COURSE SYLLABUS/DESCRIPTION

Department and Course Number	ISQA 4590/ISQA 8596
Course Title	IT Audit and Control
Course Coordinator	Deepak Khazanchi
Total Credits	3
Date of Last Revision	7/20/2004

1.0 Course Description:

1.1 Overview of content and purpose of the course (Catalog description).

This course explores organizational and managerial issues relevant to planning and conducting IT audit and control activities. The course covers the following conceptual areas: business risks and the management of business risk, IT risk as a component of business risk, the need to manage IT risks, and the basic type of controls required in a business system in order to control IT risks. Issues associated with new risks created by the use of the internet for business applications and electronic commerce is also covered.

1.2 For whom course is intended.

The course is intended for undergraduate students (juniors and seniors) and graduate students in Information Systems or Business Administration or related areas who have an interest in IS/T audit and control issues.

1.3 Prerequisites of the course (Courses).

A solid understanding of business foundations such as accounting and introductory auditing and exposure to the IS discipline is required. Permission of department is required to enroll. Permission of Instructor is required.

1.4 Prerequisites of the course (Topics).

- Basic Accounting
- Introduction to Auditing
- Information Security and Policy

1.5 Unusual circumstances of the course.

2.0 Objectives:

2.1 List of performance objectives stated in terms of the student educational outcomes.

- Understand the concept of business risks and the management of business risk
- Understand IT risk as a component of business risk
- Gain an appreciation of the need to manage IT risks
- Gain an understanding of the basic type of controls required in a business system in order to control IT risks

- Learn concepts and applications of the following types of IT controls: top management, system development, programming, data resource management, database, security, operations management, quality assurance, boundary controls, and communications.
- Gain an appreciation for the difficulties in assessing systems effectiveness and efficiency.
- Understand the new system control risks created by the use of the internet for business applications and electronic business.

3.0 Content and Organization:

3.1 List of major topics to be covered in chronological sequence (specify number of weeks on each).

Week	TOPIC
1	Introduction
2	Top Management Controls
3	Systems Development Management Controls
4	Programming Management Controls
5	Data Resource Management Controls
6	Security Management Controls
7	Operations Management Controls
8	Quality Assurance Management Controls
9	Boundary Controls
10	Communication Controls
11	Database & ERP Controls
12	Evaluating System Effectiveness & Efficiency
13	Trust Services (AICPA/CICA/IIA Reports)
14	B2B Assurance Framework (Khazanchi and Sutton)

4.0 Teaching Methodology:

4.1 Methods to be used.

The primary teaching method will include class discussion, case studies, lecture, guest speakers, and demonstration.

4.2 Student role in the course.
The student will attend lectures and demonstrations, participate in discussion on assigned readings, complete assigned projects and papers, and complete required examinations.

4.3 Contact hours.
3 hours

5.0 Evaluation:

5.1 Type of student projects that will be the basis for evaluating student performance, specifying distinction between undergraduate and graduate, if applicable. For Laboratory projects, specify the number of weeks spent on each project).

Students will be evaluated on the following basis.

Class participation: Students are expected to attend each and every class and be prepared to actively participate in the discussion. Much of the class will be conducted using an open discussion approach, and the success of the class will be dependent on students' ability to identify and discuss relevant issues.

Quizzes: There will be a quiz on the material covered in the readings for each week (2-13) and must be completed no later than Saturday preceding the in-class discussion of the material.

Exams: There will be one comprehensive final examination.

Group Assignments: Each person will be assigned to a learning group to complete a case study related to each topic.

Current News Articles: Each class member will be responsible for summarizing and presenting two news articles during the course of the semester. These articles should relate in some fashion to risk and controls and should represent a current news event related to the subject to be covered in a given week. All students are required to participate on a regular basis in the discussion.

Additional Requirement for Graduate Students: Graduate students will be required to read and develop a literature review based conceptual paper on an IS/T audit and control topic or write a report on IS/T audit practices in their workplace as they relate to the conceptual discussions in class. In addition, graduate students will be expected to be prepared to discuss and present the readings listed under the bibliography section for each week.

5.2 Basis for determining the final grade (Course requirements and grading standards) specifying distinction between undergraduate and graduate, if applicable.

The grade base for the course for undergraduate students will consist of the following:

	Available points
Quizzes	15%
Comprehensive final exam	30%
Current news articles	15%
Individual participation	15%
Application & Assessment Exercises (Cases)	25%

The grade base for the course for graduate students will consist of the following:

	Available points
Quizzes	15%
Final Paper	30%
Current news articles	15%
Leadership of class discussion	15%
Application & Assessment Exercises (Cases)	25%

5.3 Grading scale and criteria.

The grading scale is as follows:

GRADE	POINT VALUE
A	92% <= x % <= 100%
A-	89% <= x <= 92%
B+	86% <= x <= 89%
B	82% <= x <= 86%
B-	79% <= x <= 82%
C+	76% <= x <= 79%
C	72% <= x <= 76%
C-	69% <= x <= 72%
D+	66% <= x <= 69%
D	62% <= x <= 66%
D-	59% <= x <= 62%
F	Less than 59%

An “I” or “IP” will be awarded only if a student is unable to complete the course requirements due to circumstances beyond her/his control as specified in the UNO catalog. The student must also have substantially completed the course and have a passing grade when the grade of “I” is requested.

6.0 Resource Material

6.1 Textbooks and/or other required readings used in course.

- *Information Systems Control and Audit*, by Ron Weber (Prentice Hall, 1998)
- Compilation of *Cases for Information System Control & Audit* (Proposed: D. Khazanchi), Prentice Hall.

6.2 Other suggested reading materials, if any.

- Hollander, Denna, and Cherrington (1996). *Accounting, IT and Business Solutions*. Irwin.

6.3 Other sources of information.

AICPA/CICA/IIA web sites

6.4 Current bibliography of resource for student's information.

Week 1: Overview

General:

Anonymous(1998). "IS" auditors wanted. *CGA Magazine*, 32(7), 38

Why IT Audit and Control?

Menkus, B.(1992). Understanding EDI Security Issues. *Computers & Security*, 11(6), 525-528.

Rezaee, Z., Elam, R. & Sharbatoghlie, Ahmad.(2001). Continuous auditing: The audit of the future. *Managerial Auditing Journal*, 16(3), 150-158.

Stazyk, T.E.(1992). Information Systems Auditing in the 1990s: A Business Approach. Internal Auditing, 8(1), 3.

Dallas, D.A.(1999). The role of IS auditing in today's business environment. Information Strategy, 15(3), 45-48.

Neale,C.W. & Holmes,D.E.A.(1990). Post-Auditing Capital Projects. Long Rage Planning, 23(4), 88-95.

Cerullo, M.J. & Cerullo, M.V.(1990). Operational Audit of the Information Systems Development Process. Information Age, 12(4), 199-205.

Chapin, D.H.(1994). GAO's perspective on future audit issues. The Government Accountants Journal, 43(2), 17.

Bierstaker, J.L. & Burnaby, P.(2001). The impact of information technology on the audit process: An assessment of the state of the art and implications for the future. Managerial Auditing Journal, 16(3), 159-164.

Westland, J.C.(1990). Assessing the economic benefits of information systems auditing. Information System Research, 1(3), 309-324.

Mercer, L.(1987). Detecting fraud through tailor-made auditing of information systems. The CPA Journal, 57(11), 128-140.

Snowball, D.(1987). Auditing Your Own System: Some Findings And Implications. Journal of Information Systems, 1(2), 41-49.

Week 2: Conducting an IS Audit/Top Management Controls

Iversen, J., Nielsen, P.A. & Norbjerg, J.(1999). Situated assessment of problem in software development. Database for Advances in Information Systems, 30(2), 66-81.

Jobber, D., Saunders, J., Gilding, B., Hooley, G. & Hatton-Smooker, J.(1989). Assessing the Value of a Quality Assurance Certificate for Software: An Exploratory Investigation. MIS Quarterly, 13(1), 18-31.

Bodnar, G.H.(1993). Data Security and Contingency Planning. Internal Auditing, 8(3), 74.

Ahituv, N. & Neumann, S.(1982). Controlling the Information System Function. Journal of Systems Management, 33(9), 10-17.

Lederer, A.L. & Mendelow, A.L.(1988). Information Systems Planning: Top Management Takes Control. Business Horizons, 31(3), 73-78.

Week 3: Systems Development Management Controls; Programming Management Controls; Data Resource Management Controls

Doty, E.A., Sen, A. & Wang, S.C.(1989). Effect of Internal Controls in Data Base Design. Journal of Information Systems, 3(2), 70-91.

Carmel, E. & Becker, S.(1995). A process model for packaged software development. IEEE Transactions on Engineering Management, 42(1), 50-61.

Joseph, G.W. & Engle, T.J.(1991). How to Catch a Crooked Financial Data Base Administrator. Financial & Accounting Systems, 7(3), 5-11.

Week 4: Security Management Controls

Kwok, L. & Longley, D.(1999). Information Security Management and Modelling. Information Management & Computer Security, 7(1), 30.

Crutchley, S.(2002). Making Security Pay. Computerworld, 36(52), 39.

Lance, J.S. (1998). Disaster Recovery Planning for the Distributed Environment. Internal Auditor, 55(6), 40-41.

Albert, J.M. & Rauff, J.V.(1995). Utilizing expert systems to evaluate disaster recovery planning. Journal of Applied Business Research, 11(1), 30-38.

Ivancevich, D.M., Hermanson, D.R. & Smith, L.M.(1998). The Association of Perceived Disaster Recovery Plan Strength with Organizational Characteristics. Journal of Information Systems, 12(1), 31-34.

Week 5: Operations Management Controls; Quality Assurance Management Controls

Talley, B. & Scambray, J.(1998). Networks Security Checkup. InfoWorld, 20(11), 1-8.

Chou, D.C. & Yen, D.C.(1998). Analysis of the total quality management based software auditing. Total Quality Management, 9(7), 611-618.

Missing: Boundary Controls; Input Controls; Communication Controls

Week 6: Processing Controls

Keil, Mark., and Man, Joan. "Understanding the Nature and Extent of IS Project Escalation: Results from a Survey of IS Audit and Control Professionals." IEEE (1997): 139-148.

Mahnic, Viljan., Klepec, Borut., Zabkar, Natasa. "IS Audit Checklist for Router Management Performed by Third-party." IEEE (2001): 227-230.

Mercuri, Rebecca T. "On Auditing Audit Trails." Communications of the ACM 46.1 (January 2003): 17-20.

Glover, Steven M., and Romney, Marshall. "The Next Generation." Internal Auditor 55.4 (August 1998): 47-46.

Week 7: Database Controls

Wiggins, Casper E, Jr., and Murthy, Uday S. "Audit Implications of Future Database Systems." Internal Auditing 13.3 (January/February 1998): 8-18.

Bagchi, S., Liu, Y., Whisnant, K., Kalbarczyk, Z., Iyer, R., Levendel, Y., Votta, L. "A Framework for Database Audit and Control Flow Checking for a Wireless Telephone Network Controller." IEEE (2001): 225-234.

Oman, Levent.V. "Database Audit and Control Strategies." Information and Technology 2.1 (January 2001): 27. (Requested through Inter library loan)

Leitch, Robert A., and Chen, Yining. "Natural Database Structure and Audit Activities." Internal Auditing 16.5 (September/October 2001): 35. (Library has sent for binding, will receive within a week)

Week 8:

Output Controls

Wooten, Thomas C. “It Is Impossible T o Know The Number Of Poor-Quality Audits.” The CPA Journal 73.1(January 2003): 48-51.

Aggarwal, Rajesh., Rezaee, Zabihollah, Rezaee., Soni, Ramesh. “ Internal Control Considerations for Global Electronic Data Interchange.” International Journal of Commerce & Management 8.3/4 (1998): 71-84.

Audit Software

Davis, Jefferson T., Massey, Anne P., Lovell, Ronald E.R, II. “ Supporting a Complex Audit Judgement Task: An Expert Network Approach.” European Journal of Operational Research 103 (1997): 350-372.

Neddleman, Ted. “ Audit Tools.” The Practical Accoutant 34.3 (March 2001): 38-40.

Dillard, Jesse F., and Yuthas, Kristi. “A Responsibility Ethic for Audit Expert Systems.” Journal of Business Ethics 30.4(April 2001): 337-359.

Splettstoesser, Ingrid B. “ Information Systems Controls and Auditing: Martha Tool, Inc.” Issues in Accounting Education 14.2 (May 1999): 285-291.

Rezaee, Zabihollah., Sharbatoghlie, Ahmad., Elam, Rick., McMickle, Peter L. “Continuous Auditing: Building Automated Auditing Capability.” Auditing 21.1(March 2001) : 147-163.

Moreau, Norman P. “ Auditing Software- Overcoming the Fear.” Annual Quality Congress Proceedings 2002: 203-211.

Cerullo, Michael J., and Cerullo, Virginia. “ The Internal Auditor’s Role in Developing and Implementing Enterprise Resource Planning Systems.” Internal Auditing 15.3 (May/June 2000): 25. (Library has sent for binding, will receive within a week)

Week 9:

Code Review, Test Data, and Code comparison

Torode, Christina. “ Data HandOff.” CRN 906 (August 7, 2000): 14-18

Jacka, J Mike. “Ripping Apart the Evidence.” The Internal Auditor 59.6 (December 2002): 64-65.

Middleton, Bruce. “Mapping a Network Security Strategy.” Security Management 43.2 (February 1999): 79-85.

Concurrent Auditing Techniques

Gay, Grant. “ Audit Risk Reduction.” Australian CPA 72.2 (March 2002): 68-70.

Harrast, Steven., and Bean, LuAnn. “Runaway IT Projects: Internal Audit Help is on the Way.” Internal Auditing 17.2 (March/April 2002): 10. (Library has sent for binding, will receive within a week)

Week 10:

Interviews, Questionnaires, and Control Flowcharts

Jeffords, Raymond., Thbadoux, Greg., Scheidt, Marsha. “ Utilizing Questions in The Audit Interview.” Internal Auditing 18.1 (January/Februrary 2003): 14-20.

Pandit, Ganesh M. “Clients’ Perceptions of Their Incumbent Auditors and Their Loyalty to the Audit Firms: An Empirical Study.” The Mid- Atlantic Journal of Business 35.4 (December 1999): 171-188.

Performance Measurement Tools

Lampe, James C., and Sutton, Steve G. “Performance Measures to Improve Internal Audit Productivity and Quality.” Internal Auditing 13.1 (Summer 1997): 3-14.

Hussain, Mostaque., and Hoque, Zahirul. “Understanding Non-financial Performance Measurement Practices in Japanese Banks.” Accounting, Auditing, and Accountability Journal 15.2 (2002): 162-182.

Week 11:

Evaluating Asset Safeguarding and Data Integrity

Petravick, Simon. “Internal Auditor Outsourcing: Who and Why?” Internal Auditor 12.3 (Winter 1997): 16-21.

Evaluating System Effectiveness

Tsim, Y.C., Yeung, V.W.S., Leung, Edgar.T.C. “An Adaptation to ISO 9001: 2000 for Certified Organizations.” Managerial Auditing Journal 17.5 (2002): 245-250.

Rezaee, Zibihollah., and Reinstein, Alan. “ The Impact of Emerging Information Technology on Auditing.” Managerial Auditing 13.8 (1998): 465.

Karapetrovic, Stanislav., and Willborn, Walter. "Self-audit of Process Performance." The International Journal of Quality and Reliability Management 19.1 (2002): 24-45.

Evaluating System Efficiency

Collins, Rod. "uditing in the Knowledge Era." The Internal Auditor 56.3 (June 1999): 26-31.

Sinason, David H., McEldowney, John E., Pinnello, Arianna S. "Improving Audit Planning and Control with Project Management Techniques." Internal Auditor 17.6 (November/ December 2002): 12-16.

Sarkis, Joseph., Sundarraj, R.P. "Fators for Strategic Evaluation of Enterprise Information Technologies." International Journal of Physical Distribution and Logistics 30.3/4 (2000): 196.

Bean, LuAnn., and Harrast, Steven A. "Thin and Ultra Thin Clients: Fat Issues for Internal Auditors." Internal Auditor 15.6 (November/December 2000): 3. (Library has sent for binding, will receive within a week)

Week 12:

Managing the Information System Audit Function

Rezaee, Zabihollah., Elam, Rick., Sharbatoghlie. "Continuous Auditing: The Audit of the Future." Managerial Auditing Journal 16.3 (2001): 150-158.

Bierstaker, James L., Burnaby, Priscilla., Thibodeau, Jay. "The Impact of Information Technology on the Audit Process: An Assessment of the State of the Art and Implications for the Future." Managerial Auditing Journal 16.3 (2001): 159-164.

Menkus, Belden. "Some Thoughts on the Future of IS Auditing." EDPACS 28.2 (August 2000): 10.

7.0 (Fill out for ISQA and CIST courses) Estimate Computing Accreditation Commission (CAC) Category Content (class time in hours):

CAC Category	*Core*	*Advanced*
Hardware and software	5	
Networking and telecommunications	5	
Modern programming language		
Analysis and Design	5	
Data management		
Role of IS in Organizations	15	15

7.0 (Fill out for CSCI and CIST courses) Estimate Computer Science Accreditation Board (CSAB) Category Content (class time in hours):

CSAB Category	*Core*	*Advanced*
Data structures		
Computer organization and architecture		
Algorithms and software design		
Concepts of programming languages		

8.0 Oral and Written Communications:

Every student is required to submit at least __5___ written reports (not including exams, tests, quizzes, or commented programs) to typically __5___ pages and to make __1___ oral presentations of typically __30___ minutes duration. Include only material that is graded for grammar, spelling, style, and so forth, as well as for technical content, completeness, and accuracy.

9.0 Social and Ethical Issues:

Please list the topics that address the social and ethical implications of computing covered in all course sections. Estimate the class time spent on each topic. In what ways are the students in this course graded on their understanding of these topics (e.g. test questions, essays, oral presentations, and so forth?).

We will cover the standards for IS/T audit and control established by professional associations such as ISACA and AICPA. (Time: 6 hours).

10.0 Theoretical content:

Please list the types of theoretical material covered, and estimate the time devoted to such coverage.

11.0 Problem analysis:

Please describe the analysis experiences common to all course sections.

12.0 Solution design:

Please describe the design experiences common to all course sections.

CHANGE HISTORY

Date	***Change***	***By whom***	***Comments***
