**YILDIZ TECHNICAL UNIVERSITY**

**GRADUATE SCHOOL OF SCIENCE AND ENGINEERING**

**BIOMEDICAL ENGINEERING PROGRAMME**

**BME 5011 – ADVANCED TISSUE ENGINEERING SYLLABUS**

**2024 – SPRING**

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| **Course Schedule** | Monday 9.00-12.00 |
| **Classroom** | C-023 |
| **Instructor’s Name** **Office**  **Phone** **E-mail** **Office Hours** | Assist. Prof. Görke Gürel PeközerE-007(0212) 383 63 11gpekozer@yildiz.edu.trTuesday 10.00-12.00 – Wednesday 13.00-15.00 |
| **Textbooks:** | Principles of Tissue Engineering, 4th Edition, Editor: Robert LanzaTissue Engineering, 2nd Edition, Editor: Clemens Van Blitterswijk |
| **Supplementary Materials:** | Reading lists and Course notes. Course Notes in pdf format will be uploaded on AVESIS website prior to upcoming class: <http://avesis.yildiz.edu.tr/gpekozer/> Students are responsible of material presented on course notes. |
| **Course Objectives** | * to understand the basic principles behind tissue engineering
* to be familiar with the general types of cells and biomaterials used in tissue engineering
* to understand techniques utilized to design, fabricate, and functionally assess tissue engineering systems
* to apply the combined knowledge of tissue organization and tissue engineering strategies to design a unique, reasonable tissue engineering solution
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| **Course Outline** | Week 1Week 2Week 3Week 4Week 5Week 6Week 7Week 8Week 9Week 10Week 11Week 12Week 13Week 14 | Course Overview and IntroductionFundamentals of Tissue EngineeringCells, Differentiation and Tissue OrganizationCell Culture TechniquesBiomaterials, Scaffolds and Scaffolding TechniquesBiochemical Cues and Delivery MethodsHost Reactions to Biomaterials and their Biological TestingHolidayMidtermBone Tissue EngineeringCartilage Tissue EngineeringNeural Tissue Engineering and Organ EngineeringStudent Presentations / DiscussionsStudent Presentations / Discussions |
| **Grading** | Midterm: PresentationFinal:  | %30%30%40 |
| **Projects** | Students will choose a published research article in the topic of interest and present it in the class. You should propose your own tissue engineering strategy for the topic of your presentation in 1 slide at the end of your presentation.**Suggested Topics:**Tendon Tissue Engineering Neural Tissue Engineering Corneal Tissue Engineering Liver (Hepatic) Tissue Engineering Kidney Tissue Engineering Pancreas Tissue Engineering Skin Tissue Engineering Vessel Tissue Engineering Muscle Tissue Engineering Bladder Tissue EngineeringIntestine Tissue Engineering Cardiac Tissue Engineering |
| **Attendance** | While not directly enforced, attendance is strongly suggested since classparticipation is important for success. |
| **Additional Remarks** | Academic dishonesty in the form of cheating and plagiarism is NOT accepted.Extension on presentations is only allowed with valid reason and earlynotification. |