

**Penn State's Healthcare Information Technology Certificate**

|  | <b>ONC HIT modules</b>  |
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| IST 110 Information, People, and Technology          | Component 4: Introduction to Information and Computer Science<br>Component 15: Usability and Human Factors  |
| IST 210 Organization of Data                         | Component 8: Installation and Maintenance of Health IT Systems<br>Component 4: Introduction to Information and Computer Science   |
| IST 220 Networking and Telecommunications            | Component 9: Networking and Health Information Exchange<br>Component 4: Introduction to Information and Computer Science  |
| IST 260W (To be added to certificate)                | Component 17: Working in Teams<br>Component 10: Covers topics but without the focus on healthcare<br>Component 15: Usability and Human Factors<br>Component 19: Project Management  |
| HPA 101 Introduction to Health Services Organization | Component 1: Introduction to Healthcare and Public Health in the US<br>Component 2: The Culture of Healthcare   |
| HPA 332 Health Systems Management                    | Component 18: Planning, Management and Leadership for Health IT   |
| HPA 470 Health Care Information Management           | Component 3: Terminology in Health Care and Public Health Settings<br>Component 5: History of Health Information Technology in the U.S.<br>Component 6: Health Management Information Systems<br>Component 13: Public Health Information Technology |
| <b>MEDITECH vendor training</b>                      | Component 14: Special Topics Course on Vendor-Specific Systems  |
| <b>Apprenticeship</b>                                | Component 7: Working with Health IT Systems<br>Component 11: Configuring Electronic Health Records<br>Component 16: Professionalism/Customer Service in the Health Environment  |

The program was able to address approximately 90% of the ONC components. Only Component 12 (Quality) and 20 (Instruction) were not included in the certification program. The additional prerequisites for the inclusion of coursework in these two areas was prohibitive.

Where available, we have included course summaries below:

- **Information Sciences and Technology 110:  
Introduction to Information, People and Technology  
(3 credits)**

Information, People and Technology presents the high points of an education in the College of Information Sciences and Technology. It opens an intellectual journey through the ideas and challenges that IT professionals face in the world. It will address major questions such as: How can we use technology to organize and integrate human enterprises? How can technology help people and organizations adapt rapidly and creatively? What can we do about information overload?

Three perspectives (or facets) address the core issues: information or the basic science of data encoding, transmission and storage; people or the interactions among technologies, institutions, regulations and users; and technology or the design and operation of basic information technology devices. Students completing the course will be confident users and consumers of information technology. Students will develop research and analytical skills to evaluate specific devices and understand how those devices function in larger socio-technical systems. Students will be able to predict and anticipate the impact of new technologies on human institutions as well as understand the potential impact of institutions on the use and design of information technologies.

The course employs an action-oriented approach. Students learn by doing—formulating and solving problems drawn from professional contexts, detecting and recovering from errors related to technology use, and locating, reading and studying materials that support their analysis and problem-solving. Students will accomplish this by participating in team-based learning. The course provides students with the opportunity to use, modify, and evaluate software to search for, frame, and express ideas with fluency. A variety of mechanisms are used to assess student performance. These evaluation methods typically include exams, quizzes, homework assignments, group projects, and peer and self-assessments.

IST 110 is the introductory course in IST, and, as such, serves as a prerequisite for 200-level (intermediate) IST courses. It is a required course for all majors and minors in IST, and meets requirements for a General Education or Bachelor of Arts Social Science (GS) course.

- **Information Science and Technology 220:  
Networking and Telecommunications  
(3 Credits)**

The course includes an introduction to: telecommunications history; telecommunications transmission media (conducted and radiated); transmission characteristics (including an introduction to coding and modulation techniques); error characteristics, detection, and correctional; local and wide area networking applications, hardware, and software; the OSI models; industry standards; topologies; protocols; internetworking devices; communications management; security and recovery; information system applications; and the selection of telecommunications and networking systems. Special attention will be paid to evolving Internet Protocol (IP) technologies, e.g., Internet2.

IST 220 is an introduction to digital networking and telecommunications and their applications in information systems. IST 110 is the only prerequisite. It is a required core course for both the two-year and four-year Information Sciences and Technology degrees, and is a critical part of the curriculum. Its objective is to provide the students with a basic understanding of the working of digital networks and the ability to apply this knowledge to specific applications and situations. Evaluation of knowledge objectives will be by examination; and of application (i.e., selection and management) objectives by grading of group and individual projects and case studies.

While the course is about digital technology and how it works, it is not a "hands on" course, or a training course in particular equipment and/or applications. While there will be demonstrations of relevant technologies, the course is not equipment-intensive and will not involve special technology needs beyond the normal access to computing and the Internet.

- **Information, Sciences and Technology 260W:  
Introduction to Systems Analysis and Design  
(3 Credits)**

IST 260W is an introductory course to system analysis and design. It covers the process and is intended to be independent of the specific system, whether it be a hardware, software, telecommunication, logistics, or information system. This course can be used as a prerequisite to specific Associate degree system design courses. It can also be used for breadth for those IST students who do not pursue technical emphases. It serves as a writing across the curriculum course for the Information Sciences and Technology Associate degree. The course looks at two design paradigms. A small design project is included in the course.

The objectives of the course include: (1) teaching students the importance of teamwork, project management, and oral and written communication skills; (2) teaching students a systems design strategy that emphasizes customer requirements at all stages of the process; (3) introducing students to the object oriented design process; (4) giving students a full design experience on a small project such as designing an e-Commerce system; and (5) showing students examples of the writing required for systems design and requiring them to write individual and team reports as well as give oral presentations on their designs.

Students will be evaluated by examinations and by grading of their written reports and oral presentations.

System design courses are taught at the upper-division level in Engineering and Business departments. This is a lower-division course that serves as an introduction for Associate degree students to give them a background for project-level courses in their fourth semester. It will serve as a core requirement in the Associate degree program and act as a prerequisite for the design courses that are capstone courses in many of the Associate degree options. The course will be offered one semester each academic year.

Prerequisite: IST 110, IST 210, IST 220 and ENGL 015

- **Health Policy and Administration 470:  
Health Care Information Management  
(3 credits)**

This course introduces the student to information systems terminology, structures, specific applications, and their relationships to management functions in health services organizations. Health providers and health systems are continuing to make multi-million dollar investments in information systems in order to meet new market and regulatory requirements. All health services managers will play a role in the analysis, design, acquisition, installation, operation and ultimate success of information systems necessary to meet organizational goals and objectives. This course exposes students to the IS/IT applications used to support management functions. Further, applications and management issues unique to industry segments (e.g., long-term care, home care, hospital administration, physician practice management) will also be explored.

The goal of the course is to ensure that students are schooled in the terminology, conceptual models, applications and opportunities and limitations of information systems in health services to the point that

they can ask appropriate questions, recognize and state significant issues, and participate in the discussion and analysis of information systems development and application.

The course is one of several elective courses in the Health Policy Administration major that students can complete and is also a required part of the Information Sciences and Technology/Health Policy Administration Minor providing students with an understanding of the basic structures of information systems in health administration; the relationship of these systems to managerial functions such as communications, coordination, control strategic and process planning and decision making, and the important policy and ethical issues associated with privacy, confidentiality, and security in information systems. Since the course represents the capstone of the Information Sciences and Technology/Health Policy Administration minor, it is important for students to have the pre-requisites for the course (H P A 332, IST 210, and IST 220), including an understanding of major issues in the health care system, health care management and information systems.

Student's attainment of educational objectives will be assessed through a variety of evaluation methods. Understanding and appropriate application of terminology, management issues, and ethical/privacy concerns will be assessed through examination. Concept integration will be assessed through case-study analysis and project papers. Data presentation and training communication issues will be assessed through individual application projects and presentations.

Prerequisite: HPA 332, IST 210, IST 220