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A LEARNER-CENTERED CURRICULUM FOR THE ASPIRING CHIEF INFORMATION OFFICER

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Abstract

Distance-learning institutions such as Capella University most effectively serve mid-career, working adults who seek additional education that can have an immediate impact on their lives. Capella has recently developed a new graduate IT Management curriculum to serve a specific segment within this market – the aspiring Chief Information Officer. Since the individuals in this market are experienced professionals who already have IS functional skills, the curriculum focuses on developing competencies in management, both generally and within IS. The curriculum addresses these via a basic core of management courses, and a set of eight IT Management specialization courses that differs somewhat from that found in most graduate IS programs. The program is delivered via distance education methods, serving the learner's need to advance his or her education while remaining fully engaged in career and personal life.

Keywords: IS education, curriculum design, IS management

Introduction – Capella's Market and Focus

Capella University is exclusively a distance-learning institution. As such, it serves working adults, most of whom are in mid-career, who seek additional education to address specific needs – to boost or shift a career or effect a life change. These learners seek education that is highly specific to their needs and that has immediate impact on their ability to pursue their goals. Success in curriculum design, therefore, depends heavily on tailoring the course offerings to fit the learner goals and provide the immediate impact.

In early 2003, Capella reexamined the curriculum for its Master of Science (M.S.) degree specializing in Information Technology Management, based on the realization that the current curriculum did not match well with its learners' needs. This paper describes the curriculum redesign. It reviews the literature focused on IS/MIS/IT education to provide a reference point for Capella's situation and actions, describes the particular needs that Capella sought to address, and presents the revised curriculum and its rationale. The process and resulting curriculum illustrate one approach to tailoring the IS model curriculum to meet very specific and focused needs.

Graduate Education in Information Systems

Curriculum Recommendations and Studies

Over the years, IS professional organizations such as ACM, AIS, and AITP have created model IS curricula for both undergraduate and graduate programs (Tucker and Barnes, 1991; Couger, et al., 1995; Davis, et al., 1997; Gorgone and Gray, 1999). These model curricula prescribe topics, learning objectives, course content (at a high level), and course sequencing, based on industry and academic survey results (Lightfoot, 1999). They assume one or more markets to be served, and a body of knowledge and skills students should acquire to enter those markets. Some of these, especially the one entitled IS'97 (Davis, et al., 1997), have been widely adopted and have had great impact on the design of actual programs (Lightfoot, 1999).

These model curricula are supplemented by (and, to some extent, based upon) a body of research that surveys academics and professionals to determine what skills they think IS students should have (Nelson, 1991; Leitheiser, 1992; Trauth, Farwell, and Lee, 1993; Lee, Trauth, and Farwell, 1995; Tang, Lee, and Koh, 2000; Ehie, 2002; Chrysler and Van Auken, 2002), or that studies other indicators of skill needs. For example, Todd, McKeen, and Gallupe (1995) examines advertisements placed in the MIS Quarterly for IS positions. These studies typically show that skill needs change over time as information technology evolves, and offer recommendations for tuning the standard curriculum (Lightfoot, 1999; Desai and Von der Embse, 2001). They reach two conclusions particularly relevant to Capella's efforts to shape a curriculum that best addresses its target market:

1. One size does not fit all. Different students will pursue different career paths, and should have access to programs tailored to those career path choices. At the graduate level, the variation in background skills and experience that students bring to their program also contributes to the need to tailor program offerings. As Lightfoot (1999, p. 46) puts it, "The 'single career track' IS professional is a thing of the past."
2. Non-technical skills are at least as important as technical skills. Virtually every examination of IS educational needs recognizes the importance of providing both business and technical training. They differ only in their evaluation of relative importance: whether the business skills are as important as the technical skills (Desai and Von der Embse, 2001), or more important than the technical skills (Chrysler and Van Auken, 2002; Tang, Lee, and Koh, 2000/2001). In all cases, the recommendations include curriculum designs that attempt to balance technical and non-technical courses.

Finally, researchers have conducted examinations of actual IS programs to determine how well they match the model curricula (Maier and Gambill, 1996; Gorgone and Kanabar, 1997; Gill and Hu, 1999; Ramakrishna and Vijayaraman, 2000). These identify which courses are most popular, and map the patterns they find to a model curriculum. Since the model curricula and actual graduate IS programs in schools of business or management include literally dozens of individual courses, often with unique course titles, some researchers have employed grouping schemes to deal with this complexity. Ehie (2002) compares several individual surveys, identifying both current and projected popularity of courses in ten broad categories. Tang, Lee, and Koh (2000/2001) groups IS knowledge and skills into 21 categories for comparing requirements and actual achievements. Chrysler and Van Auken (2002) restricts its focus to eight generic courses, into which it maps numerous specific course titles. Lightfoot (1999) builds a ten category taxonomy of course topics to represent the suggested curriculum solution.

Figure 1 depicts a taxonomy of course topics derived from these surveys and their various grouping schemes. The individual survey most relevant to Capella's situation is that of Ramakrishna and Vijayaraman (2000). This survey examined graduate programs in schools of business or management, and within that population, focused specifically on Master of Science programs. The rankings in Figure 1 show how commonly each topic area was included within the core of the 70 M.S. programs with IS specializations examined by Ramakrishna and Vijayaraman (2000). For example, the topic area addressed by one or more courses in the most programs was the application system delivery process, the second most frequently encountered was data management, and so on. Other studies of actual MIS program curricula (e.g., Maier and Gamble, 1996; Gill and Hu, 1999) have found similar results for undergraduate programs.

The Needs of Capella's Target Market

In the past, the M.S. program in IT Management at Capella University has followed this same pattern, with one or more courses in each of the six topic areas at the head of the popularity list. However, analysis of the competency needs of the market segment Capella is best suited to serve suggested that a different emphasis was needed. A survey of the entire population of Capella's M.S. learners specializing in IT Management to determine their backgrounds and educational goals showed that

1. Every individual was currently employed in one or another form of IT-related position. These covered a wide range of specializations, from systems analysts, through database and network specialists, to managers and consultants. In many cases these learners had developed deep skills in a particular aspect of IT through long experience. These individuals fall into the category described in MSIS2000, the ACM/AIS model curriculum guidelines for graduate degree programs in information systems, (Gorgone and Gray, 2000, p. 15) as "the professional returning to school with extensive practical experience."
2. Every individual had enrolled in Capella's program to gain skills needed to advance to higher levels of management within IT organizations. Target career goals included Chief Information Officer or equivalent, or other senior level positions described in Gorgone and Gray (2000, p. 12), such as "managing the IS function," "global IT management," "technology management," and, in some cases, "consulting." (By and large, such individuals are not willing to disrupt their careers by returning to school full-time, making them good candidates for distance learning.)

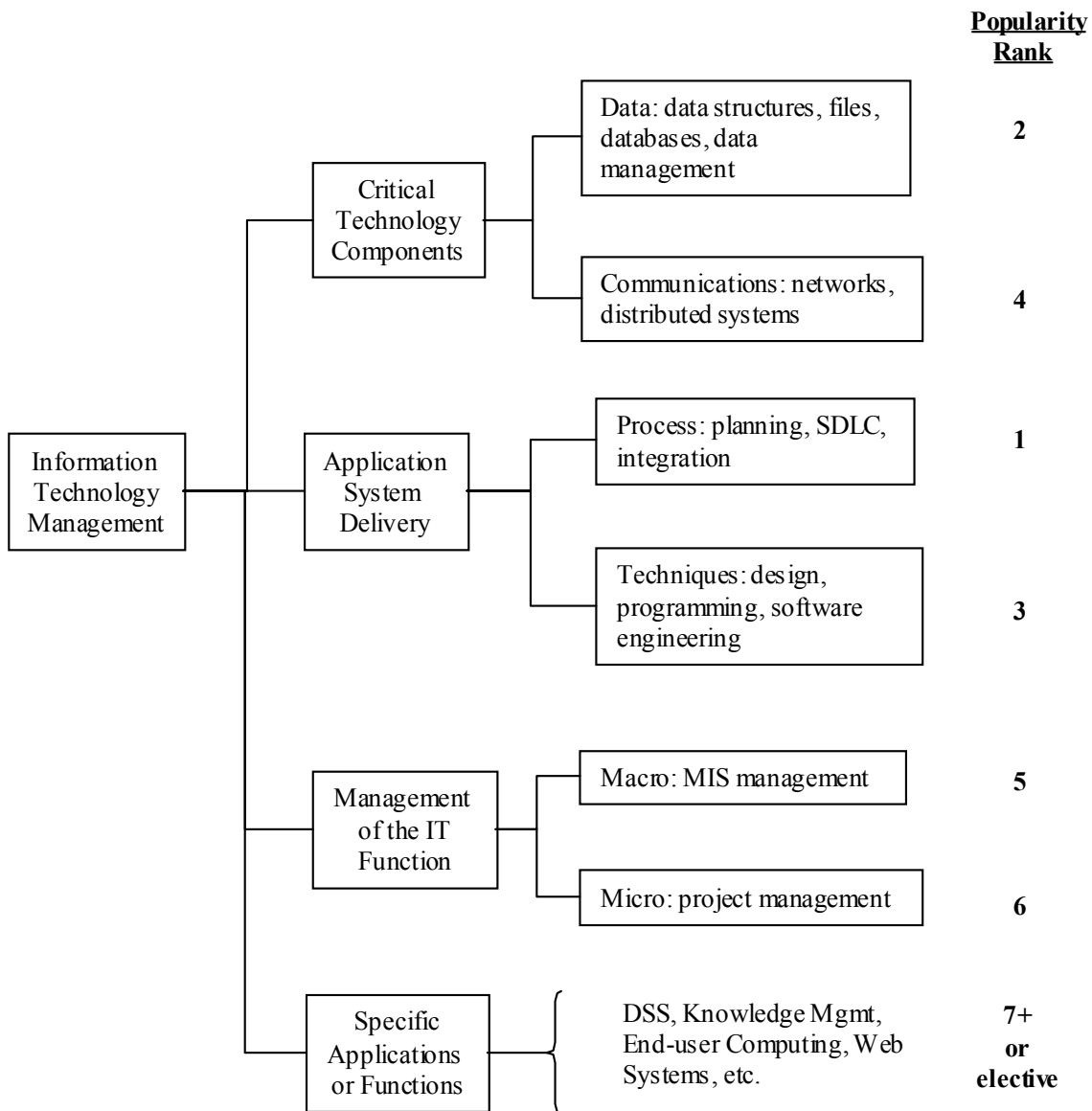


Figure 1. Relative Popularity of Course Topics in M.S. IS Programs

Capella’s curriculum, as mainstream as it might be, did not match up well with the needs of this group. But this group – consisting as it did of currently working adults who sought additional education to further specific career goals – was precisely who Capella sought to serve. So a curriculum redesign was in order.

The Curriculum for the Aspiring CIO

Capella University bases all its curriculum and course designs on required competencies. The experienced IT professionals who wish to move from individual contributor or supervisor roles to higher management positions (“aspiring CIOs,” in Capella’s terms) typically need to develop or enhance one or more of several competencies:

1. their managerial skills, to interact effectively both with their peers in the broader organization, and with senior management;

2. their understanding, at a level of abstraction appropriate to senior management, of the critical components of information technology, and how they condition the use of systems within organizations;
3. their mastery of the process of identifying organizational needs and deploying IT support to meet these needs; and
4. their mastery of the particular challenges involved in managing IT functions and staff.

A program that addresses the needs of this tightly focused market calls for a curriculum somewhat different from that that commonly encountered in graduate IS programs.

As a result of this analysis, Capella redesigned its curriculum for the M.S. program in Organization and Management, IT Management specialization, to better serve the aspiring CIO learner. Discussions among the Capella faculty and program directors, as well as with local IT executives in the Minneapolis area suggested that the topical emphasis within the program shift away from specifics of technology and technique, and towards management practices. Figure 2 shows the emphasis believed appropriate for this group for each broad topical area.

To match this pattern of emphasis, the new curriculum incorporated three components.

1. Six required Core Courses:
 - Management and Organization Behavior
 - Marketing Strategy and Practice
 - Accounting and Financial Management
 - Strategic Planning
 - Ethics and Social Responsibility
 - Data Analysis and Decision Making for Managers

These courses form the core for the M.S. program in Organization and Management for all specializations, and address organizational literacy across a range of functions. They resemble similar courses in many MBA or M.S. in management programs, and serve primarily to develop the non-technical skills needed by the learners.

2. Five Specialization Courses – one required course, plus four electives which could be chosen from among seven courses offered. These are unique to the IT Management specialization:
 - Strategic Information Technology Management (required)
 - System Planning and Delivery
 - Software Engineering Management
 - Knowledge Management
 - Managing IT Personnel
 - Project Planning, Management, and Financial Control
 - Advances in Information Technology
 - Special Topics in IT Management
3. One Integrative Course -- Organizational Leadership and Change Management -- to be taken after all other courses are completed. This course also focuses primarily on business rather than IT technical skill development.

In total, the M.S. program comprises twelve courses, or 48 quarter credits. The unique aspect of the program lies within the second component, the specialization courses. These courses provide a different pattern of emphasis across IS topical areas than is found in most graduate IS programs.

IT Management Specialization Course Descriptions

The paragraphs below briefly describe each of the IT Management specialization courses.

Strategic Information Technology Management: All students specializing in IT Management take this course. It covers fundamental IT Management issues such as aligning IT and business strategies, strategic IT planning, IT governance, and the effects IT can have on organizational structure and processes. It provides an overview of IT Management from the CIO's perspective.

Knowledge Management: This course examines the relationship between knowledge management and information technology and its extensions for the innovative and strategic management paradigms of the future. The central message of the course is that knowledge, not money or technology will be the primary economic unit of business in the twenty-first century. Topics include the analysis of knowledge management as an organizational strategy along with its characteristics, development, and implementation.

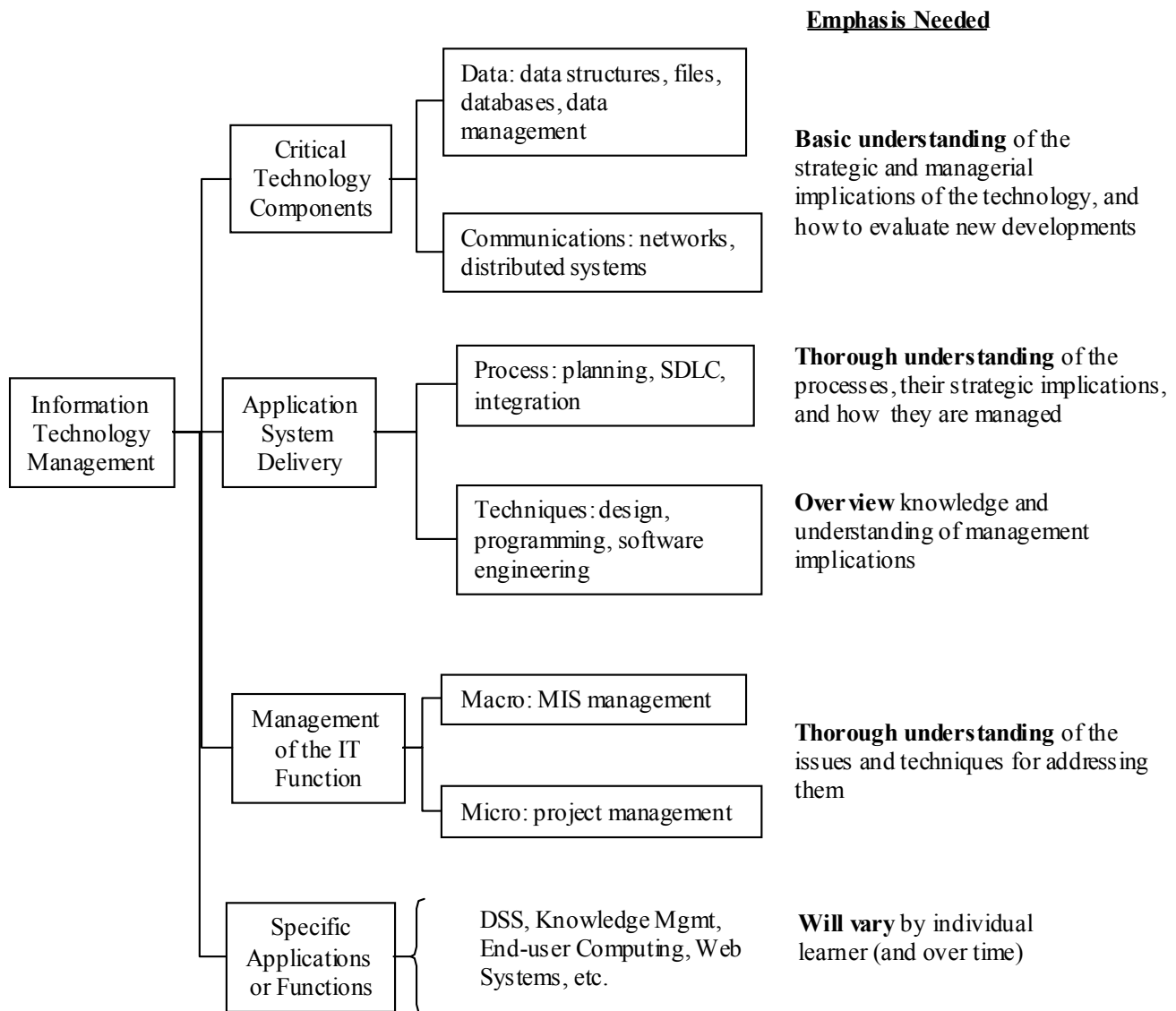


Figure 2. Topical Emphases Needed to Serve the Target Learner Group

Advances in Information Technology: This course examines emerging information technologies, their possible impact on the organization, and strategies for planning and managing them. Topics include such items as new programming paradigms, universal networking, advanced computer architectures, new generation database management systems, and self-repairing systems. The learning objectives include not only the specific technologies, but also the process of evaluating the implications of new technology developments.

System Planning and Delivery: This course addresses the management of the end-to-end process of aligning IT with organizational goals, planning IT initiatives, and delivering infrastructure and application systems to support those goals. Topics include strategic information system planning, development of programs to implement the strategic plan, and specific approaches to delivering system integration programs.

Software Engineering Management: The course covers methods and models for managing the development process of software systems. Topics include: quantitative models of the software lifecycle; cost-effectiveness; uncertainty and risk analysis; planning and modeling a software project; software cost estimation; software engineering metrics; software project documentation. Concepts such as open source development, component reuse and application of standardized software packages are considered.

Managing IT Personnel: This course examines the particular issues of managing IT personnel, including analysts, developers, technical specialists, and infrastructure support personnel. Covers contemporary management practices and techniques regarding IT staff acquisition, development, motivation, retention, and assessment. Examines the particular challenges of organizing effective virtual work teams.

Project Planning, Management, and Financial Control: This course covers the skills needed to manage large, complex IT projects and programs. It addresses stakeholder analysis; building partnerships with user constituencies; project and program organization; planning, estimation, and budgeting; monitoring, control, and problem resolution; change management; and financial analysis and reporting.

Special Topics in IT Management: This course offers a structured opportunity to explore specific topics of interest to IT management, such as entrepreneurship, intellectual property management, negotiating with vendors, offshore outsourcing, and public policy related to IT.

Figure 3 shows how these courses align with the taxonomy of topic areas in IS curricula, as well as the emphasis needed in each topic area to serve the aspiring CIO market. Combined with the basic core courses and the integrative capstone course, these provide a focus that definitely tends more toward management than technology.

Conclusion

In designing its curriculum for the IT Management Specialization, Capella University has explicitly decided to pursue a narrowly focused niche market. The number of individuals seeking to enter IS or to become more proficient at IS will always exceed by far that of individuals seeking to become CIOs or other senior IS executives. This curriculum does not fit the needs of those seeking entry to IS, since it offers no introductory courses in the technology components of IS, or in basic IS processes. Nor will it suit most individuals seeking to upgrade their IS skills, since it focuses on managing and leading IS rather than doing IS. However, an individual currently working in IS and aspiring to a senior management position is especially likely to find the flexibility and tailoring of distance learning attractive. Capella's curriculum attempts to provide the precise components sought by some mid-career IS professionals for delivery via this method.

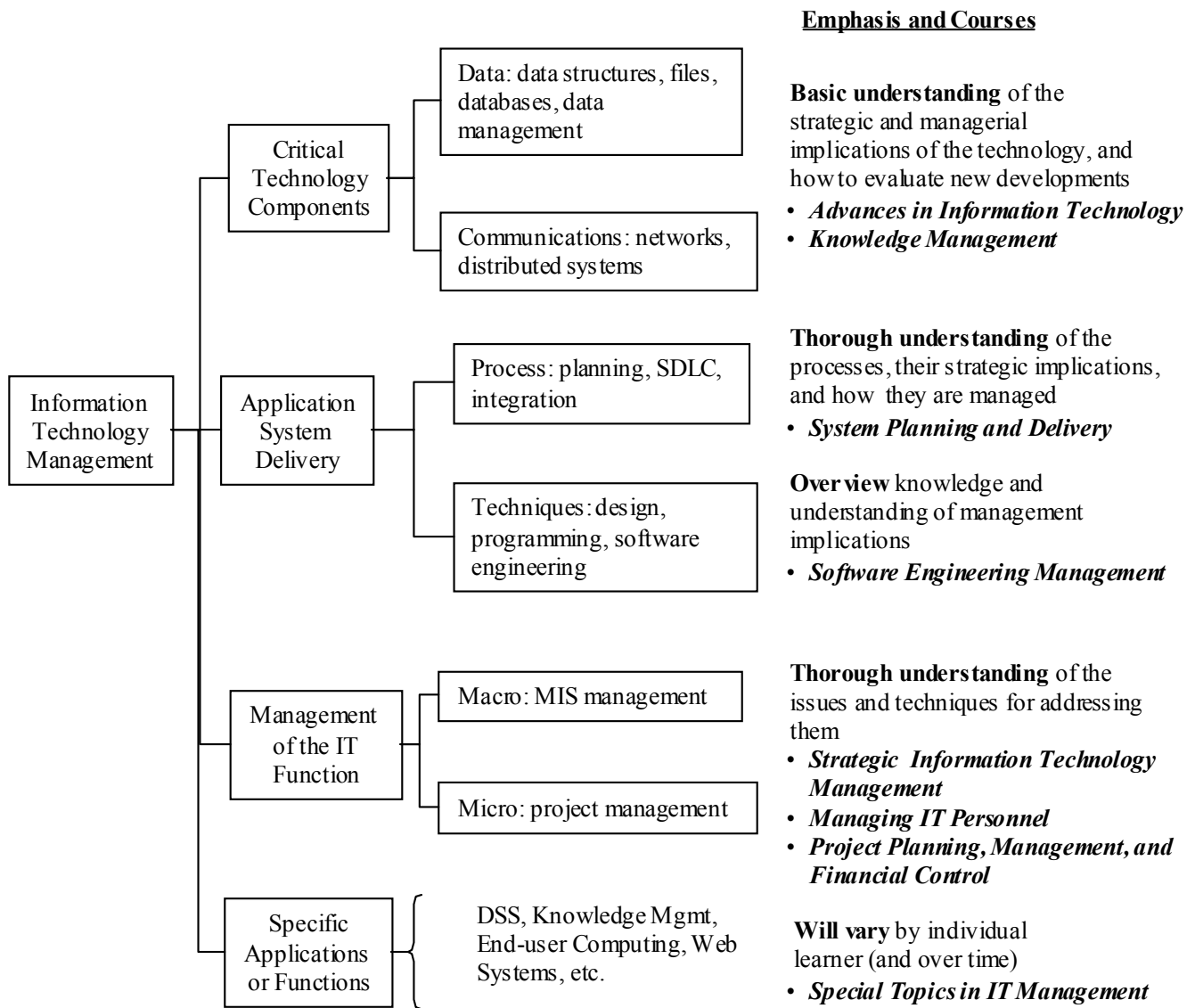


Figure 3. Specific Courses Mapped to the Needed Topical Emphases

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