**Courses and ECTS Credits**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **First and Second Year** | | | | | | | | | | |
| Code | Course Name | | | ECTS | | T+P+L | C/E | | | Language |
| Fall Semester | | | | | | | | | | |
| 521403301 | [BIOLOGICALFUNCTIONS](#D521401301) | | | 7,5 | | 2+0+0 | ELECTİVE | | | TURKISH |
| 521403302 | [VITAMINOLOGY](#DERS521401302) | | | 7,5 | | 2+0+0 | ELECTİVE | | | TURKISH |
| 521403303 | [PEPTIDEAND PROTEINBIOCHEMISTRY](#D521401303) | | | 7,5 | | 2+0+0 | ELECTİVE | | | TURKISH |
| 521403304 | [BIOENERGETICS I](#DERS521401304) | | | 7,5 | | 2+0+0 | ELECTİVE | | | TURKISH |
| 521403305 | [BIOLOGIC CASCADE SYSTEMS](#DERS521401305) | | | 7,5 | | 1+0+0 | ELECTİVE | | | TURKISH |
| 521403306 | METABOLISMII | | | 7,5 | | 2+2+0 | ELECTİVE | | | TURKISH |
| 521403307 | [NUTRITIONAL BIOCHEMISTRY](#DERS521401307) | | | 7,5 | | 2+0+0 | ELECTİVE | | | TURKISH |
| 521403308 | [METHODS ENZYME PURFICATION OF](#DERS521401308) | | | 7,5 | | 2+0+0 | ELECTİVE | | | TURKISH |
| 521403309 | [BIOCHEMISTRY OF METABOLIC DISORDERS](#DERS521401309) | | | 7,5 | | 3+0+0 | COMPULSORY | | | TURKISH |
| 521403310 | AUTOMATEDORIENTATION | | | 7,5 | | 2+0+0 | ELECTİVE | | | TURKISH |
| 521403311 | SPECIAL TOPICSIN BIOCHEMISTRYI | | | 7,5 | | 2+2+0 | ELECTİVE | | | TURKISH |
| 521403312 | [BIOCHEMISTRY OF CANCER](#DERS521401312) | | | 7,5 | | 2+1+0 | ELECTİVE | | | TURKISH |
| 521403313 | [BIOCHEMICAL FACTORS IN AGING](#D521401313) | | | 7,5 | | 2+0+0 | ELECTİVE | | | TURKISH |
| 521403314 | [OXIDATIF STRESS-FREE RADICALS](#D521401314) | | | 7,5 | | 2+2+0 | ELECTİVE | | | TURKISH |
| 521403315 | [PATHOPHYSIOLOGY OF DIABETES MELLITUS](#DERS521401315) | | | 7,5 | | 3+0+0 | ELECTİVE | | | TURKISH |
| 521403316 | [ADVANCED METABOLISM I](#D521401316) | | | 7,5 | | 3+0+0 | COMPULSORY | | | TURKISH |
| 521401700 | SPECIALIZATION FIELD COURSE | | | 5 | | 3+0+0 | COMPULSORY | | | TURKISH |
|  | | | |  | |  |  | | |  |
| Spring Semester | | | | | | | | | | |
| 521404301 | [ANORGANIC BIOELEMENTS](#DERS521402301) | | | 7,5 | | 2+0+0 | ELECTİVE | | | TURKISH |
| 521404302 | [BIOENERGETICS II](#DERS521402302) | | | 7,5 | | 2+0+0 | ELECTİVE | | | TURKISH |
| 521404303 | [XENOBİOTİC BİOTRANSFORMATİON AND TRANSFORMATİON ENZYMES](#DERS521402303) | | | 7,5 | | 2+0+0 | ELECTİVE | | | TURKISH |
| 521404304 | [TISSUE BIOCHEMISTRY](#DERS521402304) | | | 7,5 | | 3+0+0 | ELECTİVE | | | TURKISH |
| 521404305 | [KINETICS OF ENZYME](#DERS521402305) | | | 7,5 | | 2+0+0 | ELECTİVE | | | TURKISH |
| 521404306 | [IMMUNE SYSTEM BIOCHEMISTRY AND IMMUNOASSAY](#DERS521402306) | | | 7,5 | | 2+2+0 | ELECTİVE | | | TURKISH |
| 521404307 | [MEASUREMENT TECHNIQUES](#DERS521402307) | | | 7,5 | | 3+0+0 | COMPULSORY | | | TURKISH |
| 521404308 | [METHOD OF SCIENCE IN THE AUTOMATION](#DERS521402308) | | | 7,5 | | 1+4+0 | ELECTİVE | | | TURKISH |
| 521404309 | SPECIAL TOPICSIN BIOCHEMISTRYII | | | 7,5 | | 2+2+0 | ELECTİVE | | | TURKISH |
| 521404310 | [TUMOR MARKERS](#DERS521402310) | | | 7,5 | | 2+2+0 | ELECTİVE | | | TURKISH |
| 521404311 | [CYTOKINES AND FUNCTIONS](#DERS521402311) | | | 7,5 | | 3+0+0 | ELECTİVE | | | TURKISH |
| 521404312 | [EXERCISE BIOCHEMISTRY](#DERS521402312) | | | 7,5 | | 3+0+0 | ELECTİVE | | | TURKISH |
| 521404313 | ANTIOXIDANTSSLOW DOWNAGINGANDANTI-AGING | | | 7,5 | | 2+2+0 | ELECTİVE | | | TURKISH |
| 521404314 | [ADVANCED METABOLISM 2](#D521402314) | | | 7,5 | | 3+0+0 | COMPULSORY | | | TURKISH |
| 521404315 |  | | | 7,5 | | 2+0+0 | ELECTİVE | | | TURKISH |
| 521401700 | SPECIALIZATION FIELD COURSE | | | 5 | | 3+0+0 | COMPULSORY | | | TURKISH |
|  | | | |  | |  |  | | |  |
|  | | | |  | |  |  | | |  |
| **COURSE CODE:** **521403301** | | | | **DEPARTMENT: MEDİCAL BİOCHEMİSTRY** | | | | | | | | |
| **COURSE NAME: BİOLOGİCAL OXİDATİONS** | | | | | | | | | | | | |
| **INSTRUCTOR NAME**  Assist Prof Dr Fahrettin Akyüz | | | **COURSE LANGUAGE**  **Turkish: X**  **English: ** | | | **Course Catagory** | | | | | | |
| Technical | | | Medical | Other(……) | | |
|  | | |  | | |  | | | 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 ****  Autumn X | 2 | 0 | |  | 2 | 7,5 | COMPULSORY ELECTIVE  ** X** | |
|  | | | | | | | | |
| **ASSESMENT CRITERIA** | | | | | | | | |
| **MID-TERM** | | | | **ACTIVITY** | | | **Quantity** | **Percentage (%)** |
| 1st Mid-Term | | | 1 | 50 |
| 2 nd Mid- Term | | |  |  |
| Quiz | | |  |  |
| Homework | | |  |  |
| Project | | |  |  |
| Oral Exam | | |  |  |
| Other (………) | | |  |  |
| **FINAL** | | | | Quiz | | |  |  |
| Homework | | |  |  |
| Project | | |  |  |
| Oral Exam | | |  |  |
| Other(……………….) | | | 1 | 50 |
| **MAKE-UP EXAM** | | | | Oral | | Written | Oral and Written | Multiple Choice |
|  | | 1 |  |  |
| **PREREQUISITE(S)** | | | |  | | | | |
| **COURSE CONTENT** | | | | Biological oxidation reduction reactions, electron current,standart reduction oxidation potentials, calculation of redoks data, oxidatve fosforilation | | | | |
| **COURSE AIMS** | | | | To give information about biological oxidations and calculation | | | | |
| **COURSE OBJECTIVES** | | | | To understand mechanism of metabolic reactions and ATP senthesis | | | | |
| **TEXTBOOK(S)** | | | | Principles of Biochemistry, Albert Lehninger, fifth ed. 2009 Worth publishers, Newyork | | | | |
| **REFERENCES** | | | | Biochemistry, Lubert Strayer, Sixth ed. 2007  W.H. Freewar and company, Newyork.  Medical Biochemistry, John Baynes, Marek H Dominiczek, Harcourt Brace and Company, Mosby, Basildon, 2004, England.Biochemistry, Dacid E. Metzler, Second ed. Harcourt academic press, 2001.Human Biochemistry, Onat T., Emerk K.., Sönmez E.Y., Palme Publishing, second ed., 2007, Ankara.Biochemistry, Gürdöl F., Ademoğlu E., Nobel publishing, Second ed. 2010. | | | | |
|  | **COURSE SYLLABUS** | | | | | | | |
| **WEEK** | **DATE** | | **SUBJECTS/TOPICS** | | | | | |
| 1 |  | | Thermodynamics | | | | | |
| 2 |  | | Enthalpy, entropy,free energy concepts | | | | | |
| 3 |  | | Equilibrium constand and free energy contact of reactions | | | | | |
| 4 |  | | Variaty of biochemical reactions | | | | | |
| 5 |  | | Oxidation reduction reactions | | | | | |
| 6 |  | | Phosphate group transfers | | | | | |
| 7 |  | | Free energy variation of ATP hydrolysis | | | | | |
| 8 |  | | Mid-term exam | | | | | |
| 9 |  | | Half reactions, reducing equivelant | | | | | |
| 10 |  | | Electron transporters,ETC | | | | | |
| 11 |  | | Oxido reductases | | | | | |
| 12 |  | | Mithocondrially and microsomally P-450 systems | | | | | |
| 13 |  | | Transfer of electron, standart reducing potentially | | | | | |
| 14 |  | | Free energy for ATP synthesis physiologically and energy calculations | | | | | |
| 15 |  | | Atp synthesis | | | | | |
| 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 | other (……………………………………….) |  |  | **X** |
| 14 | other (……………………………………….) |  | **X** |  |

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| --- | --- |
| **Instructor Name**  **Sign** | **Date** |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **COURSE CODE:** **521403302** | | **DEPARTMENT: MEDICAL BIOCHEMİSTRY** | | | |
| **COURSE NAME: VİTAMİNOLOGY** | | | | | |
| **INSTRUCTOR NAME** | **COURSE LANGUAGE**  **Turkish: **  **English: x** | | **Course Catagory** | | |
| Technical | Medical | Other(……) |
| **Prof.Dr.Güngör Kanbak** |  | |  | 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  Autumn x | 2 | 0 | 0 | 2 | 7,5 | COMPULSORY ELECTIVE  **x ** | |
|  | | | | | | | |
| **ASSESMENT CRITERIA** | | | | | | | |
| **MID-TERM** | | | **ACTIVITY** | | | **Quantity** | **Percentage (%)** |
| 1st Mid-Term | | |  |  |
| 2 nd Mid- Term | | |  |  |
| Quiz | | |  |  |
| Homework | | |  |  |
| Project | | |  |  |
| Oral Exam | | | 1 | 50 |
| Other (………) | | |  |  |
| **FINAL** | | | Quiz | | |  |  |
| Homework | | |  |  |
| Project | | |  |  |
| Oral Exam | | | **1** | **50** |
| Other(……………….) | | |  |  |
| **MAKE-UP EXAM** | | | Oral | | Written | Oral and Written | Multiple Choice |
| **x** | |  |  |  |
| **PREREQUISITE(S)** | | |  | | | | |
| **COURSE CONTENT** | | | The importance of water and lipid solubl vitamins on biochemical reactions and human health | | | | |
| **COURSE AIMS** | | | To teach chemical structures and molecular properties. To teach functions of vitamins on biochemical reactions as coenzymes.To teach biochemical measurements of vitamins | | | | |
| **COURSE OBJECTIVES** | | | To grasp relationshps of structure functions of vitamins and importance of ilness and human health | | | | |
| **TEXTBOOK(S)** | | | Lecture notes | | | | |
| **REFERENCES** | | |  | | | | |

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| --- | --- | --- |
|  | **COURSE SYLLABUS** | |
| **WEEK** | **DATE** | **SUBJECTS/TOPICS** |
| 1 |  | |  | | --- | | Introduction to vitaminology | |
| 2 |  | Thiamine (vitamine B1) |
| 3 |  | Ryboflavine (vitamine B2) |
| 4 |  | Pyridoxine (B6 vitamine) |
| 5 |  | Niasine (nicotineamide) |
| 6 |  | Biotin (Vitamine H) |
| 7 |  | Pantotenic acid |
| 8 |  | p-aminobenzoic acid |
| 9 |  | Folic acid |
| 10 |  | Lipoic acid |
| 11 |  | Vitamin B12 (syanocobalamine) |
| 12 |  | Vitamin C (ascorbic acid) |
| 13 |  | Vitamin A |
| 14 |  | Vitamin D |
| 15 |  | Vitamin E |
| 16 |  | Vitamin K |

**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 (……………………………………….) |  | **x** |  |
| 14 | other (……………………………………….) | **x** |  |  |

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| **Instructor Name**  **Prof.Dr.Güngör Kanbak**  **Sign** | **Date** |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **DERSİN KODU:** **521403303** | | **ANABİLİM DALI:MEDİCAL BİOCHEMİSTRY** | | | |
| **DERSİN ADI:BİOCHEMİSTRY OF PEPTİDES AND PROTEİNS** | | | | | |
| **DERSİ VEREN ÖĞRETİM**  **ELEMANI**  **Prof.Dr.Güngör Kanbak** | **DERSİN DİLİ**  **Türkçe: x**  **İngilizce: ** | | **Dersin Kategorisi** | | |
| Teknik | Medikal | Diğer(……) |
|  |  | |  | x |  |

**DERSİN DÜZEYİ**

|  |  |  |  |
| --- | --- | --- | --- |
| **BİLİMSEL HAZIRLIK** | **YÜKSEK LİSANS** | **DOKTORA** | **UZMANLIK ALAN DERSİ** |
| **** | **** | **x** | **** |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| **YARIYIL** | **HAFTALIK DERS SAATİ** | | | **DERSİN** | | | |
| **Teorik** | **UygulamA** | **Laboratuvar** | **Kredisi** | **AKTS** | **TÜRÜ** | |
| Bahar ****  Güz **x** | 2 | 0 | 2 | 2 | 7,5 | ZORUNLU SEÇMELİ  **x ** | |
|  | | | | | | | |
| **DEĞERLENDİRME ÖLÇÜTLERİ** | | | | | | | |
| **YARIYIL İÇİ** | | | **Faaliyet türü** | | | **Sayı** | **Yüzdesi (%)** |
| I. Ara Sınav | | |  |  |
| II. Ara Sınav | | |  |  |
| Kısa Sınav | | |  |  |
| Ödev | | |  |  |
| Proje | | |  |  |
| Sözlü Sınav | | | 1 | 50 |
| Diğer (………) | | |  |  |
| **YARIYIL SONU SINAVI** | | | Kısa Sınav | | |  |  |
| Ödev | | |  |  |
| Proje | | |  |  |
| Sözlü Sınav | | | **1** | **50** |
| Diğer (………) | | |  |  |
| **MAZERET SINAVI** | | | Sözlü Sınav | | Yazılı | Sözlü ve Yazılı | Çoktan Seçmeli |
| **x** | |  |  |  |
| **VARSA ÖNERİLEN ÖN KOŞUL(LAR)** | | | ---------- | | | | |
| **DERSİN KISA İÇERİĞİ** | | | Peptid structure and protein structure which one of the basic  Macromolecules; amino acid monomers | | | | |
| **DERSİN AMAÇLARI** | | | To understand Peptid structure and protein structure which one of the basic  Macromolecules and to comprehend protein structure and functions | | | | |
| **DERSİN HEDEFİ** | | | The aims of lecture;amino acids,to understand peptid bonds and protein structure-function relationships and to understand functions of proteins in human body | | | | |
| **TEMEL DERS KİTABI** | | | ----- | | | | |
| **YARDIMCI KAYNAKLAR** | | | Lecture notes | | | | |

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|  | **DERSİN HAFTALIK PLANI** | |
| **HAFTA** | **TARİH** | **İŞLENEN KONULAR** |
| 1 |  | To introduce biochemistry of peptide and proteins |
| 2 |  | Chemical structure and clssification of amino acids |
| 3 |  | Recognation of peptid bonds and characterictics |
| 4 |  | Recognation of peptid bonds and characterictics |
| 5 |  | The functions of proteins in human body |
| 6 |  | The functions of proteins in human body |
| 7 |  | Classifications of proteins |
| 8 |  | Functional proteins;enzyms,haemoglobine |
| 9 |  | Functional proteins;protein hormones |
| 10 |  | Primer and seconder protein structures |
| 11 |  | Tertier and quaterner protein structures |
| 12 |  | Measuremet method of proteins |
| 13 |  | Purification of proteins |
| 14 |  | Purification of proteins |
| 15 |  | Serum proteins |
| 16 |  | Serum proteins |

**PROGRAM ÇIKTISI**

Verilen Dersin Öğrenciye Kazandıracağı Becerilen: Hiç Katkısı Yok (1), Kısmen Katkısı Var (2), Tam Katkısı Var(3)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **NO** |  | **1** | **2** | **3** |
| 1 | Sağlık Bilimlerine İlişkin Bilgi Toplama ve Edindiği Bilgileri  Uygulama Becerisi |  | **x** |  |
| 2 | Bilimsel Sorgulama ve Hipotez Oluşturma Becerisi |  | **x** |  |
| 3 | Literatür Tarama ve Değerlendirme Becerisi |  | **x** |  |
| 4 | Deney Tasarlama, Yapma, Verileri Analiz Edebilme ve  Değerlendirebilme Becerisi | **x** |  |  |
| 5 | Deneysel Araç ve Gereç Tanıma ve  Uygun Şekilde kullanabilme Becerisi | **x** |  |  |
| 6 | Disiplinler-arası Takım Çalışması Yapabilme Becerisi |  | **x** |  |
| 7 | Tıbbi Problemleri Tanıma, Formülize Etme ve Çözme Becerisi |  | **x** |  |
| 8 | Araştırmalarda ve Veri Analizlerinde Etkin Bilgisayar Kullanabilme Becerisi |  | **x** |  |
| 9 | Yapılan deneysel çalışmaların Ulusal ve Uluslar Arası  Bilime Sağlayacağı Katkıyı Anlama Becerisi | **x** |  |  |
| 10 | Etkin Yazılı ve Sözlü İletişim/Sunum Becerisi |  | **x** |  |
| 11 | Mesleki ve Etik Sorumluluğu Anlama ve Uygulama Becerisi | **x** |  |  |
| 12 | Yaşam Boyu Öğrenimin Önemini Kavrama ve Uygulama Becerisi |  |  | **x** |
| 13 | Tıp Eğitiminde temel Kavramları Tanıma Becerisi |  |  | **x** |
| 14 | Temel Kavramları Merkeze Alarak Etik Problemlere Yaklaşma Becerisi |  | **x** |  |

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| **Dersin Öğretim Üyesi**  **Prof.Dr.Güngör Kanbak**  **İmza** | **Tarih**  **13.04.2015** |

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| --- | --- | --- | --- | --- | --- |
| **COURSE CODE:** **521403304** | | **DEPARTMENT: MEDICAL BIOCHEMİSTRY** | | | |
| **COURSE NAME: BİOENERGETİCS 1** | | | | | |
| **INSTRUCTOR NAME** | **COURSE LANGUAGE**  **Turkish: **  **English: x** | | **Course Catagory** | | |
| Technical | Medical | Other(……) |
| **Prof.Dr.Güngör Kanbak** |  | |  | 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 ****  Autumn **x** | 2 | 0 | 0 | 2 | 7,5 | COMPULSORY ELECTIVE  **x ** | |
|  | | | | | | | |
| **ASSESMENT CRITERIA** | | | | | | | |
| **MID-TERM** | | | **ACTIVITY** | | | **Quantity** | **Percentage (%)** |
| 1st Mid-Term | | |  |  |
| 2 nd Mid- Term | | |  |  |
| Quiz | | |  |  |
| Homework | | |  |  |
| Project | | |  |  |
| Oral Exam | | | 1 | 50 |
| Other (………) | | |  |  |
| **FINAL** | | | Quiz | | |  |  |
| Homework | | |  |  |
| Project | | |  |  |
| Oral Exam | | | **1** | **50** |
| Other(……………….) | | |  |  |
| **MAKE-UP EXAM** | | | Oral | | Written | Oral and Written | Multiple Choice |
| **x** | |  |  |  |
| **PREREQUISITE(S)** | | |  | | | | |
| **COURSE CONTENT** | | | Bioenergetics investigate energy changes which occurs in biological systems a asas anabolic and catabolic processes | | | | |
| **COURSE AIMS** | | | To teach anabolism and catabolism, to teach thermodynamic rules, to teach gibss energy,entropi,enthalpy, to teach endergonic and exergonic functions, to teach ATP synthesis and functions | | | | |
| **COURSE OBJECTIVES** | | | To investigate energy changes in chemical reactions via national and international literatures. | | | | |
| **TEXTBOOK(S)** | | | Lecture notes | | | | |
| **REFERENCES** | | |  | | | | |

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|  | **COURSE SYLLABUS** | |
| **WEEK** | **DATE** | **SUBJECTS/TOPICS** |
| 1 |  | Introduction to bioenergetics |
| 2 |  | Catabolism and anabolism |
| 3 |  | Principles of Bioenergetics;first law of thermodinamic |
| 4 |  | Principles of Bioenergetics; second law of thermodinamic |
| 5 |  | Description of gibss free energy,entropy and endthalpy |
| 6 |  | Description of gibss free energy,entropy and endthalpy |
| 7 |  | Energy changes in biological systems |
| 8 |  | Egzergonic and endergonic functions |
| 9 |  | Egzergonic and endergonic functions |
| 10 |  | Energy levels in carbohydrate,lipid and proteins |
| 11 |  | Energy levels in carbohydrate,lipid and proteins |
| 12 |  | Phosphate group transfer and ATP molecule |
| 13 |  | Synthesis of ATP and functions |
| 14 |  | Synthesis of ATP and functions |
| 15 |  | To plan one research Project subject to bioenergetics |
| 16 |  | To plan one research Project subject to bioenergetics |

**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 (……………………………………….) |  | **x** |  |
| 14 | other (……………………………………….) |  | **x** |  |

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| **Instructor Name**  **Prof.Dr.Güngör Kanbak**  **Sign** | **Date** |

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| --- | --- | --- | --- | --- |
| **COURSE CODE: 521403305** | | **DEPARTMENT: MEDİCAL BİOCHEMİSTRY** | | |
| **COURSE NAME: BİOLOGİC CASCADE SYSTEMS** | | | | |
| **INSTRUCTOR NAME**  **Prof.Dr.Sema USLU** | **COURSE LANGUAGE**  **Turkish: **  **English: x** | **Course Catagory** | | |
| Technical | Medical | Other(……) |
|  |  |  | 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  Autumn **x** | 1 | 0 | | - | 1 | | 7,5 | | COMPULSORY ELECTIVE  ** x** | |
|  | | | | | | | | | | |
| **ASSESMENT CRITERIA** | | | | | | | | | | |
| **MID-TERM** | | | **ACTIVITY** | | | | | **Quantity** | | **Percentage (%)** |
| 1st Mid-Term | | | | | 1 | | %50 |
| 2 nd Mid- Term | | | | |  | |  |
| Quiz | | | | |  | |  |
| Homework | | | | |  | |  |
| Project | | | | |  | |  |
| Oral Exam | | | | |  | |  |
| Other (………) | | | | |  | |  |
| **FINAL** | | | Quiz | | | | |  | |  |
| Homework | | | | |  | |  |
| Project | | | | |  | |  |
| Oral Exam | | | | |  | |  |
| Other(……………….) | | | | | **1** | | **%50** |
| **MAKE-UP EXAM** | | | Oral | | | Written | | Oral and Written | | Multiple Choice |
|  | | |  | |  | |  |
| **PREREQUISITE(S)** | | |  | | | | | | | |
| **COURSE CONTENT** | | | Significance of cascade systems in human body. Mechanisms of cascade systems and  important cascade reactions | | | | | | | |
| **COURSE AIMS** | | | To discuss, molecular mechanisms of signal transduction,receptors, second messengers, G-proteins, regulation of glycogen, kinin-kininogen, coagulation, compleman, vitamin D, apopitosis, taste, smell, vision,hearing, insulin, rennin-angiotensin, arachidonic acid, contraction of muscle, leptin, cascade systems. | | | | | | | |
| **COURSE OBJECTIVES** | | | To understans the role of cascade systems in regulation of different conditions in organism. | | | | | | | |
| **TEXTBOOK(S)** | | | Lecture notes | | | | | | | |
| **REFERENCES** | | | David L. Nelson and Michael M. Cox.2005. Lehninger Principles of. Biochemistry. Fourth Edition.USA | | | | | | | |

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| --- | --- | --- |
|  | **COURSE SYLLABUS** | |
| **WEEK** | **DATE** | **SUBJECTS/TOPICS** |
| 1 |  | Mechanisms of cascade systems |
| 2 |  | Cell signal transfer, |
| 3 |  | Receptors |
| 4 |  | G-proteins and second massengers |
| 5 |  | Regulation of glycogen |
| 6 |  | Kinin-kininogen and coagulation cascade |
| 7 |  | Compleman cascade |
| 8 |  | Vitamin A and D cascade |
| 9 |  | 1st Mid-Term |
| 10 |  | Taste, smell and visioncascade |
| 11 |  | Apopitosis cascade |
| 12 |  | Insulin cascade |
| 13 |  | Renin-angiotensinogen cascade |
| 14 |  | Arachidonic acid cascade |
| 15 |  | Muscle contraction |
| 16 |  | Leptin cascade |

**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 (……………………………………….) |  |  |  |
| 14 | other (……………………………………….) |  |  |  |

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| **Instructor Name**  **Sign**  **Prof.Dr.Sema USLU** | **Date** |

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| **COURSE CODE:521403306** | | **DEPARTMENT: MEDİCAL BİOCHEMİSTRY** | | | |
| **COURSE NAME: METABOLİSM 2** | | | | | |
| **INSTRUCTOR NAME**  **Yard. Doç. Dr Fahrettin Akyüz** | **COURSE LANGUAGE**  **Turkish: X**  **English: ** | | **Course Catagory** | | |
| Technical | Medical | Other(……) |
|  |  | |  | 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 X  Autumn **** | 3 | 0 | |  | 2 | 7,5 | COMPULSORY ELECTIVE  **X ** | | |
|  | | | | | | | | | |
| **ASSESMENT CRITERIA** | | | | | | | | | |
| **MID-TERM** | | | | **ACTIVITY** | | | **Quantity** | **Percentage (%)** | |
| 1st Mid-Term | | | 1 | 50 | |
| 2 nd Mid- Term | | |  |  | |
| Quiz | | |  |  | |
| Homework | | |  |  | |
| Project | | |  |  | |
| Oral Exam | | |  |  | |
| Other (………) | | |  |  | |
| **FINAL** | | | | Quiz | | |  |  | |
| Homework | | |  |  | |
| Project | | |  |  | |
| Oral Exam | | |  |  | |
| Other(……………….) | | | 1 | 50 | |
| **MAKE-UP EXAM** | | | | Oral | | Written | Oral and Written | Multiple Choice | |
|  | | 1 |  |  | |
| **PREREQUISITE(S)** | | | |  | | | | | |
| **COURSE CONTENT** | | | | Carbonhydrate digestion, Carbonhydrate metabolisms  Lipids digestion, Lipid metabolizms  Amino acids oxidation and urea synthesis, Biyosenthesis of aminoacids,Nücleic acids metabolisms, rgolation of metabolisms and metabolisms defects | | | | | |
| **COURSE AIMS** | | | | To know metabolisms and regülations of carbonhydrate, lipid, aminoacid, nücleic acid | | | | | |
| **COURSE OBJECTIVES** | | | | To understand metabolic reactions and organization | | | | | |
| **TEXTBOOK(S)** | | | | Lehninger, Biyokimyanın ilkeleri,Çev ed.Murat Elçin 2013 | | | | | |
| **REFERENCES** | | | | Biochemistry, Lubert Strayer, Sixth ed. 2007  W.H. Freewar and company, Newyork.  Medical Biochemistry, John Baynes, Marek H Dominiczek,  Harcourt Brace and Company, Mosby, Basildon, 2004, England.  Biochemistry, Dacid E. Metzler, Second ed. Harcourt academic press, 2001.  Human Biochemistry, Onat T., Emerk K.., Sönmez E.Y., Palme Publishing, second ed., 2007, Ankara. | | | | | |
|  | **COURSE SYLLABUS** | | | | | | | |
| **WEEK** | **DATE** | | **SUBJECTS/TOPICS** | | | | | |
| 1 |  | | Absorbton and digestion carbonhydrates | | | | | |
| 2 |  | | Glycolysis and catabolism of hexoses | | | | | |
| 3 |  | | Citric acid cycle , Biosynthesis of carbonhydtrates | | | | | |
| 4 |  | | Regulation of carbonhydrate metabolism, defects | | | | | |
| 5 |  | | Absorbtion and digestion of lipids, oxidation of fatty acids | | | | | |
| 6 |  | | Biosynthesis of lipids | | | | | |
| 7 |  | | Regulation of lipid metabolisms, defects | | | | | |
| 8 |  | | Mid- term exam | | | | | |
| 9 |  | | Absorbtion and digestion of proteins | | | | | |
| 10 |  | | Amino acid oxidation and urea synhesis | | | | | |
| 11 |  | | Biyosynthesis and transformation of special product of aminoacids | | | | | |
| 12 |  | | Regulation of aminoacid metabolisms, defects | | | | | |
| 13 |  | | Nucleic acids, purin, pyrimidin metabolisms | | | | | |
| 14 |  | | Biosynthesis of nucleic acids | | | | | |
| 15 |  | | Regulation and defects of nucleic acid metabolisms | | | | | |
| 16 |  | | Organization of all metabolisms | | | | | |

**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 (……………………………………….) |  |  | **X** |
| 14 | other (……………………………………….) |  |  | **X** |

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| **Instructor Name**  **Sign** | **Date** |

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| **COURSE CODE: 521403307** | | | **DEPARTMENT: MEDICAL BIOCHEMİSTRY** | | | |
| **COURSE NAME:** | **NUTRİTONAL BİOCHEMİSTRY** | | | | | |
| **INSTRUCTOR NAME** | | **COURSE LANGUAGE**  **Turkish: **  **English: x** | | **Course Catagory** | | |
| Technical | Medical | Other(……) |
| **Prof.Dr.Güngör Kanbak** | |  | |  | 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 | 0 | 0 | 7,5 | COMPULSORY ELECTIVE  **x ** | |
|  | | | | | | | |
| **ASSESMENT CRITERIA** | | | | | | | |
| **MID-TERM** | | **ACTIVITY** | | | | **Quantity** | **Percentage (%)** |
| 1st Mid-Term | | | |  |  |
| 2 nd Mid- Term | | | |  |  |
| Quiz | | | |  |  |
| Homework | | | |  |  |
| Project | | | |  |  |
| Oral Exam | | | | 1 | 50 |
| Other (………) | | | |  |  |
| **FINAL** | | Quiz | | | |  |  |
| Homework | | | |  |  |
| Project | | | |  |  |
| Oral Exam | | | | **1** | **50** |
| Other(……………….) | | | |  |  |
| **MAKE-UP EXAM** | | Oral | | | Written | Oral and Written | Multiple Choice |
| **x** | | |  |  |  |
| **PREREQUISITE(S)** | |  | | | | | |
| **COURSE CONTENT** | | Macro- and micronutrients,the importance of nutrition on biochemical reactions, the importance of nutrition on ilness and human healthealth,additive nutrients | | | | | |
| **COURSE AIMS** | | To teach macro- and micronutrients,to teach the importance of nutrition and additive nutrients on different physiological and pathophysiological processes | | | | | |
| **COURSE OBJECTIVES** | | The role of nutrition on biochemistry subject to literature | | | | | |
| **TEXTBOOK(S)** | | Lecture notes | | | | | |
| **REFERENCES** | |  | | | | | |

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|  | **COURSE SYLLABUS** | |
| **WEEK** | **DATE** | **SUBJECTS/TOPICS** |
| 1 |  | Basic princible of Nutrition |
| 2 |  | Macronutrients |
| 3 |  | Micronutrients |
| 4 |  | Biochemical biomarkers in Nutrition |
| 5 |  | Biochemical biomarkers in Nutrition |
| 6 |  | İmmunonutrition |
| 7 |  | Nutrigenetics |
| 8 |  | The role of additive nutrients in human health |
| 9 |  | The role of additive nutrients in human health |
| 10 |  | Functional foods |
| 11 |  | Nutrition on cancer |
| 12 |  | Phytocehemicals |
| 13 |  | Phytocehemicals |
| 14 |  | Nutritional disorders Obesty and metabolic syndrome |
| 15 |  | Nutrition in Pediatry and Pregnancy |
| 16 |  | Nutrition and Aging |

**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 (……………………………………….) |  | **x** |  |
| 14 | other (……………………………………….) | **x** |  |  |

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| **Instructor Name**  **Prof. Dr. Güngör Kanbak**  **Sign** | **Date** |

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| **COURSE CODE:521403308** | | **DEPARTMENT: MEDİCAL BİOCHEMİSTRY** | | | |
| **COURSE NAME: METHODS OF ENZYME PURIFICATION** | | | | | |
| **INSTRUCTOR NAME**  Assist. Prof. Dr. Fahrettin Akyüz | **COURSE LANGUAGE**  **Turkish:** X  **English: ** | | **Course Catagory** | | |
| Technical | Medical | Other(……) |
|  |  | |  | 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 ****  Autumn X | 2 | 0 |  | 2 | 7,5 | COMPULSORY SELECTIVE   X | |
|  | | | | | | | |
| **ASSESMENT CRITERIA** | | | | | | | |
| **MID-TERM** | | | **ACTIVITY** | | | **Quantity** | **Percentage (%)** |
| 1st Mid-Term | | | 1 | 50 |
| 2 nd Mid- Term | | |  |  |
| Quiz | | |  |  |
| Homework | | |  |  |
| Project | | |  |  |
| Oral Exam | | |  |  |
| Other (………) | | |  |  |
| **FINAL** | | | Quiz | | |  |  |
| Homework | | |  |  |
| Project | | |  |  |
| Oral Exam | | |  |  |
| Other(written exam) | | | 1 | 50 |
| **MAKE-UP EXAM** | | | Oral | | Written | Oral and Written | Multiple Choice |
|  | | 1 |  |  |
| **PREREQUISITE(S)** | | |  | | | | |
| **COURSE CONTENT** | | | Techniques for enzyme purification techniques for distruption of tissues and cells, subcellular fractination, Basic principles column chromatography, electrophoresis, affinity chromatography. | | | | |
| **COURSE AIMS** | | | To explain necesssary for obtain puring enzymes in researchs | | | | |
| **COURSE OBJECTIVES** | | | To explain fundamental of enzyme extraction | | | | |
| **TEXTBOOK(S)** | | | Principles of Biochemistry, Albert Lehninger, fifth ed. 2009 Worth publishers, Newyork | | | | |
| **REFERENCES** | | | Biochemistry, Lubert Strayer, Sixth ed. 2007  W.H. Freewar and company, Newyork.  Medical Biochemistry, John Baynes, Marek H Dominiczek, Harcourt Brace and Company, Mosby, Basildon, 2004, England.Biochemistry, Dacid E. Metzler, Second ed. Harcourt academic press, 2001.Human Biochemistry, Onat T., Emerk K.., Sönmez E.Y., Palme Publishing, second ed., 2007, Ankara.Biochemistry, Gürdöl F., Ademoğlu E., Nobel publishing, Second ed. 2010.Basic methods of enzyme purification, Erarslan A., Kazan D., Denizci A.A:, Karahan N., TÜBİTAK, 2004. | | | | |

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|  | **COURSE SYLLABUS** | |
| **WEEK** | **DATE** | **SUBJECTS/TOPICS** |
| 1 |  | What is enzyme extraction |
| 2 |  | Distruption of tissues and cells |
| 3 |  | Choice of tissue |
| 4 |  | Distruption of mammalian tissues |
| 5 |  | Membrane bound enzymes |
| 6 |  | Protection of enzyme activity, control of temperature and pH |
| 7 |  | Protection against proteolysis, thiol groups and heavy metals |
| 8 |  | Mid – term exam |
| 9 |  | Effect of free radical, mechanical stress and dilution |
| 10 |  | Assays of enzymes in unfractionated cell- extracts |
| 11 |  | The presence of endogenous inhibitors |
| 12 |  | İnterference from other reactions |
| 13 |  | Subcellular fractionation |
| 14 |  | Spectrophotometric enzyme assay techniques |
| 15 |  | Chromatographic, electrophoretic and other techniques |
| 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 |  |

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| **Instructor Name**  **Sign** | **Date**  Assist. Prof. Dr. Fahrettin Akyüz |

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| **COURSE CODE:** **521403309** | | **DEPARTMENT: MEDICAL BIOCHEMİSTRY** | | | |
| **COURSE NAME: BİOCHEMİSTRY OF METABOLİC DİSORDERS** | | | | | |
| **INSTRUCTOR NAME** | **COURSE LANGUAGE**  **Turkish: **  **English: x** | | **Course Catagory** | | |
| Technical | Medical | Other(……) |
| **Prof.Dr.Güngör Kanbak** |  | |  | 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  Autumn x | 3 | 0 | 0 | 3 | 7,5 | COMPULSORY ELECTIVE  **x ** | |
|  | | | | | | | |
| **ASSESMENT CRITERIA** | | | | | | | |
| **MID-TERM** | | | **ACTIVITY** | | | **Quantity** | **Percentage (%)** |
| 1st Mid-Term | | |  |  |
| 2 nd Mid- Term | | |  |  |
| Quiz | | |  |  |
| Homework | | |  |  |
| Project | | |  |  |
| Oral Exam | | | 1 | 50 |
| Other (………) | | |  |  |
| **FINAL** | | | Quiz | | |  |  |
| Homework | | |  |  |
| Project | | |  |  |
| Oral Exam | | | **1** | **50** |
| Other(……………….) | | |  |  |
| **MAKE-UP EXAM** | | | Oral | | Written | Oral and Written | Multiple Choice |
| **x** | |  |  |  |
| **PREREQUISITE(S)** | | |  | | | | |
| **COURSE CONTENT** | | | Inborn errors of metabolism subject to metabolic deseases | | | | |
| **COURSE AIMS** | | | To teach, bochemical basis of new born errors because of one or more enzyme defects in anabolic and catabolic processes | | | | |
| **COURSE OBJECTIVES** | | | Enzyme defects in new born subject to metabolism teaching biyochemical pathways will teach. Furthermore, biochemical technics which scanning metabolic defects in new born will show | | | | |
| **TEXTBOOK(S)** | | | Lecture notes | | | | |
| **REFERENCES** | | |  | | | | |

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|  | **COURSE SYLLABUS** | |
| **WEEK** | **DATE** | **SUBJECTS/TOPICS** |
| 1 |  | General iformation subject to new born metabolic errors |
| 2 |  | Metabolic errors of amino acid and protein metabolism |
| 3 |  | Metabolic errors of amino acid and protein metabolism |
| 4 |  | Metabolic errors of carbohydrate metabolism |
| 5 |  | Metabolic errors of carbohydrate metabolism |
| 6 |  | Metabolic errors of lipid metabolism |
| 7 |  | Metabolic errors of lipid metabolism |
| 8 |  | Metabolic errors of purine and pyrimidine metabolism |
| 9 |  | Metabolic errors of urea cycle |
| 10 |  | Metabolic errors of sodium and water metabolism |
| 11 |  | Metabolic errors of plasma proteins and immunuglobulins metabolism |
| 12 |  | Biochemical test measurements in new born erros laboratuaries |
| 13 |  | National and international scanning programs |
| 14 |  | National and international scanning programs |
| 15 |  |  |
| 16 |  |  |

**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 (……………………………………….) |  | **x** |  |
| 14 | other (……………………………………….) | **x** |  |  |

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| **Instructor Name**  **Prof.Dr.Güngör Kanbak**  **Sign** | **Date** |

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| **COURSE CODE:** **521403312** | | **DEPARTMENT: MEDİCAL BİOCHEMİSTRY** | | | |
| **COURSE NAME: BİOCHEMİSTRY OF CANCER** | | | | | |
| **INSTRUCTOR NAME** | **COURSE LANGUAGE**  **Turkish: \***  **English:** | | **Course Catagory** | | |
| Technical | Medical | Other(……) |
| **\*\*\*** |  | |  | \* |  |

**COURSE LEVEL**

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| **PROPAEDEUTIC** | **M.SC.** | **Ph.D.** | **COURSE OF PROVINCE** |
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| **SEMESTER** | **WEEKLY COURSE PERIOD** | | | **COURSE OF** | | | |
| **Theoric** | **Practice** | **Laboratory** | **Credit** | **ECTS** | **TYPE** | |
| Spring ****  Autumn **X** | 2 | 1 |  | 2,5 | 7,5 | COMPULSORY ELECTIVE  **\*** | |
|  | | | | | | | |
| **ASSESMENT CRITERIA** | | | | | | | |
| **MID-TERM** | | | **ACTIVITY** | | | **Quantity** | **Percentage (%)** |
| 1st Mid-Term | | | 1 | 50 |
| 2 nd Mid- Term | | |  |  |
| Quiz | | |  |  |
| Homework | | |  |  |
| Project | | |  |  |
| Oral Exam | | |  |  |
| Other (………) | | |  |  |
| **FINAL** | | | Quiz | | |  |  |
| Homework | | |  |  |
| Project | | |  |  |
| Oral Exam | | |  |  |
| Final | | | 1 | 50 |
| **MAKE-UP EXAM** | | | Oral | | Written | Oral and Written | Multiple Choice |
|  | |  |  |  |
| **PREREQUISITE(S)** | | |  | | | | |
| **COURSE CONTENT** | | | Biochemical characteristics of cancer | | | | |
| **COURSE AIMS** | | | Teach the basics of biochemistry of cancer | | | | |
| **COURSE OBJECTIVES** | | | To teach the biochemical changes that occur in cancer incidence | | | | |
| **TEXTBOOK(S)** | | | Tumor Markers (Eleftherios P. Diamandis, Daniel W. Chan, …) | | | | |
| **REFERENCES** | | |  | | | | |

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|  | **COURSE SYLLABUS** | |
| **WEEK** | **DATE** | **SUBJECTS/TOPICS** |
| 1 |  | Characteristics of Cancer Cells |
| 2 |  | Factors that Cause Cancer |
| 3 |  | Biochemical Changes in Cancer Cell |
| 4 |  | Changes in the cell surface of malignant |
| 5 |  | MİD-TERM |
| 6 |  | Apopitozis |
| 7 |  | Angiogenesis |
| 8 |  | Stepwise Formation of Metastases |
| 9 |  | Metastasis Process |
| 10 |  | Laboratory Diagnosis of Cancer |
| 11 |  | FİNAL |
| 12 |  |  |
| 13 |  |  |
| 14 |  |  |
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| 16 |  |  |

**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 |  |  | **\*** |
| 2 | ask scientific questions and form hypothesis |  |  | **\*** |
| 3 | search and interpret scientific literature |  | **\*** |  |
| 4 | design and conduct experiments as well as analyze and interpret the data |  | **\*** |  |
| 5 | learn how to use the experimental equipment effectively | **\*** |  |  |
| 6 | function on multi-disciplinary teams |  |  | **\*** |
| 7 | identify, formulate, and solve medical problems |  |  | **\*** |
| 8 | use computer effectively both in conducting the experiments and analyzing the data |  | **\*** |  |
| 9 | understand the impact of experimental solutions on national and international sciences |  | **\*** |  |
| 10 | use effective written and oral communication/presentation skills | **\*** |  |  |
| 11 | get an understanding of professional and ethical responsibility | **\*** |  |  |
| 12 | get a recognition of the need for, and an ability to engage in lifelong learning |  | **\*** |  |
| 13 | other (……………………………………….) |  |  |  |
| 14 | other (……………………………………….) |  |  |  |

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| **Instructor Name**  **Sign**  **\*\*\*** | **Date** |

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| **COURSE CODE:** **521403313** | | **DEPARTMENT: MEDİCAL BİOCHEMİSTRY** | | | |
| **COURSE NAME: BİOCHEMİCAL FACTORS İN AGİNG** | |  | | | |
| **INSTRUCTOR NAME**  **Prof.Dr. Sema USLU** | **COURSE LANGUAGE**  **Turkish: X**  **English: ** | | **Course Catagory** | | |
| Technical | Medical | Other (…) |
|  |  | |  | **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 ****  Autumn **x** | **2** | **0** | | **0** | **2** | **7,5** | | | COMPULSORY ELECTIVE  ** X** | |
|  | | | | | | | | | | |
| **ASSESMENT CRITERIA** | | | | | | | | | | |
| **MID-TERM** | | | **ACTIVITY** | | | | **Quantity** | | | **Percentage (%)** |
| 1st Mid-Term | | | | **1** | | | **50** |
| 2 nd Mid- Term | | | |  | | |  |
| Quiz | | | |  | | |  |
| Homework | | | |  | | |  |
| Project | | | |  | | |  |
| Oral Exam | | | |  | | |  |
| Other (Written………) | | | |  | | |  |
| **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** | | | * Biochemical importance of aging, geriontology science, theories of aging, hormezis, changes in biochemical composition of tissue in elderly population and the effects of aging in results of biochemical analysis. | | | | | | | |
| **COURSE AIMS** | | | * The aim of this course is to provide graduate level knowledge on the molecular and biochemical mechanisms that underline the process of aging | | | | | | | |
| **COURSE OBJECTIVES** | | | * To be able to comprehend aging theories and the importance of biochemical changes in aging. * To be able to describe the biochemical features of aging | | | | | | | |
| **TEXTBOOK(S)** | | | * Murray RK, bender DA, Bothem KM, Kenelly PI, Rodwell VW, Weil PA. **Harper’s Illustrated Biochemistry**. 29th Edition. The Mc-Graw-Hill Componies, China, 2012. * Gürdöl F, Ademoğlu E. **Biyokimya**. 2. Baskı. Nobel Tıp Kitapevi., İstanbul, 2010 | | | | | | | |
| **REFERENCES** | | | Lecture notes | | | | | | | |

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|  | **COURSE SYLLABUS** | |
| **WEEK** | **DATE** | **SUBJECTS/TOPICS** |
| 1 |  | Biochemical importance of aging |
| 2 |  | Geriontology science and history |
| 3 |  | Theories of aging |
| 4 |  | Programmed senescence theories |
| 5 |  | Telomeric theory |
| 6 |  | Endocrin theory |
| 7 |  | Immunologic theory |
| 8 |  | 1st Mid-Term |
| 9 |  | Wear and tear theories |
| 10 |  | Cross linking theory |
| 11 |  | Free-radical theory |
| 12 |  | Somatic mutation theory |
| 13 |  | Hormezis |
| 14 |  | Changes in biochemical composition of tissues in aging |
| 15 |  | The effects of aging on results of biochemical analysis |
| 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 | The ability to recognize the basic consepts in medical education |  |  | **X** |
| 14 |  |  |  |  |

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| **Instructor Name**  **Sign**  **Prof.Dr.Sema USLU** | | | **Date**  **02.09.2015** | | | | |
| **COURSE CODE:** | **521403314** | | | **DEPARTMENT: MEDİCAL BİOCHEMİSTRY** | | | |
| **COURSE NAME: OXİDATİVE STRES-FREE RADİCALS** | | | |  | | | |
| **INSTRUCTOR NAME**  **Prof.Dr. Sema USLU** | | **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** | | **0** | **3** | **7,5** | COMPULSORY ELECTIVE  ** X** | |
|  | | | | | | | | |
| **ASSESMENT CRITERIA** | | | | | | | | |
| **MID-TERM** | | | **ACTIVITY** | | | | **Quantity** | **Percentage (%)** |
| 1st Mid-Term | | | | 1 | 50 |
| 2 nd Mid- Term | | | |  |  |
| Quiz | | | |  |  |
| Homework | | | |  |  |
| Project | | | |  |  |
| Oral Exam | | | |  |  |
| Other (Written………) | | | |  |  |
| **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** | | | * To contained is the structures physical and chemical characteristics, exogen and endogen sources and metabolites of free radicals and cellular damages such as lipid peroksidation, protein, carbohydrate, nucleic acits and DNA damage and their roles at the development of oksidative stres and diseases and biochemical analysis methods. | | | | | |
| **COURSE AIMS** | | | * The aim of this course is to discuss structures, sources, pathophysiological effects of free radicals and their research methods. | | | | | |
| **COURSE OBJECTIVES** | | | * To explain the basic concepts related to free radicals * To be explain the roles of free radicals at the development of the oxidative stres and several diseases * To provide necessary knowledge and skills for free radical measurement process. | | | | | |
| **TEXTBOOK(S)** | | | * Murray RK, bender DA, Bothem KM, Kenelly PI, Rodwell VW, Weil PA. **Harper’s Illustrated Biochemistry**. 29th Edition. The Mc-Graw-Hill Componies, China, 2012. * Nelson DL, Cox MM. **Lehninger Biyokimyanın İlkeleri.** 5.Baskı. Çeviri Ed:Elçin MY. Palme Yayıncılık, Ankara, 2013. * Gürdöl F. **Tıbbi Biyokimya**. Nobel Tıp Kitapevi, İstanbul, 2015. | | | | | |
| **REFERENCES** | | | Lecture notes | | | | | |

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|  | **COURSE SYLLABUS** | |
| **WEEK** | **DATE** | **SUBJECTS/TOPICS** |
| 1 |  | Classification of carbohydrates. Monosaccharides |
| 2 |  | Disaccharides and polysaccaharides |
| 3 |  | Glycolysis and the catabolism of other hexoses |
| 4 |  | Pyruvate metabolism |
| 5 |  | The Citric acid cycle and HMP pathway |
| 6 |  | Gluconeogenesis and glycogenesis |
| 7 |  | Classification of lipids and fatty acids |
| 8 |  | 1st Mid-Term |
| 9 |  | Lipoproteins and lipoprotein metabolism |
| 10 |  | Oxidation of fatty acids |
| 11 |  | Lipid biosynthesis (Fatty acids, cholesterol, triacylglycerols) |
| 12 |  | Water -soluble vitamines |
| 13 |  | Fat-soluble vitamines |
| 14 |  | Metabolism and biofunctions of macroelements |
| 15 |  | Metabolism and biofunctions of microelements |
| 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 | The ability to recognize the basic consepts in medical education |  |  | **X** |
| 14 |  |  |  |  |

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| **Instructor Name**  **Sign**  **Prof.Dr.Sema USLU** | | **Date**  **02.09.2015** | | | | |
| **COURSE CODE:** **521403315** | | | **DEPARTMENT: MEDİCAL BİOCHEMİSTRY** | | | |
| **COURSE NAME: PATHOPHYSİOLOGY OF DİABETES MELLİTUS** | | | | | | |
| **INSTRUCTOR NAME**  Prof.Dr. Aysen AKALIN | **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 | 50 |
| 2 nd Mid- Term | | |  |  |
| Quiz | | |  |  |
| Homework | | |  |  |
| Project | | |  |  |
| Oral Exam | | |  |  |
| Other (………) | | |  |  |
| **FINAL** | | | Quiz | | |  |  |
| Homework | | |  |  |
| Project | | |  |  |
| Oral Exam | | |  |  |
| Other(……………….) | | | 1 | 50 |
| **MAKE-UP EXAM** | | | Oral | | Written | Oral and Written | Multiple Choice |
|  | |  |  |  |
| **PREREQUISITE(S)** | | |  | | | | |
| **COURSE CONTENT** | | | Diabetes mellitus (DM) is awidespread disease in population. İn thıs course the bıochemical mechanisms which cause DM and the laboratory tests in diagnosis and follow-up of disease will be discussed. | | | | |
| **COURSE AIMS** | | | The causes of DM, Classification and the mechanisms of disease, related laboratory tests. | | | | |
| **COURSE OBJECTIVES** | | |  | | | | |
| **TEXTBOOK(S)** | | | * [Peter A. Mayes](http://www.amazon.com/s/ref=ntt_athr_dp_sr_1/189-1561636-9233633?_encoding=UTF8&field-author=Peter%20A.%20Mayes&ie=UTF8&search-alias=books&sort=relevancerank), [Robert K. Murray](http://www.amazon.com/Robert-K.-Murray/e/B0034OONIY/ref=ntt_athr_dp_pel_2/189-1561636-9233633)[Daryl K. Granner](http://www.amazon.com/s/ref=ntt_athr_dp_sr_3/189-1561636-9233633?_encoding=UTF8&field-author=Daryl%20K.%20Granner&ie=UTF8&search-alias=books&sort=relevancerank), (2004). **Harper's Biochemistry.** 25th Edition. United States of America  Burtis, CA. & Ashwood, ER.(2006). TIETZ Textbook of Clinical Chemistry.4th Edition.Lehninger, Nelson, DL. & Cox, MM. (2000). Principles of Biochemistry. Third EditionOnat T, Emerk K, Sözmen EY, (2006) İnsan Biyokimyası Palme Yayıncılık  * Harvey RA, (2008)[**Biochemistry (Lippincott's Illustrated Reviews Series**)](http://www.amazon.com/Biochemistry-Lippincotts-Illustrated-Reviews-Richard/dp/160831412X/ref=sr_1_1?s=books&ie=UTF8&qid=1352716911&sr=1-1&keywords=lippincott+biochemistry) 5 th Edition * [Gürdöl](http://www.nobeltip.com/tr/products.asp?ID=22&AID=23061&title=Prof.Dr.%20Figen%20Gürdöl&sort=&strSearch=) F,  [Ademoğlu](http://www.nobeltip.com/tr/products.asp?ID=22&AID=25127&title=%20Prof.Dr.%20Evin%20Ademoğlu&sort=&strSearch=) E, (2010) **Biyokimya,** Nobel Tıp Kitapevi | | | | |
| **REFERENCES** | | |  | | | | |

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| --- | --- | --- |
|  | **COURSE SYLLABUS** | |
| **WEEK** | **DATE** | **SUBJECTS/TOPICS** |
| 1 |  | Definition and Types of Diabetes Mellitus |
| 2 |  | Diagnostic Criteria of Diabetes Mellitus |
| 3 |  | Laboratory in the Diagnosis of Diabetes Mellitus |
| 4 |  | Metabolism in Diabetes Mellitus |
| 5 |  | Biochemical Pathways in Diabetes Mellitus |
| 6 |  | Midterm Exam |
| 7 |  | Treatment of Diabetes Mellitus |
| 8 |  | Complications of Diabetes Mellitus |
| 9 |  | Follow-up on The Diagnosis of Diabetes Mellitus |
| 10 |  | Role of Laboratory in Follow-up of Diabetes Mellitus |
| 11 |  |  |
| 12 |  |  |
| 13 |  |  |
| 14 |  |  |
| 15 |  | Final Exam |
| 16 |  |  |

**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 (……………………………………….) | **X** |  |  |
| 14 | other (……………………………………….) |  | **X** |  |

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| **Instructor Name**  **Sign**  **Prof.Dr. Aysen AKALIN** | **Date**  **09.07.2014** |

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| --- | --- | --- | --- | --- | --- |
| **COURSE CODE: 521403316** | | **DEPARTMENT: MEDİCAL BİOCHEMİSTRY** | | | |
| **COURSE NAME: ADVANCED METABOLİSM 1** | | | | | |
| **INSTRUCTOR NAME**  Assist Prof Dr Fahrettin Akyüz | **COURSE LANGUAGE**  **Turkish: X**  **English: ** | | **Course Catagory** | | |
| Technical | Medical | Other(……) |
|  |  | |  | 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 ****  Autumn X | 3 | 0 | |  | 3 | 7,5 | COMPULSORY ELECTIVE  X **** | |
|  | | | | | | | | |
| **ASSESMENT CRITERIA** | | | | | | | | |
| **MID-TERM** | | | | **ACTIVITY** | | | **Quantity** | **Percentage (%)** |
| 1st Mid-Term | | | 1 | 50 |
| 2 nd Mid- Term | | |  |  |
| Quiz | | |  |  |
| Homework | | |  |  |
| Project | | |  |  |
| Oral Exam | | |  |  |
| Other (………) | | |  |  |
| **FINAL** | | | | Quiz | | |  |  |
| Homework | | |  |  |
| Project | | |  |  |
| Oral Exam | | |  |  |
| Other(……………….) | | | 1 | 50 |
| **MAKE-UP EXAM** | | | | Oral | | Written | Oral and Written | Multiple Choice |
|  | | 1 |  |  |
| **PREREQUISITE(S)** | | | |  | | | | |
| **COURSE CONTENT** | | | | The starting materials to metabolism, digestion, The reülation of enzimatic activity and metabolism, The organizaton of metabolism | | | | |
| **COURSE AIMS** | | | | To understand principles of metabolic reactions, To know Fundamentals of anabolic and katabolic reactions | | | | |
| **COURSE OBJECTIVES** | | | | To give information about process of metabolizma | | | | |
| **TEXTBOOK(S)** | | | | Lehninger, Biyokimyanın ilkeleri,Çev ed.Murat Elçin 2013 | | | | |
| **REFERENCES** | | | | Biochemistry, Lubert Strayer, Sixth ed. 2007  W.H. Freewar and company, Newyork.  Medical Biochemistry, John Baynes, Marek H Dominiczek, Harcourt Brace and Company, Mosby, Basildon, 2004, England.Biochemistry, Dacid E. Metzler, Second ed. Harcourt academic press, 2001.Human Biochemistry, Onat T., Emerk K.., Sönmez E.Y., Palme Publishing, second ed., 2007, Ankara. | | | | |
|  | **COURSE SYLLABUS** | | | | | | | |
| **WEEK** | **DATE** | | **SUBJECTS/TOPICS** | | | | | |
| 1 |  | | Digestions and importance | | | | | |
| 2 |  | | Sources of energy | | | | | |
| 3 |  | | The Regülation of enzymatic activity and metabolism | | | | | |
| 4 |  | | Hormons and receptors | | | | | |
| 5 |  | | Transferring group reactions | | | | | |
| 6 |  | | İzomerization and condensation reactions | | | | | |
| 7 |  | | Coenzymes, oxidation –reduction reactions | | | | | |
| 8 |  | | Mid- term exam | | | | | |
| 9 |  | | Transition metals in catalysis and electron transport | | | | | |
| 10 |  | | Fermentation, life without oxygen | | | | | |
| 11 |  | | Oxidative phosphorylation and hydroxylation | | | | | |
| 12 |  | | Macromolecules associate | | | | | |
| 13 |  | | Vitamins of metabolic reactions | | | | | |
| 14 |  | | Specialized tissues and organs | | | | | |
| 15 |  | | General information about anabolism and catabolism | | | | | |
| 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 | other (……………………………………….) |  |  | **X** |
| 14 | other (……………………………………….) |  |  | **X** |

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| **Instructor Name**  **Sign** | **Date** |

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| **COURSE CODE:** **521404301** | | **DEPARTMENT: MEDİCAL BİOCHEMİSTRY** | | | |
| **COURSE NAME: ANORGANİC BİOELEMENTS** | | | | | |
| **INSTRUCTOR NAME**  **Prof.Dr.Sema USLU** | **COURSE LANGUAGE**  **Turkish: **  **English: x** | | **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 | 0 | | - | 2 | 7,5 | COMPULSORY ELECTIVE  ** x** | |
|  | | | | | | | | |
| **ASSESMENT CRITERIA** | | | | | | | | |
| **MID-TERM** | | | **ACTIVITY** | | | | **Quantity** | **Percentage (%)** |
| 1st Mid-Term | | | | 1 | %50 |
| 2 nd Mid- Term | | | |  |  |
| Quiz | | | |  |  |
| Homework | | | |  |  |
| Project | | | |  |  |
| Oral Exam | | | |  |  |
| Other (………) | | | |  |  |
| **FINAL** | | | Quiz | | | |  |  |
| Homework | | | |  |  |
| Project | | | |  |  |
| Oral Exam | | | |  |  |
| Other(……………….) | | | | **1** | **%50** |
| **MAKE-UP EXAM** | | | Oral | | | Written | Oral and Written | Multiple Choice |
|  | | |  |  |  |
| **PREREQUISITE(S)** | | |  | | | | | |
| **COURSE CONTENT** | | | To discuss chemistry, dietery sources, absorption, transport, metabolism, functions, excretion,  and analytical technicues of each anorganic bioelements (sodium, potassium, chloride,  bicarbonate, magnessium, calcium, phosphate, iron, copper, zinc, selenium, iodine,fluoride,  manganese, molibdenium, cocalt, chromium and toxic metals) | | | | | |
| **COURSE AIMS** | | | To understand the clinical significance and functions of anorganic bioelements in human organizm. | | | | | |
| **COURSE OBJECTIVES** | | | Significance and functions each of anorganic elements in human body. Discuss the analytical technicues of major, trace and toxic anorganic bioelements | | | | | |
| **TEXTBOOK(S)** | | | Lecture notes | | | | | |
| **REFERENCES** | | | Burtis CA, Ashwood ER, Bruns DE,. 2008. Tietz Fundamentals of Clinical Chemistry.Ssixth edition, Elsivier Inc. Philadelphia, USA | | | | | |

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|  | **COURSE SYLLABUS** | |
| **WEEK** | **DATE** | **SUBJECTS/TOPICS** |
| 1 |  | Functions of Periodic table and Anorganic bioelements |
| 2 |  | Atom, ion and molecule concepts. International Units |
| 3 |  | Classification Anorganic bioelements |
| 4 |  | The Analitical techniques used to assess of Anorganic bioelements in human body fluids |
| 5 |  | Tecnique of Flame Emission spectrophotometry |
| 6 |  | Tecnique of Ion selctive electrode (ISE) |
| 7 |  | Electrolytes (sodium, potassium and chloride) |
| 8 |  | 1st Mid-Term |
| 9 |  | Tecnique of osmometre and Plasma and urine osmolality |
| 10 |  | Elements of bone metabolism (calcium, magnessium, phosphore) |
| 11 |  | Tecnique of Atomic Absorption Spectrophotometry (AAS) |
| 12 |  | Trace elements (Iron and Copper) |
| 13 |  | Trace elements (selenium and zinc) |
| 14 |  | Trace elements (molibdenium, manganese, fluoride, iodine, cobalt and chromium) |
| 15 |  | Toxic elements (aluminium, arcenic, cadmium, lead) |
| 16 |  | Toxic elements (mercury, thallium, antimony, beryllium, nickel, silicon, platinum, silver) |

**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 (……………………………………….) |  |  |  |
| 14 | other (……………………………………….) |  |  |  |

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| **Instructor Name**  **Sign**  **Prof.Dr.Sema USLU** | **Date** |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **COURSE CODE:** **521404302** | | **DEPARTMENT: MEDICAL BIOCHEMİSTRY** | | | |
| **COURSE NAME: BİOENERGETİCS II** | | | | | |
| **INSTRUCTOR NAME** | **COURSE LANGUAGE**  **Turkish: **  **English: x** | | **Course Catagory** | | |
| Technical | Medical | Other(……) |
| **Prof.Dr.Güngör Kanbak** |  | |  | 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 **x**  Autumn | 2 | 0 | | 0 | 2 | 7,5 | COMPULSORY ELECTIVE  **x ** | |
|  | | | | | | | | |
| **ASSESMENT CRITERIA** | | | | | | | | |
| **MID-TERM** | | | **ACTIVITY** | | | | **Quantity** | **Percentage (%)** |
| 1st Mid-Term | | | |  |  |
| 2 nd Mid- Term | | | |  |  |
| Quiz | | | |  |  |
| Homework | | | |  |  |
| Project | | | |  |  |
| Oral Exam | | | | 1 | 50 |
| Other (………) | | | |  |  |
| **FINAL** | | | Quiz | | | |  |  |
| Homework | | | |  |  |
| Project | | | |  |  |
| Oral Exam | | | | **1** | **50** |
| Other(……………….) | | | |  |  |
| **MAKE-UP EXAM** | | | Oral | | | Written | Oral and Written | Multiple Choice |
| **x** | | |  |  |  |
| **PREREQUISITE(S)** | | |  | | | | | |
| **COURSE CONTENT** | | | The change of energy on chemical reactions in biological systems in terms of anabolic and catabolic processes | | | | | |
| **COURSE AIMS** | | | To teach cellular functions subject to ATP (muscle contraction,active transport etc.), to teach electron transport and oxidative transport | | | | | |
| **COURSE OBJECTIVES** | | | To grasp ATP synthesis and molecular functions of ATP subject to national and international literature | | | | | |
| **TEXTBOOK(S)** | | | Lecture notes | | | | | |
| **REFERENCES** | | |  | | | | | |

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|  | **COURSE SYLLABUS** | |
| **WEEK** | **DATE** | **SUBJECTS/TOPICS** |
| 1 |  | Muscle contraction |
| 2 |  | Muscle contraction |
| 3 |  | Active transport from biomembranes |
| 4 |  | Active transport from biomembranes |
| 5 |  | The synthesis of new molecules via ATP molecule |
| 6 |  | Substrate phosphorilation |
| 7 |  | Biological oxidations |
| 8 |  | Electron transport |
| 9 |  | Electron transport |
| 10 |  | Oxidative phosphorilation |
| 11 |  | Oxidative phosphorilation |
| 12 |  | To plan one research Project subject to bioenergetics |
| 13 |  | To plan one research Project subject to bioenergetics |
| 14 |  |  |
| 15 |  |  |
| 16 |  |  |

**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 (……………………………………….) |  | **x** |  |
| 14 | other (……………………………………….) |  | **x** |  |

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| **Instructor Name**  **Prof.Dr.Güngör Kanbak**  **Sign** | **Date** |

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| **COURSE CODE:** **521404303** | | **DEPARTMENT: MEDICAL BIOCHEMİSTRY** | | | |
| **COURSE NAME: XENOBİOTİC BİOTRANSFORMATİON AND TRANSFORMATİON ENZYMES** | | | | | |
| **INSTRUCTOR NAME** | **COURSE LANGUAGE**  **Turkish: **  **English: x** | | **Course Catagory** | | |
| Technical | Medical | Other(……) |
| **Prof.Dr.Güngör Kanbak** |  | |  | 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 X  Autumn | 2 | 0 | 0 | 2 | 7,5 | COMPULSORY ELECTIVE  **x ** | |
|  | | | | | | | |
| **ASSESMENT CRITERIA** | | | | | | | |
| **MID-TERM** | | | **ACTIVITY** | | | **Quantity** | **Percentage (%)** |
| 1st Mid-Term | | |  |  |
| 2 nd Mid- Term | | |  |  |
| Quiz | | |  |  |
| Homework | | |  |  |
| Project | | |  |  |
| Oral Exam | | | 1 | 50 |
| Other (………) | | |  |  |
| **FINAL** | | | Quiz | | |  |  |
| Homework | | |  |  |
| Project | | |  |  |
| Oral Exam | | | **1** | **50** |
| Other(……………….) | | |  |  |
| **MAKE-UP EXAM** | | | Oral | | Written | Oral and Written | Multiple Choice |
| **x** | |  |  |  |
| **PREREQUISITE(S)** | | |  | | | | |
| **COURSE CONTENT** | | | Xenobiotics and molecular structures,xenobiotic biotransformations and enzymes | | | | |
| **COURSE AIMS** | | | To teach xenobiotics enter to body and these metabolism.To teach the toxic effects of xenobiotics and remove these xenobiotics. To teach enzymes during xenobiotic metabolism | | | | |
| **COURSE OBJECTIVES** | | | To teach investigate xenobiotic concept, to grasp xenobiotic metabolism and enzymes in terms of literature | | | | |
| **TEXTBOOK(S)** | | | Lecture notes | | | | |
| **REFERENCES** | | |  | | | | |

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|  | **COURSE SYLLABUS** | |
| **WEEK** | **DATE** | **SUBJECTS/TOPICS** |
| 1 |  | Description of xenobiotics and general informations |
| 2 |  | Object to biotansformation |
| 3 |  | Biotransformation enzymes and localisations |
| 4 |  | Phase 1 reactions |
| 5 |  | Phase 1 reactions |
| 6 |  | Phase 2 reactions |
| 7 |  | Phase 2 reactions |
| 8 |  | Toxic effects of xenobiotics |
| 9 |  | Chemical carconogen molecules |
| 10 |  | Epoxidation |
| 11 |  | Nutritional terror and xenobiotics |
| 12 |  | Induction of xenobiotic enzymes |
| 13 |  |  |
| 14 |  |  |
| 15 |  |  |
| 16 |  |  |

**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 (……………………………………….) |  | **x** |  |
| 14 | other (……………………………………….) | **x** |  |  |

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| --- | --- |
| **Instructor Name**  **Prof.Dr.Güngör Kanbak**  **Sign** | **Date** |

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| **COURSE CODE:** **521404304** | | **DEPARTMENT:** **MEDİCAL BİOCHEMİSTRY** | | | |
| **COURSE NAME: TİSSUE BİOCHEMİSTRY** | | | | | |
| **INSTRUCTOR NAME**  Prof.Dr. Özkan ALATAŞ | **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 | 50 |
| 2 nd Mid- Term | | |  |  |
| Quiz | | |  |  |
| Homework | | |  |  |
| Project | | |  |  |
| Oral Exam | | |  |  |
| Other (………) | | |  |  |
| **FINAL** | | | Quiz | | |  |  |
| Homework | | |  |  |
| Project | | |  |  |
| Oral Exam | | |  |  |
| Other(……………….) | | | 1 | 50 |
| **MAKE-UP EXAM** | | | Oral | | Written | Oral and Written | Multiple Choice |
|  | |  |  |  |
| **PREREQUISITE(S)** | | |  | | | | |
| **COURSE CONTENT** | | | The specialized biochemical systems combined with functions of erythrocytes and other blood cells, brain tissue and the nervous system, connective tissue and muscle tissue, bone tissue, endothelium, eye tissue, adipose tissue and liver tissue will be discussed. | | | | |
| **COURSE AIMS** | | | The purpose of this course is to examine the biochemical mechanisms involved in specialized tissues of human organism. | | | | |
| **COURSE OBJECTIVES** | | |  | | | | |
| **TEXTBOOK(S)** | | | * [Peter A. Mayes](http://www.amazon.com/s/ref=ntt_athr_dp_sr_1/189-1561636-9233633?_encoding=UTF8&field-author=Peter%20A.%20Mayes&ie=UTF8&search-alias=books&sort=relevancerank), [Robert K. Murray](http://www.amazon.com/Robert-K.-Murray/e/B0034OONIY/ref=ntt_athr_dp_pel_2/189-1561636-9233633)[Daryl K. Granner](http://www.amazon.com/s/ref=ntt_athr_dp_sr_3/189-1561636-9233633?_encoding=UTF8&field-author=Daryl%20K.%20Granner&ie=UTF8&search-alias=books&sort=relevancerank), (2004). **Harper's Biochemistry.** 25th Edition. United States of America  Burtis, CA. & Ashwood, ER.(2006). TIETZ Textbook of Clinical Chemistry.4th Edition.Lehninger, Nelson, DL. & Cox, MM. (2000). Principles of Biochemistry. Third EditionOnat T, Emerk K, Sözmen EY, (2006) İnsan Biyokimyası Palme Yayıncılık  * Harvey RA, (2008)[**Biochemistry (Lippincott's Illustrated Reviews Series**)](http://www.amazon.com/Biochemistry-Lippincotts-Illustrated-Reviews-Richard/dp/160831412X/ref=sr_1_1?s=books&ie=UTF8&qid=1352716911&sr=1-1&keywords=lippincott+biochemistry) 5 th Edition * [Gürdöl](http://www.nobeltip.com/tr/products.asp?ID=22&AID=23061&title=Prof.Dr.%20Figen%20Gürdöl&sort=&strSearch=) F,  [Ademoğlu](http://www.nobeltip.com/tr/products.asp?ID=22&AID=25127&title=%20Prof.Dr.%20Evin%20Ademoğlu&sort=&strSearch=) E, (2010) **Biyokimya,** Nobel Tıp Kitapevi | | | | |
| **REFERENCES** | | |  | | | | |

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|  | **COURSE SYLLABUS** | |
| **WEEK** | **DATE** | **SUBJECTS/TOPICS** |
| 1 |  | Erythrocytes |
| 2 |  | Leukocytes |
| 3 |  | Platelets |
| 4 |  | Endothelial cells |
| 5 |  | Immune system |
| 6 |  | Muscle Tissue |
| 7 |  | Nervous System and Brain Tissue |
| 8 |  | Midterm Exam |
| 9 |  | Eye Tissue |
| 10 |  | Gastrointestinal System |
| 11 |  | Epithelium and connective tissue |
| 12 |  | Bone Tissue |
| 13 |  | Adipose Tissue |
| 14 |  | Liver Tissue |
| 15 |  | Final Exam |
| 16 |  |  |

**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 (……………………………………….) | **X** |  |  |
| 14 | other (……………………………………….) |  | **X** |  |

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| **Instructor Name**  **Sign**  Prof.Dr. Özkan ALATAŞ | **Date** |

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| **COURSE CODE:** **521404305** | | **DEPARTMENT: MEDİCALBİOCHEMİSTRY** | | | |
| **COURSE NAME: KINETICS OF ENZYMES** | | | | | |
| **INSTRUCTOR NAME**  Assist. Prof.Dr. Fahrettin Akyüz | **COURSE LANGUAGE**  **Turkish:** X  **English: ** | | **Course Catagory** | | |
| Technical | Medical | Other(……) |
|  |  | |  | 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 X  Autumn **** | 2 | 0 |  | 2 | 7,5 | COMPULSORY SELECTIVE  **** X | |
|  | | | | | | | |
| **ASSESMENT CRITERIA** | | | | | | | |
| **MID-TERM** | | | **ACTIVITY** | | | **Quantity** | **Percentage (%)** |
| 1st Mid-Term | | | 1 | 50 |
| 2 nd Mid- Term | | |  |  |
| Quiz | | |  |  |
| Homework | | |  |  |
| Project | | |  |  |
| Oral Exam | | |  |  |
| Other (………) | | |  |  |
| **FINAL** | | | Quiz | | |  |  |
| Homework | | |  |  |
| Project | | |  |  |
| Oral Exam | | |  |  |
| Other(written exam) | | | 1 | 50 |
| **MAKE-UP EXAM** | | | Oral | | Written | Oral and Written | Multiple Choice |
|  | | 1 |  |  |
| **PREREQUISITE(S)** | | |  | | | | |
| **COURSE CONTENT** | | | What are enzymes kinetics?, one substrate reactions of enzymes, kinetics of enzyme inhibitions, reactions of involving two substrates enzyme, mechanisms of involving two substrate enzyme reactions, inhibitions of substrate and product, activation of enzymes, effect of temperature and pH on activation of enzymes, problems with all of them. | | | | |
| **COURSE AIMS** | | | It is explain with problems that reactions, kinetics, inhibitions and activations of enzymes | | | | |
| **COURSE OBJECTIVES** | | | It is explain importance of enzymes in living cells and different in between enzyme and catlyzer | | | | |
| **TEXTBOOK(S)** | | | Principles of Biochemistry, Albert Lehninger, fifth ed. 2009 Worth publishers, Newyork | | | | |
| **REFERENCES** | | | Biochemistry, Lubert Strayer, Sixth ed. 2007  W.H. Freewar and company, Newyork.  Medical Biochemistry, John Baynes, Marek H Dominiczek, Harcourt Brace and Company, Mosby, Basildon, 2004, England.Biochemistry, Dacid E. Metzler, Second ed. Harcourt academic press, 2001.Human Biochemistry, Onat T., Emerk K.., Sönmez E.Y., Palme Publishing, second ed., 2007, Ankara.Biochemistry, Gürdöl F., Ademoğlu E., Nobel publishing, Second ed. 2010.Notes of enzyme kinetics, Erarslan A. TÜBİTAK,2003. | | | | |

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|  | **COURSE SYLLABUS** | |
| **WEEK** | **DATE** | **SUBJECTS/TOPICS** |
| 1 |  | What is enzyme kinetic? |
| 2 |  | İnvolving one substrate reactions, problems |
| 3 |  | İnhibitions of enzymes, kinetic of reversible inhibition |
| 4 |  | Kinetic of irrversible inhibition, exercises |
| 5 |  | Reactions of involving two substrate enzymes |
| 6 |  | Formation complexes in reactions of involving two substrates enzymes |
| 7 |  | Exercises of two substrates enzymes |
| 8 |  | Mid- term exam |
| 9 |  | İnhibition in two substrates enzyme reactions |
| 10 |  | İnhibition of substrate and product |
| 11 |  | Activation of enzymes, exercises |
| 12 |  | Mechanisms of effect of temperature on enzymes activities |
| 13 |  | Mechanisms of effect of pH on enzyme activities |
| 14 |  | Enzyme activities, temperatue, pH problems |
| 15 |  | Effect of other factors on reaction velocities |
| 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 |  |

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| **Instructor Name**  **Sign** | **Date**  Assist. Prof.Dr. Fahrettin Akyüz |

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| **COURSE CODE:** **521404306** | | **DEPARTMENT:** MEDİCAL BİOCHEMİSTRY | | | |
| **COURSE NAME: IMMUNE SYSTEM BİOCHEMİSTRY AND İMMUNOASSAY** | | | | | |
| **INSTRUCTOR NAME**  Prof.Dr. Özkan ALATAŞ | **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 | 0 | 3 | 7,5 | COMPULSORY ELECTIVE  **** X | |
|  | | | | | | | |
| **ASSESMENT CRITERIA** | | | | | | | |
| **MID-TERM** | | | **ACTIVITY** | | | **Quantity** | **Percentage (%)** |
| 1st Mid-Term | | | 1 | 50 |
| 2 nd Mid- Term | | |  |  |
| Quiz | | |  |  |
| Homework | | |  |  |
| Project | | |  |  |
| Oral Exam | | |  |  |
| Other (………) | | |  |  |
| **FINAL** | | | Quiz | | |  |  |
| Homework | | |  |  |
| Project | | |  |  |
| Oral Exam | | |  |  |
| Other(……………….) | | | 1 | 50 |
| **MAKE-UP EXAM** | | | Oral | | Written | Oral and Written | Multiple Choice |
|  | |  |  |  |
| **PREREQUISITE(S)** | | |  | | | | |
| **COURSE CONTENT** | | | After giving the description of terms immune system, immunity and immun response, lymphoctes, mononukleer phagocytes, dendritic cells, granulocytes and lymphoid tissue will be discussed. | | | | |
| **COURSE AIMS** | | | The aim of this course is to teach the properties and functions of human system and to understand the laboratory test based on immun reactions. | | | | |
| **COURSE OBJECTIVES** | | |  | | | | |
| **TEXTBOOK(S)** | | | Abbas AK., Lichtman AH., Pober JS., (1994) Cellular and Molecular Immunology, W.B. Saunders, International Edition  * Burtis, CA., Ashwood, ER., 2005. **Tietz Fundamentals of Clinical Chemistry**, Saunders Company, * Mehmetoğlu İ, (2007) **Klinik Laboratuvar El Kitabı**, Nobel Tıp Kitapevi | | | | |
| **REFERENCES** | | |  | | | | |

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|  | **COURSE SYLLABUS** | |
| **WEEK** | **DATE** | **SUBJECTS/TOPICS** |
| 1 |  | Cells and Tissues Related to Immune System |
| 2 |  | Types of Immune Response |
| 3 |  | Antibody and Antigen Properties |
| 4 |  | Majorhistocompatibiliy Complexes |
| 5 |  | Antigen Recognition and Presentation of T-lymphocytes |
| 6 |  | Maturation of T-lymphocytes |
| 7 |  | Activation of B Cells and Antibody Formation |
| 8 |  | Midterm Exam |
| 9 |  | Inflammation |
| 10 |  | Regulation of Immune Response |
| 11 |  | Cytokines |
| 12 |  | Compleman System |
| 13 |  | Autoimmune Diseases |
| 14 |  | Tissue and Organ Transplantation |
| 15 |  | Final Exam |
| 16 |  |  |

**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 (……………………………………….) | **X** |  |  |
| 14 | other (……………………………………….) |  | **X** |  |

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| **Instructor Name**  **Sign**  **Prof.Dr. Özkan ALATAŞ** | **Date** |

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| **COURSE CODE:** **521404307** | | **DEPARTMENT: MEDİCAL BİOCHEMİSTRY** | | | |
| **COURSE NAME: MEASUREMENT TECHNİQUES** | | | | | |
| **INSTRUCTOR NAME** | **COURSE LANGUAGE**  **Turkish: \***  **English:** | | **Course Catagory** | | |
| Technical | Medical | Other(……) |
| **\*\*\*** |  | |  | \* |  |

**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 |  | 3 | 7,5 | COMPULSORY ELECTIVE  **\*** | |
|  | | | | | | | |
| **ASSESMENT CRITERIA** | | | | | | | |
| **MID-TERM** | | | **ACTIVITY** | | | **Quantity** | **Percentage (%)** |
| 1st Mid-Term | | | 1 | 50 |
| 2 nd Mid- Term | | |  |  |
| Quiz | | |  |  |
| Homework | | |  |  |
| Project | | |  |  |
| Oral Exam | | |  |  |
| Other (………) | | |  |  |
| **FINAL** | | | Quiz | | |  |  |
| Homework | | |  |  |
| Project | | |  |  |
| Oral Exam | | |  |  |
| Final | | | 1 | 50 |
| **MAKE-UP EXAM** | | | Oral | | Written | Oral and Written | Multiple Choice |
|  | |  |  |  |
| **PREREQUISITE(S)** | | |  | | | | |
| **COURSE CONTENT** | | | Laboratory measurement methods | | | | |
| **COURSE AIMS** | | | Measurement techniques used in the teaching of clinical laboratories | | | | |
| **COURSE OBJECTIVES** | | |  | | | | |
| **TEXTBOOK(S)** | | | Clinical Chemistry and Molecular Diagnostics (Burtis, Ashwood, Bruns) | | | | |
| **REFERENCES** | | | Clinical Chemistry, Clinical Laboratory | | | | |

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|  | **COURSE SYLLABUS** | |
| **WEEK** | **DATE** | **SUBJECTS/TOPICS** |
| 1 |  | Spectrophotometer, Fluorometer |
| 2 |  | Turbidimeter, Nephelometer |
| 3 |  | Chromatography |
| 4 |  | Mass spectrometry |
| 5 |  | MİD-TERM |
| 6 |  | Radioimmunoassay |
| 7 |  | Enzyme immunoassay |
| 8 |  | Chemiluminescence measurements |
| 9 |  | Elektroforez |
| 10 |  | ISE |
| 11 |  | FİNAL |
| 12 |  |  |
| 13 |  |  |
| 14 |  |  |
| 15 |  |  |
| 16 |  |  |

**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 |  | **\*** |  |
| 2 | ask scientific questions and form hypothesis |  | **\*** |  |
| 3 | search and interpret scientific literature |  | **\*** |  |
| 4 | design and conduct experiments as well as analyze and interpret the data | **\*** |  |  |
| 5 | learn how to use the experimental equipment effectively | **\*** |  |  |
| 6 | function on multi-disciplinary teams |  |  | **\*** |
| 7 | identify, formulate, and solve medical problems |  |  | **\*** |
| 8 | use computer effectively both in conducting the experiments and analyzing the data |  | **\*** |  |
| 9 | understand the impact of experimental solutions on national and international sciences |  | **\*** |  |
| 10 | use effective written and oral communication/presentation skills |  | **\*** |  |
| 11 | get an understanding of professional and ethical responsibility |  | **\*** |  |
| 12 | get a recognition of the need for, and an ability to engage in lifelong learning |  | **\*** |  |
| 13 | other (……………………………………….) |  |  |  |
| 14 | other (……………………………………….) |  |  |  |

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| **Instructor Name**  **Sign**  **\*\*\*** | **Date** |

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| --- | --- | --- | --- | --- | --- |
| **COURSE CODE:** **521404308** | | **DEPARTMENT: MEDİCAL BİOCHEMİSTRY** | | | |
| **COURSE NAME: METHOD SCIENCE IN THE AUTOMATION** | | | | | |
| **INSTRUCTOR NAME** | **COURSE LANGUAGE**  **Turkish: \***  **English:** | | **Course Catagory** | | |
| Technical | Medical | Other(……) |
| **\*\*\*** |  | |  | \* |  |

**COURSE LEVEL**

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| **PROPAEDEUTIC** | **M.SC.** | **Ph.D.** | **COURSE OF PROVINCE** |
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| **SEMESTER** | **WEEKLY COURSE PERIOD** | | | **COURSE OF** | | | |
| **Theoric** | **Practice** | **Laboratory** | **Credit** | **ECTS** | **TYPE** | |
| Spring \*  Autumn | 1 | 4 |  | 3 | 7,5 | COMPULSORY ELECTIVE  **\*** | |
|  | | | | | | | |
| **ASSESMENT CRITERIA** | | | | | | | |
| **MID-TERM** | | | **ACTIVITY** | | | **Quantity** | **Percentage (%)** |
| 1st Mid-Term | | | 1 | 50 |
| 2 nd Mid- Term | | |  |  |
| Quiz | | |  |  |
| Homework | | |  |  |
| Project | | |  |  |
| Oral Exam | | |  |  |
| Other (………) | | |  |  |
| **FINAL** | | | Quiz | | |  |  |
| Homework | | |  |  |
| Project | | |  |  |
| Oral Exam | | |  |  |
| Final | | | 1 | 50 |
| **MAKE-UP EXAM** | | | Oral | | Written | Oral and Written | Multiple Choice |
|  | |  |  |  |
| **PREREQUISITE(S)** | | |  | | | | |
| **COURSE CONTENT** | | | The concept of total laboratory automation | | | | |
| **COURSE AIMS** | | | Explain the major steps in automated analysis | | | | |
| **COURSE OBJECTIVES** | | | Explain the concept of total laboratory automation and discuss future trends in automated analyses | | | | |
| **TEXTBOOK(S)** | | | Bishop M.L, Duben-Engelkirk JL, Fody EP: Clinical Chemistry | | | | |
| **REFERENCES** | | |  | | | | |

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|  | **COURSE SYLLABUS** | |
| **WEEK** | **DATE** | **SUBJECTS/TOPICS** |
| 1 |  | History of Automated Analyzers |
| 2 |  | Basic Approaches to Automation |
| 3 |  | Steps in Automated Analysis |
| 4 |  | Specimen Preparation and Identification |
| 5 |  | Specimen Measurement and Delivery |
| 6 |  | Reagent Systems and Delivery |
| 7 |  | Measurement Phase |
| 8 |  | MID-EXAM |
| 9 |  | Selection of Automated Analyzers |
| 10 |  | Total Laboratory Automation |
| 11 |  | Pre-Analytical Phase |
| 12 |  | Analytical Phase |
| 13 |  | Post-analytical Phase |
| 14 |  | Future Trends in Automation |
| 15 |  |  |
| 16 |  | FİNAL |

**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 |  | **\*** |  |
| 2 | ask scientific questions and form hypothesis | **\*** |  |  |
| 3 | search and interpret scientific literature |  | **\*** |  |
| 4 | design and conduct experiments as well as analyze and interpret the data |  | **\*** |  |
| 5 | learn how to use the experimental equipment effectively |  | **\*** |  |
| 6 | function on multi-disciplinary teams |  |  | **\*** |
| 7 | identify, formulate, and solve medical problems |  |  | **\*** |
| 8 | use computer effectively both in conducting the experiments and analyzing the data |  | **\*** |  |
| 9 | understand the impact of experimental solutions on national and international sciences |  | **\*** |  |
| 10 | use effective written and oral communication/presentation skills | **\*** |  |  |
| 11 | get an understanding of professional and ethical responsibility |  |  | **\*** |
| 12 | get a recognition of the need for, and an ability to engage in lifelong learning |  | **\*** |  |
| 13 | other (……………………………………….) |  | **\*** |  |
| 14 | other (……………………………………….) |  | **\*** |  |

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| **Instructor Name**  **Sign**  **\*\*\*** | **Date** |

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| --- | --- | --- | --- | --- | --- |
| **COURSE CODE:** **521404310** | | **DEPARTMENT: MEDİCAL BİOCHEMİSTRY** | | | |
| **COURSE NAME: TUMOR MARKERS** | | | | | |
| **INSTRUCTOR NAME** | **COURSE LANGUAGE**  **Turkish: \***  **English:** | | **Course Catagory** | | |
| Technical | Medical | Other(……) |
| **\*\*\*** |  | |  | \* |  |

**COURSE LEVEL**

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| **PROPAEDEUTIC** | **M.SC.** | **Ph.D.** | **COURSE OF PROVINCE** |
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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  **\*** | |
|  | | | | | | | |
| **ASSESMENT CRITERIA** | | | | | | | |
| **MID-TERM** | | | **ACTIVITY** | | | **Quantity** | **Percentage (%)** |
| 1st Mid-Term | | | 1 | 50 |
| 2 nd Mid- Term | | |  |  |
| Quiz | | |  |  |
| Homework | | |  |  |
| Project | | |  |  |
| Oral Exam | | |  |  |
| Other (………) | | |  |  |
| **FINAL** | | | Quiz | | |  |  |
| Homework | | |  |  |
| Project | | |  |  |
| Oral Exam | | |  |  |
| Final | | | 1 | 50 |
| **MAKE-UP EXAM** | | | Oral | | Written | Oral and Written | Multiple Choice |
|  | |  |  |  |
| **PREREQUISITE(S)** | | |  | | | | |
| **COURSE CONTENT** | | | Physiology,Pathobiology,Technology and Clinical Application | | | | |
| **COURSE AIMS** | | | Teach the basics of tumor markers | | | | |
| **COURSE OBJECTIVES** | | | To teach the biochemical changes that occur in cancer incidence | | | | |
| **TEXTBOOK(S)** | | | Dıamandıs E.P,Frısche H.A., Lılja H., Chan D.W.,Schwartz M.K.:Tumor Markers physiology, technology andclinical application | | | | |
| **REFERENCES** | | |  | | | | |

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|  | **COURSE SYLLABUS** | |
| **WEEK** | **DATE** | **SUBJECTS/TOPICS** |
| 1 |  | Tumor Markers: Past, Present and Future |
| 2 |  | Tumor Markers;Introduction and General prıncıples |
| 3 |  | Clinical Evaluation for Tumor Markers |
| 4 |  | Combining Multiple Biomarkers in Clinical Diagnosis |
| 5 |  | Circulating Cancer Cellsas Tumor Markers |
| 6 |  | Oncogenes and Tumor Suppressor Genes in Cancer |
| 7 |  | Biomarkers as Therapeutic Targets |
| 8 |  | MID-EXAM |
| 9 |  | Tumor Markers in Breast Cancer |
| 10 |  | Ovarian Cancer |
| 11 |  | Tumor Markers for Colorectal Cancer |
| 12 |  | Prostate Cancer |
| 13 |  | Lung Cancer |
| 14 |  | Genomic and Proteomic Approaches for Biomarker Discovery |
| 15 |  | FINAL |
| 16 |  |  |

**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 |  |  | **\*** |
| 2 | ask scientific questions and form hypothesis |  |  | **\*** |
| 3 | search and interpret scientific literature |  | **\*** |  |
| 4 | design and conduct experiments as well as analyze and interpret the data |  | **\*** |  |
| 5 | learn how to use the experimental equipment effectively | **\*** |  |  |
| 6 | function on multi-disciplinary teams |  |  | **\*** |
| 7 | identify, formulate, and solve medical problems |  |  | **\*** |
| 8 | use computer effectively both in conducting the experiments and analyzing the data |  | **\*** |  |
| 9 | understand the impact of experimental solutions on national and international sciences |  | **\*** |  |
| 10 | use effective written and oral communication/presentation skills | **\*** |  |  |
| 11 | get an understanding of professional and ethical responsibility | **\*** |  |  |
| 12 | get a recognition of the need for, and an ability to engage in lifelong learning |  | **\*** |  |
| 13 | other (……………………………………….) |  |  |  |
| 14 | other (……………………………………….) |  |  |  |

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| **Instructor Name**  **Sign**  **\*\*\*** | **Date** |

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| **COURSE CODE:** **521404311** | | **DEPARTMENT: MEDİCAL BİOCHEMİSTRY** | | | |
| **COURSE NAME: CYTOKİNES AND FUNCTİONS** | | | | | |
| **INSTRUCTOR NAME**  Prof.Dr. Özkan ALATAŞ | **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 | 50 |
| 2 nd Mid- Term | | |  |  |
| Quiz | | |  |  |
| Homework | | |  |  |
| Project | | |  |  |
| Oral Exam | | |  |  |
| Other (………) | | |  |  |
| **FINAL** | | | Quiz | | |  |  |
| Homework | | |  |  |
| Project | | |  |  |
| Oral Exam | | |  |  |
| Other(……………….) | | | 1 | 50 |
| **MAKE-UP EXAM** | | | Oral | | Written | Oral and Written | Multiple Choice |
|  | |  |  |  |
| **PREREQUISITE(S)** | | |  | | | | |
| **COURSE CONTENT** | | | The structure, production, general features, functions, acute phase response, receptor structure and properties of cytokines, which play an important role in regulating the natural specific immunity will be discussed in this course. | | | | |
| **COURSE AIMS** | | | The aim of this course is to learn the properties of cytokines and their roles in immun response. | | | | |
| **COURSE OBJECTIVES** | | |  | | | | |
| **TEXTBOOK(S)** | | | * [Peter A. Mayes](http://www.amazon.com/s/ref=ntt_athr_dp_sr_1/189-1561636-9233633?_encoding=UTF8&field-author=Peter%20A.%20Mayes&ie=UTF8&search-alias=books&sort=relevancerank), [Robert K. Murray](http://www.amazon.com/Robert-K.-Murray/e/B0034OONIY/ref=ntt_athr_dp_pel_2/189-1561636-9233633)[Daryl K. Granner](http://www.amazon.com/s/ref=ntt_athr_dp_sr_3/189-1561636-9233633?_encoding=UTF8&field-author=Daryl%20K.%20Granner&ie=UTF8&search-alias=books&sort=relevancerank), (2004). **Harper's Biochemistry.** 25th Edition. United States of America  Burtis, CA. & Ashwood, ER.(2006). TIETZ Textbook of Clinical Chemistry.4th Edition.Lehninger, Nelson, DL. & Cox, MM. (2000). Principles of Biochemistry. Third EditionOnat T, Emerk K, Sözmen EY, (2006) İnsan Biyokimyası Palme Yayıncılık  * Harvey RA, (2008)[**Biochemistry (Lippincott's Illustrated Reviews Series**)](http://www.amazon.com/Biochemistry-Lippincotts-Illustrated-Reviews-Richard/dp/160831412X/ref=sr_1_1?s=books&ie=UTF8&qid=1352716911&sr=1-1&keywords=lippincott+biochemistry) 5 th Edition * [Gürdöl](http://www.nobeltip.com/tr/products.asp?ID=22&AID=23061&title=Prof.Dr.%20Figen%20Gürdöl&sort=&strSearch=) F,  [Ademoğlu](http://www.nobeltip.com/tr/products.asp?ID=22&AID=25127&title=%20Prof.Dr.%20Evin%20Ademoğlu&sort=&strSearch=) E, (2010) **Biyokimya,** Nobel Tıp Kitapevi | | | | |
| **REFERENCES** | | |  | | | | |

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|  | **COURSE SYLLABUS** | |
| **WEEK** | **DATE** | **SUBJECTS/TOPICS** |
| 1 |  | Definition and Classification of Cytokines |
| 2 |  | General properties of cytokines |
| 3 |  | Cytokine Receptor Super families |
| 4 |  | The natural immunity regulating Cytokines |
| 5 |  | Chemokines |
| 6 |  | Cytokines that regulate the activation, growth and differentiation of Lymphocyte |
| 7 |  | TGF-β |
| 8 |  | Midterm Exam |
| 9 |  | Cytokines that regulate Inflammation Associated with Immune System |
| 10 |  | Interferon Family |
| 11 |  | Cytokines that regulate Haematopoiesis |
| 12 |  | c-kit ligand and colony-stimulating factors |
| 13 |  | JAK-STAT signaling pathway |
| 14 |  | NF-kB |
| 15 |  | Final Exam |
| 16 |  |  |

**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 (……………………………………….) | **X** |  |  |
| 14 | other (……………………………………….) |  | **X** |  |

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| **Instructor Name**  **Sign**  Prof.Dr. Özkan ALATAŞ | **Date** |

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| **COURSE CODE:** **521404312** | | **DEPARTMENT: MEDİCAL BİOCHEMİSTRY** | | |
| **COURSE NAME:EXERCİSE BİOCHEMİSTRY** | | | | |
| **INSTRUCTOR NAME**  **Prof.Dr.Sema USLU** | **COURSE LANGUAGE**  **Turkish: **  **English: x** | **Course Catagory** | | |
| Technical | Medical | Other(……) |
|  |  |  | 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 **x**  Autumn **** | 3 | 0 | | - | 3 | | 7,5 | | COMPULSORY ELECTIVE  ** x** | |
|  | | | | | | | | | | |
| **ASSESMENT CRITERIA** | | | | | | | | | | |
| **MID-TERM** | | | **ACTIVITY** | | | | | **Quantity** | | **Percentage (%)** |
| 1st Mid-Term | | | | | 1 | | %50 |
| 2 nd Mid- Term | | | | |  | |  |
| Quiz | | | | |  | |  |
| Homework | | | | |  | |  |
| Project | | | | |  | |  |
| Oral Exam | | | | |  | |  |
| Other (………) | | | | |  | |  |
| **FINAL** | | | Quiz | | | | |  | |  |
| Homework | | | | |  | |  |
| Project | | | | |  | |  |
| Oral Exam | | | | |  | |  |
| Other(……………….) | | | | | **1** | | **%50** |
| **MAKE-UP EXAM** | | | Oral | | | Written | | Oral and Written | | Multiple Choice |
|  | | |  | |  | |  |
| **PREREQUISITE(S)** | | |  | | | | | | | |
| **COURSE CONTENT** | | | This course examines how exercise affects the functioning of human  organism at the molecular level and describes the use of simple biochemical tests to  assess an exercising person’s health and performance. | | | | | | | |
| **COURSE AIMS** | | | To discuss, Principles of exercise metabolism, exercise parameteres, effects of exercise on metabolisms, energy sources in exercise and biochemical assassment of exercising persons. | | | | | | | |
| **COURSE OBJECTIVES** | | | To know Effects of exercise on metabolisims and biochemical parameters | | | | | | | |
| **TEXTBOOK(S)** | | | Lecture notes | | | | | | | |
| **REFERENCES** | | | Mougios V. 2006. Exercise Biochemistry. Human Kinetics.com, USA | | | | | | | |

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|  | **COURSE SYLLABUS** | |
| **WEEK** | **DATE** | **SUBJECTS/TOPICS** |
| 1 |  | Principle of exercise metabolism |
| 2 |  | Exercise parameters |
| 3 |  | The ATP-ADP cycle in exercise |
| 4 |  | Neural control of movement and muscle contraction |
| 5 |  | Carbohydrate metabolism in exercise |
| 6 |  | Glycolysis, pyruvate oxidation and the citric acid cycle in muscle |
| 7 |  | Lipid metabolism in exercise and efects of exercise on plasma lipid parameters |
| 8 |  | 1st Mid-Term |
| 9 |  | Protein metabolism in exercise |
| 10 |  | Effects of exercise on gene expression |
| 11 |  | Integration of exercise metabolism |
| 12 |  | Energy sources in exercise |
| 13 |  | Biochemical assessment of exercising persons |
| 14 |  | Parameters of Iron status in exercise |
| 15 |  | Parameters of metabolites in exercise (lactate, glucose, lipid parameters, ammonia,creatinine) |
| 16 |  | Enzymes and hormones in exercise |

**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 (……………………………………….) |  |  |  |
| 14 | other (……………………………………….) |  |  |  |

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| **Instructor Name**  **Sign**  **Prof.Dr.Sema USLU** | **Date** |

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| **COURSE CODE:** **521404314** | | **DEPARTMENT: MEDİCAL BİOCHEMİSTRY** | | | |
| **COURSE NAME: ADVANCED METABOLİSM 2** | | | | | |
| **INSTRUCTOR NAME**  **Yard. Doç. Dr Fahrettin Akyüz** | **COURSE LANGUAGE**  **Turkish: X**  **English: ** | | **Course Catagory** | | |
| Technical | Medical | Other(……) |
|  |  | |  | 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 X  Autumn **** | 3 | 0 | |  | 3 | 7,5 | COMPULSORY ELECTIVE  **X ** | |
|  | | | | | | | | |
| **ASSESMENT CRITERIA** | | | | | | | | |
| **MID-TERM** | | | | **ACTIVITY** | | | **Quantity** | **Percentage (%)** |
| 1st Mid-Term | | | 1 | 50 |
| 2 nd Mid- Term | | |  |  |
| Quiz | | |  |  |
| Homework | | |  |  |
| Project | | |  |  |
| Oral Exam | | |  |  |
| Other (………) | | |  |  |
| **FINAL** | | | | Quiz | | |  |  |
| Homework | | |  |  |
| Project | | |  |  |
| Oral Exam | | |  |  |
| Other(……………….) | | | 1 | 50 |
| **MAKE-UP EXAM** | | | | Oral | | Written | Oral and Written | Multiple Choice |
|  | | 1 |  |  |
| **PREREQUISITE(S)** | | | |  | | | | |
| **COURSE CONTENT** | | | | Carbonhydrate digestion, Carbonhydrate metabolisms  Lipids digestion, Lipid metabolizms  Amino acids oxidation and urea synthesis, Biyosenthesis of aminoacids,Nücleic acids metabolisms, rgolation of metabolisms and metabolisms defects | | | | |
| **COURSE AIMS** | | | | To know metabolisms and regülations of carbonhydrate, lipid, aminoacid, nücleic acid | | | | |
| **COURSE OBJECTIVES** | | | | To understand metabolic reactions and organization | | | | |
| **TEXTBOOK(S)** | | | | Lehninger, Biyokimyanın ilkeleri,Çev ed.Murat Elçin 2013 | | | | |
| **REFERENCES** | | | | Biochemistry, Lubert Strayer, Sixth ed. 2007  W.H. Freewar and company, Newyork.  Medical Biochemistry, John Baynes, Marek H Dominiczek, Harcourt Brace and Company, Mosby, Basildon, 2004, England.Biochemistry, Dacid E. Metzler, Second ed. Harcourt academic press, 2001.Human Biochemistry, Onat T., Emerk K.., Sönmez E.Y., Palme Publishing, second ed., 2007, Ankara. | | | | |
|  | **COURSE SYLLABUS** | | | | | | | |
| **WEEK** | **DATE** | | **SUBJECTS/TOPICS** | | | | | |
| 1 |  | | Absorbton and digestion carbonhydrates | | | | | |
| 2 |  | | Glycolysis and catabolism of hexoses | | | | | |
| 3 |  | | Citric acid cycle , Biosynthesis of carbonhydtrates | | | | | |
| 4 |  | | Regulation of carbonhydrate metabolism, defects | | | | | |
| 5 |  | | Absorbtion and digestion of lipids, oxidation of fatty acids | | | | | |
| 6 |  | | Biosynthesis of lipids | | | | | |
| 7 |  | | Regulation of lipid metabolisms, defects | | | | | |
| 8 |  | | Mid- term exam | | | | | |
| 9 |  | | Absorbtion and digestion of proteins | | | | | |
| 10 |  | | Amino acid oxidation and urea synhesis | | | | | |
| 11 |  | | Biyosynthesis and transformation of special product of aminoacids | | | | | |
| 12 |  | | Regulation of aminoacid metabolisms, defects | | | | | |
| 13 |  | | Nucleic acids, purin, pyrimidin metabolisms | | | | | |
| 14 |  | | Biosynthesis of nucleic acids | | | | | |
| 15 |  | | Regulation and defects of nucleic acid metabolisms | | | | | |
| 16 |  | | Organization of all metabolisms | | | | | |

**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 (……………………………………….) |  |  | **X** |
| 14 | other (……………………………………….) |  |  | **X** |

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| **Instructor Name**  **Sign** | **Date** |