GROSSMONT COLLEGE

 COURSE OUTLINE OF RECORD

Curriculum Committee Approval: 11/30/2021

 GCCCD Governing Board Approval: 12/14/2021

CARDIOVASCULAR TECHNOLOGY 252 – INTERVENTIONAL PROCEDURES II, INVASIVE CARDIOLOGY

 1. Course Number Course Title Semester Units

 CVTE 252 Interventional Procedures II, Invasive Cardiology 5

Semester Hours

5 units: 3 hours lecture 48-54 hours 96-108 outside of class hours 6 hours lab: 96-108 hours

240-270 total hours

 2. Course Prerequisites

A “C” grade or higher in CVTE 222.

Corequisite

None

 Recommended Preparation

 None

 3. Catalog Description

This course continues the advanced study of cardiac medical electronics and instrumentation, focusing on devices utilized in invasive cardiology. Specialized interventional procedures performed in the Cardiac Catheterization Lab will be emphasized, along with structural heart,cardiac rhythm management, device implantation, and electrophysiology studies. Classroom and hospital-based lab sessions will focus on coronary, peripheral and electrophysiologic procedures.

 4. Course Objectives

 The student will:

 a. Identify and assessthe principles utilized in the determination of myocardial blood flow.

 b. Demonstrate and contrast the selection, preparation and use of percutaneous coronary interventional devices.

 c. Demonstrate and contrast the selection, preparation and use of structural heart interventional devices.

 d**.** Demonstrate and contrast the selection, preparation and use of peripheral interventional devices.

 e**.** Demonstrate and contrast the selection, preparation and use of electrophysiological procedure equipment and devices.

 f. Exhibit setup and operation of mechanical support devices.

 g. Identifyand discuss the principles utilized in vascular closure technologies.

 5. Instructional Facilities

 a. Standard classroom.

 b. Classroom laboratory.

 c. Cardiac Cath Lab.

 6. Special Materials Required of Student

 a. Smartphone, tablet, or laptop.

 b. Access to internet

7. Course Content

a. Endovascular intervention

 1) Carotid intervention

 a) Stenting

 b) TCAR (need full spelling)

 2) Endovascular aneurysm repair (EVAR)

 3) Renal artery intervention

 4) Iliofemoral and femoral-popliteal interventions

b. Complex coronary intervention

 1) Chronic total occlusions

 2) Bifurcation stenting

 3) Complex imaging/physiologic testing

 a) IVUS (Intravascular ultrasound)

 b) OCT (Optical Coherence Tomography)

 c) FFR/IFR (Fractional Flow Reserve/Instantaneous wave-free ratio)

 4. Left Main interventions

c. Mechanical Support Devices

 1) Intra-aortic balloon pump

 2) Impella

 3) ECMO (extracorporeal membrane oxygenation)

d. Structural Heart Intervention

 1) Transcatheter Aortic Valve Replacement

 2) MitraClip

 3) Left atrial appendage occlusion (Watchman, Amulet, Lariet)

e. Cardiac Rhythm Management Device

 1) Implantable defibrillator

 2) Pacemaker

 3) Implantable loop recorder

f. Heart Failure management

 1) Biventricular pacemakers

 2) Biventricular implantable defibrillators

 3) Cardiomems

g. Complex Electrophysiology Studies

 1) PVC ablations

 2) VT ablations

 3) Focal tachycardia ablations

h. Vascular closure technologies/devices

i. Registered Cardiovascular Invasive Specialist (RCIS) Exam review

 8. Method of Instruction

 a. Lecture.

 b. Discussion.

 c. Multimedia presentations.

 d. Classroom demonstration.

 e. Computer simulations.

 f. Structured classroom exercises.

9. Methods of Evaluating Student Performance

 a. Written exams.

 b. Quizzes.

 c. Practical examination.

 d. Comprehensive written final exam or passing score on credentialing exam (RCIS).

10. Outside Class Assignments

 a. Assigned reading from texts, medical journals, and online references such as Cath Lab Digest or The Journal of American College of Cardiology.

 b. Problem-solving homework assignments.

 c. Preparation for student classroom presentations focused on Cath Lab procedures and new technologies.

11. Representative Texts

 a. Representative Text(s):

1) Kern, Morton J. *The Cardiac Catheterization Handbook. 7th*Edition. Elsevier Health Sciences. Philadelphia, PA. 2019.

2) Moscucci, Mauro. Grossman & Baim’s Cardiac Catheterization, Angiography, and Intervention. 9th ed. Lippincott Williams & Wilkins, Philadelphia, PA. 2020.

3) Kern, Morton J. *The Interventional Cardiac Catheterization Handbook 4th Edition* Elsevier Health Sciences. Philadelphia, PA. 2017.

 b**.** Supplementary texts and workbooks:

 Todd, J. Wesley. *CV Review Book Volume 1-5: Cardiac Self-Assessment* Spokane,WA. 2018.

 Addendum: Student Learning Outcomes

 Upon completion of this course, our students will be able to do the following:

a. Demonstrate and contrast the selection, preparation and clinical application of percutaneous coronary interventional devices such as coronary angioplasty balloons, coronary stents, atherectomy and thrombectomy devices.

b. Demonstrate and contrast the selection, preparation, and clinical application of interventional peripheral devices such as angioplasty balloons, peripheral stents, atherectomy and thrombectomy devices.

c**.** Demonstrate and contrast the selection, preparation, and clinical application of structural heart interventions such as transcatheter aortic valve replacement, mitral valve modifications, and left atrial appendage occlusion.

d**.** Understanding of electrophysiology studies as they pertain to the Cardiac Catheterization Lab.