**YILDIZ TECHNICAL UNIVERSITY**

**FACULTY OF ELECTRICAL AND ELECTRONICS ENGINEERING**

**DEPARTMENT OF BIOMEDICAL ENGINEERING**

**BME 3540 – CELL AND 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 Peközer  E-007  (0212) 383 63 11  gpekozer@yildiz.edu.tr  Tuesday 13.00-15.00 – Wednesday 10.00-12.00 | |
| **Textbooks:** | Principles of Tissue Engineering, 4th Edition, Editor: Robert Lanza  Tissue 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 | |
| **Course Outline** | Week 1  Week 2  Week 3  Week 4  Week 5  Week 6  Week 7  Week 8  Week 9  Week 10  Week 11  Week 12  Week 13  Week 14 | Course Overview and Introduction  Fundamentals of Tissue Engineering  Cells, Differentiation and Tissue Organization  Cell Culture Techniques  Biomaterials, Scaffolds and Scaffolding Techniques  Biochemical Cues and Delivery Methods  Host Reactions to Biomaterials and their Biological Testing  Holiday  Midterm  Bone Tissue Engineering  Cartilage Tissue Engineering  Neural Tissue Engineering and Organ Engineering  Student Presentations / Discussions  Student Presentations / Discussions |
| **Grading** | Midterm:  Presentation  Final: | %30  %30  %40 |
| **Projects** | Groups of 3-4 students will choose a published research article in the topic of interest and present it in the class. All group members should participate equally to the preparations and the presentation 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 Engineering  Intestine Tissue Engineering  Cardiac Tissue Engineering  As final, students will prepare a literature review on their presentation topics and submit a paper of at least 10 page long. | |
| **Attendance** | While not directly enforced, attendance is strongly suggested since class  participation 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 early  notification. | |