Endocrinology, Diabetes, Clinical Nutrition and Metabolism

MD COURSE SPECIFICATION

Faculty of Medicine– Mansoura University

(A) Administrative information

(1) Programme offering the course:	Postgraduate MD program of **Endocrinology, diabetes, clinical nutrition and metabolism. EDCNM600**
(2) Department offering the programme:	Internal medicine department **(Endocrinology , diabetes and metabolism unit)**
(3) Department responsible for teaching the course:	Internal medicine department **(Endocrinology , diabetes and metabolism unit)**
(4) Part of the programme:	Second part (Third, fourth, fifth and sixth semesters)
(5) Date of approval by the Department`s council	12 / 4 / 2015
(6) Date of last approval of programme specification by Faculty council	9/6/2015
(7) Course title:	**Endocrinology , diabetes , clinical nutrition and metabolism**
(8) Course code:	EDCNM610
(9) Credit hours	23 hours
(10) Total teaching hours:	345 hours lectures 450 hours clinical

(B) Professional information

(1) Course Aims:

The broad aims of the course are as follows

:

1-To graduate a specialist who can develop a management plan for the patient in the field of endocrinology, diabetes, metabolism, and clinical nutrition

2-Continuously updating knowledge of the basic diabetes, endocrine, nutrition and metabolic disorders including health promotion, disease prevention and long term management.

(2) Intended Learning Outcomes (ILOs):

On successful completion of the course, the candidate will be able to:

A- Knowledge and Understanding

A1 Recognize the diagnostic criteria for diabetes mellitus and pre-diabetes and identify the different types with the underlying basis of metabolic disturbances and the principles of management of different types.

A2 Recognize the pathogenesis, presenting features and management of different stages of diabetic complications.

A3 Describe the effects of diabetes on the pregnant woman and her foetus, the risk factors and diagnostic criteria for gestational diabetes .

A4 Recognize the recent trends in treatment of diabetes including drugs and Islet cell and pancreas transplantation.

A5 Assist the candidate to know important recent treatment modalities in special diabetic situations such as diabetes management in Ramadan and diabetes in geriatric subjects.

A6 Recall the pathophysiology and basic facts and criteria of the metabolic syndrome and its components and how to manage.

A7 Demonstrate knowledge of causes, investigations and treatments for disorders of the hypothalamus and pituitary gland.

A8 Describe the Causes, diagnosis and management of thyroid disorders, goiter and thyroid cancer.

A9 Recognize the causes, investigations and treatments for disorders of the adrenal glands.

A10 Demonstrate knowledge to the causes of primary and secondary gonadal failure and menstrual irregularity.

A11 State diagnostic and treatment strategies for gonadal failure, hirsutism, virilism, gynecomastia, polycystic ovarian syndrome and infertility and recognize controversy regarding hormone replacement therapy.

A12 Recognize facts about Calcium homeostasis and bone disorders Causes of hypercalcemia and hypocalcemia and their treatments.

A13 Describe differential diagnosis, screening and treatment strategies for osteoporosis.

A14 Demonstrate knowledge to etiology, pathophysiology and different treatment options of obesity and its consequences.

A`15 Recognize the pathogenesis of various classes of dyslipidemias and apply evidence based medicine to select method for management

A16 Recognize causes of and investigations of neuroendocrine tumors and ectopic hormone production and features of multiple endocrine neoplasia syndromes

A17 Recognize causes, clinical manifestation and complication of obesity and to give our candidates the ability for its management.

A18 Demonstrate knowledge to basics of clinical nutrition, food groups and food pyramid.

B- Intellectual skills

B1 Demonstrate increasing ability to prioritise and organize clinical and clerical duties in order to optimize patient care and clinical team resource.

B2 Analyze efficiently case scenarios and refer to the most appropriate diagnosis and possible differential diagnosis and interpret basic clinical, laboratory and radiological tests in the field of endocrinology and diabetes.

B3 Interpret arterial blood gases and use guidelines of treat endocrinal emergencies

B4 Select different drugs based on the patient condition and in different situations

B5 Differentiate between different causes of obesity and endocrinal hypertension

B6 Distinguish the impact of common disorders related to different body system on endocrinal system.

C- Practical and Professional skills:

C1 Be able to elucidate an appropriate history, clinical examination andinterpret basal and dynamic tests done to diagnose Diabetes,endocrine, nutrition and metabolic disorders.

C2 Apply the systems used to monitor blood glucose including continuous glucose monitoring systems.

C3 Educate patients on the indications for insulin therapy, the use of insulin delivery devices including syringes, pens and pumps and use of home blood glucose monitoring systems.

C4 Advise/counsel patients about the different diabetic complications.

C5 Diagnosing and management of diabetic, endocrinal and metabolicemergencies.

C6 Manage diabetes , endocrinal and metabolic disorders appropriately in peri-operative patients and patients in intensive and coronary care units.

C7 Optimise glycemic, blood pressure and endocrinal control prior to and throughout pregnancy.

C8 Practice effective strategies in the implementation of a screening programme for diabetes complications.

C9 Diagnose Diabetic retinopathy using direct ophthalmoscopy and interpret retinal photographs with proper ophthalmology referral.

C10 Diagnose the different patterns of autonomic and somatic poly- and mononeuropathies, including performance nerve conduction velocity and manage erectile dysfunction in diabetic men.

C11 Assess vascular supply and neurological status of the lower limb and identify patients at risk of foot problems.

C12 Select and interpret appropriate imaging techniques in detection and management of diabetes, metabolism and endocrinal disorders.

C13 Apply regulations to the use of radioactive isotope as a line of therapy for various endocrinal disorders.

C14 Assessment of normal growth and development by the use of growth charts and assessment of pubertal stage.

C15 Apply the knowledge from large clinical trials in management of diabetes ,endocrinology ,clinical nutrition and metabolism.

C16 Apply the principles of infection control and recognize potential for cross-infection in clinical settings.

C17Perform and/or refer appropriately for fine needle aspiration cytology of the thyroid .

C18Demonstrate ability to investigate and manage patients with endocrinal tumors.

C19 diagnose and manage Addisonian crisis.

C20 Make appropriate referrals for bone densitometry and understand its value and limitations.

C21Prescribe appropriately steroids and sex hormone replacement therapy

C22Diagnose, manage and provide care for patients with disorders of appetite and weight.

C23Demonstrate the ability to investigate the obese patient in order to exclude endocrine causes and initiate different lines of management.

C24Perform proper nutritional assessment and design proper diet in health and different diseases.

D- **Communication and transferable skills**

D1 Demonstrate the ability to interact with diverse patient population including but not limited to diversity in gender, age, culture, race, religion, disabilities.

D2 Communicate effectively and sensitively with patients, relatives and carers.

D3 Communicate effectively with physicians , other health professionals and health related agencies.

D4 Recognize the desirability of monitoring performance, learning from mistakes and adopting no blame culture so as to ensure high standards of care and optimize patient safety.

D5 Demonstrate leadership, team working and provide supervision ineducation and training of junior colleagues and other members of the healthcare team

D6 Use technology different resources for gaining information andknowledge.

D7 Pursue a collaborative approach to the planning and implementation of patient care in particular to identify and facilitate the patient's agenda encompassing their beliefs, concerns, expectations and needs.

D8 Develop critical appraisal skills and use of evidence based guidelines in making decisions about the care of patients

(1) Course content: **Four modules studied in 4 semesters (3rd, 4th, 5th, and 6th)**

Subject	Lecture	Seminar	Credit hours
Module 1 **Diabetes mellitus**	**4/week**	**2/week**	**6**
• **Classification and diagnosis of diabetes** • **Prediabetes** - Impaired Fasting glucoce - Impaired Glucoce tolerance - Screening	**1**		
• **Type 1 diabetes** - Epidemiology - Pathogenesis	**2**		
• **Type 2 diabetes** - Epidemiology - Pathogenesis	**2**		
• **Metabolic syndrome**	**1**		
• **Other types of diabetes** - Monogenic diabetes - Drug induced - Endocrine disorders causing diabetes - Pancreatic disorders & diabetes	**1**		
• **Monitoring of glycemic control** - HbA1C - Fructosamine and 1,5-anhydroglucitol - Conventional glucose monitoring - Ketone testing - Continous glucose monitoring	**2**		
• **Recognition and management of associated conditions** - Hypetension - Dyslipidaemia - Obesity -Sleep apnea - NASH, NAFLD - Thyroid disease	**1** **1** **1** **1** **1**		

- Celiac disease Dead in bed syndrome	**1**		
• **Management** - Clinical presentation - Aims of diabetes care - Education - Life style management (diet & exercise)	**1**		
• **Insulin & insulin treatment**	**2**		
• **New technologies for insulin administration and glucose monitoring**	**2**		
• **Oral anti-diabetic agents**	**2**		
• **Non insulin parenteral drugs** • **Combination therapy**	**2**		
• **In hospital management of diabetes and surgery in diabetic patients**	**2**		
• **Hypoglycemia**	**1**		
• **Acute metabolic complications of diabetes**	**2**		
• **Macro vascular complication** - Cardiovascular disease - Cerebrovascular disease - Peripheral vascular disease	 **2** **2** **2**		
• **Micro vascular complications** - Retinopathy - Nephropathy - Neuropathy	 **1** **2** **2**		
• **Other complication :** - Foot problems In diabetes - Sexual dysfunction - Gastrointestinal - Skin - Bone & Rheumatic disease - Diabetes & infection	 **2** **1** **1** **1** **2** **1**		
• **Diabetes in special groups**			

- Diabetes in childhood & adolescence & transitional care - Diabetes in pregnancy - Diabetes in old age - Psychiatric disorders & diabetes	**2** **2** **2** **1**		
• **Future directions** - Future drug treatment in type I - Future drug treatment in type II - Islet transplantation - Gene therapy	**1** **1** **2** **1**		
Teaching hours	**60**	**30**	
Module2 **Hypothalamus & pituitary** • **Pituitary masses (mass effect, evaluation, management, nonfunctioning tumors** • **Parasellar masses, hypophysitis, familial syndrome** • **Prolactin disorders** • **Growth hormone disorders** ➢ **acromegaly,** ➢ **deficiency** • **ACT, TSH disorders** • **Hypopituitarism** • **Pituitary hemorrhage, infarction, empty sella syndrome** • **Craniopharyngeoma, incidentaloma** • **Diabetes insipidus, SIADH** • **Hypothalamus, pineal gland eating disorders** **Reproductive endocrinology** **Male reproduction** • **Hypogonadism in males**	**5/w** **3** **3** **2** **2** **1** **1** **2** **2** **2** **1** **2** **2**	**2/w**	**7 credit hours**

➢ Primary and secondary ➢ Genetic disorders of androgen production and action ➢ Testosterone therapy & gonadotropins • Male infertility • Gynecomastia • Erectile dysfunction • Testosterone in aging men , abuse of androgen and anabolic steroids • Sexual differentiation • Ejaculatory dysfunction • Andropause Female reproduction • Amenorrhea • Hyperandrogenism : ➢ nonpolycystic ➢ polycystic ovary syndrome • Premenstrual syndrome and premenstrual dysphoric disorder • Endocrine causes of infertility • Hormone contraception • Perimenopause and menopause • Sexual differentiation • Gender dysphoria • Female to male transgender management <u>Adrenal gland</u> • Glucocorticoids ➢ Glucocorticoid excess & resistance ➢ Adrenal insufficiency ➢ Management of glucocorticoid therapy • Mineralocorticoids ➢ Mineralocorticoid excess	2 2 2 1 2 2 2 1 1 1 2 2 1 2 2 2 2 2 3 2 1 2		

(hyperaldosteronism) ➢ Mineralocorticoid defeciency (hypoaldosteronism) • Adrenal androgen ➢ congenital adrenal hyperplasia • Endocrine hypertension • Adrenal incidentaloma • Adrenal medulla • Adrenal cancer • Adrenal disease in pregnancy	2 2 2 2 2 1 2		
Teaching hours	75	30	
<u>Module3</u> <u>Thyroid</u> Hyperthyroidism • Graves disease • Toxic adenoma and multinodular goiter • Inappropriate TSH syndrome • Thyrotoxicosis with low radio iodine uptake • Complicated thyrotoxicosis and subclinical hyperthyroidism Hypothyroidism • Primary • Secondary • Subclinical hypothyroidism • Hypothyroidism therapy & complicated hypothyroidism Nontoxic diffuse & nodular goiter • Pathogenesis & clinical picture • Imaging techniques & FNAC • Management Thyroid cancer • Classification, papillary, follicular thyroid carcinoma • Medullary and undiferentiated	5/w 3 2 1 3 2 2 1 1 2 2 2 1 2 2	2/w	7credit hours

carcinoma • Multidisciplinary approach or thyroid cancer (surgery, postoperative management, follow up	2 2		
Thyroid test abnormalities without thyroid disease.	2		
Thyroid disorders during pregnancy.	2		
Thyroid emergencies & perioperative care of patient undergoing thyroid surgery	2		
Radioisotopes in diagnosis and management of thyroid disorders	2		
Management of thyroid patient in critical care	1		
Amiodarone and thyroid			
<u>Calcium and bone disorders</u>	3		
1. Parathyroid dependent hypercalcemia	2		
2. Parathyroid independent hypercalcemia	2		
3. Approach and management of hypercalcemia			
4. Hypocalcemic disorders	2		
• Parathyroid related disorders	2		
• Vit. D related disorders	2		
• Other causes of hypocalcaemia and treatment of hypocalcaemia	2		
5. Hypovitaminosis D	2		
6. Disorders of phosphate metabolism	2		
7. Disorders of magnesium metabolism			
8. Osteoporosis	3		
• Skeletal biology and bone remodeling	2		
• Primary osteoporosis	2		
• Secondary osteoporosis	2		

• Prevention and therapy 9. Paget disease of bone 10. Endocrine and metabolic causes of nephrolithiasis 11. Renal osteodystrophy 12. Osteogenesis imperfect and bone dysplasia	2 2 2 2		
Teaching hours	75	30	
<u>Module 4</u> <u>Metabolism</u> Hypercholesterolemia Hypertriglyceridemia Mixed hyperlipidemia Hypolipidemia Atherogenesis Treatment of lipid disorders Porphyria , hemochromatosis and inborn errors of amino acid metabolism Inherited disorders of connective tissue and inherited carbohydrate disorders Obesity • Definition, Etiology classification and staging of obesity • Clinical manifestations, complications of obesity, obesity paradox • Obesity therapy Clinical nutrition • Introduction to clinical nutrition and types of nutrients • Assessment of nutritional status • Food groups, food pyramid and description of an adequate diet • Nutrition in different condition • Immune nutrition • Enteral and parenteral nutrition	2/w 2 1 2 1 2 2 4 4 2 2 2 2 2 2	1/w	3 credit hours

• **Nutrition in the elderly**			
Teaching hours	**30**	**15**	

Course contents (clinical and practical skills)

Clinical skill	Teaching hours
History taking and interpret of tests to differentiate different types of diabetes	**3**
programme to prevent or delay the onset of diabetes mellitus	**6**
patient education about the use of insulin delivery devices	**5**
people education about the use of home blood glucose monitoring systems	**3**
insulin dose adjustments including different regimens for intermittent insulin therapy and insulin pump therapy	**4**
indications for insulin therapy in type 2 diabetes	**3**
dose adjustment in response to blood glucose levels, exercise, alcohol etc	**3**
complications of diabetes and perform annual screening for complications	**4**
patients appropriate for psychological intervention	**3**
different hyperglycaemic emergencies	**4**
factors that may have contributed to hyper or hypoglycaemic emergencies	**3**
future prevention of hyper and hypoglycaemic emergencies	**4**
plan for investigation and management, including identifying appropriate patients for escalation of treatment to critical care	**3**
importance of diabetes in pregnancy and the need for family planning in fertile women of all ages	**4**
importance of pre-conception care and potential risks of diabetic pregnancy, including progression of complications	**3**
diabetes regarding contraception	**3**
glycaemic and blood pressure control prior to and throughout pregnancy	**4**
gestational diabetes	**3**
Manage glycaemia during labour and delivery	**3**
implementation of a screening programme for diabetes complications	**5**
patients at risk of foot problems and advise on prevention recognising the importance of patient education.	**4**
specialist footwear and off-loading techniques	**3**

features of Charcot's neuroarthropathy	**3**
vascular supply and neurological status of the lower limb	**4**
imaging techniques in detection and management of bone infection in the diabetic foot	**3**
diabetic foot problems including use of appropriate antibiotic treatment liaising appropriately with microbiological service	**4**
Exercise judgment in the need for, and timing of, surgical referral	**3**
basal and dynamic tests of pituitary function	**4**
diagnosis and first line management of functioning and non functioning pituitary tumours	**6**
diagnosis and monitoring optic nerve compression	**5**
immediate and long term care to patients with mass effects from pituitary enlargement	**3**
Demonstrate ability to diagnose and manage hypopituitarism	**5**
diagnosis and management of diabetes insipidus	**3**
diagnosis and management of patients during and after surgery for pituitary tumours	**6**
diagnosis and management of patients with SIADH, thirst dysregulation and other disorders of water balance.	**5**
diagnosis and management of disorders of growth and maturation, particularly constitutional delay in growth in puberty	**8**
diagnosis and management of common chromosomal disorders such as Turner's and Klinefelter's syndromes	**7**
tests of adrenal function	**5**
diagnosis and first line management of Cushing's Syndrome	**6**
Diagnosis of endocrine hypertension and provide first line management for phaeochromocytoma and adrenocortical hypertension	**7**
diagnosis and management of non classical congenital adrenal hyperplasia and provide first line management for classical CAH in adolescents and adulthood	**5**
diagnosis and management of patients with suspected adrenal tumours	**7**
perioperative care for patients with suspected or proven adrenal insufficiency	**5**
importance of steroid replacement during intercurrent illness	**5**

test of the hypothalamopituitary-gonadal axis	**7**
diagnosis and management of primary and secondary gonadal failure	**7**
Prescribing appropriately sex hormone replacement therapy to men and women	**5**
diagnosis and management of women with hirsutism / virilism	**7**
Management of polycystic ovarian syndrome	**5**
diagnosis and management of men with gynaecomastia	**5**
Interpreting thyroid function test results to diagnose and exclude thyroid disease and to recognise assay interferences	**7**
diagnosis and management of simple non-toxic goitre and solitary thyroid nodules	**7**
Perform and/or refer appropriately for fine needle aspiration cytology of the thyroid	**8**
Use and/or refer for the use of radioisotopes to diagnose thyroid disorders	**7**
Use and/or refer for the use of radioisotopes in the treatment of hyperthyroidism and goitre	**6**
diagnosis and management of primary and secondary hypothyroidism	**6**
diagnosis and management of thyroid emergencies including thyroid patients in critical care	**7**
perioperative care for patients undergoing thyroid surgery (particularly preoperative preparation)	**7**
diagnosis and management of patients with thyroid eye disease	**8**
Management of thyroid disorders during and after pregnancy	**7**
diagnosis and management of hypercalcaemia including emergency presentation	**7**
diagnosis and management of hyperparathyroidism	**6**
Provide peri operative care for patient undergoing parathyroid surgery	**7**
diagnosis and management of hypocalcaemia	**6**
Risk factors for vitamin D deficiency including dietary factors and ethnicity	**7**
diagnosis and management of vitamin D deficient states	**7**
preventive care against osteoporosis	**7**
diagnosis and management of established osteoporosis	**8**
diagnosis and management of Paget's Disease of bone	**7**
Select appropriate patients for bone biopsy	**7**
Select appropriate patients to screen for dyslipidaemia	**8**

Assess cardiovascular risk in relation to the patient's lipid profile	**8**
diagnosis and management of patients with primary and secondary lipid disorders	**7**
Communicate the cardiovascular risk of hyperlipidaemia to patients	**8**
diagnosis and management and providing care for patients with disorders of appetite and weight	**5**
investigationg the obese patient in order to exclude endocrine causes	**5**
management of the obese patient	**7**
Identify adequate diet and patient with different nutritional disorders	**5**
Management of patient with different nutritional disorders	**5**
Describimg diet in different diseases and conditions	**7**
referrals for CT and MR scans of pituitary, adrenals orbits and other organs	**9**
referrals for ultrasonography of the ovaries, parathyroids and thyroid	**7**
referrals for angiography with selective catheterisation and sampling from endocrine glands	**5**
Total	**450 hours**

(2) Teaching and Learning Methods :

As a policy, active participation of students at all levels will be encouraged.

The following teaching modalities will be employed:

3.1: Lectures with power point presentation.
3.2: Seminar Presentation
3.3: Journal Club Presentations
3.4: Group Discussions
3.5: Grand Rounds
3.6: Skill teaching in ICU, emergency and ward settings
3.7: Self-study, assignments and use of internet
3.8: Bedside teaching rounds in ward
3.9:Outpatient and Follow up clinics (General Diabetes, Obesity,Clinical nutrition, Endocrine, Diabetic foot, Diabetic neuropathy…etc)
3.10: Long and short case presentations.

In addition to the conventional teaching methodologies, interactive strategies; like conferences will also be introduced to improve both communication and clinical skills in the upcoming consultants.

(3) Student Assessment Methods:

4.1: written exam to assess knowledge and intellectual skills.
4.2: Clinical & practical exam to assess knowledge, intellectual practical, professional and transferable skills.
4.3: MCQ continuous assessment to assess knowledge and skills.

Weighting of assessment

a) MCQ exam at the end of each semester: 15 Marks each
b) Final exam
   - Written exam 240 marks
   - Clinical exam (OSCE and OSLER) 200 marks
   - Practical 100 marks

To be eligible for the final exam, the candidate must have passed the first part exam, fulfilled the credit hours of the courses and log book activities. The candidate must earn 60% of the marks to pass each component of the final exam.

(5) References of the course:

5.1: Course Notes (paper and/or electronic)

5.2: Essential Books (Text Books)

1. Williams textbook of endocrinology
2. Oxford textbook of endocrinology and diabetes
3. International Textbook of diabetes
4. Joslin's Diabetes Mellitus.

5.3: Recommended Books

1. American Diabetes Association: Physician's Guide Series
2. Reproductive Endocrinology. WB Saunders
3. Handbook of obesity
4. Oxford Handbook of Nutrition and Dietetics

5.4: Periodicals:

1. Clinics in Endocrinology and Metabolism
2. Yearbook of Endocrinology
3. Endocrine Reviews
4. Journal of Clinical Endocrinology and Metabolism
5. Diabetes Care
6. Diabetes
7. New England Journal of Medicine
8. International Journal of Obesity
9. Obesity
10. Journal of Obesity
11. Journal of Nutrition
12. Clinical Nutrition

(6) Facilities and resources mandatory for course completion:

Candidates and their learning are supported in a number of ways:

- Induction course introducing study skills
- Candidates logbook
- Programme Specification and Handbooks
- Extensive library and other learning resources
- Computer laboratories with a wide range of software
- Interanet with a wide range of learning support material

■ MD Dissertation Supervisor

Course coordinator:

Prof Nagy Shaaban, Head of endocrinology and diabetes unit

Prof Omayma Saleh, Professor of internal medicine, endocrinology and diabetes unit.

Prof Manal Tarshoby, Professor of internal medicine, endocrinology and diabetes unit.

Head of the department:

Prof Salah El gamal, Professor of internal medicine

Date: 23 /4/2016