Catalog: Health Information Technology Programs and Courses

Led by Bellevue College, the Health eWorkforce Consortium was formed to elevate Health Information Technology workforce development locally and nationally and provide career paths into this promising field for veterans and others.

The nine-college consortium includes Bellevue College, Bellingham Technical College, Clark College, Clover Park Technical College, Northern Virginia Community College, Pierce College, Renton Technical College, Spokane Community College, and Whatcom Community College. The Health Information and Management Systems Society (HIMSS) is also a primary partner.

BELLEVUE COLLEGE

Contents

HEALTH INFORMATION TECHNOLOGY PROGRAMS

Healthcare Data Analytics Certificate Program

Created by Bellevue College

This 30-credit program introduces students to the rapidly emerging field of healthcare data analytics. Through the use of case studies students explore and apply the tools, practices and issues surrounding the use of data analytics in support of key decisions in healthcare organizations. Topics include: clinical, operational and financial analytics in various healthcare settings; and trends and regulations that shape the role and practices of healthcare analytics.

Courses in Program:

COURSE TITLE	CREDITS	OPEN SOURCE MATERIALS FREELY AVAILABLE FOR THIS COURSE?
HCTM 455: ETL and Data Warehousing	5	Yes
HCTM 470: Healthcare Data Analytics Applications	5	Yes
HCTM 320: Health IT Data Standards	5	Not for this credit program; but similar content available in Non-Credit Bellevue College *Healthcare Data Analyst* Certificate Program
HCTM 450: Healthcare Analytics and Quality	5	No
HCTM 375: HIT Project Management	5	No
PHIL 365: Biomedical Ethics: Theory & Practice	5	No

To access this course on Skills Common.org, please visit: http://www.skillscommons.org/handle/taaccct/3780

HCTM 455: ETL and Data Warehousing

Presents students with best practices for ETL (extract, transform and load) and data warehousing. Utilizing both theory and hands on experience, students practice querying disparate healthcare databases to populate a data warehouse. The importance of organizational data governance will also be introduced.

Topics

- The role of query languages in data extraction
- Transforming data prior to loading into analyzable data formats
- Analyzable data file formats
- Data granularity and its role in the data warehouse
- Understanding stakeholder analytic needs
- How to construct a data warehouse
- Popular data warehouse tools
- Data dictionaries, data reliability and validity
- Data governance; definition, why it's needed and best practices
- Appropriate privileges and permissions for a data warehouse

CREDITS: 5   (cc) (i) OPEN SOURCE MATERIALS FREELY AVAILABLE FOR THIS COURSE

HCTM 470: Healthcare Data Analytics Applications

Students analyze strategies, benefits and limitations of data analytics in various healthcare environments. In the context of case studies, they evaluate, select and apply analytics tools and methods to develop meaningful information in support of key clinical, operational and financial decisions. Current and emerging analytics practices and metrics are discussed.

Topics

- Technologies, strategies and current practices for data gathering
- Developing metrics
- Data analysis tools and strategies
- Data analytics reporting
- Accuracy, integration and completeness of healthcare data sets
- Compliance requirements
- Clinical analytics applications, metrics and practices
- Healthcare operational analytics applications, metrics and practices

- Healthcare financial analytics applications, metrics and practices
- Enterprise-wide BI applications, metrics and practices
- Trends in healthcare data analytics implementation and management
- Barriers to and limitations of data analytics applications
- From data to key decisions
- Case studies

CREDITS: 5   OPEN SOURCE MATERIALS FREELY AVAILABLE FOR THIS COURSE

HCTM 320: Health IT Data Standards

Fundamentals of healthcare standards as they relate to patient records, coding and classification systems, privacy and security, technical infrastructure and medical device integration. Includes basics of decision support and data mining, the National Health Information Exchange, the federal Standards and Infrastructure Framework, Health Information Exchange systems (HIEs), Regional Health Information Organizations (RHIOs), and Meaningful Use.

Topics

- Fundamentals of healthcare standards
- Patient records
- Coding and classification systems
- Privacy and security
- Technical infrastructure and medical device integration
- Decision support and data mining
- The National Health Information Exchange
- The federal Standards and Infrastructure Framework
- ICD (International Classification of Diseases) -10/5010 codes
- Health Information Exchange systems (HIEs) and Regional Health Information Organizations (RHIOs)
- Meaningful Use
- Business and clinical scenarios
- Emerging trends in data mining and processing, including bioinformatics challenges

CREDITS: 5   OPEN SOURCE MATERIALS NOT AVAILABLE FOR THIS CREDIT PROGRAM;
BUT SIMILAR CONTENT AVAILABLE IN NON-CREDIT BELLEVUE COLLEGE HEALTHCARE DATA ANALYST CERTIFICATE PROGRAM

HCTM 450: Healthcare Analytics and Quality

Explores the scope and role of data and data analytics in healthcare in the context of national quality policies, as articulated in Meaningful Use Stages 1 and 2, and the National Quality Forum metrics that have been selected for Accountable Care Organization assessment and rewards, Health Information Technology for Economic and Clinical Health (HITECH) Act, and the Patient Protection and Affordable Care Act (PPACA).

Topics

- Applications of data analytics in healthcare
- Government initiatives that push data analytics
- Meaningful Use stages 1 and 2
- National Quality Forum metrics
- Accountable Care Organizations
- Health Information Technology for Economic and Clinical Health (HITECH) Act, and the Patient Protection and Affordable Care Act (PPACA)
- Impact of data analytics on healthcare delivery
- Information security and privacy
- Patient safety
- Quality management and reporting
- Clinical Decision Support Systems
- Operational efficiencies
- Information sharing between physicians
- Retrospective and forensics analytics
- Predictive analytics
- Beyond meaningful use
- Case Studies

CREDITS: 5   **OPEN SOURCE MATERIALS NOT AVAILABLE FOR THIS CREDIT PROGRAM**

HCTM 375: HIT Project Management

Examines project management theory and practice with emphasis on project management in healthcare IT settings. Students will evaluate tools used to develop and manage healthcare IT projects and select appropriate tools for developing a project based on a case study.

Topics

- Role of healthcare IT project management office in healthcare settings
- Differences between project management and operations

- Comparison and contrast of Project Management Institute (PMI) and Software Engineering Body of Knowledge philosophies in terms of Healthcare IT project management
- Evaluation of project management software used to manage healthcare IT projects
- Creation of forms, files and folders needed to manage a healthcare IT project
- Role and responsibilities of the project manager and team members in healthcare IT
- Strategies to manage communication needs in healthcare IT project management
- Project phases and the project life cycle in healthcare IT
- Strategic planning, project selection, and project prioritization
- Development of project management plans
- Financial and budget management in healthcare project management
- Managing project scope – work breakdown structure, scope verification and scope control
- Strategies to manage project time, personnel and costs
- Evaluation and selection of tools used for healthcare IT project quality control and quality management
- Risk management planning in healthcare IT projects – identifying, mitigating and controlling risk

CREDITS: 5   OPEN SOURCE MATERIALS NOT AVAILABLE FOR THIS CREDIT PROGRAM

PHIL 365: Biomedical Ethics: Theory & Practice

Examine ethical issues that arise in healthcare, such as provider-patient relations, death and dying, reproductive issues, human and animal experimentation, and bioethics and public policy. Offers the knowledge and skills needed to research, analyze, and evaluate positions taken on these or related issues. Special attention is paid to the practical use of ethics in clinical practice and in public society.

Topics

I. Intro to Ethical Theory
    a. Ethical theories relevant to biomedical contexts
    b. Practical applications of ethical theories in biomedical contexts
II. Intro to Research in Biomedical Ethics
    a. Use of research materials
    b. How to write a philosophy research paper
III. Issues and Case Studies in Biomedical Ethics. Topics will vary, but may include:
    a. Medical decision-making
    b. Death & dying
    c. Choices in reproduction
    d. Genetics
    e. Public policy
    f. Provider patient relationships

Healthcare Data Analyst Certificate Program (non-credit)

Created by Bellevue College

This 227-hour program focuses on the tools and strategies that support clinical, financial, operational and quality analytics applications in healthcare settings. The curriculum covers three main areas: an overview of the healthcare environment and its specific regulations, standards and trends; a hands-on examination of analytical tools and processes including data analysis and visualization; and a survey of analytics application to healthcare through case studies and scenarios with a discussion of future directions in this rapidly evolving environment. The program is ideal for those with experience or training in business intelligence or database-related fields, or for with significant experience in a healthcare organization.

Courses in Program:

COURSE TITLE	CREDITS	OPEN SOURCE MATERIALS FREELY AVAILABLE FOR THIS COURSE?
Introduction to Electronic Health Record Systems	12 hours	Yes
Applied Statistics	30 hours	Yes
Introduction to Healthcare Data Standards and Quality	50 hours	Yes
Data Visualization, including Tableau	25 hours	Yes
Healthcare Data Analytics Applications	50 hours	Yes
Operations Analysis in Healthcare	30 hours	Yes

To access this course on Skills Common.org, please visit: http://www.skillscommons.org/handle/taaccct/3870

Introduction to the Healthcare Environment

Learn about the US healthcare delivery and payment systems. You will explore the structure, policies and procedures applicable to the various healthcare organizations; and gain an appreciation for the roles and disciplines of providers throughout the US healthcare system. The course also covers the basics of the regulatory and accreditation processes; the laws, policies and procedures pertaining to patient safety, healthcare quality, data confidentiality and security, as well as professional and practice-related ethical issues.

*Just for those without healthcare industry experience

Topics

US healthcare system – history and trends

Healthcare delivery system
- Characteristics and organization
- Inpatient and outpatient setting – administrative and functional organization
- Interaction between different organizations
- Need of unique populations
- Opportunities and challenges moving forward
- Doctors' offices, hospitals, to ACOs, Web-health (e.g., CarenaMD)
- Pharmacy – PBMs – Databases, Retail clinics

Healthcare payment system
- History, characteristics and organization
- Healthcare financing structures and role of various payer organizations
- Payment and billing methodologies
- Fee-for-service and episode-of-care reimbursement
- Controlling rising medical costs
- Trends in healthcare financing
- State and federal laws regulating US healthcare insurance organizations
- Opportunities and challenges moving forward

Role of Healthcare Professionals
- Healthcare terminology—clinician, patient, disease, and syndrome, treatment
- Health professionals' roles, education, training, certification and licensure
- Primary care physicians and specialists
- Nurses, advanced practice nurses, LPNs, MAs and Medication Aids
- Physician assistants, pharmacists, therapists, and allied health professionals
- Changing roles and interactions between various healthcare professionals

HOURS: 30   **OPEN SOURCE MATERIALS FREELY AVAILABLE FOR THIS COURSE**

Introduction to Electronic Health Record Systems

Presents the evolution of electronic health records. You will have the opportunity to explore the features and functions of EHR systems in a simulated environment, and compare and contrast different EHR systems.

Topics

- Evolution of Electronic Health Records systems
- Features and functions
- Data management structures in different EHR systems
- Benefits and limitations

HOURS: 12   **OPEN SOURCE MATERIALS FREELY AVAILABLE FOR THIS COURSE**

Applied Statistics

Learn to understand and apply statistical concepts, methods and reasoning; organize, interpret and produce data; analyze statistical arguments and communicate findings clearly; and appreciate the relevance of statistics to contemporary society. Topics include: introduction to design of experiments, data analysis, correlation and regression, concepts of probability theory, sampling errors, confidence intervals, and hypothesis tests.

Topics

- Introduction
- Descriptive Statistics
- Probability and Distributions
- Normal Distribution
- Sampling Distributions
- Confidence Intervals
- Comparison of Independent Samples
- Data Collection and Experimental Design
- Comparison of Paired Samples
- Analysis of Categorical Data
- Analysis of Variance
- Linear Regression
- Correlation

HOURS: 30   **OPEN SOURCE MATERIALS FREELY AVAILABLE FOR THIS COURSE**

Introduction to Healthcare Data Standards and Quality

Explore current and emerging trends in healthcare data standards and quality as they relate to patient records, coding and classification systems, and information privacy and security. Topics include: acquisition, storage and access of medical data; key data management infrastructure and technical standards; and data quality and governance. Also covered are current and emerging government regulations, and their impact on healthcare providers and systems, and data acquisition and analysis needs and strategies. This course also includes discussions of ethical issues as they relate to the acquisition, analysis and dissemination of data.

Topics

- Current and emerging standards in healthcare information and quality
- Impact on healthcare practices
- Techniques to acquire, store and utilize medical data
- Security and privacy in data management
- Key infrastructure components and related technical standards
- Healthcare data interchange regulations and practices
- Healthcare data specifications and standards
- Meaningful Use Stages 1 and 2
- Impact of MU on the healthcare system and healthcare providers
- Impact of MU on data acquisition and analysis needs
- Data quality and data governance
- Ethical issues

HOURS: 50   (cc)(i) OPEN SOURCE MATERIALS FREELY AVAILABLE FOR THIS COURSE

Data Visualization, including Tableau

We know that data analytics is a powerful tool that is being used increasingly in healthcare. Data alone is not sufficient to bring about transformation. Analysts need to be able to tell a story with the data, communicating observations in a clear, compelling way. In this course, you'll learn data visualization tools and techniques, and be introduced to a software tool widely used in industry—Tableau.

Topics

- Visual organization and communication – transforming data into insights
- Trends in data visualization
- Creating visual analytics
- Interacting with the user
- Visualization tools – compare and contrast
- Intro to Visualization tool features, terminology and functionality
- Importing data into the tool
- Blending data sources
- Organizing and filtering data

- Types of charts and visualizations
- Filters, sets, groups and hierarchies
- Calculations and formulas that enhance visualization
- Mapping
- Dashboards
- Distributing and sharing visualizations
- Use cases and scenarios

HOURS: 25   CC ① **OPEN SOURCE MATERIALS FREELY AVAILABLE FOR THIS COURSE**

Healthcare Data Analytics Applications

Deepen your understanding of current and emerging practices in the application of data analytics in healthcare. Topics include clinical, financial, operations and quality analytics; trends in healthcare practices, customer expectations, and regulations that impact healthcare analytics; ethical issues in gathering, analyzing and reporting healthcare data; and a discussion of the roles and applications of descriptive, retrospective and prescriptive analytics in various healthcare settings. Through the use of case studies, students, you'll practice tools and techniques to analyze given data sets for specific outcomes, and create visual representations of data that convey information clearly and effectively to stakeholders with varied backgrounds and expertise.

Topics

- Clinical analytics – Clinical Quality and Outcomes
- Patient level analytics
- Population level or batch analytics
- Clinical decision support
- Financial analytics
- Cost and Profitability
- Claims and billing
- Operations analytics
- Quality analytics
- Pay for performance
- Meaningful Use
- Quality Metrics and Accountable Care Organizations
- Compliance and reporting
- Descriptive, retrospective and prescriptive analytics
- Patient/Customer Satisfaction
- Ethical issues relating to healthcare data analytics

HOURS: 50   CC ① **OPEN SOURCE MATERIALS FREELY AVAILABLE FOR THIS COURSE**

Operations Analysis in Healthcare

Gain an understanding of the role and applications of operations analytics in improving patient and population outcomes and reducing costs in various healthcare settings. Learn how operations analytics can also improve efficiencies and resource utilization throughout the organization. Analytics also offers the powerful potential to help organizations gain insights into which treatments are most effective for different types of patients, enabling them to customize and optimize treatment for individual patients.

Topics

- Use cases and benefits of operations analytics
- Enterprise and administrative analytics
- Operations and scheduling
- Resource management and utilization
- Productivity and efficiencies
- Workflow and Coordination of care
- Physician performance evaluation
- Treatment and outcome analysis
- Comparative Effectiveness Research (CER)
- Rare event detection
- Readmission rates
- Risk assessment and management
- Patient-Centered Medical Home
- Disease coordination

HOURS: 30

OPEN SOURCE MATERIALS FREELY AVAILABLE FOR THIS COURSE

Healthcare Database Management & Design Certificate Program

Created by Pierce College

This 40-credit program is designed for students interested in a non-clinical care IT profession in the health care industry merging both the healthcare background with IT enterprise database and business analysis skills. Below are the courses that comprise this certificate.

Courses in Program:

COURSE TITLE	CREDITS	OPEN SOURCE MATERIALS FREELY AVAILABLE FOR THIS COURSE?
BTECH 150 Medical Terminology I	5	Yes
BTECH 257 **Electronic Health Records**	5	Yes
CIS 210 **Business Analysis**	5	Yes
CIS 260 **Database Management Systems**	5	Yes
CIS 261 **SQL (Structured Query Language)**	5	Yes
CIS 262 **Database Administration, Backup & Recovery**	5	No
CIS 269 **Advanced SQL Programming & Tuning**	5	No
CIS 280 **Systems Analysis and Design**	5	Yes

To access this course on Skills Common.org, please visit: http://www.skillscommons.org/handle/taaccct/2510

BTECH 150 Medical Terminology I

Fundamentals of medical terminology, including prefixes, suffixes, root words, and basic rules upon which the student will build a medical vocabulary. Includes basic anatomy and physiology for the medical office worker. Recognition and definition of medical prefixes, suffixes, and root words

Topics

- Analysis of medical terms through knowledge of the Greek and Latin roots, prefixes, and suffixes
- Correct pronunciation and spelling of medical terms
- Utilization of the medical dictionary and other references
- Formation of nouns, adjectives, and plurals of medical words using the proper terminology

CREDITS: 5   **OPEN SOURCE MATERIALS FREELY AVAILABLE FOR THIS COURSE**

BTECH 257 Electronic Health Records

This course will prepare students for the management of health information through the use of electronic health records. Students will complete common work tasks and practice data entry while creating a variety of electronic medical records (EMRs) in both inpatient and outpatient settings using training software. The course will also provide background on existing and evolving government driven standards and regulations as they apply to the healthcare environment.

Topics

- Healthcare Delivery Organizations
- Healthcare Payment Systems
- Role of Healthcare Professionals
- Government Regulation and Certification
- Electronic Health and Medical Records
- Clinical and Financial Applications
- Consumer Health Informatics
- Healthcare Data Exchange and Standards
- Privacy and Security Policies and Compliance
- Various additional Healthcare- and Health IT-related Topics

CREDITS: 5   **OPEN SOURCE MATERIALS FREELY AVAILABLE FOR THIS COURSE**

CIS 210 Business Analysis

A study of the Business Analyst profession and generally accepted best practices. Students will analyze the business environment, define stakeholder needs and recommend IT solutions that enable the organization to

achieve its goals. Course discussion and hands-on case studies in the healthcare industry with comparison to other industries, as applicable, provides practical knowledge and experience.

Topics

- Business analysis techniques and methodologies
- Task/Project Requirements
- Problem definition
- Creative thinking
- Conflict and scope management
- Gap analysis
- Various additional Healthcare- and Health IT-related Topics

CREDITS: 5   ©① OPEN SOURCE MATERIALS FREELY AVAILABLE FOR THIS COURSE

CIS 260 Database Management Systems

Concepts and theory of relational database management systems (RDBMS) including the analysis and design of relational database systems. This is a project-based class. Entity Relationship modeling and advanced Microsoft Access techniques, in preparation for the Microsoft Office Specialist exam, will be covered. Course discussion and hands-on case studies in the healthcare industry with comparison to other industries, as applicable, provides practical knowledge and experience.   Database Management Systems

Topics

- Database Development
- Business rules and user requirements
- Entity Relationship Diagrams
- Normalization
- Database Design Patterns
- Validate and manage data
- Data queries
- Database forms, views and reports
- Database Security and administration
- Software, data, and users testing
- Various additional Healthcare- and Health IT-related Topics

CREDITS: 5   ©① OPEN SOURCE MATERIALS FREELY AVAILABLE FOR THIS COURSE

CIS 261 SQL (Structured Query Language)

Introduction to Structured Query Language (SQL), the industry-standard language for storing, retrieving, displaying, and updating data in a relational database. Includes an introduction to a procedural language extension such as PL/SQL or T-SQL.

Topics

- Structured Query Language (SQL)
- Relational Databases
- Queries
- Data Management
- Analysis
- Data Manipulation Language (DML)
- Data Control Language (DCL)
- Data Definition Language (DDL)

CREDITS: 5   **OPEN SOURCE MATERIALS FREELY AVAILABLE FOR THIS COURSE**

CIS 262 Database Administration, Backup & Recovery

This course addresses the key tasks and functions required of a database administrator in a production environment. Students will gain experience creating and implementing a database, managing data, expanding the size of the database, implementing basic security and data integrity measures, and granting data access privileges to individual users. Relational Data Base Management System (RDBMS)

Topics

- Database administration
- Database security
- Database backup and recovery
- Structured Query Language

CREDITS: 5   **OPEN SOURCE MATERIALS NOT AVAILABLE FOR THIS COURSE**

CIS 269 Advanced SQL Programming & Tuning

An advanced course in Structure Query Language (SQL). Students will develop script files, stored procedures, and procedural language units, as well as diagnose and tune performance problems. Procedural Languages

Topics

- Design
- Structured Query Language
- Programming terms and concepts
- SQL Tuning
- Debugging

CREDITS: 5   **OPEN SOURCE MATERIALS NOT AVAILABLE FOR THIS COURSE**

CIS 280 Systems Analysis and Design

This course introduces students to a systematic approach to defining needs, creating specifications, and designing information systems. Course discussion and hands-on case studies in the healthcare industry with comparison to other industries, as applicable, provides practical knowledge and experience. Waterfall and agile systems analysis and design techniques will be used to develop and document effective computer-based information systems projects. Students will also learn project management standards and create project plans using currently available project management application software.   Systems Development Life Cycle (SDLC)

Topics

- Agile and other development methodologies
- Project Management
- Professionalism and Computer Ethics
- Data security and privacy standards and regulations (HIPAA, FERPA)
- IT Management
- IT Standards & Best Practices
- Computer Careers and certifications
- Various Healthcare- and Health IT-related topics

CREDITS: 5   **OPEN SOURCE MATERIALS FREELY AVAILABLE FOR THIS COURSE**

Health Information Technology [Networking] Certificate Program

Created by Bellingham Technical College

This 64-credit program prepares students to manage computer network systems in the healthcare field through a combination of classroom theory and practical application. They develop the knowledge and skills to troubleshoot and repair computer systems and design, install, and maintain Local Area Networks (LANs). In addition, students will gain a comprehensive understanding of the healthcare environment, health information management systems, information security and trends in healthcare. This Program also prepares students for industry standard certifications: Certified Associate in Healthcare Information & Management Systems, CompTIA Network+ Certification, and CompTIA A+ Certification Below are the courses that comprise this certificate program.

Courses in Program:

COURSE TITLE	CREDITS	OPEN SOURCE MATERIALS FREELY AVAILABLE FOR THIS COURSE?
IT 102 **IT Ethics and Careers**	5	Yes
IT 112 **PC Hardware A+**	8	No
IT 121 Introduction to Programming	5	No
IT 141 Operating Systems A+	8	No
IT 160 Networking Technologies	8	No
HT 180 Healthcare and Technology	5	Yes
HT 190 Health Information Management Systems	5	Yes
HT 200 Health Technology Professional	5	Yes
ENG 101 English Composition or **COM 170 Oral & Written Communication**	5	No
CMST 210 Interpersonal Communications	5	No
MATH 146 Introduction to Statistics **or MATH 100 Occupational Math**	5	No

To access this course on Skills Common.org, please visit: http://www.skillscommons.org/handle/taaccct/2347

IT 102 IT Ethics and Careers

Ethics issues and career options for computer professionals will be explored through research and simulated IT enterprises. Topics include intellectual property rights, respecting privacy, avoiding harm to others, IT career paths, and IT workplace environments.

Topics

- Career speakers and paper
- Ethics issues reading and forums
- IT Scenarios

CREDITS: 5   **OPEN SOURCE MATERIALS FREELY AVAILABLE FOR THIS COURSE**

IT 112 PC Hardware A+

This course prepares the student to understand, install, configure, upgrade, troubleshoot and repair PC hardware components. Course material parallels the hardware portion of the CompTIA A+ certification objectives for the Essentials and the IT Technician exams.

Topics

- How Hardware and Software work together
- Cases, form factors, power supplies
  CPUs, Motherboards and chipsets
  RAM
- I/O Devices
- Hard Disks and Mass Storage
- Basic Networking
- Printers

CREDITS: 8   **OPEN SOURCE MATERIALS NOT AVAILABLE FOR THIS COURSE**

IT 121 Introduction to Programming

This course introduces students to the fundamentals of good program design, coding, testing, and documentation. Students will learn to employ user interface design, standardization and variable naming, decision operators, looping mechanisms, and error handling as they build programs.

Topics

- Design guidelines
- Variables and constants

- Selection structures
- Repetition structures

IT 141 Operating Systems A+

This course prepares the student to install, maintain, and troubleshoot Windows operating systems. Course material parallels the CompTIA A+ Operating Systems portion of the certification objectives.

Topics

- Introducing Operating Systems
- Troubleshooting OS Startup
- Installing Operating Systems
- Windows on a network
- Maintaining Operating Systems
- Windows on the Internet
- Supporting Users and Their Data
- Securing Your PC and LAN
- Troubleshooting OS Startup
- Supporting Printers & Scanners

IT 160 Networking Technologies

This course serves as a general introduction for students to acquire a foundation in current network technologies for local area networks (LANs), wide area networks (WANs), and the Internet. It provides an introduction to the hardware, software, terminology, components, design, and connections of a network, as well as the topologies and protocols for LANs. It covers LAN-user concepts and the basic functions of system administration and operation.

Topics

- Default ports
- Addressing formats
- Subnetting and addressing schemes
- Routing
- Wireless communication standards
- Cable types
- Connector types
- Physical network topologies

- Wiring standards
- WAN and LAN technology
- Logical network topologies
- The OSI model
- Configuration management documentation
- Network monitoring
- Troubleshooting
- Command line interface tools
- Network scanners
- Hardware and software security devices
- Firewalls
- Network access security
- User authentication
- Device security

CREDITS: 8   **OPEN SOURCE MATERIALS NOT AVAILABLE FOR THIS COURSE**

HT 180 Healthcare and Technology

This course serves as a general introduction of the healthcare environment, healthcare delivery systems, health information and technology in healthcare. Course materials parallel CAHIMS certification objectives.

Topics

- Healthcare Delivery Organizations
- Healthcare Payment Systems
- Role of Healthcare Professionals
- Government Regulation and Certification
- Health IT Applications
- Electronic Health & Medical Records
- Clinical & Financial Applications
- Consumer Health Informatics
- Systems Architecture & Components
- Healthcare Data Exchange & Standards

CREDITS: 5   **OPEN SOURCE MATERIALS FREELY AVAILABLE FOR THIS COURSE**

HT 190 Health Information Management Systems

This course will provide a comprehensive overview of health information management systems (HIMS). Topics will include HIMS selection, analysis, design, user and technical requirements, implementation, training, and evaluation. Course materials parallel CAHIMS certification objectives.

Topics

- HIMS Analysis, Planning and Design
- Clinical Process & Workflow Analysis
- Business, User & Technical Requirements
- Usability & Human Factors
- Project Management
- HIMS Selection & Acquisition
- Interoperability Standards & Certification
- HIMS Implementation & Management
- End User Training & Support
- Systems Monitoring & Maintenance
- HIMS Testing & Evaluation

CREDITS: 5   **OPEN SOURCE MATERIALS FREELY AVAILABLE FOR THIS COURSE**

HT 200 Health Technology Professional

This course prepares students to be health technology professionals. Students will practice privacy and security policies and compliance standards, develop leadership and planning skills, and enhance customer service and communication skills.

Topics

- Privacy & Security Policies & Compliance
- Security Risk Assessment & Audits
- Data & Systems Security Management
- Disaster Recovery & Business Continuity
- Leadership & Change Management
- Quality Standards
- IT Strategic Planning
- Business Communication & Ethics
- Teams & Team Building
- Professionalism & Customer Service
- Staying Current- Technology & Industry

CREDITS: 5   **OPEN SOURCE MATERIALS FREELY AVAILABLE FOR THIS COURSE**

ENG 101 English Composition or
COM 170 Oral & Written Communication

English 101 is a course designed to help students write effectively at the college level. Students will read, analyze, and write essays using a variety of rhetorical strategies, as well as develop, articulate, and verbally express ideas clearly and effectively. Performing competently at this level requires skills in critical reading and thinking, and the ability to accurately analyze what will make writing more effective in any given context. Writing is a process requiring time and commitment.

Topics

- Overview of course, detailed analysis of course syllabus, diagnostic writing exercises
- Review of sentence, paragraph and essay structural fundamentals
- Practice with a variety of prewriting, outlining, drafting, and editing techniques
- Research, use, and documentation of outside sources to help develop and support an argument
- Enhancement of skill areas, including originality of thesis choice, support and development of thesis, and overall unity and coherence of the composition
- Discussion and engagement in critical analysis in the writing and reading process
- Analysis of and practice in using a variety of rhetorical techniques

CREDITS: 5   **OPEN SOURCE MATERIALS NOT AVAILABLE FOR THIS COURSE**

CMST 210 Interpersonal Communications

This course is designed to guide students through the process of developing the interpersonal skills necessary for interacting and communicating well with others--especially in workplace. Topics will include: communication skills, teamwork, leadership, problem solving/conflict resolution, assertiveness, customer relations, business and work ethics, organizational development, employment rights and responsibilities, equity and cultural issues, and personal development (decision making, motivation, self-esteem, etc.).

Topics

- Course Overview & Accepting Responsibility
- Learning Styles & Personality
- Goal setting
- Listening & Non-verbal Communication Skills
- Relational Styles & Assertive Skills
- Conflict Resolution & Problem-Solving Skills
- Teamwork / Leadership
- Customer Relations
- Violence, Emotions & Interpersonal Relationships
- Stress Management

- Equity and Diversity & Constructive Criticism

MATH 146 Introduction to Statistics or MATH 100 Occupational Math

Math 146: Introduction to Statistics is a WEB-ENHANCED college-level math course in elementary descriptive and inferential statistics. It provides an introduction to data analysis that makes use of graphical and numerical techniques to study patterns and departures from patterns. The student will study randomness with an emphasis on understanding variation; collects information in the face of uncertainty; checks distributional assumptions; tests hypotheses; uses basic probability as a tool for anticipating what the distribution of data may look like under a set of assumptions; and begins to use appropriate statistical models to draw conclusions from data.

Topics

- Sampling and data
- Descriptive statistics
- Probability topics
- Discrete and continuous random variables
- Normal distribution
- Central limit theorem
- Confidence intervals
- Hypothesis testing
- Linear regression and correlation

Mobile Health Information Technology Certificate Program [with a focus on mobile device management]

Created by Spokane Community College

This 25-credit program combines knowledge of health IT and management systems with a solid foundation in mobile device management. Mobile Devices are transforming the healthcare industry and is poised to alter how health care is delivered, the quality of the patient experience, and the cost of health care. But with this transformation come security, management, and regulatory concerns. IT Managers are struggling to keep up with constantly evolving mobile device and mobile application technologies. Mobile device usage, especially personally owned devices, are loaded with risks that must be carefully managed to avoid penalties and damaged reputation from breaches of Personal Health Information (PHI). Mobile devices must be tracked, encrypted, and managed to minimize network security and physical security risks. This program also prepares students for the CAHIMS certification exam which is designed for emerging professionals within the healthcare industry and demonstrates knowledge of health IT and management systems.

Courses in Program:

COURSE TITLE	CREDITS	OPEN SOURCE MATERIALS FREELY AVAILABLE FOR THIS COURSE?
CIS 103 Mobile Devices	5	Yes
CIS 104 Mobile Device Management	5	Yes
HIM 219 **Healthcare Environment and Professional Skills**	5	Not in this set of materials. Please visit http://oli.stanford.edu and access *Health Information Technology Foundations* course
HIM 220 **Health Technology Environment and Security**	5	Not in this set of materials. Please visit http://oli.stanford.edu and access *Health Information Technology Foundations* course
HIM 221 **HIMS Systems Analysis, Implementation and Maintenance**	5	Not in this set of materials. Please visit http://oli.stanford.edu and access *Health Information Technology Foundations* course

To access this course on Skills Common.org, please visit: http://www.skillscommons.org/handle/taaccct/2361

CIS 103 Mobile Devices

Demonstrate basic mobile skills as needed in the health care system. This will include topics dealing with devices and their usage, networking of devices, security, and medical applications.

Topics

- Basic mobile devices
- Types
- Operating Systems
- Mobile device usage
- Setup and Configuration
- Gestures
- Application Installation and Usage
- Backups
- Cloud Storage
- Mobile networking
- Connectivity
- Wireless
- IP Addressing
- VPN
- Mobile security
- BYOD in the Workplace
- Policies
- Physical Security
- Mobile Medical Applications
- Personal Health Record Apps
- Electronic Medical Records

CREDITS: 5   OPEN SOURCE MATERIALS FREELY AVAILABLE FOR THIS COURSE

CIS 104 Mobile Device Management

Demonstrate basic mobile skills as needed in the health care system. This will include topics dealing with devices and their usage, networking of devices, security, and medical applications.

Topics

- Mobile Device Management Basics
- What is mobile device management (MDM)
- Challenges
- Enterprise Needs

- Frontline Management
- MDM Products
- Management Theories
- Manage Device
- Third Party Software
- Manage Data
- Policies
- Third Party Software
- Manage Both
- Policies
- Third Party Software
- Managing Mobile Devices
- Security
- Requirements for Secure Devices
- Security Checklist
- Setting up Secure solutions
- Avoiding Viruses
- Looking into the Future
- Integrating Mobile Deployment Components
- Keeping up with a Changing World
- Where are Mobile Devices Headed

CREDITS: 5   **OPEN SOURCE MATERIALS FREELY AVAILABLE FOR THIS COURSE**

HIM 219 Healthcare Environment and Professional Skills
Topics

This course gives an overview of the healthcare environment and of the leadership, planning, professional and communication skills that are essential to be successful in this environment. It covers the healthcare systems as a whole including provider, governing, and payment organizations.

- Healthcare Environment
- Healthcare Delivery Organizations
- Healthcare Payment Systems
- Role of Healthcare Professionals
- Government Regulation and Certificate
- Leadership and Change Management
- Quality Standards
- IT Strategic Planning

- Business Communication and Ethics
- Teams and Team Building
- Professionalism and Customer Service
- Staying Current with Technology and Industry

HIM 220 Health Technology Environment and Security
Topics

This course gives an overview of the healthcare environment, various health IT applications, and associated privacy and security policies and compliance. It focuses on health information management systems as well as applications that connect into system, and on the flow and transfer of data throughout the healthcare system.

- Healthcare Technology Environment
- Health IT Applications
- Electronic Health and Medical Records
- Clinical and Financial Applications
- Consumer Health Informatics
- Systems Architecture and Components
- Healthcare Data Exchange and Standards
- Privacy and Security Policies and Compliance
- Security Risk Assessment and Audits
- Data and Systems Security Management
- Disaster Recovery and Business Continuity

HIM 221 HIMS Systems Analysis, Implementation and Maintenance
Topics

This course gives an overview of the healthcare information management systems lifecycle, including analysis planning and design, selection and acquisition, implementation and management, and testing and evaluation. The focus is on best practices and standards that guide effective implementation and maintenance of information systems to support clinical processes and workflow in healthcare organizations.

- Health Information Management Systems Analysis, Planning and Design
- Clinical Process and Workflow Analysis
- Business, User and Technical Requirements
- Usability and Human Factors
- Health IT Project Management
- Health Information Management Systems Selection
- Health Information Management Systems Acquisition
- Interoperability Standards and Certification
- Health Information Management Systems Implementation
- End User Training and Support
- Health Information Management Systems Monitoring and Maintenance
- Testing Methodology and Planning
- Testing Implementation and Documentation

CREDITS: 5   OPEN SOURCE MATERIALS NOT AVAILABLE FOR THIS COURSE

PLEASE VISIT http://oli.stanford.edu AND ACCESS HEALTH INFORMATION TECHNOLOGY FOUNDATIONS COURSE

Mobile Health Software Development (MHSD) Certificate Program

Created by Spokane Community College

This 15-credit program is designed to be completed over three academic terms by either students concurrently enrolled in the Software Development AAS degree or certificate program or by experienced programmers who wish to further develop their mobile software development skills. This certificate offers a thorough examination of mobile software development and provides an entry way into healthcare, health information technology, and health information management systems. The focus of this certificate is twofold: it incorporates entry-level knowledge of health IT and management systems with a solid foundation in mobile software development, including HTML5, CSS3, jQuery, Responsive Design, Phone Gap, and the Android mobile development platform. The entry-level health IT specialist's curriculum is aligned to the CAHIMS (Certified Associate in Healthcare Information Management Systems) certification administered by HIMSS (Health Information Management Systems Society.) The MHSD certificate is designed for current software development students or for those who have previous a degree or experience in software design and desire to enter a career in health IT. Below are the courses that comprise this certificate.

Courses in Program:

COURSE TITLE	CREDITS	OPEN SOURCE MATERIALS FREELY AVAILABLE FOR THIS COURSE?
CIS 217 – Mobile I	5	Yes
CIS 218 – Mobile II	5	Yes
CIS 219 – Mobile III	5	Yes

To access this course on Skills Common.org, please visit: http://www.skillscommons.org/handle/taaccct/2363

CIS 217 – Mobile I
Topics

This course presents the standards of creating Mobile Websites with the use of HTML5, CSS3, and JQuery. It will teach how to utilize standard responsive website design to create single websites that can be utilized with a wide variety of Mobile devices, Tablets, Laptops, and desktop computers with varying screen sizes.

I.   Introduction to jQuery
   a.   Installation and versions
   b.   Writing Simple anonymous functions
   c.   Using existing plugins and code
   d.   Applying jQuery to responsive web design
II.   Responsive Web Design
   a.   Developing screen size agnostic websites
   b.   Percentage based HTML and CSS elements
   c.   Aligning and Positioning elements dynamically based on screen sizes
   d.   Modifying elements dynamically
III.   Introduction to jQuery Mobile
   a.   Developing single page mobile apps
   b.   Navigation
   c.   Styling
IV.   Introduction to Phone Gap
   a.   Phone Gap Installation
   b.   IDE installation and use
   c.   Building and Compiling a Smartphone Application
   d.   Deploying an Application to the various app stores: Google Play, iPhone App Store

CREDITS: 5   OPEN SOURCE MATERIALS FREELY AVAILABLE FOR THIS COURSE

CIS 218 – Mobile II
Topics

This course presents the standards of creating Mobile Websites through the use of either Android Operating System Development and the Java Language or iPhone/iPad through the Objective-C language.

I.   Introduction to Java or Objective-C
   a.   Installation and versions
   b.   Integrated Development Environment (IDE) usage
   c.   Writing a first native application
   d.   Testing application on a virtual mobile device
   e.   Testing application on a physical mobile device.

II. Responsive Application Design
   a. Developing screen size agnostic applications for both portrait and landscape modes
   b. Using native user controls and screen elements
   c. Aligning and Positioning elements dynamically based on screen sizes
   d. Modifying and interacting with elements dynamically
III. Introduction to Native Sensors
   a. Installing proper libraries used for each required sensor (Cameras, GPS, accelerometers, networking, etc.)
   b. Designing screen elements that require various sensor and input devices
   c. Building Sensor aware Applications
   d. Deploying native Applications to the various app stores: Google Play, iPhone App Store

CREDITS: 5   ⓒⓘ **OPEN SOURCE MATERIALS FREELY AVAILABLE FOR THIS COURSE**

CIS 219 – Mobile III
Topics

This course presents advanced concepts of creating Mobile Websites through the use of either Android Operating System Development and the Java Language or iPhone/iPad through the Objective-C language. In addition, the building of mobile application aware websites through standard Application Programming Interfaces (API) will be presented.

I. Introduction to TCP/IP Networking connections
   a. Setting up connections from the smart device to a remote service
   b. Reading and writing XML / JSON data streams
   c. Error checking and connection through WIFI and Phone networks
II. Creating a Web Service for use with mobile apps
   a. Establishing Web Based API's
   b. REST Standard API's
   c. Sending and Receiving JSON data packages
   d. Sending and Receiving XML data packages
III. Utilizing Existing Cloud-based API's
   a. Obtaining API keys
   b. Installing required libraries
   c. Connecting to services
   d. Reading the API documentation
   e. Utilizing the data in native applications.

CREDITS: 5   ⓒⓘ **OPEN SOURCE MATERIALS FREELY AVAILABLE FOR THIS COURSE**

HEALTH INFORMATION TECHNOLOGY COURSES

Healthcare IT Privacy & Security Course

Created by Whatcom Community College

This 5-credit course provides students with an in-depth understanding of healthcare information privacy and security issues and infrastructure planning. Students learn about advanced health IT topics; security and privacy laws and regulations related to the exchange of patient data; requirements for health IT risk management, audits, and breach investigations; and developing and maintaining secure health IT systems. This course is an excellent elective for IT Networking/Security students or professionals who would like to explore or pursue IT careers in healthcare organizations (5 credits, 55 hours lecture). See below for a list of topics covered in this course.

Topics

- Laws/Regulations and the Secure Exchange of Patient Data
- Security: Patient Health Records, Health Information Exchanges—Across Boundaries
- Health IT Risk Management, Planning and Assessment—Security Issues
- Healthcare IT Audits and Security Breaches
- Laws/Regulations and the Secure Exchange of Patient Data

To access this course on Skills Common.org, please visit: http://www.skillscommons.org/handle/taaccct/3767

Healthcare Security Topics for Computer Information Systems Students (non-credit)

Created by Whatcom Community College

This 30-hour, non-credit course emphasizes healthcare computer security, including topics such as identifying threats and points of vulnerability in healthcare IT systems, access control and its relation to HIPAA, security related to patient data, workflow challenges, healthcare regulations that impact data security, and preparing various security attacks. It is an excellent complement to IT Security and/or IT Networking programs. The course consists of weekly lectures, labs and online sessions. See course topics below.

Topics

- Privacy and Security laws and regulations
- Potential points of vulnerability in a healthcare IT system – covers the interfaces between systems
- Interoperability Standards and Certification
- Impact of end users on HIT security, particularly in applications
- Access control and its relation to HIPAA
- Security related specifically to patient data (influence of HIPAA and other regulations)
- Workflows and their challenges to security
- Importance of usability to maintaining security