take anything—"even moving boxes at a Home Depot," he says. "But hopefully, it won't come to that." —WITH LARRY GREENEMEIER AND AARON RICADELA



Write to Marianne Kolbasuk McGee at mmcgee@cmp.com. Visit our Career Development Tech Center: informationweek.com/career3

COMPLIANCE

SEC GETS CLOSER TO XBRL

Standard eliminates duplication of effort in preparing documents in different formats

The Securities and Exchange Commission may soon permit filings to be submitted using the Extensible Business Reporting Language, an XML-based markup language for tagging data in financial statements. The SEC is considering letting companies use XBRL to file financial data beginning with the 2004 calendar-year-end reporting season.

XBRL augments formats such as HTML and PDF, both of which are accepted by the SEC and processed by its online reporting system, Edgar. The SEC will assess over the next several months the advantages and potential impact of XBRL on the Edgar system and on systems used by providers of financial information. "Technical feasibility is important both for us and people creating files," says Corey Booth, CIO at the SEC.

Using XBRL eliminates the duplication of effort needed to prepare documents in different formats such as HTML or PDF. Uniquely, it also enables structured queries such as "What were depreciation expenses for 1999?" But XBRL is harder to use than HTML, for example, requiring the creation of style sheets for turning electronic documents into a readable format. Financial-software providers are addressing this and other issues, such as embedding XBRL into financial-accounting systems, Booth says.

The SEC has tested XBRL sporadically in the past few years; in 2002, it accepted XBRL-formatted documents from financial publisher R.R. Donnelley, which filed forms on behalf of Morgan Stanley and Microsoft, which requested the test. Says Booth, "Microsoft and Morgan Stanley wanted to do it; they're early adopters of XBRL."

STEVEN MARLIN (smarlin@cmp.com)

The New York Times
nytimes.com

June 20, 2005

Programming Jobs Losing Luster in U.S.

By THE ASSOCIATED PRESS

Filed at 11:07 a.m. ET

STANFORD, Calif. (AP) -- As an eager freshman in the fall of 2001, Andrew Mo's career trajectory seemed preordained: He'd learn C++ and Java languages while earning a computer science degree at Stanford University, then land a Silicon Valley technology job. The 22-year-old Shanghai native graduated this month with a major in computer science and a minor in economics. But he no longer plans to write code for a living, or even work at a tech company.

Mo begins work in the fall as a management consultant with The Boston Consulting Group, helping to lead projects at multinational companies. Consulting, he says, will insulate him from the offshore outsourcing that's sending thousands of once-desirable computer programming jobs overseas.

More important, Mo believes his consulting gig is more lucrative, rewarding and imaginative than a traditional tech job. He characterized his summer programming internships as "too focused or localized, even meaningless."

"A consulting job injects you into companies at a higher level," he said. "You don't feel like you're doing basic stuff."

Mo's decision to reboot his nascent career reflects a subtle but potentially significant industry shift. As tens of thousands of engineering jobs migrate to developing countries, many new entrants into the U.S. work force see info tech jobs as monotonous, uncreative and easily farmed out -- the equivalent of 1980s manufacturing jobs.

The research firm Gartner Inc. predicts that up to 15 percent of tech workers will drop out of the profession by 2010, not including those who retire or die. Most will leave because they can't get jobs or can get more money or job satisfaction elsewhere. Within the same period, worldwide demand for technology developers -- a job category ranging from programmers people who maintain everything from mainframes to employee laptops -- is forecast to shrink by 30 percent.

Gartner researchers say most people affiliated with corporate information technology departments will assume "business-facing" roles, focused not so much on gadgets and algorithms but corporate strategy, personnel and financial analysis.

"If you're only interested in deep coding and you want to remain in your cubicle all day, there are a shrinking number of jobs for you," said Diane Morello, Gartner vice president of research. "Employers are starting to want versatilists -- people who have deep experience with enterprise-wide applications and can parlay it into some larger cross-company projects out there."

Career experts say the decline of traditional tech jobs for U.S. workers isn't likely to reverse anytime soon.

The U.S. software industry lost 16 percent of its jobs from March 2001 to March 2004, the Washington-based Economic Policy Institute found. The Bureau of Labor Statistics reported that information technology industries laid off more than 7,000 American workers in the first quarter of 2005.

"Obviously the past four or five years have been really rough for tech job seekers, and that's not going to change -- there are absolutely no signs that there's a huge boom about to happen where techies will get big salary hikes or there will be lots of new positions opening for them," said Allan Hoffman, the tech job expert at career site Monster.com.

Not everyone from the class of 2005 thinks programming is passe, and companies are always eager to hire Americans who can write great code -- the type of work that, in recent years, produced innovations including file-sharing software at Napster and search engine tech at Google.

But even the most dedicated techies are entering the profession with less zeal than their predecessors.

The erosion of "deep code" and other technology jobs in the next decade is creating a high-stakes game of musical chairs for geeks, Silicon Valley recruiters say.

Dimming career prospects have been particularly ego-bruising for people who entered the profession during the late '90s, when employers doled out multiple job offers, generous starting salaries, and starting bonuses including stock options and Porsches.

"The current situation is getting back to the '70s and '80s, where IT workers were the basement cubicle geeks and they weren't very well off," said Matthew Moran, author of the six-month-old book "Information Technology Career Builder's Toolkit: A Complete Guide to Building Your Information Technology Career in Any Economy."

"They were making an honest living but weren't anything more than middle-class people just getting by," Moran said.

Thousands of U.S. companies have opened branches or hired contractors in India, China and Russia, transforming a cost-saving trick into a long-term business strategy. Offshoring may be a main factor in eroding enthusiasm for engineering careers among American students, creating a vast supply of low-wage labor in eastern Europe and Asia and driving down worldwide wages.

The average computer programmer in India costs roughly $20 per hour in wages and benefits, compared to $65 per hour for an American with a comparable degree and experience, according to the consulting firm Cap Gemini Ernst & Young.

According to the most recent data from the National Science Foundation, 1.2 million of the world's 2.8 million university degrees in science and engineering in 2000 were earned by Asian students in Asian universities, with only 400,000 granted in the United States.

U.S. graduates probably shouldn't think of computer programming or chemical engineering as long-term careers but it's "not all gloom and doom," said Albert C. Gray, executive director of the National

Society of Professional Engineers.

He says prospects are good for aeronautic, civil and biomedical engineers, the people who design and build artificial organs, life support devices and machines to nurture premature infants.

"In this country, we need to train our engineers to be at the leading edge," Gray said. "That's the only place there's still going to be engineering work here."

At Stanford, career experts are urging engineering and science majors to get internships and jobs outside of their comfort zones -- in marketing, finance, sales and even consulting.

They suggest students develop foreign language skills to land jobs as cross-cultural project managers -- the person who coordinates software development between work teams in Silicon Valley and the emerging tech hub of Bangalore, India, for example.

Stanford listed 268 job postings in its computer science jobs database in the spring quarter -- roughly double the number from last year.

But that doesn't necessarily indicate a plethora of traditional tech jobs. About half of the new postings would prefer applicants who speak at least two languages and many were for management-track positions, said Beverley Principal, assistant director of employment services at Stanford.

"When they're first hired at the entry level, just out of school, people can't always become a manager or team leader," Principal said. "But many employers see these people moving into management roles within two years. They need to know how to step into these roles quickly."