

Department of Medical Imaging Sciences  
Faculty of Health Sciences American  
University of Beirut

**Course number: MIMG207**

Course name: Principle of Imaging II

Fall semester AY 2019 - 2020

### Course Administration

Instructor: Dr. Charbel Saade (Assistant Professor)  
Office: 3<sup>rd</sup> Floor, Van Dyck - Room 329  
Phone: 2964  
Office hours: by appointment  
Email: cs39@aub.edu.lb

### Class Time and Location

Monday: 13:30 – 14:45 – MIS classroom

Wednesday: 13:30 – 14:45 – MIS classroom

### Course Description

This course is designed to develop competency in diagnostic procedures of the gastrointestinal system, biliary tract, and genitourinary systems, and breast imaging. Vascular and non-vascular interventional procedures are covered to provide students with knowledge about the techniques used for management of patients with these radiological procedures. The course content will focus on the patient and equipment preparation, projections and positions followed for each study, use of contrast media, after care of patients and radiographic appearances of different anatomical structures.

### Course Objectives

By the end of the course, students will be able to:

Contrast Media:

1. Identify the pharmacology and type of radiopaque contrast media and discuss the classifications and route of administration of contrast media employed in imaging procedures.
2. Identify the applications of radiographic contrast media.
3. Describe the adverse side effects and reactions of radiopaque contrast media and identify the screening methods to evaluate patients prior to introduction of radiopaque contrast media.

Gastrointestinal system, biliary tract and genitourinary system procedures:

4. Identify the anatomy of the gastrointestinal system, biliary tract and genitourinary system.
5. List and define the indications and the contraindications for the procedures involving the gastrointestinal, biliary tract and genitourinary system.
6. Identify the type of contrast media used for the procedures.

7. Describe the patient preparation for the procedures.
8. List and identify the specialized equipment necessary for the procedures.
9. Describe the patient positioning and projections taken for the procedures.
10. Identify the other imaging modalities used to evaluate the different body systems.
11. Identify the radiographic anatomy of the projections taken and perform image critique.
12. Identify the complications associated with the procedures.

#### Breast Imaging:

13. Describe the anatomy of the breast
14. Discuss the advantages and disadvantages of the following breast imaging modalities, digital mammography, breast ultrasound, breast magnetic resonance imaging
15. Identify the characteristics of benign and malignant breast lesions
16. Identify the common types of breast cancer.
17. Identify the reasons for breast compression, spot compression and magnification techniques.
18. Describe the proper positioning for the routine and supplementary projections in digital mammography
19. Identify the breast radiographic anatomy of the projections taken and perform image critique.
20. Identify the purpose of breast needle localization
21. Identify and discuss the advantages and disadvantages of the various core biopsy methods.

#### Vascular and Non-Vascular Interventional Procedures

22. Describe and identify the use, the shape and specifications of catheters, guide wires and accessory items found in interventional suite.
23. List and describe the various vascular and nonvascular interventional procedures that can be performed.
24. List the indications and contraindications for interventional procedures.
25. Discuss vessel access for the interventional procedures.
26. Identify common complications for the interventional procedures.

**Credits Allocated: 3**

**Prerequisites: MIMG 206**

**Course Requirements and Student Evaluations**

	<b>Assessment</b>	<b>Objectives</b>	<b>Percent</b>
A.	Attendance and Class Contribution		5%
B.	Quiz 1 (Week 5)	1-12	30 %
C.	Quiz 2 (Week 9)	31-21	30 %
D.	Final Exam (Week 14)	22-26	35 %

**N.B. : The passing grade for the course is 70/100**

See Appendix 1 for Assignment Outline and Marking Criteria

**General Education Knowledge Goals and Skills**

**General Education Knowledge Goals**

1. Communication: Students will communicate effectively in both speech and writing.
2. Technology: Students will use computer systems or other appropriate forms of technology to achieve educational and personal goals.
3. Diversity: Students will understand the importance of a global perspective and culturally diverse peoples.
4. Ethical Reasoning and Action: Students will understand ethical issues and situations.

**General Education Knowledge Skills**

1. Written and Oral Communication in English: Students will communicate effectively in speech and writing and demonstrate proficiency in reading.
2. Critical Thinking and Problem-solving: Students will use critical thinking and problem-solving skills in analyzing information.

3. Ethical Decision-Making: Students will recognize, analyze and assess ethical issues and situations.
4. Computer Literacy: Students will use computers to access, analyze or present information, solve problems, and communicate with others.
5. Collaboration and Cooperation: Students will develop the interpersonal skills required for effective performance in group situations.
6. Intra-Cultural and Inter-Cultural Responsibility: Students will demonstrate an awareness of the responsibilities of intelligent citizenship in a diverse and pluralistic society, and will demonstrate cultural, global, and environmental awareness.

### Detailed Course Outline

Please note this is a tentative schedule. Any changes may be made at the instructor's discretion.

Date	Topic	Reading
2/9/19	Contrast Media - 1	<ol style="list-style-type: none"> <li>1. Thomsen, H. S. (2006). <i>Contrast media</i>. J. A. Webb (Ed.). Springer-Verlag Berlin Heidelberg.</li> <li>2. Thomsen, H. S. (2011). Contrast media safety—an update. <i>European journal of radiology</i>, 80(1), 77-82.</li> </ol>
4/9/19		
9/9/19	Contrast Media - 2	
11/9/19		
16/9/19	Contrast Media - 3	
18/9/19		
23/9/19	Gastrointestinal System - 1	
25/9/19		
30/9/19	Gastrointestinal System - 2	
2/10/19		
7/10/19	Gastrointestinal System - 3	
9/10/19		
14/10/19	Gastrointestinal System - 4	
16/10/19		
21/10/19	Breast Imaging - 1	
23/10/19		
28/10/19	Breast Imaging – 2 and 3	
30/10/19		
4/11/19		
6/11/19	Vascular Interventions - 1	
11/11/19		
13/11/19		
18/11/19	Vascular Interventions - 2	
20/11/19		
25/11/19	Non - Vascular Interventions	
27/11/19		
2/12/19	Final Exam	

## Bibliography / References

1. Andolina, V.F. & Lille, S. (2011). *Mammographic Imaging: A Practical Guide*. 3<sup>rd</sup> Edition. Philadelphia, PA, Lippincott Williams & Wilkins.
2. Bontrager, K.L. and Lampignano, J. P. (2013). *Textbook of Radiographic Positioning and Related Anatomy*. 8<sup>th</sup> Edition. St. Louis, Missouri, Elsevier Mosby.
3. Levine, M.S., Ramchandani P. & Rubesin S.E. (2012). *Practical Fluoroscopy of the GI and GU Tracts*. United Kingdom, University Press, Cambridge.
4. Long, B.W., Rollins J. H. & Smith, B. J. (2016). *Merrill's Atlas of Radiographic Positioning and Procedures (Volumes 1, 2 and 3)*. 13<sup>th</sup> Edition. St. Louis, Missouri, Elsevier Mosby.
5. Munoz J.J. & Ribes R. (2010). *Learning Vascular and Interventional Radiology*. New York, Springer
6. Peart, O. (2005). *Mammography & Breast Imaging*. McGraw-Hill.
7. Valgi, K. (2012). *The Practice of Interventional Radiology with Online Cases and Videos*. Philadelphia, PA, Elsevier Saunders.
8. Watson, N. & Jones H. (2018). *Chapman & Nakielny's Guide To Radiological Procedures*. 7<sup>th</sup> Edition. Elsevier.
9. Website: [www.MDCT.com.au](http://www.MDCT.com.au)
10. Website: <https://www.med-ed.virginia.edu/courses/rad/gi/index.html>

## Course Policy

1. **Attendance:** Attendance is mandatory and attendance will be taken in each lecture and lab session. You are expected to attend all classes and participate in classroom activities. If you miss a class, it is your responsibility to make up for the material missed and inquire about any announcements made. As per AUB General Regulations, students who miss more than one-fifth of the sessions of any course in the first ten weeks of the semester (five weeks in the case of the summer term) are dropped from the course.
2. **Academic integrity:** Education is demanding and time management is essential. Do not hesitate to use the resources around you but do not cut corners. Cheating and plagiarism will not be tolerated. Please review the Student Code of Conduct in your handbook available on the following web page: <https://www.aub.edu.lb/sao/Documents/Student%20Handbook%202016-2017.pdf> and familiarize yourself with definitions and penalties (p. 33).

If you're in doubt about what constitutes plagiarism, ask your instructor because it is your responsibility to know. The American University of Beirut has a strict anti-cheating and anti-plagiarism policy. Penalties include failing marks on the assignment in question, suspension or expulsion from University and a permanent mention of the disciplinary action in the student's records.

3. Missed tests: All tests must be completed within the time period specified; zero points

will be given for an exam if the student does not adhere to the time guidelines. The only delays for the final exam that will be considered by the instructor are for documented illness, death in the family, and personal/family emergency.

4. **Students with Disabilities:** AUB strives to make learning experiences accessible for all. If you anticipate or experience academic barriers due to a disability (such as ADHD, learning difficulties, mental health conditions, chronic or temporary medical conditions), please do not hesitate to inform the Accessible Education Office. In order to ensure that you receive the support you need and to facilitate a smooth accommodations process, you must register with the Accessible Education Office (AEO) as soon as possible: [accessibility@aub.edu.lb](mailto:accessibility@aub.edu.lb); [+961-1-350000](tel:+961-1-350000), x3246; West Hall, 314.
  
5. **Non-Discrimination – Title IX – AUB:** AUB is committed to facilitating a campus free of all forms of discrimination including sex/gender-based harassment prohibited by Title IX. The University’s non-discrimination policy applies to, and protects, all students, faculty, and staff. If you think you have experienced discrimination or harassment, including sexual misconduct, we encourage you to tell someone promptly. If you speak to a faculty or staff member about an issue such as harassment, sexual violence, or discrimination, the information will be kept as private as possible, however, faculty and designated staff are required to bring it to the attention of the University’s Title IX Coordinator. Faculty can refer you to fully confidential resources, and you can find information and contacts at [www.aub.edu.lb/titleix](http://www.aub.edu.lb/titleix). **To report an incident**, contact the University's Title IX Coordinator Trudi Hodges at 01-350000 ext. 2514, or [titleix@aub.edu.lb](mailto:titleix@aub.edu.lb). An anonymous report may be submitted online via EthicsPoint at [www.aub.ethicspoint.com](http://www.aub.ethicspoint.com).