

فرم دانشجو

شناسنامه درس و جدول دوره واحد درسی

<b>Title of the Course:</b> cell and tissue culture <b>Field and Degree:</b> Human Genetics – Master’s Program <b>Faculty:</b> School of Medicine <b>Course Code:</b> 17 <b>Academic Year:</b> 2025–2026 <b>Prerequisite:</b> Cytogenetics <b>Credits:</b> 2 Credits <b>Semester:</b> First Semester <b>Credit Distribution:</b> 1 Theoretical Credits – 1 Practical Credit <b>Teaching Staff:</b> Dr. Tahmasbi, Dr. Ghandil <b>Class Day and Time:</b> Monday, 8:00–10:00 <b>Course Coordinator:</b> Dr. Tahmasbi Email: <a href="mailto:tahmasebi.birgani62@gmail.com">tahmasebi.birgani62@gmail.com</a> <b>Office Hours:</b> Every day, 08:00–16:00
<b>General Objectives</b>
To provide students with fundamental theoretical knowledge and practical skills in cell and tissue culture techniques, enabling them to culture, maintain, and analyze cells and tissues safely and effectively for research and biomedical applications.
<b>Specific Objectives</b>
To define the principles and historical development of cell and tissue culture.
To explain the importance of cell and tissue culture in biomedical research, diagnostics, and therapeutic applications.
To distinguish between in vitro, ex vivo, and in vivo cell culture systems.
To familiarize students with the cell culture laboratory environment and develop proficiency in aseptic techniques essential for preventing contamination.
To train students in the correct preparation and handling of complete cell culture media required for optimal cell growth.
To perform routine passaging of adherent cell cultures to maintain healthy cell growth.
To accurately determine cell concentration and assess cell viability.
To learn standard techniques for long-term storage of cell lines.
To successfully revive and recover viable cells from frozen stocks.
<b>Course Description</b>
Cell and Tissue Culture is a fundamental laboratory technique where cells, tissues, or organs are grown under controlled conditions outside their natural environment. The applications of cell and tissue culture are vast and impactful, spanning research, medicine, and industry. In basic scientific research, it is indispensable for studying cell physiology, testing drug efficacy and toxicity, and understanding disease mechanisms like cancer. In medicine, it is crucial for vaccine production, regenerative therapies such as growing skin grafts for burn victims, and in vitro fertilization. Furthermore, the biotechnology industry relies on these techniques to produce therapeutic proteins like monoclonal antibodies and insulin. Ultimately, this technology provides a foundational tool for advancing biology and improving human health.

Lecturer	Teaching Method	Student Activities	Expected Teaching Concepts	Session
Dr. Bijanzadeh	interactive lecture	Q & A method	Introduction to Cell and Tissue Culture	1
Dr. Tahmasebi	interactive lecture	Q & A method	The Cell Culture Laboratory & Essential Equipment	2
Dr. Bijanzadeh	interactive lecture	Q & A method	An Introduction to Types of Microscopes	3
Dr. Tahmasebi	interactive lecture	Q & A method	Aseptic Technique	4
Dr. Bijanzadeh	interactive lecture	Q & A method	Media and Supplements	5
Dr. Tahmasebi	interactive lecture	Q & A method	Cryopreservation, Thawing Subculture of Adherent and Non adherent Cells	6
Dr. Bijanzadeh	interactive lecture	Q & A method	Contamination in cell culture: Types, Detection and Prevention	7
Dr. Tahmasebi	interactive lecture	Q & A method	Cytotoxicity and Cell Proliferation Assays (Practical)	8
Dr. Bijanzadeh	interactive lecture	Q & A method	Laboratory Safety and Aseptic Techniques in Cell Culture (Practical)	9

## معاونت آموزشی دانشگاه علوم پزشکی اهواز

### مرکز مطالعات و توسعه آموزش علوم پزشکی

Dr. Tahmasebi	interactive lecture	Q & A method	Preparation and Sterile Handling of Complete Cell Culture Media (Practical)	<b>10</b>
Dr. Bijanzadeh	interactive lecture	Q & A method	Passaging and Maintenance of Adherent Cell Lines (Practical)	<b>11</b>
Dr. Tahmasebi	interactive lecture	Q & A method	Cell Counting and Viability Assessment (Practical)	<b>12</b>
Dr. Bijanzadeh	interactive lecture	Q & A method	Principles and Methods of Cell Cryopreservation (Practical)	<b>13</b>
Dr. Tahmasebi	interactive lecture	Q & A method	Thawing and Recovery of Cryopreserved Cells (Practical)	<b>14</b>
Dr. Bijanzadeh	interactive lecture	Q & A method	Cell Proliferation and Cytotoxicity Assays (MTT Assay) (Practical)	<b>15</b>

#### Student Assignments

Students are required to prepare written laboratory reports for each practical session and submit them to the instructor. Laboratory report writing constitutes **30% of the practical exam grade (equivalent to 3 out of 10 points)** for the course.

#### Course Evaluation Method

Final Exam+ student assignment (30%)

#### Reference

مقاله های علمی جدید منتشر شده (در این زمینه) در مجلات معتبر

- 1- Pfanger, r, and freshney, R, IAN the latest edition (the latest editing). Culture of Human tumor cells; wiley- liss.
- 2- Primrose, S.B. (the attest edition). Molecular Biotechnology, Black Well Scientific Publication
- 3- Ragai R. Mitry (Editor), Robin D. Hughes; Third Edition 2016; Human Cell Culture Protocols. Springer – Humana Press