Embryo Syllabus

Course Number and Name: AN2220 Human Embryology
Course Hours: Lab and lecture
Course Credits: 2

Contact Information:
Course Instructor: Robert E. Routh, Ph.D
Office Number and Building:
Office Hours – days / time: Monday – Friday 9:00 a.m. – 5:00 p.m.
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Course Materials:
Required Readings / Texts and or Articles:
Text:
Title: The Developing Human: Clinically Oriented Embryology
Author: Ketih L. Moore & T.V.N. Persaud
Edition: 8th Ed.
Publisher: Saunders
Date of publication. 2003

Scholar 360 Address: http://scholar360.com/txchiro
Course Description:
Human Embryology AN2220 will cover development of the major systems of the human body from the conception through birth. These systems include the musculoskeletal, digestive, nervous, cardiovascular, respiratory, and urogentital systems. This course will also emphasis congenital birth defects that the Chiropractor may be presented with in a clinical setting.
CCE / TCC Competencies:
Human Embryology is designed to bridge the basic science principles of embryology to the essential chiropractic tools of physical exam, neuromuscular skills, diagnoses of

disease, and chiropractic adjustment or manipulation. Therefore, the student must master each system being cognizant of its clinical applications.

Learning Outcomes:

1. The student should be able to describe the development of the human zygote in the first four weeks of life after fertilization.
2. The student should be able to describe the formation of each organ system described in this course.
3. The student should be able to describe the congenital anomalies of each organ system presented in this course.

Learning Objectives:

1. The student will define and understand the first week of development including: gametogenesis, spermatogenesis, oogenesis, meiosis, fertilization, blastogenesis.
2. The student will define and understand the second week of development including: implantation and embryonic development.
3. The student will define and understand the third week of development including: gastrulation, neurulation, and somites.
4. The student will define and understand the fourth – eighth week of development including: germ layer derivatives and teratogens.
5. The student will describe the development and rotation of each organ within each system as it relates to the other structures around it.
6. The student will study each congenital anomaly in each organ system, and understand the consequences of each anomaly on the patient.

Teaching Philosophy:

"Repetition is the key, the key is repetition". This statement was forever expressed by Dr. O'Callahan at LSUHSC in Shreveport, LA while I was working towards my Ph.D.. The longer I teach the more convinced I see of this truth. During my class I will briefly teach you the process of learning. It will be covered in more detail in your neuroanatomy course. However, to go from short term, to intermediate, and finally long term memory the mind must "hold" information in a cognizant state for an extended period of time. This is why there is so much overlap between classes. Due to the physiology of learning I incorporate a "progressive" teaching style where every system is added to the next. In short, students in Human Embryology will be continually tested on concepts from Gross Human Anatomy I & II. Therefore, it is essential for the students to continually review previous anatomical systems in order to retain their knowledge. In addition, it is helpful if students will read the lectures before class. In that way, the student is not seeing the information for the first time. This will save the student a great deal of time studying and reviewing. By they end of Gross Human Anatomy I & II and Human Embryology the student will be able to go into their other

courses with confidence to learn physical exam, neuromuscular skills, diagnoses of disease, and chiropractic adjustment or manipulation.

Student Responsibilities:

The student has the responsibility of attending to their own learning and taking responsibility for their grade. The student should show up to class on time prepared to learn. While in the lab the student will wear either scrubs, or a long lab coat at all times. This includes late night study sessions and weekends. Students are to dress as to cover their bodies remembering that we are on a campus of academic excellence. Last, but not least, treat all your fellow classmates with respect. Your professor is here to help you.

General Lecture Guidelines:

Turn off your cell phone in lecture.

Do not text during lecture.

Do not "Facebook" or social network during class.

If you have a personal emergency you are free to get up and quietly walk out of lecture, without the professors permission, and without disturbing others.

Personal computers in class are highly encouraged, and lectures may be recorded.

Food &/or drink in the lecture room is permissible.

General Lab & Lecture Exam Guidelines:

Cheating will NOT be tolerated, and will be grounds for immediate dismissal from the College.

There is NO talking in exams, or you will be removed from the exam.

All late exams taken, due to illness or other reasons, automatically result in 10 points taken off of that exam. Taking exams late is highly discouraged.

All exams & quizzes are the property of Dr. Routh and are NOT to be copied or reproduced in any way.

Most exams & quizzes will be answered on a Scantron Card. Students are to have a Scantron Card with them at all times in order to be prepared for an unannounced quiz.

Course Content and Outline:

Week 1:

Mitosis & Meiosis, and The Beginning of Human Development: First Week, and Formation of the Bilaminar Embryonic Disk: Second Week

Week 2:

Formation of Germ Layers and Early Tissue & Organ Differentiation: Third Week, Organogenetic Period: Fourth Week, and Head & Neck Embryogenesis

Week 3*:*

The Nervous System: This section includes early development of the neural tube and neural crest, the derivatives of the neuroepithelium, the derivatives of the neural crest, the development and positional changes that occur during development of the spinal cord, the development of the primary and secondary brain vesicles and brain flexures

Exam Review

Week 4:

Exam I

The Respiratory System: This section includes the development of the lower respiratory system including the larynx, trachea, bronchi, and lungs. This section also includes the respiratory anomalies.

Week 5:

The Cardiovascular System: This section includes the development of the heart, great vessels, fetal circulation, and congenital anomalies.

The Musculoskeletal System (MSS): This section includes the development of muscle tissue (including cardiac, smooth, and skeletal), bone formation, joint formation, vertebral column, limbs, and congenital anomalies.

Week 6:

MSS continued

Exam Review

Week 7:

Exam II

The Digestive System: This section includes the development of the foregut, midgut, and hindgut, along with their congenital anomalies.

Week 8:

The Renal System: This section includes the three developmental stages of the human kidney, and how it is formed and positioned. This section also includes the anomalies of kidney development.

Urinary System I: This section includes the formation of the urinary bladder and urethra, and exstrophy of the urinary bladder. It also includes the anomalies of the

urachus and urethra. This lecture also includes the developmental stages of the adrenal gland.

Week 9:

Urinary System II

The Reproductive System: This material includes the development of the indifferent gonads, testis, ovaries, male & female genital ducts, external genitalia, and the congenital anomalies.

Week 10:

Exam Review

Exam

Week 11:

Bone Marrow Hematopoesis: This section includes the different types of cells found in the blood, and how they develop.

Week 12:

Anatomy I Review: If the schedule allows, the time that is available with be used for a review of information from Human Gross Anatomy I.

Week 13:

Anatomy I Review and Final Exam Review

Week 14 & 15: ***Final Exam***

Grade Method and Scale: (This is the policy of TCC and must not be altered.) Faculty has the discretion for setting the policy of rounding up or down and should be included in this section.

TCC Grading Scale

A = 90 - 100

B = 80 - 89

C = 70 - 79

F = below 70

Method of Assessment:

Students will be tested by two methods. These methods are:

1. Multiple choice
2. Essay or short answer

This course has no lab. Therefore, only material from lecture will be tested. The total number of correct answers will be divided by the total number of question throughout the entire course. A percentage of correct answers will determine the letter grade. See the section above.

POLICY INFORMATION:

Attendance Policy: (This is the policy of TCC and must not be altered.)

Regular and punctual attendance of all scheduled classes and laboratories is expected. A student is subject to academic penalty if absences exceed 10%. Absences exceeding 20% subject a student to dismissal from a course. Three incidences of tardiness may constitute an absence. If justifiable cause can be shown for the absenteeism, the student may be permitted to make up missed assignments and maintain enrollment in the class. During the course of their internship, students will be required to be in attendance at the clinic throughout the normal trimester vacation periods unless the clinic is closed. The hours from these periods will be added to the student's clinic requirements.

Also, state the actual attendance policy as it applies to your course. Attendance is based on contact hours and differs from course to course. Therefore, you may want to specifically indicate how many absences will meet the criteria of 10% of absences and 20% of absences.

Missed Examinations: (This is the policy of TCC and must not be altered.)

Students must notify faculty before missing any examination. If an examination is missed for good and sufficient reason **and** the student has notified the faculty member in advance, a make-up examination may be given subject to a fee of $40.00. The fee for the make-up examination is a minimum of $75.00 if a standardized patient is required for the exam. Additional required standardized patient hours may increase this $75.00 minimum fee. All intra-term examination must be made up prior to final examinations. Missed final examinations must be made up within the first week of the next semester. A student may be allowed a maximum of two missed examination dates for good and sufficient reason per trimester. These two missed examination dates are for all enrolled courses in a trimester, not for each individual course. Any request for additional make-up examinations will require documentation substantiating the absence and must be approved by the Dean of Academic Affairs.

State any other **guidelines and regulations** as it specifically applies to your course and may include the following

1. Cell phone
2. Walking in late
3. Leaving early
4. Wandering in and out of class
5. Dress code
6. Exam procedures
7. Student responsibilities
8. Use of computers in class
9. Others

Dr. Routh reserves the right to add test and quizzes at any time or any type.

Attachment #1:

To simplify the process of developing learning outcomes and objectives follow the procedure below.

Definition: A **domain** is a classification of knowledge and or clinical activity.

1. Determine if you are measuring a cognitive domain, a psychomotor domain or an attitudinal domain.
2. Under that domain determine which level of knowledge you are trying to assess. When viewing the charts below consider each **"level" (**noted in the grey boxes) as relating to the learning outcomes.
3. Courses that occur early in the curriculum should use level 1 and 2 action verbs while courses that occur later in the curriculum should use level 3 and 4 action verbs or those in a higher level.
4. It is very important that the verbs being considered are measurable
5. Those listed below are just a few of the possibilities.

Cognitive or Thinking Domain: Skills in the **cognitive domain** revolve around knowledge, comprehension, and critical thinking of a particular topic.

Note: some verbs may be applicable within more than one category.

Psychomotor (Skills) Domain: Skills in the **psychomotor domain** describe the ability to physically manipulate a tool or instrument like a hand or a hammer.

Psychomotor objectives usually focus on change and/or development in behavior and/or skills.

Attitudinal or Affective (Valuing) Domain: Skills in the **affective domain** describe the way people react emotionally and their ability to feel another living thing's pain or joy.

Affective objectives typically target the awareness and growth in attitudes, emotion, and feelings.

The affective domain is concerned with changes (growth) in interests, attitudes and values.

Level 1 Receiving	Level 2 Responding	Level 3 Valuing	Level 4 Organization	Level 5 Internalization
Requires learner shows awareness of the benefits of a particular value, attitude or interest	Requires learner to show awareness of the benefits of a particular value, attitude or interest	Requires learner to attach personal worth to a particular value, attitude or interest	Requires learner to determine how new values, interests and attitudes relate to those already held	Requires learner to respond consistently according to a set of values
1. Accept	1. Choose	1. Complete	1. Consider	1. Administer
2. Follow	2. Demonstrate	2. Evaluate	2. Facilitate	2. Criticize
3. Listen	3. Discuss	3. Justify	3. Investigate	3. Enhance
4. Observe	4. Identify	4. Propose	4. Recommend	4. Question
5. Receive	5. Select	5. Suggest	5. Synthesize	5. Solve

Note: some verbs may be applicable within more than one category.