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# University Vice-Presidency of Academic Affairs

## College of Health Science

## Program of Health Informatics

**Bachelor of Science in Health Informatics**

**Study Plan**

**August 2022**

# Program Identification and General Information

1. **Program title:**

Bachelor of Sciences in Health Informatics (BSC.HI).

1. **Admission requirements for the program**

* High School (Science Trak)
* Completing Year 1 Successfully

1. **Total credit hours needed for completion of the program:**

* The study plan is composed of 130 credit hours distributed as follows:
* University requirements: 34 credit hours
* College requirements: 33 credit hours.
* Department requirements: 54 credit hours
* Track requirements: 6 credit hours.

## Major tracks within the program:

* Technical Oriented Trak
* Public Health Oriented Track

## Internship program

## The students will spend 12 weeks (1 semester) to complete approximately 420 internship hours.

## Degree granted on completion of the program

* Bachelor of Science (B.S.c.) Degree.

1. **Professional occupations:**

* Program Graduates can work and contribute to one of the following sectors:
  + - Health and Medical Informatics
    - Information Systems Design and Development
    - E-Health
    - Medical Coding
    - Research and Development
    - Teaching

## Name of program chair:

* Chair of the Health Informatics Department: Dr. Heba Alqurashi

# B. Program Structure and Organization

## Program Structure by kind of requirements:

**University Requirements: 34 Credit Hours**

|  |  |  |  |
| --- | --- | --- | --- |
| **Pre-Requisites** | **Credit Hours** | **Course Name** | **Course Code** |
|  | 16 | English Skills | ENG001 |
|  | 3 | Essentials of Computers & Software | CS001 |
|  | 2 | Academic Skills | CI001 |
|  | 2 | Communication Skills | COMM001 |
|  | 3 | Fundamentals to Mathematics | MATH001 |
|  | 2 | Introduction to Islamic Culture I | ISM101 |
|  | 2 | Prof. Conduct & Ethics in Islam | ISM102 |
|  | 2 | Islamic Economic System | ISM103 |
|  | 2 | Social System and Human Rights | ISM104 |
|  | **34** | **Total** | |

## College Requirements: 33 Credit Hours

|  |  |  |  |
| --- | --- | --- | --- |
| **Pre-Requisites** | **Credit Hours** | **Course Name** | **Course Code** |
| PYP | 3 | Basic Medical Terminology | BIO101 |
| BIO101 | 3 | Introduction to Anatomy and Physiology | BIO102 |
| PYP | 3 | Health Care Management | HCM101 |
| PYP | 3 | Organizational Behavior | HCM102 |
| HCM101 | 3 | Health Policy and Saudi Healthcare System | HCM 113 |
| PYP | 3 | Introduction to Biostatistics | PHC121 |
| PHC 121 | 3 | Introduction to Epidemiology | PHC131 |
| BIO101 | 3 | Concepts of Health Education and Promotion | PHC212 |
| PHC 131 | 3 | Healthcare Research | PHC215 |
| HCM113 | 3 | Ethics & Regulations in Healthcare | PHC216 |
| PHC 216 | 3 | Health Communications | PHC312 |
|  | **33** | **Total** | |

**Specialization Requirements: 57 Credit Hours**

|  |  |  |  |
| --- | --- | --- | --- |
| **Pre-Requesits** | **Credit Hours** | **Course Name** | **Course Code** |
| PYP | 3 | Introduction to Health informatics | HCI111 |
| HCI111  HCM101 | 3 | Electronic Health Records | HCI 112 |
| HCI112 | 3 | Medical Coding and Billing | HCI 213 |
| HCI111  HCI112 | 3 | Interdisciplinary Perspectives in Healthcare | HCI214 |
| HCI 213 | 3 | Public Health Informatics | HCI 314 |
| HCI 213 | 3 | Telehealth and Telemedicine | HCI 315 |
| HCI 314 | 3 | E-Health | HCI 316 |
| HCM101 | 3 | Financial Management for Healthcare | HCM213 |
|  | 3 | Introduction to IT and IS | IT231 |
|  | 3 | Object Oriented Programming | IT232 |
| IT232 | 3 | Data Structure | IT245 |
| IT245 | 3 | System Analysis and Design | IT353 |
| IT232 | 3 | Introduction to Database | IT244 |
| IT231  IT245 | 3 | Human Computer Interaction | IT352 |
| IT241 | 3 | Computer Networks | IT351 |
| IT353 | 3 | IT Project Management | IT362 |
| IT244  IT352 | 3 | Web Technologies | IT361 |
| IT351 | 3 | IT Security and Policies | IT476 |
| IT244 | 3 | Decision Support Systems | IT475 |
|  | **57** | **Total** |  |

## Elective Requirements:

## Students must choose 6 credit hours from one of the following tracks.

**Track I: Technical Oriented Track**

|  |  |  |  |
| --- | --- | --- | --- |
| **Pre-Requisites** | **Credit Hours** | **Course Name** | **Course Code** |
| PHC312  HCI314  HCI315 | 3 | Mobile Application development | IT487 |
| 3 | IT Innovation and Entrepreneurship | IT364 |
| 3 | IT Professional Ethics in IT | IT485 |
|  | 3 | **E-Commerce** | **ECOM 101** |

**Track II: Public Health Oriented Track**

|  |  |  |  |
| --- | --- | --- | --- |
| **Pre-Requisites** | **Credit Hours** | **Course Name** | **Course Code** |
| PHC312  HCI314  HCI315 | 3 | Introduction to Public Health | PHC101 |
| 3 | Environmental Health | PHC152 |
| 3 | Occupational Health | PHC261 |
| 3 | Introduction to Mental Health | PHC273 |
| 3 | Global Health | PHC311 |

**2- Program Structure by Years**

### Year 1

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Pre-Requesits** | **Credit Hours** | **Course Name** | **Course Code** | **1st Semester** |
| None | 8 | English Skills | ENG001 |
| None | 3 | Essentials of Computers & Software | CS001 |
| None | 2 | Academic skills | CI001 |
|  | **13** | **Total** | |
| **Pre-Requesits** | **Credit Hours** | **Course Name** | **Course Code** | **2nd**  **Semester** |
| None | 4 | English Skills | ENG001 |
| None | 3 | Fundamentals to Mathematics | MATH001 |
| None | 2 | Communication Skills | COMM001 |
|  | **9** | **Total** | |
| **Pre-Requesits** | **Credit Hours** | **Course Name** | **Course Code** | **3rd**  **Semester** |
| None | 4 | English Skills | ENG001 |
|  | **4** | **Total** | |

**Year 2**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Pre-Requisites** | **Credit Hours** | **Course Name** | **Course Code** | **4th Semester** |
| **PYP** | 3 | Introduction to IT and IS | IT231 |
| 3 | Object Oriented Programming | IT232 |
| 3 | Basic Medical Terminology | BIO101 |
| 3 | Introduction to Biostatistics | PHC121 |
|  | **12** | **Total** | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Pre-Requisites** | **Credit Hours** | **Course Name** | **Course Code** | **5th**  **Semester** |
| PYP | 3 | Introduction to Health informatics | HCI111 |
| IT232 | 3 | Introduction to Database | IT244 |
| PYP | 3 | Health Care Management | HCM101 |
| BIO101 | 3 | Introduction to Anatomy and Physiology | BIO102 |
|  | **12** | **Total** | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Pre-Requisites** | **Credit Hours** | **Course Name** | **Course Code** | **6th**  **Semester** |
| IT232 | 3 | Data Structure | IT245 |
| PYP | 3 | Organizational Behavior | HCM102 |
| PHC121 | 3 | Introduction to Epidemiology | PHC131 |
| None | 2 | Introduction to Islamic Culture I | ISM101 |
|  | **11** | **Total** | |

### Year 3

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Pre-Requisites** | **Credit Hours** | **Course Name** | **Course Code** | **7th Semester** |
| HCI111 IT231 | 3 | Electronic Health Records | HCI112 |
| IT231 | 3 | Computer Networks | IT351 |
| IT231  IT245 | 3 | Human Computer Interaction | IT352 |
| IT245 | 3 | System Analysis and Design | IT353 |
|  | **12** | **Total** | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Pre-Requisites** | **Credit Hours** | **Course Name** | **Course Code** | **8th**  **Semester** |
| HCI111  HCI112 | 3 | Medical Coding and Billing | HCI213 |
| IT352  IT244 | 3 | Web Technologies | IT361 |
| IT353 | 3 | IT Project Management | IT362 |
| HCM101 | 3 | Health Policy and Saudi Healthcare System | HCM113 |
|  | **12** | **Total** | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Pre-Requisites** | **Credit Hours** | **Course Name** | **Course Code** | **9th Semester** |
| BIO101 | 3 | Concepts of Health Education and Promotion | PHC212 |
| PHC131 | 3 | Healthcare Research | PHC215 |
| HCM101 | 3 | Financial Management for Healthcare | HCM213 |
| HCM113 | 3 | Ethics & Regulations in Healthcare | PHC216 |
|  | **12** | **Total** | |

**Year 4**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Pre-Requisites** | **Credit Hours** | **Course Name** | **Course Code** | **10th Semester** |
| HCI112 | 3 | Consumer Health Informatics | HCI214 |
| IT244 | 3 | Decision Support Systems | IT475 |
| IT351 | 3 | IT Security & Policies | IT476 |
|  | 2 | Prof. Conduct & Ethics in Islam | ISM102 |
|  | **11** | **Total** | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Pre-Requisites** | **Credit Hours** | **Course Name** | **Course Code** | **11th**  **Semester** |
| HCI213 | 3 | Telehealth and Telemedicine | HCI315 |
| PHC216 | 3 | Health Communications | PHC312 |
|  | 2 | Islamic Economic System | ISM103 |
| HCI213 | 3 | Public Health Informatics | HCI314 |
|  | **11** | **Total** | |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Pre-Requisites** | **Credit Hours** | **Course Name** | **Course Code** | **12th Semester** |
| HCI314 | 3 | E-Health | HCI316 |
|  | 2 | Social System and Human Rights | ISM104 |
| PHC312 HCI314HCI315 | 3 | Elective 1 | xxx |
| PHC312HCI314 HCI315 | 3 | Elective 2 | xxx |
|  | **11** | **Total** | |

# Course Descriptions

1. **University Requirements**

**CS 001: Essentials of Computers and Software**

This course is an essential guide to computing concepts and provides the learner with a complete learning solution focusing on the most important, essential, and current concepts of information technology. Students are given a streamlined, concise, relevant approach to the fundamental issues surrounding the world of computing through a balance between theory and applied learning of these important topics.

**MATH 001: Introduction to mathematics**

This course will address the outcomes of introductory and intermediate algebra. Topics include basic algebraic properties, integers, simplifying and factoring polynomials, solving and, graphing linear equations and inequalities, solving systems of equations in two and three variables, functions, rational expressions, quadratic and rational equations and inequalities, absolute value, graphing systems of equations and inequalities, and other selected topics. Applications will be emphasized, and numeric, algebraic, and graphical modes will be used.

**نھج 001: المھارات الأكادیمیة**

یھدف ھذا المقرر إلى مساعدة الطالب على إدارة ذاتھ وقدراتھ وإمكاناتھ بصورة تقوده إلى النجاح والتفوق والإبداع واكتساب عدد من الإستراتیجیات والأدوات البحثیة وأدوات التعلم والتفكیر بصورة إیجابیة سلیمة واستخدام سلسلة من الأدوات الحقیقیة والإستراتیجیة الفاعلة، التي تساعده على تحصیل المعرفة، وتنظیمھا وسرعة استدعائھا وإعداد البحوث العلمیة وعرضھا. كما یھدف المقرر إلى تعزیز أدوات واستراتیجیات التعلم الذاتي وأنماطھ وطرقھ وكذلك أدوات واستراتیجیات التعلم في بیئات التعلم الالكترونیة.

**علم 001: مھارات الاتصال**

تعریف طبیعة الاتصال وعناصره وأنواعه وخصائصھ وأھدافھ وكفاءة الاتصال ومعیقاتھ وأدواته, العلاقة بین الاتصال اللغوي والاتصال غیر اللغوي. مفھوم الذات, والإفصاح عن الذات مھارة الإقناع, المقابلات الشخصیة, القدرات الشخصیة التي تسعى إلیھا القطاعات مھارة كتابة السیرة الذاتیة مھارة الإلقاء والعرض الفعال.

**سلم 101: الثقافة الاسلامیة )1(**

یتناول المقرر في وحداتھ عدة موضوعات تشمل مفھوم الثقافة في اللغة العربیة، واللغة الإنجلیزیةculture والثقافة في الإصطلاح. ومصطلح الدین والقیم والعلم. والمدنیة و الحضارة، والثقافة والحضارة، والثقافة والدین، والثقافة والمدنیة، و الثقافة والقیم . مصادر علم الثقافة الإسلامیة: القرآن الكریم، الإجماع. القیاس ، آراء العلماء وآثارھم .الخبرات اإلنسانیة النافعة .أثر ھذه المصادر في بناء الثقافة الإسلامیة وصحة توجھھا.

موضوعات علم الثقافة:. العمومیات. الخصوصیات. المتغیرات والبدائل المفاھیم. القیم. القضایا الفكریة النظم. المذھبیات الفكریة. ركائز الثقافة الإسلامیة: العقیدة. الشریعة. الأخلاق. أركان الإیمان الستة: الإیمان با� وملائكتھ وكتبھ ورسلھ وبالیوم الآخر وبالقدر خیره وشره. مكونات الثقافات الكبرى: الثقافة الفارسیة. الثقافة الھندیة. الثقافة الصینیة. التراث الیھودي. التراث النصراني. الفكر الغربي الحدیث. التحدیات التي تواجھ الثقافة الإسلامیة: الاستشراق. التنصیر الاستعمار. التغریب. عولمة الثقافة الغربیة. تقنیة ثقافة المعلومات والمعرفة العابرة. التطرف الفكري. المنھج السلیم في التعامل مع التحدیات التي تواجھ الثقافة الإسلامیة**.**

**سلم 102: الأخلاق و آداب المھنة في الاسلام**

یتناول المقرر في وحداتھ عدة موضوعات تشمل: تعریف الأخلاق وأقسامھا ومكانتھا في الإسلام وأھمیة دراستھا. وأسس الأخلاق الإسلامیة. وخصائص الأخلاق في الإسلام. والأخلاق عند غیر المسلمین. ووسائل اكتساب الأخلاق. والمسؤولیة الخلقیة. وصور من أخلاق النبي صلى الله علیھ وسلم . والنزاھة والأمانة ومكافحة الفساد. ومفھوم أخلاقیات المھنة.

**سلم 103: النظام الاقتصادي في الاسلام**

یتناول المقرر في وحداتھ عدة موضوعات تشمل مفھوم القضایا الاقتصادية وأھمیة دراستھا) مدخل للمقرر(والتأمین:تعریفھ وأركانھ وخصائصھ وحكمھ. بورصة الأوراق المالیة:تعریفھا وأقسامھا ودورھا وأھدافھا وحكمھا الشرعي. غسیل الأموال: مفھومھ وصوره وحكمھ وآثاره.

الخصخصة: مفھومھا وأشكالھا وأھدافھا وضوابطھا. صكوك الإجارة:تعریفھا وخصائصھا وأھدافھا وحكمھا . العولمة الإقتصادیة: معناھا وأھدافھا ووأدواتھا وآثارھا الإقتصادیة وسیاسات منظمات العولمة الإقتصادیة. المعاملات المصرفیة الإكترونیة: البیوع الإكترونیة والإعتماد المستندي الإكتروني والأوراق التجاریة الإكترونیة والتحویل المصرفي الإكتروني ومخاطر التعاملات الإكترونیة . التكامل الإقتصادي : مفھومھ وعوامل قیامھ ومزایاه ومراحلھ ومتطلباتھ . التضخم الإقتصادي : مفھومھ وأنواعھ وأسبابھ وآثاره وسبل التغلب علیھ.

**سلم 104: النظام الاجتماعي و حقوق الانسان في الاسلام**

یتناول المقرر في وحداتھ عدة موضوعات تشمل مفھوم المجتمع : تعریفھ،الإنسان في الإسلام ، أسس بناء المجتمع وعنایة الإسلام بھ، سمات المجتمع الإسلامي،تقویة الروابط الإجتماعیة ، الأسرة في الإسلام : تعریفھا ، مكانتھا ، أھمیتھا ، أسس بناءالأسرة ، الزواج ومقاصده ، حقوق الزوجین ، حقوق الآباء والأولاد والأقارب ، مكانة المرأة وحقوقھا في الإسلام ، الشبھات حول النظام الأسري في الإسلام والرد علیھا : تعدد الزوجات ، الحجاب ، میراث المرأة ، دیة المرأة ، الطلاق ، تحدید النسل.

1. **College Requirements**

**BIOL 101: Basic Medical Terminology**

This course will provide students with a basic medical terminology vocabulary for use in the health care setting. The course focuses on prefixes, suffixes, and root words of medical terms and their meaning, spelling, and pronunciation. It also emphasis on building a working medical vocabulary based on body systems. This knowledge will enable them to become successful communicators (especially in the health care setting).

**BIOL 102: Introduction to Anatomy and Physiology**

The Introduction to Anatomy & Physiology course is designed to provide you with an overview of common terminology and present the major anatomical structures of the human body’s systems. The content explores basic physiological processes of each system, discussing how body systems work together and how each system participates in homeostasis of the body.

**HCM 101: Healthcare Management**This course is design to provide the student with an overview of healthcare management including its definition, function, and competencies. The student will learn the roles of manager in healthcare organizations, models and styles of leadership, theories of motivation and motivational strategies, strategic planning, outcome monitoring and control, healthcare marketing, quality improvement basics, financing healthcare, managing healthcare professionals and human resources, teamwork, and fraud and abuse of healthcare system.

**HCM 102: Organizational Behavior**

Effective management of human resources within healthcare organizations requires an understanding of various organizational behaviors and processes. With a better understanding of behavioral processes in terms of individuals' perceptions, motivations, and attitudes, it will enable managers to understand themselves better, and adopt appropriate managerial policies and leadership styles to increase their effectiveness. The aim of this course is to explain the way people behave and why they behave in such ways in the organizational setting. This course focuses on the organizational processes and theoretical constructs related to organizational behavior. The roles of leaders, followers, and teams and their influence on the culture and performance of an organization are addressed through the analysis of key organizational behavior concepts and related cases. Topics will include values, perception, attitudes, assumptions, learning, motivation, conflict, diversity, and change.

**HCM 113: Health Policy & Saudi Healthcare System**This course presents an overview of health policy making and describes healthcare policy in the KSA with specific examples from types of health systems. Special emphasis is placed on the power and process of the health policymaking arena. The course provides an analytical framework for health policy and explores a range of different healthcare systems, Saudi healthcare system in depth.

**PHC 121: Introduction to Biostatistics**

The course starts with describing foundational concepts of biostatistics. Students will be introduced how to apply basic theoretical concepts of biostatistics in health science, epidemiology, and public health. Knowledge about measurement scales, types of variables and data along with various statistical methods for summarizing and presenting different types of data will be provided. The concept of probability with its applications in epidemiology and public health will be introduced. The course concludes with a moderate level presentation of important probability distributions applied commonly in epidemiology and public health. The whole program will be delivered in an application-oriented way by giving more weightage for problem solving.

**PHC 131: Introduction to Epidemiology**

This course will focus on introducing the history and concepts of epidemiology, using principles and methods of both descriptive and analytical epidemiology to address public health problems and issues. Emphasis will be placed on practical application of epidemiology, measures of morbidity and mortality, descriptive epidemiology, causation, source of epidemiological data, epidemiological studies’ design, measure of effect, data interpretations issues, and screening for disease in the community.

**PHC 212: Concepts of Health Education and Promotion**

The health and education sectors have stimulated an increase in health promotion programs and infrastructure. The change from "health education" to "health promotion" represents a growth in both theory and practice. "The practice of health promotion requires an integration of existing knowledge from areas such as community development, adult education, health education, public health, social psychology, medicine, community mental health, political science and social marketing"(Health Promotion Strategy). Therefore, there is an increasing need to provide the tools to develop effective multi agency and multi professional programs as well as an understanding of contemporary health promotion. This course enhances the student’s awareness about the factors that influence health such as; heredity, environment, health care services, and our own behavior. It critically evaluates student’s understanding and attitudes towards health education and promotion. It develops personally and professionally skills through participative and experiential learning, and through empowerment. It helps the students who would become health educators or health promoters to enhance the pedagogy and practical skills of teachers in the context of revised curricula and develop new approaches to evaluation and assessment strategies and to become effective facilitators of learning.  
It also provides the students with knowledge and practice of integrating technology with health promotion practice.

**PHC 215: Healthcare Research Methods and Analysis**

This course provides demonstration on basic skills for health informatics research conduct. Students will learn how to conduct research using a variety of sources (primary, secondary and general). Students will be instructed on proposal writing techniques (development of a thesis statement, aims, objectives, selection of appropriate methods, methodology, etc...). Students will learn of quantitative and qualitative data collection and analysis approaches, and how to evaluate reliability and validity. Students will perform data collection and analysis, reporting their findings using formal scientific writing.

**PHC 216: Ethics and Regulations in Healthcare**

An essential knowledge of the medical ethics to create a theorized assumptions, concepts and values for moral judgment and decision making in a health care field. This course will increase the awareness of wide range of ethical challenges that can rise in the health care profession. It will enhance the ability to test the strengths and weaknesses of various moral beliefs and ethical arguments relevant to health care practices; and apply relevant bioethical principles in health-related situations. It will also reinforce the personal sense of fairness in the context of current or future professional roles. It will help the students to gain insights into the Islamic medical ethics, so that the students would evaluate any future issue that may arise according to the Islamic main sources (Quran, Sunna and Etihad).

**PHC 312: Health Communications**

This course is designed to familiarize students with theory and research on communication in health and illness contexts, focusing on how messages from interpersonal, organizational, cultural and media sources affect health beliefs and behaviors. The course will explore communication in health care delivery, health care organizations, as well as health promotion and disease prevention. Spanning multiple levels of communication, different communicative channels, and the use of diverse communication media and technologies, this course will demonstrate a variety of perspectives from which the students examine health communication at an individual, family, professional, organizational, and societal level. The overall goal for the course is to help students discover how health and illness affects and is affected by communication. It has been consistently shown in research that public health outcomes can be improved through effective communication of timely, accurate health information. Clear communication is essential to successful public health practices at intrapersonal, interpersonal, group, organizational, and societal levels.  
The course therefore aims to provide skills in analyzing various health situations regarding communication needs and developing communication strategies tailored to these situations.

1. **Specialization Requirements**

**HCI 111: Introduction to Health Informatics**

This course is designed to provide students with the basic concepts, knowledge, and skills of Health Informatics. Students will learn how data, information and knowledge are created, managed, and processed using Information and Communication Technology. This course will introduce the students to Health Informatics as a Discipline, Basics of Electronics Health Records, Computerized Physician Order Entry, Medical databases, Imaging, Tele-health, Consumer Health Informatics, Ethics in Health Informatics, social and organizational factors involved in implementation of electronic health systems, and Integration standards such as HL7. It also provides historical perspectives of computing in Health.

**HCI 112: Electronic Health Records**

This course will introduce the students about the history of Electronic Health Record and its development for the past 40 years. Students will appreciate why and how EHR should replace paper-based health record. Students will learn the technical components to design and build EHR as well as the management and social aspects of EHR.

**HCI 213: Medical Coding and Billing**

In the traditional paper-based patient record, data are available mainly as a free text. This patient record is primarily used for patient care itself. Nowadays the data presented in patient records is used for other tasks than patient cars. For example, they are used for report generation to different local and international organization, research studies, health resource allocation, case mix management, public health education, medical billing, and insurance. For all the mentioned there is a need to transfer this medical data to a standard coding using international classification systems. This course introduces the students to different clinical coding/classification and nomenclature systems such as SNOMED, CPT, HCPS and ICD-O and the essential coding concepts and phases. The course is enhanced by practical exercises to strength students' understanding of different steps for accurately select and use different coding system based on coding purpose.  
The course emphasis on applying those concepts to medical billing and explains to the students’ different stages for proper diagnostic and procedural coding and forms preparation for billing or reporting to the health insurance provider.

**HCI214: Consumer Health Informatics**

This course is intended to provide a general introduction to consumer health informatics (CHI). Broadly, the field aims to give individual health care consumers, as well as their families and communities, the information, and tools that they need to help them become more involved in their health and health care. First, this course will present an overview of theories that are relevant to health behavior change and health information behavior and explore how they might be applied to promote changes in health behavior and/or explain health consumers’ behaviors. The course will also introduce key issues such as health literacy, patient-centered communication, patient empowerment, patient-generated data, participation, and privacy. Lastly, the course will cover CHI applications in major application domains including personal health records, m-Health, and tele-health.

**HCI 314: Public Health Informatics**

This course is designed to provide students with the knowledge required to develop, implement, and evaluate public health information systems, and the knowledge about the application of information technology to public health practice, research, and learning. The course will introduce public health disease surveillance systems (including their interaction with electronic health records), public health practice support systems, public health disaster and emergency systems, health consumers’ informatics for disease self-management and prevention.

**HCI 315: Telehealth and Telemedicine**

This course introduces definitions and concepts relating to the use of telehealth in clinical and non-clinical health services. A range of clinical and non-clinical telehealth applications will be explored using case examples, while introducing relevant guidelines and technical standards. Finally, explore barriers and facilitators relating to the uptake of telehealth.

**HCI 316: E-Health**

This course will provide the students with an orientation to technology-based health promotion, including e-health promotion programs pros and cons, standardizing and tailoring health information, interactivity, and social media. The course will discuss challenges to implement and maintain e-health promotion programs, and differences between e-health modalities. The students also will be introducing to e-health development and implementation best practice. Finally, the students will contribute in various ways to an ongoing e-health promotion project developed to allow the students to gain practical skills in e-health promotion.

**HCM 213: Financial Management for Healthcare**

This course provides an overview of financial management of healthcare organizations. Students will learn basic concepts of financial management as well as the role that finance plays in the healthcare organization today. Focus will be on the role of financial manager, financial statement cash management and budgeting, financial ratios and working capital, cost of capital, the concept of time value of money.

**IT 231: Introduction to Information Technology and Information Systems**

This course is an introductory course in information technology and information systems technology. The purpose of this course is to familiarize students with application of IT systems in various professional spectrums in the form of Information systems. Topics include basic hardware, software, data and overview of use of information technology in organizations. This course also provides an understanding of information systems and outlines the concepts of how IS can provide for competitive advantage. The course will also discuss about the management challenges facing organization today and how its affect to business and society.

**IT 232: Object Oriented Programming**

This course is to introduce the students to the concept of Object-Oriented programming, principles of computer analysis of problems, design of algorithms, programming and testing using the Java programming language. Topics include problem analysis, basics of Programming, data types, control structures, functions, arrays, and the mechanics of running, testing, and debugging.

**IT 244: Introduction to Database**

The course familiarizes students with significance of maintaining a computer-based database using DBMS and its potential advantages to the organization. The students at the completion of this course will be able to understand the principal database concepts and develop a simple database for a small organization using standard DBMS. In this course, students should study the following topics: Basic concepts in database systems and architectures; Entity-Relationship model, Data models (including basics of Relational model & SQL), Database Design (Database dependencies and Normalization), and Database implementation.

**IT 245: Data structure**

This course is the logical extension of Object-Oriented Programming. In this course, students will be taught to work on complex data structures and algorithms. Major focus of this course is to prepare the transition from conventional functional programming to more relevant object-oriented programming. Topic includes Concepts of object oriented (OO) programming: data abstraction, encapsulation, inheritance, and polymorphism. Also includes key data structures including stacks, queues, linked lists, binary trees, recursion, and examples using some fundamental algorithms of computer science. Java programming languages will be used.

**IT 351: Computer Networks**

Fundamental concepts in the design and implementation of computer communication networks and their protocols. This course provides students with hands on experience in most state-of-the-art networking tools, technologies, standards, and protocols. This includes layered network architectures, applications, transport, congestion, routing, data link protocols, local area networks. An emphasis will be placed on the protocols used on the Internet.

**IT 352: Human Computer Interactions**

This course introduces the field of Human computer Interaction (HCI). Therefore, the course provides an overview about the fundamental components of an interactive system which include the human, the computer system itself and the nature of the interaction. It presents also different interaction models, frameworks, and styles. Moreover, it includes the interaction design process and highlights the range of design rules that can help to increase the usability of software products. In addition, it includes the evaluation techniques under two broad headings: expert analysis and user participation. Furthermore, it discusses how to design a system to be universally accessible, regardless of age, gender cultural background or ability.

**IT353: IT Security and Policies**

This course is mainly designed to prepare students with the knowledge to be IT project managers with project management skills needed to better manage IT projects. Built along the IT project management lifecycle, this course covers detailed topics of the basic concepts of IT project management, including initiating, planning, controlling, executing, and closing projects. The course also shows how IT projects should be managed, from inception to post implementation review. This course will help improve management skills and abilities to define the project scope, create a workable project plan, and manage within the budget and schedule.

**IT361: Web Technologies**

In this course students will be familiarized with web application development including both client side as well as server-side development and database connectivity. Topics such as Introduction to the Internet, World Wide Web, World Wide Web Consortium (W3C), standard mark-up language and services of the Internet. Topics include creating web pages, search engines, FTP, and other related topics. Students will get descriptions of client side and servicer side programming. Upon completion, students should be able to deploy a hand-coded web site created with mark-up language, and effectively use and understand the function of search engines.

**IT362: IT Project Management**

This course is mainly designed to prepare students with the knowledge to be IT project managers with project management skills needed to better manage IT projects. Built along the IT project management lifecycle, this course covers detailed topics of the basic concepts of IT project management, including initiating, planning, controlling, executing, and closing projects. The course also shows how IT projects should be managed, from inception to post implementation review. This course will help improve management skills and abilities to define the project scope, create a workable project plan, and manage within the budget and schedule.

**IT475: Decision Support Systems**

Decision support systems are playing key role in today’s organizations in taking effective and useful decisions while insulating organizations from effects of wrong decisions. The course is devoted to introducing decision support systems; show their relationship to other computer-based information systems, demonstrate DSS development approaches, and show students how to utilize DSS capacities to support different types of decisions. The topics covered in the course include but not limited to Introduction to decision support systems; DSS components; Decision making and DSS; DSS software and hardware; developing DSS; DSS models

**IT476: IT Security and Policies**

This course introduces the concepts and issues related to securing information systems and the development of policies to implement information security controls. Topics include the historical view of networking and security, security issues, trends, security resources, and the role of policy, people, and processes in information security. Upon completion, students should be able to identify information security risks, create an information security policy, and identify processes to implement and enforce policy.

**IT 487: Mobile Application Development**

The evolution of computing and IT technologies in the domain of wireless computing has spawned a new horizon of opportunities in the form of mobile smartphone applications. These applications provide users with flexibility, mobility and enhanced usability features. The future of IT applications can only be secured by developing their mobile and smartphone versions. This course is aimed at providing students with basic and fundamental knowledge concept of mobile computing. This includes the major techniques involved, and networks & systems issues for the design and implementation of mobile computing systems and applications. This course also provides an opportunity for students to understand the key components and technologies involved and to gain hands-on experiences in building mobile applications. Students will gain knowledge about mobile IP, mobility management, location estimation, location-aware computing, user experience and other topics.

1. **Track Requirements**

**Track 1: Technical Oriented Track**

**IT487: Mobile Application Development**

The evolution of computing and IT technologies in the domain of wireless computing has spawned a new horizon of opportunities in the form of mobile smartphone applications. These applications provide users with flexibility, mobility and enhanced usability features. The future of IT applications can only be secured by developing their mobile and smartphone versions. This course is aimed at providing students with basic and fundamental knowledge concept of mobile computing. This includes the major techniques involved, and networks & systems issues for the design and implementation of mobile computing systems and applications. This course also provides an opportunity for students to understand the key components and technologies involved and to gain hands-on experiences in building mobile applications. Students will gain knowledge about mobile IP, mobility management, location estimation, location-aware computing, user experience and other topics.

**IT364: IT Entrepreneurship and Innovation**

This course describes the fundamental concepts of entrepreneurship and digital innovation in technology-driven enterprises, growth strategies, innovation models, challenges for new venture creation, legal and intellectual property issues. This course will help improve creativity and innovative skills leads to professional entrepreneurs who create a workable project plan and manage within the budget and schedule.

**IT485 Professional Ethics in IT:**

This course provides an introduction to the field of professional issues which relates to social and ethical issues in computing. This course will cover the major social and ethical issues in computing, including the history of computing, impact of computers on society, and the computer professional codes of ethics.

**ECOM 101: E-Commerce**

Electronic commerce is the exchange of information and transactions between organizations via computers. While E-commerce has been with us for a while, its more recent implementation via the Internet has enormous implications for marketing and communication. Students will evaluate the strategic implications of E-commerce as well as issues of planning, developing, and implementing E-commerce solutions for marketing.

**Track 2: Public Health Oriented Track**

**PHC 101: Introduction to Public Health**

This course is an introduction to the key concepts and practices of public health, which is the science of Preventing disease, prolonging life, and promoting health through the organized efforts of society. Individual and population health will be explored as an evolving and multidimensional concept shaped through historical, cultural, psychosocial, economic, and environmental contexts. The goals, interdisciplinary roles and challenges, and settings for public health practice will be explored. Intervention strategies targeting community and population health will be introduced.

**PHC 151: Environmental Health**

This course introduces the principles of environmental health and examines the short- and long-term effects of environmental hazards on human health. Students consider their own interactions with natural, and human made environments to assess the impact of chemical, physical, biological, and social elements on their health. Students explore the emerging global health threats related to the environment, and environmental factors involved in the etiology and transmission of both communicable and non-infectious disease. Some of the topics in this course will also introduce the effect of electromagnetic radiations of human health and will highlight the highlight the effluent monitoring and environmental strategies to mitigate the adverse environmental effects.

**PHC 261: Occupational Health**

This course is designed to discuss the occupational health related issues which involves the safety, health and welfare of the people engaged in work or employment. This course will focus on the overview of disease burden, principles for risk assessment, risk management and risk communication in the field of occupational health in Kingdom of Saudi Arabia. It will focus on identifying and preventing the workplace hazards to maintain safe and healthy working environment. This course will also give understanding to the strategies for identifying and removing barriers that affect health and work performance, program development and management responsibilities. Current policies in KSA will be addressed and students will be highlighted with the occupational related health hazards.

**PHC 273: Introduction to Mental Health**

This course is designed to reflect the WHO’s recommendations and emphasis on the immediate need for trained community mental health workforce, to overcome the limited-service availability in the Kingdom. The course offers an interesting public health approach to mental health, services, and prevention. With a comprehensive introducing to the prevalent mental health and behavioral disorders; the course provides the students with knowledge in mental health epidemiology, wider determinants of mental health, risk assessment, prevention, and research.

**PHC 311: Global Health**

The course will provide students with an introduction to the global burden of disease and the relationships between globalization and health, including recent global health issues such as climate change. Offering a multidisciplinary perspective, the course will examine global epidemics/pandemics, global mobility (tourism and population migration – refugees) and inequalities. The diversity of health care systems is considered, and lessons will be derived, to develop an understanding of health system requirements globally. Other issues addressed include health personnel crisis, with emphasis on the economic and political issues causing brain drain from the areas of greatest need for health care, the health implications of disasters and conflict areas, social justice, human rights in global health issues, and how health is being redefined in the era of globalization. It will also provide students the understanding and tools needed to describe and analyze how globalization determines and interacts with health policies and governance. Lastly, the course will address new innovations in resource provision in developing countries such as PEPFAR, project RED, The Global Fund for HIV, AIDS, and TB (NGO’s) as well as traditional programs generated by the World Bank and other members of the UN system such as the Millennium Development Goals.