**Courses and ECTS Credits**

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| --- |
|  |
| Course Code | Course Name | ECTS | T+P+L | C/E | Language |
| Fall Semester |
| 521103206 | [Genetically Modified Organisms and Cytotoxic Effects](#GDO) | 7,5 | 2+0+0 | Elective | Turkish |
| 521103204 | [Intercellular and Intracellular Communication](#IntracellularCommunication)   | 7,5 | 2+0+0 | Elective | Turkish |
| 521103202 | [Rules in Laboratory Studies as Technical and Health](#LabRULES)   | 7,5 | 2+2+0 | COMPULSORY | Turkish |
| 521103208 | [Proteome and Proteomics](#Proteomes) | 7,5 | 2+2+0 | Elective | Turkish |
| 521103203 | [Nucleic acids and Protein Synthesis](#NucleicACIDSandPROTEINsynthesis) | 7,5 | 3+0+0 | COMPULSORY | Turkish |
| 521103205 | [Telomere and Telomerase Activity](#Telomerase) | 7,5 | 2+2+0 | Elective | Turkish |
| 521103207 | [Monooxygenases](#Monooxygenases) | 7,5 | 3+0+0 | Elective | Turkish |
| 521103209 | [Comperative Biology of Organ Systems](#OrganBiology) | 7,5 | 3+0+0 | COMPULSORY | Turkish |
|  |  |  |  |  |
| Spring Semester |
| 521104201 | [Amino Acid Cromatographic Techniques](#aminoacidCHROMATOGRAPHY) | 7,5 | 2+2+0 | Elective | Turkish |
| 521104202 | [Biology of Experiment Animals And Using of Experimental Techniques](#AnimalsEXPERIMENT) | 7,5 | 2+2+0 | Elective | Turkish |
| 521104206 | [Problems of Cell Culture and Cell Lines that Should be Considered in the Selection of Those](#CELLculture) | 7,5 | 2+2+0 | Elective | Turkish |
| 521104203 | [Structure of Mitochondria Mitochondrial DNA and Diseases](#mitochondriANDitsDNA) | 7,5 | 2+0+0 | Elective | Turkish |
| 521104205 | [Introduction of Nanobiology](#NANOBIOLOGY) | 7,5 | 2+0+0 | Elective | Turkish |
| 521104204 | [The determination of Protein Expression by Using with SDS Page and Western Blot Analysis](#SDSPAGE) | 7,5 | 1+2+0 | Elective | Turkish |
|  |  |  |  |  |
|  |  |  |  |  |



**ESOGÜ INSTITUTE OF HEALTH SCIENCE**

**DEPARTMENT OF** **MEDICAL BIOLOGY**

 **COURSE INFORMATION FORM**

|  |  |  |
| --- | --- | --- |
| **COURSE CODE:** | 521103206 | **DEPARTMENT:** Medıcal Biology |
| **COURSE NAME:** | Genetically Modified Organisms and Cytotoxic Effects |
| **INSTRUCTOR NAME** | **COURSE LANGUAGE** | **Course Catagory** |
| Technical | Medical | Other(……) |
| Assoc. Prof. Dr. M. Cengiz ÜSTÜNER | Turkish |  | x |  |

**COURSE LEVEL**

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

|  |  |  |
| --- | --- | --- |
| **SEMESTER** | **WEEKLY COURSE PERIOD** | **COURSE OF** |
| **Theoric** | **Practice** | **Laboratory** | **Credit** | **ECTS** | **TYPE** |
| Autumn | 2  | 0  |   | 2  | 7,5 | ELECTIVE |
|  |
| **ASSESMENT CRITERIA** |
| **MID-TERM** | **ACTIVITY** | **Quantity** | **Percentage (%)** |
| 1st Mid-Term |  1 | 25%  |
| 2 nd Mid- Term |   |   |
| Quiz |  |   |
| Homework | 1  | 25%  |
| Project |   |   |
| Oral Exam |  |  |
| Other (………) |  |  |
| **FINAL** | Quiz |  |  |
| Homework |  |  |
| Project |  |  |
| Oral Exam |  |  |
| Other(Written) | 1 | 50% |
| **MAKE-UP EXAM** | Oral | Written | Oral and Written | Multiple Choice |
|  | x |  |  |
| **PREREQUISITE(S)** |   |
| **COURSE CONTENT** | Definition of genetically modified organisms. Evaluation of the relationship between genetically modified organisms, and molecular biology. Formation mechanism of genetically modified organisms. Types of genetically modified organisms.Application areas.Determine the effects of the environment.To reveal the mechanism of cytotoxic effect on human health.Useful identification of genetically modified organisms.To reveal the advantages and disadvantages. |
| **COURSE AIMS** | Determination of genetically modified organisms   and to reveal cytotoxic effects. |
| **COURSE OBJECTIVES** | To identify the genetically modified organism,To reveal the relationship between genetically modified organisms and molecular biology,To identify usage areas,To explain the mechanism of cytotoxic effect on human health, |
| **TEXTBOOK(S)** |   |
| **REFERENCES** | Bush, R.R., Hefle. S.L.: “Food allergens.” In: Critical Reviews in Food Science and Nutrition,Allergenicity of Foods Produced by Genetic Modification, IFBC/ILSI 36(S),S119-S150, 1996.Lehrer, S., Reese. G.: “Food Allergens: Implictions for biotechnology.” In: Biotechnology and Safety Assessment, 2nd ed., J. Thomas ed. Taylor and Francis, 127-150, 1998.Lehrer, S.B., Reese. G.: “Biosafety of genetically modified plants and microorganisms: Recent developments in approaches to evaluation of allergenicity.” In: The Fourth International Symposium on the Biosafety Results of Field Tests of Genetically Modified Plants and Microorganisms. 1-12, 1997.Lehrer, S.B., Horner, W.E., Reese. G.: ”Why are some proteins allergenic? Implications for biotechnology.” Critical Review in Food Science and Nutrition 36(6), 553-64, 1996.Matsuda, T., Alvarez, A.M., Tada, Y., Adachi T., Nakamura. R.: “Gene engineering for hypo-allergenic rice: repression of allergenic protein synthesis in seeds of transgenic rice plants by antisense RNA.” In: Proceedings of the International Workshop on Life Science in Production and Food-consumption of Agricultural Products, Session-4, 1993. |

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| --- | --- |
|  |  **COURSE SYLLABUS** |
| **WEEK** | **SUBJECTS/TOPICS** |
| 1 | Definition of genetically modified organisms.Bioengineering, biotechnology, biosecurity concepts and interactions of their scope |
| 2 | Biotechnological applications on the different approaches to the past, present and future |
| 3 | Genetically modified organisms and the relationship between molecular biology |
| 4 | Formation mechanism of genetically modified organisms I |
| 5 | Formation mechanism of genetically modified organisms II |
| 6 | Types of genetically modified organisms I |
| 7 | Types of genetically modified organisms II |
| 8 | Application areas - agricultural production, food, animal husbandry |
| 9 | Application areas - the health field |
| 10 | Importance of genetic resources and biosafety |
| 11 | Identify the effects of the environment |
| 12 | Cytotoxic mechanism of action of human health I |
| 13 | Cytotoxic mechanism of action of human health II |
| 14 | Determination of beneficial genetically modified organisms |
| 15 | To reveal the advantages and disadvantages of genetically modified organisms |
| 16 | Convention on Biological Diversity Cartagena Protocol on Biosafety |

**PROGRAM QUTCOMES**

Place choose never(1), few(2) or many(3) regarding your course

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **NO** |  | **1** | **2** | **3** |
| 1 | gather as well as apply knowledge of health sciences |   |   | x |
| 2 | ask scientific questions and form hypothesis |   | x |  |
| 3 | search and interpret scientific literature |  |   |  x |
| 4 | design and conduct experiments as well as analyze and interpret the data | x  |   |   |
| 5 | learn how to use the experimental equipment effectively | x |   |   |
| 6 | function on multi-disciplinary teams |  |  |  x |
| 7 | identify, formulate, and solve medical problems | x  |  |   |
| 8 | use computer effectively both in conducting the experiments and analyzing the data |  x |   |  |
| 9 | understand the impact of experimental solutions on national and international sciences |  |  x |  |
| 10 | use effective written and oral communication/presentation skills |  |   | x  |
| 11 | get an understanding of professional and ethical responsibility |  x |   |   |
| 12 | get a recognition of the need for, and an ability to engage in lifelong learning |  | x |  |
| 13 | other (recognition skills of the basic concepts in Medical Education)  | x |  |  |
| 14 | other (Approaching the ethical problems by centralizing basic concepts) |  | x |  |

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| **INSTRUCTOR NAME** | **DATE** |
| Assoc. Prof. Dr. M. Cengiz ÜSTÜNER | 25.12.2018 |



**ESOGÜ INSTITUTE OF HEALTH SCIENCE**

**DEPARTMENT OF MEDICAL BIOLOGY**

 **COURSE INFORMATION FORM**

|  |  |  |
| --- | --- | --- |
| **COURSE CODE:** | 521103204 | **DEPARTMENT:** Medical Biology |
| **COURSE NAME:** | Intercellular and Intracellular Communication |
| **INSTRUCTOR NAME** | **COURSE LANGUAGE** | **Course Catagory** |
| Technical | Medical | Other(……) |
| Assoc. Prof. Dr. M. Cengiz ÜSTÜNER | Turkish |  | x |  |

**COURSE LEVEL**

|  |  |  |  |
| --- | --- | --- | --- |
| **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** |
| Fall | 2  |  |   | 2  | 7,5 | ELECTIVE |
|  |
| **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** | Types of intercellular communications; cell surphace and intracellular receptors; relation of ligand-receptor, and signaling the role of protein kinase and protein phosphates; activation of adenyl cyclase by G protein receptor and G protein ; formation of signal by cAMP, cGMP, Ca+2, Ca+2-calmodulin complex; signal transduction by PIP2 (IP3, DAG); some diseases due to defective signal proteins that have role on cellular communication. |
| **COURSE AIMS** | -To give a cellular concept that littlest part of an organism is very important for coninuity of the life.-To give the understanding at molecular level that every mutation occure in a receptor protein and/or in a stimulative molecule have very effective role in this regulatory system. |
| **COURSE OBJECTIVES** | -To choose their scientific research subject among these themes and to investigate the choosen subject at molecular level.-To investigate developing a cancerous cell in a cancer type.-To determine a mutation in a gene related to a disease.-To investigate effective point of the treatment in this pathway. |
| **TEXTBOOK(S)** |  |
| **REFERENCES** | -Pollard, T.D., Earnshaw, W.C.: Cell Biology, London, New-York, St-Louis, Sydney,Toronto, 2002.-Bray, A., Raff, K., Watson, R.: Molecular Biology of the Cell, Secon Ed., New-York, London, 1989.-Cooper, G.M.: The Cell, Washington D.C., 1997.Başaran A.: Tıbbi Biyoloji Ders Kitabı, Pelikan Yayınları, 8. Baskı, Pelikan Yayınları, İstanbul. |

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|  |  **COURSE SYLLABUS** |
| **WEEK** | **SUBJECTS/TOPICS** |
| 1 | Intercellular stimulation, intercellular communication.  |
| 2 | Endocrine signaling, paracrine signaling, synaptic signaling, autocrine signaling. |
| 3 | The role of extracellular signalings in cellular metabolism. |
| 4 | Cellular signalings and their receptors. |
| 5 | Intracellular signal transduction: Cell surface receptors and other receptors. |
| 6 | G protein-coupled receptors. |
| 7 | G proteins. |
| 8 | Activation of adenyl cyclase by G protein. |
| 9 | Seconder messangers. |
| 10 | 3’-5’ AMP (cAMP), 3’-5’ GMP (cGMP), Ca+2 ions, calmodulin. |
| 11 | Relationship betwen cAMP and calcium messangers. |
| 12 | Inositol 4,5-biphosphate (IP2) and 1,2-diacylglycerol. |
| 13 | Inositol 1,4,5-triphosphate (IP3) and 1,2-diacylglycerol.. |
| 14 | Signaling by steroid hormone receptors. |
| 15 | Diseases due to defects in intercellular signaling system. |
| 16 | Overview of the whole subjects. |

**PROGRAM OUTCOMES**

Place choose never(1), few(2) or many(3) regarding your course

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **NO** |  | **1** | **2** | **3** |
| 1 | gather as well as apply knowledge of health sciences |  |  |  |
| 2 | ask scientific questions and form hypothesis |  |  | X |
| 3 | search and interpret scientific literature |  | X |  |
| 4 | design and conduct experiments as well as analyze and interpret the data |  |  | **X** |
| 5 | learn how to use the experimental equipment effectively |  | **X** |  |
| 6 | function on multi-disciplinary teams |  | **X** |  |
| 7 | identify, formulate, and solve medical problems |  |  |  |
| 8 | use computer effectively both in conducting the experiments and analyzing the data |  |  | **X** |
| 9 | understand the impact of experimental solutions on national and international sciences |  |  | **X** |
| 10 | use effective written and oral communication/presentation skills |  |  | **X** |
| 11 | get an understanding of professional and ethical responsibility |  |  | **X** |
| 12 | get a recognition of the need for, and an ability to engage in lifelong learning |  |  | **X** |
| 13 | other (recognition skills of the basic concepts in Medical Education)  |  | **X** |  |
| 14 | other (Approaching the ethical problems by centralizing basic concepts) |  |  | **X** |

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| **INSTRUCTOR NAME** | **DATE** |
| Assoc. Prof. Dr. M. Cengiz ÜSTÜNER | 25.12.2018 |



**ESOGÜ INSTITUTE OF HEALTH SCIENCE**

**DEPARTMENT OF MEDICAL BIOLOGY**

 **COURSE INFORMATION FORM**

|  |  |  |
| --- | --- | --- |
| **COURSE CODE:** | 521103202 | **DEPARTMENT:** Medical Biology |
| **COURSE NAME:** | Rules in laboratory studies as technical and health |
| **INSTRUCTOR NAME** | **COURSE LANGUAGE** | **Course Catagory** |
| Technical | Medical | Other(……) |
| Prof.Dr. Hülyam KURT | Turkish |  | x |  |

**COURSE LEVEL**

|  |  |  |  |
| --- | --- | --- | --- |
| **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** |
| Fall | 2  | 2  |   | 3  | 7,5 | COMPULSORY |
|  |
| **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** | Aim of using laboratory and contents, Rules of molecular biology laboratory, General laboratory methods, Security procedure, Preparing solutions, Destruction of chemical and solution, Using methods of equipments, Required material of laboratory, Vital investigation in laboratory, Using microscope and types in laboratory, Destruction of waste after experiment, Method writing and filing in study, Planned of study and application series, Material which is going to save to prepare |
| **COURSE AIMS** | To give information about rules of molecular biology laboratory. |
| **COURSE OBJECTIVES** | The students learn how must be the molecular biology laboratory. By preparing homework, to learn the literature collection and presentation their work. |
| **TEXTBOOK(S)** |  |
| **REFERENCES** | 1. Laboratory Biosafety Manual, World Heath Organization, Genova
2. Hammersen, F.: Histology Color Atlas of Miroscopic Anatomy, Third Edition, Urbon-Schwarzenberg,Baltimore-Munich,1985
3. Pontin, C.F.A., (Çev: Korol,S.): Biyologlar İçin Mikroskop Tekniği Hakkında Notlar, Güven Matbaası, Ankara, 1960
4. Prophet, B.E., Mills B., Arington, B.: Laboratory Metods in Histotechnology Published by the American Registry of Pathology, Washington, D.C., 1992.
5. Sümbüllüoğlu, İ., Sümbüllüoğlu K.: Sağlık Bilimleri Araştırma Yöntemleri, Ankara, 1988.
6. Tamer, Ü.A.: Mikrobiyoloji Lab. Klavuzu, And. Ünv., Eğitim Sağlık ve Bilimsel Araştırma Çalışmaları Vakfı Yayınları, No 7, Eskişehir.
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|  |  **COURSE SYLLABUS** |
| **WEEK** | **SUBJECTS/TOPICS** |
| 1 | Aim of using laboratory and contents, |
| 2 | Rules of molecular biology laboratory |
| 3 | General laboratory methods |
| 4 | Security producure |
| 5 | Preparing solutions |
| 6 | Destruction of chemical and solution |
| 7 | Using methods of equipments |
| 8 | Required material of laboratory  |
| 9 | MIDTERM EXAM |
| 10 | Vital investigation in laboratory |
| 11 | Using microscope and types in laboratory |
| 12 | Destruction of waste after experiment |
| 13 | Method writing and filing in study |
| 14 | Planned of study and application series |
| 15 | Material which is going to save,to prepare |
| 16 | FINAL EXAM |

**PROGRAM OUTCOMES**

Place choose never(1), few(2) or many(3) regarding your course

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **NO** |  | **1** | **2** | **3** |
| 1 | gather as well as apply knowledge of health sciences |  |  |  |
| 2 | ask scientific questions and form hypothesis |  |  | **x** |
| 3 | search and interpret scientific literature |  |  | **x** |
| 4 | design and conduct experiments as well as analyze and interpret the data |  |  | **x** |
| 5 | learn how to use the experimental equipment effectively |  |  | **x** |
| 6 | function on multi-disciplinary teams |  |  | **x** |
| 7 | identify, formulate, and solve medical problems |  |  | **x** |
| 8 | use computer effectively both in conducting the experiments and analyzing the data |  |  | **x** |
| 9 | understand the impact of experimental solutions on national and international sciences |  |  | **x** |
| 10 | use effective written and oral communication/presentation skills |  |  | **x** |
| 11 | get an understanding of professional and ethical responsibility |  |  | **x** |
| 12 | get a recognition of the need for, and an ability to engage in lifelong learning |  |  | **x** |
| 13 | other (recognition skills of the basic concepts in Medical Education)  |  | **x** |  |
| 14 | other (Approaching the ethical problems by centralizing basic concepts) |  |  | **x** |

|  |  |
| --- | --- |
| **INSTRUCTOR NAME** | **DATE** |
| Prof.Dr. Hülyam KURT | 25.12.2018 |



**ESOGÜ INSTITUTE OF HEALTH SCIENCE**

**DEPARTMENT OF MEDICAL BIOLOGY**

 **COURSE INFORMATION FORM**

|  |  |
| --- | --- |
| **COURSE CODE:** 521103208 | **DEPARTMENT:** Medical Biology |
| **COURSE NAME:** Proteome and Proteomics |
| **INSTRUCTOR NAME** | **COURSE LANGUAGE** | **Course Catagory** |
| Technical | Medical | Other(……) |
| Prof. Dr. Didem TURGUT COŞAN | Turkish |  | **X** |  |

**COURSE LEVEL**

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

|  |  |  |
| --- | --- | --- |
| **SEMESTER** | **WEEKLY COURSE PERIOD** | **COURSE OF** |
| **Theoric** | **Practice** | **Laboratory** | **Credit** | **ECTS** | **TYPE** |
| Fall | 2 | 2 | 0  | 3  | 7,5 | ELECTIVE |
|  |
| **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** | Description and history of proteom, identification of protein and peptides, protein databases, methods used in the identification of proteomes |
| **COURSE AIMS** | To give information about description of proteom, which resarch areas it is used in and about the methods used in the identification of proteom. |
| **COURSE OBJECTIVES** | To give basic and current informations related with proteom and proteomics which are thought to be an important guiding in the investigation of new methods of diagnosis and treatment |
| **TEXTBOOK(S)** |   |
| **REFERENCES** | 1. Brown T.A.: Essential Molecular Biology Volume I A Practical Approach. IRL Press, Oxford University Press,Oxford, New York, Tokyo, 1990.
2. M. Schena, (Editor) DNA Microarray. Publisher: Scion Publishing Ltd. Publication date: October 2007
3. Richard J. Simpson Basic Methods in Protein Purification and analysis: A Laboratory Manual Joint ProteomicS Laboratory (JPSL) of the Ludwig Institute for Cancer Research and the Walter and Eliza Hall Institute of Medical Research, Melbourne, Australia; Peter D. Adams, Fox Chase Cancer Center, Philadelphia; Erica A. Golemis, Fox Chase Cancer Center, Philadelphia 2009
4. Richard Simpson: [Proteomics: A Cold Spring Harbor Laboratory Course Manual](http://www.cshlpress.com/default.tpl?action=full&cart=124393553552842589&--eqskudatarq=656&newtitle=Proteomics%3A%20A%20Cold%20Spring%20Harbor%20Laboratory%20Course%20Manual)Ludwig Institute for Cancer Research, Melbourne 2009.
5. Sambrook J, Fritsch E.F., Maniatis, T.: Molecular Cloning, A Laboratory Manual, Cold Spring Harbor Laboratory Press, 1989.
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|  |  |
| --- | --- |
|  |  **COURSE SYLLABUS** |
| **WEEK** | **SUBJECTS/TOPICS** |
| 1 | Description of proteom the history |
| 2 | General strategy used in proteom analysis |
| 3 | Protein and/or peptides definition (Identification) |
| 4 | Three-dimensional structure |
| 5 | Gel electrophoresis |
| 6 | Polyacrilamide gel |
| 7 | Two-dimensional gel electrophoresis  |
| 8 | Gel stain techniques  |
| 9 | Protein Databases  |
| 10 | Mass Spectrometer  |
| 11 | Kinds of chromatography |
| 12 | Column chromatography  |
| 13 | Three-dimensional structure of protein identification methods |
| 14 | Immunoassay |
| 15 | Protein microarray  |
| 16 | Bioinformatic |

**PROGRAM QUTCOMES**

Place choose never(1), few(2) or many(3) regarding your course

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **NO** |  | **1** | **2** | **3** |
| 1 | gather as well as apply knowledge of health sciences |  |  | **X** |
| 2 | ask scientific questions and form hypothesis |  |  | **X** |
| 3 | search and interpret scientific literature |  |  | **X**  |
| 4 | design and conduct experiments as well as analyze and interpret the data |  |  | **X**  |
| 5 | learn how to use the experimental equipment effectively |  |  | **X**  |
| 6 | function on multi-disciplinary teams |  |  | **X**  |
| 7 | identify, formulate, and solve medical problems |  |  | **X**  |
| 8 | use computer effectively both in conducting the experiments and analyzing the data |  |  | **X** |
| 9 | understand the impact of experimental solutions on national and international sciences |  |  | **X** |
| 10 | use effective written and oral communication/presentation skills |  |  | **X**  |
| 11 | get an understanding of professional and ethical responsibility |  | **X**  |  |
| 12 | get a recognition of the need for, and an ability to engage in lifelong learning |  | **X** |  |
| 13 | ability to recognition of basic concepts in medical education  |  | **X** |  |
| 14 | ability to approach basic principles taking center ethical problems |  | **X** |  |

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| **INSTRUCTOR NAME** | **DATE** |
| Prof.Dr. Didem TURGUT COŞAN | 25.12.2018 |

 **ESOGÜ INSTITUTE OF HEALTH SCIENCE**

**DEPARTMENT OF MEDICAL BIOLOGY**

 **COURSE INFORMATION FORM**

|  |  |  |
| --- | --- | --- |
| **COURSE CODE:** | 521103203 | **DEPARTMENT:** Medical Biology |
| **COURSE NAME:** | Nucleic acids and Protein Synthesis |
| **INSTRUCTOR NAME** | **COURSE LANGUAGE** | **Course Catagory** |
| Technical | Medical | Other(……) |
| Prof. Dr. Hasan Veysi GÜNEŞ | Turkish |  | X |  |

**COURSE LEVEL**

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

|  |  |  |
| --- | --- | --- |
| **SEMESTER** | **WEEKLY COURSE PERIOD** | **COURSE OF** |
| **Theoric** | **Practice** | **Laboratory** | **Credit** | **ECTS** | **TYPE** |
| Fall |  3 |  0 |   | 3 | 7,5 | COMPULSORY |
|  |
| **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 functions of nucleic acids;Transcription and Replication of. nucleic acids in Procaryot and eucaryot; Nucleic acids repair systems: Protein synthesis |
| **COURSE AIMS** | Learn and ivestigate to structure and function of nucleic acids in the last references |
| **COURSE OBJECTIVES** | The student learn about nucleic acids; By preparing homework, they learn the literature collection and presantation their work |
| **TEXTBOOK(S)** | Güneş,HV. Moleküler Hücre Biyolojisi, Kaan Kitabevi, 2003 |
| **REFERENCES** | Lewin B. Genes VI, Oxford University Press, 1997,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 York2002.Reed R. Coupling transcription, splicing and mRNA export. Current Opinion in  Cell Biology 2003, 15: 326-331.Caceres JF and Kornblihtt AR. Alternative splicing. Trends in Genetics, 2002,  18(4):186-193.Adelantado EM, Filippo JS, Abarca FM. Mobility of the Sinorhizobium meliloti  Group II Intron Rmlnt1 Occurs by Reverse Splicing into DNA.  Journal of Molecular Biology 2003. 327: 931-943. |

|  |  |
| --- | --- |
|  |  **COURSE SYLLABUS** |
| **WEEK** | **SUBJECTS/TOPICS** |
| 1 | Discovery of DNA,Futures of nucleic acids |
| 2 | PlasmidsStructure and types of RNAs |
| 3 | Transcription, Regulation of transcription |
| 4 | Synthesis of r RNA , **t** RNA and m RNA  |
| 5 | Formation of Cap and poly AProcessing of hnRNA  |
| 6 | DNA synthesis |
| 7 | Replication of DNA in Procaryotic and eucaryotic cell  |
| 8 | WRITTEN EXAM |
| 9 | DNA damage and repair |
| 10 | Protein synthesis |
| 11 | Protein synthesis |
| 12 | Structure and function of Procaryotic and eucaryotic genes Operon  |
| 13 | **Presentation of homework:**  |
| 14 | **Presentation of homework:** |
| 15 | **Presentation of homework:** |
| 16 | WRITTEN EXAM |

**PROGRAM QUTCOMES**

Place choose never(1), few(2) or many(3) regarding your course

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **NO** |  | **1** | **2** | **3** |
| 1 | gather as well as apply knowledge of health sciences |  |  | X |
| 2 | ask scientific questions and form hypothesis |  |  | X |
| 3 | search and interpret scientific literature |  |  | X |
| 4 | design and conduct experiments as well as analyze and interpret the data | X |  |  |
| 5 | learn how to use the experimental equipment effectively | X |  |  |
| 6 | function on multi-disciplinary teams | X |  |  |
| 7 | identify, formulate, and solve medical problems |  |  | X |
| 8 | use computer effectively both in conducting the experiments and analyzing the data |  | X |  |
| 9 | understand the impact of experimental solutions on national and international sciences |  | X |  |
| 10 | use effective written and oral communication/presentation skills |  |  | X |
| 11 | get an understanding of professional and ethical responsibility |  |  | X |
| 12 | get a recognition of the need for, and an ability to engage in lifelong learning |  |  | X |
| 13 | Ability of recognition of fundamental terms in Medical School teaching  |  | X |  |
| 14 | Ability of handling ethic issues by considering fundamental terms  |  | X |  |

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| --- | --- |
| **INSTRUCTOR NAME** | **DATE** |
| Prof.Dr. Hasan Veysi GÜNEŞ | 25.12.2018 |

 **ESOGÜ INSTITUTE OF HEALTH SCIENCE**

**DEPARTMENT OF MEDICAL BIOLOGY**

 **COURSE INFORMATION FORM**

|  |  |  |
| --- | --- | --- |
| **COURSE CODE:** | 521103205 | **DEPARTMENT:** Medical Biology |
| **COURSE NAME:**Telomere and Telomerase Activity |
| **INSTRUCTOR NAME** | **COURSE LANGUAGE** | **Course Catagory** |
| Technical | Medical | Other(……) |
| Prof. Dr. Hasan Veysi GÜNEŞ | Turkish |  | X |  |

**COURSE LEVEL**

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

|  |  |  |
| --- | --- | --- |
| **SEMESTER** | **WEEKLY COURSE PERIOD** | **COURSE OF** |
| **Theoric** | **Practice** | **Laboratory** | **Credit** | **ECTS** | **TYPE** |
| Fall |  2 | 2 |   | 3 | 7,5 | ELECTIVE |
|  |
| **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** | Determination of telomeric localization on the chromosomes; structures of telomeric DNA and single strand and double strand telomeric proteins; structure and function of telomerases; replication of telomeric DNA; the role of telomerases on the apoptotic and non-apoptotic cell death; the analyses methods of telomeric enzyme activity. |
| **COURSE AIMS** | -To emphasis on the reterdation studies of senescence and relation between cancer and telomerase.-To give opportunity of experimental studies related to this subject to the students.-To determine telomerase activity in different cancer cells |
| **COURSE OBJECTIVES** | -To give to the students the analyses opportunity of telomeric and telomerase activity on cancer cells.-To give to the students to measures opportunity of telomeric proteins and telomerase main protein TERT (telomerase reverse transkriptase). |
| **TEXTBOOK(S)** | Ayşe Başaran: Detailed conference text on telomeres and telomerases and various literatures. |
| **REFERENCES** | -Smith., De Lang, T.: TRF1, a manual telomeric protein, TIG, Vol.13, No. 1, 1997. (Telomer proteini ekstraksiyon metodu)-Wiley, J.: Telomere and Telomerase, Willey J. And Ions, INC, England, 1997.-Rudolph, K.L., Chang., S., Lee, H ve ark.: Longevity, Stress Response, and Cancer in aging telomerase-deficient Nice, Cell, Vol:96, 701-712.-Counter C.M., Gupta J., Harley, C.B. ve ark.. Telomerase activity in normal leukocytes and in hematologic malignancies, Blood, Vol:85, No:9, (May1), 1995:2315-2320. |

|  |  |
| --- | --- |
|  |  **COURSE SYLLABUS** |
| **WEEK** | **SUBJECTS/TOPICS** |
| 1 | Localization of telomeres and structure of telomere . |
| 2 | Functions of telomere. |
| 3 | Telomeric DNA and base sequences of telomeric DNA in human and various organisms. |
| 4 | Single strand and double strand telomeric proteins. |
| 5 | Replication of telomeric DNA. |
| 6 | Telomeric DNA in the cells of young and old and cancer cells. |
| 7 | Telomerase enzyme and its structure. |
| 8 | Activity of telomerase enzyme. |
| 9 | RNA of telomerase. |
| 10 | Main telomerase protein (Telomerase Reverse Transcriptase). |
| 11 | Telomerase helper proteins. |
| 12 | DNA of telomerase; occurrance of some abnormalities due to telomerase enzyme absence. |
| 13 | Programmed cell death (apoptosis). |
| 14 | The role of telomeric DNA and telomerase activity on the apoptosis. |
| 15 | Determination techniques of telomerase enzyme activity and their comparison. |
| 16 | Overview of the whole subjects. |

**PROGRAM QUTCOMES**

Place choose never(1), few(2) or many(3) regarding your course

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **NO** |  | **1** | **2** | **3** |
| 1 | gather as well as apply knowledge of health sciences |  |  | X |
| 2 | ask scientific questions and form hypothesis |  |  | X |
| 3 | search and interpret scientific literature |  |  | X |
| 4 | design and conduct experiments as well as analyze and interpret the data |  |  | X |
| 5 | learn how to use the experimental equipment effectively |  |  | X |
| 6 | function on multi-disciplinary teams |  |  | X |
| 7 | identify, formulate, and solve medical problems |  |  | X |
| 8 | use computer effectively both in conducting the experiments and analyzing the data |  |  | X |
| 9 | understand the impact of experimental solutions on national and international sciences |  |  | X |
| 10 | use effective written and oral communication/presentation skills |  |  | X |
| 11 | get an understanding of professional and ethical responsibility |  |  | X |
| 12 | get a recognition of the need for, and an ability to engage in lifelong learning |  |  | X |
| 13 | Ability of recognition of fundamental terms in Medical School teaching  |  | X |  |
| 14 | Ability of handling ethic issues by considering fundamental terms  |  | X |  |

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| --- | --- |
| **INSTRUCTOR NAME** | **DATE** |
| Prof.Dr. Hasan Veysi GÜNEŞ | 25.12.2018 |

 **ESOGÜ INSTITUTE OF HEALTH SCIENCE**

**DEPARTMENT OF MEDICAL BIOLOGY**

 **COURSE INFORMATION FORM**

|  |  |  |
| --- | --- | --- |
| **COURSE CODE:** | 521104207 | **DEPARTMENT:** Medical Biology |
| **COURSE NAME:**Monooxygenases  |
| **INSTRUCTOR NAME** | **COURSE LANGUAGE** | **Course Catagory** |
| Technical | Medical | Other(……) |
| Prof.Dr. Hulyam KURT | Turkish |  | X |  |

**COURSE LEVEL**

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

|  |  |  |
| --- | --- | --- |
| **SEMESTER** | **WEEKLY COURSE PERIOD** | **COURSE OF** |
| **Theoric** | **Practice** | **Laboratory** | **Credit** | **ECTS** | **TYPE** |
| Fall | 3 | 0 | 0 | 3 | 7,5 | ELECTIVE |
|  |
| **ASSESMENT CRITERIA** |
| **MID-TERM** | **ACTIVITY** | **Quantity** | **Percentage (%)** |
| 1st Mid-Term |  1 | 25 |
| 2 nd Mid- Term |   |   |
| Quiz |  |   |
| Homework | 1  | 25 |
| Project |   |   |
| Oral Exam |  |  |
| Other (………) |  |  |
| **FINAL** | Quiz |  |  |
| Homework |  |  |
| Project |  |  |
| Oral Exam |  |  |
| Other(Final Exam) | 1 | 50 |
| **MAKE-UP EXAM** | Oral | Written | Oral and Written | Multiple Choice |
|  | X |  |  |
| **PREREQUISITE(S)** |  -- |
| **COURSE CONTENT** | Oxidation reactions, oxidation reactions play a role in enzyme systems, mediated oxidation of microsomal enzymes, Oksidazlar and conceptual information about oksigenazlar. mechanisms of Monooxygenase action. |
| **COURSE AIMS** | To understand molecular structures and mechanisms of Monooxygenase action. |
| **COURSE OBJECTIVES** | - To discuss monooxygenases molecular structure, cholesterol, steroid hormone, vitamin production and destruction, its role in carsinogenesis with drug metabolism, importance of human health and diseases.  |
| **TEXTBOOK(S)** | - [Robert K. Murray](http://www.amazon.com/exec/obidos/search-handle-url/ref%3Dntt_athr_dp_sr_1?%5Fencoding=UTF8&search-type=ss&index=books&field-author=Robert%20K.%20Murray) [Daryl K. Granner](http://www.amazon.com/exec/obidos/search-handle-url/ref%3Dntt_athr_dp_sr_2?%5Fencoding=UTF8&search-type=ss&index=books&field-author=Daryl%20K.%20Granner) [Peter A. Mayes](http://www.amazon.com/exec/obidos/search-handle-url/ref%3Dntt_athr_dp_sr_3?%5Fencoding=UTF8&search-type=ss&index=books&field-author=Peter%20A.%20Mayes) [Victor W. Rodwell](http://www.amazon.com/exec/obidos/search-handle-url/ref%3Dntt_athr_dp_sr_4?%5Fencoding=UTF8&search-type=ss&index=books&field-author=Victor%20W.%20Rodwell). Harper's Biochemistry. McGraw-Hill Publishing Co; 25th edition. August 28, 1999. |
| **REFERENCES** | -1- Cashman JR: Structural and catalytic properties of the mammalian flavin-containing monooxygenase. *Chem Res Toxicol* 8(2):166-8. 1995.2- [Robert K. Murray](http://www.amazon.com/exec/obidos/search-handle-url/ref%3Dntt_athr_dp_sr_1?%5Fencoding=UTF8&search-type=ss&index=books&field-author=Robert%20K.%20Murray) [Daryl K. Granner](http://www.amazon.com/exec/obidos/search-handle-url/ref%3Dntt_athr_dp_sr_2?%5Fencoding=UTF8&search-type=ss&index=books&field-author=Daryl%20K.%20Granner) [Peter A. Mayes](http://www.amazon.com/exec/obidos/search-handle-url/ref%3Dntt_athr_dp_sr_3?%5Fencoding=UTF8&search-type=ss&index=books&field-author=Peter%20A.%20Mayes) [Victor W. Rodwell](http://www.amazon.com/exec/obidos/search-handle-url/ref%3Dntt_athr_dp_sr_4?%5Fencoding=UTF8&search-type=ss&index=books&field-author=Victor%20W.%20Rodwell). Harper's Biochemistry. McGraw-Hill Publishing Co; 25th edition. August 28, 1999.3**- Nebert D W, Eisen H J, Negishi M, Lang M A, Hjelmeland L M, and Okey A B :** Genetic Mechanisms Controlling the Induction of Polysubstrate Monooxygenase (P-450) Activities. Annual Review of Pharmacology and Toxicology. Vol. 21: 431-462 . 1981.4- Archakov AI: **Cytochromes P-450, drug disease, and personified medicine. Part I.** Klin Med (Mosk) - 86(2): 4-8. 01-JAN-2008. |

|  |  |
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|  |  **COURSE SYLLABUS** |
| **WEEK** | **SUBJECTS/TOPICS (Theoretical)** |
| 1 | Oxidation and Reduction Mechanisms |
| 2 | Enzymes involved in Oxidation Reactions |
| 3 | Oxidases and Monooxygenases |
| 4 | Dihydrogenases and Hydroperoxidases |
| 5 | Molecular Action of Monooxygenases |
| 6 | Microsomal Monooxygenases |
| 7 | Exam |
| 8 | Oxidation Reactions done by Nonmicrosomal Enzymes |
| 9 | Flavin Monooxygenases and cytP450 enzyme system |
| 10 | P450 enzymes (CYP’s) |
| 11 | Effect of P450 enzymes on Drug metabolism |
| 12 | Phase I Reactions |
| 13 | Phase II Reactions |
| 14 | Important P450 enzymes in endogen chemical metabolism |
| 15 | P450 dependant monooxygenases |
| 16 | Presentation of Homeworks |

**PROGRAM QUTCOMES**

Place choose never(1), few(2) or many(3) regarding your course

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **NO** |  | **1** | **2** | **3** |
| 1 | gather as well as apply knowledge of health sciences |   |   | X |
| 2 | ask scientific questions and form hypothesis |   |  | X |
| 3 | search and interpret scientific literature |  |   |  X |
| 4 | design and conduct experiments as well as analyze and interpret the data |   | X  |   |
| 5 | learn how to use the experimental equipment effectively |  | X  |   |
| 6 | function on multi-disciplinary teams |  |  | X  |
| 7 | identify, formulate, and solve medical problems |   | X |   |
| 8 | use computer effectively both in conducting the experiments and analyzing the data |   |   | X |
| 9 | understand the impact of experimental solutions on national and international sciences |  | X  |  |
| 10 | use effective written and oral communication/presentation skills |  |   | X  |
| 11 | get an understanding of professional and ethical responsibility |   |   | X  |
| 12 | get a recognition of the need for, and an ability to engage in lifelong learning |  |  | X |
| 13 | Ability of recognition of fundamental terms in Medical School teaching  |  | X |  |
| 14 | Ability of handling ethic issues by considering fundamental terms  |  | X |  |

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| --- | --- |
| **INSTRUCTOR NAME** | **DATE** |
| Prof.Dr. Hülyam KURT | 25.12.2018 |

 **ESOGÜ INSTITUTE OF HEALTH SCIENCE**

**DEPARTMENT OF MEDICAL BIOLOGY**

 **COURSE INFORMATION FORM**

|  |  |  |
| --- | --- | --- |
| **COURSE CODE:** | 521103209 | **DEPARTMENT:** Medical Biology |
| **COURSE NAME:** | Comperative Biology Of Organ Systems |
| **INSTRUCTOR NAME** | **COURSE LANGUAGE** | **Course Catagory** |
| Technical | Medical | Other(……) |
| Prof. Dr. Hasan Veysi GÜNEŞ | Turkish |  | X |  |

**COURSE LEVEL**

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

|  |  |  |
| --- | --- | --- |
| **SEMESTER** | **WEEKLY COURSE PERIOD** | **COURSE OF** |
| **Theoric** | **Practice** | **Laboratory** | **Credit** | **ECTS** | **TYPE** |
| Fall | 3 | 0 |   | 3 | 7,5 | ELECTIVE |
|  |
| **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** | Organ systems, their functions, structure, and their relative comparision from single cell organisms to human |
| **COURSE AIMS** | Investigation of organ systems function and structure by comparing in protozoa and metazoa |
| **COURSE OBJECTIVES** | To teach the stuendts the comperative biology of organ systems regarding from a unicellular to multicellular organism like human in a detailed way; By preparing homework, they learn the literature collection and presantation their work |
| **TEXTBOOK(S)** | Başaran, A.: Tıbbi Biyoloji Ders Kitabı, Eskişehir, 2004. |
| **REFERENCES** | * Rhaesa, A,S.: The evolution of organ system (Oxford biology), New York,2007
* www.emc.maricopa.edu/faculty/farabee/BIOBK/BioBookEXCRET.html

Mader S.S.: Biology. Dubuque, 1996 |

|  |  |
| --- | --- |
|  |  **COURSE SYLLABUS** |
| **WEEK** | **SUBJECTS/TOPICS** |
| 1 | Digestive System |
| 2 | Circulatory System I |
| 3 | Circulatory System II |
| 4 | Respiratory System |
| 5 | Excretory System I |
| 6 | Excretory System II |
| 7 | Muscular and Skeletal System |
| 8 | Written Exam |
| 9 | Reproductive System I |
| 10 | Reproductive System II |
| 11 | Nervous System I |
| 12 | Nervous System II |
| 13 | Endocrine System I |
| 14 | Endocrine System II |
| 15 | **Homework Presentation** |
| 16 | **Final Exam** |

**PROGRAM QUTCOMES**

Place choose never(1), few(2) or many(3) regarding your course

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **NO** |  | **1** | **2** | **3** |
| 1 | gather as well as apply knowledge of health sciences |  |  | X |
| 2 | ask scientific questions and form hypothesis |  |  | X |
| 3 | search and interpret scientific literature |  |  | X |
| 4 | design and conduct experiments as well as analyze and interpret the data | X |  |  |
| 5 | learn how to use the experimental equipment effectively | X |  |  |
| 6 | function on multi-disciplinary teams | X |  |  |
| 7 | identify, formulate, and solve medical problems |  |  | X |
| 8 | use computer effectively both in conducting the experiments and analyzing the data |  | X |  |
| 9 | understand the impact of experimental solutions on national and international sciences |  | X |  |
| 10 | use effective written and oral communication/presentation skills |  |  | X |
| 11 | get an understanding of professional and ethical responsibility |  |  | X |
| 12 | get a recognition of the need for, and an ability to engage in lifelong learning |  |  | X |
| 13 | Ability of recognition of fundamental terms in Medical School teaching  |  | X |  |
| 14 | Ability of handling ethic issues by considering fundamental terms  |  | X |  |

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| --- | --- |
| **INSTRUCTOR NAME** | **DATE** |
| Prof.Dr. Hasan Veysi GÜNEŞ | 25.12.2018 |

 **ESOGÜ INSTITUTE OF HEALTH SCIENCE**

**DEPARTMENT OF MEDICAL BIOLOGY**

**COURSE INFORMATION FORM**

|  |  |  |
| --- | --- | --- |
| **COURSE CODE:** | 521104201 | **DEPARTMENT:** Medical Biology |
| **COURSE NAME:**Amino Acid Cromatographic Techniques |
| **INSTRUCTOR NAME** | **COURSE LANGUAGE** | **Course Catagory** |
| Technical | Medical | Other(……) |
| Prof. Dr. Hulyam KURT | Turkish |  | X |  |

**COURSE LEVEL**

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

|  |  |  |
| --- | --- | --- |
| **SEMESTER** | **WEEKLY COURSE PERIOD** | **COURSE OF** |
| **Theoric** | **Practice** | **Laboratory** | **Credit** | **ECTS** | **TYPE** |
| Spring |  2 | 2 |   | 3 | 7,5 | ELECTIVE |
|  |
| **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** | Characteristics of the amino acids and proteins and their normal metabolic pathways; some examples of metabolic diseases (mainly phenylketonuria) due to abnormalities on the metabolic pathways; analyses of metabolic diseases due to abnormality of amino acid methabolism in the urine and blood by chemical tests, paper chromatographic test and Guthrie tests . |
| **COURSE AIMS** | -To give the reasons of amino acid metabolic disorder; to give the knowledge of some amino acid metabolic disorders are curable (such as phenylketonuria) by early diagnosis and some practical applications. |
| **COURSE OBJECTIVES** | -The main objective of this course is to give knowledge to the students that some metabolic disorders such as phenylketonuria are curable by diabetic therapy; besides to give knowledge practical applications techniques of the related subjects. |
| **TEXTBOOK(S)** | -Haktan, M., Aydın, A.: Pediatride Metabolizma Bozuklukları, İstanbul, 1986. |
| **REFERENCES** | -Haktan, M., Aydın, A.: Pediatride Metabolizma Bozuklukları, İstanbul, 1986-Yalçındağ, S.: Çocukta Metabolizma Hastalıkları, İstanbul, 1983-Kayaalp, O.S.: Tıbbi Farmakoloji-Cilt III, Ankara, 1978-Yerson, M.: İnsan Biyokimyası, İstanbul, 1988-Nyhan, W.L., Ozand, P.T.: Atlas of Metabolic Diseases, Chapman & Hall Medical, 1997. |

|  |  |
| --- | --- |
|  |  **COURSE SYLLABUS** |
| **WEEK** | **SUBJECTS/TOPICS (Theoretical)** |
| 1 | Structure of amino acids.  |
| 2 | Classifications of the amino acids. |
| 3 | Chemical reactions of the a.a.. |
| 4 | Structure of the proteins (Primer, seconder and tersier strctures). |
| 5 | Classification of the proteins. |
| 6 | Biological functions of the proteins. |
| 7 | Metabolism of the proteins. |
| 8 | Metabolism of the a.a. |
| 9 | Metabolic disorders of a.a. |
| 10 | Alcaptonuria and albinism. |
| 11 | Phenylketonuria. |
| 12 | Tyrosinemia. |
| 13 | Analysis of amino acid disorders by chemical ways. |
| 14 | Quantitative and Qualitative analyses of amino acid metabolic disorders in urine and blood by paper chromatography |
| 15 | Analyses of phenylketonuria in the heel blood by Guthrie tests. |
| 16 | Overview of the whole subjects. |

**PROGRAM QUTCOMES**

Place choose never(1), few(2) or many(3) regarding your course

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **NO** |  | **1** | **2** | **3** |
| 1 | gather as well as apply knowledge of health sciences |  |  | X |
| 2 | ask scientific questions and form hypothesis |  |  | X |
| 3 | search and interpret scientific literature |  |  | X |
| 4 | design and conduct experiments as well as analyze and interpret the data |  |  | X |
| 5 | learn how to use the experimental equipment effectively |  |  | X |
| 6 | function on multi-disciplinary teams |  |  | X |
| 7 | identify, formulate, and solve medical problems |  | X |  |
| 8 | use computer effectively both in conducting the experiments and analyzing the data |  |  | X |
| 9 | understand the impact of experimental solutions on national and international sciences |  |  |  |
| 10 | use effective written and oral communication/presentation skills |  |  | X |
| 11 | get an understanding of professional and ethical responsibility |  |  | X |
| 12 | get a recognition of the need for, and an ability to engage in lifelong learning |  |  | X |
| 13 | Ability of recognition of fundamental terms in Medical School teaching  |  | X |  |
| 14 | Ability of handling ethic issues by considering fundamental terms  |  | X |  |

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| **INSTRUCTOR NAME** | **DATE** |
| Prof.Dr. Hülyam KURT | 25.12.2018 |

 

**ESOGÜ INSTITUTE OF HEALTH SCIENCE**

**DEPARTMENT OF MEDICAL BIOLOGY**

 **COURSE INFORMATION FORM**

|  |  |  |
| --- | --- | --- |
| **COURSE CODE:** | 521104202 | **DEPARTMENT:** Medical Biology |
| **COURSE NAME:** | Biology Of Experiment Animals And Using Of Experimental Techniques |
| **INSTRUCTOR NAME** | **COURSE LANGUAGE** | **Course Catagory** |
| Technical | Medical | Other(……) |
| Prof.Dr. Hülyam KURT | Turkish |  | x |  |

**COURSE LEVEL**

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

|  |  |  |
| --- | --- | --- |
| **SEMESTER** | **WEEKLY COURSE PERIOD** | **COURSE OF** |
| **Theoric** | **Practice** | **Laboratory** | **Credit** | **ECTS** | **TYPE** |
| Spring | 2  | 2  |   | 3  | 7,5 | ELECTIVE |
|  |
| **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** | Selection of experiment animals, structure of experimental cages, feeding of animals, generating of animals and care, biology of mice, rat, rabbit and cobaya, experiment technique with experimental animals, technique of anesthetized of experimental animal, attention of health rules |
| **COURSE AIMS** | To give knowledge about biology of experimental animals and experimental techniques with animals  |
| **COURSE OBJECTIVES** | The students learn speciality of experimental animals. By preparing homework, to learn the literature collection and presentation their work. |
| **TEXTBOOK(S)** |  |
| **REFERENCES** | 1. Arrington, L. R.: Introductory Laboratory Animal Science. The Interstate, Danville (III) USA 206 p. 1972.
2. Dennis E. J. Baker: The Laboratory Rat. Vol. 1-C. Academic Press, California, USA, 1979.
3. Harkness, J.E., Wagner, J.E.: The Biology and Medicine of Rabbits and Rodents. (Fourth Edition). Williams & Wilkins, 1995.
4. Holmes D.D.: Clinical Laboratory Animal Medicine An Introduction, 1984.
5. Merdivenci A.: Laboratuar Hayvan Bakımı, Üretimi ve Deney Tekniği, İstanbul Üniv. Cerrahpaşa Tıp Fak. Istanbul, 106s. 1971.
6. Waynforth, H.B., Flecknell, P.A.: Experimental and Surgical Technique in the Rat. Academic Press, London, 1994.
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| --- | --- |
|  |  **COURSE SYLLABUS** |
| **WEEK** | **SUBJECTS/TOPICS** |
| 1 | Selection of experiment animals |
| 2 | Structure of life cages and urine collecting cages |
| 3 | Feeding of animals and generating of animals and care |
| 4 | Biology of mice |
| 5 | Biology of rat |
| 6 | Biology of rabbit |
| 7 | Biology of cobaya |
| 8 | Giving material to experiment animals, taking blood from jugular vein |
| 9 | MIDTERM EXAM |
| 10 | Taking blood from tail vein and earlap |
| 11 | Taking blood from heart and jugular vein |
| 12 | Collection of serum, plasma and urine from animal. |
| 13 | Anaesthetic technique |
| 14 | Cleaning waste of animal |
| 15 | FINAL EXAM |
| 16 | Selection of experiment animals |

**PROGRAM OUTCOMES**

Place choose never(1), few(2) or many(3) regarding your course

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **NO** |  | **1** | **2** | **3** |
| 1 | gather as well as apply knowledge of health sciences |  |  |  |
| 2 | ask scientific questions and form hypothesis |  |  | **x** |
| 3 | search and interpret scientific literature |  |  | **x** |
| 4 | design and conduct experiments as well as analyze and interpret the data |  |  | **x** |
| 5 | learn how to use the experimental equipment effectively |  |  | **x** |
| 6 | function on multi-disciplinary teams |  |  | **x** |
| 7 | identify, formulate, and solve medical problems |  |  | **x** |
| 8 | use computer effectively both in conducting the experiments and analyzing the data |  |  | **x** |
| 9 | understand the impact of experimental solutions on national and international sciences |  | **x** |  |
| 10 | use effective written and oral communication/presentation skills |  |  | **x** |
| 11 | get an understanding of professional and ethical responsibility |  |  | **x** |
| 12 | get a recognition of the need for, and an ability to engage in lifelong learning |  |  | **x** |
| 13 | other (get an understanding of basic concepts of medical education) |  | **x** |  |
| 14 | other (get an understanding of approaching to ethical problems with taking basic concepts to center) |  |  | **x** |

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| **INSTRUCTOR NAME** | **DATE** |
| Prof.Dr. Hülyam KURT | 25.12.2018 |



**ESOGÜ INSTITUTE OF HEALTH SCIENCE**

**DEPARTMENT OF MEDICAL BIOLOGY**

 **COURSE INFORMATION FORM**

|  |  |
| --- | --- |
| **COURSE CODE:** 521104206 | **DEPARTMENT:** Medical Biology |
| **COURSE NAME:** Problems of cell culture and cell lines that should be considered in the selection of those |
| **INSTRUCTOR NAME**Prof. Dr. Didem TURGUT COŞAN | **COURSE LANGUAGE****Turkish: x****English: ** | **Course Catagory** |
| Technical | Medical | Other(……) |
|  |  |  | **X** |  |

**COURSE LEVEL**

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

|  |  |  |
| --- | --- | --- |
| **SEMESTER** | **WEEKLY COURSE PERIOD** | **COURSE OF** |
| **Theoric** | **Practice** | **Laboratory** | **Credit** | **ECTS** | **TYPE** |
| Spring | 2 | 2 | 0  | 3  | 7,5 | ELECTIVE |
|  |
| **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** |  To give information on the basic structure of the cells in culture and biology, the selection of specific cell lines for research, contamination and basic research rules  |
| **COURSE AIMS** | Tissue culture (primary culture), as well as cell culture, and are used in many studies researchers have used in experiments in vivo behavior of materials to help them learn about the environment. Unlike tissue culture cell lines to be studied in cell culture to study the suitability of these cells is important where and how to be obtained. In addition, each cell is different from the needs of the media environment and their choice is important. Mediums like it could be ready for use as a cost reduction in order to be prepared by the user. The researchers therefore also have information on this subject is needed. In addition, cell culture media of these many problems, this technique actually seemed easy become inextricable, and the researcher's effort to buy time and has led to financial losses. Before starting this work may be what is known of this problem and be done to solve what is important to know. If the problem is contamination, contamination can be conducted to determine the type of tests and determined the type of contamination is necessary to decide the appropriate solutions |
| **COURSE OBJECTIVES** | To give information about basic rules of the cell culture working area and teach the techniques can be applied to solve any problems encountered |
| **TEXTBOOK(S)** |   |
| **REFERENCES** | 1. B. E. Kipsop, A. Doyle, Maintenance of microorganism and cultured cells: a manual of laboratory methods, second edition, academic press, 1991.
2. S. Ozturk and W. Hu, Cell Culture Technology for Pharmaceutical and Cell-Based Therapies., CRC Press, 2005.
3. Coligan et al., Current Protocols in Immunology, Supp.55, John Wiley&Sons, Bestheda, 2002.
4. Freshney, Culture of Animal Cells, 4th ed., Wiley-Liss, New York, 2000
5. Gartner LP and Hiatt JL. Color textbook of Histology,W.B.Saunders Company, Philadelphia,1997.
6. Greenstein et al., Nörobilim, Bozbuğa et al (çeviri ed.), Nobel Tıp, İstanbul, 2004
7. Kleinsmith L. J., Kish V. M., Principles of Cell and Molecular Biology, Second Edition, Harper Collins College Publishers, 1995.
8. Pinel, Biopsychology, 4th ed., Allyn&Bacon, Boston, 2000
9. Widmaier et al., Vander et al’s Human Physiology, 9th ed., Mc Graw Hill, New York, 2004.
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|  |  **COURSE SYLLABUS** |
| **WEEK** | **SUBJECTS/TOPICS** |
| 1 | The basic structure of the cells in culture and biology. |
| 2 | Cellular and nutritional needs.  |
| 3 | Cell proliferation and growth factors in culture.  |
| 4 | Cell culture techniques.  |
| 5 | The selection of specific cell lines for research.  |
| 6 | Locations of cell lines can be achieved and how it can be obtained.  |
| 7 | Necessary equipment for cell culture.  |
| 8 | Factors affecting cell growth and division.  |
| 9 | Culture media and chemicals.  |
| 10 | Types of contamination.  |
| 11 | Techniques to determine the type of contamination.  |
| 12 | Bacterial contamination.  |
| 13 | Fungal contamination |
| 14 | Ways to overcome contamination.  |
| 15 | Cellular risk factors.  |
| 16 | Basic working rules for cellular  |

**PROGRAM QUTCOMES**

Place choose never(1), few(2) or many(3) regarding your course

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **NO** |  | **1** | **2** | **3** |
| 1 | gather as well as apply knowledge of health sciences |  |  | **X** |
| 2 | ask scientific questions and form hypothesis |  |  | **X** |
| 3 | search and interpret scientific literature |  |  | **X**  |
| 4 | design and conduct experiments as well as analyze and interpret the data |  |  | **X**  |
| 5 | learn how to use the experimental equipment effectively |  |  | **X**  |
| 6 | function on multi-disciplinary teams |  |  | **X**  |
| 7 | identify, formulate, and solve medical problems |  |  | **X**  |
| 8 | use computer effectively both in conducting the experiments and analyzing the data |  |  | **X** |
| 9 | understand the impact of experimental solutions on national and international sciences |  |  | **X** |
| 10 | use effective written and oral communication/presentation skills |  |  | **X**  |
| 11 | get an understanding of professional and ethical responsibility |  |  **X** |  |
| 12 | get a recognition of the need for, and an ability to engage in lifelong learning |  | **X** |  |
| 13 | ability to recognition of basic concepts in medical education  |  | **X** |  |
| 14 | ability to approach basic principles taking center ethical problems |  | **X** |  |

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| **INSTRUCTOR NAME** | **DATE** |
| Prof.Dr. Didem TURGUT COŞAN | 25.12.2018 |

 **ESOGÜ INSTITUTE OF HEALTH SCIENCE**

**DEPARTMENT OF MEDICAL BIOLOGY**

 **COURSE INFORMATION FORM**

|  |  |  |
| --- | --- | --- |
| **COURSE CODE:** | 521104203 | **DEPARTMENT:** Medical Biology |
| **COURSE NAME:** | Biological Structure of Mitochondria, Mitochondrial DNA and Mitochondrial Diseases |
| **INSTRUCTOR NAME** | **COURSE LANGUAGE** | **Course Catagory** |
| Technical | Medical | Other(……) |
| Prof. Dr. Hasan Veysi GÜNEŞ | Turkish |  | X |  |

**COURSE LEVEL**

|  |  |  |  |
| --- | --- | --- | --- |
| **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 |  2 | 0 |   | 2 | 7,5 | ELECTIVE |
|  |
| **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** | The structure of mitochondria, energy reactions in mitochondria. Mitochondrial DNA and various mitochondrial diseases. |
| **COURSE AIMS** | The structure of mitochondria, energy production and mitochondrial diseases |
| **COURSE OBJECTIVES** | Transfer all information about mitochondria. Collecting the literature with the given homework, collecting and collecting the information and writing it as a report and explaining them |
| **TEXTBOOK(S)** | Gunes, HV. Molecular Cell Biology, Kaan Bookstore, 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. |

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|  |  **COURSE SYLLABUS** |
| **WEEK** | **SUBJECTS/TOPICS (Theoretical)** |
| 1 | Mitochondria and evolution |
| 2 | Structure of mitochondria |
| 3 | Mitochondria and energy metabolism |
| 4 | Electron transport system |
| 5 | Mitochondrial life cycle |
| 6 | Synthesis of mitochondrial proteins and transport to mitochondria |
| 7 | MIDTERM |
| 8 | Mitochondrial DNA structure and replication |
| 9 | Mitochondrial DNA repair system, |
| 10 | Mitochondrial DNA transcription |
| 11 | Mitochondrial diseases |
| 12 | Mitochondrial Diseases |
| 13 | **Presentation of homework:**  |
| 14 | **Presentation of homework:** |
| 15 | **Presentation of homework:** |
| 16 | WRITTEN EXAM |

**PROGRAM QUTCOMES**

Place choose never(1), few(2) or many(3) regarding your course

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **NO** |  | **1** | **2** | **3** |
| 1 | gather as well as apply knowledge of health sciences |  |  | X |
| 2 | ask scientific questions and form hypothesis |  |  | X |
| 3 | search and interpret scientific literature |  |  | X |
| 4 | design and conduct experiments as well as analyze and interpret the data |  |  | X |
| 5 | learn how to use the experimental equipment effectively |  |  | X |
| 6 | function on multi-disciplinary teams | X |  |  |
| 7 | identify, formulate, and solve medical problems |  | X |  |
| 8 | use computer effectively both in conducting the experiments and analyzing the data |  | X |  |
| 9 | understand the impact of experimental solutions on national and international sciences |  |  | X |
| 10 | use effective written and oral communication/presentation skills |  |  | X |
| 11 | get an understanding of professional and ethical responsibility |  |  | X |
| 12 | get a recognition of the need for, and an ability to engage in lifelong learning |  |  | X |
| 13 | Ability of recognition of fundamental terms in Medical School teaching  |  | X |  |
| 14 | Ability of handling ethic issues by considering fundamental terms  |  | X |  |

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| --- | --- |
| **INSTRUCTOR NAME** | **DATE** |
| Prof.Dr. Hasan Veysi GÜNEŞ | 25.12.2018 |



**ESOGÜ INSTITUTE OF HEALTH SCIENCE**

**DEPARTMENT OF** **MEDICAL BIOLOGY**

 **COURSE INFORMATION FORM**

|  |  |  |
| --- | --- | --- |
| **COURSE CODE:** | 521104205 | **DEPARTMENT:** MEDICAL BIOLOGY |
| **COURSE NAME:** | Introduction to the Nanobiology |
| **INSTRUCTOR NAME** | **COURSE LANGUAGE** | **Course Catagory** |
| Technical | Medical | Other(……) |
| Assoc. Prof. Dr. M. Cengiz ÜSTÜNER | Turkish |  | x |  |

**COURSE LEVEL**

|  |  |  |  |
| --- | --- | --- | --- |
| **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 |  2 |  0 |   | 2  | 7,5 | ELECTIVE |
|  |
| **ASSESMENT CRITERIA** |
| **MID-TERM** | **ACTIVITY** | **Quantity** | **Percentage (%)** |
| 1st Mid-Term | 1  | 25%  |
| 2 nd Mid- Term |   |   |
| Quiz |  |   |
| Homework |  1 |  25% |
| Project |   |   |
| Oral Exam |  |  |
| Other (………) |  |  |
| **FINAL** | Quiz |  |  |
| Homework |  |  |
| Project |  |  |
| Oral Exam |  |  |
| Other(Written) | 1 | 50% |
| **MAKE-UP EXAM** | Oral | Written | Oral and Written | Multiple Choice |
|  | x |  |  |
| **PREREQUISITE(S)** |   |
| **COURSE CONTENT** | Nanotechnology: Molecules and Determination of bonding structures.Definition of the units used in the molecular level.Definition of nanotechnology.Identifying areas of nanotechnology applied to molecular biology.Determination of physical properties of nanometer-scaled structures.Nanoscopic and macroscopic identification of appropriate methods for molecular biology applications.The creation of nanometer-scale structures in molecular biology.Nanotechnology applications and benefits of the use of molecular biology. |
| **COURSE AIMS** |  With atomic size limits based on scientific progress, common definition of the nanotechnology and nanobiology, which collect the different sciences in a one point, determine the application areas in molecular biology. |
| **COURSE OBJECTIVES** |  The acquisition of basic knowledge related to the applications of nanotechnology and nanobiology. |
| **TEXTBOOK(S)** |   |
| **REFERENCES** | 1. Petrucci, R.H., Harwood, W.S., Herring G.F.: General Chemistry Principles and Modern Applications, Eighth Edition by California State University, USA, 2005.2. Katarzyna, B.K, Masanori S.: From molecular biology to nanotechnology and nanomedicine, Biosystems. 2002 Mar-May;65(2-3):123-38.3. Hosokawa, M., Nogi, K., Naito, M., Yokoyama T.: Addressing of nanoparticles by using DNA molecules, Nanoparticle Technology Handbook, Pages 485-488, 2008.4. Gupta, P.D., Manasi, D., Vasavada A.R.: Proteın Nanotechnology - A Powerful Futurıstıc Dıagnostıc Technıque Indian Journal Of Clinical Biochemistry, 20 (2) 48-53, 2005.5. Permiakov, N.K., Ananian, M.A., Sorokovo, V.I., Luskinovich, P.N.: Scanning probe microscopy and medico-biological nanotechnology: history and prospects. Arkh. Patol. 60, 9–13 1998.6. Drexler, K.E.: Nanosystems: Molecular Machinery, Manufacturing, and Computation, Wiley, New York, 1992. |

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|  |  **COURSE SYLLABUS** |
| **WEEK** | **SUBJECTS/TOPICS** |
| 1 | BionanotechnologyNanotechnology and bionanotechnology |
| 2 | Nanotechnology: molecules and determination of bonding structures.Definition of the units used in the molecular level. |
| 3 | The importance of the size of the nanoNeed for nano-size—surface volume ratio significanceSignificance and key features of nano-size |
| 4 | Synthesis and characterization of nanostructures |
| 5 | The nano carbonThe nano carbon technologies |
| 6 | Methods of analysis of nanoparticles |
| 7 | Examination of bionano materials with spectroscopic methods |
| 8 | Artificial molecular receptors |
| 9 | Biyonano sensors |
| 10 | Nanoparticles as drug delivery systemsThe importance of the nano dimension in drug transporting  |
| 11 | Targeted drug deliveryRole of nanotechnology in drug during transportation |
| 12 | Chemistry of drug delivery vehicles.1. Nanocapsules
2. Unilamellar liposomal vesicles
 |
| 13 | 1. Nanoparticles
2. Microemulsions
 |
| 14 | Bionanoimaging |
| 15 | Applications of bionanotechnology1. Nanostructures and nanosystems
2. Nanoparticles
3. In vitro diagnostics
4. Medical application of nanosystems and nanoparticles
 |
| 16 | NanotoxicologyIdentification of potential risks |

**PROGRAM QUTCOMES**

Place choose never(1), few(2) or many(3) regarding your course

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **NO** |  | **1** | **2** | **3** |
| 1 | gather as well as apply knowledge of health sciences |   |   | x |
| 2 | ask scientific questions and form hypothesis |   |  | x |
| 3 | search and interpret scientific literature |  |   |  x |
| 4 | design and conduct experiments as well as analyze and interpret the data |   |   | x  |
| 5 | learn how to use the experimental equipment effectively |  |   | x  |
| 6 | function on multi-disciplinary teams |  | x |   |
| 7 | identify, formulate, and solve medical problems |   | x |   |
| 8 | use computer effectively both in conducting the experiments and analyzing the data |   |   | x |
| 9 | understand the impact of experimental solutions on national and international sciences |  |   | x |
| 10 | use effective written and oral communication/presentation skills |  |  x |   |
| 11 | get an understanding of professional and ethical responsibility |   |   |  x |
| 12 | get a recognition of the need for, and an ability to engage in lifelong learning |  | x |  |
| 13 | other (recognition skills of the basic concepts in Medical Education)  |  | x |  |
| 14 | other (approaching the ethical problems by centralizing basic concepts) |  |  | x |

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| **INSTRUCTOR NAME** | **DATE** |
| Assoc. Prof. Dr. M. Cengiz ÜSTÜNER | 25.12.2018 |



**ESOGÜ INSTITUTE OF HEALTH SCIENCE**

**DEPARTMENT OF** **MEDICAL BIOLOGY**

 **COURSE INFORMATION FORM**

|  |  |  |
| --- | --- | --- |
| **COURSE CODE:** | 521104204 | **DEPARTMENT:** MEDICAL BIOLOGY |
| **COURSE NAME:** | The determination of Protein Expression by Using with SDS Page and Western Blot Analysis  |
| **INSTRUCTOR NAME** | **COURSE LANGUAGE** | **Course Category** |
| Technical | Medical | Other(……) |
| Assoc. Prof. Dr. M. Cengiz ÜSTÜNER | Turkish |  | x |  |

**COURSE LEVEL**

|  |  |  |  |
| --- | --- | --- | --- |
| **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 |  1 | 2  |   |  2 | 7,5 | ELECTIVE |
|  |
| **ASSESMENT CRITERIA** |
| **MID-TERM** | **ACTIVITY** | **Quantity** | **Percentage (%)** |
| 1st Mid-Term | 1 | 25% |
| 2 nd Mid- Term |  |  |
| Quiz |  |  |
| Homework | 1 | 25% |
| Project |  |  |
| Oral Exam |  |  |
| Other (………) |  |  |
| **FINAL** | Quiz |  |  |
| Homework |  |  |
| Project |  |  |
| Oral Exam |  |  |
| Other(Written) | 1 | 50% |
| **MAKE-UP EXAM** | Oral | Written | Oral and Written | Multiple Choice |
|  | x |  |  |
| **PREREQUISITE(S)** |   |
| **COURSE CONTENT** | Determination of the appropriate proteins for analysis., SDS PAGE and Western blot analysis protocols, obtaining of the determinated proteins, electrophoresis system,transfer procedure of tje proteins from gel to nitroceelulose membrane, blocking, process, labeling of the protein by antibody, view with ECL and determination of the amount on software. To reveal the advantages of the SDS PAGE and Western blot method. |
| **COURSE AIMS** |  Isolation of proteins, and determination of the protein expression by SDS PAGE and Western blot method  |
| **COURSE OBJECTIVES** | To determine specific protein in tissue or cells,To determine expression of proteins by the method of SDS PAGE and Western blotting,To analyze Western blot bands.  |
| **TEXTBOOK(S)** |   |
| **REFERENCES** | Towbin, H. et. al.; Electrophoretic transfer of proteins from polyacrylamide gels to nitrocellulose sheets: procedure and some applications. Proc Natl Acad Sci U S A. 76(9):4350-4, 1979.Towbin, H and Gordon, J. Immunoblotting and dot immunobinding--current status and outlook. J Immunol Methods 4;72(2):313-40, 1984. Matsudaira, P. Sequence from picomole quantities of proteins electroblotted onto polyvinylidene difluoride membranes. J Biol Chem. 262(21):10035-8, 1987.Stott D.I. Immunoblotting, dot-blotting, and ELISPOT assays: methods and applications. J Immunoassay ;21(2-3):273-96,1988. |

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|  |  **COURSE SYLLABUS** |
| **WEEK** | **SUBJECTS/TOPICS** |
| 1 | Protein structural analysis, functional analysis of proteins,Isolation of Protein-Protein Purification |
| 2 | The basic principle of the electrophoresis method The purpose of the Electrophoresis and Western Blotting methodApplication areas  |
| 3 | Preparation of tissue supernatants for Western Blotting Introduction of gels |
| 4 | By protein assay kit, calculation of total tissue protein and amount of protein loaded in each well  |
| 5 | Purpose of the SDS gel electrophoresisThe selection of the gel and preparation of gel solutions |
| 6 | The principle of SDS-PAGE electrophoresisSeparating gels and stoking gels preparation and loading of samples |
| 7 | Factors affecting the electrophoretic migration of the proteinsElectrophoresis application |
| 8 | Acrylamide concentrationSandwich preparation and blotting |
| 9 | Buffer solutions used in SDS-PAGECoomassie blue staining of the gel |
| 10 | AntibodiesBiomarkers |
| 11 | The membranes and the differences between the membranes Solution of the membrane bloking, and  incubation with primary antibody |
| 12 | Western blot protocolIncubation of the membrane with a secondary antibody |
| 13 | ECL (Enhanced chemiluminescence) and the display of proteins with ECL |
| 14 | Marking and staining of proteins related toWestern blot imaging methods |
| 15 | Displayed the Protein marked with antibody and determination of the amount with ECLEvaluation of the bands  |
| 16 | Analysis of Western blot bandsThe membrane staining with Ponceau S Western blot stripping stage |

**PROGRAM QUTCOMES**

Place choose never(1), few(2) or many(3) regarding your course

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **NO** |  | **1** | **2** | **3** |
| 1 | gather as well as apply knowledge of health sciences |  |   | x |
| 2 | ask scientific questions and form hypothesis |  |  | x |
| 3 | search and interpret scientific literature |  |  x |   |
| 4 | design and conduct experiments as well as analyze and interpret the data |  |   | x  |
| 5 | learn how to use the experimental equipment effectively |  |   |  x |
| 6 | function on multi-disciplinary teams |  |  |  x |
| 7 | identify, formulate, and solve medical problems |  |  | x  |
| 8 | use computer effectively both in conducting the experiments and analyzing the data |  |   | x |
| 9 | understand the impact of experimental solutions on national and international sciences |  |   | x |
| 10 | use effective written and oral communication/presentation skills |  |  x |   |
| 11 | get an understanding of professional and ethical responsibility |  |   |  x |
| 12 | get a recognition of the need for, and an ability to engage in lifelong learning |  |  | x |
| 13 | other (recognition skills of the basic concepts in Medical Education)  |  |  | x |
| 14 | other (Approaching the ethical problems by centralizing basic concepts) |  |  | x |

|  |  |
| --- | --- |
| **INSTRUCTOR NAME** | **DATE** |
| Assoc. Prof. Dr. M. Cengiz ÜSTÜNER | 25.12.2018 |