

NORTHWESTERN UNIVERSITY  
KELLOGG GRADUATE SCHOOL OF MANAGEMENT  
Accounting Information and Management 432

**102-432: Information Technology In Healthcare Management**

This course examines accounting concepts as they apply to the planning and management control aspects of healthcare institutions with current information technology in a connected world. Topics covered include cost accounting, hospital information systems, activity-based costing, clinical information systems, responsibility accounting, management control, product costing, financial reports, cost benefit analysis, performance assessment, computer-based medical records, medical clinic information systems, and enterprise-wide information networks. Information technology in a connected world encompasses all healthcare relationships, and these communications are examined with case studies. Prerequisite: Accounting 430. [Scheduled in **Winter Quarter for Monday Evening, Section 81 on Evanston Campus at 6:30 pm**]

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**Revised Course Content:**

Advancements in medical technology, clinical information systems, hospital information systems, networks, information warehousing, and computer-based medical records are examined in the revised course materials. Case studies illustrate how the internet is changing the delivery of health care services in hospitals, clinics, and medical group practices. Computer exercises previously used in this course have been replaced by these new instructional units.

**Course Objectives:**

The purpose of this course is to assist you in performing strategic assessment of healthcare entities, especially regarding financial, operational, management control, and information systems issues. A five-dimensional framework is presented in the first session for classifying healthcare entities, and other dimensions are added to this framework for selected healthcare evaluations. Financial statements of healthcare entities are studied for their contents and for reinforcing the structural differences among healthcare entities. Each examination of healthcare entities includes a consideration of the medical technology, information systems capabilities within the organization, and the role of the internet in changing communications in a connected world. Emphasis is placed on your gaining an understanding of the relationship between the healthcare entity's organizational structure and the specification of viable cost accumulation centers for planning and management control purposes. This understanding includes knowledge about expenditure control and responsibility-accounting reporting procedures, case-mix management, medical technology index, product life-cycle costing, departmental assessments, budgeting, cost benefit analysis, alternative "costs" for different management purposes, and assessing patient outcomes by treatment modalities. Patient management information systems, clinical information systems, computer-based medical records, financial systems, and information networks are examined with an emphasis on timeliness of information available to physicians.

Upon successful completion of the course you should be able to:

1. Understand the identification and classification problems with healthcare entities that result in different macro totals of financial data for the same type of facility as reported by governmental agencies and professional associations.
2. Know the major alternative financial reporting choices by nonprofit healthcare entities in recording transactions for unrestricted net assets and temporarily restricted and permanently restricted net assets, including the impact that given alternative accounting practices may have on financial statements for several years.
3. Understand the concept of "different costs for various management purposes" in the context of healthcare entities and be able to explain marginal cost, differential cost, joint cost, direct cost, assigned cost, allocated cost, natural element of cost, and net realizable value.
4. Explain the key data exchanges and interactive capabilities among patient management information systems, clinical information systems, computer-based medical record, and financial systems that are needed by physicians.
5. Discuss the relationship of medical management, medical technology, and information systems for performance assessment, improved outcomes, and quality of care.
6. Explain information warehousing and retrieval capabilities using the same healthcare entity's transaction data for management control, cash flow management, departmental assessment, pricing of services, and strategic planning.
7. Understand the reasons that matching of costs and revenue in a healthcare entity are more complex than the typical situation in a business firm and why the traceability of transaction data is critical for management planning and control purposes.
8. Explain the forecasting of financial outcomes for healthcare entities given case mix profiles of admissions, visits, patient days, gross charges, costs by treatment modalities, and mix of third-party payors.
9. Understand product costing and management of healthcare services given approved treatment protocols, mix of third-party payors, physician profiles, and managed care arrangements.
10. Evaluate a healthcare entity's information networks from a few observations as to the content, scope, access, transmission, and timeliness of patient information available to physicians at various locations and to other consumers (patients and information seekers).

**Grading:**

- Preparedness on the reading materials when questioned and class participation (**10** percent).
- Midterm examination consists of four or five essay questions (**30** percent).
- Final examination contains four or five essay questions (**60** percent).
- **There are no term papers in the course.**

**Honor Code**

- The Honor Code is taken seriously.
- Students are encouraged to form study groups for purposes of discussing technical notes and readings. This joint effort includes studying for the midterm test and the final examination.
- After the optional take home examination is distributed in class, then all cooperative discussions between and among students regarding Accounting 432 course must cease.

**Prerequisite**

- There are no prerequisites in health services management for the Accounting 432 course.
- Some students take Accounting 432 [Information Technology In Healthcare Management] before taking Accounting 479 [Financial Assessment and Performance Evaluation of Healthcare Entities]. Other students take Accounting 479 in the Spring Quarter followed by Accounting 432 in the Winter Quarter.

**Course Materials:**

Special healthcare instructional materials were prepared for the **102-432** course which serve to provide an orientation to the field of study and to emphasize the unique financial accounting practices, management control procedures, and information systems and network capabilities followed in this industry. These materials are consistent with the stated course objective — "to assist you in performing strategic assessment of healthcare entities, especially regarding financial, operational, management control, and information systems issues."

Course materials consist of five parts which focus on management planning and control in healthcare entities with current information technology. First part is the essential components of management control. This phase captures expenditure, revenue, and activity data by regular cost account and the aggregation of these data by temporary reporting cost centers under the responsibility accounting construct. These statistical data include specific work-load units and relative-value measures that are used in performance evaluation by regular cost account. Inpatients are assessed by an acuity index which is used in patient care management and nurse scheduling. These relative-value units and acuity measures permit refined variance analysis for cost centers and cost-volume analysis for revenue centers.

**Course Materials** (continued)

Second part begins with the mapping of regular cost data and common cost centers into departmental management control system modules where a different type of monitoring and assessment is performed. Fixed costs and minimum-volume monitoring are accomplished for patient care and quality assurance purposes. Comparisons of actual with budget for the mix and distribution of healthcare services are essential for quality care. Instructional materials illustrate the cost accumulation process, responsibility accounting reporting arrangement, cost assignments, cost allocations, and traceability of transaction data. Problems have been prepared on cost accounting practices for healthcare entities in the areas of patient acuity, nurse scheduling, work load measurements, variance analysis, and cost-volume analysis.

Third part examines information flows within healthcare entities. Patient management information systems and financial information systems in healthcare entities must respond to governmental requirements for submitting and supporting electronic claims data. Clinical information systems and hospital information systems are focused on supporting patient care and the delivery of services. These diverse information networks are integrated within a management control framework, and data warehousing is used in promptly providing relevant information for diverse purposes. The internet is changing the delivery of healthcare services in hospitals, medical group practices, clinics, extended care facilities, and home care. Physicians, patients, consumers, and information seekers are undergoing role changes in healthcare entities through the power of information in a connected world.

Fourth part consists of case studies and guest lecturers which are used in supplementing text materials and handouts on information technology and enterprise-wide information networks. Some case studies describe hand-held devices being used by all physicians in medical clinics during the patient interaction within an episode of care and how this technology has changed the delivery of care. Another case study focuses on required interfaces among clinical information systems, patient management information systems, financial information systems, and computer-based medical records to permit high-speed interaction by various physicians, healthcare professionals, administrative staff, and affiliated healthcare providers. Other topics covered include information warehousing for outcomes assessment, information systems for care delivery, and future state of information technology in healthcare management.

Fifth and final part is the management of patient services. These materials include classifying and reporting episodes of care, case-mix management, and revenue center analysis. Standard reports are examined that compare treatment protocols by payor for an attending physician within a case-mix group. Assigned exercises focus on management planning and control issues at the lower level of treatment protocol by payor. Instructional materials explain a seven-step assessment framework of DRG activities for management planning and control purposes. Case examples presented in class serve to integrate segments of the course with applied applications and are based on the actual cost, revenue, and utilization experiences of healthcare entities. Computer-based medical record with order management capabilities that can be accessed by physicians at various locations is used in integrating various segments of course materials.

Typical students for which the Accounting 432 course is designed:

- Healthcare major with interest in marketing
- Healthcare major with interest in corporate finance
- Healthcare major with interest in healthcare institutions
- Marketing major with interest in pharmaceutical companies
- Marketing major with interest in suppliers of healthcare services
- Finance major with interest in banking (loans to healthcare entities)
- Finance major with interest in benefit management
- Management consultant with potential interest in healthcare

**Impact of Accounting 432 on other courses and the health services management major:**

- There is no overlap between Acct 102-432 and Acct 102-479. Chapters 15 and 16 assigned in Accounting 432 will be used as a reference in Accounting 479 for purposes of illustrating the diagnosis-related groups for Medicare inpatients in the prospective payment system. The focus in using these materials is different between the two courses.
- Four courses required for the major in "health industry management" should typically not be based on **both** Accounting 432 and Accounting 479 courses. Students taking Accounting 432 and Accounting 479 are strongly encouraged to take three other courses within the health industry management program.
- Description of **102-479: Financial Assessment and Performance Evaluation of Healthcare Entities**

This course focuses on accounting, operational, utilization and financial systems as they apply to the financial management of healthcare entities with current information technology. Topics include financial statements of different types of healthcare entities, financial viability, medical technology, hospital closures, physician performance, patient treatment profiles, short-term financing, management of patient accounts, payor analysis, long-term financing, issuance of tax-exempt securities, and bond ratings. Each student will perform a strategic assessment of healthcare entities in a marketplace using published data provided by the instructor and will make a class presentation of the findings. Prerequisite: Accounting 430. [Scheduled **Spring Quarter, Thursday Evening, Section 81 on Evanston Campus, at 6:30 pm**]

**Required Materials for Accounting 432:** (to be purchased)

1. T. R. Prince, *Strategic Management for Health Care Entities: Creative Frameworks For Financial and Operational Analysis* Chicago: American Hospital Publishing, Inc., 1998.
2. Case Packet [Distributed in class compliments of instructor].

**Bring Case Packet of Readings To Class!**

**102-432: Information Technology In Healthcare Management**

Class Session

**2001**

1. Jan 8            Entities Providing Health Care Services to Individuals; Balance Sheets, Fund Accounting, and Net Assets  
 Read:     Chapter 1 and Chapter 4.  
 Review:   Study Questions and Responses for Chapters 1 and 4 [case packet; see Instructor before the first class for a complimentary copy of the case packet].  
 Read:     "Case-Mix Index for Medicare Inpatients" and "Charity Care and Community Service" pp. 36-41.

**Make-up class is Friday, January 12, 2001.**

2. Jan 12            Statement of Operations, Changes in Net Assets, Income and Retained Earnings; Capitation and Managed Care; Statements of Cash Flows  
 Read:     Chapter 5, Chapter 6 (pp. 119-127 only) and Chapter 7.  
 Review:   Study Questions and Responses for Chapters 5 and 7.  
 Read:     "Marketplace Analysis" and "Facility and Medical Service Codes" pp. 49-54.
3. Jan 15            Cost Analysis for Decision Making; Medical Devices and Clinical Integration Solutions  
 Read:     Chapter 10.  
 Review:   Study Questions and Responses for Chapter 10.  
 Read:     "Medical Devices and Clinical Integration Solutions."
- 4A. Jan 22           Guest lecturer: David R. Artz, M.D., MBA, Medical Director Information Services, Northwestern Memorial Hospital  
                           Topic: "Clinical Integration"
- 4B. Jan 22            Cost Measurement and Matching Issues in Health Care Entities  
 Read:     Chapter 11.  
 Review:   Study Guide for chapter.  
 Read:     "Internet and Telephony in the Connected Physician, Patient, Provider, Payer and Consumer World"

Class Session

**2001**

- 5A. Jan 29      Guest lecturer: Jonathan H. Kaplan, Vice President, Cap Gemini Ernst & Young U.S. LLC  
Topic: "Information Systems for Care Delivery."
- 5B. Jan 29      Activity-Based Costing in Health Care Entities  
Read:      Chapter 12.  
Review:    Study Guide for chapter.
- 6A. Feb 5      Midterm examination is a written analysis of four or five questions. [Written analysis is due at 6:30 p.m. on February 5.]
- 6B. Feb 5      Product Life-Cycle Costing and Different Costs for Various Purposes; Information Technology and Financial Viability of Healthcare Entities  
Read:      Chapter 13.  
Review:    Study Guide for chapter.  
Read:      "Information Technology and Financial Viability of Healthcare Entities."
- 7A. Feb 12     Guest lecturer: Ann Scott Blouin, Ph.D, Vice President, Cap Gemini Ernst & Young U.S. LLC  
Topic: "Information Warehousing For Outcomes Assessment and Special Studies."
- 7B. Feb 12     Management Control and Budgeting Issues  
Read:      Chapter 14.  
Review:    Study Guide for chapter.
- 8A. Feb 19     Guest lecturer: Steven F. Tolle (Senior Manager) and Barbara L. Gelberd (Senior Manager of Business Alliances), Pfizer Health Solutions Inc.  
Topic: "Improved Healthcare Management at Point of Sale."
- 8B. Feb 19     Physician Performance, Variance Analysis, and Management Control  
Read:      Chapter 15.  
Review:    Study Guide for chapter.  
Read:      "Resource-Based Relative-Value Scale (**RBRVS**) for Physician Payment Programs" [distributed in class].

Class Session

**2001**

9. Feb 26      Forecasting Health Services by Patients Within a Health Care Facility; Financial Management of Patient Services and Contract and Plan Administration In the Connected Economy  
Read:    Chapter 16.  
Review: Study Guide for chapter.  
Read:    "Financial Management of Patient Services and Contract and Plan Administration In the Connected Economy."
10. Mar 5      Product Costing and Management; Future State of Information Technology in Healthcare Management  
Read:    Chapter 17.  
Review: Study Guide for chapter.  
Read:    "Future State of Information Technology in Healthcare Management."
11. Mar 12      Final Examination, Monday, March 12th, 6:30 to 8:45 p.m.  
As stated on page 3, there is an optional take home examination for the course. The optional examination must be completed by 6:30 p.m. on March 12th unless there are extenuating circumstances supporting an extension.

See Professor Tom Prince for a more information on the course.