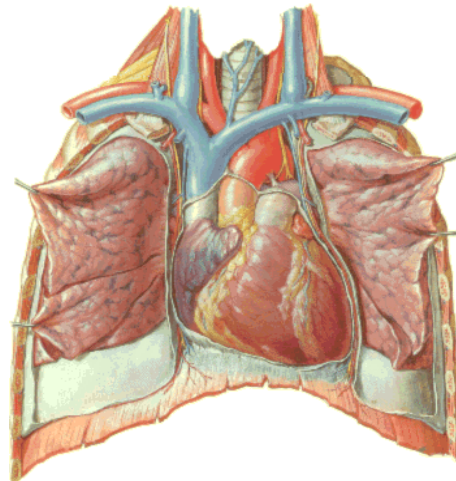
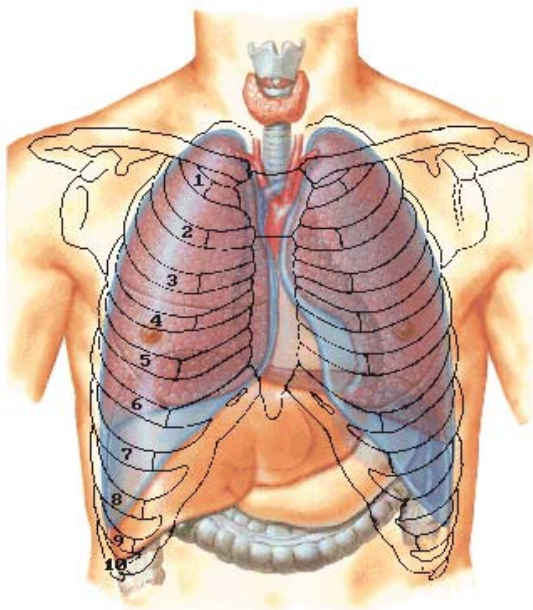


**Clinical Anatomy, Embryology, and Imaging  
BMS 6115C  
Summer 2008**

**Florida State University  
College of Medicine**

**Course Director  
Lynn J. Romrell, Ph.D.**



**Contents:**

**Course Syllabus  
Course Schedule  
Laboratory Schedule  
Laboratory Rules & Protocol**

## Faculty & Teaching Assistants

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9. David Nigen
10. Michael Simpson
11. Lance Tegen
12. Jennifer Tota

## **General Course Syllabus**

This syllabus is a guide for participation in the course; information is subject to change during the presentation of the courses. Any changes in the course will be announced during the classroom and laboratory sessions and will be noted in the course Blackboard web site.

# Overview

## Human Anatomy, Embryology and Imaging Course – BMS 6115

**Goals:** Human Anatomy, Embryology and Imaging (BMS 6115C) is a 10 week long course and runs concurrently with the Doctoring 1 Course. The primary goal of the course is to provide the students with a basic understanding of the gross anatomy, embryology and radiologic imaging of the entire body. This knowledge serves as a foundation for the remainder of the student's medical education and future practice of medicine. Second, this course prepares students to apply their understanding of anatomy, embryology, and radiologic imaging as they gain insight into the pathophysiology of disease processes. Students are encouraged to utilize learning resources such as faculty, textbooks, journals and FSU-COM computer resources so that as long term learners the students are able take responsibility for their own continued educational development.

The team approach is essential in this course, which has a major laboratory component. Medicine is a “team sport.” Appropriate care of patients requires the constant interactions of numerous members of the health care team. Most of us learn best when we share our knowledge with others – good teachers learn from those they teach.

The assigned laboratory teams are expected to work together on the clinical cases presented in lecture and to work as a team to complete the assigned dissection in the laboratory. Students will utilize a variety of digital imaging programs that will supplement learning that occurs in the laboratory setting, lectures, small-group sessions and personal study time. As a side benefit, this course will introduce the student to anatomical terminology commonly used in medicine today. The anatomic knowledge gained during the course will be used in later courses in the curriculum.

### Course Objectives: The student will be able to:

Knowledge – be able to:

1. Demonstrate a basic knowledge of normal anatomy, embryology, cross-sectional anatomy and radiologic imaging of the human body.
2. Apply anatomical knowledge to recognize and solve clinical problems.
3. Demonstrate knowledge of the anatomical differences in the human body from birth to senescence.
4. Recognize when one has reached the limits of their anatomical knowledge when trying to apply it to understanding clinical problems, and be able to utilize other resources to obtain needed information in a timely manner.
5. Recognize the anatomy and laboratory findings related to variations, pathology, previous surgery and human life cycle from gestation to the elderly patient.

Skills – be able to:

6. Utilize a variety of resources (faculty, textbooks, computers, internet, etc.) to locate anatomic, embryologic, and/or radiologic information in order to understand how it relates to clinical problems.

Interpersonal skills and communication – be able to:

7. Work together as a professional team in the anatomy laboratory and in small-group study sessions.
8. Engage in self-evaluation and evaluate peer performance during the laboratory and small-group experiences of the course.

Professionalism – be able to:

9. Demonstrate professional values, attitudes and behavior in all your interpersonal interactions with faculty, staff and peers.

**COMPETENCY & LEARNING OBJECTIVES AND EXAMPLES OF OUTCOME MEASURES IN THE CLINICAL ANATOMY, EMBRYOLOGY AND IMAGING BMS 6115C** The following are the general institutional learning objectives that have been organized by the competencies established by the College of Medicine.

General Competency	KEY	Institutional Learning Objective	Outcome Measure(s) Examples
	<u>K=Knowledge S=Skills AB=Attitudes/Behaviors</u>		
Professional values, attitudes, and behaviors	AB1	Display the personal attributes of compassion, honesty, and integrity in relationships with patients, families, communities, and the medical profession.	Observational during small-group interactions
	AB7	Demonstrate awareness of the health care needs of aging patients and a willingness to care for the elderly.	Observational during small-group interactions
	AB9	Demonstrate respect for the roles of other healthcare providers and of the need to collaborate with others in caring for individual patients and in promoting public health and community service.	Observational during small-group interactions
General Competency	KEY	Institutional Learning Objective	Outcome Measure(s) Examples
	<u>K=Knowledge S=Skills AB=Attitudes/Behaviors</u>		
Moral reasoning and ethical conduct	AB4	Demonstrate professionalism and high ethical standards in all aspects of medical practice, specifically competence, honesty, integrity, compassion, respect for others, professional responsibility and social responsibility.	Observational during small-group interactions
General Competency	KEY	Institutional Learning Objective	Outcome Measure(s) Examples
	<u>K=Knowledge S=Skills AB=Attitudes/Behaviors</u>		
Communicating with patients, families, and colleagues	S13	Demonstrate the ability to communicate compassionately and effectively, both verbally and in writing, with patients, their families, colleagues, and others with whom physicians must exchange information in carrying out their responsibilities.	Observational during small-group interactions
General Competency	KEY	Institutional Learning Objective	Outcome Measure(s) Examples
	<u>K=Knowledge S=Skills AB=Attitudes/Behaviors</u>		
Application of basic biomedical and behavioral sciences to patient care	K1	Recognize the scientific basis of health, disease, and medicine in the management of common and high impact medical conditions in contemporary society.	Observational during small-group interactions

	<b>K2</b>	Describe the development, structure and function of the healthy human body and each of its major organ systems at the macroscopic, microscopic, and levels.	Observational during small-group interactions. Performance during lab session, large group session, quizzes and major examinations.
	<b>K3</b>	Recognize and discuss the implications of altered structure and function (pathology and pathophysiology) of the body and its major organ systems that are seen in various diseases and conditions.	Performance during lab sessions
	<b>K4</b>	Identify changes in the structure and function of the human body associated with the aging process and be able to distinguish normal changes associated with aging from those that denote disease.	Performance during lab sessions
<b>General Competency</b>	<b>KEY</b>	<b>Institutional Learning Objective</b>	<b>Outcome Measure(s) Examples</b>
		<b><u>K=Knowledge S=Skills AB=Attitudes/Behaviors</u></b>	
Problem solving and critical thinking	<b>K6</b>	Describe basic biobehavioral and clinical science principles used to analyze and solve problems related to the diagnosis, treatment, and prevention of disease.	Performance during lab sessions, small group sessions, large group interactive sessions, quizzes and examinations
	<b>S3</b>	Demonstrate the appropriate use of laboratory tests and radiographic studies in making diagnostic and treatment decisions.	Performance during lab sessions, large group interactive sessions, quizzes and examinations
	<b>S5</b>	Demonstrate the ability to formulate and implement a plan of care for both the prevention and treatment of disease, enhancement of the patient's functional capabilities, and the relief of symptoms and suffering.	Observational during small-group interactions
<b>General Competency</b>	<b>KEY</b>	<b>Institutional Learning Objective</b>	<b>Outcome Measure(s) Examples</b>
		<b><u>K=Knowledge S=Skills AB=Attitudes/Behaviors</u></b>	
Lifelong learning and information management	<b>K11</b>	Describe strategies to support lifelong learning via both print and electronic sources to assist in making diagnostic and treatment decisions (e.g., practice guidelines) and to remain current with advances in medical knowledge and practice (e.g., medical information data bases).	Observational during small-group interactions
	<b>S11</b>	Demonstrate the ability to acquire new information and data and to critically appraise its validity and applicability to one's professional decisions, including the application of information systems technologies for support of clinical decision-making.	Observational during small-group interactions
<b>General Competency</b>	<b>KEY</b>	<b>Institutional Learning Objective</b>	<b>Outcome Measure(s) Examples</b>
		<b><u>K=Knowledge S=Skills AB=Attitudes/Behaviors</u></b>	
Personal awareness	<b>AB5</b>	Exhibit a capacity for self-evaluation, moral reflection, and ethical reasoning to form the basis for a self-directed, lifelong engagement in the responsible, committed, compassionate practice of medicine.	Observational during small-group interactions
	<b>S17</b>	Recognize abilities and limitations; know when to request assistance.	Observational assessment by faculty and staff; Observational during small-group interactions

## **University Curriculum Committee Approved Academic Honor Policy and ADA Statement**

### **ACADEMIC HONOR POLICY:**

The Florida State University Academic Honor Policy outlines the University's expectations for the integrity of students' academic work, the procedures for resolving alleged violations of those expectations, and the rights and responsibilities of students and faculty members throughout the process. Students are responsible for reading the Academic Honor Policy and for living up to their pledge to ". . . be honest and truthful and . . . [to] strive for personal and institutional integrity at Florida State University." (Florida State University Academic Honor Policy, found at <http://www.fsu.edu/~dof/honorpolicy.htm>.)

### **AMERICANS WITH DISABILITIES ACT:**

Students with disabilities needing academic accommodation should:

- (1) Register with and provide documentation to the Student Disability Resource Center; and
- (2) Bring a letter to the instructor indicating the need for accommodation and what type. This should be done during the first week of class.

This syllabus and other class materials are available in alternative format upon request. For more information about services available to FSU students with disabilities, contact the:

Student Disability Resource Center  
97 Woodward Avenue, South  
Florida State University  
Tallahassee, FL 32306-4167  
(850) 644-9566 (voice)  
(850) 644-8504 (TDD)  
[sdrc@admin.fsu.edu](mailto:sdrc@admin.fsu.edu)  
<http://www.fsu.edu/~staffair/dean/StudentDisability/>

### **FSU COM ATTENDANCE POLICY**

#### **COM Philosophy**

##### **We believe that:**

Professionalism is a major component of our medical curriculum. We believe students should conduct themselves appropriately in the various educational activities of the curriculum. This conduct includes coming to educational activities on-time, using the laptop computers only for course work during the educational activity, and not disrupting the class if late. The faculty should also demonstrate professionalism, by starting and ending all scheduled educational activities on time and providing a course schedule with clearly explained course policies in the course syllabus. Any changes in the schedule should be given to the students in a timely manner.

Students will be accountable and personally responsible for attending all educational activities (small groups, labs, clinical experiences, examinations, lectures, computer sessions, etc.).

Unexcused absences reflect negatively on the goals and objectives of the medical curriculum and demonstrate unprofessional behavior by the respective student.

We owe it to our state legislature and the citizens of the State of Florida to provide a quality educational program that meets the needs of our students in preparing them for the M.D. degree.

## **Attendance Policy**

Students are expected to attend all scheduled activities. Students are expected to be on time. Being on time is defined as being ready to start at the assigned time. If a student has an emergency that prevents her/him from attending a scheduled activity, s/he is to call and notify the Office of Student Affairs (Year 1/2) or the Regional Campus Dean / Student Support Coordinator (Year 3/4) and request that they inform the supervisors/professors/clerkship faculty/education director for that activity. If at all possible, the student should also call and at a minimum, leave a message with one of the course/clerkship directors. It is important that students realize that their absence or tardiness negatively impacts a number of other people. Attendance, including tardiness, is part of the student's evaluation for professionalism. Negative evaluations may result in decreased grades and in severe cases, referral to the Student Evaluation and Promotion Committee.

## **Procedure for Notification of Absence**

### **Year 1/2**

If the student knows in advance of an upcoming legitimate absence, the online "Advance Request for Absence from Educational Activity(ies)" process should be followed as outlined below.

If the absence occurs due to an unforeseen emergency, the student should contact the course director and the Associate Dean for Student Affairs immediately to report the absence including the reason for the absence.

The implications for the absence (e.g., remediation, course grade adjustment, make-up exam, etc.) will be given to the student by the course director and final decisions regarding these actions shall rest with the course director.

The online "Request for Absence" process should be used for all absences, including post-illness absences, regardless of whether the student is requesting an absence from one or more classes or the entire day. Here is how it works.

- 1) Student completes online form: <https://apps.med.fsu.edu/absence>  
(Form will only work in Internet Explorer)
- 2) The form is routed to student affairs for approval then to appropriate Course Directors/Instructors
- 3) Course Directors will approve/deny request
- 4) Students can check on the status of the progress of the request by clicking on the "Pending requests" link, where they will be able to see if the instructor(s) has taken action on the form.  
(If the instructor has not taken action within 24 hours, students can contact him/her directly to let him/her know that the request is pending.)
- 5) The student will receive an email indicating whether the request has been approved/denied.

Students must include all the courses/activities they plan to miss on the requested day of absence (lecture, small groups, quiz, exam, OSCE, etc.) If students plan to be gone the entire day and fail to include an activity/class on the form, they will NOT be excused from that particular activity/class. It will be considered unexcused. It is the students' responsibility to ensure the form is filled out completely with all the courses/activities they will miss for that particular day.

If a student's request has been denied, the email will not indicate the reason nor indicate which instructor denied the request.

Some reasons that are likely to automatically disqualify an advance request are: exams, CLC sessions and OSCEs -- unless it is for extreme circumstances (illness, family emergencies, etc).

### **Year 3/4 Required Clerkships**

If the student requests an absence in advance, the "Advance Request for Absence from Educational Activity(ies)" form (Appendix B) should be completed, signed by the student and given to the Regional Campus Dean. Requests for excused absences from a required clerkship should be rare and made only in situations that cannot be rescheduled to occur during a scheduled time off or during an elective. An excused absence from a required clerkship may be allowed when it is determined by the Regional Campus Dean that the student has no alternative (see Fourth Year Scheduling Policies).

The Regional Campus Dean, after consultation with the Education Director and the Clerkship Director, will make the final decision regarding the student's request and give the student the implications for the absence (e.g., remediation, course grade adjustment, make-up exam, etc.). Final decisions regarding implications for the student's grade shall rest with the Education Director. The Clerkship Director will notify the clerkship faculty member of the decision. The form will be filed in the Office of Student Affairs at the regional campus.

If the absence occurs due to an unforeseen emergency, the student should contact the Clerkship Director and the Regional Campus Dean immediately to report the absence including the reason for the absence. The Regional Campus Dean, after consultation with the Education Director and the Clerkship Director will make the final decision regarding implications of the student's absence. The implications for the absence (e.g., remediation, course grade adjustment, make-up exam, etc.) will be given to the student by the Regional Campus Dean. Final decisions regarding implications for the student's grade shall rest with the Education Director. The Clerkship Director will notify the clerkship faculty member of the decision. The form will be filed in the Office of Student Affairs at the regional campus.

### **Year 4 Electives**

If the student requests an absence in advance, the "Advance Request for Absence from Educational Activity(ies)" form should be completed, signed by the student and given to the Regional Campus Dean. The Regional Campus Dean, after consultation with the Elective Director, will make the final decision regarding the student's request and give the student the implications for the absence (e.g., remediation, course grade adjustment, make-up exam, etc.). Final decisions regarding implications for the student's grade shall rest with the Regional Campus Dean, who will notify the Elective Director of the decision. The form will be filed in the Office of Student Affairs.



If the absence occurs due to an unforeseen emergency, the student should contact the Regional Campus Dean immediately to report the absence including the reason for the absence. The Regional Campus Dean, after consultation with the Elective Director, will make the final decision regarding implications of the student's absence. The implications for the absence (e.g., remediation, course grade adjustment, make-up exam, etc.) will be given to the student by the Regional Campus Dean. Final decisions regarding implications for the student's grade shall rest with the Regional Campus dean, who will notify the Elective Director of the decision. The form will be filed in the Office of Student Affairs.

### **Remediation Policy for Absences from Examinations, Quizzes, Small Group Sessions, Laboratory Sessions, Clinical Learning Center Sessions, Preceptor visits, and Clerkship Call**

The remediation policies for absences from examinations, quizzes, small group sessions, laboratory sessions and clerkship call are:

1. **POLICY ON MISSED EXAMINATIONS:** Students are required to take major in-term and final examinations. According to rules of the curriculum committee, a student can only be excused from an examination by a course/education director decision based on the personal situation of the student. The course/education director will determine the time of the exam make-up session. Also, according to the curriculum committee decision and the existence of the FSU-COM honor code, the student will be given the same examination given to the other students.
2. **POLICY ON MISSED QUIZZES:** Students are required to take scheduled and unscheduled quizzes in the courses. A student can only be excused from a quiz by a course director decision based on the personal situation of the student. The student must make arrangements with the course/education director to make up a missed quiz. Also, according to the curriculum committee decision and the existence of the FSU-COM honor code, the student will be given the same quiz given to the other students.
3. **POLICY ON MISSED SMALL GROUP SESSIONS, LABORATORY SESSIONS, CLINICAL LEARNING CENTER SESSIONS, PRECEPTOR VISITS, AND CLERKSHIP CALL:** The student should contact the course director, small group leader or education director for instructions on remediation of the missed session and material covered.

**To obtain an excused absence the student must contact the Office of Student Affairs who will initiate a process to determine whether the absence can be excused. This request must be submitted in a timely manner to allow the process to occur and a decision made for the student request. Emergency requests will also be handled by the Office of Student Affairs.**

### **Remediation Policy for Students Who Fail a Course**

Remediation of courses/clerkships will be planned and implemented by a combined decision of the Evaluation and Promotion Committee in collaboration with the course/education director.

### **Unexcused Absences**

It will be the responsibility of the course/education directors to clearly state in their respective course/clerkship syllabi the implications for having an unexcused absence from a scheduled educational or examination activity in a course or clerkship. *For BMS 6115, students with more than two such absences in the summer term will not receive academic credit for the course and a grade of “F” will be submitted to the Registrar. Students who have an unexcused absence from an examination or a quiz will lose the entire score (points) awarded for that examination or quiz, and the final grade for the course will reflect this loss.*

## Course Components

**Anatomy Laboratory:** The laboratory experience will consist of highly interactive, small group activities designed to integrate structure identification with anatomical relationships and clinical significance. A significant portion of the course will be devoted to a dissection lab (four, two hour sessions per week). Student lab teams will be divided into a red and blue team. The red and blue teams will alternate every other day in taking responsibility for the dissections. The “dissecting” team will study the human cadaver, and the “non-dissecting” team will study cross-sectional imaging and radiology of the entire body by anatomical regions.

*One member of each team (red and blue) will be assign as the team captain for the week. At the end of the lab period (5:00 p.m.), the team captain for the dissecting team will meet with the entire non-dissecting team and review the dissection completed that day. All items identified in bold print in the dissection guide should be shown to the “non-dissecting” team. These daily meeting are essential so that the teams are ready to trade assignments each day.*

The ability to recognize and understand anatomical relationships is essential in many aspects of the practice of medicine from performing a basic physical examination to the interpretation of radiographic images. The lectures, laboratory exercises, and independent study assignments will focus on the normal anatomy and common variations seen in the human body. Students are to work in their assigned teams as they study and review the material presented in the course. Exchange of information between the red and blue teams must occur so that all students are able to benefit from every laboratory assignment. The team members are responsible to see that the exchange of information occurs on a frequent basis.

**Students not actively dissecting during lab hours and assigned to study osteology, radiology and/or cross-sectional anatomy can do so in the study room adjacent to the anatomy labs or in their respective community areas.** The study room in the anatomy laboratory is equipped with models, skeletons, computers, anatomy software, a computer and LCD projector. The anatomy laboratories and student study rooms are available to students 24 hours a day, seven days a week.

**Lectures:** Lecturers will focus the content on major anatomical concepts and introduce clinical presentations aimed at stimulating active student participation. **The lectures are intended to be very interactive between students and faculty. In order for this type of dialogue to occur, the student must read the assigned material before attending a lecture in order to intelligently discuss issues or ask for clarification about a concept.** The lecture is not intended to present all information; students are expected to study information in the assigned text to supplement material presented in the lectures. The textbooks will be the benchmark for the level of detail examined upon for each anatomical region. The radiology component of the course will focus on the recognition of anatomic structures using various radiologic techniques.

**Weekly “Grand Rounds” - Clinical Presentation:** Each week will end with a clinical presentation which is planned to emphasize anatomical concepts covered during the week. The material presented may be included on the examinations. These sessions will emphasize the importance of anatomy in developing a differential diagnosis in the treatment of patients.

**Radiology & Cross-sectional Imaging:** **The objective of the radiology cross-section component of the course is not to train radiologists.** The objective is to enable students to apply their understanding of the anatomic relationship to interpret and recognize structures visualized by a variety of radiologic techniques.

As part of the independent study required in the courses, students must complete the on-line tutorials presented in the “[Radiologic Anatomy](#)” (by Lanier, Rathe, and Seymour). Each unit has a self-evaluation exercise. Students must submit a statement that they have achieved a score of 80 percent on a 60-question examination in each unit. Students may take the examinations as many times as needed to achieve the required score. The practical examinations will include radiologic images with structures marked for identification.

**The lab is equipped with an ultrasound unit.** We will provide opportunities for all students to use an ultrasound unit to visualize anatomy on themselves and each other. This will be related to their anatomical study on the cadaver. Our goal is to provide a basic understanding of how ultrasound images are produced and how they compare to findings from dissections. Students will be able to download the imaging to share with students and faculty.

**Self-Study:** Blocks of time are planned each day for independent, self-directed use of faculty resources, educational materials such as videotaped demonstrations, interactive software, the Internet, and even textbooks.

**Available Resources:** The College of Medicine has a variety of textbooks and digital texts available to you at the library web site. The college also has made available the Gold Standard Multimedia web site <http://www.med.fsu.edu/library/gsm.asp>. You are encouraged to visit the Clinical Human Embryology, Cross-sectional Anatomy, Human Anatomy and Radiologic components of this site. You will find imaging and text references including self-testing components. A cross-sectional anatomy tutor will be available for you to study normal cross-sectional anatomy using the Visible Human data from the National Library of Medicine at: <https://mcintranet.med.fsu.edu/sites/courses/anatomy/default.aspx>.

**Assessment:** Student performance on all activities will result in an accumulation of points which will determine the student's status for the course and grades will be presented as; A, B+, B, C+, C, D, and F. The final grades are based on the total points accumulated in the course.

**Individual students can observe their scores in the course using the Blackboard web site under the Student Tools section and My Grades subsection. Grades are reported after all quizzes and unit examinations (written and laboratory examinations).**

The table below indicates the relative weightings for the components. A maximum of 100 points is possible.

## Determination of Grades

<b>Component</b>	<b>Total percent for each category</b>
<b>Written Unit Exams (60 questions each)</b>	
Unit 1 – Extremities and Back	<b>12</b>
Unit 2 – Thorax and Head/Neck	<b>12</b>
Unit 3 – Abdomen and Pelvis	<b>12</b>
<b>Laboratory Exams (60 questions each)</b>	
Unit 1 – Extremities and Back	<b>12</b>
Unit 2 – Thorax and Head/Neck	<b>12</b>
Unit 3 – Abdomen and Pelvis	<b>12</b>
<b>Mid-Unit Quizzes (20 questions each written and practical)</b>	
Unit 1 – Extremities and Back	<b>3</b>
Unit 2 – Thorax and Head/Neck	<b>3</b>
Unit 3 – Abdomen and Pelvis	<b>3</b>
<b>NBME Subject examination</b>	<b>16</b>
<b>TOTAL</b>	<b>100</b>

### Grading scale for the course

<b>Grade</b>	<b>High %</b>	<b>Low %</b>
A	100	90
B+	89	87
B	86	80
C+	79	77
C	76	70
D	69	65
F	<64	

### Important grading issues

1. To pass the CA course, students must make at least 70% overall in the course.
2. Individual grades are reported for the permanent record as either A, B+, B, C+, C, D, and F. Exact scores are only used to determine the grade category.

### Written Exams

**Unit Examinations:** The unit examinations are 24% of the value of the final grade. The unit examinations include both a written and laboratory practical component. The two components are of equal value. Two components (written and practical) are given on the same day; both components have 60 test items. The written examination questions will be simple multiple-choice questions (select the best answer). Many written questions will emphasize the clinical application of anatomy and will often be based on clinical scenarios. Information from all course activities is considered testable material for the written exams. The unit examination will not have questions from previous units.

Students will **NOT** be allowed to keep their unit examinations. **The final examination is not comprehensive.** The approximate percentages for the sources of the written exam questions are as follows:

1. Lecture-guided topics and clinical presentations, 75-85%
2. Assigned reading not lectured upon, 5-10%
3. Integration of X-sectional and radiographic anatomy, 5-10%

**Mid Unit Quizzes:** There will be three quizzes, which will occur at approximately the mid-point of each unit. The quizzes will include a written and practical component. For the practical, students will work in teams to identify the structures on the cadavers and radiographic images.

**NBME Subject Examination:** This is a **comprehensive examination** testing knowledge in anatomy and embryology. The score on the Subject Examination will be adjusted so 50<sup>th</sup> percentile is equal to the class mean on the other examinations in the course. This examination will count for 16% of the final grade

### **Laboratory Assessment**

**Laboratory Unit Exams:** The primary evaluation of the student's anatomical knowledge over the laboratory activities will be through three unit practical examinations during the course. The practical examinations consist of 60 questions consisting of basic identification and association type questions. Approximately 40 structures are tagged on the cadavers, models and skeletons, and the content level is comparable to most of the **BOLDED TEXT** structures in the dissector. About 10 questions will test knowledge about normal radiology and cross-sectional anatomy. The practical examinations are not comprehensive.

**Evaluation of teamwork of red and blue lab activities:** You will complete a peer-evaluation of your group members' participation in both the red and blue teams activities. You will also do a self-evaluation of your own performance.

## Required/ Recommended Textbooks & Atlases

Title, Publisher, ISBN	Authors	Edition	Required/ Optional
Essential Clinical Anatomy, Lippincott Williams and Wilkins, ISBN: 078176274X	Moore, Keith, L., and Agur, Anne, M. R.	3rd 2007	Required
Grants Dissector, Lippincott, Williams & Wilkins, ISBN: 9780781774314	Tank, Patrick W..	14 <sup>th</sup> 2009	Required
Langman's Essential Medical Embryology, Lippincott Williams and Wilkins, ISBN: 0781755719	Sadler, T. W.	1 <sup>st</sup> 2005	Required
<b>If you have not had any previous embryology courses, you may want to obtain the text listed below instead of the essentials of embryology text.</b> Langman's Medical Embryology, Lippincott Williams and Wilkins, ISBN:0781794854	Sadler, T. W.	10 <sup>th</sup> 2006	Alternate required
Imaging Atlas of Human Anatomy, Mosby, ISBN: 0723432212  <b>You can also get the following if you like working with the radiology imaging on your computers- Imaging Atlas of Human Anatomy – CD ROM ISBN-13: 978-0-323-03411-1 or ISBN-10: 0-323-03411-X</b>	Weir, J., and Abrahams, P.H.  <b>Weir, J., and Abrahams, P.H.</b>	3 <sup>rd</sup>  <b>August 2005</b>	Required
Anatomy in Diagnostic Imaging, Harcourt Publishers, ISBN: 072169358x	Fleckenstein & Trantum- Jensen	2 <sup>nd</sup>	Recommended as an alternate
<b><i>Choose one of the following atlases:</i></b>			
(a) Grant's Atlas of Anatomy, Lippincott, Williams & Wilkins, ISBN: 0781770552	Agur, A.M.R. and Lee, M.J.	12 <sup>th</sup> 2009	More "accurate" illustrations
(b) Atlas of Human Anatomy, Icon Learning Systems/Elsevier, ISBN: 9781416033851	Netter, F.H.	4 <sup>th</sup> 2008	Most popular among students
(c) Color Atlas of Anatomy: A Photographic Study of the Human Body, Lippincott, Williams & Wilkins, ISBN: 0781790131	Johannes W. Rohen, Chihiro Yokochi and Elke Lutjen-Drecoll	6 <sup>th</sup> 2006	Color photographic atlas
<b><i>Other reference texts recommended, but not required</i></b>			
Clinically Oriented Anatomy - Lippincott Williams & Wilkins, ISBN: 0781736390	Keith L. Moore & Arthur Dalley	5 <sup>th</sup> 2006	Recommended Reference Book
McMinn's Clinical Atlas of Human Anatomy with DVD, 6th Edition, Elsevier Science Limited, ISBN: 9780323036054	Abrahams, P.H., Marks Jr., S.C., Hutchings, R	5th	Color photographic atlas

**Other required items for the course:**

What else do you need for the course?

1. dissecting kit (optional – we supply basic tools)
2. lab coat or scrubs
3. eye protection – this can be glasses or safety glasses

Optional items you might purchase that will help you in the laboratory

1. plastic baster for each table to remove fluid from cadaver cavities
2. plastic apron

The College provides latex gloves for the laboratories

**Assessment of the Course and Faculty Evaluation:**

Mid Course Evaluations: A random sample of students will be asked to participate in a Mid-Course evaluation by the Office of Medical Education. This will assist the course director in being able to make any mid course adjustments based on the student feedback.

End of Course Evaluation. A random sample of students will be required to complete an evaluation of the course administered by the Office of Medical Education at the end of the course. Student evaluations will be kept anonymous to the course director.

Comments are of particular interest for improvement of the course. Students must complete the evaluation in order to have their course grade recorded.

Evaluation of Faculty – Students will be asked to complete the FSU SPOT/SUSSAI faculty evaluation forms for major course faculty and the FSU COM faculty evaluation form.

**Student evaluations of the course, lecturers, peers, and self are required in order for grades to be released to the FSU Registrar.**

<b>Order of Weekly Content Areas</b>	
<b>WEEK</b>	<b>REGION</b>
1	Back & Upper Extremity
2	Upper Extremity
3	Lower Extremity
4	Unit 1 Exams / Thorax
5	Thorax / Head & Neck
6	Head & Neck
7	Head & Neck
8	Unit 2 Exams
9	Pelvis & Perineum
10	Pelvis & Perineum
11	Unit 3 & NBME Exams



# Anatomy Laboratory Rules and Protocol - 2008





## Protocol for the FSU-COM Human Anatomy Laboratory

Dr. Lynn Romrell is the former Executive Director (served for 25 years) and is currently the representative of Florida State University College of Medicine on the Anatomical Board of the State of Florida. As a member of the Anatomical Board, he is responsible to ensure that dignity is always shown for the remains of the individuals who will their bodies to the State of Florida for the education of medical students and other students in the health care disciplines.

### Lab activity

1. Access. The anatomy lab will be open 24 hours a day, 7 days a week during the semester. After hours, the anatomy lab can be accessed by the card reader.
2. All students, faculty and approved guests must sign “Pledge of Respect” form.
3. Authorized Personnel. Only COM medical students, faculty and other health-related personnel and facility workers are permitted access to the lab. FSU badges are the best form of I.D. All unauthorized persons will be told to leave immediately. After scheduled course hours, campus police regularly patrol the area and will escort trespassers from the lab and report the person(s) responsible for the unauthorized entry to appropriate authorities for corrective purposes. Immediate family members and health-oriented guests of medical student's must first receive authorization from Dr. Romrell before being allowed entry into the lab. The lab doors should not be opened for anyone "knocking" other than for an authorized person (i.e. student forgetting their card). Visitation is **NOT** permitted during scheduled dissection periods. During any visit of authorized guests, they should avoid all opened cadaver tanks. Minors will **NOT** be admitted except as part of an organized tour. It is the responsibility of all authorized personnel , faculty and students, to enforce these rules. It is the LAW that donors to the Florida Anatomical Board are guaranteed the respect and confidentiality in the spirit by which their gift was donated to our institution. Any disrespect to the cadavers will be dealt with accordingly.
4. According to Florida law, removal of any cadaver parts, whatsoever, from the laboratory is a crime of grave robbery.
5. NO photographs are to be taken of the cadavers or anything in the laboratory, except for images necessary for cadaver autopsy reports.
6. NO eating, drinking or smoking is allowed in the laboratory or amphitheater.
7. NO radios or tape players are allowed in the laboratory, unless used with earphones.

8. Personal protection in the lab:
  - Do not wear sandals or open toe shoes in the lab.
  - Recommend wearing scrubs or lab coats. Some prefer an additional plastic apron for protection from fluids.
  - Recommend wearing of gloves.
  - Wear glasses or protective goggles.
  - Material Safety Data Sheets of chemicals used in the laboratory are available in the lab.
  - Use dust mask when using electric bone saws.
9. First aid for cuts in the lab: First aid kits are available in the lab
  - Remove gloves and wash cut area.
  - Cover with sterile bandage.
  - Put on clean gloves.
10. All lab coats, dissecting equipment and books should be stored in the locker room or in the cadaver tank. Anything left out after regular lab sessions will be thrown out during daily lab cleaning. **Do not wear dissection clothing or gloves outside of the anatomy laboratory.**
11. Skeletons are available in the lab. Do not remove them from their stands or take them apart.
12. Disarticulated bones are also available, and should not be removed from the lab. Report any broken bone specimens to a faculty member for repair/replacement.
13. The antiseptic soap for washing hands is located on the sinks and locker rooms.
14. **Rule to Remember** No not try to catch a dropped tool or retrieve a tool dropped in the tank. In case of injury in the lab during regular lab sessions, notify a faculty member. If an injury occurs after regular lab hours, go to the emergency room.

**Lab waste containers:** There are three types - locate them, learn them, and use them correctly. These are emptied by three different disposal services, who refuse to empty incorrectly parceled waste.

- Type 1. Red-bagged buckets located under each cadaver table. For skin and fat only.
- Type 2. Regular waste receptacles located around the lab. For waste paper, gloves, etc.
- Type 3. Red Sharps containers located around the lab. For scalpel blades only.

**Anatomical Models:** All models should be handled with clean hands or clean gloves only. There will be study areas for looking at the models.

## **Dissection Tank and Cadaver**

1. Each group is responsible for keeping the cadaver table clean.
2. The cadaver is covered with a cloth material. Always cover the cadaver with this cloth when leaving the lab. Do not remove the toe or ear tag. This is used to properly dispose of the human tissue.
3. There is one plastic bottle at each table. Fill it only with a wetting solution located in the large crocks at the perimeter of the lab. Use this daily to wet down the cadaver/cloth upon leaving the lab.
4. There is one sponge at each table. It is the responsibility of each group to keep the cadaver and cadaver tray clean.
5. If a dissecting tool falls into the bottom of the cadaver tank, do not retrieve it. Replacement tools can be found in the blue bins outside the female locker room. They are compliments of previous classes.
6. If there is a problem or concern about your cadaver (odor, mold, fixation) or tank (broken mechanism) contact Dr. Romrell.

**Keeping your cadaver moist and in good condition and your cadaver table clean, results in a more pleasant lab experience and successful dissection exercises.**

**Tool Box**

A plastic toolbox containing several special dissection tools will be checked out to each group working at a table at the beginning of the course. That group is responsible for the tools and the return of the complete set in clean condition at the end of the course. Failure to do so will result in the withholding of the course grade and prevention of registration for the next term. There will be a charge to the group for any lost/unreturned tools. (PRICE LIST ENCLOSED BELOW).

**TOOLS GIVEN TO EACH TABLE ARE TO  
BE RETURNED  
AT THE END OF THE COURSE  
IN CLEAN CONDITION**

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**TOOL BOX REPLACEMENT PRICE LIST**

Rib Shears -----	\$72.00
Bone Shears -----	\$50.00
Bone Chisel -----	\$26.00
Bone saw -----	\$60.00
Rawhide Mallet -----	\$40.00
Periosteal Elevator -----	\$15.00
Tool Box -----	\$15.00

UNRETURNED, LOST, OR BROKEN TOOLS WILL RESULT IN WITHHOLDING OF GRADES AND FUTURE REGISTRATION UNTIL EITHER RETURNED/PAID FOR BY RESPONSIBLE DISSECTION TABLE/GROUP.

# Clinical Anatomy, Embryology and Imaging Examination Protocol

## **FOR WRITTEN EXAMS:**

The course directors should inform all students, **that if they were 15 minutes late to an exam, it would be considered an unexcused absence**. The student(s) will have to contact the Student Affairs Office.

## **FOR PRACTICAL EXAMS:**

All students must arrive promptly at their assigned time or they **will not** be permitted to take the practical.

## **A course coordinator or the course director will announce the following items to the students.**

1. Students will enter the examination room ten-minutes before the scheduled time of the examination(s).
2. Students will be instructed to write their name on the test and answer sheet, and bubble in their name and personal identification number before starting the examination(s).
3. **All answers must be recorded on the answer sheet in order to receive credit.**
4. If a restroom break is necessary, take your test and answer sheet to the proctor(s).
5. All Question and Answer sheets will be collected at the end of the examination by the proctor.
6. **Warnings:**
  - A. Students are given a 30-minute warning and will be reminded that all answers must be recorded on the computer answer sheet in order to receive credit, before the end of the exam(s).
  - B. Students are given a 10-minute warning, before the end of the exam(s).
7. At the end of the exam, all students will be instructed to:
  - A. Put their pencils down
  - B. Take their answer sheet and in some cases their test to the proctor stationed in the foyer.
  - C. Failure to comply is considered irregular behavior and will be noted.
8. **BRING YOUR SHARPENED PENCILS**

# INTRODUCTION TO GROSS PATHOLOGY FOR ANATOMY STUDENTS

By Andrew Payer, Ph.D.

As you perform the dissection of your cadaver, you will most likely encounter some abnormal (pathological) anatomy. This handout outlines some general principles of gross observation of lesions, and describes some features of common pathologic processes you may encounter. You will learn more about pathology and pathophysiology in subsequent courses; however, it is important at this stage to begin to develop keen powers of observation.

## 1. VIEWING THE SPECIMEN AS A WHOLE:

Your first task should be to IDENTIFY the organ. The second is to IDENTIFY and CHARACTERIZE any abnormalities (lesions). When you are examining an organ in a cadaver and can make use of normal anatomic relationships, the first part is easy. When you are examining a pathologic specimen that has been removed from the body, this may not be so simple. To identify and describe the organ as a whole you should observe the following features:

**SIZE:** What are the dimensions of the specimen you are examining? Is it the entire organ, or just a section of it? If just a portion is provided to you, what plane is the slice taken from? Can you extrapolate from the size of the section to the size of the intact organ? Lastly, is the size normal or abnormal for that organ? Dimensions that are relevant differ depending on the type of organ. For example, for the heart, it is customary to weigh the organ as a whole, and measure the thickness of the right and left ventricular walls. These measurements will tell you if there is too much or too little cardiac muscle present; the former situation indicates hypertrophy of the muscle, as seen in hypertension, the latter indicates atrophy of the muscle or loss of muscle due to myocardial infarctions or other processes. By contrast, a solid organ such as the spleen is best described in terms of weight and/or overall dimensions. Several conditions can lead to enlargement of the spleen, including portal hypertension, tumors, and acute or chronic infection.

**SHAPE:** The shape of an organ will provide clues as to its identity. For example, if you are provided with a tubular segment of tissue, it can only be part of the gastrointestinal tract, the genitourinary tract, or the vascular system. Specific features of the inner lining and the wall itself can help you distinguish between these--e.g. small intestine has very distinct transverse mucosal folds, as opposed to a large elastic artery such as aorta, which would normally have a smooth inner surface (intima). Solid organs will have different telltale shapes as well; a kidney sectioned sagittally looks like a bean, the liver is very large and has two major lobes, the thyroid is shaped like a butterfly, etc. It is also important to notice abnormalities in shape, once you have identified the organ. For example, a heart from a patient with congestive heart failure will appear more rounded (globular) than normal. This is because the chamber becomes dilated.

**CAPSULAR SURFACE:** It is important to distinguish between an anatomically relevant surface of the organ (capsule or other covering), and the surface that has been exposed by the pathologist or anatomist by cutting open the organ (cut surface, see below). Capsules of organs should normally be smooth, glistening, thin, and nearly transparent. Some abnormalities you may observe include thickening of the capsule, focal lesions (see below), wrinkling of the capsule (indicating shrinkage of the organ), rough

shaggy material on the capsule (fibrin or collagen, indicating recent or remote inflammatory process), or a nodular “cobblestone” appearance, that indicates extensive scarring in the underlying organ.

**ANATOMIC RELATIONSHIPS:** These relationships, if any are preserved in the specimen you are presented with, can help you identify the organ, but may also indicate pathologic processes. For example, radiation therapy to the uterus for cervical cancer may cause fibrosis (scarring) that results in plastering together of the cervix, the bladder, and the rectum. Sometimes, abnormal connections (fistulas) may be formed between these organs. Scarring processes in general, if they involved the outer surfaces of organs, may result in “adhesions”, bands of scar tissue that connect separate structures, or disparate parts of the same structure (e.g. loops of bowel, or visceral and parietal pleural surfaces).

## **2. EXAMINING THE CUT SURFACE:**

The CUT SURFACE should be examined and described in terms of COLOR, ARCHITECTURE, and CONSISTENCY. Any abnormal areas (LESIONS) should be described using a similar scheme.

**COLOR** can sometimes be useful in characterizing the organ or the lesion. The normal brown/tan/red color of many tissues is largely a function of the presence of blood. Material that appears darker than normal (brown, black or gray in fixed specimens, red or brown in fresh specimens) is often blood. Conversely, one reason an organ or lesion might be paler than surrounding areas is lack of blood (e.g. infarct). Fat also imparts a pale yellow appearance. Carbon pigment (black) may be seen in lungs and thoracic lymph nodes of smokers or city dwellers, pus usually appears white to yellow, bile appears green to yellow, etc.

**ARCHITECTURE:** The cut surface of an organ will be the best clue as to its identity. For example, the cut surface of the kidney will demonstrate the cortex and medullary pyramids very clearly. The absence or blurring of these regions in a kidney signifies pathology (e.g. diffuse infiltration by tumor, or swelling as may be seen in acute tubular necrosis). The cut surface of glandular tissues like pancreas or salivary gland has multiple little lobules that are joined together by collagen (interlobular septa). It is important to notice any focal (e.g. holes, masses, discoloration, etc.) or diffuse abnormalities of the underlying tissue architecture.

**CONSISTENCY:** Much can be learned about a specimen by palpating it (with gloves on!). For example, normal lung is spongy; pneumonia will make the lung feel very firm and solid (“consolidation”). Scar tissue (fibrosis) will cause tissue to feel tougher than normal, cancer is often hard, like a rock. Processes that cause death of the tissue (necrosis) may lead to softening (liquefaction) of the specimen in areas.

## **3. DESCRIBING AND CHARACTERIZING THE LESIONS:**

LESIONS should be described according to size, shape, number, color, and consistency (see above). Once the salient features of the lesions have been noted, follow the steps below to arrive at a tentative diagnosis.

Determine whether the lesion(s) is FOCAL or DIFFUSE. FOCAL lesions are discrete, stand out from surrounding unaffected tissue, and may have well defined margins. Examples of focal lesions are infarcts, abscesses, granulomas, benign neoplasms, and some malignant neoplasms. DIFFUSE lesions lack discrete margins, tend to be more subtle than focal lesions, and may involve the entire organ.

Examples of diffuse lesions are organ hypertrophy, leukemic infiltration, inflammatory processes, or diffuse scarring processes.

If the lesion is FOCAL (or MULTIFOCAL, i.e. several discrete, well demarcated lesions):

**Does it reflect the blood supply of the organ or part of the organ?** Infarcts (areas of tissue death due to interruption of the blood supply) are typically “wedge-shaped” with the apex of the wedge at or near a blocked blood vessel, and the base at the capsular surface. The affected area encompasses the region supplied by that artery.

**Is it cavitory?** (Is the lesion a hole or softened region?) If so, is the wall of the cavity thin or thick? Thin walled cavities may include benign cysts, or abscesses. Thicker walls indicate scarring and host reaction of a chronic infection, and are typical of granulomas, as seen in tuberculosis.

**Is it expansile?** Expansile masses have “pushing borders” and compress the adjacent tissues, forming a “pseudocapsule” of attenuated tissue around itself. These lesions can sometimes be “shelled out” of the organ. This is a feature of benign neoplasms (e.g. uterine fibroids (leiomyomas))

**Is it infiltrative?** Infiltrative lesions, in contrast to expansile ones, have an intimate relationship with surrounding tissue and cannot be shelled out. Close inspection of the border of the lesion may reveal irregular tongues of tumor extending into the tissue. This is a feature of malignant neoplasms (cancers).

If the lesion is DIFFUSE:

**Does it involve overall enlargement of the organ?** Examples of diffuse pathologic processes that result in organomegaly (enlargement) are: hypertrophy, chronic passive congestion, and infiltration by leukemia.

**Can the cardinal signs of inflammation be seen?** Swelling, congestion of blood vessels, and infiltration of the tissue by white blood cells are features of inflammatory processes, such as pneumonia. Swelling is manifested by bulging of the cut surface, blurring of normal architectural features, or more firm consistency of the tissues. Vascular congestion will make tissue appear darker in color, and infiltration by white blood cells may make tissue appear paler and firmer (indurated) than normal. Inflammation may also show up on the capsular surface as a shaggy, soft material (fibrin, fibrinous exudate). The lung is a common place to see these changes.

**Is there generalized scarring?** A sequel of inflammatory or degenerative processes is scarring (fibrosis). This can be most readily recognized by observing the capsular surface for areas of retraction or a cobblestone appearance. The cut surface will show deranged architecture, areas of tough, gristle-like tissue, or general increase in firmness. A scarred organ is often smaller than normal. Examples are benign nephrosclerosis in the kidneys (common result of aging and hypertension), cirrhosis of the liver, and interstitial pulmonary fibrosis in the lung.