**Courses and ECTS Credits**

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|  |
| Course Code | Course Name | ECTS | T+P+L | C/E | Language |
| Fall Semester |
| 521103301 | [MEMBRANE BIOLOGY AND TRANSPORT](#D521101301) | 7,5 | 3+0+0 | ELECTIVE | TURKISH |
| 521103302 | [ONCOGENES](#D521101302) | 7,5 | 3+0+0 | ELECTIVE | TURKISH |
| 521103303 | [INTRACELLULAR PROTEIN TRANSPORT](#D521101303)  | 7,5 | 3+0+0 | ELECTIVE | TURKISH |
| 521103304 | [CYTOLOGY (STRUCTURE OF ORGANELLES)](#D521101304) | 7,5 | 2+2+0 | COMPULSORY | TURKISH |
| 521103306 | [ULTRASTRUCTURE OF CELL PROCESS](#D521101306) | 7,5 | 3+0+0 | ELECTIVE | TURKISH |
| 521103307 | [STRUCTURES AND FUNCTIONS OF NON CODING RNA](#D521101307) | 7,5 | 3+0+0 | ELECTIVE | TURKISH |
| 521103308 | [PURIFICAT. OF DNA,RNA AND CONSTRC.REKOMB DNA](#D521101308) | 7,5 | 2+2+0 | COMPULSORY | TURKISH |
| 521101600 | SPECILIZED FIELD COURSE | 5 | 3+0+0 | COMPULSORY | TURKISH |
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| Spring Semester |
| 521104301 | [CELL CYCLE, MOL. CON.AT CELL DİV., CELL SEN.,APOP.](#D521102301) | 7,5 | 2+2+0 | COMPULSORY | TURKISH |
| 521104304 | [CELLULAR MECHANISMS OF DEVELOPMENT](#D521102304) | 7,5 | 3+0+0 | ELECTIVE | TURKISH |
| 521104305 | [ANA. OF NUCLEIC ACID AND PROTEIN BY MEANS OF COMP.](#D521102305) | 7,5 | 2+2+0 | COMPULSORY | TURKISH |
| 521104306 | [SOME MUTATIONS IN HUMAN GENOM](#D521102306) | 7,5 | 2+0+0 | ELECTIVE | TURKISH |
| 521104307 | [THE EFFECT OF NUTRIENTS İNTO CELLS AND ADAPTATION](#D521102307) | 7,5 | 3+0+0 | ELECTIVE | TURKISH |
| 521104308 | [THE INTRODUCTION OF MEDICAL BIOTECHNOLOGY](#D521102308) | 7,5 | 2+0+0 | ELECTIVE | TURKISH |
| 521104309 | [METHODS OF MUTATION DETECTION](#D521102309) | 7,5 | 2+2+0 | ELECTIVE | TURKISH |
| 521101600 | SPECILIZED FIELD COURSE | 5 | 3+0+0 | COMPULSORY | TURKISH |
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| **COURSE CODE:** | **521103301** | **DEPARTMENT: MEDİCAL BİOLOGY** |
| **COURSE NAME:** | **MEMBRANE BİOLOGY AND TRANSPORT** |
| **INSTRUCTOR NAME**Prof. Dr. Hasan Veysi GÜNEŞ | **COURSE LANGUAGE****Turkish:** X**English: ** | **Course Catagory** |
| Technical | Medical | Other(……) |
|  |  |  | X |  |

**COURSE LEVEL**

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| **PROPAEDEUTIC** | **M.SC.** | **Ph.D.** | **COURSE OF PROVINCE** |
| **** | **** | X | **** |

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| **SEMESTER** | **WEEKLY COURSE PERIOD** | **COURSE OF** |
| **Theoric** | **Practice** | **Laboratory** | **Credit** | **ECTS** | **TYPE** |
| Spring ****Autumn X |  3 |  0 |  | 3 | 7,5 | COMPULSORY ELECTIVE **** X |
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| **ASSESMENT CRITERIA** |
| **MID-TERM** | **ACTIVITY** | **Quantity** | **Percentage (%)** |
| 1st Mid-Term |  1 | 40  |
| 2 nd Mid- Term |  |  |
| Quiz |  |  |
| Homework |  |  |
| Project |  |  |
| Oral Exam |  |  |
| Other (………) |  |  |
| **FINAL** | Quiz |  |  |
| Homework | 1 | 20 |
| Project |  |  |
| Oral Exam |  |  |
| Other(Final Exam) | 1 | 40 |
| **MAKE-UP EXAM** | Oral | Written | Oral and Written | Multiple Choice |
|  | X |  |  |
| **PREREQUISITE(S)** |  -- |
| **COURSE CONTENT** | Structure of cell and cell membrane; Structure of macromolecules in the membrane; Simple, passive and active transport; Exocytosis, endocytosis and receptor-mediated endocytosis |
| **COURSE AIMS** | Structure of the cell membrane and how is realize the transport in this structure |
| **COURSE OBJECTIVES** | The student learn about cell membran; By preparing homework, they learn the literature collection and presantation their work |
| **TEXTBOOK(S)** | Güneş,HV. Moleküler Hücre Biyolojisi, Kaan Kitabevi, 2003 |
| **REFERENCES** | Alberts B,Bray D, Lewis J. at all. Molecular Biology of The Cell,GarlandPublishing,Inc, New York, 1994Pollard TD.,Earnshaw WC. Cell Biology,Saunders, New York 2002. |

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| **COURSE CODE:** | **521103302** | **DEPARTMENT: MEDİCAL BİOLOGY** |
| **COURSE NAME:** | **ONCOGENES** |  |
| **INSTRUCTOR NAME** | **COURSE LANGUAGE****Turkish: x****English: ** | **Course Catagory** |
| Technical | Medical | Other(……) |
| Prof.Dr. Didem TURGUT ÇOŞAN |  |  | x |  |

**COURSE LEVEL**

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| **PROPAEDEUTIC** | **M.SC.** | **Ph.D.** | **COURSE OF PROVINCE** |
| **** | **** | **x** | **** |

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| **SEMESTER** | **WEEKLY COURSE PERIOD** | **COURSE OF** |
| **Theoric** | **Practice** | **Laboratory** | **Credit** | **ECTS** | **TYPE** |
| Spring ****Autumn **x** | 3  | 0  |  | 3  | 7,5 | COMPULSORY ELECTIVE **x** |
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| **ASSESMENT CRITERIA** |
| **MID-TERM** | **ACTIVITY** | **Quantity** | **Percentage (%)** |
| 1st Mid-Term |  1 |  40 |
| 2 nd Mid- Term |  |  |
| Quiz |  |  |
| Homework | 1  |  20 |
| Project |  |  |
| Oral Exam |  |  |
| Other (………) |  |  |
| **FINAL** | Quiz |  |  |
| Homework |  |  |
| Project |  |  |
| Oral Exam |  |  |
| Other(Written Exam) | 1 | 40 |
| **MAKE-UP EXAM** | Oral | Written | Oral and Written | Multiple Choice |
|  | **x** |  |  |
| **PREREQUISITE(S)** |  |
| **COURSE CONTENT** | What is oncogene? How does oncogene work? Forming of cancer, Classify of oncogenes, Tumor cell heterogenite, Role of proto-oncogene, activation of proto-oncogene and tumor suppressor gene in cancer, Classification of oncogene proteins and features, Growth factors, Using of oncogene in medical research |
| **COURSE AIMS** | To learn the structure of genes that role in the cancer formation and its effects  |
| **COURSE OBJECTIVES** | To learn biology of cancer that have a high mortality and its interactions with genes. By preparing homework, to learn the literature collection and presentation their work. |
| **TEXTBOOK(S)** | Textbook of Prof.Dr. İrfan DEĞİRMENCİ |
| **REFERENCES** | 1. Alberts, B., Bray, J., D., Lewis, Raff, M., Roberts, K., Wartson, J., D.: Molecular Biology of THE CELL, Third Edition, Gurland Puplishing, Inc. New York London 1994.
2. Cooper D.N., Krawczak, M.: Human Gene Mutation, Bios Scientific Publishers, Oxford, 1993.
3. Darnell J., Lodish H., Baltimore D.: Molecular Cell Biology, Scientific American Books Inc., 1990.
4. Macdonald F., Ford CHj. : Oncogenes and Tumor Suppressor Genes, Bios Scientific Publishers, United Kingdom, 1991.
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| **COURSE CODE:** | **521103303** | **DEPARTMENT: MEDİCAL BİOLOGY** |
| **COURSE NAME:****INTRACELLULAR PROTEİN TRANSPORT** |
| **INSTRUCTOR NAME**Assoc. Prof. Dr. Hulyam KURT | **COURSE LANGUAGE****Turkish:** X**English: ** | **Course Catagory** |
| Technical | Medical | Other(……) |
|  |  |  | X |  |

**COURSE LEVEL**

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| **PROPAEDEUTIC** | **M.SC.** | **Ph.D.** | **COURSE OF PROVINCE** |
| **** | **** | X | **** |

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| **SEMESTER** | **WEEKLY COURSE PERIOD** | **COURSE OF** |
| **Theoric** | **Practice** | **Laboratory** | **Credit** | **ECTS** | **TYPE** |
| Spring ****Autumn X | 3 | 0 |  | 3 | 7,5 | COMPULSORY ELECTIVE **** X |
|  |
| **ASSESMENT CRITERIA** |
| **MID-TERM** | **ACTIVITY** | **Quantity** | **Percentage (%)** |
| 1st Mid-Term |  1 | 24 |
| 2 nd Mid- Term |  |  |
| Quiz |  |  |
| Homework | 1  | 16  |
| Project |  |  |
| Oral Exam |  |  |
| Other (………) |  |  |
| **FINAL** | Quiz |  |  |
| Homework |  |  |
| Project |  |  |
| Oral Exam |  |  |
| Other(Final Exam) | 1 | 60 |
| **MAKE-UP EXAM** | Oral | Written | Oral and Written | Multiple Choice |
|  | X |  |  |
| **PREREQUISITE(S)** |  -- |
| **COURSE CONTENT** | Structure of organelles which make protein synthesis; Protein folding and processing in the E.R. ; after E.R. protein sorting and export Golgi apparatus; transport to plasma membrane of polarized cells. |
| **COURSE AIMS** | -To give a molecular concept that after the protein synthesis there are some intracellular protein processing pathways. |
| **COURSE OBJECTIVES** | -To give an opportunity to select a molecular subject in the receptors and lysosomal enzymes. |
| **TEXTBOOK(S)** | -Başaran, A.: Tıbbi Biyoloji Ders Kitabı, Eskişehir, 2002.-Güneş, H.V.: Moleküler Hücre Biyolojisi. Kaan Kitapevi, Bursa, 2003. |
| **REFERENCES** | -Cooper, G.M.: The Cell, Dara-Farber Cancer Instıtute School. North America, 1997.-Pollard, T.D., Earnshaw, W.C.: Cell Biology, London, New-York, St-Louis, Sydney,Toronto, 2002. |

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| **COURSE CODE:** | **521103304** | **DEPARTMENT: MEDİCAL BİOLOGY** |
| **COURSE NAME:** | **CYTOLOGY (STRUCTURE OF ORGANELLES)** |
| **INSTRUCTOR NAME**Prof. Dr. Hasan Veysi GÜNEŞ | **COURSE LANGUAGE****Turkish:** X**English: ** | **Course Catagory** |
| Technical | Medical | Other(……) |
|  |  |  | X |  |

**COURSE LEVEL**

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| **PROPAEDEUTIC** | **M.SC.** | **Ph.D.** | **COURSE OF PROVINCE** |
| **** | **** | X | **** |

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| **SEMESTER** | **WEEKLY COURSE PERIOD** | **COURSE OF** |
| **Theoric** | **Practice** | **Laboratory** | **Credit** | **ECTS** | **TYPE** |
| Spring ****Autumn X |  2 | 2 |  | 3 | 7,5 | COMPULSORY ELECTIVEX |
|  |
| **ASSESMENT CRITERIA** |
| **MID-TERM** | **ACTIVITY** | **Quantity** | **Percentage (%)** |
| 1st Mid-Term |  1 | 40  |
| 2 nd Mid- Term |  |  |
| Quiz |  |  |
| Homework |  |  |
| Project |  |  |
| Oral Exam |  |  |
| Other (………) |  |  |
| **FINAL** | Quiz |  |  |
| Homework | 1 | 20 |
| Project |  |  |
| Oral Exam |  |  |
| Other(Final Exam) | 1 | 40 |
| **MAKE-UP EXAM** | Oral | Written | Oral and Written | Multiple Choice |
|  | X |  |  |
| **PREREQUISITE(S)** |  -- |
| **COURSE CONTENT** | Structure and function of the cell, cytoplasm and organelles  |
| **COURSE AIMS** | Learning of the structure and function of the cell, cytoplasm and organelles |
| **COURSE OBJECTIVES** | The student learn about cell and cytoplasm; By preparing homework, they learn the literature collection and presantation their work |
| **TEXTBOOK(S)** | Güneş,HV. Moleküler Hücre Biyolojisi, Kaan Kitabevi, 2003 |
| **REFERENCES** | Alberts B,Bray D, Lewis J. at all. Molecular Biology of The Cell, Garland Publishing,Inc, New York, 1994Pollard TD.,Earnshaw WC. Cell Biology, Saunders, New York 2002.Gartner LP and Hiatt JL. Color textbook of Histology,W.B.Saunders Company,  Philadelphia,1997 |

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| **COURSE CODE:** | **521103306** | **DEPARTMENT: MEDİCAL BİOLOGY** |
| **COURSE NAME:** | **ULTRASTRUCTURE OF CELL PROCESS** |
| **INSTRUCTOR NAME**Prof. Dr. Hasan Veysi GÜNEŞ | **COURSE LANGUAGE****Turkish:** X**English: ** | **Course Catagory** |
| Technical | Medical | Other(……) |
|  |  |  | X |  |

**COURSE LEVEL**

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| **PROPAEDEUTIC** | **M.SC.** | **Ph.D.** | **COURSE OF PROVINCE** |
| **** | **** | X | **** |

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| **SEMESTER** | **WEEKLY COURSE PERIOD** | **COURSE OF** |
| **Theoric** | **Practice** | **Laboratory** | **Credit** | **ECTS** | **TYPE** |
| Spring ****Autumn X |  3 |  0 |  | 3 | 7,5 | COMPULSORY ELECTIVE **** X |
|  |
| **ASSESMENT CRITERIA** |
| **MID-TERM** | **ACTIVITY** | **Quantity** | **Percentage (%)** |
| 1st Mid-Term |  1 | 40  |
| 2 nd Mid- Term |  |  |
| Quiz |  |  |
| Homework |  |  |
| Project |  |  |
| Oral Exam |  |  |
| Other (………) |  |  |
| **FINAL** | Quiz |  |  |
| Homework | 1 | 20 |
| Project |  |  |
| Oral Exam |  |  |
| Other(Final Exam) | 1 | 40 |
| **MAKE-UP EXAM** | Oral | Written | Oral and Written | Multiple Choice |
|  | **x** |  |  |
| **PREREQUISITE(S)** |  -- |
| **COURSE CONTENT** | DNA packaging in chromatin and chromosomes; classification of the chromosomes based upon the position of centromere; DNA replication; transcription of mRNA; mRNA processing; ribosome production in the nucleus. |
| **COURSE AIMS** | -To give the molecular knowledge that formation of mRNA and ribosomes from DNA in nucleus which is checkpoint of a cell. |
| **COURSE OBJECTIVES** | -To give the knowledge of the other functional unites related to nucleus and protein synthesis. |
| **TEXTBOOK(S)** | -Başaran, A.: Tıbbi Biyoloji Ders Kitabı, 6. Baskı, Nobel-Güneş Kitapevi, Eskişehir, 2002.-Güneş, H.V.: Moleküler Hücre Biyolojisi. Kaan Kitapevi, Bursa, 2003. |
| **REFERENCES** | -Pollard, T.D., Earnshaw, W.C.: Cell Biology, New-York, 2002.-Bray, A., Raff L., Watson, R.: Molecular Biyology of the Cell., Newyork, London, 2002. |

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| **COURSE CODE:** **521103307** | **DEPARTMENT: MEDİCAL BİOLOGY** |
| **COURSE NAME:****STRUCTURES AND FUNCTİONS OF NON CODİNG RNA’S** |
| **INSTRUCTOR NAME**Assoc. Prof. Dr. Didem TURGUT COŞAN | **COURSE LANGUAGE****Turkish: x****English: ** | **Course Catagory** |
| Technical | Medical | Other(……) |
|  |  |  | **X** |  |

**COURSE LEVEL**

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| **PROPAEDEUTIC** | **M.SC.** | **Ph.D.** | **COURSE OF PROVINCE** |
| **** | **** | **x** | **** |

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| **SEMESTER** | **WEEKLY COURSE PERIOD** | **COURSE OF** |
| **Theoric** | **Practice** | **Laboratory** | **Credit** | **ECTS** | **TYPE** |
| Spring ****Autumn **x** | 3 | 0 | 0  | 3  | 7,5 | COMPULSORY ELECTIVE ** x** |
|  |
| **ASSESMENT CRITERIA** |
| **MID-TERM** | **ACTIVITY** | **Quantity** | **Percentage (%)** |
| 1st Mid-Term | 1  | 30 |
| 2 nd Mid- Term |  |  |
| Quiz |  |  |
| Homework | 1  | 30 |
| Project |  |  |
| Oral Exam |  |  |
| Other (………) |  |  |
| **FINAL** | Quiz |  |  |
| Homework | 1 | 40 |
| Project |  |  |
| Oral Exam |  |  |
| Other(……………….) |  |  |
| **MAKE-UP EXAM** | Oral | Written | Oral and Written | Multiple Choice |
|  | **X** |  |  |
| **PREREQUISITE(S)** |  |
| **COURSE CONTENT** | To provide basic information about gene silencing, RNA interference and non-coding RNAs |
| **COURSE AIMS** | With emerging technologies in molecular biology in the field of development and many new ones are added to our knowledge. RNA that is not code issue is one of the issues going on in the last period. Recently, RNAi has been discovered, and then we know interferens miRNA forms of RNA, siRNA, and dsRNA were added as concepts. Continuing research on this subject and information is increasing every day. Therefore, this matter is very contemporary, the course will be the subject matter is broad. Another issue arising with the discovery of RNA interferensin in the treatment of the disease can be targeted based on gene silencing and gene silencing or gene is silent about the so-called upgrading. This revolutionary innovation in science subjects for the examination will be enlightening. |
| **COURSE OBJECTIVES** | To flash on the world of non-coding RNA which has got an important role in gene silencing that is an important area of ​​research in the development of new treatment methods |
| **TEXTBOOK(S)** |  |
| **REFERENCES** | 1. Andrew Z. Fire and Craig C. Mello The Nobel Prize in Physiology or Medicine [The Nobel Assembly at Karolinska Institutet](http://www.mednobel.ki.se) October 2006.
2. Krishnarao Appasani RNA Interference Technology - From Basic Science to Drug Development Edited by, Andrew Fire, Marshall Nirenberg CUP GeneExpression Systems, Inc., Massachusetts March 2005.
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| **COURSE CODE:** | **521103308** | **DEPARTMENT: MEDİCAL BİOLOGY** |
| **COURSE NAME:** | **PURİFİCATİON OF DNA, RNA, AND CONSTRUCTİON OF RECOMBİNANT DNA MOLECULES** |
| **INSTRUCTOR NAME** | **COURSE LANGUAGE****Turkish: x****English: ** | **Course Catagory** |
| Technical | Medical | Other(……) |
| Prof.Dr. Didem TURGUT ÇOŞAN |  |  | x |  |

**COURSE LEVEL**

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| **PROPAEDEUTIC** | **M.SC.** | **Ph.D.** | **COURSE OF PROVINCE** |
| **** | **** | **x** | **** |

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| **SEMESTER** | **WEEKLY COURSE PERIOD** | **COURSE OF** |
| **Theoric** | **Practice** | **Laboratory** | **Credit** | **ECTS** | **TYPE** |
| Spring **** Autumn **x** | 2 | 2 |  | 3 | 7,5 | COMPULSORY ELECTIVE **x** |
|  |
| **ASSESMENT CRITERIA** |
| **MID-TERM** | **ACTIVITY** | **Quantity** | **Percentage (%)** |
| 1st Mid-Term |  1 | 40 |
| 2 nd Mid- Term |  |  |
| Quiz |  |  |
| Homework | 1  | 20 |
| Project |  |  |
| Oral Exam |  |  |
| Other (………) |  |  |
| **FINAL** | Quiz |  |  |
| Homework |  |  |
| Project |  |  |
| Oral Exam |  |  |
| Other(Written Exam) | 1 | 40 |
| **MAKE-UP EXAM** | Oral | Written | Oral and Written | Multiple Choice |
|  | **x** |  |  |
| **PREREQUISITE(S)** |  |
| **COURSE CONTENT** | Purification DNA, purification of RNA, electrophoresis of nucleic acids, basic factors influencing electrophoretic mobility, nucleic acids separations, gel composition, apparatus and electrophoresis |
| **COURSE AIMS** | To learn the basic knowledge of molecular biology. By preparing homework, to learn the literature collection and presentation their work. |
| **COURSE OBJECTIVES** |  To learn theoretical and practically the basic methods of using in molecular biology laboratory. |
| **TEXTBOOK(S)** | **Textbook of Prof.Dr. İrfan DEĞİRMENCİ** |
| **REFERENCES** | 1. Alberts, B., Bray, J., D., Lewis, Raff, M., Roberts, K., Wartson, J., D. : Molecular Biology of THE CELL, Third Edition, Gurland Puplishing, Inc. New York London 1994.
2. Brown T.A.: Essential Molecular Biology Volume I A Practical Approach. IRL Press, Oxford University Press,Oxford, New York, Tokyo, 1990.
3. Cooper D.N., Krawczak, M.: Human Gene Mutation, Bios Scientific Publishers, Oxford, 1993.
4. Darnell J., Lodish H., Baltimore D.: Molecular Cell Biology, Scientific American Books Inc., 1990.
5. Sambrook J, Fritsch E.F., Maniatis, T.: Molecular Cloning, A Laboratory Manual, Cold Spring Harbor Laboratory Press, 1989.
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| **COURSE CODE:** | **521104301** | **DEPARTMENT: MEDİCAL BİOLOGY** |
| **COURSE NAME:****CELL CYCLE, MOLECULAR CONTROL AT CELL DİVİSİON, CELL SENESCENSE, APOPTOSİS** |
| **INSTRUCTOR NAME**Prof. Dr. Hasan Veysi GÜNEŞ | **COURSE LANGUAGE****Turkish:** X**English: ** | **Course Catagory** |
| Technical | Medical | Other(……) |
|  |  |  | X |  |

**COURSE LEVEL**

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| **PROPAEDEUTIC** | **M.SC.** | **Ph.D.** | **COURSE OF PROVINCE** |
| **** | **** | **X** | **** |

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| **SEMESTER** | **WEEKLY COURSE PERIOD** | **COURSE OF** |
| **Theoric** | **Practice** | **Laboratory** | **Credit** | **ECTS** | **TYPE** |
| Spring XAutumn **** |  2 | 2 |  | 3 | 7,5 | COMPULSORY ELECTIVE **X** |
|  |
| **ASSESMENT CRITERIA** |
| **MID-TERM** | **ACTIVITY** | **Quantity** | **Percentage (%)** |
| 1st Mid-Term |  1 | 40  |
| 2 nd Mid- Term |  |  |
| Quiz |  |  |
| Homework |  |  |
| Project |  |  |
| Oral Exam |  |  |
| Other (………) |  |  |
| **FINAL** | Quiz |  |  |
| Homework | 1 | 20 |
| Project |  |  |
| Oral Exam |  |  |
| Other(Final Exam) | 1 | 40 |
| **MAKE-UP EXAM** | Oral | Written | Oral and Written | Multiple Choice |
|  | X |  |  |
| **PREREQUISITE(S)** |  -- |
| **COURSE CONTENT** | Check points of cell division in the interphase stage; types of the parts in Cdk1 complex in mammalia and yeast cells; functions of proteins (p21, p53 etc.) at check points; defective cell division due to abnormality at the checkpoints; molecular events that reasons of the aging; molecular mechanism of defective cells elimination through apoptosis. |
| **COURSE AIMS** | -To give the mechanism of the cell division.-To give the some cases that reasons of cancer occurrance. |
| **COURSE OBJECTIVES** | -To give knowledge that some chemical compounds how effects the cell division at molecular levels.-To investigate that some cancer cells can cure by anticancerogenous agents in cancer cell line and some laboratory animals. |
| **TEXTBOOK(S)** | -Başaran, A.: Tıbbi Biyoloji Ders Kitabı, 6. Baskı, Nobel-Güneş Kitapevi, Eskişehir, 2002. |
| **REFERENCES** | -Pollard, T.D., Earnshaw, W.C.: Cell Biology, New-York, 2002.-Alberts, B., Bray, D., Lewis, J., Raff, M., Roberts, K., Watson, J.D.: Molecular Biology of the Cell., Newyork, London, 1989.-Cooper, G.M.: The Cell, USA, 1997. |

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| **COURSE CODE:** | **521104304** | **DEPARTMENT: MEDİCAL BİOLOGY** |
| **COURSE NAME:****CELLULAR MECHANİSMS OF DEVELOPMENT** |
| **INSTRUCTOR NAME**Assoc. Prof. Dr. Hulyam KURT | **COURSE LANGUAGE****Turkish:** X**English: ** | **Course Catagory** |
| Technical | Medical | Other(……) |
|  |  |  | X |  |

**COURSE LEVEL**

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| **PROPAEDEUTIC** | **M.SC.** | **Ph.D.** | **COURSE OF PROVINCE** |
| **** | **** | X | **** |

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| **SEMESTER** | **WEEKLY COURSE PERIOD** | **COURSE OF** |
| **Theoric** | **Practice** | **Laboratory** | **Credit** | **ECTS** | **TYPE** |
| Spring XAutumn **** | 3 | 0 |  | 3 | 7,5 | COMPULSORY ELECTIVE **** X |
|  |
| **ASSESMENT CRITERIA** |
| **MID-TERM** | **ACTIVITY** | **Quantity** | **Percentage (%)** |
| 1st Mid-Term |  1 | 24 |
| 2 nd Mid- Term |  |  |
| Quiz |  |  |
| Homework | 1  | 16  |
| Project |  |  |
| Oral Exam |  |  |
| Other (………) |  |  |
| **FINAL** | Quiz |  |  |
| Homework |  |  |
| Project |  |  |
| Oral Exam |  |  |
| Other(Final Exam) | 1 | 60 |
| **MAKE-UP EXAM** | Oral | Written | Oral and Written | Multiple Choice |
|  | X |  |  |
| **PREREQUISITE(S)** |  -- |
| **COURSE CONTENT** | Control of molecular level of formation of organism; zygote, morula, blastula and gastrula cycles; formation of ectoderm, endoderm and mesoderm; the mechanisms of formation of body; investigation of body formation on C. elegans. |
| **COURSE AIMS** | -To understand the event that control of each other body formation mechanisms |
| **COURSE OBJECTIVES** | -To understand the very a complicated system that operates the body formation from a simplest organism to well developed organism. |
| **TEXTBOOK(S)** | -Başaran, A.: Tıbbi Biyoloji Ders Kitabı, 6. Baskı, Nobel-Güneş Kitapevi, Eskişehir, 2002.-Kayalı, H., Şatrooğlu, G., Taşyürekli, M.: İnsan Embriyolojisi (7.Baskı), Alfa Baskıevi, İstanbul,1992. |
| **REFERENCES** | -Alberts, B., Lewis, R., Watson, R.: Molecular Biyology of the Cell., Second Edition (p:879-946), Newyork, London, 1989. |

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| **COURSE CODE:** | **521104305** | **DEPARTMENT: MEDICAL BIOLOGY** |
| **COURSE NAME:** | **ANALYSIS OF NUCLEIC ACID AND PROTEIN BY MEANS OF COMPUTER** |
| **INSTRUCTOR NAME**Doç. Dr. M. Cengiz ÜSTÜNER | **COURSE LANGUAGE****Turkish:**  x**English: ** | **Course Category** |
| Technical | Medical | Other(……) |
|  |  |  | x |  |

**COURSE LEVEL**

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| **PROPAEDEUTIC** | **M.SC.** | **Ph.D.** | **COURSE OF PROVINCE** |
| **** | **** | **x** | **** |

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| **SEMESTER** | **WEEKLY COURSE PERIOD** | **COURSE OF** |
| **Theoric** | **Practice** | **Laboratory** | **Credit** | **ECTS** | **TYPE** |
| Spring xAutumn **** |  2 |  2 |  |  3 | 7,5 | COMPULSORY ELECTIVE **x** |
|  |
| **ASSESMENT CRITERIA** |
| **MID-TERM** | **ACTIVITY** | **Quantity** | **Percentage (%)** |
| 1st Mid-Term |  1 | 30%  |
| 2 nd Mid- Term |  |  |
| Quiz |  |  |
| Homework |  1 | 30%  |
| Project |  |  |
| Oral Exam |  |  |
| Other (………) |  |  |
| **FINAL** | Quiz |  |  |
| Homework |  |  |
| Project |  |  |
| Oral Exam |  |  |
| Other(Written) | 1 | 60% |
| **MAKE-UP EXAM** | Oral | Written | Oral and Written | Multiple Choice |
|  | x |  |  |
| **PREREQUISITE(S)** |  |
| **COURSE CONTENT** | Presentation of the LabWork program, analysis the various menus of the program's |
| **COURSE AIMS** |  Recorded to a DNA gel,examined in the laboratory, and ensure the examination of it. |
| **COURSE OBJECTIVES** |  Through this program, The students will later carry out the molecular biological studies without facing difficulties by using the accurate computer programs. |
| **TEXTBOOK(S)** |  LabWork program manual |
| **REFERENCES** |  |

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| **COURSE CODE:** | **521104306** | **DEPARTMENT: MEDİCAL BİOLOGY** |
| **COURSE NAME:** | **SOME MUTATİONS İN HUMAN GENOM** |
| **INSTRUCTOR NAME** | **COURSE LANGUAGE****Turkish: x****English: ** | **Course Catagory** |
| Technical | Medical | Other(……) |
| Prof.Dr.Didem TURGUT COŞAN |  |  | x |  |

**COURSE LEVEL**

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| **PROPAEDEUTIC** | **M.SC.** | **Ph.D.** | **COURSE OF PROVINCE** |
| **** | **** | **x** | **** |

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| **SEMESTER** | **WEEKLY COURSE PERIOD** | **COURSE OF** |
| **Theoric** | **Practice** | **Laboratory** | **Credit** | **ECTS** | **TYPE** |
| Spring  **x**Autumn**** | 2  |  |  | 2  | 7,5 | COMPULSORY ELECTIVE ** x** |
|  |
| **ASSESMENT CRITERIA** |
| **MID-TERM** | **ACTIVITY** | **Quantity** | **Percentage (%)** |
| 1st Mid-Term |  1 |  40 |
| 2 nd Mid- Term |  |  |
| Quiz |  |  |
| Homework | 1  |  20 |
| Project |  |  |
| Oral Exam |  |  |
| Other (………) |  |  |
| **FINAL** | Quiz |  |  |
| Homework |  |  |
| Project |  |  |
| Oral Exam |  |  |
| Other(Written Exam) | 1 | 40 |
| **MAKE-UP EXAM** | Oral | Written | Oral and Written | Multiple Choice |
|  | **x** |  |  |
| **PREREQUISITE(S)** |  |
| **COURSE CONTENT** | Single base pair alteration, deamination linked with 5-metilcytosine metilation, single base pair mutation causing disease, gene transformation, point mutation in mitochondrial genom, deletions of gene, large gene deletion, short gene deletion, deletion of mitochondrial genom, Insertion duplication and invertion of gene, small insertion, large insertion, duplication of gene, invertions, expansion of unstable repeat sequences, Single base pair substitutions in human gene mRNA splice junction and their phenotypic consequences, Regulatory mutations |
| **COURSE AIMS** | As a theoratic, to learn mutations, its features and identify methods in human. |
| **COURSE OBJECTIVES** | To get generally information about molecular biology and use it practically. By preparing homework, to learn the literature collection and presentation their work. |
| **TEXTBOOK(S)** | Textbook of Assoc.Prof.Dr. İrfan DEĞİRMENCİ |
| **REFERENCES** | Alberts, B., Bray, J., D., Lewis, Raff, M., Roberts, K., Wartson, J., D. : Molecular Biology of THE CELL, Third Edition, Gurland Puplishing, Inc. New York London 1994.Brown T.A.: Essential Molecular Biology Volume I A Practical Approach. IRL Press, Oxford University Press,Oxford, New York, Tokyo, 1990.Cooper D.N., Krawczak, M. : Human Gene Mutation, Bios Scientific Publishers, Oxford, 1993.Darnell J., Lodish H., Baltimore D. : Molecular Cell Biology, Scientific American Books Inc., 1990.Sambrook J, Fritsch E.F., Maniatis, T.: Molecular Cloning, A Laboratory Manual, Cold Spring Harbor Laboratory Press, 1989. |

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| **COURSE CODE:** **521104307** | **DEPARTMENT: MEDİCAL BİOLOGY** |
| **COURSE NAME:****THE EFFECT OF NUTRİENTS İNTO CELLS AND ADAPTATİON** |
| **INSTRUCTOR NAME**Assoc. Prof. Dr. Didem TURGUT COŞAN | **COURSE LANGUAGE****Turkish: x****English: ** | **Course Catagory** |
| Technical | Medical | Other(……) |
|  |  |  | **x** |  |

**COURSE LEVEL**

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| **PROPAEDEUTIC** | **M.SC.** | **Ph.D.** | **COURSE OF PROVINCE** |
| **** | **** | **x** | **** |

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| **SEMESTER** | **WEEKLY COURSE PERIOD** | **COURSE OF** |
| **Theoric** | **Practice** | **Laboratory** | **Credit** | **ECTS** | **TYPE** |
| Spring **x**Autumn **** |  3 |  0 | 0  | 3  | 7,5 | COMPULSORY ELECTIVE ** x** |
|  |
| **ASSESMENT CRITERIA** |
| **MID-TERM** | **ACTIVITY** | **Quantity** | **Percentage (%)** |
| 1st Mid-Term | 1  |  30 |
| 2 nd Mid- Term |  |  |
| Quiz |  |  |
| Homework |  |  |
| Project |  1 |  30 |
| Oral Exam |  |  |
| Other (………) |  |  |
| **FINAL** | Quiz |  |  |
| Homework | 1 | 40 |
| Project |  |  |
| Oral Exam |  |  |
| Other(……………….) |  |  |
| **MAKE-UP EXAM** | Oral | Written | Oral and Written | Multiple Choice |
|  | **X** |  |  |
| **PREREQUISITE(S)** |  |
| **COURSE CONTENT** | Plants as nutrients are consumed for their changes due to environmental conditions and the effects of these altered foods will be examined in the cells. |
| **COURSE AIMS** | In this class found in nature as the food we eat will determine the kinds of natural plants. Plants as nutrients are consumed for their changes due to environmental conditions and the effects of these altered foods will be examined in the cells. Air pollution and industrial solid, liquid and gas waste that occur in plants by examining the effects will be evaluated in terms of molecular biology. These effects may bring about changes in the cell and will be defined in terms of damage. In addition to these changes in cell adaptation responses will be evaluated. |
| **COURSE OBJECTIVES** | We consume nutrients to the cells of the molecular-level learning will be affected. |
| **TEXTBOOK(S)** |  |
| **REFERENCES** | 1. Alberts, B., Bray, J., D., Lewis, Raff, M., Roberts, K., Wartson, J., D. : Molecular Biology of The Cell, Third Edition, Gurland Puplishing, Inc. New York London 1994.
2. Basaran A.:Tıbbi Biyoloji Ders Kitabı., Güneş&Nobel Kitabevleri, Genişletilmiş 7. Baskı, 2005.
3. Bray, A., Raff L., Watson, R.: Molecular Biyology of the Cell., Newyork, London, 2002.
4. Cooper, G.M.: The Cell, Dara-Farber Cancer Instıtute School. North America, 1997.
5. Güneş H.V.: Moleküler Hücre Biyolojisi, Güneş Kitabevi, Genişletilmiş 2. Baskı, 2007.
6. Pollard, T.D., Earnshaw, W.C.: Cell Biology, London, New-York, St-Louis, Sydney,Toronto, 2002.
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| **COURSE CODE:** **521104308** |  | **DEPARTMENT: MEDICAL BIOLOGY** |
| **COURSE NAME:** **THE INTRODUCTİON OF MEDİCAL BİOTECHNOLOGY** |
| **INSTRUCTOR NAME****1** | **COURSE LANGUAGE****Turkish: x****English: ** | **Course Catagory** |
| Technical | Medical | Other(……) |
| Prof.Dr.Didem TURGUT COŞAN |  |  | **X** |  |

**COURSE LEVEL**

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| **PROPAEDEUTIC** | **M.SC.** | **Ph.D.** | **COURSE OF PROVINCE** |
| **** | **** | **x** | **** |

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| **SEMESTER** | **WEEKLY COURSE PERIOD** | **COURSE OF** |
| **Theoric** | **Practice** | **Laboratory** | **Credit** | **ECTS** | **TYPE** |
| Spring **x**Autumn **** | 2  | 0  | 0  | 2 | 7,5 | COMPULSORY ELECTIVE** x** |
|  |
| **ASSESMENT CRITERIA** |
| **MID-TERM** | **ACTIVITY** | **Quantity** | **Percentage (%)** |
| 1st Mid-Term | 1  | 30 |
| 2 nd Mid- Term |  |  |
| Quiz |  |  |
| Homework | 1  | 30 |
| Project |  |  |
| Oral Exam |  |  |
| Other (………) |  |  |
| **FINAL** | Quiz |  |  |
| Homework | 1 | 40 |
| Project |  |  |
| Oral Exam |  |  |
| Other(……………….) |  |  |
| **MAKE-UP EXAM** | Oral | Written | Oral and Written | Multiple Choice |
|  | **X** |  |  |
| **PREREQUISITE(S)** |  |
| **COURSE CONTENT** | The History, Description, Purpose and Usage of Biotechnology, Medical Biotechnologic Products, Procedures, Medical Biotechnology and Biomolecule Design, Medical Biotechnology and Biomarkers, Medical Biotechnological Transformation and Transfection, Clinic Approaches and Ethic Principles of Medical Biotechnology, Medical Biotechnology Laboratories and Safety, Status of Medical Biology in Turkey  |
| **COURSE AIMS** | We aim to give information about Medical Biotechnology which is the most popular subject in our present day. Biotechnologic procedures which is used various study of biology will help us treating various diseases in future and there are too many studies. Knowledge about the usage and function of medical biotechnology, many researches continues in this area, is important for medicine. |
| **COURSE OBJECTIVES** | To transpose what is need to know about medical biotechnology, which shows a wide spread from industry to medicine and has an importance of growing day by day and to have knowledge about this actual subject.  |
| **TEXTBOOK(S)** | Understanding Biotechnology by [A. Borém](http://www.informit.com/safari/author_bio.asp%40ISBN%3D0131010115), [F.R. Santos](http://www.informit.com/safari/author_bio.asp%40ISBN%3D0131010115), [D. E. Bowen](http://www.informit.com/safari/author_bio.asp%40ISBN%3D0131010115) (2003) |
| **REFERENCES** | 1. [Synthetic Polymers for Biotechnology and Medicine](http://www.amazon.com/Synthetic-Polymers-Biotechnology-Medicine-Intelligence/dp/1587060272/ref%3Dsr_1_3?s=books&ie=UTF8&qid=1304526263&sr=1-3) by R. Freitag (2002)
2. Bionanotechnology: Lessons from Nature by [D. S. Goodsell](http://eu.wiley.com/WileyCDA/Section/id-302479.html?query=David+S.+Goodsell) (2004)
3. Cell and Tissue Culture: Laboratory Procedures by [A. Doyle](http://www.amazon.com/s/ref%3Dntt_athr_dp_sr_1?_encoding=UTF8&sort=relevancerank&search-alias=books&field-author=Alan%20Doyle), [J. B. Griffiths](http://www.amazon.com/s/ref%3Dntt_athr_dp_sr_2?_encoding=UTF8&sort=relevancerank&search-alias=books&field-author=J.%20Bryan%20Griffiths), [A. Griffiths, J.B. Doyle](http://www.amazon.com/s/ref%3Dntt_athr_dp_sr_3?_encoding=UTF8&sort=relevancerank&search-alias=books&field-author=A.%2C%20Griffiths%2C%20J.B.%20Doyle), [D.G. Newell](http://www.amazon.com/s/ref%3Dntt_athr_dp_sr_4?_encoding=UTF8&sort=relevancerank&search-alias=books&field-author=D.G.%20Newell) (1998)
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| **COURSE CODE:** | **521104309** | **DEPARTMENT: MEDİCAL BİOLOGY** |
| **COURSE NAME:** | **METHODS OF MUTATİON DETECTİON** |
| **INSTRUCTOR NAME****Prof.Dr.Hülyam KURT** | **COURSE LANGUAGE****Turkish: X****English: ** | **Course Catagory** |
| Technical | Medical | Other(……) |
|  |  |  | X |  |

**COURSE LEVEL**

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| **PROPAEDEUTIC** | **M.SC.** | **Ph.D.** | **COURSE OF PROVINCE** |
| **** | **** | **X** | **** |

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| **SEMESTER** | **WEEKLY COURSE PERIOD** | **COURSE OF** |
| **Theoric** | **Practice** | **Laboratory** | **Credit** | **ECTS** | **TYPE** |
| Spring **X**Autumn **** |  2 |  2 |  |  3 | 7,5 | COMPULSORY ELECTIVE ** X** |
|  |
| **ASSESMENT CRITERIA** |
| **MID-TERM** | **ACTIVITY** | **Quantity** | **Percentage (%)** |
| 1st Mid-Term |  1 | 40  |
| 2 nd Mid- Term |  |  |
| Quiz |  |  |
| Homework | 1  | 20  |
| Project |  |  |
| Oral Exam |  |  |
| Other (………) |  |  |
| **FINAL** | Quiz |  |  |
| Homework |  |  |
| Project |  |  |
| Oral Exam |  |  |
| Other(Writen exam) |  1 | 40  |
| **MAKE-UP EXAM** | Oral | Written | Oral and Written | Multiple Choice |
|  | **X** |  |  |
| **PREREQUISITE(S)** |  |
| **COURSE CONTENT** | Southern and northern blot analysis, polimerase chain reaction (PCR), deletion scanning, denaturation by gel electrophoresis, heterodoublex analysis, SSCP (Single- strand conformation polymorphism) analysis, processing of DNA sequence, rapidly scanning of known mutation, ligase chain reaction, Linkage analysis, risk analysis, Positional clonning, DNA polymorphism and association with disease, Analysis in gel documantation system, DNA sequence analysis, Mutation scanning from gene banks by computer. |
| **COURSE AIMS** | Students learn methods of mutation detection. By preparing homework, to learn the literature collection and presentation their work. |
| **COURSE OBJECTIVES** |  To learn theoretical and practically methods of mutation detection |
| **TEXTBOOK(S)** | **Textbook of Prof.Dr. İrfan DEĞİRMENCİ** |
| **REFERENCES** | Alberts, B., Bray, J., D., Lewis, Raff, M., Roberts, K., Wartson, J., D. : Molecular Biology of THE CELL, Third Edition, Gurland Puplishing, Inc. New York London 1994.Brown T.A.: Essential Molecular Biology Volume I A Practical Approach. IRL Press, Oxford University Press,Oxford, New York, Tokyo, 1990.Cooper D.N., Krawczak, M.: Human Gene Mutation, Bios Scientific Publishers, Oxford, 1993.Darnell J., Lodish H., Baltimore D.: Molecular Cell Biology, Scientific American Books Inc., 1990.Sambrook J, Fritsch E.F., Maniatis, T.: Molecular Cloning, A Laboratory Manual, Cold Spring Harbor Laboratory Press, 1989. |