



### **Course Description**

#### **SON1121C | OB/GYN Sonography 1 | 2.00 credits**

All in depth course designed to present all aspects of clinical OB/GYN ultrasound studies. Subject matter includes: review of normal anatomy (ultrasound appearance), indication for ultrasonic studies, clinical presentation, clinical data, pathophysiological basis of disease, ultrasound manifestation of diseases, recognition of adequate images and scanning pitfalls.

### **Course Competencies**

**Competency 1:** The student will demonstrate knowledge, comprehension, and application of the role of ultrasound in obstetrics by:

1. Listing at least 5 indications of an OB ultrasound
2. Listing maternal risks factors that increase the chances of producing a fetus with congenital anomalies
3. Recounting important questions to ask patients before beginning the Obstetrical ultrasound exam
4. Describing the steps of first trimester ultrasound protocol
5. Describing the steps in second and third trimester ultrasound protocol
6. Discussing maternal risk factors that increase the chances of producing a fetus with a congenital anomaly
7. Discussing AIUM official statements in OB/GYN use and bioeffects of ultrasound
8. Describing appropriate OB/GYN ultrasound orders and scans
9. Discussing the use of sonography as a diagnostic tool and screening test

**Competency 2:** The student will demonstrate knowledge, comprehension, and application of sonography of the normal and abnormal first trimester pregnancy by:

1. Explaining the early development of the embryo
2. Explaining the role of HCG
3. Listing the goals of sonography in the first trimester
4. Recognizing sonographic images of the yolk sac, embryo, amnion, chorion, and gestational sac on ultrasound
5. Describing landmarks of the first trimester including physiologic bowel hernia ion
6. Listing protocol to measure the mean sac diameter and the CRL
7. Determining which measurement is best used for each stage of the pregnancy
8. Describing the cranial abnormalities seen in the first trimester
9. Distinguishing normal bowel herniation from ventral wall defects
10. Discussing the sonographic findings of a cystic hygroma in the first trimester
11. Differentiating a hemorrhagic corpus luteum cyst from other pelvic masses
12. Describing the difference between a myoma and a contraction
13. Describing the clinical and sonographic findings in an ectopic pregnancy
14. Identifying common locations of ectopic pregnancy
15. Listing other types of abnormal pregnancies including missed abortion, spontaneous abortion, incomplete abortion, threatened abortion, complete abortion, and blighted ovum
16. Describing the sonographic findings in a molar pregnancy
17. Listing and describing diagnostic exams, sonographic appearance, differential diagnosis, and complications of first trimester abnormalities
18. Identifying the sonographic appearance of normal and abnormal first trimester findings
19. Identifying normal and abnormal nuchal translucency measurements
20. Identifying normal and abnormal yolk sac measurements
21. Discussing noninvasive prenatal testing and maternal serum cell free DNA analysis
22. Identifying and defining structural abnormalities found that can be diagnosed in the first trimester (acrania, anencephaly, cystic hygroma, ventral wall defects, Dandy Walker malformations)
23. Identifying normal sonographic appearance of fetus in first trimester anatomy ultrasound

**Competency 3:** The student will demonstrate knowledge, comprehension, and application of sonography of normal second and third trimester by:

1. Listing the guidelines for second – third trimester OB ultrasound
2. Defining the terminology specific to trimesters, gravidity, parity, and fetal presentation
3. Describing sonographic techniques necessary to image specific fetal structures
4. Describe the anatomy specific to performing a fetal ultrasound exam
5. Listing gestational sac growth and measurements
6. Calculating the biparietal diameter, head circumference, abdominal circumference, and extremity measurements

**Competency 4:** The student will demonstrate knowledge, comprehension and application of fetal growth and well-being assessment by ultrasound by:

1. Describing how intrauterine growth restriction (IUGR) is detected by ultrasound
2. Differentiating between symmetric and asymmetric IUGR
3. Listing which growth parameters are used to distinguish IUGR
4. Listing the measurement of amniotic fluid volume in singleton and multiple gestation
5. Identifying and discussing the parameters of a biophysical profile
6. Identifying the sonographic appearance of fetal tone, fetal breathing, and movement
7. Discussing qualitative and quantitative Doppler measurements applied to obstetrics
8. Describing the significance of macrosomia and IUGR

**Competency 5:** The student will demonstrate knowledge, comprehension, and application of ultrasound in high risk pregnancy by:

1. Listing the types of multiple gestation and their effect of pregnancy
2. Differentiating between monozygotic and dizygotic twins
3. Describing Twin-to-Twin Transfusion and listing what the sonographer should include in the ultrasound exam in high-risk pregnancies
4. Differentiating between immune and non-immune hydrops
5. Discussing how maternal diabetes effects pregnancy
6. Describing the effect of hypertension has on pregnancy
7. Describing the sonographic findings in a patient with systemic lupus
8. Describing the sonographic findings of fetal demise
9. Listing the complication of premature labor
10. Identifying the sonographic findings and complications of diabetes, high blood pressure, incompetent cervix, pre-term lab, and fetal immune and non-immune hydrops
11. Listing differential diagnosis, sonographic appearance, lab values, complications, prognosis of high risk obstetrical pathologies

**Competency 6:** The student will demonstrate knowledge, comprehension, and application of prenatal diagnosis of congenital anomalies by:

1. Describing the methods of genetic testing, including maternal serum markers, chorionic villus sampling and amniocentesis
2. Discussing ultrasound techniques in invasive genetic testing (amniocentesis, chorionic villus sampling, peripheral umbilical blood sampling)
3. Discussing invasive and noninvasive prenatal testing for chromosomal and genetic abnormalities
4. Describing genetic syndromes seen in perinatal ultrasound scanning and how anomalies are transmitted and identified on ultrasound
5. Listing the prevalence and prognosis of the most common chromosomal anomalies
6. Describing the sonographic features of chromosomal anomalies
7. Defining syndromes and their sonographic appearance. listing and identifying the sonographic findings of VACTERL syndrome. listing definition, differential diagnosis, sonographic appearance, lab values, complications, prognosis of pathologies presented
8. Compare and contrast sonographic appearance of differential diagnosis of anomalies presented

**Competency 7:** The student will demonstrate knowledge and comprehension of the anatomy and function of the placenta and umbilical cord by:

1. Discussing embryogenesis of the placenta
2. Listing the functions of the placenta
3. Identifying the placental position and its importance
4. Describing how to use the placental grading and its clinical implication
5. Describing the sonographic findings and clinical significance of placental pathologies
6. Recognizing the sonographic appearance of placental abruption
7. Comparing signs and symptoms of previa vs placenta abruption
8. Recognizing the placenta in multiple gestation and identifying chorionicity
9. Describing the development and normal anatomy of the umbilical cord
10. Discussing obstetrical problems with umbilical cords that are abnormal
11. Discussing how a sonographer will identify a true knot for a cyst or mass on the cord
12. Describing umbilical cord insertion abnormalities
13. Discussing vasa previa and prolapse of the cord
14. Listing abnormalities associated with a single umbilical artery
15. Identifying sonographic images of normal and abnormal placental findings
16. Discussing the maternal risk of placenta accreta

**Competency 8:** The student will demonstrate knowledge and comprehension of the amniotic fluid and membranes by:

1. Listing the protocol for the AFI measurement
2. Identifying normal and abnormal AFI measurements
3. Discussing the production of amniotic fluid
4. Identifying the functions of the amniotic fluid
5. Recognizing abnormal volumes of AFI
6. Differentiating amniotic band syndrome from amnion and chorion separation
7. Defining Oligohydramnios and Polyhydramnios
8. Listing possible causes and incidence of oligohydramnios and polyhydramnios

**Competency 9:** The student will demonstrate knowledge, comprehension and application of fetal head and neural tube defects in ultrasound by:

1. Discussing the embryology of the neural tube fetal brain development
2. Discussing and identifying anomalies of the fetal brain and spine on diagrams and ultrasounds
3. Discussing genetic studies
4. Listing normal ranges of measurements
5. Describing the effect and management of neural tube defects

#### **Learning Outcomes**

- Communicate effectively using listening, speaking, reading, and writing skills
- Use quantitative analytical skills to evaluate and process numerical data