Course Number and Title: HLH 215 Cardiovascular Monitoring

Campus Location:
Georgetown, Wilmington

Effective Date:
2018-51

Prerequisite:
BIO 121 and (DMS 106 or NMT 101 or RCT 140)

Co-Requisites:
None

Course Credits and Hours:
2.00 credits
2.00 lecture hours/week
0.00 lab hours/week

Course Description:
This course focuses on cardiovascular monitoring for allied health students with emphasis on the normal and abnormal electrocardiogram (EKG) patterns. Topics include systematic interpretation, dysrhythmias, normal and abnormal 12 lead EKGs, and cardioversion and defibrillation.

Required Text(s):
Obtain current textbook information by viewing the campus bookstore - https://www.dtcc.edu/bookstores online or visit a campus bookstore. Check your course schedule for the course number and section.

Additional Materials:
Department policy manuals

Schedule Type:
Classroom Course

Disclaimer:
None

Core Course Performance Objectives (CCPOs):

1. Describe cardiac anatomy and physiology. (CCC 1, 6; CVS PGC 1; NMT PGC 1; RCT PGC 1, 2)
2. Explain electrophysiology and electrocardiography. (CCC 1, 6; CVS PGC 1; NMT PGC 1, 3, 5; RCT PGC 1)
3. Define and discuss coronary artery disease (CAD). (CCC 1, 5, 6; CVS PGC 1; NMT PGC 1, 7; RCT PGC 1)
4. Explain the development of dysrhythmia. (CCC 1, 6; CVS PGC 1; NMT PGC 1, 7; RCT PGC 1)
5. Differentiate dysrhythmia interpretations. (CCC 1, 6; CVS PGC 1, 5; NMT PGC 1, 3; RCT PGC 1, 2)
6. Analyze normal 12 lead EKGs. (CCC 1, 6; CVS PGC 1, 5; NMT PGC 2, 3, 5; RCT PGC 1,2)
7. Describe the use of cardiac pacemakers. (CCC 1, 6; CVS PGC 1; NMT PGC 1; RCT PGC 1)
8. Explain cardioversion/defibrillation and Code Blue. (CCC 1, 6; CVS PGC 1, 5; NMT PGC 3, 5, 6; RCT PGC 1, 2)
9. Analyze abnormal 12 lead EKGs and axis deviation. (CCC 1, 6; CVS PGC 1, 5; NMT PGC 3, 5; RCT PGC 1, 2)

See Core Curriculum Competencies and Program Graduate Competencies at the end of the syllabus. CCPOs are linked to every competency they develop.

Measurable Performance Objectives (MPOs):
Upon completion of this course, the student will:

1. Describe cardiac anatomy and physiology.
    1. Label on a schematic drawing of the heart; the chambers, valves, and major vessels.
    2. Describe the gross anatomical structures of the heart.
    3. Describe functions of the structures of the conduction system.
    4. Name the five major coronary arteries and indicate the surfaces of the heart they supply.
    5. Describe the events that comprise one cardiac cycle.
    6. Define *cardiac output* (CO), and list its determinants.
2. Explain electrophysiology and electrocardiography.
    1. Identify PQRST on a normal EKG tracing, and state which parts of the conduction system are being activated to produce each wave form.
    2. Define *automaticity* and *conductivity*.
    3. Draw the deflections produced by a wave of depolarization moving toward, receding away from, and moving both toward and away from a positive electrode.
    4. Explain what the horizontal and vertical axis of the EKG are measuring and state the normal values for 1mm block on each axis.
    5. Describe the factors to be considered for rhythm, rate, P waves, PR interval, and QRS complex while interpreting the strip.
    6. Analyze and correctly measure the five parameters of the systematic interpretation in the PQRST worksheet.
3. Define and discuss coronary artery disease (CAD).
    1. List three major risk factors for CAD.
    2. Define and explain angina.
    3. State two signs and symptoms of both classical and atypical myocardial infarction (MI).
    4. Describe how patient history, physical examination, labs, and EKGs are used to diagnose acute MI.
    5. Describe and explain the pathologic events and their major treatment intervention for MI.
    6. List the common complications that may follow acute MI.
4. Explain the development of dysrrhythmia.
    1. List dysrrhythmias produced by suppression and irritability.
    2. Describe and explain the effects of suppression and irritability on CO.
    3. State the typical EKG appearance of early beats, late beats, slow rhythms, fast rhythms, blocked conduction, atrial fibrillation, and ventricular fibrillation.
    4. Identify the typical configuration of beats that arise in the sinoatrial (SA) node, atria, atrioventricular (AV) junction, and ventricles.
5. Differentiate dysrhythmia interpretations.
    1. List criteria for normal sinus rhythm.
    2. List criteria for selected common suppression dysrrhythmias.
    3. List criteria for selected common irritability dysrrhythmias.
    4. Identify the selected rhythms on a monitor and rhythm strip.
    5. Describe initial management of the selected rhythms.
6. Analyze normal 12 lead EKGs.
    1. Demonstrate and explain the anatomical positions of each of the six precordial leads and the four limb leads.
    2. List the criteria for QRS complex, ST segment, septal Q waves, and T wave deflection for each of the leads on a normal 12 lead EKG.
    3. Demonstrate the technique and the procedure for obtaining a standard 12 lead EKG.
    4. State the danger signs of electrical equipment malfunction and the precautions necessary for safe use of the equipment.
7. Describe the use of cardiac pacemakers.
    1. State three indications for the insertion of pacemakers.
    2. Define *fire*, *capture*, and *sense* as they apply to pacemaker function.
8. Explain cardioversion/defibrillation and Code Blue.
    1. Define and explain cardioversion and defibrillation.
    2. State one indication for cardioversion and one indication for defibrillation.
    3. Describe staff and patient safety in cardioversion and defibrillation.
9. Analyze abnormal 12 lead EKGs and axis deviation.
    1. List two factors that can influence the direction of the ventricular axis.
    2. Using limb leads I and III, describe the QRS deflections produced by normal, left, and right axis.
    3. List the leads that are used to locate abnormalities on the anterior, inferior, and lateral surfaces of the heart.
    4. State the changes in QRS complex, ST segment, and T wave when there is injury, ischemia, and/or infarction present.
    5. Explain criteria used to locate left ventricular hypertrophy, left bundle branch block, and right bundle branch block.

Evaluation Criteria/Policies:
Students must demonstrate proficiency on all CCPOs at a minimal 75 percent level to successfully complete the course. The grade will be determined using the Delaware Tech grading system:

92	–	100	=	A
83	–	91	=	B
75	–	82	=	C
0	–	74	=	F

Students should refer to the Student Handbook - https://www.dtcc.edu/handbook for information on the Academic Standing Policy, the Academic Integrity Policy, Student Rights and Responsibilities, and other policies relevant to their academic progress.

Core Curriculum Competencies (CCCs are the competencies every graduate will develop):

1. Apply clear and effective communication skills.
2. Use critical thinking to solve problems.
3. Collaborate to achieve a common goal.
4. Demonstrate professional and ethical conduct.
5. Use information literacy for effective vocational and/or academic research.
6. Apply quantitative reasoning and/or scientific inquiry to solve practical problems.

Program Graduate Competencies (PGCs are the competencies every graduate will develop specific to his or her major):
CVS Program Graduate Competencies (PGCs are the competencies every graduate will develop specific to his or her major):

1. Perform competently a full range of echocardiography procedures.
2. Perform competently a full range of vascular sonographic procedures.
3. Utilize professional verbal, nonverbal, and written communication skills in patient care, procedure intervention, and professional relationships.
4. Act in a professional and ethical manner and comply with professional scope of practice.
5. Integrate critical thinking and problem solving skills as expected of a healthcare professional.

NMT Program Graduate Competencies (PGCs are the competencies every graduate will develop specific to his or her major):

1. Integrate principles of theoretical knowledge and demonstrate entry-level skills pertaining to nuclear medicine in-vivo and in-vitro procedures, radiation safety, quality control, quality assurance, NRC regulations, patient care, radiopharmaceutical preparation and administration, instrumentation and medical informatics.
2. Exhibit verbal, nonverbal, and written communication skills during patient care, research, and professional scope of practice.
3. Competently perform all in-vivo and in-vitro procedures.
4. Abide by the profession' s code of ethics as stated in the American Registry of Radiologic Technologists (ARRT) and Nuclear Medicine Technology Certification Boards (NMTCB).
5. Exhibit critical thinking and problem solving skills during the practice of nuclear medicine.
6. Perform all entry-level procedural computer analysis.

RCT Program Graduate Competencies (PGCs are the competencies every graduate will develop specific to his or her major):

1. Apply theoretical information that leads to an appropriate action in the application or delivery of respiratory care procedures.
2. Perform technical skills in the implementation of respiratory care procedures within a plan of care.
3. Practice behaviors that are consistent with professional and employer expectations/requirements of their employees.

Disabilities Support Statement:
The College is committed to providing reasonable accommodations for students with disabilities. Students are encouraged to schedule an appointment with the campus Disabilities Support Counselor to request an accommodation needed due to a disability. A listing of campus Disabilities Support Counselors and contact information can be found at the disabilities services - https://www.dtcc.edu/disabilitysupport web page or visit the campus Advising Center.