Program Midtern of Discipline “Methods of molecular biotechnology”

6D070100 Biotechnology

**Module 1** Structure, feature and functions of nucleic acids

Methods of extraction of nucleic acids from different biological materials

What is the methods used for cell lysis

Describe the main principles of DNA extraction

Give characterization of the main principles of RNA extraction

Show the methods used for estimation of purification degree of nucleic acids

Describe the FISH (Fluorescence In-Situ Hybridization)

Show the main approaches and methods of molecular biotechnology

Present the principles and applications of amplifying DNA *in vitro*: the polymerase chain reaction (PCR)

How to prepare cDNA?

How to analyze PCR product

Give characterization of types electrophoresis.

How to apply isoelectric focusing and for what purposes?

Show the principles and applications of two-dimensional electrophoresis.

Give characterization of Real time PCR and its applications.

What is the conventional PCR

Hybridization conditions and melting temperature of DNA.

Analysis and characterization of nucleic acids.

Show important factors that affect stringency and hybridization.

Describe relation between melting temperature and oligonucleotide concentration.

Give characterization of approaches and methods of modification of nuclear acids.

Show different types of endonucleases and their use in molecular biotechnology.

Present the main principles of electrophoresis for analysis of nucleic acids.

Describe the methods of nucleic acid detection DNA.

Give characterization of use of SDS-PAGE for analysis of nuclear

Give characterization of separation and techniques for different types of DNA