

In the Name of God

Nursing Informatics

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Section II

Title of the Course: Healthcare Information Dissemination

Code of the course: 01

Number of Credits: 1

Type of the course: Core courses

Prerequisite: -

Principal objective(s) of the course: The aim of this course is to improve students' knowledge and insight to identify the components of the Internet and Healthcare Information Dissemination.

Course description: This course provides up-to-date knowledge and offers broader information about diseases and nursing care. The integration of medical sciences, information and technology, and communication development skills can enhance access to the latest research findings across the world, and contribute to improve the quality of health care. In this course, students review the concepts of Healthcare Information Dissemination and infrastructures, challenges, and general software applications. Moreover, information retrieving skills such as search in e-resources, digital libraries, nursing and medical databases, and search engines along with informative websites are explored.

Main topics: 26 hours

Theory 0.5 units (9 hours)

- The basics and concepts of Healthcare Information Dissemination
- Infrastructures, applications and challenges
- Internet and facilities
- The key points of general search on the Web
- The information retrieving models

Practice 1 unit (17 hours)

- Working with search engines, Google, operators and services

- Communication over the Internet and Email Management
- An Introduction to medical & nursing databases
- The digital library search
- Pubmed search
- The Medical Subject Headings (MeSH)
- An Introduction to related websites

Principal reference(s):

1. Hebda T, Czar P. Handbook of informatics for nurses & healthcare professionals. 5th ed. Upper Saddle River: Pearson; 2013.

2. Self-learning websites ICDL; and Information Retrieving Skills articles and books

Student assessment practices: 50% is assigned to practical class assignments - 50% is assigned to final exam

Title of the Course: Research Methodology for Evidence Based Practice

Code of the course: 02

Number of Credits: 2

Type of the course: Core courses

Prerequisite: -

Principal objective(s) of the course: This course focuses on the essentials of the research process to facilitate students' ability to knowledgeably and effectively find, appraise, and apply scientific findings to nursing practice.

Course description: Students will be familiar with principles, concepts and methods of research in the nursing sciences, and accessing credible sources using a systematic approach, evaluating the quality of research findings, discussing methods of translation, integrating nursing knowledge into nursing practice, and evaluating outcomes.

1. Accessing research findings relevant to clinical practice through advanced search methods.
2. Appraising the quality of research evidence specific to the treatment and management of health care and nursing care.
3. Analyzing evidence summaries regarded as foundation for clinical practice guidelines.
4. Describing methods of translating and integrating scientific evidence into health care settings.
5. Examining the endpoints derived from integration of scientific findings into practice.

Main topics: 34 hours

Theory 2 units (34 hours)

- An overview of Research Methodology
- Introduction to research (history, definitions, types of quantitative research, subject selection)
- The assumption of theoretical framework, and a review of the studies and resources
- Objectives, questions, assumptions, and limitations of the study
- Methods and materials involved (population, sample and sampling methods, the study of variables and measures, data collection, tool validation and reliability, findings, data sources, statistical methods and information analysis, ethics in research)
- Conclusions and recommendations making use of findings and future research
- Learning how to prepare a research proposal
- Essentials of research critiques
- Making use of information technology in nursing informatics research
- Inferring, interpreting, and drawing conclusion out of the analyzed data

Principal reference(s):

1. LoBiondo-Wood G., Haber J. Nursing Research: Methods and Critical Appraisal for Evidence-Based Practice, 8th Ed. Elsevier, 2013.
2. Burns N, Study Guide for The Practice of Nursing Research: Appraisal, Synthesis, and Generation of Evidence sixth Ed., Saunders, 2009.

3. Polit DF, Beck CT. Essentials of nursing research: appraising evidence for nursing practice. 7th ed. Philadelphia: Wolters Kluwer Lippincott Williams & Wilkins; Last Ed. 2010.
4. Khoubati K. Handbook of research on advances in health informatics and electronic healthcare applications : global adoption and impact of information communication technologies. Hershey, PA: Medical Information Science Reference; 2010.
5. Lazakidou AA, Siassiakos KM. Handbook of research on distributed medical informatics and e-health. Hershey: Medical Information Science Reference; 2009.

Student assessment practices:

- Assessing the activities of students in class
- Assignments, seminars, individual and group activities

Title of the Course: Biostatistics for Evidence Based Practice

Code of the course: 03

Number of Credits: 2

Type of the course: Core courses

Prerequisite: -

Principal objective(s) of the course: The focus of this course is to introduce biostatistics in order to be applied to nursing and evidence-based practice. Emphasis is placed on the interpretation and appraisal of data analyses for selecting and using the best evidence to make practical conclusions about empirical data.

Course description: This course enables students to

1. Demonstrate how concepts of biostatistics are used in the literature, nursing research and evidence-based practice.
2. Select appropriate statistical methods in different situations of evidence-based practice.
3. Interpret results of data analysis and statistical tables in a variety of contexts.
4. Appraise the accuracy of data analyses in relation to the findings in selected research and quality improvement science articles.
5. Distinguish between statistical and clinical significance.

Main topics: 34 hours

Theory 2 units (34 hours)

- An overview of measurement scales
- Scale distribution of descriptive statistics
- Indicating the sample size
- An introduction to Type I and II errors and P Value
- Definitions and basic concepts: variable and dispersion, index of central tendency, measures of dispersion, measures of distribution, and accuracy
- An introduction to statistical analysis through SPSS Application
- Estimating and evaluating the hypothesis
- Overall comparison of the average, variance, and sample
- Estimating the proportions and evaluating the hypothesis
- Linear regression, analyzing one-way and two-way variances
- Graphs: histograms line and scatter charts

Principal reference(s):

1-Munro B . Statistical Method for Health Care Research, 7th: Lippincott Williams & Wilkins.2013.

2-Polit DF, Beck CT. Essentials of nursing research: appraising evidence for nursing practice. 7th ed. Philadelphia: Wolters Kluwer Lippincott Williams & Wilkins; 2010.Last Ed.

Student assessment practices:

- Class quiz given in the middle and end of the term
- Assessing the activities of students in the class
- Assignments, seminars, individual and group activities

Title of the Course: Entrepreneurship Management in Nursing

Code of the course: 04

Number of Credits: 2

Type of the course: Management courses

Prerequisite: -

Principal objective(s) of the course: This course define healthcare entrepreneurship from the perspective of nursing informatics, digital health era, health care providers, and managers of health services. It will help you understand why digital technologies are at the forefront of entrepreneurship and give you familiarity with key characteristics of online and digital entrepreneurship in nursing profession care delivery.

Course description: Course modules cover the changing nature of careers as a result of disruption, how to look for and create new products and innovation using the internet and digital technologies, how the internet impacts entrepreneurial competition including network effects and platform technologies, using the internet to find resources and team members to build a business, plus the role of growth and scaling. You will learn through a mix of useful assessment, strategy and theory, designed to help you become a digital entrepreneur manager in different aspects of nursing job utilizing rapidly changing technology.

Main topics: 34 hours

Theory 2 units (34 hours)

- The definition and concepts of health entrepreneurship
- The process of innovation and industry disruption
- Determining the elements of online innovation Articulate the nature of digital value creation and R&D
- Categorizing different online business models
- Describing alternative online growth strategies
- Choosing strategies for maintaining team relationships that facilitate flexibility, collaboration and quick decision making
- Value chain definition
- Teamwork and communication skills
- Customer relationship management
- Nursing care and telenursing practice guidelines

Principal reference(s):

1. Marino L, Accad A, Barr TL. Leadership Through Entrepreneurship. InAdvanced Practice Nursing Leadership: A Global Perspective 2020 (pp. 295-311). Springer, Cham.
2. Sanders E, Kingma M. Handbook on Entrepreneurial Practice Nurses creating opportunities as entrepreneurs and intrapreneurs, International Council of Nurses, Geneva. 2012.
3. Kumar S, Snooks H. Telenursing. London: Springer; 2011.

Student assessment practices:

- A summary of the concepts in the lesson cards
- Final examination

- Assessing the activities, students' attendance in class and their assignments

Title of the Course: Nursing Management and leadership

Code of the course: 05

Number of Credits: 2

Type of the course: Management courses

Prerequisite: -

Principal objective(s) of the course: The course focuses on administration development of the knowledge, skills, and abilities needed for leadership in nursing informatics. It provides an interdisciplinary and holistic approach to develop skills and knowledge in decision making, problem solving, and leadership.

Course description: Students will review the leadership role for improving practice and outcomes in client systems and care delivery. In addition, they will get familiar with translation of theory, knowledge, and evidence for the advancement of nursing informatics practice management.

Main topics: 34 hours

Theoretical 2units (34 hours)

- An introduction to the Principles of Management
- Nursing management, models and theories
- Evolutional leadership
- The process of decision-making and problem solving
- Communication and Human Relations and Motivation
- Philosophy and goals of nursing informatics management
- Determining system Requirements, Evaluation, Monitoring, and Planning
- Human resource planning
- Policy making
- Knowledge management
- Change Management
- Application of IT in nursing management and leadership
- Integration of theory, knowledge, and scientific evidence into leadership processes
- Intergroup relationship, communication and collaboration
- Strategic planning
- Critical thinking skills and effective communication skills in implementing the leadership role
- Leader behaviors and organizational elements, such as design, culture and effectiveness

Principal reference(s):

1-Marquis, BL., and Huston, CJ. Leadership Roles and Management Functions in Nursing; theory and application. 8th Ed. Philadelphia: Wolters Kluwer/ Lippincott. 2014.

2-Rigolosi ELM. Management and leadership in nursing and health care : an experiential approach. 3rd ed. New York: Springer; 2013.

Student evaluation methods:

30% is offered for class assignment, such as: traditional nursing administration model analysis and factors of IT-based model identification - 70% is offered for final exam

Title of the Course: Nursing Informatics fundamentals

Code of the course: 06

Number of Credits: 2

Type of the course: Informatics courses

Prerequisite: -

Principal objective(s) of the course: The aim of this course is introducing the basic concepts of Nursing Informatics services in all aspects of Nursing Science, and to review the history of nursing informatics specialization and the required competencies, applications, opportunities, and challenges.

Course description: This course reviews the concepts of data, information, knowledge and communication. Information Technological communications and computer applications in the field of prevention, diagnosis, treatment and rehabilitation, and nursing care will be reviewed. Making use of information technology in the areas of management, practice, research and teaching will be covered as well.

Main topics: 34 hours

Theory two units (34hours)

- Nursing informatics terminologies and standards
- Competencies of nursing informatics specialists
- Infrastructures, applications, opportunities and challenges of NI
- The importance of the information and data elements
- Knowledge Circle
- Telecommunication, networks, remote care, and telenursing
- Computer-based documentation and patient records
- Complexity of human-computer interaction
- Evidence-based nursing and data classification systems
- Informatics tools for the design of effective care plan(ICNP)
- Nursing Intervention Classification System(NIC)
- Nursing Outcome Classification System(NOC)
- Nursing Diagnosis Classification, NANDA
- Nursing informatics experiences in the world
- NI organizations
- Future trends of Nursing Informatics

Principal reference(s):

1. Saba VK, McCormick KA. Essentials of nursing informatics. 5th ed. New York: McGraw-Hill Medical; 2011.
2. Hebda T, Czar P. Handbook of informatics for nurses & healthcare professionals. 5th ed. Upper Sanddle River: Pearson; 2013.
3. Berman JJ. Methods in medical informatics : fundamentals of healthcare programming in Perl, Python, and Ruby. Boca Raton: Taylor & Francis; 2011.
4. Cashin A, Cook R. Evidence-based practice in nursing informatics : concepts and applications. Hershey, PA: Medical Information Science Reference; 2011.
5. Rodrigues J. Digital advances in medicine, e-health, and communication technologies. Hershey, PA: Medical Information Science Reference; 2013.

Student assessment practices: 30% is assigned to of studies reports - 70% is assigned to final exam

Title of the Course: Technology Solutions for Generating Knowledge in Nursing Care

Code of the course: 07

Credits: 2

Type of the course: Informatics courses

Prerequisite: -

Principal objective(s) of the course: The aim of this course is to familiarize students with concepts of information technology application in different areas of nursing, fields of education, research, management, clinical fields, and health care professionals' interaction.

Course description: The course will discuss techniques, concepts, technologies, and applications dealing with knowledge organizations. It provides in-depth knowledge in theoretical and practical applications of computing. The flexible program of study includes areas such as digital media, Web-based technologies and new technologies. The interdisciplinary approach allows students to integrate courses from several specialized areas to put forward technological solutions. Graduates are prepared for a variety of entries, midlevel technical and managerial positions within the Web technology, and computing industries for generating knowledge in nursing care.

Main topics: 34 hours

Theory one unit (34 hours)

- Technology revolution
- An overview of computer information systems
- Internet Technologies
- Human-Computer Interaction
- An Introduction to Digital Communication Systems
- Telenursing
- Mobile Data Management
- Systems and Information Integration
- Technology application in education, research, management and clinical fields of Nursing Informatics
- Electronic Government
- Cybersecurity, System Security fundamentals
- Data Communications and Networks
- Knowledge Management Systems
- Remote care, connections and Issues
- Easy softwares in nursing care
- Information Resources Management and related technologies

Principal reference(s):

- 1- Ball MJ, Hannah KJ. Nursing informatics : where technology and caring meet. 4th ed. London ; New York: Springer; 2011.
- 2- Fong B, Fong ACM, Li CK. Telemedicine technologies : information technologies in medicine and telehealth. Chichester, West Sussex, U.K.: John Wiley & Sons; 2011.

Student assessment practices: 30% is assigned to studies reports - 70% is assigned to final exam

Title of the Course: Information Management Systems in nursing

Code of the course: 08

Credits: 3

Type of the course: Informatics courses

Prerequisite: -

Principal objective(s) of the course:

The aim of this course is to familiarize applicants with the information systems, infrastructures, advantages and challenges in nursing care. Likewise, the assessment and factors affecting the success of implementing IS will be studied.

Course description: In this course, students will review concepts of information systems, and the reason they are required to involve managing and implementation health and nursing information systems before designing. They will be introduced the clinical management systems, standards and ethical issues. This course also reviews interoperation of systems and decision support systems. Students will keep in touch with the latest technologies and data research methods, and information integration to gain experience of integrating information systems.

Main topics: 34hours

Theory two units (34hours)

- The evolution of information systems
- The pyramid of systems
- Definition of Decision Support Systems in Nursing
- Types of Decision Support Systems in Nursing
- Intelligent systems to support decisions
- The application and challenges of information systems in health care and nursing science
- The system life cycle: planning, analysis, implementation and evaluation
- Clinical Information Systems in Nursing
- The success and failure factors
- Data Recovery and Security, levels of safety and access to health information
- Managing time, cost, human resources, communications and risks
- Quality of nursing information systems
- The legal issues and privacy in health information systems

Practice one unit (34 hours)

- Modeling and types of Data and management
- Meaningful use
- Information dashboards
- Network and information systems
- Electronic health record (EHR)
- Introducing the HIS system components, such as LIS, FIS, DIS, RIS, and CPOE etc.
- Nursing Information Systems(NIS)
- Management Information Systems (MIS).

Principal reference(s):

- 1- McCuen C, Sayles NB, Schnering P. Case studies in health information management. Clifton Park, NY: Thomson Delmar Learning; 2008.
- 2- Beaver K. Healthcare information systems. 2nd ed. Boca Raton, Fla.: Auerbach Publications; 2003.

- 3- Tan JKH. Developments in healthcare information systems and technologies : models and methods. Hershey: Medical Information Science Reference; 2011.
- 4- Ball MJ, Hannah KJ. Nursing informatics : where technology and caring meet. 4th ed. London ; New York: Springer; 2011.

Student assessment practices: 50% is assigned to practical class assignments - 50% is assigned to final exam

Title of the Course: Quality Improvement and Patient Safety

Code of the course: 09

Number of Credits: 2

Type of the course: Informatics courses

Prerequisite: -

Principal objective(s) of the course: The aim of this course is to familiarize students with the potential of incorporating current standards of quality and safety within the context of value-based healthcare system.

Course description: In this course, students will get familiar with Quality Outcomes and patient safety in a Culture of Value-Based Nursing Care regarding IT tools. Measuring health outcomes against the cost of delivering the outcomes are then extended to patients, providers, payers, suppliers, and society as a whole. This course introduces new healthcare delivery models, which stress a team-oriented approach to patient care and sharing of patient data so that care is coordinated, and outcomes can be measured easily. Emphasis is placed on performance and quality improvement methods that underlie value-based nursing care. The nurse in advanced practice today must exemplify the standards of quality and safety and be prepared to lead the delivery of value-based patient-centered care.

Main topics: 34 hours

Theory 2 units (34 hours)

1. Understanding the fundamental principles and lessons of the patient safety movement
2. Establishing measurable metrics and processes to evaluate the effectiveness of value-based care strategies and initiatives and medical errors and patient safety.
3. Assuming a leadership role in the design and implementation of a quality monitoring system for use in quality improvement.
4. Developing a systematic process that incorporates quality measures and benchmarks to assess quality outcomes and safety and satisfaction
5. Analyzing the culture of continuous quality improvement and the provision of value-based care to optimize patient outcomes.
6. Integrating performance and process improvement methodologies to develop solutions for identified quality and safety gaps in the practice setting
- 7- Optimizing implementation Informatics tools and information technology to improve nursing care quality outcome

Principal reference(s):

- 1- Hughes R, editor. Patient safety and quality: An evidence-based handbook for nurses. Rockville, MD: Agency for Healthcare Research and Quality; 2008 Apr.
- 2- New articles

Student assessment practices: 40% is for giving presentation or seminar and students' assignments - 60% is for final exam

Title of the Course: Nursing Database Systems: Analysis, Design and Management

Code of the course: 010

Credits: 2

Type of the course: Informatics courses

Prerequisite: 06

Principal objective(s) of the course: The aim of this course is to familiarize students with the general methods of analysis, design, development and management of information databases and critical components and applications.

Course description: This course challenges participants to critically explore modern database design and application in contemporary society. After delivering the fundamental principles and techniques required for modern database management, the unit challenges participant's to develop innovative database solutions to practical problems, through novel application of data modelling techniques, and commercial and open-source database tools. The opportunities, challenges, and implications of big data, social media, data analytics, and unstructured data on conventional database systems are explored in parallel.

Main topics: 51 hours

Theory two units (17hours)

- Critically evaluation of data and database definitions and concepts.
- Developing novel solutions to practical data management challenges using modern database tools and data modelling techniques.
- Critically exploring the organisational, societal, and technical impact of big data, unstructured data, and modern data analytics tools on database system design and management.

Practice one unit (34 hours)

- Systems Analysis and Design
- Database systems and models
- The evaluation of database management systems (DBMS)
- Web Application Development
- An overview of a nursing database

Principal reference(s):

1. P. J. Fortier, "Database Systems Handbook", MC Graw-Hill, 1997.
2. C. g. Date, "An Introduction To Database Systems", 8th Edition, Addison-Wesley, 2003.
3. Robin. Bloor, Howard. Philip, "Databases: An Evaluation and Comparison", Buttler Bloor Ltd, 1992.
4. Kathy. Hading, "Microsoft SQL Server 2000 (Databases Design and Implementation)", New York, Microsoft, 2003.

Student assessment practices: 40% is assigned to class assignments and projects with the approval of the lecturer - 60% is assigned to final exam

Title of the Course: Project Management for Healthcare Information Technology

Code of the course: 011

Credits: 2

Type of the course: Informatics courses

Prerequisite:

Principal objective(s) of the course: The aim of this course is presenting an effective methodology that encompasses standards and best practices from project management, information technology management, and change management for a streamlined transition to health and nursing care

Main topics: 34 hours

Theoretical three units (34hours)

- Integrating project, information technology, and change management methodologies
- Initiating, planning, executing, controlling, and closing
- Project management knowledge areas--integration, scope, time, cost, quality, human resource, communication, risk, and procurement management
- IT management knowledge areas--user requirements, infrastructure, workflow, security, interface, testing, and support management
- Change management knowledge areas--realization, sponsorship, transformation, training, and optimization management
- Successful project implementations.

Principal reference(s):

1. Coplan S, Masuda D. Project management for healthcare information technology. McGraw Hill Professional; 2011 Jan 26.

Student assessment practices: Student must give seminars and take final exams

Title of the Course: Ethical and Legal Aspects of Health Information Technology

Code of the course: 012

Credits: 1

Type of the course: Informatics courses

Prerequisite:

Principal objective(s) of the course: This course covers concepts and principles of law found in the healthcare field. The course focuses on legal issues regarding health information in nursing care.

Course description: This course includes topics confidentiality, release of health information, consent forms, liability of healthcare providers, concepts of risk management in the healthcare field, and other current medical/legal issues.

Main topics: 17 hours

Theoretical one units (17hours)

- Definition of privacy, security, confidentiality, legal policies and procedures, and ethical issues;
- Legal principles impacting Health Information Technology
- Identify the role of the health information professional in legal healthcare compliance
- patient consent
- legal reporting requirements
- patient safety

Principal reference(s):

1. Sharmil SH. Awareness of Community Health Nurses on Legal Aspects of Health Care. International Journal of Public Health Research. 2011 Jan 1(Special issue):199-212.
2. Berner ES. Ethical and legal issues in the use of health information technology to improve patient safety. InHEC forum 2008 Sep 1 (Vol. 20, No. 3, p. 243). Springer Science & Business Media.

Student assessment practices: Student must give seminars and take final exams

Title of the Course: Practicum in Nursing Informatics

Code of the course: 013

Credits: 3

Type of the course: Informatics courses

Prerequisite: 06, 08

Principal objective(s) of the course: The aim of this course is to provide opportunities for practical experience in implementing the knowledge and skills of nursing informatics, or reviewing a real system to analyze the application of IT in it. This module focuses on the comprehensive and systematic analysis and assessment of nursing care problems especially in complex situations. Students will write their report and present the recommendations for enhancing productivity of nursing care with the integration of informatics tools.

Course description: In this lesson, students practice the knowledge acquired in the field of nursing informatics and examine the nursing process, diagnosis, and standards. They will identify factors related to information technology that can improve care processes. This course will also develop an awareness of the role of informatics nurses. Moreover, it provides an opportunity for students to conceptualize the current situation, and proposes models of improvement for integration of IT.

- Integrating principles of evidence-based practice and appropriate theoretical frameworks into the informatics nurse role as the foundation for the assessment of nursing care problem
- Conducting an analysis of a nursing care problem for the purpose of improving care systems and health outcomes.
- Interpreting the results of problem analysis to ascertain the primary determinants that contribute to the achievement of optimal outcomes.
- Modeling the assessment of health and nursing care problems
- Analyzing the process of assessment in utilizing principles of evidence-based practice and appropriate theoretical frameworks
- Engaging in critical reflection regarding the components of the professional role of the informatics nurse

Main topics: 102 hours

Practical three units (102hours)

- Training by certified teachers in selected area providing the required guidance
- Preparation for the nursing process flowchart
- Inspections of computer and medical records
- The inspections of systems employed such as evaluation and management information systems, HIS, DSS, EHR
- Consulting and developing teamwork
- Identifying areas for improvement
- Presenting the recommended Proposal
- Development projects

Principal reference(s):

- 1- Ball MJ, Hannah KJ. Nursing informatics: where technology and caring meet. 4th ed. London ; New York: Springer; 2011.

Student assessment practices:

- The report of the NI assessment: 30%
- Setting up the project: 40%
- Presentations and training projects, 30%

Title of the Course: Electronic Education and Learning

Code of the course: 014

Number of Credits: 2

Type of the course: Elective courses

Prerequisite: -

Principal objective(s) of the course: The aim of this course is to familiarize students with the potential of internet communication and new technologies in learning and teaching. Students will be able to analyze electronic education infrastructure, and synchronous and asynchronous e-learning outcomes.

Course description: In this course, students will get familiar with e-learning infrastructure and its advantages and weaknesses, implementation of methods and models, principles of content development, and foundations of pedagogy and andragogy. They review the criteria for evaluating the success of e-Learning business and related rules.

Main topics: 34 hours

Theory 2 units (34 hours)

1. Types of Distance Education
2. Evolution and development of e-learning
3. Infrastructure and virtual University
4. The integrated e-learning and its application in nursing education
5. Patient education and e-learning
6. Introduction to Learning Management Systems (LMS) and its components
7. Teaching-learning approaches in e-learning: principles of effective learning
8. The development of educational content of e-learning
9. Factors affecting success of e-learning
10. E-learning training and regulations
11. Evaluation in e-learning system

Principal reference(s):

1. Glen S, Moule P. E-learning in nursing. Basingstoke England; New York: Palgrave Macmillan; 2006.

Student assessment practices: 40% is for giving presentation or seminar, students' assignments
- 60% is for final exam