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*Medical Education Degree Program:  
MSc  
Tehran University of Medical Sciences*

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# **Title: Medical Education**

## **Degree: Master of Science**

### **Introduction**

MSc in Medical Education is an interdisciplinary program with a special focus on educational sciences which is designed for those who wish to develop their role as educators. Candidates will learn to apply appropriate educational theories and strategies to enhance the quality of medical education activities.

### **Program Description**

The graduate of this program can contribute in teams to revise, develop and evaluate curriculum, cooperate to create effective educational opportunities, design and perform pieces of research in order to address gap of knowledge in the field of medical education and adopt scholarly approach to medical education.

### **Mission& Vision**

We are committed to our vision “writing a better future for Health Professions Education”. To this end our mission is to provide the finest education possible for medical education students, to contribute to the lifelong learning throughout their careers, to conduct research at the cutting edge of knowledge, and to improve the quality of medical education for future generations.

### **Graduate Competencies**

- Applying learning theories to design appropriate educational interventions and opportunities.
- Contributing in curriculum development/ revision in medical education
- Using active teaching and learning methods in practice
- Contributing in program evaluation
- Assessing students appropriately
- Designing and conducting research in medical education

### **Who are eligible for application?**

- Faculty members who teach in the field of health professional education
- The holders of a PhD or MSc or BSc in one of the fields of medical sciences
- Post graduate students in the field of health professional education

### **Educational Strategies, Methods and Techniques**

Believing in a student- centered paradigm, we utilize a wide range of active learning strategies including: Discussions, TBL, flipped classes, structured controversy and case-based leaning.

### **Student Assessment (Methods and Types)**

Both formative and summative methods of assessment including; written tests, assessment of participation in group activities, projects and assignments are used.

Types of Courses and Number of Credits	
Core Courses	22 Credits
Optional	2 Credits
Thesis	6 Credits
Total	30 Credits

**Table 2: Core Courses**

Code	Title of the Course	Credits			Hours			Prerequisites
		Theoretical	Practical	Total	Theoretical	Practical	Total	
01	Learning theories	2	-	2	34	-	34	-
02	Curriculum Development	1	1	2	17	17	34	-
03	Teaching and learning (1)	2	-	2	34	-	34	-
04	Teaching and learning (2)	1	1	2	17	17	34	03
05	Clinical Teaching	1	1	2	17	17	34	03
06	Student Assessment (1)	0.5	0.5	1	9	8	17	
07	Student Assessment (2)	1	1	2	17	17	34	06
08	Program and personnel Evaluation	1	1	2	17	17	34	02
09	Search literacy	0.5	0.5	1	9	8	17	-
10	Research methods in Medical Education (1)	1	1	2	17	17	34	-
11	Research methods in Medical Education (2)	1	1	2	17	17	34	-
12	Leadership and management	2	-	2	34	-	34	-
13	Thesis			6	-	-		
-	Total	-	-	28				

**Table 3: Optional Courses**

Code	Title of the Course	Credits			Hours			Prerequisites
		Theoretical	Practical	Total	Theoretical	Practical	Total	
14	Instructional design	1	-	1	17		17	01-02-03-08
15	BEME	1	-	1	17		17	09
	Total			2				

\* Students must pass 1 out of 2 from optional courses

**Table 1: First Semester**

Code	Title of the Course	Credits			Course director
		Theoretical	Practical	Total	
01	Learning theories	2	-	2	
02	Curriculum Development	1	1	2	
03	Teaching and learning (1)	2	-	2	
06	Student Assessment (1)	0.5	0.5	1	
09	Search literacy	0.5	0.5	1	
total		6	2	8	

**Table 2: Second Semester**

Code	Title of the Course	Credits			Course director
		Theoretical	Practical	Total	
04	Teaching and learning (2)	1	1	2	
07	Student Assessment (2)	1	1	2	
05	Clinical Teaching	1	1	2	
08	Program and personnel Evaluation	1	1	2	
10	Research methods in Medical Education (1)	1	1	2	
Total		5	5	10	

**Table 3: Third Semester**

Code	Title of the Course	Credits			Course director
		Theoretical	Practical	Total	
11	Research methods in Medical Education (2)	1	1	2	
14/15	BEME / Instructional design	1	-	1	
12	Leadership and management	2	-	2	
<b>Total</b>		4	1	5	

**Table 4: Thesis (Fourth Semester)**

Code	Title of the Course	Total Number of Credits	Prerequisite
13	Thesis	6	Courses Passed in Previous Semesters

**Ethical Issues**

The graduates should

- Observe the rulebook of dress code (is contained in the enclosures)
- Carefully preserve resources and equipment.
- Truly respect faculty members, the staff, classmates and other students and work for creating an intimate and respectful atmosphere.
- Observe social and professional ethical considerations in criticism.

## Section II

**Course Title:** Learning theories

**Code of the Course:** 01

**Prerequisite:** None

**Number of Credit:** 2

**Type of the course:** Theoretical

**Goal:** By end of the course, students are able to value the role of learning theories in promoting learning and apply learning theories principles to optimize learning

**Principal Objective(s) of the Course:**

1. Describe key concepts of learning
2. Apply the fundamental features of behavioral learning theories in teaching and learning process
3. Explain the core cognitive learning theories and their main concepts including cognitive strategies and metacognition
4. Apply the social cognitive learning theory in teaching and learning process
5. Describe the key elements of constructivist learning theories and its application in teaching and learning process
6. Describe the key fundamentals of humanistic learning theories
7. Analyze the Maslow's pyramid
8. Analyze the self-determination theory
9. Reflect on the application of adult learning theory principles in their teaching

**Course Description:** Understanding how learning happens will help healthcare professions educators to design activities and experiences that optimize learning. The learning theories course introduces the key theoretical principles, concepts, and research findings about learning and helps how to apply that theories and research as educators. Five major theories of learning — behaviorism, social cognitive theory, cognitivism, constructivism and humanistic and their implications are discussed. For each theory, key topics including cognitive strategies and metacognition, role modeling, motivation are presented. Course will be finished with adult learning characteristics as a wrap-up. To this end, we will use a variety of active and interactive teaching and learning methods i.e., interactive lectures, scenario-based learning, flipped classroom and reflection.

**Main Topics:**

- Introduction to learning
- Behavioral learning theories
- Cognitive learning theories
- Social cognitive learning theory
- Constructivist learning theories
- Humanistic learning theories
- Motivation theories
- Adult learning theory

**Hours: Theoretical:** 34 hours

**Student Assessment:**

1. Written exam (essays)
2. Assignments and feedback

**Main Reference(s):** Schunk DH. Learning theories an educational perspective sixth edition. Pearson; last edition

**Course title:** Curriculum Development

**Code of the course:** 02

**Prerequisite:** None

**Number of credit:** 2 Credits

**Type of the course:** Theoretical – Practical

**Principal Objective(s) of the Course:**

**Goal:** By the end of the course, students would be able to play a constructive role in planning or revising the curriculum (in macro level) and developing a course plan/lesson plan (in micro level)

**Objectives:**

1. Analyze different approaches to curriculum planning based on their application
2. Apply common approaches of stakeholder participation in curriculum development
3. Reflect on the role of different stakeholders in curriculum planning/revision
4. Compare the steps of the Harden and Kern models and how to plan an educational program based on them
5. Design a needs assessment framework for a curriculum
6. Develop educational outcomes/ objectives for a curriculum
7. Explain educational strategies and its application in curriculum development
8. Analyze the factors influencing the implementation and evaluation plan of the curriculum
9. Development a course plan/lesson plan for the specific topic
10. Value the main role of active participation of different stakeholders in curriculum development/revision processes

**Course Description:**

The basis of educational planning is primarily focused on learning and its factors and elements, and the main question facing an educational planner is how to make the learning process deeper, more sustainable and meaningful. Curriculum development is a highly specialized knowledge and familiarity with the basic concepts, principles and its application is a necessity for those involved in medical education. This course, deals with basic and advanced concepts and principles in curriculum development in the field of medical education. This course begins with basic concepts and general principles of curriculum development. Then, generalities about theories, approaches and models of curriculum. By passing this course, learners are expected to acquire the necessary attitude towards the importance of curriculum planning/revision in educational processes and be able to design or revise a new curriculum based on needs assessment. To this end we will use a variety of active and interactive teaching and learning methods i.e., case-based learning, flipped classroom, and interactive lectures.

**Main Topics:**

- Approaches to curriculum planning
- Harden model in curriculum planning/revision
- Kern model in curriculum development/revision
- Types of educational needs and techniques
- Needs assessment framework
- Outcomes/objectives
- Educational strategies
- Implementation and evaluation plan
- Course plan/ lesson plan

**Hours:**

**Theoretical:** 17 hours

**Practical:** 17 hours



**Student Assessment:**

Formative: Active participation, assignments and project

Summative: Final exam

**Main Reference(s):**

- Thomas, Patricia A., et al., eds. Curriculum development for medical education: a six-step approach. JHU press, 2016.
- Dent, John, Ronald Harden, and Dan Hunt. A Practical Guide for Medical Teachers, E-Book. Chapter 7: Curriculum Planning and Development, Elsevier health sciences, 2021.

**Course title:** Teaching and Learning (1)

**Code of the course:** 03

**Prerequisite:** None

**Number of credits:** 2 credits

**Type of the course:** Theoretical

**Goal:** By the end of this course students will be able to form/ revise their teaching identity and value the core principles of learning.

**Principal Objective(s) of the Course:**

1. Reflect on his teaching and learning beliefs
2. Adopt active teaching and learning methods in her/his practice as a teacher
3. Value engagement of students in teaching and learning process
4. Integrate reflection in his practice as a teacher
5. Facilitate students' reflection in teaching and learning
6. Value feedback giving, encourage feedback seeking and prepare students for accepting feedback as a core component in teaching and learning process
7. Prepare environment for active teaching and learning
8. Use ice- breakers and closure activities to prepare active involvement of students in learning
9. Explain new generation characters and its impact on teaching and learning methods
10. Appraise lecture free curriculum

**Course Description:**

This course is designed to create a teaching identity, provide rich opportunities for reflection on teaching beliefs, learn how to teach to motivate learner, apply framework of engagement in teaching and learning process, value feedback and integrate it in daily practice, prepare learning environment to promote active learning. To this end we will use a variety of active and interactive teaching and learning methods i.e., reflection, scenario-based learning, flipped classroom, structured controversy and interactive lectures.

**Main Topics:**

- The continuum of teaching and learning methods (student centered, teacher centered and student driven learning methods)
- FAIR principles
- Teaching to develop active learning
- Teaching to develop engagement in teaching and learning process (ICAP framework)
- Reflection as a teaching and learning method
- Reflective teaching
- Feedback
- Facilitating students learning
- New generations of students and its impact on teaching and learning process
- Teaching environment, active class and preparing the setting for learning
- Ice breakers and closure activities
- Lecture free curriculum

**Hours:**

**Theoretical:** 34 hours

**Student Assessment:**

Reflection paper, Teamwork grades, Project and Final exam.

**Main Reference(s):** An introduction to medical teaching, Huggett, Kathryn, Jeffries, William B. latest edition

**Course title:** Teaching and Learning (2)

**Code of the course:** 04

**Prerequisite:** 03

**Number of credits:** 2 credits

**Type of the course:** Theoretical – Practical

**Goal:** By the end of this course students would be able to design and implement main teaching and learning methods that are applicable in the field of medical education

**Principal Objective(s) of the Course:**

1. Express body language and effective lecture principles
2. Apply interactive techniques in lecture
3. Design and implement Team Based Learning
4. Design and implement Flipped Class
5. Design and implement Problem Based Learning
6. Design and implement Case Based Learning
7. Design and implement Role Play
8. Develop standard scenarios/ cases
9. Describe how to teach in simulation settings and labs
10. Design e-learning courses
11. Apply Mayer's principles in e-content development
12. Work with at least one content development software
13. Implement an effective and interactive webinar

**Course Description:**

Design and implement main teaching and learning methods that are applicable in the field of medical education is one the most important competences of medical teachers. This course is designed to provide rich opportunities for utilizing main teaching and learning methods that are applicable in the field of medical education. To this end we ought to teach each method using its own steps and principles for example we will teach the topic "Flipped Class" through flipped class method.

**Main Topics:**

- Effective lecture
- Interactive lecture
- Team Based Learning
- Flipped Classroom
- Problem Based Learning
- Case Based Learning
- Role Play
- Simulation, teaching with practical and labs
- Scenario/Case development
- E-Learning
- E-Content

**Hours:**

**Theoretical:** 17 hours

**Practical:** 17 hours

**Student Assessment:**

Project and feedback, final exam.

**Main Reference(s):**

- An introduction to medical teaching, Huggett, Kathryn, Jeffries, William B. last edition
- A Practical Guide for Medical Teachers -last edition

**Course title:** Clinical Teaching

**Code of the course:** 05

**Prerequisite:** 03

**Number of credits:** 2 credits

**Type of the course:** Theoretical – Practical

**Goal:** By the end of this course students would be able to design and implement main teaching and learning methods that are applicable in the field of clinical education

**Principal Objective(s) of the Course:**

1. Explain clinical education, its characteristics, benefits and challenges
2. Explain the common adult learning theories and its application in clinical settings
3. Apply Experience Based learning model in different clinical settings
4. Analyze his/her or other colleagues clinical teaching practice based on the best models of clinical teaching and provides advices
5. Analyze his/her or any colleagues outpatient teaching practice based on best models and provide advices
6. Analyze his/her or any colleague's procedural skills training based on best models and provides advices.

**Course Description:**

Design and implement main teaching and learning methods that are applicable in the field of clinical education is one the most important competences of medical teachers. This course is designed to provide rich opportunities for utilizing main teaching and learning methods that are applicable in the field of clinical education.

**Main Topics:**

- Common adult learning theories application in clinical setting
- Experience-Based Learning
- on clinical education methods (1 min. preceptor, SNAPPS, Concept map)
- Bedside teaching
- Outpatient teaching
- Procedural skills training
- Clinical education meetings (Morning report, Grand rounds)

**Hours:**

**Theoretical:** 17 hours

**Practical:** 17 hours

**Student Assessment:**

Project and feedback, final exam.

**Main Reference(s):**

- Basics in Medical Education, Hoon Eng Khoo and Zubair Amin, last edition
- A Practical Guide for Medical Teachers, John A Dent, Ronald M Harden, Dan Hunt, last edition

**Course Title:** Student assessment (1)

**Code of the Course:**

**Prerequisite:** None

**Number of Credit:** 1

**Type of the course:** Theoretical – Practical

**Principal Objective(s) of the Course:**

**Goal:** By the end of the course, students would be able to familiar with the principle and concepts of student assessment and psychometric properties of the test

**Objectives:**

1. Explain main concept and purposes of assessment in the health professions
2. Determine the validity and reliability of exams
3. Explain measurement theories (CCT, generalizability...) and its applications and limitations
4. Calculate discrimination and difficulty indices
5. Determine the minimum pass level of an exam
6. Develop a blueprint for an exam

**Course Description:**

One of the four main principles in the training cycle is to perform the test and evaluate it. Standardized testing is a highly specialized field and knowledge, and familiarity with the basic concepts, principles and methods of preparing, performing and standardizing tests and their application in different groups is a necessity for those involved in medical education. This course deals with general concepts and principles in student assessment. The course begins with an introductory statement on the history, philosophy, and necessity of assessment, and continues with a classification of measurement theories and the stages and activities of educational assessment. In the following, the statistical methods used in the analysis of test results and the validity and reliability of the test are discussed. Then, the importance of paying attention to develop a blueprint for a test and its design steps are discussed. To this end we will use a variety of active and interactive teaching and learning methods i.e., flipped classroom, and interactive lectures.

**Main Topics:**

- Introduction and concepts of assessment in the health professions
- Validity and reliability
- Measurement theory (generalizability, ...)
- Statistics of testing
- Standard setting (minimum pass level)
- Blueprint

**Hours:**

**Theoretical:** 9 hours **Practical:** 8 hours

**Student Assessment:**

Formative: Active participation in assignments during the course

Summative: Final exam

**Main Reference(s):**

- Amin Z, et al. Practical guide to medical student assessment. 2006.
- Downing SM, Yudkowsky R. Assessment in health professions education first published 2009. by Routledge 270 Madison Ave, New York, NY 10016

**Course title:** Student Assessment (2)

**Code of the course:** 07

**Prerequisite:** 06

**Number of credit:** 2 Credits

**Type of the course:** Theoretical – Practical

**Goal:** By the end of the course, students would be able to play a constructive role in developing an assessment system using appropriate tests

**Objectives:**

1. Explain Miller pyramid and their application in competency based assessment
2. Analyze the types of written exams (open-ended format) and explain their strengths and weaknesses
3. Analysis scoring errors of written exams (open-ended format) and provide suitable solutions for controlling them
4. Examine the structural errors of multiple choice questions (closed-ended format)
5. Explain the principles of oral exam in assessing learners
6. Explain the types of clinical reasoning tests and describe their application
7. Design an OSCE exam and the related materials of OSCE stations
8. Explain the types of workplace-based assessment tests and their cons and pros
9. Development an assessment system

**Course Description:**

One of the four main principles in the training cycle is to run the test and assess students' performance. Assessment is a highly specialized field and knowledge, and familiarity with the basic concepts, principles and methods of preparation, implementation and standardization of tests and their application is a necessity for those involved in medical education. In this course, different assessment tools will be presented and the characteristics and limitations of each of them will be described. Students are expected to become familiar with these tools and acquire sufficient knowledge and skills to use them. To this end we will use a variety of active and interactive teaching and learning methods i.e., case-based learning, interactive lectures.

**Main Topics:**

- Miller pyramid
- Competency based assessment
- Written exams (open-ended and closed-ended format)
- Oral exam
- Clinical reasoning tests
- OSCE
- Workplace-based assessment
- Assessment system

**Hours:**

**Theoretical:** 17 hours    **Practical:** 17 hours

**Student Assessment:**

Formative: Active participation, assignments, and project.

Summative: Final exam

**Main Reference(s):**

- Amin Z, et al. Practical guide to medical student assessment. 2006.
- Downing SM, Yudkowsky R. Assessment in health professions education first published 2009. by Routledge 270 Madison Ave, New York, NY 10016

**Course Title:** Program and Teacher Evaluation

**Code of the Course:** 08

**Prerequisite:** 02

**Number of Credit:** 2

**Type of the course:** Theoretical – Practical

**Goal:** By end of the course, students are able to value the role of evaluation in improving healthcare professions education and apply basics and practical aspects of evaluation in healthcare professions education

**Principal Objective(s) of the Course:**

- Explain the basic concepts of program and teacher evaluation
- Develop an evaluation plan for healthcare professions education programs
- Apply Kirkpatrick model to evaluate outcomes of healthcare professions education programs
- Apply CIPP evaluation model in the evolution process of healthcare professions education programs
- Explain the main essence and steps of accreditation
- Design a teacher evaluation system
- Apply meta-evaluation standards in developing a program evaluation plan and a teacher evaluation system

**Course Description:** As medical schools and other healthcare professions education organizations increase their demand for information on program effectiveness and outcomes, it has become important for educators to understand the common approaches and models for evaluation and how to plan and implement the evaluation. Program and Teacher Evaluation course covers basic concepts and common approaches, and models, to program evaluation as well as an introduction to teacher evaluation. The course also covers practical guidelines for conducting evaluations, from identifying the questions that the evaluation should address, to determining how to collect and analyze evaluative information, to ascertaining how to provide evaluative information to others. To this end, we will use a variety of active and interactive teaching and learning methods i.e., interactive lectures, scenario-based learning and flipped classroom.

**Main Topics:**

- Basics of evaluation (concepts and categories)
- Program evaluation plan
- Background of program evaluation approach and models
- Linear approaches (Kirkpatrick model)
- Nonlinear approaches (CIPP)
- Expertise-oriented evaluation (accreditation)
- Basics of meta-evaluation
- Teacher evaluation system

**Hours: Theoretical:** 17 hours    **Practical:** 17 hours

**Student Assessment:** Written exam (essays), Assignments and feedback, Projects

**Main Reference(s):**

- Fitzpatrick JL. Program evaluation alternative approaches and practical guidelines. 2011.
- Arreola RA. Developing a comprehensive faculty evaluation system. Madison, WI: Magna Publications; 2004.



**Course Title:** Search literacy

**Code of the Course:** 09

**Prerequisite:** None

**Number of Credit:** 22 Credits

**Type of the course:** Theoretical – Practical

**Principal Objective(s) of the Course:**

By passing this course, it is expected that the learners should be able to:

1. Search in scientific databases related to medical education.
2. Design a systematic search
3. Apprise the quality of scientific documents.
4. Recognize medical education journals
5. Recognize and use critical appraisal tools and websites.
6. Conduct a systematic search

**Course Description:**

As to the Dudeney, Hockly and Pegrum, search literacy is "ability to make effective use of a wide array of search engines, including a familiarity with their full functionality as well as their limitations". In this regard, Master of Science student, as a postgraduate learner, should know about when information is needed, how to recognize good sources of information, how to locate relevant information, use and communicate it effectively. In the other hand, Search literacy skill in research is still abstract to many students and they need to know about and able to use proper information in their professional life, which it can be made them lifelong learners. So, this "search literacy" course will be aimed to teach how to search English scientific databases, how to check the validity of scientific documents, familiarity with the tools of article critique and learning how to refer to scientific documents in new scientific documents.

**Main Topics:**

- Basic concepts of information technology and search literacy
- Systematic search principals
- Using search general engines and Search in Google Scholar
- Search in PubMed
- Search in ERIC
- Search in web of science
- Introducing credible medical education journals (medical education, medical teacher & ...)
- Introducing databases and critical appraisal tools

**Hours: Theoretical:** 9 hours

**Practical:** 8 hours

**Student Assessment:**

Formative assessment: 60% of the final grade is dedicated to homework during the semester and active participation and interaction of students in online synchronized meetings.

Summative assessment: As a final project, students should do a systematic search based on the provided scenario

**Main Reference(s):**

- Laidlaw A, Aiton J, Struthers J, Guild S. Developing research skills in medical students: AMEE Guide No. 69. Medical teacher. 2012 Sep 1;34(9):754-71.
- Blanco MA, Gruppen LD, Artino Jr AR, Uijtdehaage S, Szauter K, Durning SJ. How to write an educational research grant: AMEE Guide No. 101. Medical teacher. 2016 Feb 1;38(2):113-22.
- <https://training.cochrane.org/handbook/version-6.2/chapter-4-tech-suppl>
- <https://training.cochrane.org/handbook/current/chapter-04#section-4-4-3>
- <https://pubmed.ncbi.nlm.nih.gov/help/>

**Course Title:** Research methods in Medical Education (1)

**Code of the Course:** 10

**Prerequisite:** None

**Number of Credit:** 2

**Type of the course:** Theoretical – Practical

**Principal Objective(s) of the Course:**

Following participating in this course the participants would be able to:

- Explain epistemology of research in medical education and its importance
- Distinguish different types of research in medical education
- Describe quantitative research methodologies
- Discuss about true experimental design
- Apply different types of quasi experimental design.
- Design quantitative methods of medical education research.

**Main goal:**

Participants should be able to distinguish and design different types of quantitative methods.

**Course Description:**

Quantitative research is a methodology that focuses on quantifying the collection and analysis of data. It is formed from a deductive approach where emphasis is placed on the testing of theory, shaped by empiricist and positivist philosophies. The most important research methods in the field of medical education are quasi experimental research. A **quasi-experiment** is an empirical interventional study used to estimate the causal impact of an intervention on target population without random assignment. Quasi-experimental research shares similarities with the traditional experimental design or randomized controlled trial, but it specifically lacks the element of random assignment to treatment or control. Instead, quasi-experimental designs typically allow the researcher to control the assignment to the treatment condition, but using some criterion other than random assignment (e.g., an eligibility cutoff mark)<sup>1</sup>.

**Main Topics:**

- Epistemology of research in medical education and its importance
- Different types of research in medical education
- How to design research question in medical education
- How to design descriptive research methodologies
- How to design quantitative research methodologies
- True experimental design
- Different types of quasi experimental design.

**Hours:**

**Theoretical:** 17 hours

**Practical:** 17 hours

**Student Assessment:**

Formative assessment: of the final grade is dedicated to homework during the semester and active participation and interaction of students in online synchronized meetings.

Summative assessment: As a final project, participants should write a mini proposal.

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<sup>1</sup> <https://en.wikipedia.org/wiki/Quasi-experiment>

**Main Reference(s):**

- Norman, G. R., van der Vleuten, C. P., & Newble, D. I. (Eds.). (2002). *International handbook of research in medical education* (Vol. 7). Springer.
- Ary, D., et al., *Introduction to research in education*. 2010: Cengage Learning.
- Johnson, B. and L. Christensen, *Educational research: Quantitative, qualitative, and mixed approaches*. 2007: SAGE Publications, Incorporated.
- Cohen LM. L. and Morrison, K.(2007). *Research methods in education* 6th edition. London: Roulledge.

**Course Title:** Research methods in Medical Education (1)

**Code of the Course:** 10

**Prerequisite:** None

**Number of Credit:** 2

**Type of the course:** Theoretical – Practical

**Principal Objective(s) of the Course:**

Following participating in this course the participants would be able to:

- Explain epistemology of research in medical education and its importance
- Distinguish different types of research in medical education
- Describe quantitative research methodologies
- Discuss about true experimental design
- Apply different types of quasi experimental design.
- Design quantitative methods of medical education research.

**Main goal:**

Participants should be able to distinguish and design different types of quantitative methods.

**Course Description:**

Quantitative research is a methodology that focuses on quantifying the collection and analysis of data. It is formed from a deductive approach where emphasis is placed on the testing of theory, shaped by empiricist and positivist philosophies. The most important research methods in the field of medical education are quasi experimental research. A **quasi-experiment** is an empirical interventional study used to estimate the causal impact of an intervention on target population without random assignment. Quasi-experimental research shares similarities with the traditional experimental design or randomized controlled trial, but it specifically lacks the element of random assignment to treatment or control. Instead, quasi-experimental designs typically allow the researcher to control the assignment to the treatment condition, but using some criterion other than random assignment (e.g., an eligibility cutoff mark)<sup>2</sup>.

**Main Topics:**

- Epistemology of research in medical education and its importance
- Different types of research in medical education
- How to design research question in medical education
- How to design descriptive research methodologies
- How to design quantitative research methodologies
- True experimental design
- Different types of quasi experimental design.

**Hours:**

**Theoretical:** 17 hours

**Practical:** 17 hours

**Student Assessment:**

Formative assessment: of the final grade is dedicated to homework during the semester and

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<sup>2</sup> <https://en.wikipedia.org/wiki/Quasi-experiment>

active participation and interaction of students in online synchronized meetings.  
Summative assessment: As a final project, participants should write a mini proposal.

**Main Reference(s):**

- Norman, G. R., van der Vleuten, C. P., & Newble, D. I. (Eds.). (2002). *International handbook of research in medical education* (Vol. 7). Springer.
- Ary, D., et al., *Introduction to research in education*. 2010: Cengage Learning.
- Johnson, B. and L. Christensen, *Educational research: Quantitative, qualitative, and mixed approaches*. 2007: SAGE Publications, Incorporated.
- Cohen LM. L. and Morrison, K.(2007). *Research methods in education* 6th edition. London: Roulledge.

**Course title:** Management and leadership in medical education

**Code of the course:** 12

**Prerequisite:** None

**Number of credits:** 2 credits

**Type of the course:** Theoretical

**Goal:** By the end of this course students would be able to perform as an educational manager/ leader

**Principal Objective(s) of the Course:**

1. Explain basic concepts and theories of management
2. Describe strategic planning steps in training, vision
3. Plan a strategic plan in medical education with emphasis on developing strategies
4. Do SOWT analysis
5. Use evaluation matrix by SPACE method
6. Strategy implementation, strategy evaluation and operational planning
7. Apply total quality management in TQM medical education
8. Utilize change management steps in medical education change process
9. Value leadership in medical education
10. Describe group decision making, networking, advocacy

**Course Description:**

This course is designed to provide the opportunity of applying the concepts of management and leadership. We will use a variety of active and interactive teaching and learning methods i.e., scenario-based learning, flipped classroom, and interactive lectures.

**Main Topics:**

- Basic concepts and theories of management
- Strategic planning steps in training, vision
- Strategic planning in medical education with emphasis on developing strategies
- Analysis and selection of strategies using SOWT analysis, types of strategies
- Evaluation matrix by SPACE method
- Strategy implementation, strategy evaluation and operational planning
- Total quality management in TQM medical education
- Change management
- Human resource strategy in medical education
- Leadership
- Negotiation
- Group decision making, networking, advocacy

**Hours:**

**Theoretical:** 34

**Student Assessment:**

Project and Final exam

**Main Reference(s):**

- The Essential Deming: Leadership Principles from the Father of Quality- last edition
- Fred R. David - Strategic Management- last edition
- Management of Organizational Behavior- last edition

**Course title:** Instructional Design

**Code of the course:** 14

**Prerequisite:** 01-02-03-08

**Number of credits:** 1

**Type of the course:** Theoretical

**Goal:** By the end of this course students would be able to identify the most effective ways through which learners can get the information and create more effective educational opportunities.

**Principal Objective(s) of the Course:**

7. Define instructional design
8. Utilize models of instructional design
9. Develop a lesson plan
10. Apply Gagne instructional design
11. Design educational materials

**Course Description:**

Instructional design by identifying the most effective ways through which learners can get the information help teacher to create more effective educational opportunities. This course is designed to provide rich opportunities for utilizing instructional design principles in the field of medical education.

**Main Topics:**

- Overview of instructional design
- Models of instructional design (ADDIE, Gagne and general model)
- Steps of instructional design
- Key points for developing a lesson plan
- Types of educational materials
- CREATE model for designing learning materials

**Hours:**

**Theoretical:** 17 hours

**Student Assessment:**

Project, feedback and final exam.

**Main Reference(s):**

- Understanding Medical Education: Evidence, Theory, and Practice, last Edition
- ABC of teaching and learning in medicine-last edition



**Course title:** BEME

**Code of the course:** 15

**Prerequisite:** 09

**Number of credits:** 1 credits

**Type of the course:** Theoretical

**Goal:** By the end of this course students would be able to adopt an evidence based approach in his/her educational practice

**Principal Objective(s) of the Course:**

14. Describe concept and history of BEME
15. Differentiate BEME and EBM
16. Introduce functions, structure and activities of the BEME Collaboration:
17. Describe BEME steps
18. Explain the challenges and process of evidence synthesis in medical education

**Course Description:**

BEME's aim is to provide the latest evidence from scientifically-grounded educational research. To enable medical education stakeholders to make informed decisions. We will use a variety of active and interactive teaching and learning methods i.e., flipped classroom, and interactive lectures.

**Main Topics:**

19. Concept and history of BEME
20. Differences of BEME and EBM
21. BEME Collaboration
22. BEME steps
  - a. Formulating answerable question
  - b. Developing search strategy
  - c. Critical appraising of evidence (QUESTS)
  - d. Implementing change
  - e. Evaluating the change
23. Evidence Synthesis medical education
  - a. Differences and challenges compared to medicine
  - b. Types of evidence synthesis (systematic review, Scoping review, critical review, etc.)
  - c. Steps and procedures for performing BEME Review

**Hours:**

**Theoretical:** 17 hours

**Student Assessment:**

Project and feedback, final exam.

**Main Reference(s):**

- Hammick M, Haig A. The best evidence medical education collaboration: processes, products and principles. *The Clinical Teacher*. 2007 Mar;4(1):42-5.
- Hammick M, Dornan T, Steinert Y. Conducting a best evidence systematic review. Part 1: From idea to data coding. *BEME Guide No. 13. Medical teacher*. 2010 Jan 1;32(1):3-15.
- Cook DA, West CP. Conducting systematic reviews in medical education: a stepwise approach. *Medical education*. 2012 Oct;46(10):943-52.
- Sharma R, Gordon M, Dharamsi S, Gibbs T. Systematic reviews in medical education: a practical approach: *AMEE guide 94. Medical teacher*. 2015 Feb 1;37(2):108-24

