



**DIPLOMA IN ULTRASOUND  
IN OBSTETRICS & GYNECOLOGY  
FOR PHYSICIANS & GRADUATES OF  
APPLIED MEDICAL SCIENCE (IMAGING)**

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## Introduction

During the past decade, the magnitude of development in the field of Obstetrics and Gynecology Ultrasound has progressed at a fast pace. The facilities provided in this field and the standard of care of patients at leading hospitals around the Kingdom is comparable to premier institutions of the world. These hospitals are equipped with some of the finest medical technology in the world, and staffed by high caliber specialists who endeavor to make Saudi Arabia medically self-sufficient.

As there is an increasing need for specialization in the field of Obstetrics and Gynecology Ultrasound, there is even greater realization to establish a professional training program in Obstetrics and Gynecology ultrasound in order to provide trained staff with capability for promoting excellence of clinical care.

The "Training Program in Obstetrics and Gynecology Ultrasound" is a 12 months integrated full time educational program starting the month of September of each academic year. The curriculum includes 4 weeks of theoretical course at the beginning of the academic year, followed by clinical hands-on job training in the use of ultrasound in obstetrical and gynecological clinical practice. It also includes evaluation of pelvic organs, normal and abnormal pregnancies and recognition of normal fetus and fetal anomalies. The clinical part of the training includes orientation to different ultrasound machines. Demonstration of the use of the ultrasound machines in the evaluation of normal pregnancies and pelvic organs, and in recognizing abnormalities. The training is fully supervised for the whole period by highly qualified and experienced staff in different teaching hospitals recognized as training centers by the Saudi Commission for Health Specialties.

## Mission

The "Diploma in Obstetrics and Gynecological Ultrasound" was established to provide high standard training and education in different aspects of ultrasound use in the field of Obstetrics and Gynecology. The trainees will be educated to become compassionate, competent, responsible, and independent staff capable of using the available information and resources to provide high quality ultrasound images, which could be utilized in the management of patients. The Program is designed to graduate well-trained and certified personnel with a caliber equivalent to international certification. This is accomplished under the direct supervision of qualified team of specialists with expertise in various aspects of ultrasound, and who are committed to education. After certification, the trainee would be able to perform level I and II ultrasound scans. The program is not intended to train Maternal-fetal Medicine subspecialist, or for training in advanced level III ultrasound.

## Goals

- Recruit candidates who are interested in Obstetrics and Gynecology ultrasonography.
- Provide academic activities that enable the trainee to develop thorough knowledge base for the use of diagnostic ultrasound imaging for obstetric and gynecology practice.
- Provide trainees with the knowledge, clinical skills, problem solving abilities and interpersonal skills to practice the profession with sound competence and efficiency.
- Provide directions to the trainee for self-improving through reading, research and continuous professional development.
- Graduate certified trained staff who can function as an important and competent part of the health care team, and represent commitment to the excellence of the profession they strive to achieve.

## Board of Directors

Dr. Ahmed Kurdi

RAFH

Program Director

### Members:

Dr. Sultan Al Sultan

RAFH

Dr. Wesam Kurdi

KFSH&RC

Dr. Afaf Al Twajri

RMC

Dr. Baha Sallout

KFMC

The Board will be responsible for the following:

- Supervision of the training programme.
- Approve admission of the candidates.
- Approve the end of the year examination results.
- Decisions on cases of dismissal, disciplinary action and withdrawal.
- Decisions for any needed changes in the Rules and Regulations.
- The Board will meet every 3 months through out the year, with ad-hoc meetings around the time of examinations or when needed.
- Quorum will comprise all Board Members.

## Accreditation

The "Diploma in Obstetrics and Gynecology Ultrasound" is accredited by the Saudi Commission for Health Specialties as a one-year training program. Successful completion of the training program qualifies the trainee for the award of "The Diploma in Obstetrics and Gynecologic Ultrasound", provided he/she obtained desired evaluations in all rotations and successfully passed the final examination.

## Curriculum

The obstetrics and gynecology ultrasonography programme is a comprehensive one-year certified program, which provides trainees with high quality, competency-based, didactic and clinical education. The training and education provided prepares the trainee to enter the job market in diagnostic ultrasonography, as well as instilling life-long learning values, and assist them in achieving their professional and personal goals.

On completion of this program, the participant should have a broad based, competent and skillful understanding of the following:

### General:

- Physics of ultrasound.
- The use of different machines.
- Recognize normal pelvic anatomy.
- Obtain good fetal measurements.
- Recognize normal fetal anatomy.
- Follow guidelines for a complete obstetric ultrasound.

### Specific

To be well oriented with:

- Embryology.
- Transvaginal ultrasound.
- 1<sup>st</sup> trimester abnormalities including nuchal translucency.
- 2<sup>nd</sup> trimester anomaly scan.
- 3<sup>rd</sup> trimester scan and evaluation of fetal growth.
- Fetal anomalies.
- 3D and 4D ultrasound examinations in Obstetrics and Gynecology.
- Assessment of fetal well being.
- Use of Doppler Ultrasound in Obstetrics and Gynecology.
- Ectopic pregnancy.
- Intra-uterine growth restriction (IUGR).
- Multiple pregnancies.
- Cervical incompetence.
- Ultrasound of the endometrium.
- Evaluation of maternal complications in pregnancy.
- Postpartum ultrasound.
- Ultrasound in infertility.
- Observe invasive procedures.

## Capacity

The Program can accommodate a maximum of 15 candidates each year. Candidates will rotate among the different participating hospitals.

## Available Resources

### Training resources and staffing:

#### The centers approved for training should provide the following:

- A separate well-equipped and well-staffed Obstetrics and Gynecology Ultrasound Units.
- Knowledgeable highly trained staff capable of supervision and education.
- Top quality ultrasound machines.
- Resource to textbooks, library facilities, and internet access.
- Periodic education meetings.
- Provide appropriate instruction and educational support service.
- Conduct an appropriate number of scans each day covering most or all of the following:
  - ❖ Basic pelvic anatomy.
  - ❖ Basic fetal anatomy and biometry.
  - ❖ Assessment of fetal well being.
  - ❖ Fetal nuchal translucency.
  - ❖ Fetal echocardiography.
  - ❖ Doppler Ultrasound.
  - ❖ Follicular growth.
  - ❖ Evaluation of tumors of female pelvis.
  - ❖ Diagnostic & therapeutic procedures in obstetrics and gynecology.
- **Diagnostic**
  - Fetal blood sampling.
  - Amniocentesis.
  - Chorionic villus sampling.
- **Therapeutic**
  - Aspiration of cysts.
  - Fetal blood transfusion.
  - Ovum pick-up and embryo transfer.
  - In-utero fetal shunting procedures.

All the training centers in Riyadh capable of providing the above, and therefore will be participating in the training. This includes (but not limited to): King Faisal Specialist Hospital & Research Center (KFSH&RC), Riyadh Armed Forces Hospital (RAFH), Riyadh Medical Complex (RMC), and King Fahad Medical City (KFMC).

## Admission Criteria

There are 2 broad categories of eligible candidates: sonographers and physicians.

#### The following are required for admission:

- **For sonographers:** to be a Graduate of the College of Applied Medical Sciences with one year experience in the field of ultrasound/Radiology.
- **For physicians:** at least two years of experience in the field of Obstetrics and Gynecology or radiology.
- Graduation GPA of not less than 3.00

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- Provide a letter of release or sponsorship from his/her employer as a full-time student for the year of training.
- Pass successfully the interview for admission into the Program.
- Provide two (2) reference letters from Consultants with whom the candidate has currently worked with for a minimum period of six (6) months.

Fulfillment of the basic requirements does not guarantee admission. The Admission Committee's selection is based on the grade point average, communication skills, health care experience and personal interview.

## Structure and Contents of the Program

The training program is for (12) months.

**The Theoretical course:** will be of four weeks duration at the beginning of the academic year. The topic in the course includes the following and does not exclude other topic of relevance:

- Basic physics of ultrasound
- Pelvic wall, vessels & nerves
- Basic physiology of female reproductive system
- Anatomy of pelvic organs
- Safety of ultrasound
- Fertilization, implantation & twinning
- Amnion, placenta & umbilical cord
- Fetal circulation & postnatal changes
- Basic obstetrics scanning
- 1<sup>st</sup> trimester scanning and its abnormalities
- 2<sup>nd</sup> trimester scanning and its abnormalities
- 3<sup>rd</sup> trimester scanning and its abnormalities
- Physics of Doppler ultrasound
- Medico-legal aspects of scanning
- Patients bill of rights
- Basic gynaecological scanning
- Ultrasound in infertility
- Sonography of the cervix
- US guided ovum pick-up in ART
- Fetal and uterine Doppler
- CNS malformation
- Urinary tract malformation
- Skeletal malformation
- Assessment of fetal well being
- Fetal growth and its abnormalities
- Gastrointestinal malformations
- US scan of multiple gestation
- US scan markers of chromosomal abnormalities
- Abnormalities of the fetal face, neck and thorax
- Abnormal wall defects
- Ultrasound guided procedures in obstetrics
- Cardiac malformation



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- Basic of 3D & 4D Scanning
- Ultrasound guided procedures in gynaecology
- Post partum scanning
- Adnexal pathology
- Uterine pathology
- Ectopic pregnancy
- Fetal echocardiography

**Clinical "hands-on" training:** In Obstetrics and Gynecology, ultrasound will include structured rotations at the participating hospitals.

**Monthly tutorial:** covering different topics of ultrasonography in obstetrics / gynaecology including interactive discussions, quiz sessions and projected materials.

## Evaluations, Examinations and Scoring System

### Evaluations:

- All clinical training activities attended by each candidate are recorded in an attendance book, which is regularly updated and signed each week by the Tutor in charge for each rotation. Attendance at lectures and tutorials is collected on separate sheets during the four weeks course and during the tutorials. These sheets are collected by the program secretary and handed to the Board of directors in due time.
- A logbook of normal and abnormal scans is evaluated at the end of each rotation. The logbook is a record of the cases that the candidate was involved in performing the ultrasound scan. The following are the minimal number of cases needed to pass the clinical training:
  1. 1<sup>st</sup> trimester scan: 30 cases.
  2. (12-14 weeks) anomaly scan: 15 cases.
  3. (18-24 weeks) anomaly scan: 30 cases.
  4. Fetal cardiac abnormalities: 10 cases
  5. Assessment of fetal well being (biophysical profile and Doppler ultrasound): 20 cases.
  6. Transvaginal ultrasound for cervical length and placental localization: 10 cases.
  7. Gynecology ultrasound (transabdominal and transvaginal): 20 cases.
  8. Follicular growth during induction of ovulation: 10 cases.
  9. Observation of invasive procedures: 5 cases.
- At the end of each rotation, the candidate level of competence and performance is evaluated in a specially designed evaluation form filled and signed by the supervising tutor.
- At the end of the year, a decision is made regarding the annual evaluation of the candidates based on the attendance, the logbook record, the evaluation of the rotation and recommendation to admit to end of year examination.

**Examinations:**

- Weekly MCQ examinations during the theoretical course.
- End of Year Examination: will comprise of two parts; MCQ and slide test of sonographic images.

**Scoring System:**

The final evaluation is based on the following:

1. During the training year: (continuous assessment)

Total Mark	100
Attendance for lectures and tutorials	20%
MCQs during the theoretical course	10%
Logbook	30%
Attendance and Evaluation of each rotation	40%

2. Final examination:

Total Mark	100
MCQ exam	50%
Slide test	50%

- Candidates are admitted to the end of year examination only if they score 70% and more during the training year (continuous assessment).
- Candidates not admitted to the final examination must repeat the training year before they are allowed to sit the final examination.
- Candidates who do not appear in the final examination (for a reason accepted by the Board of Directors) after completing their training year will be eligible to enter for the next examination. Candidates must provide proof of continuation of duty in their place of work whilst waiting to re-sit the examination.
- Candidates, who fail the end of year examination, will be put forward for reset of the end of year examination at the end of the following training year. Candidates must provide proof of continuation of duty in their place of work whilst waiting to re-sit the examination.

## Certification

Candidates who successfully complete the course and receive a pass mark will be awarded "The Diploma of the Obstetrics and Gynecology Ultrasound" accredited by the Saudi Commission for Health Specialties.

## Vacation

- The candidates will be allowed two weeks holiday during the whole training period
- They will be entitled for one-week study leave to attend scientific meetings.
- Candidates are entitled for two Eid Holidays.
- The total number of leave days (including the above and any extra sick leave or maternity leave) should not exceed 60 days during the training year.

- Candidates who exceed this 60 days period, with a valid reason acceptable to the Board of Directors, could be allowed to sit the final examination with the condition that diploma is issued only after compensating for the lost days as decided by the Board of Directors.
- Candidates who exceeded this 60 days period, without a valid reason acceptable to the Board of Directors, will have to repeat the training year, and cannot sit the final examination.

## General Rules and Regulations

### **Registration**

After acceptance for admission, the candidates should submit all the required documents at least one month prior to the beginning of the Training Program.

### **Withdrawal**

Candidates can withdraw from the program by providing a written request no later than three months before the end of the training year. If the reason for withdrawal is justified and acceptable to the Board of Directors, then the candidate will be accepted for training the following year if he/she wishes to.

If the candidate fails to provide a reason acceptable to the Board of Directors for withdrawal from the program, then he/she must wait for one year before re-applying again.

Less than three months notice to withdraw from the program without a valid reason accepted by the Board of Directors will result in dismissal from the program. The candidate will not be allowed to apply for one year, and must appear again for the entrance interview.

### **Disciplinary Action**

Candidates who are in breach of the Regulations of the Program will be subject to disciplinary action. The decision of the Training Committee will be final.

### **Dismissal**

- Actions concerned with training, e.g. absence from duties or negligence will be brought to the attention of the Program Director. This will be discussed by the Board of members and necessary corrected action will be implemented.
- Absence of any candidate, for any reason, for more than 60 days total without a valid reason accepted by the Board of Directors will result in dismissal from the Program.
- Misconduct or actions affecting ethics will be dealt with by the Board Director in consultation with Board Members. Any or all of the following could be recommended:
  - 1) Warning Letter.
  - 2) Warning Letter and the candidate placed on probation for three months.
  - 3) Decision to dismiss the candidate.

Candidates who are dismissed from the Program due to misconduct cannot register again within 2 years.

## Recommended References

### Suggested Textbooks

- Callen and Callen: *Ultrasonography in Obstetrics and Gynecology 2000*. (Saunders)
- Chervenak, Glenn, Isaacson & Campbell: *Ultrasound in Obstetrics and Gynecology 1993*. (Little Brown and Company).
- Chudleigh & Thilaganathan: *Obstetric Ultrasound: How, Why and When 2005*. (Churchill Livingstone)
- Pilu & Nicolaides: *Diagnosis of Fetal Abnormalities: The 18-23 Week Scan 1999*. (Informa Healthcare).
- Nicolaides, Rizzo & Hecher: *Placental and Fetal Doppler 2000*. (Informa Healthcare).
- Nicolaides, Snijders & Sebire: *The 11-14 Week Scan: The Diagnosis of Fetal Abnormalities 1999*. (Informa Healthcare).
- Twining, McHugo and Pilling: *Textbook of Fetal Abnormalities 2006*. (Churchill Livingstone)
- Sanders & Winter: *Clinical Sonography – A Practical Guide 2006*. (Lippincott Williams & Wilkins).

### Suggested Journals

- *Ultrasound in Obstetrics and Gynecology* (Wiley).
- *Journal of Perinatal Medicine* (de Gruyter).
- *Ultrasound Review in Obstetrics and Gynecology* (Taylor & Francis).
- *Internet Journal in Obstetrics and Gynecology* (Internet Scientific Publication LLC).