

الدبلومه المهنيه فى طب الجنين

Professional diploma in fetal medicine(PDFM-421)

القسم الماتح للدرجه: قسم التوليد وامراض النساء- كلية الطب – جامعه المنصوره  
Obstetrics and gynecology department, Mansoura University

نظام الدراسة :

ساعات معتمه	code	course	اسم المقرر		
12	2	PDFM -421-E	Early pregnancy and prenatal genetics <ul style="list-style-type: none"> <li>• Physiology of pregnancy and early fetal development</li> <li>• Abnormalities in the first trimester</li> <li>• Perinatal genetics and screening for defects</li> </ul>	الحمل المبكر والوراثة ما قبل الولاده	الفصل الدراسى الاول
	2	PDFM 421-C1	Clinical, counseling and self-learning	انشطه اكلينيكيه وتعلم ذاتى	
	3	PDFM 421-F	Fetal anatomy and perinatal ultrasound <ul style="list-style-type: none"> <li>• Fetal anatomical survey</li> <li>• Structural fetal anomalies by systems</li> <li>• Management of fetal anomalies</li> </ul>	تشريح الجنين والموجات فوق الصوتيه فى الفترة المحيطه بالولاده	
	5	PDFM 421-C2	Clinical, counselling and self-learning	انشطه اكلينيكيه وتعليم ذاتى	
8	2	PDFM 421-T	<ul style="list-style-type: none"> <li>• TORCH infections in pregnancy</li> <li>• Multifetal gestation</li> <li>• Common medical disorders with pregnancy</li> </ul>	الحمل عالى الخطوره والحمل متعدد الاجنه	الفصل الدراسى الثانى
	6	PDFM 421-C2	Clinical , counselling and self-learning	انشطه اكلينيكيه وتعليم ذاتى	
20 ساعه	اجمالى الساعات المعتمه				



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نظام الامتحان: ٤٥٠ درجة موزعه كالاتى

**1- امتحان فى نهايه كل فصل دراسى**

OSCE	Oral	Written	MCQ	المقرر
50	30	40	30	الحمل المبكر والوراثه ما قبل الولاده
50	30	40	30	(تشريح الجنين والموجات فوق الصوتيه فى الفتره المحيطه بالولاده)
50	30	40	30	(الحمل على الخطوره والحمل متعدد الأجنه)

الرسوم المفروضه:

المصريون: ١٤٠٠٠ اربع عشره الاف جنيه مصرى بواقع ٧٠٠ جنيه لكل ساعه معتمده

الاجانب والوافدون: ٤٠٠٠ اربعة الاف دولار بواقع ٢٠٠ دولار للساعه المعتمده

متطلبات الالتحاق بالدبلومه المهنيه فى طب الجنين:

يحق الالتحاق بالدبلومه كل من حصل على ماجستير او دبلومه او

دكتوراه او زماله مصريه او عربيه او بورد مصرى او عربى او

مايكافئها فى التوليد وأمراض النساء



١٢١٢٤



الدبلومه المهنيه فى طب الجنين  
**Professional diploma in fetal medicine(PDFM-421)**  
القسم المانح للدرجه: قسم التوليد وامراض النساء- كليه الطب – جامعه المنصوره  
**Obstetrics and gynecology department, Mansoura University**

**الهدف:**

تهدف الدبلومه المهنيه فى طب الجنين الى امداد المهتمين بهذا الفرع من علم التوليد بأعلى درجات المهنيه والمهاره فى تشخيص وعلاج العيوب الخلقية بالأجنه والحمل الخطر

**متطلبات الالتحاق بالدبلومه المهنيه فى طب الجنين:**

يحق الالتحاق بالدبلومه كل من حصل على ماجستير او دبلومه او دكتوراه او زماله مصريه او عربيه او بورد مصرى او عربى او مايكافئها فى التوليد وأمراض النساء

**عدد الساعات المعتمده :**

٢٠ ساعه مقسمه الى فصلين دراسيين

**الفصل الدراسى الأول** ومدته ١٥ أسبوع (١٢ ساعة تدريسية ويشمل الموديول الأول والثاني) دراسه الحمل المبكر الطبيعى ومضاعفاته وكذلك الاكتشاف المبكر للعيوب الوراثيه وامراض الاجنه وتشخيص العيوب الخلقية فى تركيب جسم الجنين وكيفية علاجها واستخدام الموجات الصوتيه فى تشخيصها

**الفصل الدراسى الثانى** ومدته ١٥ أسبوع ويشمل (٨ ساعات تدريسية) ويشمل التدريب على تشخيص الحمل الخطر وعيوب المشيمه والحمل متعدد الأجنه



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# DIPLOMA CURRICULUM

## 1. CURRICULUM CONTENT

اسم المقرر: الدبلومه المهنيه فى طب الجنين

**professional diploma in Fetal medicine**

**Obstetrics & gynecology**

## 2. Entry requirements

Entry to fetal medicine diploma training requires the following qualifications: post-graduate at least a master degree in obstetrics& gynecology or an Egyptian Fellowship of obstetrics& gynecology or Arab Board of obstetrics& gynecology or what's equal.

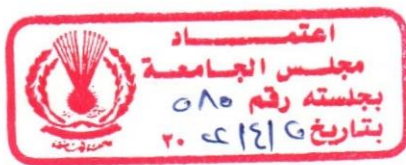
## 3. PROGRAM SPECIFICATION

### Administrative information

1. Department offering the program: Obstetrics & gynecology
2. Department responsible for teaching the Program: maternal & fetal medicine Unit
3. Date of approval by the Department`s council: 23/9/2020
4. Date of last approval of program specification by Faculty council:
5. Program title: fetal medicine and high risk pregnancy
6. Program code: PDFM 421
7. Total teaching hours: 20 hours
8. Duration of program : 2 semester in one year .
9. Program coordinator: **Prof. Hend Abdel Rahman Shalaby**

## 4. PROGRAM AIMS:

- 4.1- Diagnose and manage the whole spectrum of fetal disorders
- 4.2- Acquire a high standard of competence in the clinical management of specialized high-risk pregnancies



*Hend Abdel Rahman Shalaby*

- 4.3- Provide competencies, knowledge and skills needed in Ultrasound diagnosis and management of fetal anatomical and functional abnormalities
- 4.4- Perform Doppler assessment of the uterine and fetal circulations
- 4.5- To be Knowledge about invasive diagnostic procedures (amniocentesis, chorion villus sampling and cordocentesis)
- 4.6- To provide competencies, knowledge and skills needed to understand the different tools used in the diagnosis and management of fetal anatomical and structural abnormalities
- 4.7- To provide competencies, knowledge and skills needed to practice fetal medicine Fellowship of high quality in the community.
- 4.8- To demonstrate the ability for self-learning and evaluate the clinical practice and educational needs

#### **5. Intended Learning Outcomes (ILOs) for program**

##### **A. Knowledge ILOS**

- A1. Recognize the basic science of fetal structural and functional abnormalities.
- A2. Identify common genetic and structural diseases of the fetus.
- A3. Define basics of screening and diagnosis of high risk pregnancies

##### **B. Intellectual ILOS**

- B1. Design management of different fetal anomalies.
- B2. Construct perinatal management plan for affected pregnancies
- B3. Propose management plan patients with fetal diseases and contribute for optimal postnatal management

##### **C. Practical ILOS**

- C1. Prescribe medications safely and efficiently for high risk pregnant ladies.
- C2. Interpret different laboratory and ultrasound methods for assessment of fetal diseases.
- C3. Perform prenatal ultrasound anatomical scan and US guided diagnostic invasive tests

#### **6-Academic standards**



*Turner Abaelsaad*



Academic Reference Standards for fetal medicine specialized diploma degree of Mansoura Faculty of Medicine were compiled according to National Academic Reference Standards

## **Courses contributing to the program**

### **Intended Learning Outcomes (ILOs)**

### **Module (1) : Early pregnancy & perinatal genetics**

#### **(A) Knowledge and understanding**

- A1- Identify fetal development: normal and abnormal development of major systems. Teratogenicity, including mechanisms and agents
- A2- Classify modes of inheritance, syndromology, molecular genetics and pre-implantation diagnosis, genetic counselling.
- A3- Recognize perinatal pathology: perinatal death and placental pathological examination.
- A4- Understand overview inheritance, gene structure and function & DNA testing in clinical practice
- A5- Explain early pregnancy anatomy and physiology
- A6- Define abnormal early pregnancy abnormalities
- A7- Recognize multifetal gestation in first trimester
- A8- Explain principles of prenatal screening in first trimester
- A9- Discuss indications, limitations and methods of screening
- A10- Describe modalities for high risk pregnancy screening ( PET, SGA, SB)
- A11- Explain diagnostic approach and management of first trimester bleeding
- A12- Recognize organization and administration of fetal medicine service
- A13- identify research methodology



### **( B ) Intellectual skills**

- B1- Recognize risk factors of a genetic condition
- B2- Categorize genetic testing appropriately
- B3- Counsel women and partners before screening test after positive result
- B4- Formulate, implement and where appropriate modify management plan in a case with a chromosomal anomaly
- B5- Construct with clinical geneticist and cytogenetic specialist and refer where appropriate
- B6- Formulate management plan for ongoing and future pregnancies
- B7- Formulate, implement and where appropriate modify management plan in a case with a chromosomal anomaly

### **(C) Professional and practical skills**

- C1- Construct an appropriate history
- C3- Perform a chromosomal testing appropriately
- C4- Prescribe management plan for ongoing and future pregnancies
- C5- Support parent(s), respect confidentiality
- C6- Perform first trimester screening scan
- C7- Diagnose early pregnancy complications
- C8- Perform ultrasound diagnosis of early pregnancy complications
- C9- Diagnose patient at high risk for anomalies

## **Module ( 2 ): Fetal anatomy and perinatal Ultrasound**

### **Intended learning objectives:**



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## **( A ) Knowledge and understanding**

- A14-Identify Placental and fetal physiology in normal & abnormal pregnancy
- A15- Understand basic concepts of obstetric imaging
- A16-Identify ultrasound features of fetal malformations
- A17- Plan prenatal and postnatal management of fetal anomalies
- A18- List prognosis for abnormalities of the brain and spinal cord
- A19- Be knowledgeable about abnormalities of face and neck
- A20- Describe normal anatomy of the heart and great arteries
- A21- Describe ultrasound features of the fetal lung, diaphragm and gastrointestinal, genitourinary tracts
- A22- Demonstrate the indications, risks and techniques of amniocentesis, chorionic villus sampling and cordocentesis.
- A23 – Identify the fundamentals of Doppler study
- A24- Define the utility of volume ultrasound in obstetric imaging
- A25- List the results of Doppler indices in clinical situations
- A26- Describe basic fetal anomaly scan
- A27- identify detailed systematic approach for each system evaluation of the fetus
- A28 – List prognostic factors for fetal abnormalities.
- A29- Describe prenatal and postnatal approaches for management of fetal abnormalities.
- A30- Discuss fetal therapy intrauterine surgery. Pathophysiology, assessment and management of red cell isoimmunization, alloimmune thrombocytopenia, monozygotic twins, diaphragmatic hernia, fetal hydrops and obstructive uropathy

## **(B) Intellectual skills**

- B8- Plan management plans for fetal CNS abnormalities

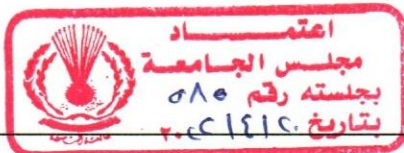




- B9- Prepare practical approach for diagnosis and management of fetal CHDs
- B10- Recognize amniotic fluid disorders
- B11- Manage sub optimally dated pregnancies
- B12- Assess and categorize placenta accreta spectrum disorders
- B13- Diagnose and manage hydrops fetalis
- B14- Analyze fetal problems and their effects on maternal and fetal health
- B15- Retrieve important data from researches and IT to help solving problems based on current evidences
- B16- Integrate the available resources all over the country to improve perinatal outcome
- B17- Evaluate information objectively and recognize their limitations
- B18- Detailed assessment of fetus at risk or with abnormality
- B19- classify pregnant ladies according to risk assesment
- B20- Mange cases with placental accretion
- B21- predict recurrent pregnancy loss using Doppler
- B22- evaluate integrity and function of fetal systems
- B23- treatment of fetal abnormalities based on the available resources

### **(C) Professional and practical skills**

- C10 - perform obstetric scans
- C11- interpret abnormalities of Doppler study
- C12-Recognize normal from abnormal cases
- C13- Write report on fetal anomaly scan.
- C14- Interpret fetal echocardiography reports.
- C15- Perform fetal neurosonography
- C16- Assessment of fetomaternal blood flow using Doppler study
- C17- Assessment of amniotic fluid abnormalities
- C18- Screen for fetal abnormalities



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C19- perform fetal embryosonography

C20- use integrated screening markers ( Biochemical & sonographic )

C21- Use online education sources to improve diagnosis and share experiences

C22- use basic ultrasound to screen for fetal congenital anomalies in 1st & 2nd trimester

C23- perform cervicometry

C24- use 3D and 4D and 5D advanced ultrasound technology

C25- diagnose placental abnormalities especially placental accretion using different modalities

C26- perform basic and advanced scanning of the fetal heart and echocardiography

C27- evaluate amniotic fluid volume and abnormalities

C28- perform amnioreduction under supervision

C29- perform genetic amniocentesis under supervision

C30- perform chorionic villous sampling under supervision

C32- perform fetal reduction under supervision

C35- interpret and discuss the abnormal screening results

C36- perform further assessment of cases high risk for aneuploidy

C38-discuss with patient and family the medical and ethical issues

### **Module 3 : multifetal gestation / Infections/ High risk pregnancy**

#### **Intended learning objectives**

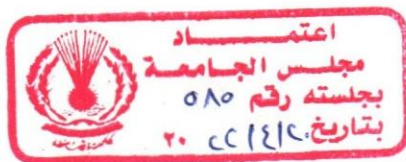
##### **( A ) Knowledge and understanding**

A31- Identify physiological aspects of multifetal gestation

A32- discuss multiple pregnancy complications

A33- describe diagnosis and follow up of multiple pregnancy

A34- Recognize screening modalities for preterm labor.



*Turner Phaulsaul*

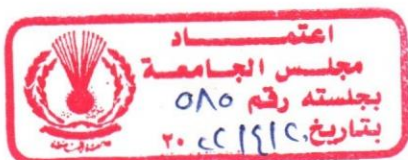
- A35- Discuss management plans for multiple pregnancy  
A36- Discuss fetal growth restriction versus small for gestational age fetus  
A37- Describe diagnosis of FGR  
A38- Plan a management strategy for SGA fetus  
A39- Identify basics of TORCH infection in pregnancy  
A40- Discuss diagnostic criteria for TORCH in pregnancy  
A41- Describe management of common infections in pregnancy  
A42- Identify hypertensive disorders in pregnancy  
A43- Update in screening and management of PET  
A44- Discuss updates in diabetes with pregnancy  
A45- Identify DM complications with pregnancy  
A46- list possible associated with pregnancy in a cardiac patient  
A47- Identify Rh-isoimmunization and fetal anemias  
A48- Discuss follow up and management of anemic fetus  
A49- Recognize causes and diagnosis of bleeding disorders in pregnancy  
A50- Discuss Systemic lupus erythematosus and antiphospholipid syndrome with pregnancy.

**( B ) Intellectual skills**

- B20- Integrate plans for treatment of monochorionic twins  
B21- Use of risk scores for a case with history of preterm labor  
B22- Apply Doppler study in fetal growth restriction  
B23- Manage a case of hypertension with pregnancy  
B24- Propose plans for a case with history of preclampsia  
B25- Evaluate cases of IUFD  
B26- Plan for management of a case with diagnosed antiphospholipid syndrome  
B27- Evaluate plans for a case of Rh isoimmunization  
B28- Judge the diagnosis of FGR and SGA  
B29- Evaluate the ultrasound criteria of infection.



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B30- Integrate medical disorder multidisciplinary team approach

**( C ) Professional and practical skills**

C39- Perform US cervicometry.

C40- Perform fetal reduction under supervision.

C41- How to diagnose and follow up fetal growth restriction?

C42- Precautions to be adopted in vertically transmitted infections

C43- Proper management of preeclampsia

C44- Principles of antenatal care for a diabetic pregnant lady

C45- Management of a case with history of stillbirth.

C46- Proper routes of delivery for a cardiac patient

C47- screen for preterm labor

C48- evaluate all aspects of multiple pregnancies

C49- perform fetal reduction under supervision

C50- predict recurrent pregnancy loss using Doppler

C51- evaluate integrity and function of fetal systems

C52- follow and treat maternal medical complications with pregnancy

C53- interpret and discuss the abnormal screening results

C54- perform further assessment of cases high risk for aneuploidy

C55- treatment of fetal abnormalities based on the available resources

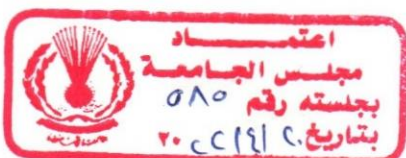
C56-discuss with patient and family the medical and ethical issues

**D- communications and transferable skills**

D1- work as a member in a fetal medicine team which include multidisciplinary team

D2- communicate with parents effectively in a non judgmental approach

D3- counsel parents effectively based on socioeconomic, medical and religious aspects



D4- Discuss with colleagues the management options and the role of other specialities

D5- keep patient records for telemedicine and medicolegality

D6- respect parent's autonomy

D7- Break bad news

D8- Communicate with families with fetal anomalies throughout pregnancy

D9- Use IT for syndromes and related abnormalities

D10- Can transfer and discuss patient disease with other specialties worldwide if necessary

D11- Preconception counseling in families at increased risk of fetal anomaly

D13- Arrangement of multidisciplinary team approach for management of fetal anomalies

### **7. Program Structure:**

The fetal medicine diploma requires one year of supervised training program that must be conducted in Mansoura University Hospital, fetal medicine unit before sitting for the final examination.

**Total credit hours: 20 hours.**

**The program has 2 semesters each semesters = 15 weeks**

**1- Semester 1      12 hours**

*Includes:* A module 1 =4 hours

\* physiology of pregnancy and early fetal development

- Abnormalities in the first trimester
- Perinatal genetics and screening for defects

**B- Module 2      8 hours**

*Includes:* \* fetal anatomical survey

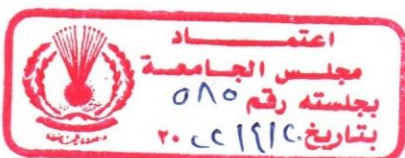
- Structural fetal anomalies by systems
- Management of fetal anomalies

**2- Semester 2 8 hour**

*Includes:* \* TORCH infection in pregnancy



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- Multifetal gestation
- Abnormal placentation & related abnormalities
- Common medical disorders with pregnancy

## **8. Program Regulation**

During the entire training program, the candidate must be dedicated full time and must be fully responsible for patient care under supervision of fellowship trainers.

Trainees Duties and obligations

**1. The trainees should attend and participate in daily unit activity.**

**Attendance and participation should not be less than 75% of the total number of activities within training period**

2. Trainees should be actively involved and fully responsible for patient care including sharing in making decisions about diagnosis and management under supervision of the consultants.

3. Trainees should be responsible (under supervision) for outpatient and in patients' routine work.

4. Trainees should be responsible for supervised admission of the patients from the OPD .

5. Trainees should share in the completion of the following documents under supervision.

\* Complete history and physical examination form.

\* Investigation requests, (laboratory, radiology, pathology, etc.).

\* Reporting results of the investigations

\* The plan of management after consultation and approval from supervisors

6. Trainees should inform the senior staff of any high-risk patient admission.

7. The trainees should attend the fetal medicine outpatient clinics

## **9. Teaching methods:**

1. Lectures and scientific seminar

2. hands on training

3. Case scenarios

4. Tutorials

5. Self learning

6. Multi-disciplinary meetings

7. E-learning

## **10. Assessment methods:**



1. MCQ exam at the end of each module (ongoing exam at the end of semesters: the student will be transferred from one semester to the next whatever the score then to the written exam)
- 2- Log book of cases
3. Clinical & hands on exam OSCE
4. Written exam (Knowledge, Intellectual skills, Communication & Transferable skills)

OSCE	Oral	Written	MCQ	المقرر
50	30	40	30	الحمل المبكر والوراثة ما قبل الولادة
50	30	40	30	(تشريح الجنين والموجات فوق الصوتية في الفترة المحيطة بالولادة)
50	30	40	30	(الحمل على الخطوره والحمل متعدد الأجنه)

## 11. References of the course

- Abuhamad, A., & Chaoui, R. (2016). *A practical guide to fetal echocardiography: Normal and abnormal hearts.*
- Callen, P. W., In Feldstein, V. A., In Norton, M. E., & In Scutt, L. M. (2017). *Callen's Ultrasonography in obstetrics and gynecology.*
- Paladini, D., & Volpe, P. (2018). *Ultrasound of congenital fetal anomalies: Differential diagnosis and prognostic indicators.*
- Abu-Rustum, R. S. (2015). *A practical guide to 3D ultrasound.*
- Timor-Tritsch, I. E., Monteagudo, A., & Pilu, G. (2012). *Ultrasonography of the prenatal brain.* New York: McGraw-Hill Professional.

## 12. Facilities and resources mandatory for course completion: all available



1. Lecture halls:
2. Library:
3. Facilities for tutors:
  - 3.1 computers and high speed internet connection.
  - 3.2 international databases
5. Outpatients clinic with high number of cases
- 6- high technology ultrasound machine

اسم : دبلومه مهاريه فى طب الجنين

**First module : first trimester and perinatal genetics**

**4 credit hours –**

Lectures title	Hours ( 30 )
1- Stages of fetal development 2- Principles of teratogenicity 3- Fetal anatomy in first trimester 4- Abnormal pregnancy in first trimester 5- Diagnosis of early pregnancy complication 6- Principles of Genetic counselling 7- Common chromosomal disorders and gene defects 8- Methods of prenatal diagnosis 9- Interpretations of various screening tests 10- Ultrasound markers of trisomy 11- Ultrasound of early pregnancy single and twin 12- Management of first trimester complications 13- First trimester screening for medical disorders ( PET, IUGR, SB, and PTL) 14- Invasive first trimester diagnostic test 15- Symptoms of normal and abnormal pregnancy	<p style="text-align: center;"><b>Each lecture 2 theoretical hours</b></p> <p style="text-align: center;"><b>Total 30 hours</b></p>

**Practical and clinical applications (total 90 hours)**



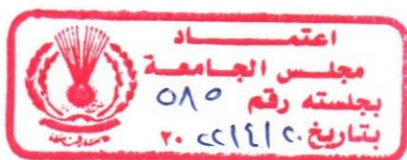
*Farmer Aboulsaud*





<ul style="list-style-type: none"> <li>1- Pathology, epidemiology and risk factors of pulmonary anomalies</li> <li>2- Screening and ultrasound diagnosis of pulmonary anomalies</li> <li>3- Treatment of common pulmonary anomalies</li> </ul>	6
<p><b>E) Abdominal wall &amp; Gastrointestinal anomalies</b></p> <ul style="list-style-type: none"> <li>1- Overview of abdominal wall &amp; GIT development</li> <li>2- Screening and ultrasound diagnosis of abdominal wall defect</li> <li>3- Screening and ultrasound diagnosis of GIT defects</li> <li>4- Outcome and prognosis of GIT and wall defects</li> <li>5- Genetic background of GIT and wall defects</li> </ul>	5
<p><b>F) Neck and Face defects</b></p> <ul style="list-style-type: none"> <li>1- Normal development and anatomy of the fetal face</li> <li>2- Sonographic appearance of fetal face and neck</li> <li>3- Characters of common anomalies of face and neck</li> <li>4- Prognosis and outcome of facial anomalies</li> <li>5- Genetic syndromes associated with facial anomalies</li> </ul>	3
<p><b>G) Skeletal anomalies</b></p> <ul style="list-style-type: none"> <li>1- Genetic basis of skeletal anomalies</li> <li>2- Ultrasound diagnosis and DD of skeletal dysplasias</li> <li>3- Outcome and prognosis of skeletal dysplasia</li> </ul>	2
<p><b>H) Fetal tumors</b></p> <ul style="list-style-type: none"> <li>1- Diagnosis and prognosis of fetal tumors</li> </ul>	3
<p><b>I) Fetal hydrops</b></p> <ul style="list-style-type: none"> <li>1- Epidemiology, etiology, pathology of fetal hydrops</li> <li>2- Outcome and prognosis of hydrops fetalis</li> </ul>	3

**Practical and clinical applications (total 225 hours)**



**Module 3 : antenatal care/ infections/high risk pregnancy**

**8 credit hours**

Lecture title	Hours (30)
1- Fetal growth restriction 2- Stillbirth 3- Multiple pregnancy 4- Preterm labor/ PPRM: screening, prevention & management 5- Placenta accreta spectrum disorders 6- Hypertensive disorders with pregnancy 7- Diabetes with pregnancy 8- Cardiac disorders with pregnancy. 9- Management of epilepsy & thyroid disorders with pregnancy 10- Management of common hematologic/ autoimmune disorders with pregnancy 11- Pregnancy in the era of Covid infection 12- Vertically transmitted infections (A) 13- Vertically transmitted infections (B) 14- Fetal macrosomia diagnosis and prediction 15- Preconceptional counselling in high risk pregnancy	<b>2 hours for each lecture</b>

**Practical and clinical applications (total 270 hours )**



*Tamer Abdelsaid*

