



BROWARD COLLEGE COURSE OUTLINE

LAST REVIEW: 2008-2009 **NEXT REVIEW:** 2013-2014 **STATUS:** A
(i.e. 2003-2004) *(i.e. 2008-2009)* *(A, I, D)*

COURSE TITLE: Sonographic OB/GYN I

COMMON COURSE NUMBER: SON 1121

CREDIT HOURS: 3

CONTACT HOUR BREAKDOWN
(per 16 week term)

CLOCK HOURS:
(Voc. Course ONLY)

Lecture: 48 Lab:
Clinic: Other:

PREREQUISITE(S): SON1170, SON1100

COREQUISITE(S): SON1211, SON1111, SON1214, SON1804

PRE/COREQUISITE(S):

COURSE DESCRIPTION *(750 character maximum):* An introduction to the cross-sectional anatomy of the female reproductive system with and without an existing pregnancy. The sonographic recognition of the normal throughout all terms of pregnancy is presented.

General Education Requirements – Associate of Arts Degree (AA), meets Area(s): Area
General Education Requirements – Associate in Science Degree (AS), meets Area(s): Area
General Education Requirements – Associate in Applied Science Degree (AAS), meets Area(s): Area

UNIT TITLES

1. Gynecology
2. Diagnostic Test
3. Congenital Anomalies of the Reproductive System
4. Obstetrics

ASSESSMENT:

Please provide a brief description (250 characters maximum) that details how students will be assessed on the course outcomes.
Quizzes, Assignment, Midterm Exam, Final Exam – all comprehensive

**** Complete the following only if course is seeking general education status ****

GENERAL EDUCATION Competencies and Skills*:

Please highlight in green font all Competencies/Skills from the list below that apply to this course. In the box to the right of the Competency/Skill, enter all specific learning outcome numbers (i.e. 1.1, 2.7, 5.12) that apply.

1. Read with critical comprehension	
2. Speak and listen effectively	
3. Speak and listen effectively	
4. Think creatively, logically, critically, and reflectively (analyze, synthesize, apply, and evaluate)	
5. Demonstrate and apply literacy in its various forms: (highlight in green ALL that apply) (1. technological, 2. informational, 3. mathematical, 4. scientific, 5. cultural, 6. historical, 7. aesthetic and/or 8. environmental)	
6. Apply problem solving techniques to real-world experiences	
7. Apply methods of scientific inquiry	
8. Demonstrate an understanding of the physical and biological environment and how it is impacted by human beings	
9. Demonstrate an understanding of and appreciation for human diversities and commonalities	
10. Collaborate with others to achieve common goals.	
11. Research, synthesize and produce original work	
12. Practice ethical behavior	
13. Demonstrate self-direction and self motivation	
14. Assume responsibility for and understand the impact of personal behaviors on self and society	
15. Contribute to the welfare of the community	

* General Education Competencies and Skills endorsed by '05-'06 General Education Task Force

Common Course Number: SON1121

UNITS

Unit 1 Gynecology

General Outcome:

- 1.0 The student shall:** demonstrate an understanding of normal anatomy, physiology and sonographic and Doppler procedures associated with examination of the nonpregnant female

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 1.1 Given cross-sectional anatomy representations of the female pelvis, label anatomical structures including uterus, bladder, rectum, ovaries, muscles, bones, ligaments, vagina.
- 1.2 Draw the vagina and uterus in a sagittal view and label the vagina, cervix, isthmus, body or corpus and fundus.
- 1.3 Identify by location the three layers of the uterine tissue, perimetrium, myometrium and endometrium.
- 1.4 Define the word menarche and state the average age.
- 1.5 Describe the endometrial cycle and menstruation and describe the sonographic appearance of the endometrium in each stage of the cycle
- 1.6 Identify the hormones involved in ovulation (LH, FSH, Estrogen, Progesterone)
- 1.7 Describe the actions and responses of the hormones to ovulation and to a subsequent pregnancy
- 1.8 Draw a diagram showing the relationship between the hypothalamus, pituitary and menstrual cycle listing the hormones involved.
- 1.9 Describe normal anatomy of the female pelvis and its relationship to ultrasound
- 1.10 Discuss anatomy and physiology of the female reproductive organs
- 1.11 Recognize and identify the sonographic appearance of normal anatomic structures of the female pelvis, including anatomic variants and normal Doppler patterns (taken from either the transvaginal or transabdominal approach) associated with the following structures:
 - a) normal ovaries
 1. follicles
 2. corpus luteum
 - b) normal uterus

- c) pelvic muscles
- d) pelvic vasculature
- e) suspensory ligaments
- f) peritoneal spaces
- g) bowel

- 1.12 List criteria utilized to identify the uterus in gynecologic ultrasound images.
- 1.13 Describe the appearance of normal ovaries in gynecologic ultrasound images.
- 1.14 Describe equipment adjustments necessary to obtain optimum gynecology scans in patients with differing body habitus.
- 1.15 Explain several reasons why a full patient bladder is necessary for transabdominal gynecological scanning.
- 1.16 Describe the general structure of the ovaries naming the two major portions, and define the function of the ovaries
- 1.17 Explain the two phases of ovulation (follicular and luteal), and describe the sonographic appearance of the ovaries during these phases
- 1.18 Identify by location the four parts of the fallopian tubes (intersitial, isthmus, ampulla, infundibular)
- 1.19 Demonstrate knowledge about preparing the patient for a gynecologic ultrasound exam including the following:
 - a) identification of oneself
 - b) explanation of the ultrasound procedure
 - c) questioning the patient comfortably on aspects of gynecological history
 - d) positioning the patient for the examination
- 1.20 Describe the exam protocol for transvaginal scanning
- 1.21 Identify on sonograms or diagrams the anatomical structures obtained with transvaginal scanning
- 1.22 Explain the advantages of transvaginal scanning over transabdominal scanning
- 1.23 Identify situations where transabdominal exams are more advantages than transvaginal

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UNITS

Unit 2 Diagnostic Tests

General Outcome:

- 2.0 The student shall:** demonstrate an understanding of gynecological diagnostic testing procedures and results.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 2.1** Differentiate between the following pregnancy tests and their sensitivity and recall when they become positive
- a) HCG Beta sub-unit
 - b) Urine-HCG
- 2.2** Describe the classes of pap smears.
- 2.3** Define the word culdocentesis.
- 2.4** Explain the significance of a CA-125 test

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UNITS

Unit 3 Congenital Anomalies of the Reproductive System

General Outcome:

- 3.0 The student shall:** demonstrate understanding of fusion anomalies of the female reproductive organs.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 3.1** Recognize and to sketch the following uterine anomalies:
- A. septate uterus
 - B. bicornuate uterus
 - C. double uterus with double cervix and vagina
- 3.2** Describe the relationship between congenital uterine malformations and other congenital anomalies
- 3.3** Describe complications associated with congenital anomalies and pregnancy

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UNITS

Unit 4 Obstetrics

General Outcome:

- 4.0 The student shall:** demonstrate an understanding of normal anatomy, physiology and sonographic procedures associated with examination of the obstetrical patient.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

A. Embryonic Period

- 4.1** Describe the process of ovulation, the timing of events with respect to the ovarian cycle, the hormonal agents involved and their functions upon proper fertilization of the ovum.
- 4.2** Describe the process of ovulation, the timing of events with respect to the ovarian cycle, the hormonal agents involved and their functions upon proper fertilization of the ovum.
- 4.3** Name the two important requirements for successful pregnancy. (proper fertilization and uterine environment)
- 4.4** Define the terms:
- A. zygote
 - B. zona pellucida
 - C. blastomere
 - D. blastocyst
 - E. morula
- 4.5** Describe the fertilization process with respect to the timing of events and the subsequent cell differentiation prior to completion of the implantation process.
- 4.6** Describe the preparation of the uterine lining during the secretory phase of the menstrual/ovarian cycle
- 4.7** Name the three layers of the secretory endometrium.
- 4.8** Name the three layers of the pregnant endometrium.
- 4.9** Describe the implantation process with respect to activities of the trophoblastic cells and the timing of events.
- 4.10** Name the two layers the trophoblast forms upon invasion of the uterine mucosa.
- 4.11** Describe the functions of these two layers.

- 4.12 Describe the ultrasonic echo pattern first visible in the early pregnant uterus.
- 4.13 Describe the subsequent changes in echo pattern which occur with continuing development of the embryo and early placenta. This shall be done by describing the echo pattern changes seen at:
 - A. 0-4 weeks post ovulation
 - B. 4-8 weeks post ovulation
 - C. 8-10 weeks post ovulation
- 4.14 Describe the basic stages of embryology and the sonographic relationships
- 4.15 Describe events occurring in the first trimester and their relationship to ultrasound
- 4.16 Name the chronological embryonic age at which the first ultrasonically documented existence of life occurs.
- 4.17 List methods used to document embryo life using ultrasound.
- 4.18 Explain the significance of crown rump and gestational sac measurements.
- 4.19 Document the earliest and latest ages at which these two measurements can be accurately obtained, and describe the method used to obtain them
- 4.20 Indicate the stage of pregnancy at which the embryonic period is ended and the fetal period begins.
- 4.21 Describe the appearance of the gestation at the beginning of the fetal period.
- 4.22 Identify on ultrasound images, and describe methods to obtain measurements of the following:
 - A. gestational sac dimensions
 - B. crown-rump length
 - C. uterine width, length and depth measurements
- 4.23 Describe ultrasonic appearance of a normal gestational sac and fetus from three to twelve weeks gestation (transabdominal and transvaginal exams - include yolk sac and membrane descriptions)
- 4.24 Describe methods to demonstrate evidence of a fetal heartbeat in a normal first trimester pregnancy.
- 4.25 Explain the normal anatomy of the pregnant uterus and dating techniques of the fetus and placenta
- 4.26 Discuss anatomy and physiology of the various stages of embryonic/fetal development as related to ultrasound

- 4.27 Discuss anatomy and physiology of the placenta at all stages of development
- 4.27 Describe methods for determining gestational and embryonic/fetal growth by ultrasound and physical examination methods
- 4.29 Recognize and identify the normal maternal and embryonic structures during the embryonic period
- 4.30 Describe and justify the application of Doppler techniques during the embryonic period

B. Fetal Period

- 4.31 Identify on obstetrical/gynecologic images the following:
 - A. placenta, chorionic plate
 - B. transverse and sagittal section fetal chest
 - C. fetal spine - longitudinally and transverse
 - D. fetal biparietal diameter/head circumference and normal intracranial anatomy
 - E. fetal kidneys
 - F. fetal heart, chambers and valves
 - G. fetal bladder
 - H. fetal limbs, distinguish upper from lower; one from two bone extremities
 - I. fetal position
 - J. fetal genitals
 - K. umbilical cord, including insertion into abdominal wall and into placenta
 - L. normal variations in placenta such as pooling, placental cysts and placental maturing changes
 - M. fetal knees, elbows, fingers
 - N. fetal facial bony structure
 - O. intrafetal umbilical vein
 - P. fetal stomach
 - Q. fetal diaphragm
 - R. fetal soft tissues/peripheral soft tissues
- 4.32 Identify fetal lie as vertex, breech, oblique or transverse on ultrasound images.
- 4.33 Measure/calculate the following:
 - A. biparietal diameter and occipital-frontal diameter, head circumference
 - B. intracranial structures (cisterna magna, cerebellum, ventricular atrium, etc.)
 - C. fetal abdomen circumference
 - D. calculate cephalic index
 - E. fetal femur length and other long bones
 - F. fetal intraorbital distance
 - G. estimated fetal weight

- 4.34** Given the patient's LMP and an ultrasound measurements on a certain date, state when given appropriate charts:
- A. the clinical dates at time of exam
 - B. the ultrasound date by BPD, Head circumference, femur length nomogram
- 4.35** Explain the importance related to technique used to measure fetal parameters and knowledge of the specific methods used to compute data for growth charts and nomograms
- 4.36** Discuss the sensitivity of the BPD vs. Head circumference and/or other parameters in determining the most accurate gestational age
- 4.37** Discuss Doppler applications and explain the role of Doppler techniques in evaluation of the fetus and/or umbilical cord
- 4.38** Recognize and identify the sonographic appearance of normal maternal and fetal anatomic structures during the second and third trimesters