

El Paso Community College

Syllabus

Part II

Official Course Description

SUBJECT AREA	<u>Diagnostic Medical Sonography</u>
COURSE RUBRIC AND NUMBER	<u>DMSO 2405</u>
COURSE TITLE	<u>Sonography of Obstetrics/Gynecology</u>
COURSE CREDIT HOURS	<u>4 4 :</u> <u>1</u>
	Credits Lec Lab

I. Catalog Description

Detailed study of the pelvis and obstetrics/gynecology as related to scanning techniques, patient history and laboratory data, transducer selection, and scanning protocols as well as fetal abnormalities. A grade of "C" or better is required in this course to take the next course. **Prerequisite: DMSO 1210. (4:1). Lab fee. OB/GYN Mock Exam fee.**

II. Course Objectives

Upon satisfactory completion of this unit, the student will be able to perform the following exams using 2D, 3D and 4D imaging.

A. Unit I. Obstetrics: Embryonic/Fetal Development

1. Define the following terms:

Ovulation	Fertilization
Implantation	Zygote
Morula	Embryo
Blastocyst	Blastomere
Trophoblast	Zona Pellucida
Amnion	Chorion
Gamete	Corpus Luteum
Graafian Follicle	FSH
Lutenizing Hormone	D & C
2. Identify the three (3) layers of the endometrium in a non-gravida uterus.
3. Identify the three (3) layers of the endometrium during pregnancy.
4. Name the three (3) embryonic germ layers.
5. Distinguish between embryonic and fetal development, or at what time during the gestational period this transition occurs.
6. Describe which anatomical systems are being developed at a given time during early gestation.
7. Define the length of a normal pregnancy in weeks and days.
8. Describe the stages of labor.
9. Differentiate between fetal lie, fetal position and fetal presentation.
10. Define the variations of fetal lie.
11. Define the different types of fetal presentation.
12. Define the different categories of fetal position.

B. Unit II. Obstetrics: Placenta and Umbilical Cord

1. Define the major two (2) functions of the placenta.
2. Describe the development and sonographic appearance of the placenta from early gestation to late gestation.
3. Explain placental grading.
4. Identify the correct placenta grade of a given placenta.
5. Identify the structures within the umbilical cord.
6. Explain blood flow during pregnancy:
 - a. How it first gets to the uterus
 - b. How it travels thru the placenta
 - c. How it reaches the fetus
 - d. How it travels within the fetus
 - e. How it returns to the placenta
 - f. Whether the fetal blood ever comes in direct contact with the maternal blood
7. Describe placenta migration.
8. Define and identify placenta previa.
9. Discuss accessory lobes.
10. Explain placenta considerations, if any, during multiple gestations.
11. Explain placenta localization during amniocentesis.
12. Identify two (2) types of amniocentesis.
13. Identify two (2) methods of performing an amniocentesis.
14. Describe the different lesions commonly associated with the placenta.
15. Explain the effects the following disease processes have upon the placenta:
 - a. Intra-uterine Growth Retardation
 - b. Diabetes
 - c. Pre-eclampsia
 - d. Drug/Alcohol Addiction
 - e. Anemia
 - f. Fetal Hydrops
 - g. Abruptio Placenta
16. Differentiate between a uterine fibroid and a myometrial contraction.
17. Define Braxton-Hicks contraction.
18. Explain the following umbilical cord anomalies:
 - a. Cord Prolapse
 - b. Cord Knots
 - c. Body Loopings
 - d. Umbilical Hernia
 - e. Single Umbilical Artery
 - f. Gastroschisis versus Omphalocele
19. Identify which fetal position umbilical cord prolapse is most likely to occur.
20. Differentiate between overt and occult prolapse.
21. Explain the importance of a distended bladder and the pitfalls of an over-distended bladder as compared to an under-distended bladder.

C. Unit III. Obstetrics: Normal Fetal Anatomy

1. Define and identify the following anatomical structures:
 - a. Fetal Thalami
 - b. Falx Cerebri
 - c. Peduncles
 - d. Ventricles
 - e. Cavum Septum Pellucidum
 - f. Orbits
 - g. Petrous Ridges

- h. Lesser Wings of the Sphenoid
- i. Ambient Cisterns
- j. Corpus Callosum
- k. Hippo and Para-Hippocampal Gyri
- l. Frontal, Occipital, and Parietal Bones
- 2. Describe the sonographic appearance of the previously listed structures.
- 3. Identify which three (3) of the previously listed structures are Bi-Parietal Diameter measurement landmarks.
- 4. Determine at what level within the fetal head the previously mentioned structures are located.
- 5. Identify the structures in the transverse, coronal and sagittal scanning planes.
- 6. Define and identify the following anatomical structures:
 - a. Fetal Umbilical Vein
 - b. Ductus Venosus
 - c. Fetal Kidneys
 - d. Fetal Bladder
 - e. Liver
 - f. Aorta
 - g. Fetal Stomach
 - h. Fetal Spine
 - i. Fetal Heart
 - j. Fetal Lungs
 - k. Diaphragm
 - l. Fetal Ribs
- 7. Identify which of the previously mentioned anatomical structures must be demonstrated to produce an accurate abdominal circumference measurement.
- 8. Describe the sonographic appearance of all of the previously mentioned anatomical structures in objective six (6).

D. Unit IV. Obstetrical Measurements

- 1. Differentiate between the following:
 - a. Menstrual Age
 - b. Gestational Age
 - c. Fetal Age
- 2. Describe how the following fetal measurements are performed:
 - a. Crown Rump Length
 - b. Robinson's Technique
 - c. Bi-Parietal Diameter
 - d. Occipital/Frontal Diameter
 - e. Cephalic Index
 - f. Head Circumference
 - g. Abdominal Circumference
 - h. Femur Length
 - i. Total Intra-uterine Volume
- 3. Identify at least two (2) pitfalls that may be encountered when performing the crown rump length measurement.
- 4. Explain why the bi-parietal measurement is taken from outer parietal table to inner parietal table, listing the specific effect that requires the measurement to be performed in this manner.
- 5. Differentiate between crown rump length and Robinson's technique.
- 6. Discuss three (3) factors that can influence bi-parietal diameter accuracy.
- 7. Identify which one (1) of the previously listed fetal measurements is the most accurate overall.
- 8. Discuss the bi-parietal accuracy and what gestational time constraints are involved.
- 9. Define when the head circumference is most useful or proves to be of greatest benefit.

10. Identify the three (3) factors that influence abdominal circumference.
11. Define when, during the gestational period, the abdominal circumference is least and most accurate.
12. Determine which measurement, the bi-parietal diameter or abdominal circumference, is most accurate when compared to each other.
13. Explain two (2) factors influencing femur length.
14. Compare the femur length measurement to the head circumference, bi-parietal Diameter, and abdominal circumference to determine which measurement is most accurate.
15. Identify two (2) factors which greatly diminish the accuracy of the total intra-uterine volume measurement.
16. Explain the two (2) influencing factors that can arise when performing exams on mothers with multiple gestations.
17. Describe the importance of comparing measurement ratios.

E. Unit V. Obstetrics: Fetal Anomalies

1. Define and describe the following cervical anomalies:
 - a. Teratoma
 - b. Cystic Hygroma
 - c. Meningo-Meningomyelocele
 - d. Edema
2. Identify which of the previous conditions result in:
 - a. increased/decreased amniotic fluid
 - b. increased alpha-fetoprotein
 - c. presence of other associated anomalies
3. Differentiate between:
 - a. Maternal Serum Alpha-fetoprotein
 - b. Amniotic Fluid Alpha-fetoprotein
4. Define and describe the following thorax anomalies:
 - a. Ectopic Cordis
 - b. Pericardial Effusion
 - c. Pleural Effusion
 - d. Diaphragmatic Hernia
5. Identify which of the previous conditions result in:
 - a. increased/decreased amniotic fluid
 - b. increased/alpha-fetoprotein
 - c. presence of other associated anomalies
6. Define and describe the following neural tube defects:
 - a. Anencephaly
 - b. Microcephaly
 - c. Hydrocephalus
 - d. Hydranencephaly
 - e. Holoprosencephaly
 - f. Dandy-Walker Cyst
 - g. Encephalomeningiocyte
 - h. Myelomeningioce
7. Identify which of the previous conditions result in:
 - a. increased/decreased amniotic fluid
 - b. increased alpha-fetoprotein
 - c. presence of other associated anomalies
8. Define and describe the following G.I. tract anomalies
 - a. Esophageal Atresia
 - b. Duodenal Atresia
 - c. Anal Atresia
 - d. Umbilical Cord Hernias
 - e. Omphalocele

- f. Gastroschisis
 - g. Fetal Ascites
9. Identify which of the previous conditions result in:
 - a. increased/decreased amniotic fluid
 - b. increased alpha-fetoprotein
 - c. presence of other associated anomalies
10. Define and describe the following genito-urinary tract anomalies:
 - a. Renal Agenesis
 - b. Hydronephrosis
 - c. Urinary ascites
 - d. Multicystic Kidneys
 - e. Infantile Polycystic Kidneys
 - f. Hydrocele
11. Identify which of the previous conditions result in:
 - a. increased/decreased amniotic fluid
 - b. increased alpha-fetoprotein
 - c. presence of other associated anomalies
12. Define and describe the following types of bone dysplasias:
 - a. Camptomelic Dysplasia
 - b. Achondroplasia
 - c. Chondroectodermal
 - d. Diastrophic Dysplasia
 - e. Thanatrophic Dysplasia
 - f. Osteogenesis Imperfecta
13. Identify which of the previous conditions result in:
 - a. increased/decreased amniotic fluid
 - b. increased alpha-fetoprotein
 - c. presence of other associated anomalies
14. Describe the methods of determining fetal viability.
15. Describe intra-uterine fetal demise and the signs that determine this condition.

F. Unit VI. Gynecological Anatomy

1. Explain the importance of a well distended urinary bladder.
2. Describe pitfalls that may be encountered from an over-distended or under-distended bladder.
3. Describe the normal size and sonographic appearance of the uterus.
4. Identify the three (3) tissue layers within the uterus.
5. Discuss uterine size changes during the life cycle.
6. Describe the normal size and sonographic appearance of the vagina.
7. Describe the size, shape and structure of the ovaries.
8. Discuss the sonographic appearance of the ovaries.
9. Explain the conditions which determine the location of the ovaries.
10. Define the ligaments which support the ovaries.
11. Describe the changes in ovarian size during the life cycle.
12. Explain any association between uterus location and ovarian location.
13. Describe changes in the ovary caused by pregnancy and menses.
14. Define the function and position of the fallopian tubes.
15. Identify the four (4) parts of the fallopian tubes.
16. Explain the importance of a distended bladder and the pitfalls of an over-distended bladder as compared to an under-distended bladder.
17. Describe the pitfalls that can arise due to the recto-sigmoid colon.
18. Define and describe the sonographic appearance of the following pelvic musculatures:
 - a. Iliopsoas Muscles
 - b. Obturator Internus Muscle

- c. Levator Ani Muscle
- d. Coccygeous Muscle
- e. Piriformis Muscle
- f. Gluteus Maximus Muscle
- 19. Define and describe the sonographic appearance and location of the following structures.
 - a. Common Iliac Artery
 - b. Common Iliac Vein
 - c. Internal/External Iliac Arteries
 - d. Internal/External Iliac Veins
- 20. Describe the sonographic appearance and location of the ureter as compared to the previously mentioned vessels.

G. Unit VII. Gynecology: Pathology

- 1. Define and describe the sonographic appearance of a leiomyoma.
- 2. Define and describe the sonographic appearance of fibroids.
- 3. Differentiate between a leiomyoma and a fibroid.
- 4. Define and describe the sonographic appearance for the following conditions:
 - a. Endometriosis
 - b. Pelvic Inflammatory Disease
 - c. Tubo-ovarian Abscess
 - d. Hydrosalpinx
 - e. Pyosalpinx
 - f. "Chocolate Cysts"
 - g. Hydatiform Mole
 - h. Ectopic Pregnancy
 - i. Hematocolpos
 - j. Mucinous Cystadenoma
 - k. Dermoid Cyst
 - l. Teratoma
 - m. Polycystic Ovaries
 - n. Blighted Ovum
 - o. Ectopic Pregnancy
 - p. Pseudocyesis
 - q. Corpus Luteum Cyst
- 5. Discuss other exams, lab data that would or could help diagnose the previously mentioned conditions.
- 6. List the five (5) pitfalls that make examination of the pelvis thru ultrasound difficult.
- 7. Describe at least three (3) of the four (4) features, that when identified, assist the physician in diagnosing a positive metastatic lesion.
- 8. Define differential diagnoses.
- 9. Describe specific situations/conditions that the use of ultrasound would be the primary diagnostic tool.
- 10. Describe specific situations/conditions that an ultrasound examination would be used as a "back-up" to another diagnostic modality, and identify that modality.
- 11. Explain why the border of a suspected mass is important for the diagnoses of that particular lesion.
- 12. Define the importance of determining the internal consistency of a mass.
- 13. Compare endometriosis, pelvic inflammatory disease and ectopic pregnancy detailing the difficulties that can sometimes arise in delineating one from another.
- 14. Define complex mass.
- 15. Describe a condition that once present, would require the sonologist to scan the following anatomical areas:
 - a. Prei-colic Gutters
 - b. Cul-de-Sac
 - c. Peri-Hepatic Spaces

16. Describe at least two (2) areas, other than the area being scanned, that should be scanned if a metastatic lesion is found in the pelvis.
17. Define the following types of abortion:
 - a. Missed Abortion
 - b. Threatened Abortion
 - c. Incomplete Abortion
 - d. Spontaneous Abortion

III. THECB Learning Outcomes (WECM)

1. Identify the sonographic appearances of normal and abnormal female pelvis.
2. Identify normal and abnormal obstetrical findings.
3. Demonstrate appropriate scanning techniques using standard protocols.
4. Evaluate patient history and laboratory data as it relates to sonography.

IV. Evaluation

A. Grading Scale:

100 – 92	= A
91 – 83	= B
82 – 75	= C
74 – 67	= D
66 – 0	= F

No grade of less than “C” will be considered as successful completion of a professionally related course. **Grades .5 or higher** will be rounded of to the next whole number grade.

B. Final Grade Determination

Take Home Exams and Pop Quizzes	20% of final grade
Unit Exams	40% of final grade
Worksheets/Homework	10% of final grade
Comprehensive Final	30% of final grade

C. Exams: **NO RE-TESTS WILL BE GIVEN**

All exams are written and consist of the following formats: multiple-choice, true-false, matching, essay.

An exam missed because of an excused absence must be made up on the day that the student returns to class. An exam missed because of an unexcused absence may not be made up, and the student will receive a grade of zero (0) for that exam.

Frequent, unannounced pop quizzes are given at the beginning of the class period. Tardiness or absence on these days results in a zero (0) on that particular pop quiz. No pop quizzes, under any circumstances, may be **made up**.

D. Cheating

Any student caught cheating will have his/her exam withdrawn and be given a zero (0) for that exam.

E. Attendance

An absence will be considered excused if the student informs the instructor of his/her absence before that class period begins.

AN ACCUMULATION OF THREE UNEXCUSED ABSENCES WARRANTS THE STUDENT BEING DROPPED FROM THE CLASS FOR EXCESSIVE ABSENCES.

F. Tardiness

Tardiness is defined as being 10 minutes or more late to class. Students tardy in excess of the above are considered absent.

V. Disability Statement (Americans with Disabilities Act [ADA])

EPCC offers a variety of services to persons with documented sensory, mental, physical, or temporary disabling conditions to promote success in classes. If you have a disability and believe you may need services, you are encouraged to contact the Center for Students with Disabilities to discuss your needs with a counselor. All discussions and documentation are kept confidential. Offices located: VV Rm C-112 (831-2426); TM Rm 1400 (831-5808); RG Rm B-201 (831-4198); NWC Rm M-54 (831-8815); and MDP Rm A-125 (831-7024).

VI. 6 Drop Rule

Students who began attending Texas public institutions of higher education for the first time during the Fall 2007 semester or later are subject to a 6-Drop limit for all undergraduate classes. Developmental, ESL, Dual Credit and Early College High School classes are exempt from this rule. All students should consult with their instructor before dropping a class. Academic assistance is available. Students are encouraged to see Counseling Services if dropping because exemptions may apply. Refer to the EPCC catalog and website for additional information.

VII. Title IX and Sex Discrimination

Title 9 (20 U.S.C. 1681 & 34 C.F.R. Part 106) states the following "No person in the United States shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any educational program or activity receiving Federal financial assistance." The Violence Against Women Act (VAWA) prohibits stalking, date violence, sexual violence, and domestic violence for all students, employees and visitors (male and female). If you have any concerns related to discrimination, harassment, or assault (of any type) you can contact the Assistant to the Vice President for Student and Enrollment Services at 915-831-2655. Employees can call the Manager of Employee Relations at 915-831-6458. Reports of sexual assault/violence may also be reported to EPCC Police at 915-831-2200.