**MOLECULAR BIOLOGY II CREDIT HOURS3+0**

**LEARNING OUTCOMES:**

**Students will be able to:**

1. Know about the gene regulation and gene expression.
2. Understand the processes of transcription and translation

**COURSE CONTENTS:**

Over view of regulation of gene expression. Regulatory sequences, transcription factors, Regulation of gene expression in prokaryotes (operon systems), eukaryotic gene regulation, Transcriptional control of gene expression (RNA polymerases, regulatory sequences, activators and repressors of transcription; genetic switches, transcription initiation, molecular mechanisms of transcription repression and activation, regulation of transcription factor activity); post-transcriptional controls (processing and transport of pre-mRNA, cytoplasmic mechanisms of post-transcriptional control, processing of rRNA and tRNA); Bacterial protein synthesis and regulation; Eukaryotic protein synthesis and regulation; post translational modification; non coding RNAs

**RECOMMENDED BOOKS:**

1. Allison, L.A., 2011. Fundamental Molecular Biology.2nd Edition. Wiley Sons.
2. [Gerald Karp](http://eu.wiley.com/WileyCDA/Section/id-302479.html?query=Gerald+Karp),G., [Janet Iwasa](http://eu.wiley.com/WileyCDA/Section/id-302479.html?query=Janet+Iwasa),J., [Wallace Marshall](http://eu.wiley.com/WileyCDA/Section/id-302479.html?query=Wallace+Marshall),W., 2016. Karp's Cell and Molecular Biology, 8th Edition. John Willey and Sons, Inc.
3. [Kormann](http://www.intechopen.com/books/editor/modern-tools-for-genetic-engineering), M.S.D., 2016. Modern Tools for Genetic Engineering. Publisher: **InTech**Janeza Trdine 951000 Rijeka, Croatia - European Union.
4. [Kormann](http://www.intechopen.com/books/editor/modern-tools-for-genetic-engineering),M.S.D., 2016. Modern Tools for Genetic Engineering. Publisher: InTech Janeza Trdine 951000 Rijeka, Croatia - European Union
5. [Larramendy, M.L., and Soloneski](http://www.intechopen.com/books/editor/nucleic-acids-from-basic-aspects-to-laboratory-tools),S., 2016. Nucleic Acids From Basic Aspects to Laboratory Tools Publisher: InTech,Janeza Trdine 951000 Rijeka, Croatia EUROPEAN UNION
6. Lodish., H., Berk,A., Kaiser, C.A. M. Krieger, M., Bretscher, A., Ploegh, H., Martin, K., 2016. Molecular Cell Biology. 8th Edition. W.H.Freeman.
7. Old R. W. and Primrose, S.B., An Introduction to Genetic Engineering, Blackwell Scientific Publications.
8. Watson, J.D., Gann,A., Levine, M., Losicks,R., 2013. Molecular Biology of the Gene. The Benjumen Cummings Publishing Company, California
9. Wilson, J. and Hunt, T., 2015. . Molecular Biology of the Cell. 6th Edition Garland Sciences, Taylor and Francis.