



AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

Course Title		In Dialysis Biomedical Technology							
Course Code		DY108		Course Level		Short Cycle (Associate's Degree)			
ECTS Credit	3	Workload	78 (Hours)	Theory	2	Practice	0	Laboratory	0
Objectives of the Course		Learning the definition and clinical applications of medical technologies is aimed in this course. Also artificial kidney studies will be discussed.							
Course Content		Definition of biomedical technology and fields of use, electrostatic and electric current: general concepts bioelectric application: properties of electric current and biological effects, types of bioelectric application instruments,Hemo-dialysis and artificial kidney studies.							
Work Placement		N/A							
Planned Learning Activities and Teaching Methods				Explanation (Presentation)					
Name of Lecturer(s)		Lec. Mehran AKSEL							

Assessment Methods and Criteria

Method	Quantity	Percentage (%)
Midterm Examination	1	40
Final Examination	1	60

Recommended or Required Reading

1	Prof. Dr. Gürbüz ÇELEBİ, Biomedical Physics, Peace Press, İzmir, 2008.
2	Lecture Notes

Week	Weekly Detailed Course Contents	
1	Theoretical	Definition of biomedical technology and fields of use
2	Theoretical	Electrostatic and electric current: General concepts
3	Theoretical	Electrostatic and electric current: capacitance, capacitor, current intensity, current density, conductance, dielectric constant, electric potential and resistance
4	Theoretical	Magnetism: Magnetic field and properties; diamagnetic, paramagnetic and ferromagnetic
5	Theoretical	Electrical measuring and monitoring instruments: general properties
6	Theoretical	Biological signals: properties, types, records
7	Theoretical	Electrodes and transducers: properties and types
8	Theoretical	Amplification and analysis of biological signals
9	Theoretical	Bioelectric application: properties of electric current and biological effects, types of bioelectric application instruments
10	Theoretical	Bioelectric applications: Iontophoresis, TENS, Stimulators, Electro-narcosis, defibrillator, pacemaker, short wave diathermia, electro surgery
11	Theoretical	The dangers and prevention of electrical energies: shock and safety
12	Theoretical	Properties of biomolecules and ways of detection
13	Theoretical	Biomolecules detection in clinic: Chromatography, centrifuge, electrophoresis etc.
14	Theoretical	Hemo-dialysis and artificial kidney studies

Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	1	2	42
Individual Work	14	0	2	28
Midterm Examination	1	3	1	4
Final Examination	1	3	1	4
Total Workload (Hours)				78
[Total Workload (Hours) / 25*] = ECTS				3

*25 hour workload is accepted as 1 ECTS



Learning Outcomes

1	Understanding the definition and field of use of Biomedical technologies
2	Differentiate the general concepts of Electrostatic and electric current
3	Getting information about Hemo-dialysis and artificial kidney studies
4	Learning the amplification and analysis of bioelectric signal
5	Learning bioelectrical application tools

Programme Outcomes (Dialysis)

1	To be able to comprehend the duties and responsibility of dialysis technicians. To be able to work in a team with members of other health professions.
2	To be able to acquire a general knowledge of human anatomy, physiology and biochemistry
3	To be able to gain knowledge of blood-borne infectious diseases, especially infectious diseases such as hepatitis and universal prevention methods
4	To be able to have knowledge of blood-borne infectious diseases, especially infectious diseases such as hepatitis and universal prevention methods
5	To be able to recognize hemodialysis machine, and have knowledge and skills will be used it during operation of dialysis
6	To be able to have the knowledge of application on peritoneal dialysis and skills be able to train patient on this.
7	To be able to acquire dialysate characteristics, have necessary skills on preparation and application
8	To be able to gain the knowledge and skills on the basic principles of water treatment, application methods, and control of purified water as a level of practitioner
9	To be able to comprehend the principles of patient care, complications during dialysis operation what patients may be encounter and perform necessary knowledge and skills to take necessary measures to protect patient from these complications.
10	To be able to gain knowledge and equipment related to educating on problems that the long-term dialysis patients may have.
11	To be able to understand periodic examinations during the follow up dialysis patients and recognize pathologies in the early period, and have the knowledge and skills to take necessary precautions in time
12	To be able to have the knowledge of the dialysis patients, physiological, social and psychological problems, and perform necessary support skills on these issues for the patient
13	In general to be able to comprehend the knowledge of, drugs, dosage, side effects, and toxic effects, routes of administration of drugs and drug use in patients with chronic renal failure
14	To be able to acquire a high level knowledge of fluid and electrolyte problems with general issues nephrology, acid-base balance disorder, nephrology and urology kidney disease, chronic and acute renal failure.
15	To be able to comprehend the methods of diagnosis and treatment of diseases of the system, and have knowledge of fighting and protecting from especially problems that can be seen in dialysis patients as level of practitioner and getting patient compliance.
16	To be able to have knowledge of statistics and research methods as a level of following the developments, monitoring and interpreting scientific publications.
17	To be able to gain the knowledge of foreign language as a level of communicating and following developments.
18	To be able to be willing to self-improvement as an individual committed to the principles and reforms of Atatürk and keeping on the some of the rules of social life, customs and traditions, depending on the interests of the country on their own interests as a member of society,

Contribution of Learning Outcomes to Programme Outcomes 1:Very Low, 2:Low, 3:Medium, 4:High, 5:Very High

	L1	L2	L3	L4	L5
P4	5	5	5	5	5
P5	4	3	5	5	5
P6	4	4	4	4	4
P7	4	4	4	4	4
P8	4	4	4	4	4

