TEHRAN UNIVERSITY OF MEDICAL SCIENCES

School of Allied Medical Sciences

Course Description Guide

Non-continues PhD of Science in Medical Library and Information Science

Program Name & Definition:

Non-continues PhD of Science in Medical Library and Information Science.

Medical Library & Information Science is a multidisciplinary field. PhD graduates learn more about how to employ new technologies to effectively facilitate medical information acquisition, organization, retrieval, dissemination and translation. They can contribute in promoting knowledge, evaluating scientific output and making necessary policies towards scientific productivity. PhD graduates of Medical Library & Information Science will have a significant contribution in theoretical and practical advancement of this field. The graduates can use new technologies to promote the information services; they will have a significant contribution in information and knowledge needs assessment, selection, organization and dissemination. They also can advance the frontiers of knowledge by preparing research literature as well as innovations and render consultative services in research teams. The program aims to train and graduate qualified professionals with thorough knowledge of theory and practice in Medical Library and Information Science. The main mission of this course is to train knowledgeable, skillful and competent graduates in Medical Library & Information Science. Evidence-based medicine increases the role of competent graduates in Medical Library and Information Science. Administrating libraries, especially designing and administrating digital libraries, is at the stake of designing proper information retrieval systems that can be performed under the supervision of PhD graduates. They can also contribute by offering courses at BSc, MSc and PhD levels and teaching workshops to enhance the knowledge, skill and search proficiency of researchers and to promote information literacy and health information literacy of their target population. The graduates can additionally make significant contributions by tracking the country's scientific output to compare its scientific status with other countries in the region and worldwide.

Courses and number of credits:

Core Courses:	23 credits
Non-core (Electives)	4 credits
Thesis:	20 credits
Total:	47 credits

Table 1. Compensatory Courses

Code of the Course	Title of the Course	Credits			Teaching Hours			Prerequisite or Concurrent courses
		Theory	Practical	Total	Theory	Practical	Total	
01	Application of Information Technology in Medical Information Systems	2	-	2	34	-	34	-
02	Health Economics*	2	-	2	34	-	34	-
03	Indexing and Abstracting	1	1	2	17	34	51	-
04	Organization of Medical Resources	1	2	3	17	68	85	-
05	Information Storage & Retrieval	2	1	3	34	34	68	-
Total		12						

The students should pass some or all the compensatory credits, based on the decision made by the related departments and approved by the Post-Graduate Council of the university.

*passing these courses is obligatory for all students who have not taken them before.

Table 2. Core Courses

Code of the Course	Title of the Course	Credits			Teaching Hours			Prerequisite or Concurrent courses
		Theory	Practical	Total	Theory	Practical	Total	
06	Information Seeking Behavior & Information Needs	2	-	2	34	-	34	-
07	Planning& Assessment of Library and Information Science Centers	2	-	2	34	-	34	-
08	Information Retrieval Systems	2	-	2	34	-	34	01,05
09	Database Management (Medical Library and Information sciences)	2	-	2	34	-	34	-
10	Comparative Medical Librarianship and Information science	2	-	2	34	-	34	-
11	Research Seminar in Medical Library and Information Science	2	-	2	34	-	34	-
12	Health Information Management	2	-	2	34	-	34	-
13	Communication Sciences	2	-	2	34	-	34	-
14	Information Economics	2	-	2	34	-	34	02
15	Medical Literature	2	-	2	34	-	34	-
16	Internship	-	3	3			153	-

17	Dissertation			20	
Total		43			

Table 3. Non-core Courses*

Code of the Course	Title of the Course	Credits			Teaching Hours			Prerequisite or Concurrent courses
		Theory	Practical	Total	Theory	Practical	Total	
18	Organization, Management & Planning of Health Services	2	-	2	34	-	34	-
19	Medical Information Systems	2	-	2	34	-	34	-
20	Statistics in Library and Information Science (LIS)	2	-	2	34	-	34	-
21	Educational Planning and Management	1.5	.5	2	26	17	43	-
Total		8						

*Students should select and pass 4 credits (2 courses) from the Non-Core courses, depending on the topic of her/his dissertation, the supervisor's suggestions and the department's approval.

Title: Application of Information Technology in Medical Information Systems **01**

Prerequisite: -

Credits: 2

Course: Theory

Objective: It aims to prepare students to understand the importance of managing information systems, knowing computer systems from managerial point of view and understanding the database.

Course Description: In this course, students get familiar with importance of information management, management of information system (MIS), create and manage MIS, Database Management Systems(DBMS), database structure, advantages and disadvantages of DBMS, Decision Support Systems, MIS lifecycle, MIS implementation, data dictionary, hospital information system, laboratory information system.

Title: Health Economics **02**

Prerequisite: -

Credits: 2

Course: Theory

Objective: After completing this course, students should be able to analyze the important issues of health economics. Using economic techniques and models to allocate resources at micro and macro levels. Students must be able to plan, evaluate and monitor all health economics processes with respect to production, recording and presenting of data.

Course Description: In this course, students get familiar with general economics, basic and fundamental concepts of the health economics, the difference views between health economy and general economy, health economics strategies, economics concepts about gross national products, gross domestic products, the main theories in health economics, economics assessment of resource in health department, inflation in the health sector and its causes, the role of health in economic development.

Title: Indexing and Abstracting **03**

Prerequisite: -

No. of Credit:3

Course: Theory and Practical

Objectives: To equip students with principles and methods of indexing and abstracting and their application.

Course Description: Examining the concepts and theories of indexing and abstracting, Sociology of Information and review of the historical process of production indexes and abstracts, providing index for books and periodicals, various types of retrieval language, how to create and use the thesaurus, study and compare some thesauruses.

Title: Organization of Medical Resources **04**

Prerequisite: -

Credits: 3

Course: Theory & Practical

Objective: To make Students to be acquaintant with cataloging and ranking principles and methods in both printed and electronic format in order to manage organization library division.

At the end of the semester, students should be able to:

-Use and apply the rules governing organization of various types of medical resource, from main entries to added entries, the ISBD standard for a variety of references, documents control as well as subject cataloging using medical and non-medical tools, and understand and define their application.

- Become acquainted with the common thesauruses and common medical subject headings and their application.

- Understand and introduce the application of the United States National Library of Medicine (NLM) classification and Congress and Dewey classification

- Become acquainted with a variety of common library software and learn how to use them.

- Organize non-book materials with an emphasis on electronic resources.

Course Description:

- Selection and designation of retrieval points in bibliographic records (rules of various types of main entry and added entries, the ISBD standard for a variety of references, documents control, subject cataloging, acquaintance with the United States National Library of Medicine (NLM) classification and Congress and Dewey classification.

- Acquaintance with the formats of USMARK, UNIMARK, UKMARC, IRANMARC

- Acquaintance with common library software

- Organizing non-book materials with an emphasis on electronic resources

- Acquaintance with MeSH and Farsi Medical Thesaurus and their application

Title: Information Storage & Retrieval **05**

Prerequisite: -

Credits: 3

Course: Theory & Practical

Objective: To make Students to be acquainted with the various principles, methods and systems of scientific information storage and retrieval, and to create skills for using them.

Course Description:

- theories and concepts of the information storage and retrieval system
- characteristics of storage and retrieval systems from the perspective of designing systems
- introduction and application of various methods and tools for information storage and retrieval
- principles and methods for storing information and the role of retrieval in different stages
- an overview of a variety of systems, including manual, mechanized and automated systems, information retrieval principles and methods, and search strategies, practices, and metrics of information systems.

Title: Information Seeking Behavior & Information Needs **06**

Prerequisite: -

Credits: 2

Course: Theory

Objectives: To make the students to know the theoretical foundations of information needs and formal and informal information-seeking behaviors, mechanisms for recognizing information-seeking behaviors, types of medical information users and a variety of models in this field in order to design and provide services tailored to the needs and behaviors.

At the end of the semester, the students should be able to:

- Explain theoretical and especially psychological basics of emotional, fundamental, organizational informational needs.

- Explain theoretical foundations and formal and informal information-seeking behaviors.

- Identify and explain the variety of social and cultural factors affecting the information-seeking behavior of users of medical information resources.

- Explain the mechanisms for recognizing the information-seeking behavior and information needs of the various types of information users, especially medical information, according to a variety of information-seeking behavior models.

- Explain the relationship between information need, information- seeking behaviors with system design and service delivery.

- Criticize a university research on information-seeking behavior and present the critique in the classroom.

- Criticize a university research on informational needs of medical information users and present the critique in the classroom.

Course Description:

- Theoretical and psychological foundations of emotional, fundamental, organizational and informational needs

- Theoretical foundations of problem solving and informal and formal information-seeking behaviors in educational environments and other environments

- Socio-cultural factors affecting information-seeking behavior

- Technological factors affecting information-seeking behavior

- Human-computer interaction as one of the most influential factors

- Mechanisms for recognizing information-seeking behavior and information needs, especially in medical information environments

- System design and service provision

Title: Planning& Assessment of Library and Information Science Centers **07**

Prerequisite: -

Credits: 2

Course: Theory

Objective: To prepare students to design and plan libraries and information centers in accordance with the needs of the user community, with an emphasis on medical sciences and hospital libraries.

At the end of the semester, the students should be able to:

- Define new theories of organization and management of medical libraries and information centers.

- Describe how to plan, organize, motivate and control and innovate in libraries.

- Understand the evaluation, appraisal, effectiveness, and efficiency of activities and operations and information services in the library using library standards and models and techniques for evaluating management.

Course Description:

Analysis of new theories of organization and management of medical libraries, planning analysis, decision making and its techniques in libraries, reviewing organization and organizing procedure, organizational changes and organizational development of medical libraries, analyzing theories of motivation, leadership, and leadership theories and styles, control and its techniques,the predictions required for the efficiency and effectiveness of information program, activities and services in libraries, evaluating services in terms of cost-benefit, cost-profit, and developing criteria for the appraisal of information services, familiarity with models and techniques of evaluation of organizations with their application in the library, the study of several research and operational work on the application of various evaluation techniques and models in libraries, familiarity with a variety of library standards, including academic and hospital libraries.

Title: Information Retrieval Systems **08**

Prerequisite: Application of Information Technology in Medical Information System - Information Storage and Retrieval

Credits: 2

Course: Theory

Objective: To prepare Students with the knowledge of information systems and networks so as to prepare them in designing varieties of information systems

At the end of the semester, student should be able to:

Define a variety of information systems and their architecture.

Describe a variety of software in information and procurement criteria of each one.

Design and introduce good network system, their management and structure of both national and international networks.

Course Description: Types of information systems

Computer Information systems and their architecture

To be familiar with how to produce medical information software's

Familiarity with examples of software

Criteria for providing software's suitable for library and information activities according to the needs of the Persian language

Networking and network management

Short-coverage and wide-coverage networks

Detecting and explaining environmental issues associated with the network

Acquaintance with the structure of a number of national and international networks

Networking issues in Iran.

Title: Database Management (Medical Library and Information sciences) **09**

Prerequisite: -

Credits: 2

Course: Theory

Objective: Understanding the concepts and principles of database management and introduction to database management and designing of medical information software.

Course Description: Understanding data, data models and managing data; Database system architecture (external level, conceptual level and internal level); Introduction to Relational Database: Includes Introduction, Concept of Relationship, Basic Relational Variables, and Perspective; Introduction to SQL, Views, Dynamic SQL; DomainsDefinition, Relational Values, Relationships Properties and interpretation; Relationship Algebra, Review of the Original Algebra, Relational Algebra grammar, Semantics, Application of Relational Algebra, Expansion; Relational Calculus, Quantitative, Comparison of Relational Algebra and Relational Calculus; Integrity, Information Base Constraints, Candidate Keys, Primary and Secondary Keys; Databases Design, introduction, basic definitions; Normalization, First, Second, Third Normal Forms, Summary of the Normalization Procedure, some Normalization Problems; Semantic Modeling, Introduction, E/R Model, Database Design with E/R Model; Transaction Management, Introduction, Transactions, System Restoration, Security Synchronization; Database, Introduction, Data Encryption, Views and Security.

Title: Comparative Medical Librarianship and Information science **10**

Prerequisite: -

Credits: 2

Course: Theory

Objective: Familiarization of Students with the Status of the field of medical Library and Information Science, especially at National, Regional and International Levels, as well as Familiarizing Students with the Developments in the Field of Library and Information Science in the Era of Electrons.

Course Description: Library and Information from the Critics' Perspectives; Various Reviews and Comments on Medical librarianship, medical informatics and Medical Information Management; Comparative Research Conducted in the Library and Information Science Field and Profession, History and Business of medical Library and Information science, as well as Medical library and Information Science in Iran; Main Libraries and Large Information Centers at the National, Regional and

International Levels; Developments in the field of medical Library and Information Science in the New Era, Especially Under the Influence of Information Technology; Existing Theories about the Future of medical Library and Information Science.

Title: Research Seminar in Medical Library and Information Science 11

Prerequisite: -

Credits: 2

Course: Theoretical

Main Objective: Strengthening the Students ability in Identifying research priorities of Medical Library and Information research and critical analysis of research in the field of Medical Library and Information Science;Introduction to Integrated Systems and the Unified Medical Language System(UMLS) and Other Secondary Sources of Research (for Data Gathering); Strengthen the Ability of Students to prepare PhD research proposals and proposals for fundamental and applied and developmental research in Governmental and Non governmental Institutions.

Course Description: Review of the research elements and elements of research proposals in the field of Medical Library and Information Science, methods of research in Library and Information Science and medical library and Information science; Research priorities and critique It; Integrated systems of health and medical information and other information systems; Review of information resources in the field of research; Fundamental, Applied and Developmental Research Features in Organizations and their differences with academic research; Special Issues for the Development of Ph.D. Dissertations in the field of Medical Library and Information Science and its Difference with Master's Theses; Criteria for Evaluation and Critique of Fundamental, Applied and Developmental Research; Defending thesis and Specific Points of a Successful Defense.

Title: Health Information Management 12

Prerequisite: -

Credits: 2

Course: Theory

Objectives: Familiarizing Students with applied methods used in the field of Health Information Management and the Basics of Designing Information Management Systems, measuring and Evaluating Them.

Course Description: A Study of the basic Concepts in the Implementation of Health Information Systems; Introduction to applied methods in the field of Health Information Management; Introduction to the Principles of Information Management Systems Design (Data entry, Information Processing, Information Provision); Familiarity with health Information management organizations

and Institutions; situational analysis of the human resources requirement for Information systems; Operation management techniques in Health Information Systems; How to draw up a chart of the progress of operation; Similarities and differences of health information management with Medical library and Information Science, Medical Records, Archives, Medical Information; Standards and Rules Related to Health Information Management; How to Measure the Production of Information (Identification of Evaluation Criteria and the Method of Extending Information Management Systems); The Future of Health Information Management and Providing Appropriate Solutions to the System's Deficiencies; Definition of naming, Classifications and Their Application Differences, Common General naming and Their Comparison with Medical Subject Headings and Thesauri, Specialized naming Used in Health Information Management and Comparison with MeSH; Comparison of SNOMED, UDC, Study of UMLS and its Application in Educational and Therapeutic Centers, ICD Comparison and Its extension in terms of Structure with Dewey and Congress Classification.

Title: Communication Sciences **13**

Prerequisite: -

Credits: 2

Course: Theory

Objectives: Familiarity with the Issues of Communication between Human - Human, Human - Machine-Machine-Machine

Course Description: The Elements of the communication process; Factors and obstacles to communication; Features of human Communication; Roles of cultural and technical factors in the quality of communication; Importance of feedback in communication; A variety of feedback; Human-machine communication features; Man as sender; Man as an intermediary; Human as recipient; Machine-to-Machine Communication features and the role of man in communication with machines; Impressionability of communicational themes from elements of the process of communication; Importance of understanding flow of communication in optimizing activities of Medical Library and Information science.

Title: Information Economics **14**

Prerequisite: Health Economics

Credits: 2

Course: Theory

Objective: Information about importance of information economics in scale of national, international, environmental and political factors that affect information flow.

Course Description: Definition and determination of information economic scale (micro and macro) - aspect of information economically in planning and development, Economic and production, information distribution and consumption – reciprocal relation between information and economics

– role of Library and information centers and training of library and information sciences in adjustment of economics factors – the ways of benefit and loss comparison in capitalization in national information sciences

Title: Medical Literature 15

Prerequisite: -

Credits: 2

Course: Theory

Objective: To make students to be familiar with changes in medical sciences in civilization of Islam and Iran and also medical texts, old medicine, and professors in field.

Course Description: Survey of science history in Iran and the world – appearance and changes of medical sciences and old medicine in Islam and Iranian civilization – transmission of medical sciences to Islamic world – progress of Iranian professor in old medicine – acquaintance with different field of medicine like pharmacology, ophthalmology, public health, anatomy and … - classification of Iranian professor in medicine

Title: Internship 16

Prerequisite: -

Credits: 3

Course: Theory & Practical

Objective: In this course that will last for six(6) months, according to plan of medical library and information sciences department, students are expected to have practical's in different parts of university library, hospital library and archives to get acquainted with the science of information, classification and distribution.

Course Description: According to plan of medical library and information sciences department, students should practice in one or more medical library and information science centers in other to gain experience and are expected to work under the supervision of a professor.

Title: Dissertation 17

Prerequisite: -

Credits: 20

Course: Practical

Objectives: Designing and implementation of a project related to medical library and information sciences under the supervision of a professor.

Course Description: -

Title: Organization, Management & Planning of Health Services **18**

Prerequisite: -

Credits: 2

Course: Theory

Objectives: Create awareness to students with organizations and institutions that provides health services and also with health and cure discipline in Iran in the aspect of organizational charts.

Course Description: Recognition of network – network classes – planning for people in village – planning for manpower – role of university after dissolution of health organization – the role of health organization in urgency medicine.

Title: Medical Information Systems **19**

Prerequisite: -

Credits: 2

Course: Theory

Objectives: Familiarity with databases and famous medical sites and how to find information in them. Use of electronic journals and the ability to work with search engines.

Course Description: Familiarity with reference resources and important medical information databases and how to search information in these databases, Training famous sites in the field of medical and allied medical sciences, familiarization with supply activities of medical information.

Title: Statistics in Library and Information Science (LIS) **20**

Prerequisite: -

Credits: 2

Course: Theoretical

Objective: Introducing students with deep and advanced concepts of statistics and bibliometric and their application in medical library and information science.

Course Description: Familiarity with Inferential statistics, estimation and hypothesis testing, correlation test between qualitative and quantitative traits, Analysis of variance, goodness of fit test, Kolmogorov test, nonparametric statistics, Wilcoxon test, Mann-Whitney test, Kruskal–Wallis test, bibliometric, Bradford model, Zapf's law, citation analysis.

Title: Educational Planning and Management **21**

Prerequisite: -

Credits: 2

Course: 1.5 Theoretical – 0.5 Practical

Objectives: This is a course designed to enhance the pedagogical skills of PhD students.So that students learn about the principles of management, planning and teaching methods.

Course Description: Familiarity with the philosophy of education, the nature of the education process and its goals, Elements of the educational system and its effective factors, the Importance and place of educational design, teachers' roles and responsibilities, promotion of teaching efficiency and effectiveness, learning principles, application of Learning theories in teaching, characteristics of adult education, differences between learners and a variety of learning styles, teaching patterns, types of strategies and methods of teaching skills critical thinking and decision making, assessment and evaluation of teaching process, learning, evaluation of academic achievement, types and characteristics of tests.