Course Title: Radiology  
Course Number: DHY 103  
Course Credit: 3 cr.

Semester Analysis: 15 weeks of classes/lab  
Placement: First year, first semester  

Pre-Requisite: BIO204 and admission into the Dental Hygiene Program  
Co-requisite: DHY101 and DH102

Faculty: Jane Doe  
Office #: (978) 630-9413  
E-mail: @mwcc.mass.edu

Course Description:
This course is an introduction to the science of radiology; the nature of radiation, radiation physics, theory and practice in the fundamentals of exposure and processing techniques, radiation hygiene and safety, and introduction to radiographic interpretation. Lab experience is included.

The general education and program competencies for this course that will be met are as follows:

MWCC General Education Competencies addressed in this course:
1. Competence in written and oral communication in English  
2. Competence in quantitative reasoning and scientific modes of inquiry  
3. Information literacy  
4. Understanding self

Leveled Program Competencies for Semester I:  
(*indicates those competencies addressed in this course)

The student will:
1. *Communicate with guidance through written and electronic means.  
2. *Demonstrate basic application of theory in pre-clinical setting  
3. *Communicate a basic plan of care for an individual, utilizing appropriate interpretive and assessment skills  
4. *Utilize opportunities to enhance one’s own learning in the practice of dental hygiene
Course Objectives: Met Through Radiology Lab/Lecture Experience

Upon completion of this course, the student will be able to:

- Discuss the history of dental radiology and the role of radiographs in dentistry.
- Describe and discuss both manual and automatic processing of dental film including latent image formation, darkroom requirements, solutions and safe lighting.
- Describe and discuss density, contrast and detail as it applies to radiographic film. Include the types and effects of film fog.
- Discuss, describe and perform and differentiate common dental radiographic exposures and surveys. Include the technique for each.
- Discuss the criteria for diagnostic acceptability.
- Diagram and discuss the function of each part of a dental x-ray machine.
- Describe and discuss the production of primary radiation including characteristic radiation, bremsstrahlung, and the useful beam.
- Describe and discuss the interaction of x-rays and matter including absorption, ionization, and secondary and scatter radiation.
- Discuss how mA, kVp, exposure time and focal film distance affect the radiographic image. Solve problems based on appropriate formulas and reasoning.
- Discuss the qualities of an ideal radiographic image and the five principles of projection geometry. Relate projection geometry to both the paralleling and bisecting angle techniques.
- Discuss the purpose and techniques for duplicating radiographs.
- From radiographs identify and discuss the normal anatomy of the teeth and supporting structures. Include the eruption process.
- Identify and describe common restorative/dental materials.
- Identify and describe anatomic landmarks present in extra and intraoral dental exposures. Using the correct terminology, describe, differentiate and identify common anomalies, developmental defects, diseases and pathology of the teeth and jaws.
- Utilizing a systematic approach, interpret full mouth surveys for health, anatomic landmarks, common diseases of the teeth and bone, anomalies and developmental disturbances. Discuss and demonstrate behaviors/methods/techniques for exposing dental radiographs on children and adults. Include techniques for common problems as well as developmental and acquired abnormalities.
- Demonstrate appropriate infection control procedures when exposing and processing radiographs.
- List the basic principles of shadow casting and describe their influences on the radiographic image.
- Describe and demonstrate the basic principles of parallel technique, bisecting angle technique and digital radiography.
- Describe and demonstrate the exposure of the panoramic radiograph. Correctly mount full mouth and bitewing radiographs.
- Identify and describe the cause and correction for errors in exposure and/or processing technique.
- Describe the advantages and disadvantages of digital radiography. Expose, process, and mount bitewing and full mouth radiographic surveys utilizing digital image plates and computer software.
- Duplicate radiographs.
Teaching Methods: Lecture, laboratory, PowerPoint presentation, videotapes, handouts, discussions, textbook assignments and tests. Laboratory session will have demonstrations, hands-on group and individual learning activities on DXTTR training manikins. Assigned readings and homework are expected to be completed prior to each class and laboratory session.

Method of Evaluation: Grades on assignments, laboratory work and exams must average 77 or above for a passing grade.

Attendance policy: Attendance for both classroom and laboratory sessions is required, as per student handbook. It is the student’s responsibility to arrange any make-up time with the instructor if an absence is unavoidable. Absence for lecture or laboratory sessions will adversely affect your final grade. Students are responsible for all class/laboratory materials, assignments and activities regardless of absence.

Grading:
- 4 written tests: 25%
- Laboratory work: 25%
- Midterm exam: 25%
- Final exam (comprehensive): 25%

Statement on Disabilities: If you have a disability, medical or emotional issue that might impact your class performance, please consult with me privately so that the college may provide the required and appropriate accommodations for you. It is most beneficial if the disclosure is made early in the semester. This could include learning disabilities, brain injury, and hearing impairments, etc., just to name a few.

Students with documented disabilities, who believe that they may need accommodations in this class, are encouraged to contact the Counselor for Students with Disabilities in Rm. 135; phone # (978) 630-9120. Do so as soon as possible to ensure that any such accommodations are implemented in a timely fashion.

In addition to the instructor, the college employs other staff to which the student may go for support. They are:
- Nancy Kennedy, Director of Counseling – R. 141B
- Dine King, College Nurse/Health Educator, the Health and Wellness Office – Rm. 133

Policies and Procedures: This course follows all the policies and procedures listed in the MWCC Dental Hygiene Student Handbook 2010-2011.

Plagiarism: Plagiarism on any assignment will result in a grade of zero for that assignment. If plagiarism is identified, a conference will be scheduled with the student and the instructor. The student may have one chance to re-write the assignment based on the discretion of the instructor. Faculty will review written assignments for plagiarism on Blackboard through “Safe-Again”. Students may seek help in the writing labs at the Gardner Campus, if needed, with written assignments.

Required course Texts:
Reference Texts: