BMT 262 Biomedical Instrumentation 2

Course Description: A continuation of BMT 161. Topics include: medical device maintenance, technology management, patient and surgical monitoring, and test equipment.

Prerequisites(s): BMT 161, EET 122, and EET 132 **Co-requisite(s):** No co-requisite

Lecture Hours: 3	Lab Hours: 3	Credit Hours: 4
Lab Fee: 105	Supplemental Fee: 0	Purpose:
☐ Transfer Assurance Guide Course (TAG)	☐ Transfer Module Course (TM)	
Course Format: Lec/Lab	Grading: A/B/C/D/F/I	
Delivery Method: □ Web	x Hybrid	□ Classroom
Semesters Offered: x Fall	x Spring	x Summer

Course Primary Text:

Textbook from BMT 161 and Introduction to Biomedical Equipment Technology, Carr and Brown, ISBN: 0130104922	

Supplemental Materials:

Course Outcomes:

1	
2	
3	
4	

Course Topics:

Week	
1 & 2	1. Review of BMT 161 2. Health IT 3. Clinical Engineering-Information Technologies Interface 4. Clinical Engineering-Systems Engineering Interface 5. Operating Room and Equipment Laboratory Projects Week 1: Heart Monitors Week 2: MP-70 Monitor

3 & 4	1. ECG 2. ESU 3. Neo-natal Monitors 4. Electrical Safety review Laboratory Projects Week 3: ECG Week 4: ESU
5 & 6	1. ECG a. Man-Machine Interface b. Bioelectric Amplifiers applied to Biomedical Systems i. Operational Amplifiers ii. Instrumentation Amplifiers iii. Inverting Amplifiers iv. Non-inverting Amplifiers 2. Respiratory Systems Laboratory Projects Week 5: Hospital Visit, O.R. Week 6: Respiratory Lab
7 & 8	1. Physiological Pressure Measurements 2. O.R. visit debrief 3. Infusion devices a. Large volume pumps b. Syringe pumps/PCA c. Enteral d. Other 4. Imaging Systems a. MRI b. CT c. Ultrasound d. Cath-lab e. X-Ray Laboratory Projects Week 7: Electrical Safety Analyzers Week 8: OR visit
9	Live in-class exam 2 Laboratory Projects Imaging continued
10 & 11	1. Defibrillator review 2. EMI 3. Telemetry 4. Laboratory Equipment 5. ICU 6. OR review Laboratory Projects Week 10: Telemetry

	Week 11: Electrical Safety advanced topics
12, 13, & 14	1. Hospital Visit 2 a. Intensive Care b. Catheterization Lab 2. ICU and CCU topics 3. Clinical and Medical Networking 4. CE-IT Interface 5. Test 3 Laboratory Projects Week 12: Hospital Visit Week 13: Bioelectric Amplifiers Week 14: Physiological Pressures
15	Chemistry and Biomedical Applications Laboratory Projects Final PM for Monitoring System and Central Station
16	Exam 4

Methods of Evaluation/Assessment

4 Tests
Laboratory Exams
Oral Presentations

Course Keeper: Steven J. Yelton, P.E. Date Completed: April 5, 2019