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A. James Wynne  
ajwynne@vcu.edu

Meg Murray

Roy D. Johnson

Joe Cipolla

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# ADOPTING THE IS 2009 MODEL CURRICULUM: A PANEL SESSION TO ADDRESS THE CHALLENGES FOR PROGRAM IMPLEMENTATION

**A. James Wynne**

Virginia Commonwealth University  
ajwynne@vcu.edu

**Meg Murray**

Kennesaw State University  
mcmurray@kennesaw.edu

**Roy D. Johnson**

University of Pretoria  
roy\_d\_johnson@hotmail.com

**Joe Cipolla**

Independent Information System Consultant  
jtcipolla@gmail.com

## ABSTRACT

This panel session is designed to initiate an open forum and frank discussion of the IS 2009 Model Curriculum proposed by the Joint IS 2009 Curriculum Task Force and developed as a cooperative effort by the Association for Computing Machinery (ACM) and the Association for Information Systems (AIS). Following an introduction to the new model curriculum, a summary and overview of the changes from IS 97/2002 to the IS 2009 recommended core and elective courses will be presented and a panel representing academia and business will address possible issues, challenges, and implications of implementing the suggested curriculum changes on the major stakeholders that include students, faculty, administration, infrastructure resources, and the business community. Concluding the session will be an open forum to allow audience participation in the discussion for the purpose of exchanging ideas on the implementation of the new model curriculum.

## Keywords

IS 2009 model curriculum, ACM, AIS, Implementation challenges, core courses, elective courses, faculty, students, business community, infrastructure resources, curriculum design, IS program.

## INTRODUCTION

The evolution of the model IS curriculum development shares a common goal: to provide guidelines for educational institutions to assure their graduates have necessary competencies, skills, and attitudes for success in the workplace and life-long learning as an IS professional (Davis et al. 1997). The availability of curriculum models not only provides a mechanism to keep the currency of contents for the body of IS knowledge taught, but also provides local academic units with rationale to justify resources to support the IS programs (Gorgone et al. 2003).

- 1) The systematic approach of model IS curriculum design has several advantages (Davis et al. 1997):
- 2) It was based on replicable methodology as the knowledge base evolves;
- 3) It provides functional rather than topical guidelines for course content;
- 4) the body of knowledge of learning objectives is progressively covered in an integrated fashion;
- 5) It provides unified and measurable educational learning objectives, which allows competent learning of the body of knowledge and continuous assessment and feedbacks (Argyris 1976); and
- 6) It provides for small learning units and allows both coherent of overall learning outcomes and flexibility for individual academic units to ensure the quality of their graduates.

Both IS'97 and IS 2002 extension have been widely adopted by many IS department as the baseline for their own curriculum design, and have been the basis for IS undergraduate program accreditation (Topi et al. 2009). Despite the rapid contextual and technological changes in information technology in the past 10 years, there have been no major updates of model curriculum and many of the technologies in model curriculum elements haven been quite antiquated. The major changes in technology and industry practices include:

- 1) A movement towards globally distributed information systems development;
- 2) Web technologies and development as a core part of IS development;
- 3) Emergence of service-oriented architecture;
- 4) Focus on configuration on large-scale enterprise systems;
- 5) Ubiquitous mobile computing; and
- 6) Standardization of IT control and infrastructure frameworks (Topi et al. 2009).

Besides the need to reflect technology changes in the curriculum, the enrollment crisis in CS and IS majors also calls for an update in the curriculum design. Since the “dot-com bubble” burst in 2001, IS enrollment decreased as much as 70-80 percent throughout the world (Granger et al. 2007). Even though there are many other factors affecting the IS enrollments, curriculum changes have been recommended by many (George, Valachich, and Valor 2005; Bullen, Abraham, and Gallup 2007; Granger et al. 2007; Kuechler, McLeod, and Simkin 2009) as one of the opportunities to increase enrollment.

On September 11th, 2009, a much anticipated draft version of IS 2009 was distributed by the Joint IS2009 Task Force as the third collaborative effort by ACM and AIS. IS 2009 is considered as a major revision of the existing model curriculum with several significant characteristics (Topi et al. 2009) to address aforementioned issues, including:

- 1) Reaching beyond the schools of management and business to provide expertise in other domains such as law, biology, healthcare, and so on;
- 2) The outcome expectations has been articulated in high-level IS capabilities to provide students with skills and knowledge levels in three categories: IS specific, foundation, and domain fundamentals;
- 3) The curriculum core is separated from electives to support different career tracks; and
- 4) Involving the global IS community to reflect the global perspective IS discipline.

Compared to previous version, IS 2009 has clearly moved towards a less technical, more managerial focus. It assumes that most organizational systems are built based on packaged systems or out-sourced development. Students are expected to engage in effective communication with both business stakeholders and developers in order to accurately specify both business and system requirements. However, they are not required to understand design and/or implementation of the technical structure of the system. A change in core data management concepts has reduced the focus on physical data modeling and DBA level requirements and application development (IS2002.5 programming, Data, File, and Object Structures and IS 2002.9 Physical Design and Implementation in Emerging Environment). Programming is completely removed from the core set of courses. The other major change in IS 2009 is the infusion of both enterprise architecture and IT infrastructure in core courses, focusing on organizational level issues related to planning, architecting, designing and implementing IT solutions with infrastructure as a foundation.

The proposed new IS 2009 model curriculum has the potential for many challenges to the major stakeholders, including faculty, students, administration, business community, infrastructure resources, and accreditation boards. Before making the transition from the existing IS Model Curriculum to the new IS 2009 Curriculum, many factors (Tatnall and Burgess 2009) need to be taken into consideration, which include:

- 1) Organizational factors such as organizational constraints and administrative support;
- 2) Resources such as hardware, software and textbooks;
- 3) Social factors such as community expectations and competition with other course providers; and
- 4) Perceptions of faculty members and students towards of the change. Among those diverse challenges, faculty acceptance level towards the curriculum change may be the most critical because faculty members are vital to the strength of an IS program (Topi et al. 2009) and an effective faculty is the first required resource (Firth, Lawrence, and Looney 2008).

## **PANEL DISCUSSION AND FORMAT**

The purpose of this panel session is to initiate a comprehensive discussion of the new IS 2009 Model Curriculum, specifically designed to address issues and challenges of its adoption and implementation. The four-person panel is composed of three faculty members and one information technology business professional. A. James Wynne will provide the perspective of a school of business IS program; Meg Murray will represent an IT/IS program that is housed outside the school of business; Roy Johnson will provide an international IS/IT program viewpoint, and Joe Cipolla will represent the business community's point of view based on his experience as a former CIO and currently IS/IT Consultant.

The panel session will follow the following format:

- First, a summary of curriculum changes recommended by the task force should be highlighted with an emphasis on suggested major content area revisions;
- Second, each of the panelists will address the implications on their specific program (curriculum) in the short term and the long term, with the business representative providing an employers' perspective of content appropriateness and focus and expectations of graduates from this program of study;
- Third, a discussion of the implications that these proposed changes will have on major stakeholders including students, faculty, infrastructure resources, administration, business community, and accreditation boards, with a particular focus on faculty acceptance or resistance;
- Fourth, an open discussion forum will provide the audience to address the necessary requirements for transitioning from the existing IS 2002 Curriculum to the new IS 2009 Curriculum.

**SUPPLEMENTARY MODEL CURRICULUM INFORMATION****Prerequisite**

IS'97.P0 Knowledge Work Software Tool Kit (a prerequisite to the program)

- A. Information Systems Fundamentals**
  - a. IS'97.1 Fundamentals of IS
  - b. IS'97.2 Personal Productivity with IS Technology
- B. Information Systems Theory and Practice**
  - a. IS'97.3 Information Systems Theory and Practice
- C. Information Technology**
  - a. IS'97.4 Information Technology Hardware and Software
  - b. IS'97.5 Programming, Data and Object Structures
  - c. IS'97.6 Networks and Telecommunications
- D. Information Systems Development**
  - a. IS'97.7 Analysis and Logical Design of an IS
  - b. IS'97.8 Physical Design and Implementation with DBMS
  - c. IS'97.9 Physical Design and Implementation with a Programming Environment
- E. Information Systems Deployment and Management Processes**
  - a. IS'97.10 Project Management and Practice.

**List 1: Details of IS'97 core curricula (Topi, et.al. 2009)**

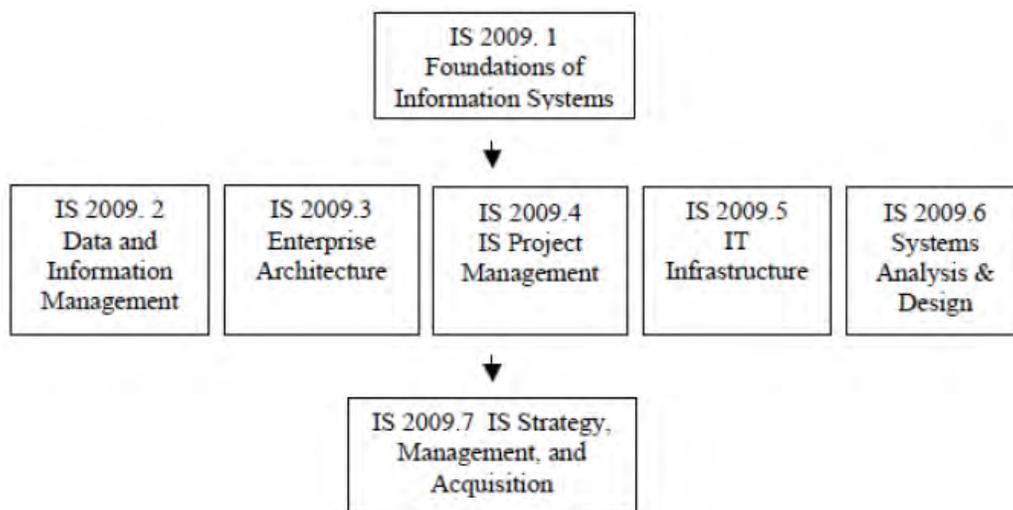
<b>Changes in IS 2009</b>	<b>IS'97</b>	<b>IS 2009</b>
Foundation topics are changed to more current issues.	<b>IS'97.1:</b> Fundamentals of IS <b>and</b> <b>IS'97.2:</b> Personal Productivity with IS Technology <b>and</b> <b>IS'97.3:</b> Information Systems Theory & Practice	<b>IS 2009.1:</b> Foundations of Information Systems
From system design and implementation in a DBMS environment to conceptual data modeling, logic models, and physically implementing a relational database using SQL, plus basic database administration tasks. However, physical data model and DBA level requirements have been reduced.	<b>IS'97.8:</b> Physical Design & Implementation with DBMS	<b>IS 2009.2:</b> Data and Information Management
It does not require in-depth skills in designing or configuring hardware and software solution; instead, focus is on the level required for effective work as business system analysis. It is considered as foundation for further study in more technical issues in computer architecture and communication networks.	<b>IS'97.4:</b> Information Technology Hardware & Software <b>and</b> <b>IS'97.6:</b> Networks & Telecommunications	<b>IS 2009.5:</b> Information Infrastructure
Focus has changed from object-oriented analysis and logic design to business requirement and system requirement analysis, and high-level design specifications. Also, the assumption is that most organization systems are built based on packaged systems or implemented by using outsourced capabilities (on or off-shore). <i>Specification regarding methods and approaches is left to the individual institution to make the decision based on their faculty capacities and local companies' need.</i>	<b>IS'97.10:</b> Project Management & Practice	<b>IS 2009 4:</b> IS Project Management

Instead of system development management or enhancement projects, IS 2009 does not specify system development. Instead, it is considered as all IS projects. Further, team activities are emphasized. It also acknowledges that project management involves not only internal resources, but also external resources (contracted from outside organization). The methods and approaches are left for individual institute to make local decisions.	<b>IS'97.5:</b> Programming, Data and Object Structures <b>and</b> <b>IS'97.9:</b> Physical Design & Implementation with a Programming DBMS	Gone
No Programming		
This is new.	None	<b>IS 2009 3:</b> Enterprise Architecture
This is new.	None	<b>IS 2009 7:</b> IS Strategy, Management, and Acquisitions

**Table 1. IS'97 Model Curriculum Courses vs. IS 2009 Model Curriculum Courses. (Topi, et.al. 2009)**

Student Groups Curriculum Model	Student Groups Curriculum Model
All Students	IS 2009.1 Foundations of Information Systems
IS Majors and Minors	IS 2009.7 IS Strategy, Management & Acquisition IS 2009.3 Enterprise Architecture IS 2009.2 Data and Information Management
IS Majors	IS 2009.6 Systems Analysis & Design IS 2009.5 IT Infrastructure IS 2009.4 IT Project Management

**Table 2. Representative IS 2009 Curriculum Design for All Students, IS Minors & IS Majors (Topi, et.al. 2009)**



**Figure 1. IS 2009 Core Courses (Topi, et.al. 2009)**

Structure of the IS Model Curriculum: Information Systems specific courses																	
Career Track:	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
<b>Core IS Courses:</b>																	
Foundations of IS	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Enterprise Architecture	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
IS Strategy, Management and Acquisition	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Data and Information Management	●	○	○	●	●	○	○	○	○	○	○	○	○	○	○	○	○
Systems Analysis & Design	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○
IT Infrastructure	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○
IT Project Management	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
<b>Elective IS Courses:</b>																	
Application Development	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Business Process Management		●	●			○	○	○			○	○			○		
Collaborative Computing						○								○			○
Data Mining / Business Intelligence		●		●	●	○	○	○	○	○	○	○	○	○	○	○	○
Enterprise Systems		●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Human-Computer Interaction	●					○	○				○						○
Information Search and Retrieval		○		○	●									○			○
IT Audit and Controls	○		●	○	○	○	○	○	○	○	○	○	○	○	○	○	○
IT Security and Risk Management	○			○	○	○	○	○	○	○	○	○	○	○	○	○	○
Knowledge Management		●		○	○	○			○								
Social Informatics														○		○	

**Key:**  
 ● = Significant Coverage  
 ○ = Some Coverage  
 Blank Cell = Not Required

Figure 1. IS 2009 Core & Elective Courses (Topi, et.al. 2009)

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