

# MEDGEN



## Developing Medical Genetics Education Through Curriculum Reforms and Establishment of Postgraduate Training Programs



### **Student Starting Profile for MSc Program in Genetic Counseling**

The student starting profile focuses on creating the core curriculum comprising essential knowledge, skills and attitudes to be acquired by students to allow them to work as genetic counselors.

Rapid development in molecular biology and medicine emphasizes the importance of ensuring that genetic counselors are familiar with the principles of human genetics and their applications in preventive medicine. There is a need to establish a modern curriculum that will take into account expanding and changing roles of genetic counselors in genomic medicine.

The aim of the current student starting profile is:

- To identify essential core competencies to be taught to future students in the Genetic Counseling program.
- To delineate learning outcomes of the future students.
- To identify new fields of medicine that will use genetic counseling services more frequently and to include the relevant teaching material into the curriculum.

The genetic counsellor typically has completed Bachelor degree in the field of life science in an Academic Institute recognized by the Israeli Scientific Council, with a minimal academic grade of 85. Personal interview conducted by a board of medical geneticists and genetic counselors is required for the acceptance. The program is planned to be completed in two academic years. It will integrate courses, seminars and clinical experience in an environment that encourages close student and faculty interaction.

**We propose to aim at achieving the following core competencies and educational outcomes:**

## ***I. Core Competencies:***

### **A. Knowledge in human genetics**

- Identifying individuals and families with disorders determined to have a genetic component.
- Identifying fetuses at risk for a genetic condition.
- Determining the risk of recurrence of a genetic condition.
- Understanding the genetic and environmental components of common diseases.
- Providing accurate information on the genetic disorder.
  
- Determining the need for and utility of genetic tests relating to a disease or special condition in the family members or in the fetus.
  
- Interpreting the results of genetic tests.
  
- Translating genetic test results into specific information on the disease.
  
- Understanding the principles of genetic screening and genetic disease prevention.
  
- Understanding the principles of pharmacogenomics.

### **B. Communication skills**

- Making an assessment of the family's needs.
- Referring to appropriate supporting agencies and patient organizations.
- Communicating clinical and genetic information to families in an individualized manner.
  
- Helping individuals and families to understand the information provided during genetic counseling.
  
- Facilitating understanding between individuals with genetic diseases and other health professionals about inheritance patterns, genetic disorders and genetic testing results.

- Evaluating the level of understanding of the individual counselled regarding the topics being discussed.

### **C. Ethical principles and documentation**

- Studying principles of nondirective counseling.
- Recognizing various types of genetic testing including predictive, predisposition, diagnostics, etc.
- Understanding ethical aspects of genetic screening.
- Understanding ethical aspects of predictive and predisposition testing, testing in children and adoption.
- Documenting information in an appropriate manner and according to legal regulations.
- Studying medico-legal aspects of genetic counseling and legal issues related to DNA testing.

### **D. Participation in Education in Medical Genetics**

- Planning and delivering professional and public education in the Medical Genetics field.

## ***II. Learning outcomes***

### **A. Knowledge in genetics**

- Ascertaining sufficient medical, family and personal information from the individual and the family with genetic condition to calculate genetic risk.
- Understanding patterns of Mendelian and non-Mendelian inheritance and the underlying mechanisms by which genetic disease may occur.
- Providing clinical information and recommendations to the individuals and their families.
- Understanding laboratory methods used for genetic disease diagnosis and being aware of limitations of molecular testing.
- Providing information on reproductive options.

## **B. Social aspects**

- Ascertaining practical and psychological needs of the individual and family.
- Being able to identify relevant organizations and patient organizations and communicate this information to the families.

## **C. Communication skills**

- Providing information about the genetic disorder appropriate to the families according to their religious and cultural views.
- Enabling individuals to make informed choices about the implications of genetic diagnosis on the family members.
- Consulting other health professionals about specific genetic diseases in order to discuss with the family screening options, management options and prognosis.

## **D. Ethical principles and documentation**

- Providing information on the risks and benefits of a genetic test prior to obtaining consent for the test.
- Promoting dissemination of information to family members when possible and recommended.
- Explaining how the results of genetic testing genetics might impact on career and insurance related-decisions.
- Maintaining confidentiality and security of genetic information.

## **F. Education**

- Distributing knowledge in medical genetics.
- Raising awareness on available services related to healthcare in genetic diseases.

## **Summary**

This summary provides recommended core competencies and learning outcomes in medical genetics for the MSc program in Genetic Counselling. It serves as a student starting profile and is aimed at assisting in defining the structure and content for this program.

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