Executive Summary
Higher Education Institution
New Department of Information and Operations Management
14 April 2008

Program Description

The David Eccles School of Business currently has four departments: Accounting and Information Systems, Finance, Management and Marketing. These four departments offer six undergraduate degrees (accounting, finance, entrepreneurship, information systems, management and marketing). As is evident from its name, the School of Accounting and Information Systems consists of two distinct areas. Similarly, the Management Department consists of several distinct areas, one of which is Operations Management (OM). Due to mutual research and teaching interests and associated synergies, we propose the combination of the Information Systems (IS) and Operations Management (OM) groups into a new department called Information and Operations Management (IOM). Both IS and OM require strong analytical and problem-solving skills. Practitioners of both areas need to have a strong foundation in modeling and data analysis. The common foundation is a motivating factor in proposing the combination of the two areas.

Role and Mission Fit

"The mission of The University of Utah is to serve the people of Utah and the world through the discovery, creation and application of knowledge; through the dissemination of knowledge by teaching, publication, artistic presentation and technology transfer; and through community engagement." We believe that the IS and OM groups already contribute to this mission, but the establishment of the new department will allow us to do so more naturally. First, as a result of combining, opportunities for research collaboration will expand. Second, by combining resources, we should be more efficient in the delivery of material, which will allow us to offer courses that we have not been able to offer before. More specifically, we will be able to do the following more effectively.

- Discover and disseminate a synergetic combination of technical and business knowledge through real-world-oriented learning opportunities, integrated in required, core, elective and executive course work.
- Prepare students to meet the growing need for IS or business professionals and leaders to understand, implement, use and manage data-driven and security technologies.
- Prepare students to manage and improve processes, including supply chains, to build a competitive advantage through operations.
- Motivate and prepare students for Ph.D. studies in IS and OM
- Support local and state economies with high-quality data and security professionals and operations managers who help create value for their employers and establish solid financial foundations with above-average income jobs.

Faculty. The numbers in the table below reflect the composition of the faculty as of the submission date. One tenure-track member is retiring and a second will be changing his appointment to become a lecturer. We are currently conducting a search to hire a new tenure-track faculty member.

Number of faculty with Doctoral degrees	Tenure	***10***	Lecturer	***2***	Adjunct	***1***
Number of faculty with Master's degrees	Tenure	***0***	Lecturer	***2***	Adjunct	***2***
Number of faculty with Bachelor's degrees	Tenure	***0***	Lecturer	***0***	Adjunct	***0***
Other Faculty	Tenure	***0***	Contract	***0***	Adjunct	***0***

Market Demand
The IT job market is growing fast in Utah and elsewhere in the United States. IT is one of the fast-growing employment areas in the State of Utah, with high salary jobs awaiting competent IT managers, business analysts, software developers, and systems administrators. The Bureau of Labor Statistics of the U.S. Department of Labor has published similar encouraging forecasts. These figures are supported by a recent salary survey of the fulltime MBA graduates at BYU and other peer institutions—the IS students are among those receiving the highest average salaries. We also queried several websites to obtain a snapshot of current demand for individuals with operations management skills. We found a healthy market for graduates of OM programs, including needs in operations management, project management, quality management, logistics and supply chain management, inventory management, purchasing and operations research. The average salaries are quite high (in the $70K to $80K range), indicating a demand for managers with training in operations. Opportunities exist in service, manufacturing, healthcare, non-profit and education sectors.

Student Demand
One main benefit of the new department is the existing IS degree. The Bachelors of Information Systems degree has been increasing in popularity since it was restructured three(3) years ago, with a growth rate of almost 350% over the last three years. These numbers include only students with IS declared as their major AND enrolled in courses for that semester. These numbers do not reflect the entire demand since we do not count students not currently enrolled in coursework and students taking courses that have not been accepted into Upper Division Status at the David Eccles School of Business. Our separate proposal for the new OM major shows that we anticipate strong growth in that area as well.

Statement of Financial Support. Indicate from which of the following the funding will be generated:
(Provide the detail for funding as part of the "Financial Analysis" section included in the full proposal.)

- Legislative Appropriation ..... ☐
- Grants..... ☒
- Reallocated Funds..... ☐
- Tuition dedicated to the program ..... ☒
- Other (Dean's reallocation)..... ☒

Similar Programs Already Offered in the USHE
Utah State University offers degrees in both OM and IS. The new Dean imposed a proposed change in structure similar to what we are proposing, but their faculty members have resisted the change to this point. Hence the structural change is indefinitely on hold. Weber State University has a Department of Information Systems and Technologies and offers a degree of the same name. They also offer a Business Administration degree with an emphasis in supply chain management, which is similar, although much more specialized to what the DESB Management Department currently offers at the University of Utah. Utah Valley State College offers a degree in Information System & Technology through its School of Technology and Computing. Our curriculum and research profiles have several unique strengths. One of the strengths is on data driven strategies utilizing data mining and data warehousing technologies as well as data and problems from data intensive enterprises such as Overstock. One other strength is in technology innovation including service design. One more strength worth mentioning is IT security including securing servers, networks and information systems.

Institutions Submitting Proposal:
University of Utah

College, School or Division in Which Program/Administrative Unit Will Be Located:
David Eccles School of Business

Department(s) or Area(s) in Which Program/Administrative Unit Will Be Located:
New Department of Information and Operations Management

Program/Administrative Unit Title:
Department of Information and Operations Management

Recommended Classification of Instructional Programs (CIP) Code: _____

Certificate, Diploma and/or Degree(s) to be Awarded: Bachelor of Science in Information Systems; Bachelor of Science in Operations Management (proposed); Master of Science in Information Systems (proposed); PhD in Information Systems; and PhD in Operations Management.

Proposed Beginning Date: January 1, 2009

Institutional Signatures (as appropriate):

Department Chair Robert Allen

Dean Jack Brittain

Graduate School Dean _____
David S. Chapman Date

Chief Academic Officer _____
David W. Pershing Date

President _____
Michael K. Young Date

Section I: The Request

University of Utah requests approval to create a new Department of Information and Operations Management effective Spring 2009. This program has been approved by the Institutional Board of Trustees on xx Month 2008.

Section II: Program Description

Complete Program Description

The David Eccles School of Business (DESB) currently has four departments: Accounting and Information Systems, Finance, Management and Marketing. These four departments offer six undergraduate degrees (accounting, finance, entrepreneurship, information systems, management and marketing). As is evident from its name, the School of Accounting and Information Systems consists of two distinct areas. Similarly, the Management Department consists of several distinct areas, one of which is Operations Management (OM). Due to mutual research and teaching interests and associated synergies, we propose the combination of the Information Systems (IS) and Operations Management (OM) groups into a new department called Information and Operations Management (IOM).

In conjunction with the proposal to create a new department, we also propose a new major in OM and a new masters degree in IS (proposals provided separately). There is already an IS undergraduate major, which we propose should move to the new IOM department; hence the new department will offer B.S. degrees in both IS and OM. Similarly, we propose that PhD degrees that are now offered in IS and OM through existing departments be moved to the new IOM Department.

The core of IS knowledge focuses on understanding the principles and application of information and technology fundamental to creating business values, enable business strategies and empower other business functions. The core topics include, but are not limited to, structures, problem solving or knowledge discovery algorithms, user requirement modeling, database theories and design, data warehouse, as well as programming and security/quality assurance techniques for information processing and management.

OM is concerned with converting inputs to outputs in a way that adds value. Such conversion takes place within processes and as such operations management is concerned with process management and improvement. Almost all major companies have complex operations which need to be managed well to maximize company profits. Core topics include (but are not limited to) productivity, project management, process design and management, supply chain management, quality control and management, capacity planning, resource planning, scheduling and inventory management.

Both IS and OM require strong analytical and problem-solving skills. Practitioners of both areas need to have a strong foundation in modeling and analysis of systems and data. The common foundation is an important factor in proposing that the two areas be combined into one area.

Purpose of Department

As elaborated upon more below (see the Labor Market Demand and Student Demand sections), there is growing demand for graduates in both information systems and operations management. The state of Utah and the region are seeing growth in manufacturing, technology and service firms that have a need for a workforce schooled in operations and information systems management.

It is also true that many institutions of higher learning either already have or are moving towards similar departments. The Similar Programs section below shows that many of the top business schools in the country, including some that are considered our peer schools, have departments that combine the two groups into one.

Institutional Readiness

Because the two areas of IS and OM already exist within current departments, the transition to the new department will cause minimal disruption. The IS major already exists as does an OM emphasis within the Management Department. Hence classes in both areas already exist. Combining the areas into one department allows us to take advantage of logical synergies in terms of common student preparation.

Faculty

By July 1, 2008, we have five regular, tenure-track and three full-time contract faculty members in IS. Similarly, we have five regular, tenure-track and one full-time contract faculty member in OM, and we are conducting a search for a sixth tenure-track OM faculty member. The faculty size we currently have is sufficient to offer the degrees that are currently in place or are proposed. The increased tuition-to-program revenue resulting from the increasing sizes of our programs will provide funding for additional hires if necessary.

Staff

We will need one administrative assistant and possibly a part-time executive secretary for the new department. The support from an administrative assistant will be provided by reallocating the responsibilities of a staff member currently serving in the school. Thus, no new hires are anticipated for the foreseeable future. The School of Business provides undergraduate student advisors and Master program advising support staff and we don't anticipate needing any other staff. Advising support for graduate students primarily comes from faculty.

Library and Information Resources

Because both the IS and the OM groups have been part of existing programs, and IS and OM classes have been offered for several years, library and information systems resources are already in place. Those resources (hard copy and online journals, books, interlibrary loan services, software packages, etc.) are able to meet both research and teaching needs of the new department.

Admission Requirements

The admission requirements to both majors are the same as those for other majors within the Business School. An applicant for the MS IS program or the Ph.D study in IS or OM needs to have 3.0 or higher GPA from the last higher-education degree program completed and an adequate GRE or GMAT test score to receive consideration for admission. Foreign-international applicants who haven't completed a degree program in the States need to provideTOEFL scores for consideration for admission. Working experiences or prior IS or business degrees are not required. Applicants also need to submit a goal statement and three letters of recommendations to complete their application packages. The departmental graduate studies committee can petition for applicants who don't meet the minimum GPA requirement of the Graduate School.

Student Advisement

As mentioned above, the student advisement function for the undergraduate majors in the School of Business is centralized. The staff in DEBS's undergraduate Advising Office work with all majors within the School. We anticipate that the current staff of the Undergraduate Advising Office will be able to serve students served by the new department without additional resources. Advising support for graduate students primarily comes from faculty.

Justification for Gradation Standards and Number of Credits

The graduation requirements for students in both majors are consistent with Univeristy guidelines and requirements for other majors within the Business School. Some of the requirements that are specific to the School include 40 semester hours of upper division credit, a 2.0 or better GPA in upper division business classes, and at least a C- grade in all business courses. To receive the MS IS degree, a student must:

- Complete the required 30 credits of course work according to the MS IS curriclum of choice
- Complete up to 12 credits of pre-requisite courses, if required of the student at the time of student's admission
- Receive 2.75 GPA each year in the program
- Receive a B or higher grade from the Master Project advisor and the MS IS committee members

The graduation requirements for Ph.D. students in both IS and OM will be consistent with Graduate School's and DESB's policies.

External Review and Accreditation

No outside consultants were involved in the development of the program. We contemplate the possibiltiy of an advisory board from industry, but at this point it does not exist. We anticipate that such a board would assist in curriculum review and development. In addition, the board of advisors can provide internship and placement opportunities as well as carrier advice to students. As part of the David Eccles School of Business, the new department will be part of a School review by the Association to Advance Collegiate Schools of Business (AACSB). The next review that the School will be subject to is in 2009.

Our department will not be accredited separately from the School of Business. The AACSB (our accrediting body) assesses faculty sufficiency on two measures: (1) participating faculty, which is an indicator of faculty engagement, and (2) academic qualifications, which is an indicator of faculty currency and contributions to knowledge, which is important for us because we are a research mission school. There are no fixed standards, but since we are a graduate institution, we are expected to hit a higher standard. The AACSB does not proscribe a student-to-faculty ratio.

Projected Enrollment

The following is the projected enrollment for the IS major.

Year	Student Headcount	# of Faculty	Student-to-Faculty Ratio	Accreditation Req'd Ratio
1	110	14	7.9 : 1.0	NA
2	120	16	7.5 : 1.0	NA
3	130	18	7.2 : 1.0	NA
4	140	19	7.4 : 1.0	NA

5	150	20	7.5 : 1.0	NA

The following is the projected enrollment for the OM major.

Year	Student Headcount	# of Faculty	Student-to-Faculty Ratio	Accreditation Req'd Ratio
1	15	14	1.1 : 1	NA
2	30	16	1.9 : 1	NA
3	50	18	2.8 : 1	NA
4	80	19	4.2 : 1	NA
5	100	20	5.0 : 1	NA

The following is the projected enrollment for the MS IS program.

Year	Student Headcount	# of Faculty	Student-to-Faculty Ratio	Accreditation Req'd Ratio
1	10	14	1.0 : 1.4	NA
2	20	16	1.0 : 0.8	NA
3	30	18	1.0 : 0.6	NA
4	40	19	2.1 : 1.0	NA
5	50	20	2.5 : 1.0	NA

The following is the projected enrollment for the IS and OM Ph.D. programs

Year	Student Headcount	# of Faculty	Student-to-Faculty Ratio	Accreditation Req'd Ratio
1	14	14	1.0 : 1.0	NA
2	16	16	1.0 : 1.0	NA
3	18	18	1.0 : 1.0	NA
4	19	19	1.0 : 1.0	NA
5	20	20	1.0 : 1.0	NA

Expansion of Existing Program

The new department is not an extension or expansion of existing programs. For reference data, the following shows the IS Major enrollment trend by headcount for the past five years. The headcount of an academic year was measured after students declared business majors in the last (spring) semester. Please note that the IS major program was temporarily suspended in Spring and Fall 2005. The program was reinstated in Spring 2006 with a new curriculum design and increasing coverage of upper-division undergraduate IS courses by regular, tenure-track or academically qualified full-time faculty members. The trend shows that the revised IS major program has been a success, experiencing vast growth since its reinstatement. The Student Credit Hours for an academic year is the total of student credit hours of all IS undergraduate and graduate sections for the summer, fall and spring semesters of the year.

Year	Student Headcount	SCH
2003-2004	73	NA

2004-2005	47	5992.5
2005-2006	14	6699.5
2006-2007	79	7265.5
2007-2008	101	8149.5

Section III: Need

Program Need

For historical reasons, the IS and OM groups evolved within existing departments. At the times of the groups' inceptions, the size of the faculty was small and could not justify a separate department. It is also true that many years ago, it was somewhat common for IS groups to be part of accounting departments. Over the years, the commonalities between IS and accounting have not surpassed the commonalities between IS and other areas in engineering, science, medicine and business that also heavily utilize IS. In the case of OM, there never was a strong intellectual tie that linked it to other areas within the Mangement Department. (Those areas include organizational behavior and strategic management.) Instead, the Management Department was somewhat of a "catch-all" department for groups that did not fit elsewhere.

In contrast, the synergies between IS and OM which have existed in academia and industries since the inception of the IS programs about 35 years ago have only become stronger. The mathematical and conceptual foundations for the two areas are similar, including analytic knowledge of optimization and statistics. Moreover, faculty members of the two gropus attend similar national conferences and publish in each other's academic journals, which their colleagues in the current structures do not do so consistently. Several years ago the idea of combining the groups was raised, but because of the small sizes of the faculty groups, the issue was dropped. We have now reached the point where the sizes and stability of the two groups have increased to create enough resources and new opportunities for students to make a very viable department. The two groups fit together much more logically than do the groups where they are separately housed. We desire to take advantage of the intellectual similarities to create a cohesive group of faculty with similar teaching and research interests that will benefit students with synergistic learning opportunities. We believe that such a structure will allow us to make better decisions associated with program, student, faculty and external relationship development. We also believe that the proposed structure will make us more attractive to potential faculty recruits, prospective students and recruiters.

The following sections provide evidence of separate reasons that the University of Utah has need of a new IOM Department with its associated majors. There is growing demand for jobs in IS and OM and therefore there is also growing interest among the students. The material that the two groups teach is also appealing to many students in its own right and a new department will allow us to recruit, advise and help place such students.

Finally, we feel that the proposed move is necessary to stay competitive with top business schools. Most of the top schools have either separate programs in IS or OM, or they have combined departments like

the one that we are proposing. The combination of IS and OM makes sense on many levels, which top business schools have recognized and implemented.

Labor Market Demand

The IT job market is growing fast in Utah and elsewhere in the United States. IT is one of the fast-growing employment areas in the State of Utah, with high salary jobs awaiting competent IT managers, business analysts, software developments, and systems administers. The Bureau of Labor Statistics of the U.S. Department of Labor has published similar encouraging forecasts. These figures are supported by a recent salary survey of the fulltime MBA graduates at BYU and other peer institutions—the IS students are among those receiving the highest average salaries.

BYU MBA Full-Time Statistics by Industry

Industry	%	Ave Salary	Median Salary	% Rec Sch Bus	Ave Bonus	% Rec Moving Allow	Ave Moving Allow	Rec Auto Comp	Ave Auto Comp	% Rec Sign On Bonus
Consulting	3%	$84,000	$79,000	33%	$5,000	33%	$5,000	33%	-	-
Consumer Products	13%	$82,703	$85,340	91%	$11,642	27%	$5,586	36%	$11,125	36%
Financial Services	18%	$86,529	$90,000	100%	$24,156	88%	$9,821	50%	$13,188	6%
Manufact.	14%	$83,692	$86,000	120%	$13,542	60%	$6,250	40%	$2,241	-
Non-Profit	1%	$89,500	$89,500	-	-	-	-	-	-	-
Other	16%	$80,867	$75,000	87%	$11,769	-	53%	$5,688	33%	$12,600
Petroleum/ Energy	3%	$83,667	$90,000	-	-	100%	$5,933	33%	$2,000	-
Pharma / Biotech.	6%	$62,894	$66,700	50%	-	83%	$4,600	83%	$34,081	16%
Real Estate	3%	$85,120	$84,000	100%	$12,108	50%	$6,000	50%	-	-
Techno.	**23%**	**$85,120**	**$84,000**	**100%**	**$12,108**	**71%**	**$6,483**	**53%**	**$20,278**	**47%**

According to our market demand analysis, we anticipate our MS-IS students to be sought after by technology vendors (e.g., systems development, business applications/process analysis and design, technical marketers, systems integration and ERP, and technology-enabled business solutions), In-house IT shops (e.g., data management, application development, business process analysis/design, systems integration, business intelligence using data warehouse and mining, systems integration and ERP, systems auditing, and network management and security), and consulting firms (e.g., business solutions, systems integrations, ERP, business intelligence, Web services, systems development, and systems auditing).

U.S. Department of Labor

Bureau of Labor Statistics

	Number of Jobs	Salary
Computer and Mathematical Science Occupations	3,076,200	**$69,240**
Computer and Information Scientists, Research	27,650	**$96,440**
Computer Programmers	396,020	**$69,500**
Computer Software Engineers, Applications	472,520	**$82,000**
Computer Software Engineers, Systems Software	329,060	**$87,250**
Computer Support Specialists	514,460	**$44,350**
Computer Systems Analysts	446,460	**$72,230**
Database Administrators	109,840	**$67,460**
Network and Computer Systems Administrators	289,520	**$65,260**
Network Systems and Data Communications Analysts	203,710	**$67,460**
Computer Specialists, All Other	180,270	**$69,370**

Local and multinational companies including Google, IBM, Omniture, Oracle, Overstock, Sharp Analytics, Yahoo! and Wasatch Advisors have been interacting with IS faculty members about their recruiting needs, which align with our MSIS curriculum. Some of them have hired our graduates or students of our undergraduate and graduate programs. Appendix E provides some sample job descriptions that these companies have hired and are seeking to hire our graduates and students. One common and increasingly important requirement that these and other companies often find lacking in otherwise qualified applicants is the ability to secure data assets and to extract from them actionable intelligence for enhancing their operations, services, products, and strategies. This requires good database, data warehousing, technical, operations and people skills. The students can develop such IS and operations capabilities through a focused graduate-level and undergraduate IS and OM programs.

IS related job Growth in Utah

Area	Title	2004 Employment	2014 Employment	Numeric Employment Change	Percent Employment Change	Average Annual Openings
Utah	**Computer and information scientists, research**	320	470	160	**49**	20
Utah	**Computer and information systems**	2,090	3,010	920	**44**	130

	managers					
Utah	**Computer programmers**	6,090	7,270	1,180	**19**	260
Utah	**Computer software engineers, applications**	2,970	5,260	2,290	**77**	260
Utah	**Computer software engineers, systems software**	4,100	6,960	2,860	**69**	330
Utah	**Computer support specialists**	5,370	7,560	2,190	**40**	290
Utah	**Computer systems analysts**	4,690	6,930	2,240	**47**	280
Utah	**Database administrators**	620	1,010	400	**64**	50
Utah	**Network and computer systems administrators**	2,050	3,260	1,210	**58**	140
Utah	**Network systems and data communications analysts**	2,330	4,080	1,750	**74**	200
Utah	**Telecommunications equipment installers and repairers, except line installers**	2,350	2,760	410	**17**	90
Utah	**Telecommunications line installers and repairers**	660	900	240	**36**	40

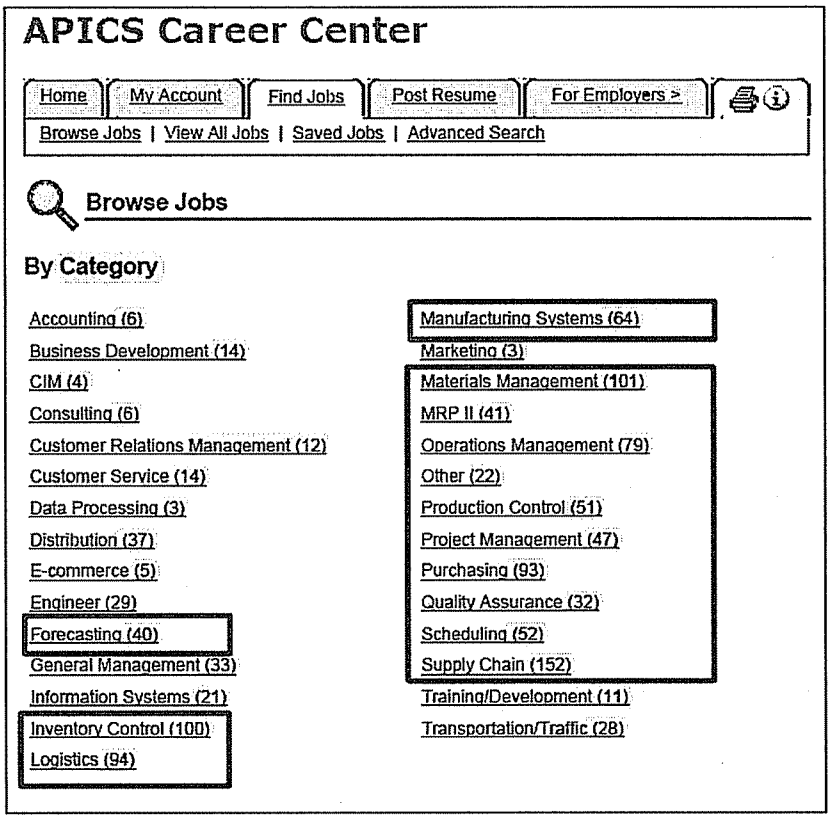
References:

Bureau of Labor Statistics of the U.S. Department of Labor, www.bls.gov
Bureau of Labor Statistics of the U.S. Department of Labor Salary Survey, http://www.bls.gov/oes/current/oes_nat.htm
Bureau of Labor Statistics of the U.S. Department of Labor Statistics for Utah, http://www.bls.gov/oes/current/oes_ut.htm#b15-0000
BYU MBA Class of 2007 Salary Survey, http://marriottschool.byu.edu/career/recruiters/salaryBonusData.cfm

Position Openings in Fields Related to Operations Management in Utah		
Position	State	Number of Openings
Operations Management	Utah	154
Project/Program Management	Utah	42
Manufacturing/Production/Operations	Utah	152
Logistics/Transportation	Utah	80

Quality Assurance/Safety	Utah	60
Retail/Wholesale	Utah	236
Source: Monster.com, April 10, 2008 Total number of positions across 6 categories above 553		

The following is a screen shot taken from the Association for Operations Management webpage and shows the job openings in different categories related to OM marked by red frames.



Occupation (SOC code)	Employment	Median Hourly	Mean Hourly	Mean Annual
Industrial Production Managers (11-3051)	153,410	$37.34	$40.37	$83,970
General and Operations Managers (11-1021)	1,663,280	$40.97	$47.73	$99,280
Purchasing Managers (11-3061)	66,490	$39.22	$41.35	$86,020
Transportation, Storage, and Distribution Managers (11-3071)	89,010	$35.14	$37.77	$78,560

Medical and Health Services Managers (11-9111)	232,920	$35.26	$39.02	$81,160
Logisticians (13-1081)	79,570	$30.49	$31.56	$65,640
Operations Research Analysts (15-2031)	56,170	$31.08	$33.22	$69,100
Statisticians (15-2041)	19,660	$31.60	$33.21	$69,080
SOC code: Standard Occupational Classification code – see http://www.bls.gov/soc/home.htm Data extracted on April 4, 2008 **Area: National** **Period: May 2006**				

Appendix E also includes sample job descriptions related to these position categories and positions. According to the job growth trends and the job descriptions, there is a sufficiently large market for IS and OM graduates and students of programs designed to provide contemporary IS and OM education.

Student Demand

The proposed department has three aspects of student demand that we are addressing with the startup of the program: Bachelors of Information Systems, Bachelors of Operations Management, and Masters of Information Systems Degree. We have included a section for each of these areas.

The vast growth of the student headcounts in the IS major in the last two years is a clear evidence of the demand for the IS major. We conducted two surveys about the demand for the new MS IS program and the new OM major. The IS market demand indicators show a strong growth rate for the market which should fuel long-term growth of the program as more job opportunities are created and recruiters witness the demand for these students.

Student Demand for Bachelors of Information Systems

One main benefit of the new department is the existing degree already in place. The Bachelors of Information Systems degree has been increasing in popularity since it was restructured three(3) years ago. The following shows the growth in this existing program:

Year	Student Headcount
2003-2004	73
2004-2005	47
2005-2006	14
2006-2007	79
2007-2008	101

As you can see by the numbers above, the department has experienced a growth rate of almost 350% over the last three years. These numbers include students with IS declared as their major AND enrolled in courses for the spring semesters. These numbers do not reflect the entire demand since we do not count students not currently enrolled in coursework and students also are not yet accepted into Upper Division at the David Eccles School of Business. This means these numbers do not include freshman, sophomores or incoming transfer students planning on Information Systems as their degree.

Also, our Information Systems courses are some of the most popular classes used by other majors as Upper Division electives – particularly in the areas of Accounting and Finance where technology and data skills are in high demand in the market.

This means from day one of the new department we will already have an established degree program that is experiencing high growth and attracting students from other areas into the currently offered courses.

Bachelors of Operations Management

Interests of students in business pre-major courses and major courses are what we have attempted to gauge. In addition, the School of Business has historically had a large portion of students double majoring. Due to this type of student feeder system, gauging the interest of our current student population through a survey seemed most appropriate.

Survey Information

Participant Search

Students were sent an invitation for an online survey. The students receiving the survey were students in undergraduate students in current Operations Management courses.. These courses were selected because they contain a broad cross-section of business students both from major and class perspectives because these classes are required for all business majors.

Survey Format

The survey was conducted near the beginning of the Spring 2008 semester online using SurveyMonkey. A link was emailed out to each student either through WebCT if the instructor used WebCT heavily or through class email lists if WebCT was not used heavily. The following is the detail of the survey:

Survey Responses

Question 1 – If the Business School offered a four-year undergraduate degree in Operations Management, how interested would you be in earning that degree?

I would definitely pursue that degree.	1%	2
I would STRONGLY consider that degree.	14.5%	30
I would consider that degree.	46.9%	97
I would not be interested in that degree.	37.7%	78

Question 2 – If you selected that you would not be interested, please select the most applicable reason why you are not interested.

I am not planning on pursuing a business degree.	1%	1

I have chosen a different degree and am too far along to change.	52.9%	55
I am not interested in Information Systems.	34.8%	80
Had I known about this earlier at the Freshman level, I may have opted for it	3.8%	4

Question 3 – Which of the following jobs might you be interested in as a career, if you chose a degree in Operations Management?

Supply Chain Manager	14.9%	29
Inventory Manager	16.9%	33
Materials Manager	13.8%	27
Products/Project Manager	46.2%	90
Process Improvement Leader (Six Sigma)	30.3%	59
Workforce Scheduling Manager	10.8%	21
Forecasting Manager	29.2%	57
Management Consulting	62.6%	122

Question 4 – When everything is said and done, would you be interested in the Operations Management Major?

Yes	23.4%	48
No	38.5%	79
Undecided at this time	38.5%	79

Question 5 – What is your current major? (If double major check first priority).

Accounting	26.7%	55
Business Administration	10.2%	21
Entrepreneurship	2.9%	6
Finance	29.6%	61
Information Systems	7.3%	15
Management	11.2%	23

Marketing	11.2%	23
Non-Business Major	1.5%	3
Undecided	3.4%	7

Question 6 – What is your current status?

Freshman	1.5%	3
Sophomore	26.7%	55
Junior	52.9%	109
Senior	18.9%	39

Question 7 – Regardless of your major, the following classes are being taught by Professor Mughal during next Fall and Spring: Mgt-5450 Operations Simulations Mgt-5610 & 5611 Practical Management Science The pre-requisite to both classes is Mgt-3440 (Stat II). Would you be interested in taking these classes as electives for your major?

Yes	39.0%	80
No	31.7%	65
Undecided at this time	30.7%	63

Results/Conclusions

We had 203 responses to the OM degree survey from students of the introductory statistics and core operations management classes. Over 71% of these responses were from students who identified themselves as juniors or seniors. While not all of these students may be formally part of the upper division, the prevalence of upper classmen may indicate that most of these students have already committed to an existing degree. Nevertheless, 48% indicated that they would consider an OM degree, and 14% indicated that they would strongly consider an OM degree. Of those who indicated that they had no interest in an OM degree, 54% indicated that they had already chosen an existing degree and were too far along to change.

Importantly, 62% of respondents were interested in a career in management consulting, and 46% were interested in a career as a project manager. Both of these occupation categories exhibit employment growth, high starting salaries, and generally require a background in traditional operations management skill sets.

Overall we interpret these results to indicate that there would be a strong interest in an OM degree from students who have not yet committed to another degree program.

Masters of Information Systems

Immediate and local student demand is what we have attempted to gauge. The University of Utah has historically had a large portion of commuter students and tends to populate its undergraduate programs with local students. The graduate programs are primarily fed through the corresponding undergraduate programs. Due to this type of student feeder system, gauging the interest of our current student population through a survey seemed most appropriate.

Survey Information

Participant Search

Students were sent an invitation for an online survey. The students receiving the survey were students in IS 2010 and IS 4410. These courses were selected because they contain a broad cross-section of business students both from major and class perspectives. These two classes are required for all business majors and IS 2010 is taken during the freshman/sophomore year and IS 4410 is taken during the sophomore/junior years. Approximately 800 students are currently enrolled in these two courses. We expected at least a 30 percent response rate or approximately 250 student responses.

Survey Format

The survey was conducted near the end of the Fall 2007 semester online using SurveyMonkey. A link was emailed out to each student either through WebCT if the instructor used WebCT heavily or through class email lists if WebCT was not used heavily. The following is the detail of the survey:

Email Message

The David Eccles School of Business is currently designing a one-year Masters Program in Information Systems. Part of this process includes gathering data relevant to offering this program. One such data point is student's interest in this degree if we were to offer it.

The degree makeup for courses is still being discussed, but the program layout will be a one-year program designed to primarily be a 5th year graduate program similar to our current MAcc and MS in Finance degrees.

Please complete the survey (follow the link) by Tuesday November 6th morning at 11:00 am.

http://www.surveymonkey.com/s.aspx?sm=bnFbzgOsHl3pjg_2bYBOyrFg_3d_3d

Thanks for your support and cooperation.

Survey Questions/Responses

Questions 1, 2 and 4 were single-answer checkmarks. Question 3 allowed for multiple answers for double majors. Question 5 asked which class and section they were in so we verify a good cross-section. Question 6 was just for control purposes.

Survey Responses

Question 1 – If the Business School offered a one-year Masters Program in Information Systems how interested would you be in gaining that degree?

I would definitely pursue that degree.	8.1%	40
I would STRONGLY consider that degree.	18.4%	91
I would consider that degree.	41.1%	203
I would not be interested in that degree.	32.4%	160

Question 2 – If you selected that you would not be interested, please select the most applicable reason why you are not interested.

I am not planning on pursuing a masters degree.	10.9%	25
I am planning on pursuing my masters degree somewhere else.	26.1%	60
I have chosen a different degree and am too far along to change.	20.4%	47
I am not interested in Information Systems.	34.8%	80
Other (please specify)	7.8%	18

Question 3 – What is your current major? (If double major please select both).

Accounting	21.9%	108
Business Administration	16.8%	83
Entrepreneurship	4.1%	20
Finance	21.9%	108
Information Systems	9.3%	46
Management	7.1%	35
Marketing	15.0%	46
Non-Business Major	9.3%	46
Undecided	9.3%	46

Question 4 – What is your current status?

Freshman	17.8%	87
Sophomore	23.3%	114
Junior	38.9%	190
Senior	20.0%	98

5. If you are a current student in IS 2010 or IS 4410 please indicate which one you are in.

6. Please type in your UID (i.e. u0123456) - this is only used for single-vote verification, your answers WILL NOT be tracked with your UID.

Results/Conclusions

We had 494 responses to the survey. The high response rate, within a few days of releasing the survey, shows a strong interest from our current students. The data also points to a number of important observations.

1. There is a strong interest of current students to take advantage of an MS-IS program. Having 40 students stating that they would take advantage of this program immediately and another 91 students state they would strongly consider it points to a class that could easily start out to be at least half as large as any of our current programs.

2. Information Systems is an area of great interest to our students. Only one-third of those not interested in the program stated (less than 17 percent of all surveyed) stated they had no interest in this field of study. Many students are realizing the importance of this field and also the industry is continuing to grow and will become one of the fastest growing areas over the next decade (see Market Demand).

3. We have only surveyed the current DESB students. Other institutions are seeing growth in IS undergraduates and we will also be able to capitalize on this market as our program grows and gains reputation. We plan to conduct a similar survey to collect more degree/program specific information and will include students from our feeder institutions as well as other institutions that have historically sent students to other graduate programs at DESB.

Similar Programs

Utah State University offers degrees in both OM and IS. The OM degree has about 20-25 majors per year as reported by one of their faculty members (Vijay Kannan). The new Dean imposed a proposed change in structure similar to what we are proposing, but their faculty has successfully resisted the change to this point. Hence the structural change is indefinitely on hold. Weber State University has a Department of Information Systems and Technologies and offeres a degree of the same name. They also offer a Business Administration degree with an emphasis in supply chain management, which is similar to what the Management Department currently offers at the University of Utah in that it is an

emphasis rather than a major, but the focus on supply chain makes it much more specialized. Utah Valley State College offers a degree in Information System & Technology through its School of Technology and Computing.

To benchmark the configuration of the proposed department we considered the top 57 undergraduate business programs[1] in the nation. Out of these 57 undergraduate business programs, there are **22** schools where OM and IS faculty are in a merged academic department. In 14 schools the two faculties are in separate departments, in **3** schools IS and Accounting faculty are in the same department, in 2 schools OM faculty is with Marketing, in **2** schools OM faculty is with Management, in 1 school IS faculty is with Management, 3 schools have OM program only, 6 schools have IS program only, and 4 schools have no department, division, or area emphasis.
The following is a more detailed comparison with those specific institutions that the DESB often includes in a list of "peer schools:"

School Name	Department/Area Name	Rank	IS and OM: Separate or Merged [Tenure-track Faculty Size]	Undergraduate Concentrations
University of Iowa	Management Sciences	33	Merged [15]	Management Information Systems
University of Virginia	Operations	no ranking	OM only no IS	no concentrations
University of Colorado at Boulder	Systems Department	41	Merged [7]	Information Systems track and Supply Chain Systems track
University of Cincinnati	- Quantitative Analysis and Operations Management - Information Systems	99	Separate	Operations Management, Information Systems, Digital Business
University of Washington	Information Systems & Operations Management	25	Merged [16]	Information Systems, Operations Management
University of North Carolina at Chapel Hill	Operations	5	OM only no IS	Operations
Purdue University	- Operations Management - Management Information Systems,	21	Separate	no concentrations
University of Florida	Information Systems & Operations Management	27	Merged [12]	Decision & Information Sciences
University of California, Los Angeles	-Decisions, Operations & Technology Management -Information Systems	No ranking	Separate	no concentrations
University of Arizona	Management Information Systems	21	Merged [13]	Operations Management, Management Information Systems

Collaboration with and Impact on Other USHE Institutions

The IS OM faculty has had close collaboration with IS and OM programs and faculty at other USHE institutions including Utah Valley State College, Salt Lake Community College and Utah State University.

[1] US News & World Report the America's Best Colleges 2008: Best Undergraduate Business Programs

Most programs have unique niches. Traditionally, graduates and students from one USHE institution are interested in pursuing additional education in one of the other USHE institutions when opportunities arise. The programs in the new department will provide expanded opportunities for students in other USHE institutions. We will collaborate closely with other USHE institutions to advise their students on benefits of an MS IS study or a PhD study in IS or OM and how to prepare and apply for our programs. This will be done using open houses, communication material and one-on-one Q/A by phone or emails. Students at other USHE institutions will benefit from the opportunities the new department offers.

Benefits

The new departrment will benefit the University of Utah and the Utah System of Higher Education by better serving students in the Business School as well as students in other disciplines such as engineering and computer science than before restructuring the new department. Our students and graduates will be better prepared for jobs that help develop Utah and national economy.

The synergies in research should allow us to leverage current strengths and improve national and international recognition and visibility of the department, school and university. We also anticipate that faculty in the new department will be able to participate more fully in executive education that benefits the local business community.

Consistency with Institutional Mission

"The mission of The University of Utah is to serve the people of Utah and the world through the discovery, creation and application of knowledge; through the dissemination of knowledge by teaching, publication, artistic presentation and technology transfer; and through community engagement." We believe that the IS and OM groups already contribute to this mission, but the establishment of the new department will allow us to do so more easily. First, by combining, opporutnities for research collaboartion will expand. Second, by combining resources, we should be more efficient in the delivery of material, which will allow us to offer courses that we have not been able to offer before. More specifically, we will be able to do the following more effectively.

- Discover and disseminate a synergetic combination of technical and business knowledge through real-world-oriented learning opportunities, integrated in required, core, elective and executive course work.
- Prepare students to meet the growing need for IS or business professionals and leaders to understand, implement, use and manage data-driven and security technologies.
- Prepare students to manage improve processes, including supply chains, to build a competitive advantage through operations.
- Motivate and prepare students for Ph.D. studies in IS and OM
- Support local and state economies with high-quality data and security professionals and operations managers who help create value for their employers and establish solid financial foundations with above-average income jobs.

Section IV: Program and Student Assessment

Program Assessment

MS IS Program Review

- Recruiting, admission and retention goals and measures

- Goals – to recruit high-caliber applicants and retain students in quantity that meet or exceed the five-year program size projections.
- Measures – applicant pool size and program size, # of applicants recruited per recruiting channel/event, average standard test scores, GPA of applicants and of admitted students, # of applicants, as well as students by most recent location and degree/institution.

- Student learning and graduation goals and measures
  - Goals – to graduate 95% of the students admitted who meet the learning goals of the programs.
  - Measures – the learning measures include
    - The student demonstrates IT knowledge, technical skills and business understanding in the classes with the required GPA.
    - The MS IS students are effective in integrating business knowledge and IT concepts in a real world project by achieving a B or higher grade from the student's Master Project advisor and committee.
    - The student is effective with analytical and critical thinking as measured by assignments or projects in program course work.
    - The student is effective with team work and management as measured by group projects in the program study.
    - The student is effective with written and oral communication measured by assignment, case analysis, and project writing and presentation in classes.
- Placements goals and measures
  - Goals – to help program graduates obtain positions leveraging their learning in the program.
  - Measures – # of positions by title, skills used, companies and industry as well as average salaries, sign-in bonus, and stock options received in students' offers.
- Student evaluation goals and measures
  - Goals – to assure positive student and graduate perceptions of program design, study benefits and qaulity of co-hort for improvement of the programs.
  - Measures – summaries of students' mid study, exit, and alumni interviews/surveys
- External evaluation goals and measures
  - Goals – to assume positive perceptions of students and graduates by recruiters, guest speakers, project sponsors and coordinators for MS IS students for improvement of our programs.
  - Measures – summaries of external surveys
- Financial goals and measures
  - Goals – to meet or exceed the budget projection
  - Measures – Student credit hours, revenues from MS IS, and sholarships and program fund raised.

Expected Standards of Performance

The MS IS students are expected to meet the performance standards in the following competencies

- IT knowledge, technical skills and business understanding
- Integrating business knowledge and IT concepts in a real world project by achieving a B or higher grade from the student's Master Project advisor and committee.
- Analytical and critical thinking as measured by assignments or projects in program course work.
- Team work and management as measured by group projects in the program study.

- The student is effective with written and oral communication required of assignments, case analysis, and project writing and presentation in classes.

The performance will be measured using peer, instructor, or project coordinator evaluation on a 7-point licker scale on multiple questions related to each competency. The MS IS curriculum committee and the Board of Advisors to be formed by spring 2009 will jointly design these evaluation questions.

Information Systems, Undergraduate Program Review

a. Program Goals
   1. Our students will be effective in both written and oral communication.
   2. Our students will possess valuable technical skills and IT knowledge.
   3. Our students will be able to integrate business knowledge and IT concepts.
   4. Our students will develop analytical and critical thinking skills.

b. Learning Objectives
   1. Our students will be able to prepare and deliver both a professional presentation and written report on a current IT topic.
   2. Our students will be able to design, create, and evaluate practical IT applications.
   3. Our students will be able to design and evaluate IT plans for various types of business.
   4. Our students will be able to analyze and evaluate the impact of IT using business cases.

c. Measures of Learning Objectives

Table 1
Coverage of Learning Objectives in the IS Core and Pre-Core Courses

	Learning Objectives			
Courses	**Written & Oral Communication**	**Technical Skills**	**Business Integration**	**Analytical Thinking**
IS Pre-Core Courses				
IS 2010	◙	◙		
IS 4410	◙	◙	◙	
IS Core Courses				
IS4415		◙		◙
IS 4420		◙		◙
IS 4430	◙	◙	◙	◙
IS 4440		◙	◙	◙
IS 4460	◙	◙		
IS 4470	◙	◙	◙	◙
IS 4480			◙	◙
IS Non-Concurrent Courses				

d. Methods of Measurement

I. Written and Oral Communication –

Definition:
This competency refers to the ability to communicate effectively, in writing and orally, with people of diverse business and professional backgrounds, both within and outside the organization.

Criteria for assessment:
1. Observation of the presentation: the group presentation should reflect confidence in expressing and presenting data, facts, opinions and conclusions, both in writing and verbally. The assessor should consider the quality of the written materials presented by the team (grammar, clarity, logic, focus, layout, etc.) as well as the quality of the oral presentation delivered by the students (enthusiasm, keeping the audience interested, timeline, etc.)
2. Follow-up Questions: how well did the team members communicate with each other while preparing for the assessment? How did they handle individual differences in work styles and opinions among the team members?

Rating:
As this competency is defined in this document, please rate the team's mastery of written and oral communication on the attached sheet "*Evaluation of Written and Oral Communication Skills.*"

Evaluation of Written and Oral Communication Skills

Course: _____ **Year:** _____ Semester: ☐ Fall ☐ Spring ☐ Summer

Group # _____ **Members: 1)** _____ **2)** _____ **3)** _____ **4)** _____ **5)** _____

Presentation Evaluation -- Please circle the number that best represents your attitude to the following statements.	Strongly Disagree			Neutral			Strongly Agree
1. I think the presenters were able to communicate their thoughts clearly.	①	②	③	④	⑤	⑥	⑦
2. I think the presentation was logically organized and presented.	①	②	③	④	⑤	⑥	⑦
3. I think the presenters were enthusiastic and kept my interest.	①	②	③	④	⑤	⑥	⑦
4. I think the presenters know what they are talking about.	①	②	③	④	⑤	⑥	⑦
5. I think the material presented is interesting.	①	②	③	④	⑤	⑥	⑦
6. I think the material presented is useful.	①	②	③	④	⑤	⑥	⑦
7. I think the presenters gave an effective oral presentation.	①	②	③	④	⑤	⑥	⑦

Please provide rationale for your rating and any additional comments, including aspects in which the team excelled and suggestions for improvement.

What did you like most about this group's presentation?

How could the group have improved its presentation?

Written Evaluation -- Please circle the number that best represents your attitude to the following statements.	Strongly Disagree			Neutral			Strongly Agree
8. I think the writers were able to communicate their thoughts clearly.	①	②	③	④	⑤	⑥	⑦
9. I think the document was logically organized and presented.	①	②	③	④	⑤	⑥	⑦
10. I think the writers were enthusiastic and kept my interest.	①	②	③	④	⑤	⑥	⑦
11. I think the writers know what they are talking about.	①	②	③	④	⑤	⑥	⑦
12. I think the material presented is interesting.	①	②	③	④	⑤	⑥	⑦
13. I think the material presented is useful.	①	②	③	④	⑤	⑥	⑦
14. I think the writers produced an well written document.	①	②	③	④	⑤	⑥	⑦

II. Technical Skills

Definition:
This competency refers to the ability to effectively use information technology and its accompanying terminology.

Criteria for assessment:
Technical skills will include mastery of 1) the ability to program business applications, 2) database design and implementation, 3) network design, implementation, and troubleshooting, 4) information security management, 5) ability to design and implement information systems, 6) design and publish effective web content, 7) use word processing, presentation, and database design software to make effective documents, presentations, and applications.
We recognize that the IT skills listed above are not comprehensive. However the skills listed do represent the core skills required of most MIS graduates. The assessor should consider the relative scope of the skill being assessed (the student won't know everything about any one area), and the extent to which the student has mastered a wide variety of different skills.

Rating:
As this competency is defined in this document, please rate the team's mastery of written and oral communication on the attached sheet "*Student IT Skills Assessment*"

Student IT Skills Assessment

NAME (Official university name)

Please mark all the courses you have taken at UAH (or their equivalent if taken elsewhere): ☐ CS102/103 ☐ MIS110 ☐ MIS112 ☐ MIS114 ☐ MIS146 ☐MIS301 ☐ MIS310 ☐ MIS340 ☐ MIS350 ☐ MIS420 ☐ MIS440 ☐ MIS460 ☐ MIS465 ☐ MIS470 ☐ MIS480 ☐ MIS497

CAREER PLANS:

Location: ☐ Stay in Huntsville ☐ Stay in Alabama ☐ Stay in the South ☐ Western States ☐ Eastern States ☐ Northern States ☐ Homeland ☐ Anywhere

Vocation: ☐ Networking ☐ Database ☐ Programming ☐ E-business ☐ Security ☐ Systems Design ☐ Web Design ☐ Non-IT ☐ Other _____

Experience Ratings: Indicate your level of experience in each category below.

1 =Techno-phobe | 2 = Newbie | 3 = Amateur | 4 = Professional | 5 = Guru | 6 = Über Expert | 7 = Omnipotent

Category	SD	D	MD	N	MA	A	SA
1. Ability to program applications	①	②	③	④	⑤	⑥	⑦
2. Database design and implementation	①	②	③	④	⑤	⑥	⑦
3. Networking design, troubleshooting, management	①	②	③	④	⑤	⑥	⑦
4. Information security management	①	②	③	④	⑤	⑥	⑦
5. Systems analysis and design	①	②	③	④	⑤	⑥	⑦
6. Web design and publishing	①	②	③	④	⑤	⑥	⑦
7. Word processing	①	②	③	④	⑤	⑥	⑦
8. Power Point	①	②	③	④	⑤	⑥	⑦
9. Microsoft Access	①	②	③	④	⑤	⑥	⑦
10. Writing and presentation skills	①	②	③	④	⑤	⑥	⑦
11. Time and project management	①	②	③	④	⑤	⑥	⑦

If you could learn another IT skill (programming language, operating system, IT certification, etc.) during the MIS program what would it be?

1. _____
2. _____
3. _____

What do you think will be the skills employers will be looking for when you graduate?

1. _____
2. _____
3. _____

III. Business Integration

Definition: This competency refers to expertise in using information technology to improve the effectiveness of businesses. The focus is to integrate business knowledge (factors related to how businesses operate) and information technology knowledge (factors that related to available technology and IT development). Specifically, knowing how to find and gather relevant data from various sources, organize, summarize and analyze it and create meaningful and effective information for making business decisions.

Criteria for Assessment:

1. Overall, did the students' answers to the case questions reflect an understanding of technology's impact and role in business settings?
2. Observation of the presentation: Assessors should look for evidence of IT and management literacy in terms of: 1) correctly identifying critical business knowledge, 2) correctly identifying critical IT factors, 3) accurately expressing effects of interacting business and IT factors, 4) accurately identifying potential threats or opportunities that may be derived from the intersection of business and IT factors.

Rating: As this competency is defined in this document, please rate the individual's mastery of technical skills on the attached form *"Evaluation of Business and IT Integration Skills."*

Evaluation of IT and Business Integration Skills

Course: _____ **Year:** _____ Semester: ☐ Fall ☐ Spring ☐ Summer

Group # _____ **Members: 1)** _____ **2)** _____ **3)** _____ **4)** _____ **5)** _____

Business Evaluation -- Please circle the number that best represents your attitude to the following statements.	Strongly Disagree			Neutral			Strongly Agree
1. I think the group correctly identified critical business elements relevant to the project.	①	②	③	④	⑤	⑥	⑦
2. I think the group understood the nature of the business in this project.	①	②	③	④	⑤	⑥	⑦
3. I think the group understood how a business, like the one in this project, functions in the real world.	①	②	③	④	⑤	⑥	⑦
4. I think the members of the group possess solid business knowledge.	①	②	③	④	⑤	⑥	⑦

IT Evaluation -- Please circle the number that best represents your attitude to the following statements.	Strongly Disagree			Neutral			Strongly Agree
5. I think the group correctly identified critical IT elements relevant to the project.	①	②	③	④	⑤	⑥	⑦
6. I think the group understood the nature of IT in this project.	①	②	③	④	⑤	⑥	⑦
7. I think the group understood the role of IT in the real world.	①	②	③	④	⑤	⑥	⑦
8. I think the members of the group possess solid IT knowledge.	①	②	③	④	⑤	⑥	⑦

Integration Evaluation -- Please circle the number that best represents your attitude to the following statements.	Strongly Disagree			Neutral			Strongly Agree
9. I think the group was able to effectively integrate business and IT knowledge.	①	②	③	④	⑤	⑥	⑦
10. I think the group understood how to match up business needs with IT solutions.	①	②	③	④	⑤	⑥	⑦
11. I think the group understood how IT would change the core business processes in this project.	①	②	③	④	⑤	⑥	⑦
12. I think the members of the group know how to integrate IT and business knowledge.	①	②	③	④	⑤	⑥	⑦

Impact Evaluation -- Please circle the number that best represents your attitude to the following statements.	Strongly Disagree			Neutral			Strongly Agree
13. I think the group correctly identified benefits (strengths) derived from integrating IT into the business process.	①	②	③	④	⑤	⑥	⑦
14. I think the group correctly identified disadvantages (weaknesses) derived from integrating IT into the business process.	①	②	③	④	⑤	⑥	⑦
15. I think the group understood the competitive impact of IT on the business.	①	②	③	④	⑤	⑥	⑦

16. I think the group articulated possible future opportunities, or threats, that may arise from IT integration.	① ② ③ ④ ⑤ ⑥ ⑦
Please provide rationale for your rating and any additional comments, including aspects in which the team excelled and suggestions for improvement.	

IV. Analytical Thinking –

Definition: This competency refers to the ability to identify relevant issues or variables, analyze their interrelationships, and conceptualize solutions for specific problems. Inherent to this competency are proficient thinking in abstract terms, being able to see the "big picture", and understanding how the various parts of an organization or an idea fit and function together. This competency is the most challenging to assess because it deals with abstract skills.

Criteria for assessment:
Critical thinking underlies the entire analysis of several analytical skills. The assessor should select an appropriate case that allows students to exhibit each of the skills listed on the evaluation form "*Evaluation of Analytical and Critical Thinking Skills.*" Assessors should focus on a student's ability to 1) identify relevant issues or variables, 2) analyze their interrelationships, and 3) conceptualize solutions for specific problems.

Rating:
As this competency is defined in this document, please rate the individual's mastery of analytical thinking using the attached document *"Evaluation of Analytical and Critical Thinking Skills."*

Evaluation of Analytical and Critical Thinking Skills

Course: _______ **Year:** _______ Semester: ☐ Fall ☐ Spring ☐ Summer

Case Name: ____

Using the following scale, indicate the extent that you believe the student has exhibited the following analytical and critical thinking skill.

1 = Strongly Agree (A) 2 = Agree (a) 3 = Uncertain (U) 4 = Disagree (d) 5 = Strongly Disagree (D)

	Attributes		
Student	**Identify Relevant Issues**	**Analyze Interrelationships**	**Conceptualize Solutions**
e.g. John Doe*	① ② ❸ ④ ⑤	① ② ③ ④ ❺	① ❷ ③ ④ ⑤
	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤
	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤
	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤
	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤
	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤
	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤
	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤
	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤
	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤
	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤
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	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤
	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤
	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤
	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤
	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤
	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤
	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤
	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤
	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤
	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤
	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤
	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤
	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤
	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤
	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤
	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤
	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤
	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤

	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤
	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤
	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤
	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤

*Due to privacy concerns please delete student names AFTER you have scored this form.

e. Methods of Assessment

1. The method used to assess learning objective 1 will be a direct assessment of both oral and written communication skills. Students are required to deliver both an oral presentation and a written report of a current IT topic in IS 4440 (E-Machines and Telecommunications). A direct assessment by the instructor will evaluate students' ability to produce effective oral presentations and written communications. The assessment will be recorded on the form "*Evaluation of Written and Oral Communication Skills.*"

2. The method used to assess learning objective 2 will be a direct assessment of IT skills. Students are required to take a variety of core courses that provide students with a wide array of IT skills. A direct assessment by the instructor of the IS4470 and IS4480 courses will evaluate most of the IT skills learned during the MIS program.. The assessment will be recorded on the form "*Student IT Skills Assessment.*"

3. The method used to assess learning objective 3 will be a direct assessment of business and IT integration skills. Students are required to demonstrate their ability to analyze a business and design an effective information system in IS 4430 (Systems Analysis and Design). A direct assessment by the instructor will evaluate students' ability integrate business and IT knowledge. The assessment will be recorded on the form *"Evaluation of Business and IT Integration Skills."*

4. The method used to assess learning objective 4 will be a direct assessment of analytical and critical thinking skills. Students are required to analyze numerous cases related to systems design in IS 4430 (Systems Analysis and Design). A direct assessment of a single case by the instructor will evaluate students' ability to analytically and critically think about the impact of IT on businesses. The assessment will be recorded on the form *"Evaluation of Analytical and Critical Thinking Skills."*

f. Methods of Assessment Report

The Assessment Report will be presented at the annual IS Fall retreat by the IS department chair.

g. Methods of using Assessment for Program Improvement

The IS faculty at the University of Utah will make comments on the Assessment report and provide suggestions for improvements. The IS faculty will take steps to make improvements in the overall achievement of the purposed goals.

Operations Management, undergraduate program review

When students have completed the OM major, they should be able to do the following.

- Exhibit strong oral and written communication skills.
- Approach problems using a systematic, analytical process.
- Show an understanding of the operations management function, and its relationship to other functional areas within the firm.
- Be familiar with the business vocabulary used within the operations management field.
- Know how to collect and analyze data.

- Simplify complicated situations using mathematical models.
- Have a mental framework whereby the strengths and weaknesses of a firm's operations can be analyzed, and whereby the firm can develop viable alternatives in pursuing its goals and objectives.
- Understand the tradeoffs that managers face in emphasizing one goal (such as high capacity utilization) as compared to another goal (such as minimum throughput time).
- Develop competence with specific tools and techniques used by practicing operations management personnel.
- Compare and contrast the strengths and weaknesses of different strategies and techniques, as determined by industry and global operating environment.
- Understand the impact of variability on processes.

There are several potential mechanisms that we can use to provide the assessment.

- In-class presentations by students to be evaluated by faculty and other students.
- In-class exercises to measure whether students have learned fundamental concepts. (One exercise in particular that is used currently is the Littlefield game, which simulates how much profit students make in managing an operation.)
- Cases analyses test students' ability to apply concepts.
- Direct surveys and testing of students.
- Certification exams (Certified Project Manager, Certified Quality Manager, etc.)

Section V: Finance

Financial Analysis Form					
	Year 1	Year 2	Year 3	Year 4	Year 5
Students					
Projected FTE Enrollment	258	281	296	318	333
Cost Per FTE					
Student/Faculty Ratio	10.6 : 1	11.9 : 1	12.7 : 1	14.7 : 1	16 : 1
Projected Headcount	149	186	228	279	320
Projected Tuition					
Gross Tuition					
Tuition to Program	$2,465,000	$2,612,900	$2,769,674	$2,935,854	$3,112,006
5 Year Budget Projection					
	Year 1	Year 2	Year 3	Year 4	Year 5
Expense					
Salaries & Wages	2,050,000	2,291,500	2,478,445	2,496,998	2,745,728
Benefits	164,000	200,120	215,076	220,880	236,458
Total Personnel	2,214,000	2,491,620	2,693,521	2,717,878	2,982,186
Current Expense	120,000	120,000	125,000	125,000	130,000
Travel					
Capital					

Library Expense					
Total Expense	$2,334,000	$2,611,620	$2,818,521	$2,842,878	$3,112,186
Revenue					
Legislative Appropriation					
Grants & Contracts	$10,000	$20,000	$40,000	$60,000	$80,000
Donations					
Reallocation	$100,000	$100,000	$200,000	$200,000	$200,000
Tuition to Program	$2,465,000	$2,612,900	$2,769,674	$2,935,854	$3,112,006
Fees					
Total Revenue	$2,575,000	$2,732,900	$3,009,674	$3,195,854	$3,392,006
Difference					
Revenue-Expense	$241,000	$19,280	$89,153	$13,376	($5,780)

Budget Comments

The dollar amounts in the table above are for both OM and information system (IS) classes, faculty and staff. Because we are proposing a new department, we have made projections based on both groups without breaking them out separately. The peronnel expenses assume the addition of six faculty over the next five years.

The revenue numbers that we have access to combine SCH-related income and differential tuition. Hence it is difficult to break them out separately. We have included the total enrollment-related revenue without trying to break it out as separate line items. We have assumed that revenue will grow at 6% per year, which we believe is conservative given our assessment of demand for both OM and IS majors, an added MS in IS, and differential tuition allocated to the new department. Based on the budget projection, the department is expected to generate $357,029 accumulative surplus at the end of five years.

Funding Sources

The program will be funded mainly through the SCH model at the University as well as differential tution. Because we already have OM classes in place, the student credit hours are already in place and have grown over the last few years. The OM major will be part of a department that includes an Information Systems major, which is another source of revenue. As the program grows and students complete their degrees, we also anticipate a small flow of revenue from alumni contributions. The Dean's office currently allocates $100,000 a year for Presidential Chair's supplement. This will increase to $200,000 within the next five years when the new department recruits the second Presidential Chair.The IS faculty in the Global Knowledge Management Center also will continue to expand their fund raising for providing student scholarships, internships and career opportunities.

Reallocation

Currently the two groups are part of existing departments. The SCH generated by the current OM classes will be reallocated to the new department (and hence major) and those generated by IS will be moved from the current School of Accounting and Information Systems to the new department.

Impact on Existing Budgets

The budgets of the Management (MGT) and Accounting (ACCT) departments will be affected by the new departments. A portion of SCH that have currently gone to the Management and Accounting departments will now flow to the new department. As such, the Management and Accounting department's revenue will decrease. While the revenue will decline, it is also true that the two existing deparmtents' costs will also decrease as several faculty members will be leaving to the new department. The Deans of the School of Business have provided the two existing departments budget allocations meet both departments' budget needs.

Appendix A: Program Curriculum

All Program Courses

The following courses are offered by IS.

Course ID	Cr.	Title	Description
2010	3	Computer Essentials	To help students become computer literate and computer competent. The course is designed to provide the student with the computer basics necessary for today's business environment. Completing this course with at least a B grade meets the computer literacy requirement of the DESB.
4410	3	Information Systems	Overview of the role and use of information systems to support individual, group, and business decision-making. Includes coverage of technology's role in supporting the decision-making process of business.
4415	3	Data Structures & Java	This course covers the design, implementation, and analysis of basic data structures and algorithms. The data structures covered include stacks, queues, list, trees, and graphs. Algorithms for searching, sorting, and traversing the data structures will be introduced. Students are required to implement the data structures and algorithms as library components of computer programs using Java.
4420	3	Database Fundamentals	This course introduces you to topics in database theory and design, including hands-on development of a working database system. Topics covered include the relational database model, foundations in relational algebra, design techniques, SQL, distributed databases, multimedia databases, and knowledge bases. Pre-requisite: 4415
4430	3	System Analysis and Design	This course introduces you to the field of information system analysis, analysis tools, and the procedures for managing information system analysis projects. Topics covered include the role of the systems analyst in organization; concepts, philosophies, and trends in systems analysis and design; and tools and techniques for such analysis activities.
4440	3	Networking & Servers	An introduction to the design, operation, and management of telecommunication systems including Server 2003, IIS, Linux, TCP/IP, management support for networking. This course provides instruction in data communications and computer network definitions, concepts and principles, including (but not limited to): the conversion of voice, data, video and image to digital form; topologies; protocols; standards; and fundamental concepts related to data communication networks, such as routers, gateways, cabling, etc. It prepares students to make intelligent and informed decisions about data network design/management, by analyzing the benefits, drawbacks, effects, tradeoffs, and the compromises related to various data communication technologies. You will learn how to make policy, design, and installation decisions related to planning and implementing data communication and computer network applications.
4460	3	Web-based Applications	The objective of the course is to provide knowledge and skills needed to create Web-based applications.. It covers a broad set of technologies and tools that have led to the successful use of the World Wide Web for various businesses. This includes Java programming, JSP, HTML, XML, HTTP, Web servers and databases. Pre-requisite: 4420

4470	3	IT Security & Audit	Examines management issues associated with the control and audit of information systems. Specific emphasis is on IT controls and their evaluation, computer-based auditing techniques, encryption, and security policies. Recent developments in IT, such as client-server systems and the Internet, and their impact on auditing, control, and security, are also considered. Prerequisite: IS4440 or the telecommunication equivalent.
4480	3	Building Data Warehouses	Business intelligence allows an enterprise to continuously sense and respond in its environment by providing insights into the pulse of, and problems and decisions facing an enterprise via interactive analysis of enterprise data. This course will focus on the issues and building of business intelligence systems using data warehousing, Online Analytic Processing (OLAP) and data mining technologies to organize data, and generate business analytics and patterns. A strong emphasis is on hands on experiences with the building technologies and real world projects. Pre-requisite: 4420
6010	3	Fundamentals of Management Information Systems	This course is to provide MBA students with (1) a comprehensive survey of important information systems and their business applications (2) a good understanding of essential issues or challenges surrounding management of information systems, and (3) a detailed analysis of prevailing information systems management practices and strategies in different organizations. This course strikes for a balance between technical issues and managerial considerations. Lectures and in-class discussions are the primary teaching methods, supplemented by case analysis, computer labs, and individual assignments.
6470	1.5	E-Business	This course provides MBA students with an overall understanding of electronic commerce. It is designed to provide (1) an overview of essential technological infrastructure underpinning e-commerce, (2) a comparative analysis of important business activities that take place in the conventional marketplace versus in the virtual market-space, and (3) a survey of interesting e-commerce technologies, business models/practices, and strategies.
6480	3	Building Data Warehouses	This course introduces dimensional modeling, data extraction, loading and transformation (ETL) and online analytic processing (OLAP) reporting concepts and practices for building scalable data warehouse systems. Students will practice core methods and explore real world applications and issues in hands-on assignments and group projects.
6481	1.5	Data Driven Strategies and Products	This course covers the management of quality, systems, process, people, organization and investment in order to create value from data driven products. Students will analyze cases, data and explore data driven product management strategies for real world applications.
6482	1.5	Data Mining	This course introduces data mining technologies that assist in discovery of reliable, understandable and useful patterns in structured, semi-structured and unstructured data. Students will practice core data mining technologies, analyze cases, and explore real world applications and issues.
6483	3	Advanced Data Mining	This course covers advanced data mining methods, software tools and applications for text and web data mining as well as sequence and time series, social network analysis, segment and prediction analysis and modeling. Students will collect and analyze real world data using available data mining software or programming tools. Pre-requite: IS 6482
6484	3	Advanced Data Management	This course covers issues, methods and applications of distributed data management, multimedia data management, web data management and optimization of query processing, ETL and storage management.

6540	3	ERP	This course covers technological and management issues related to ERP.
6570	3	IT Security & Audit	Examines management issues associated with the control and audit of information systems. Specific emphasis is on IT controls and their evaluation, computer-based auditing techniques, encryption, and security policies. Recent developments in IT, such as client-server systems and the Internet, and their impact on auditing, control, and security, are also considered. Prerequisite: IS4440 or the telecommunication equivalent.
6571	3	IT Forensics	Examines computer forensics and investigations. It looks at the problems and concerns related to computer investigations. It blends traditional investigation methods with classic systems-analysis problem-solving techniques and applies them to computing investigations. It implements common computer forensic tools in real-life scenarios.
6572	3	Network Defense & Countermeas ures	Provides a solid foundation in network security fundamentals. The primary emphasis is on intrusion detection. Examines developing a security policy and then implementing that policy by performing Network Address Translation, implementing packet filtering, installing proxy servers and firewalls, and setting up Virtual Private Networks. This course assumes familiarity with the Internet and basic networking concepts such as TCP/IP, gateways, routers, and Ethernet.
6595	3	Master's Project	The student completes a complex information system development, strategic planning or research project under the supervision of a full-time IS faculty member. The student is required to generate a written report for approval of the credit by the advisor and the MS IS committee. The project is expected to allow the student to integrate knowledge from individual courses and further expose students to new topics or techniques.
6910		Special Study for Master's Students	
7000		AIS Seminar	This course will provide an overview of all research topics and areas within AIS.
7410		Information Systems Seminar	Review of selected MIS research topics.
7420		Database Management Seminar	Review of selected research topics related to database management.
7910		Special Study for Ph.D. Students	
7970		Thesis Research Ph.D.	
7980		Faculty Consultation Ph.D.	
7990		Continuing Registration PhD	

The courses below will become part of the new OM major.

Course Prefix & Number	Title	Credit Hours

Course Prefix & Number	Title	Credit Hours
Core Courses		
MATH 1090	College Algebra	3
MATH 1100	Quantitative Analysis	3
BUS 1050	Foundations of Business Thought	3
WRTG 2010	Intermediate Writing	3
IS 2010	Computer Essentials	3
ACCTG 2010	Intro to Financial Accounting	3
ACCTG 2020	Intro to Managerial Accounting	3
MGT 2340	*Business Statistics*	3
MGT 3440	*Applications of Business Statistics*	3
ECON 2010	Microeconomics	3
ECON 2020	Macroeconomics	3
COMM 1010 or 1020	Elements of Speech Comm or Public Speaking	3
WRTG 3016	Professional Writing	3
IS 4410	Information Systems	3
FINAN 3040	Financial Management	3
FINAN 3050	Introduction to Investments	3
MGT 3410	Business Law	3
MGT 3660	*Production/Operations Management*	3
MGT 3680	Human Behavior in Organizations	3
MGT 5700	Advanced Management	3
MKTG 3010	Principles of Marketing	3
	International Elective I	3
	International Elective II	3
MGT 5660	Operations Strategy	3
	Sub-Total	**63**
Elective Courses	(Students select at least 4 of the following)	
MGT 4650	*Principles of Quality Management*	3
MGT 5450	*Simulation of Business Processes*	3
*MGT 5610**	*Practical Management Science*	3
*MGT 5630**	*Operations Resource Planning*	3
MGT 5670	*Managing Service Operations*	3
	Sub-Total	**15**
Track/Options (if applicable)		
	Sub-Total	
	Total Number of Credits	**78**

* These classes are not officially on the books at the time of the writing of this proposal, but the paperwork has already been started.

New Courses to be Added in the Next Five Years

The following courses are currently being planned and will be offered in the next five years. We already offer similar classes at the MBA level. (In fact, the descriptions provided are those for the equivalent MBA classes. These descriptions will change slightly as we design the classes for undergraduate students.) In all cases the MGT prefix will change to OM once the new major is approved. The new department has the faculty resources to cover these new courses.

Prefix & Number	*Title*	*Credit Hours*
MGT 5620	Global Supply Chain Management	3
MGT 5640	Project Management	3
MGT 5650	Six Sigma	3

Descriptions of Proposed Courses

MGT 5620 Global Supply Chain Management

Production of services and goods typically involves many process steps that are spread across multiple firms or departments. In supply chain management (SCM) we examine how to improve performance by considering the actions of multiple members within this chain of activities. SCM addresses not only the flow of materials from upstream to downstream members in the supply chain, but also the flow of information and funds. Advancements in information technology allow the supply chain to achieve performance improvements previously beyond reach, and may change the optimal structure of the supply chain. Class discussion is motivated by case studies that examine successful emerging supply chain strategies.

MGT 5640 Project Management

Project management has become the way of life in many industries. Whether it is development of a new product, organizational-wide implementation of a new IT tool, or execution of a merger, project management skills are required to manage cross-functional teams subject to strict deadlines and tight budget constraints. In this course we discuss all three phases of project management: project conception, execution, and closure. Issues related to project leadership, budgeting, and scheduling will be addressed in the course, and case discussions will highlight state of the art project management practices. Project management software will be introduced (possibly including group project using MS Project Software).

MGT 5650 Six Sigma

Six Sigma is a philosophy and set of concrete tools designed to reduce variation in all critical processes to achieve continuous and breakthrough improvements that impact the bottom line of organization and increase customer satisfaction. In this course, we will study the five phase DMAIC (Design-Measure-Analyze-Improve-Control) approach in detail with a combination of lecture, small group breakout sessions, and hands-on practice. Course topics will include a review of statistics, process improvement tools, statistical process control, measurement system evaluation, capability analysis and design of experiments. Statistical software such as Minitab will be required and used throughout the class.
Course Description

Appendix B: Program Schedule

Program schedule for IS Major:

Course Prefix & Number	Title	Credit Hours

Course Prefix & Number	Title	Credit Hours
FALL YEAR 1		
PHIL	Philosophy (Humanities) IE Class	3
PSYCH, SOC or ANTHRO	Social Science IE Class	3
MATH 1090	College Algebra	3
	Fine Arts IE Class	3
WRTG 2010	Intermediate Writing	3
SPRING YEAR 1		
MATH 1100	Quantitative Analysis	3
BUS 1050	Foundations of Business Thought	3
IS 2010	Computer Essentials	3
	Science IE Class	
	American Institutions Course	3
FALL YEAR 2		
ACCTG 2010	Intro to Financial Accounting	3
MGT 2340	*Business Statistics*	3
ECON 2010	Microeconomics	3
COMM 1010 or 1020	Elements of Speech Comm or Public Speaking	3
	Fine Arts IE Class	3
SPRING YEAR 2		
ACCTG 2020	Intro to Managerial Accounting	3
ECON 2020	Macroeconomics	3
MGT 3440	*Applications of Business Statistics*	3
WRTG 3016	Professional Writing	3
	Science IE Class	3
IS 4410	Intro to MIS	3
FALL YEAR 3		
IS 4415	Data Structures and Java	3
IS 4440	Networking and Severs	3
	International Elective I	3
FINAN 3040	Financial Management	3
MGT 3660	Production/Operations Management	3
SPRING YEAR 3		
IS 4420	Database	3
IS 4430	System Analysis and Design	3
FINAN 3050	Introduction to Investments	3
MGT 3410	Business Law	3
MKTG 3010	Principles of Marketing	3
FALL YEAR 4		
IS 4460	Web Applications	3
	IS track course	3
MGT 5700	Advanced Management	3

Course Prefix & Number	Title	Credit Hours
MGT 5450	Simulation of Business Processes	3
MGT 5670	Managing Service Operations	3
	SPRING YEAR 4	
MGT 3680	Human Behavior in Organizations	3
	International Elective II	3
MGT 4650	Principles of Quality Management	3
MGT 5610*	Practical Management Science	3
	Humanity IE Elective	3

Program Schedule for OM Majors

Course Prefix & Number	Title	Credit Hours
	FALL YEAR 1	
PHIL	Philosophy (Humanities) IE Class	3
PSYCH, SOC or ANTHRO	Social Science IE Class	3
MATH 1090	College Algebra	3
	Fine Arts IE Class	3
WRTG 2010	Intermediate Writing	3
	SPRING YEAR 1	
MATH 1100	Quantitative Analysis	3
BUS 1050	Foundations of Business Thought	3
IS 2010	Computer Essentials	3
	Science IE Class	
	American Institutions Course	3
	FALL YEAR 2	
ACCTG 2010	Intro to Financial Accounting	3
MGT 2340	*Business Statistics*	3
ECON 2010	Microeconomics	3
COMM 1010 or 1020	Elements of Speech Comm or Public Speaking	3
	Fine Arts IE Class	3
	SPRING YEAR 2	
ACCTG 2020	Intro to Managerial Accounting	3
ECON 2020	Macroeconomics	3
MGT 3440	*Applications of Business Statistics*	3
WRTG 3016	Professional Writing	3
	Science IE Class	3
	FALL YEAR 3	
	Humanities IE Class	3
FINAN 3040	Financial Management	3
MGT 3660	*Production/Operations Management*	3
	Diversity Requirement Course	3
	International Elective I	3

Course Prefix & Number	Title	Credit Hours
SPRING YEAR 3		
FINAN 3050	Introduction to Investments	3
MGT 3410	Business Law	3
MGT 3680	Human Behavior in Organizations	3
MKTG 3010	Principles of Marketing	3
MGT 5660	*Operations Strategy*	3
FALL YEAR 4		
MGT 5700	Advanced Management	3
IS 4410	Information Systems	3
MGT 5450	*Simulation of Business Processes*	3
MGT 5670	*Managing Service Operations*	3
SPRING YEAR 4		
	International Elective II	3
MGT 4650	*Principles of Quality Management*	3
*MGT 5610**	*Practical Management Science*	3

Program Schedule for MS IS

Course Prefix & Number	Title	Credit Hours
Core Courses		
IS 6010	MIS Fundamentals	1.5
IS 6420	Database Theory and Design	3
IS 6430	Systems Analysis and Design	3
IS 6470	eBusiness	1.5
IS 6481	Data Driven Strategies and Products	1.5
IS 6482	Data Mining	1.5
IS 6595	Master's Project	3
	Sub-Total	**15**
Track Courses		
	Data Strategies Track	
IS 6480	Building Business Intelligence Systems	3
IS 6483	Advanced Data Mining	3
IS 6484	Advanced Data Management	3
MGT 6040	Data Analysis and Decision Making I	1.5
MGT 6041	Data Analysis and Decision Making II	1.5
	Sub-Total	**12**
	Information Security Track	
IS 6570	IT Security & Audit	3
IS 6571	IT Forensics	3
IS 6572	Network Defense and Countermeasures	3
	Sub-Total	**9**
Elective Courses		

Course Prefix & Number	Title	Credit Hours
IS 6471	Emerging Web Strategies and Technology	3
IS 6540	ERP	3
MGT 6060/1	Product and Operations Management I & II	1.5/1.5
MGT 6420/1	Quality Management I & II	1.5/1.5
MGT 6450	Simulation of Business Processes	3
MGT 6620	Supply Chain Management	3
MGT 6630	Service Strategies	3
MGT 6660	Project Management	3
	Sub-Total	**24**
	Total Number of Credits	**60**

Appendix C: Faculty Bios

Rohit Aggarwal will join the David Eccels School of Business at the University of Utah as an Assistant Professor of Information Systems. His research interests include studying the avenues and challenges posed by electronic word of mouth (weblogs, online discussion forums, online posted reviews and twitter) on businesses. Specifically, he investigates the underlying process that leads to the successful generation of eWOM and its implications. His research will help firms and institutional investors in understanding the value of eWOM and the ways to better utilize eWOM. He is also interested in investigating reputation mechanism design for online services exchange, and online agent design that facilitates bidding in an online products exchange. His research has been mentioned in popular press outlets such as Conde Nast- Portfolio, and has won research funding.

Randall J. Boyle received his Ph.D. in Management Information Systems from Florida State University in 2003. He also has a master's degree in Public Administration and a B.S. in Finance. His research areas include deception detection in computer-mediated environments, information assurance, the effects of IT on cognitive biases, the effects of IT on knowledge workers, and e-commerce. He has published in several academic journals such as *Journal of Management Information Systems* and *Journal of International Technology and Information Management.* He has received the college teaching award at the University of Alabama in Huntsville and has taught a wide variety of classes including Information Security, Telecommunications, System Analysis and Design, Decision Support Systems, and Web Servers.

Susan Chesteen is a published author with publications in the Journal of Operations Management, American Journal of Hospital Pharmacy, Risk Management, Business Forum, Journal of the Society of Health Systems, Simulation & Gaming, Consultation: An International Journal, and Entrepreneurship: Theory and Practice and other journals. She co-authored a chapter in Staff Development for Pharmacy Practice published by the American Society of Health-System Pharmacists. She has served as a Judge for the Blue Chip Enterprise Initiative and Competition, an Evaluator for the Unsolicited Grant Competition of the United States Institute for Peace, and a principal investigator on grants from the Rockefeller Foundation. She has been a member of the American Society of Quality Control, the Decision Sciences Institute, the Association for Employment Practices and Principles, the Academy of Management, and served as an executive officer, editor and Fellow of the Association of Business Simulation and Experiential Learning for many years. Dr. Chesteen has served as a member of the University President's Executive Cabinet, the President of the Academic Senate, and a member of the University of Utah Presidential and Vice Presidential Search Committees. Dr. Chesteen has received the Presidential Scholars Award, the David Eccles School of Business Distinguished Service Award 2004, the Brady Award for Superior Teaching, the DESB Graduate Teaching Award, the DESB Undergraduate Teaching Award, DESB Rosenblatt Award, and the 1998 DESB Faculty Professional and Community Service Award. She has served on numerous University and college committees throughout her years at the University of Utah.

Jeff Hassett has been a member of the IT industry for over 15 years. He has experience in database design and implementation, large project implementation and also security. He has completed large technology implementations for industry leader such as Walt Disney World, United Airlines and Square D Electronics.

Paul J. Hu is an Associate Professor and David Eccles Faculty Fellow at the David Eccles School of Business, the University of Utah. He received his Ph.D. in Management Information Systems from the University of Arizona. His current research interests include information technology applications and management in health care, organizational management of systems implementation, electronic commerce, digital government, human-computer interaction, and knowledge management. Hu has published papers in *Journal of Management Information Systems*; *Communications of the ACM*; *IEEE Transactions on Systems, Man and Cybernetics*; *IEEE Transactions on Information Technology in Biomedicine*; *IEEE Transactions on Engineering Management*; *IEEE Intelligent Systems; IEEE Software; Journal of the American Society for Information Science and Technology*; *Decision Sciences; Decision Support Systems*; *Social Science Computer Review*; *European Journal of Information Systems; Information and Management; Electronic Commerce Research*; *Journal of Telemedicine and Telecare*; and *Topics in Health Information Management.* He received a Best Paper Award at the *33rd Hawaii International Conference on System Sciences.* Hu has received research funding from *the National Science Foundation, the Hong Kong Research Grants Council, University of Utah*, and *Center for International Business Education and Research.*

Daniel McDonald received his Ph.D. in Management (Information Systems) from the University of Arizona in 2006. He also has a Master's of Science degree in Management Information Systems and a B.S. in Accounting. Prior to his Master's and Ph.D., Daniel worked in industry accounting and inventory management. His research interests include Decision Support, Intelligent Systems, and Text and Data Mining. He is interested in processing e-mail communication, business news, and medical research texts to find relevant relationships, including social and event information. He has published in a variety of journals including *ACM Transactions on Information Systems*, *Bioinformatics*, *IEEE Transactions on Information Technology in Biomedicine*, *Decision Support Systems*, and the *Journal of the American Society for Information Science and Technology.*

Tariq Mughal comes to DESB with fifteen years of experience in the aerospace industry. His experience constitutes in the areas of engineering analysis, project management, business development, finance and program management. While he was at United Airlines in San Francisco he developed a budget of $2.2 Billion dollars for the acquisition and assimilation of U.S. Airways maintenance operations. He has masters in Mechanical Engineering and an MBA from University of Utah. His bachelors are in mathematics with emphasis in statistics. His primary responsibility at DESB is to teach undergraduate statistics classes and manage that program.

Gautam Pant is as an Assistant Professor at the David Eccles School of Business. He received his Ph.D. in Business Administration (Information Systems) from the University of Iowa. He also holds a Masters degree in Computer Science from Baylor University and a Bachelors degree in Computer Engineering from the University of Mumbai, India. His research focuses on searching, gathering, and analyzing Web-based information to gain actionable intelligence. He has worked as a software engineer for Computer Associates-TCG (India), as a research assistant for NEC Labs (Princeton), and GlaxoSmithKline R&D (King of Prussia). His research appears in *ACM Transactions on Information Systems*, *IEEE Transactions on Knowledge and Data Engineering*, *ACM Transactions on Internet Technology*, and *Information Retrieval.* His work also appears in the proceedings of highly selective international conferences such as *ACM SIGIR* and *ACM/IEEE JCDL.*

Vandana Ramachandran is a Ph.D. Candidate in Information Systems at the Robert H. Smith School of Business, University of Maryland. She will join the Information Systems group in the David Eccles School

of Business at the University of Utah in Fall 2008. Her research interests include economics of information systems, e-business strategies, new business models in electronic markets such as online infomediaries and sponsored search/advertising, and strategic impacts of IT in firms. Her dissertation focuses on examining how the explosion of decentralized information in online channels transforms the dynamics among buyers and sellers in both online retail markets and offline channels for durable goods, using econometric and clickstream modeling techniques. Her work is forthcoming in *Information Systems Research*, and is under review at *MIS Quarterly* and *Journal of Marketing*. She has also presented her research at several conferences including *ICIS, WISE, CIST-INFORMS, AOM, ACM* and others. She is also the recipient of research grants from the Net Institute (2005, 2007), the Stempler Award for Research on family owned/controlled businesses (2007), and the Dean's Fellowship for Summer Research (2003-2008).

Glen Schmidt's research interests include product innovation, new product development, and supply chain management. He has worked inside and/or studied firms in various industries including high-tech, heavy-duty equipment, automotive, and oil. Both his research and teaching materials have been recognized for their excellence by the Institute for Operations Research and the Management Sciences (INFORMS).

Jeff Stratman is an Assistant Professor in the Management Department at the David Eccles School of Business, University of Utah. He received his Ph.D. in Business Administration with a concentration in Operations Management from the University of North Carolina at Chapel Hill in 2001. He holds a B.S.E. in Mechanical and Aerospace Engineering from Princeton University.

His research interests include operations strategy, the strategic use of information systems for supply chain management, enterprise resource planning (ERP) systems, and management of technology. He has published in Production and Operations Management, the Journal of Operations Management, Decision Sciences, R&D Management and Supply Chain & Logistics Journal, and has presented papers at national meetings of the Institute for Operations Research and the Management Sciences (INFORMS), the Decision Sciences Institute (DSI), and the Production and Operations Management Society (POMS). He is a senior editor for Production and Operations Management, and a member of the editorial review board for Manufacturing & Service Operations Management, and Decisions Sciences.

He was a member of the faculty of the College of Management at the Georgia Institute of Technology from 2000-2006. Prior to joining Georgia Tech, he had six years of experience as a manufacturing systems consultant with Andersen Consulting (now Accenture). He is certified in Production and Inventory Management through the American Production and Inventory Control Society (APICS).

Olivia R. Liu Sheng is Presidential Professor and Emma Eccles Jones Presidential Chair of Information Systems at the David Eccles School of Business, University of Utah. She also directs the Global Knowledge Management Center (http://gkmc.utah.edu) to seek research and education extension of data driven business optimization. Her research focuses on data mining and optimization techniques for ebusiness management, customer analysis, customer profiling, personalization, recommendation, fraud/intrusion detection, bio-medical, digital government, telemedicine, telework and distributed learning applications. Her research has received funding from various Utah State agencies, Wasatch Advisors, Overstock, Optatio, U.S. Army, NSF, IBM, Tivoli, Toshiba Corp., Sun Microsystems, Hong Kong Research Grants Council, Asia Productivity Organization, SAP University Alliance, and Bureau of Land Management.

Dr. Sheng received the B.S. degree from the National Chiao Tung University in Taiwan, R.O.C. and the Master's and Ph.D. Degrees in Computers and Information Systems from the University of Rochester. She joined the faculty of Management Information Systems at the University of Arizona in 1985 and was the Department Head from 1997 to 2002. Dr. Sheng was visiting faculty at Hong Kong University of Science and Technology, Tokyo Institute of Technology, and Shanghai JaioTung University. She has published over 50 papers in such journals as *Management Science, ACM Trans. On Information Systems, ACM Trans. On Internet Technology, Information Systems Research, INFORMS Journal on Computing, Communications of ACM, IEEE Trans. on Man, Machine and Cybernetics, IEEE Trans. on Biomedical Computing,* and *IEEE Trans. on Engineering Management.* She is on the editorial board for various journals including *Information Systems Research.*

Sriram Thirumalai is an Assistant Professor in the Management Department at the David Eccles School of Business, University of Utah. Sriram holds a Bachelors in Metallurgical Engineering from the Indian Institute of Technology (IIT) ▯ Madras, a Master of Science in Statistics from the University of Minnesota, and a Ph.D. in Operations Management from the University of Minnesota. Sriram's research interests are in the areas of Management of Technology, Supply Chain Management, Operations Strategy, and Health Care Operations. Sriram's research has appeared in the Journal of Operations Management and Electronic Markets. He serves a reviewer for various journals including Journal of Operations Management, Production Operations Management Journal, and IEEE Transactions.

Weiyu Tsai's research interests are in the areas of new product-service development and project management. Specifically, he studies the topics of design of new product-service bundle, new product preannouncement, design competition, and project scheduling and resource allocation. His teaching interests are in the areas of management science and operations management.

Don G. Wardell is Professor and Chair of the Department of Management at the University of Utah's David Eccles School of Business (DESB). He received BS and MS degrees in Metallurgical Engineering from the University of Utah, and a Ph.D. degree from Purdue University's Krannert Graduate School of Management. Dr. Wardell has taught at both the undergraduate and graduate levels, including teaching classes in Spanish at INCAE in Costa Rica. Dr. Wardell was honored with the University of Utah's Distinguished Teaching Award, the DESB's Masters Teaching Excellence Award, the Brady Superior Teaching Award, and the Marvin J. Ashton Award for Excellence in Undergraduate Teaching. His research interests are mainly in the areas of quality management and Six Sigma, and especially statistical process control. He has served as an associate editor for Technometrics, is a member of the editorial review boards of Production and Operations Management and IIE Transactions on Quality and Reliability and reviews articles for numerous journals.

Appendix D: Other Benchmark Schools

The 22 schools with OM and IS in a merged department among the top 57 undergraduate business programs based on US News & World Report the America's Best Colleges 2008: Best Undergraduate Business Programs

Rank	School	Department Name	Tenure Track Faculty Size	OM/IS related degrees offered in Undergraduate Program
1	University of Pennsylvania (Wharton)	Operations and Information Management	25	Track: 1. Decision Process 2. Information Systems 3. Operations Management
3	University of California–Berkeley (Haas) *	Operations and Information Technology Management	16	none
5	New York University (Stern)	Information, Operations, & Management Science (IOMS)	34	Major: Information Systems
7	University of Texas–Austin (McCombs) *	Information, Risk, & Operations Management (IROM)	65	Major: 1. Management Information Systems 2. Supply Chain Management
9	Univ. of Southern California (Marshall)	Information & Operations Management	27	Concentration: 1. Information Systems 2. Operations Management
12	Emory University (Goizueta) (GA)	Information Systems & Operations Management	16	Major: 1. Information Technology 2. Management of Operstions 3. Decision Analysis
12	Univ. of Wisconsin–Madison *	Operations and Information Management	8	Major: 1. Operations and Technology Management 2. Information Systems
18	Pennsylvania State U.–University Park (Smeal) *	Supply Chain and Information Systems	19	Major: 1. Management Information Systems 2. Supply Chain and Information Systems
18	University of Notre Dame (IN)	Management	14	Major: Information Technology Management
21	Georgetown University (McDonough) (DC)	Operations & Information Management	14	Concentration: Operations & Information Management
21	University of Arizona (Eller) *	Management Information Systems	13	
21	Univ. of Maryland–College Park (Smith) *	Decision, Operations & Information Technologies (D&IT)	36	Major/Concentration: 1. Information Systems 2. Operations and Quality Management
25	University of Washington *	Information Systems & Operations Management (ISOM)	16	Concentration: 1. Information Systems 2. Operations Management
27	Babson College (MA)	Technology, Operations, and Information Management (TOIM)	28	Concentration: Information Technology Managemet
27	University of Florida (Warrington) *	Information Systems & Operations Management	12	Major: Decision & Information Sciences
33	Southern Methodist University (Cox) (TX)	Information Technology & Operations Management (ITOM)	10	none
33	Texas A&M Univ.–College Station (Mays) *	Information and Operations Management	22	Major: 1. Management Information Systems 2. Supply Chain Management
33	University of Iowa (Tippie) *	Management Sciences	15	Major: Management Information Systems
41	University of Colorado–Boulder *	Systems Department	7	Track: 1. Information Systems 2. Supply Chain Systems
48	College of William and Mary (VA)*	Operations and Information Technology	12	Process Management & Consulting
48	Santa Clara University (Leavey) (CA)	Operations & Management Information Systems (OMIS)	12	Operations & Management Information Systems
48	University of Alabama (Culverhouse) *	Information Systems, Statistics, and Management Science	22	Major: 1. Operations Management 2. Management Information Systems

** denotes a public school.*

Appendix E: Sample Industry Job Opportunities

In this appendix is listed information from various job postings on both Information Systems and Operations Management.

Omniture: Implementation Consultant

Interaction: Internal & Clients (All Levels)
Reports to: Director of Implementation
Levels: Junior, Mid-career, Senior

How would you like to work for one of the fastest growing Software companies in Utah? Since going public in June of 2006, Omniture has become one of the most prominent and competitive web analytic companies in the market today. Headquartered in Orem, Utah, Omniture is the pioneer of next-generation online analytics technology. It is the only company in its market to offer a comprehensive view of activity on a company's website, including historical (data warehouse) and real-time analysis and reporting. Omniture has the highest level of retained and satisfied customers in the market, including eBay, AOL, Wal-Mart, Gannett, Microsoft, Oracle, Intel, GM and Hewlett-Packard.

The employees at Omniture are "the best of the best". They are smart, innovative, driven, and – most importantly – nice. At Omniture, we are looking for professionals in various areas of expertise. There are roles in Engineering, Marketing, Sales, Professional Services, and many others. A career at Omniture will not only provide extensive career advancement and experience, but also great benefits, competitive salaries and employee perks. If you are interested in joining our team, please apply online today!

Description

Implementation Consultants customize Omniture code to each client's exact business requirements and reporting needs, help each client implement code throughout their website, and perform quality checks to ensure that implementation has been completed thoroughly. Although not a programming position, it is certainly a very technical position with constant customer interaction. This position includes all of the following aspects:

In-depth knowledge of client website, business model, and online marketing strategy.

Heavy interaction and support on the phone and sometimes in person with client employees all the way up to the VP level of Fortune 500 companies

- Expert in
  - Internet and online marketing
  - Website analysis
  - JavaScript and other Internet technologies
- SiteCatalyst product expert
- Project management
- Technical writing

Responsibilities

- Gather client business objectives using internal methodologies and tools
- Client implementation training
- Perform technical pre-assessment with client's IT personnel and assist in development of the risk assessment.

- Write logic necessary within client software to generate required values for implementation of Omniture technology
- Coach clients throughout the implementation process
- Ensure that clients complete their implementations on schedule
- Document issues and best practices relating to specific platforms or configurations
- Debug implementation problems, JavaScript errors, and product functionality
- Maintain customer contact and daily status updates for all outstanding issues
- Manage customer relationship to ensure that expectations are realistic and that the client is happy
- Coordinate with engineering department to ensure timely closure of quality issues
- Fully understand and document customer requests, and assign appropriate resources to resolve any issues

Requirements

- Extensive knowledge of Microsoft Office, email, and how the Internet and websites work.
- Must be self-managed, responsive, and dedicated to customer support.
- Strong understanding of HTML and web protocols.
- Strong JavaScript skills
- Strong technical writing skills (writing samples helpful)
- Bachelor's degree

Special Consideration Given For

- Strong client service experience, preferably with Fortune 500 companies
- Degree in information systems or related field
- Master's degree or other advanced education
- Web development experience
- ERP or other software implementation experience
- Demonstrated exceptional customer skills from previous employment
- Project management experience
- Consulting experience
- Demonstrated programming skills (with samples) in languages such as Perl, C/C++, CGI, Java, ASP, VBScript, or PHP

Sharp Analytics: Business Intelligence Analyst

We are a rapidly growing services and technology division of iCrossing, the largest privately-held digital marketing company in the United States. Sharp Analytics is based in Salt Lake City, with analysts in Scottsdale, AZ, Chicago, and New York. We do consulting work, without the extensive travel and instability of normal consulting organizations. If you are looking for variety and fast-paced, interesting work, take a look at Sharp Analytics.

Job Description:
As a member of the Sharp Analytics Business Intelligence practice you will be responsible for systems analysis, design, and implementation of reporting and analytics systems. You will help provide technical support to the sales staff. You will meet with clients to identify project requirements, develop project plans and schedules, write, test and implement software according to the client's specifications. You will be required to interact with people at many levels within an organization, from the CEO to applications developers.

Job Functions:

- Interact with clients to establish applications and systems requirements for assigned projects.
- Create design specifications using current techniques and tools or techniques and tools required by the client.
- Establish timelines for project milestones.
- Develop SQL reports and reporting dashboards per customer specifications.
- Keep current with the latest versions of Business Intelligence software, techniques and practices. Research and develop new ideas in Business Intelligence and Enterprise Reporting strategies.
- Supervise projects and coordinate technical resources as needed within the scope of the project.
- Work within the development team to foster good communication throughout the project life cycle.

Skills needed:
Oracle is the foundation of all of our systems. The candidate should have some knowledge of SQL and relational database concepts. We also look for:

- Ability to deal with complex situations and collaborate effectively with local and remote personnel in order to provide fast and effective problem resolutions.
- Superior communication skills.
- Ability to work in a fast-paced environment.
- Must be team-oriented, possess excellent organizational and written skills, and demonstrate the ability to communicate with either a software developer or business audience.

Education and Experience Required:
The candidate should have (or be close to completing) a Bachelors or Masters degree in either Information Systems, Business Administration, Accounting or Statistics. He or she should also have 3+ years of proven success developing analysis or reports to answer strategic business questions.

UPS: Information Systems Security Specialist

Skills: Knowledge of **systems** software, intrusion detection **systems**, CIRT. Requires sensitive clearance
Date: 11-6-2007
Pay rate: 48,520-81,828
Job description:
The United States Postal Service has the following excellent and challenging employment opportunity for highly motivated and innovative individuals to work in our **Raleigh Information Technology Service**

Center office in **RALEIGH, NC**. Successful candidates must demonstrate through a combination of education, training, and experience the following requirements:

REQUIREMENTS:
Knowledge of **systems** software, computer application **systems**, and database management.

Ability to perform audits of data processing security programs and procedures within data processing sites to ensure compliance with national ADP security policies and guidelines.

Ability to review new and existing hardware and make recommendations related to security specifications.

Ability to monitor an installation's system backup procedures and make recommendations for improvements.

Ability to communicate orally and in writing sufficient to prepare correspondence and security specifications, to provide technical guidance to management, and to interact with corporate representatives, vendors, consultants, and associations.

ADDITIONAL REQUIREMENTS (for this duty assignment):
Knowledge of intrusion detection **systems**.
Knowledge of computer security incident response (CIRT) in a complex security operation.

SPECIAL CONDITION(S): This position requires a sensitive clearance.

DESIRABLE EDUCATION: A baccalaureate or post-graduate degree in business or **information** technology.

Junior CRM Analyst, Overstock

- **Responsibilities:**
  - Retrieving, analyzing and interpreting data, identifying key business issues, and presenting recommendations in a concise, meaningful way, both orally and in a written format.
  - Assist in developing models to score customers and predict behavior.
  - Acting as the subject matter expert in regard to the company's customer data.
- **Interpersonal skills:**
  - Highly organized, self motivated, strong work ethic, detail orientated and thorough.
  - Ability to manage expectations of others and proactively keep others apprised of results and progress.
  - Ability to thrive and enjoy a fast paced, dynamic and entrepreneurial environment.
  - Strong presentation and team working skills. Ability to learn quickly and adapt in a dynamic environment with little direction.
- **Minimum Technical skills:** 1+ years of moderate SQL or programming. A solid understanding of statistics, including modeling techniques, correlation, and probabilities. Advanced Excel skills (pivot tables, regressions, vlookups etc.). MS Office proficiency.

- **Bonus skills:** SAS experience a big plus. Experience with techniques such as clustering, neural networks and decision trees. Experience with relational databases and reporting tools. CRM experience and knowledge.
- **Education:** Bachelor of Science in statistics, mathematics, econometrics or similar quantitative background/experience.

Senior CRM Analyst, Overstock

- **Responsibilities:**
  - Retrieving, analyzing and interpreting data, identifying key business issues, and presenting recommendations in a concise, meaningful way, both orally and in a written format.
  - Assist in developing models to score customers and predict behavior.
  - Acting as the subject matter expert in regard to the company's customer data.
  - Managing ongoing model improvement and implementation.
  - Assisting with various other analysis and reporting as needed.
- **Interpersonal skills:**
  - Highly organized, self motivated, strong work ethic, detail orientated and thorough.
  - Ability to manage expectations of others and proactively keep others apprised of results and progress.
  - Ability to thrive and enjoy a fast paced, dynamic and entrepreneurial environment.
  - Strong presentation and team working skills. Ability to learn quickly and adapt in a dynamic environment with little direction.
- **Minimum Technical skills:** 2+ years of intermediate / advanced SQL or programming. 2+ years CRM analytics. Advance ability in statistics, including modeling techniques, correlation, and probabilities. Advanced Excel skills (pivot tables, regressions, vlookups etc.). MS Office proficiency. 2+ SAS experience or equivalent tools. Experience with techniques such as clustering, neural networks and decision trees. Experience with relational databases and reporting tools.
- **Education:** Bachelor of Science in statistics, mathematics, econometrics or similar quantitative background/experience. Masters degree preferred. Marketing experience preferred.

Data Analyst. Aculus LLC

Job Summary
Seeking a Data Analyst to support Sales, Marketing, and Programs Managers through the production of routine oriented-adhoc reports. Through the use of data mining, data manipulation and analysis techniques, the Data Analyst will provide reports and analyses that their customers achieve goals and maintain profitability while providing value added services. The Data Analyst will also assist with RFP repricing and providing opportunity analyses.

Major responsibilities:

* Excellent working knowledge of the Microsoft Office Suite, especially Word and Excel (including pivot tables, built-in functions, and macros)
* Analytical and problem solving skills

* Working knowledge of relational databases
* Experience with Data Modeling and Database Administration
* Strong experience with mapping and tracking of data
* Additional training in Data modeling, data architecture design, data resource management desired

Skills and Educational Requirements

* BS Degree in Information Systems or related fields
* Experience with data analysis
* Experience with quality assurance and testing is desired
* Background in data analysis and designing and/or implementing systems utilizing a major RDBMS is desired
* Experience writing SQL is preferred
* Self-starter requiring minimal direction
* High work-ethic and willing to commit to accomplishing tasks on a deadline
* Excellent communication skills
* Excellent problem solving skills
* Excellent team player

DBA, aculus LLC

Job Summary
Under minimum supervision, responsible for managing all aspects of Database design, applications performance, data modeling, database applications availability, tuning, and routine maintenance and upgrade. The ideal candidate will have experience supporting enterprise applications on both Linux and Windows platforms.

Major responsibilities:

* Installing database server, backup and recovery, performance, tuning, upgrades ◆ patching and proactive monitoring.
* Database design.
* Maintaining and tuning databases including system parameters, tablespaces, tables, indices, triggers and procedural languages in single server and clustered environments.
* Participating in application issue investigation including helping troubleshoot daily issues.
* Provide assistance in the technical design of minor enhancements that rely on new database objects.
* Assisting with application system testing and regression testing efforts include participation in change review processes for database and application changes and assisting with overall data architecture.

Skills and Educational Requirements

* BS Degree in Information Systems, Computer Science or related fields
* Experience designing system and enterprise data architectures Skills
* Experience in perl and Linux command line programming
* Good debugging and testing skills

* Require SQL and PL/SQL or T-SQL skills
* Experience in Oracle, PostgreSQL and MySQL
* Self-starter requiring minimal direction
* High work-ethic and willing to commit to accomplishing tasks on a deadline
* Excellent communication skills
* Excellent problem solving skills
* Excellent team player

QA Engineer, aculus LLC

Job Summary
The ideal candidate will exhibit a high level of self-motivation and possess the ability to take full ownership of the entire testing process. Excellent verbal and written communication skills are a must as they will be interacting with resources from every aspect of the company. In addition, you must be experienced in the complete testing cycle from formally inspecting requirements through executing and evaluating test cases and communicating the results.

Major responsibilities:

* Tests object-oriented software, performing validation testing and integration.
* Verifies software functionality for compliance with design, ensuring that software adheres to prescribed standards.
* Evaluates security vulnerabilities of software and provides technical assistance in identifying production problems.
* Reviews functional requirements, develops test tools, and conducts inspections of test deliverables.
* Identifies issues, risks, and risk mitigation strategies for a successful test effort, and documents results of the functional test execution.
* Identifies process improvement areas.
* Troubleshoots and resolves problems and issues that arise in production code-base.
* Represent QA in cross-functional teams and lead project efforts in final stages and to completion.

Skills and Educational Requirements

* BS Degree in Computer Science, Information Systems or equivalent experience
* Knowledge of Linux platforms from a test/security perspective, with a background in testing Web environments
* Ability to write test cases based on system requirements
* Basic understanding of Java and/or other object oriented programming principles
* Perl programming skills
* Experience with version control methods and the CVS tool or equivalent
* Self-starter requiring minimal direction
* High work-ethic and willing to commit to accomplishing tasks on a deadline
* Good communication skills
* Excellent problem solving skills
* Excellent team player

UI Engineer, aculus LLC

Job Summary
Develop data intensive reporting applications with cutting edge web based technologies. Apply AJAX and Javascript expertise to create highly interactive and responsive interface for extremely large database backend.

Major responsibilities:

* Gather user requirements
* Design beautiful application screens ◆ color scheme, layout, and workflow
* Develop application from scratch using HTML, JavaScript, CSS and AJAX best practices. Must have cross browser development experience.

Skills and Educational Requirements

* BS Degree in Computer Science, Information Systems, Graphic Arts or related fields
* Experience in web programming (HTML, XHTML, CSS, JavaScript, PHP, AJAX, SQL, at least one DB technology)
* Excellent code craft - writing, source control, debugging and testing skills
* Self-starter requiring minimal direction
* High work-ethic and willing to commit to accomplishing tasks on a deadline
* Good communication skills
* Excellent problem solving skills
* Excellent team player

Web Data System Engineer, aculus LLC

Job Summary
The Web Data System Engineer will be responsible for developing, maintaining, and operating data integration, database, and reporting applications for large-scale web server monitoring application.

Major responsibilities:

* Maintain and develop database and web reporting applications
* Maintain and develop data ETL and integration programs
* Coordinate and operate data ETL, integration and reporting systems
* Identify, document and report operational and development issues
* Interact with users to identify issues or new requirements
* Coordinate with product managers, developers and QA engineers on development, test, maintenance and support plan for new requirements

Skills and Educational Requirements

* BS Degree in Information Systems, Computer Science or related fields
* Experience in Perl, command line Linux, SQL, MySQL, web programming (CGI, PHP, AJAX) and Apache module programming required
* Good debugging and testing skills
* Self-starter requiring minimal direction
* High work-ethic and willing to commit to accomplishing tasks on a deadline
* Excellent communication skills
* Excellent problem solving skills
* Excellent team player

Zrii: Buyer/Inventory Forecast Analyst

Information
Job ID: 20716
Job Title: Buyer / Inventory Forecast Analyst
Job Reference Num:
Organization Name: Zrii
Referenced Schedule:
Wage/Salary: $37,000 - 40,000
Job Description: SUMMARY
Analyzes sales numbers, monthly demand for sales, and inventory levels to ensure orders are placed to replenish stock. Will use MRP knowledge to cut purchase orders for JIT production. Provides reports to show sales and production data to ensure proper inventory levels.
ESSENTIAL DUTIES AND RESPONSIBILITIES include the following.
Other duties may be assigned.

- Plans and manages production schedules to meet customer delivery requirements and best utilize the company's productive capacity.
- Responsible for the analysis of sales order data with respect to capacity planning and material requirements.
- Responsible for the management of inventory levels, schedules and availability of selected item, either manufactured or purchased, to meet production schedules.
- Complete shipping information and delivery date.
- Receive and review Sales Orders against current requirements
- Release Purchase Orders for production material, packaging, components, raw materials, and finished goods.
- Interface with manufacturing personnel and multiple departments on material status and production planning issues.
- Enter data for quantities of parts issued and transferred between locations, inventory and cycle count adjustments, into computer database.
- Receive and issue finished goods into computer database.
- Troubleshoot quantity discrepancies with manufacturing and inspection personnel.
- Record and monitor all items with shelf-life daily and notify appropriate personnel when material has expired.
- Prepare monthly reports for cycle count and pick-lists count for monthly highlights.

- Prepare and participate in yearly physical inventory.

COMPETENCIES

To perform the job successfully, an individual should demonstrate the following competencies:

- Analytical - Synthesizes complex or diverse information; Collects and researches data; Uses intuition and experience to complement data; Designs work flows and procedures.
- Problem Solving - Identifies and resolves problems in a timely manner; Gathers and analyzes information skillfully; Develops alternative solutions; Works well in group problem solving situations; Uses reason even when dealing with emotional topics.
- Change Management - Develops workable implementation plans; Communicates changes effectively; Builds commitment and overcomes resistance; Prepares and supports those affected by change; Monitors transition and evaluates results.
- Cost Consciousness - Works within approved budget; Develops and implements cost saving measures; Contributes to profits and revenue; Conserves organizational resources.
- Judgment - Displays willingness to make decisions; Exhibits sound and accurate judgment; Supports and explains reasoning for decisions; Includes appropriate people in decision-making process; Makes timely decisions.
- Planning/Organizing - Prioritizes and plans work activities; Uses time efficiently; Plans for additional resources; Sets goals and objectives; Develops realistic action plans.

*Qualifications - IF a degree is required, you MUST include degree level (BS, MS, PhD) and major(s):

QUALIFICATIONS

To perform this job successfully, an individual must be able to perform each essential duty satisfactorily. The requirements listed below are representative of the knowledge, skill, and/or ability required. Reasonable accommodations may be made to enable individuals with disabilities to perform the essential functions.

EDUCATION AND/OR EXPERIENCE

Associates's degree and one to two years related experience and/or training; or equivalent combination of education and experience.

COMPUTER SKILLS

To perform this job successfully, an individual must be computer literate and should have a strong knowledge of Microsoft Excel Spreadsheet software.

JOB KNOWLEDGE, SKILLS AND ABILITIES

- Must possess solid analytical skills in forecasting and anticipating production needs and capabilities.
- Ability to solve practical problems and deal with a variety of changing situations under stress.
- Must be detail oriented and pay close attention to accuracy.
- Ability to properly handle confidential information and records.
- Able to analyze information gathered in order to identify potential problems or discrepancies.

*Application Instructions: Apply by email at jobs@zrii.com

Please put Buyer/Inventory in the subject line, Thanks.

Posting Information

*Job Location(s): Draper, UT

Job Category (Preferred Method):

Business/Finance/Economics

Management

Minimum GPA:

Graduation Start:

Graduation End:
Degrees: Bachelor's
*Majors: ALL MAJORS
*Post Date: 04/04/2008
*Expiration Date: 05/04/2008
Miscellaneous Information
Tuition Reimbursement: No
*Position REQUIRES a degree: No
*Hours: Full-Time

Other Job Categories for Operations Management

11-1021 General and Operations Managers

Plan, direct, or coordinate the operations of companies or public and private sector organizations. Duties and responsibilities include formulating policies, managing daily operations, and planning the use of materials and human resources, but are too diverse and general in nature to be classified in any one functional area of management or administration, such as personnel, purchasing, or administrative services. Include owners and managers who head small business establishments whose duties are primarily managerial. Exclude "First-Line Supervisors/Managers of Retail Sales Workers" (41-1011) and workers in other small establishments.

11-3051 Industrial Production Managers

Plan, direct, or coordinate the work activities and resources necessary for manufacturing products in accordance with cost, quality, and quantity specifications.

11-3061 Purchasing Managers

Plan, direct, or coordinate the activities of buyers, purchasing officers, and related workers involved in purchasing materials, products, and services. Include wholesale or retail trade merchandising managers and procurement managers.

11-3071 Transportation, Storage, and Distribution Managers

Plan, direct, or coordinate transportation, storage, or distribution activities in accordance with governmental policies and regulations. Include logistics managers.

11-9111 Medical and Health Services Managers

Plan, direct, or coordinate medicine and health services in hospitals, clinics, managed care organizations, public health agencies, or similar organizations.

13-1081 Logisticians

Analyze and coordinate the logistical functions of a firm or organization. Responsible for the entire life cycle of a product, including acquisition, distribution, internal allocation, delivery, and final disposal of resources.

15-2031 Operations Research Analysts

Formulate and apply mathematical modeling and other optimizing methods using a computer to develop and interpret information that assists management with decision making, policy formulation, or other managerial functions. May develop related software, service, or products. Frequently concentrates on collecting and analyzing data and developing decision support software. May develop and supply optimal time, cost, or logistics networks for program evaluation, review, or implementation.

15-2041 Statisticians

Engage in the development of mathematical theory or apply statistical theory and methods to collect, organize, interpret, and summarize numerical data to provide usable information. May specialize in fields, such as bio-statistics, agricultural statistics, business statistics, economic statistics, or other fields. Include mathematical statisticians.