

Information Systems and Technology

Career Paths: Information Systems and Technology

In today's successful organizations information systems and technology have become indispensable in the way managers define and execute corporate strategy, manage valuable resources, and formulate their organization's unique value proposition. The IST Portfolio equips IT-capable managers and consultants for a variety of functional areas including Finance, Marketing, Operations, Supply Chain, and Human Resources who are able to leverage IST resources for competitive advantage. The IST Portfolio also develops leaders for the MIS organization who conduct systems and technology planning and analysis, software project management, and technology-based support for business operations and processes.

Some of the typical job descriptions that our IST graduates obtain are:

- *Consulting:* Consultants work in teams with clients to design and implement a wide assortment of IT and system applications. Enterprise systems applications, customer relationship management tools, and e-business platforms are some of the projects consultants implement for clients. These positions demand an eclectic set of technical knowledge, cross-functional business understanding, and strong leadership and communications skills. Consultants typically become well versed with vendor-specific platforms and must work to integrate these systems with the client's existing systems and the business strategy of the firm.
- *Project Management:* Project management requires coordination of various teams to achieve timely and economical development and procurement of new software solutions, and successful implementation of new systems in organizations. Strong leadership and communication skills, project management skills, an understanding of the functional areas of the business and the industry context for the system, and the ability to evaluate/justify new technologies are all important prerequisites.
- *Business/Process Analyst:* Initiating and implementing new systems applications requires an understanding of user requirements, the affected business processes in their industry contexts, and logical modeling of the proposed system. Since analysts bridge the gap between application users and developers, they need business and technical expertise, strong analytical modeling capabilities, and effective communication skills. Analysts apply cutting-edge modeling methodologies such as use case scenarios, UML, object-oriented analysis and modeling, and computer-aided systems engineering tools, along with other evaluative approaches from capital budgeting and managerial accounting, and strategic management.
- *Line Management in Other Functional Area of Business:* By combining IST expertise with knowledge of a functional area of business such as Finance, Marketing, or Operations, future senior managers will be able to recognize and apply new technology solutions to problems in their organization early in their careers. IT-capable product managers, financial analysts, supply chain analysts, and plant managers can become effective in the information economy by utilizing strong analytical skills, understanding technology evolution and adoption, and accurately estimating the costs, benefits and risks associated with new applications.

Skills Desired:

Individuals in the IST career path create strategic and technical solutions to enhance business processes. They recognize emerging technology trends, conceive and design new business applications, and support the development and installation of new technical solutions for business problems—transforming the

competitive capabilities of the firm in the process. All managers and consultants in this area must develop strong leadership skills, communicate effectively, possess analytical problem solving skills, be able to build and lead cooperative teams and partnerships, and understand the organizational change process.

- Consultant skills include the ability to define and analyze business, technical and strategic problems. They should also be able to develop and install creative process and technology solutions, lead and work within teams, communicate effectively, perform financial analysis and capital budgeting, and interface with diverse functional areas.
- Project management skills include evaluation of new technology solutions, cost/risk estimation, management of the systems development life cycle, IT outsourcing, systems implementation, and effective project-related communication with senior management.
- Business process and systems analysis skills include modeling user requirements, process modeling, analytical skills, use of CASE tools, and enough of an understanding of programming to be able to do some of the work that others in a software development team actually do full time.
- Line managers in functional areas of business are able to leverage IST resources when they develop skills in the strategic use of IT, decision analysis, databases, systems development, applications integration, and technology architecture.

Enterprise Recommendation:

Many projects of the Carlson Consulting Enterprise have an IST component, making it the best enterprise choice for students seeking to develop information systems and technology expertise. The Carlson Consulting Enterprise provides an experiential learning opportunity for students to work for firms on consulting projects. This program is unique in that (1) students work under the direction of professional consultants who have many years of experience in consulting, (2) students develop leadership skills by leading projects and leading the enterprise, (3) the two and a half semester Carlson Consulting Enterprise course (6 credits) provides training in consulting skills, and (4) the Carlson Consulting Enterprise advisory board provides feedback to the students, networking opportunities for students, and advice for the Enterprise directors. Selection for the program is very competitive. The program starts in the Spring B term of the first year (2 credits) and continues for both semesters of the second year (2 credits each term).

Job Titles:

Chief Information Officer
Strategic Consultant
Industry Consultant
Enterprise Application Integrator
Systems Analyst
Systems Security Administrator
Information Management Associate
Technology Strategist
Vendor/Partner Relationship Manager
Financial Analyst

Chief Technology Officer
E-Business Consultant
Applications Project Manager
Information Technology Specialist
Business Process Analyst
Technology Management Associate
Business Intelligence Specialist
Outsourcing Manager
Supply Chain Manager
Product Manager

Job Hunting:

Companies from a variety of industries recruit graduates with expertise in information systems and technology. Many firms seek students who have knowledge in the areas of operations, marketing, or finance who can combine this knowledge with cutting-edge technology skills. In recent years, on-campus recruiting has focused on business process and IT consulting, with many students finding positions in leading firms in California, New York, Illinois, Massachusetts and New Jersey, as well as with the best firms in Minnesota. Graduates typically seek employment with Fortune 500 firms where IT and information processing plays a critical role (e.g., financial services, brand management firms, multi-divisional manufacturing), especially in the top consulting companies both nationally and abroad.

Resources:

Web Resources

Wet Feet Career Guides: Information Technology, System Administration.

www.wetfeet.com/cb/schools/minnesotacarlson/toc.asp

Vault.com – Technology and Science Industry Home. Offers company and industry overviews. Message boards organized by company. Good forum for seeing insiders discussing their concerns. vault.com/hubs/508/hubhome_508.jsp?ch_id=508

Vault.com – Operations and IT Consulting (within Consulting Home). Offers company and industry overviews, articles. vault.com/hubs/502/channelhome_502.jsp?ch_id=341

Brint.com. A content and community portal site that has been highly rated by several publication including Business Week, Fortune, the Wall Street Journal, Computerworld, and Information Week to name a few. www.brint.com

Knowledge@Wharton. Knowledge@Wharton is a bi-weekly online resource that provides articles on current business insights, analysis of current business trends, interviews with industry leaders, and other useful resources. knowledge.wharton.upenn.edu

Other Online Resources

- E-Commerce Times – www.ecommercetimes.com
- Business 2.0 – www.business20.com
- Computerworld – www.computerworld.com
- CNET.com – www.cnet.com
- InternetWorld – www.internetworld.com

Print Resources

Consulting Magazine. The leading magazine covering the consulting industry. The primary companies covered are strategy firms (McKinsey, BCG, etc.) and former “Big 5” firms (Accenture, Cap Gemini Ernst & Young). www.consultingcentral.com/features/10_02/toc.html

CIO magazine. Serves the needs of current and future CIOs and other senior IT experts by providing up-to-date perspectives on IT usage in today’s organization. www.cio.com

Strategy+Business. Thought-leadership magazine/web site for senior executives and other thought leaders in management. S+B provides insights and practical guidance on management, innovation, and strategy. Published by Booz Allen Hamilton. www.strategy-business.com

Other Journals and Publications

- McKinsey Quarterly www.mckinseyquarterly.com
- MIS Quarterly and MIS Quarterly Executive www.misq.org
- Communications of the ACM www.acm.org
- InformationWeek www.informationweek.com

Career Information Guides. Available in the GBCC

Carlson Affiliations

Carlson Technology in Business Club (student organization): Carlson Speaker Series, site visits, social and networking events, and recruiting trips.

Carlson Consulting Club (student organization): Educational events, networking engagements, and case interviewing practice.

Carlson Operations Management - SCM Club (student organization): provides students with a broader understanding of the opportunities, career paths, trends, and current issues in supply chain

and operations management, which it does through speakers, plant tours, discussion panels, faculty interactions, and other activities.

Management Information Systems Research Center – MISRC: this center is home to the internationally-respected academic research journal *MIS Quarterly* and provides opportunities for the Carlson community and local managers to network and interact with each other through MISRC-sponsored activities such as seminars, discussion groups, recruiting events, and student research projects. A cooperative affiliation with the Information Industry Initiative provides access to events like the annual Electronic Commerce Conference. www.misrc.umn.edu

University of Minnesota Digital Technology Center: this center is home to several digital technology laboratories and includes approximately 40,000 square feet of assignable space for state-of-the-art presentation and conference rooms, work space for collaborative ventures, and advanced networking and computing laboratories. www.dtc.umn.edu

University of Minnesota Patents and Technology Marketing: PTM seeks to identify and protect commercializable University technologies, including inventions and copyrightable materials, and transfers these technologies to the private sector through licensing or by participating in starting new companies. Carlson Ventures Enterprise works with PTM to develop business models and find venture funding to commercialize University technologies. www.ptm.umn.edu

Professional Affiliations

Society for Information Management. SIM is a network of nearly 3,000 IT leaders including CIOs, senior IT executives, consultants, and others. The SIM Minnesota chapter has been the organization of choice for IT executives in Minnesota for over 20 years. Membership includes IT executives, consultants, and academics from Minnesota businesses and organizations. Chapter meetings include presentations from both business and technology experts. Chapter meetings provide excellent opportunities for peer networking and connections to the Minnesota IT community. Visit www.simmn.org and www.simnet.org for details.

Institute of Management Consultants. Minneapolis/St. Paul Chapter, 612-891-1994. A professional association made up of management consultants who have been in practice for a minimum of 10 years. Promotes professionalism and competence in the consulting community.

Project Management Institute. 100,000 members in 125 countries who are practicing and studying project management in many different industry areas, including aerospace, automotive, business management, construction, engineering, financial services, IT, pharmaceuticals and telecommunications. Members and project management stakeholders can take advantage of the extensive services offered through PMI. See www.pmi.org for additional information.

Customer Relationship Management Association. The CRMA is a member organization that offers networking and educational events related to CRM. Meetings are held quarterly and feature prominent industry analysts, consultants and experts. Visit www.crm-a.org for more information.

Association for Computing Machinery (ACM) Special Interest Groups (SIG)

Several ACM SIG groups are relevant for information systems and technology, including:

- Applied Computing – www.acm.org/sigapp
- Electronic Commerce – www.acm.org/sigecom
- Groupware – www.acm.org/sigroup
- Management Information Systems – www.acm.org/sigmis
- Management of Data – www.acm.org/sigmod
- Mobility of Systems, Users, Data and Computing – www.acm.org/sigmobile
- Security, Audit and Control – www.acm.org/sigsac
- Software Engineering – www.acm.org/sigsoft

Professional Portfolio: Information Systems and Technology

Course Information

Highly Recommended Courses

IDSc 6490	Special Topics: Business Process Excellence (2 cr)
IDSc 6471	Knowledge Management (2 cr)
IDSc 6423	Enterprise Systems Technologies (2 cr)
IDSc 6442	Electronic Auctions and Exchanges (formerly: Technologies for B2B E-Commerce) (2 cr)
FINA 6242	Advanced Corporate Finance Analysis and Decisions (4 cr)
MGMT 6050	Management of Innovation and Change (2 cr)

Suggested Courses

IDSc

IDSc 6401	Decision Technologies for E-Business (2 cr)
IDSc 6421	E-Commerce in the Financial Services Industry (2 cr)
IDSc 6481	Managerial Decision Making (2 cr)
IDSc 6490	Special Topics: Information Security and Reliability (2 cr)
IDSc 6490	Special Topics: Business Intelligence (2 cr)
IDSc 6490	Special Topics: Information-based Goods in the Digital Economy (2 cr)

Operations

OMS 6041	Project Management (2 cr)
OMS 6051	Service Management (2 cr)
OMS 6056	Managing Supply Chain Operations (4 cr)
OMS 6059	Quality Management and Six Sigma (4 cr)
OMS 6072	Managing Technologies in the Supply Chain (4 cr)

Marketing

MKTG 6020	Logistics and Supply Chain (2 cr)
MKTG 6060	Distribution and Supply Chain Management (4 cr)
MKTG 6073	Technology Marketing (4 cr)
MKTG 6078	Integrated Marketing Communications (4 cr)
MKTG 6080	Internet Marketing (2 cr)
MKTG/OMS 6065	Strategic Supply Chain Management (2 cr)

Finance

FINA 6241	Corporate Finance Analysis and Decisions (4 cr)
FINA 6622	Financial Risk Management (2 cr)

Strategy

MGMT 6040	Globalization, Technology and International Management (2 cr)
MGMT 6070	Strategies for E-Business (2 cr)

Entrepreneurship

ENTR 6041	New Product Design and Business Development (6 cr, 2 semesters)
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Accounting

ACCT 6100	Financial Statement Analysis (4 cr)
ACCT 6160	Accounting for Mergers, Acquisitions and Derivatives (2 cr)

Remember: Recruiters want more than functional skills. To differentiate yourself, consult the document “Building Your Portfolio.” There you will find suggestions for additional classes that can add international exposure, provide a strategic framework and build entrepreneurial skills, among others.