MD Cardiovascular Diseases - Program Specification

University: Al-Azhar University

Faculty(s): Faculty of Medicine for boys

Programme Specification

A- Basic Information

1- Programme Title: MD Cardiovascular Diseases - Code: Card 1100

2- Programme Type: **Single** ☑ Double ☐ Multiple ☐

3- Department (s): Cardiology

4- Coordinator: Prof. Mohamed Hesham

5- External Evaluator (s): N/A

6- Last date of programme specifications approval: 30/10/2014

B- Professional Information

1. Programme Aims to:

- Provide postgraduates with knowledge and understanding of cardiovascular disease prevention and management laying stress on updates and evidence-based approach to be clinically competent for safe and effective cardiology practice.
- Prepare postgraduates to be proficient in the basic and advanced cardiology clinical skills and cardiology problem solving skills.
- Prepare postgraduate to be competent in performing and interpreting the results of the basic and advanced noninvasive and

invasive diagnostic and interventional procedures pertinent to cardiovascular diseases and to interpret and analyse their results.

- Provide postgraduate students with the research skills.
- Encourage postgraduates to pursue continued medical education and self learning.
- Prepare postgraduate to have an active role in keeping cardiovascular health for his/her community
- Encourage postgraduates to pursue professional attitudes and behaviour based on appropriate medical ethics.

2. Intended Learning Outcomes (ILOs)

2.1- Knowledge and Understanding:

Postgraduate attaining MD Degree in Cardiovascular Diseases should have sufficient understanding and knowledge that enable him/her to:

2.1.1 Recognize the fundamental and theories of cardiovascular (CV) physiology.

2.1.2 Describe the detailed anatomy of different parts of cardiovascular system including the surface and applied anatomy.

2.1.3 Define the etiology and pathophysiology of the cardiovascular (CV) diseases.

2.1.4 Describe symptoms and signs of the CV diseases.

2.1.5 Define the indications, and contraindications of noninvasive cardiovascular investigations.

2.1.6 Define the indications, contraindications and complications of invasive cardiovascular procedures.

2.1.7 Describe different treatment modalities and other recommended measures including prophylactic measures for each CV disease.

2.1.8 Determine the mutual relation between cardiology clinical practice and its effect on environment.

2.1.9 Recognize how to develop the environment and to maintain a healthy environment.

2.1.10 Recognize the recent advances in cardiovascular practice.

2.1.11 Recognize the details of ethical & legal aspects of cardiovascular practice.

2.1.12 Recognize the quality standards of cardiovascular practice.

2.1.13 Describe in details the scientific advances and updates in the management of CV disease.

2.1.14 Recognize the basics, the tools and the methodology as well as the ethical considerations in the different types of scientific research.

2.2- Intellectual Skills:

Postgraduate attaining MD Degree in Cardiovascular Diseases should develop intellectual skills that enable him/her to:

2.2.1 Evaluate and analyze the clinical data of the cardiac patient and use it for deduction and comparison in another clinical situation.

2.2.2 Select the appropriate investigation for each patient.

2.2.3 Integrate data derived from different surroundings of the patient (e.g. his clinical status, financial and social status) to select the appropriate line of treatment and take the appropriate professional decisions in different professional situations.

2.2.4 Determine, analyze and prioritize cardiovascular problems.

2.2.5 Solve the majority of cardiovascular problems according to the available data (complete or incomplete).

2.2.6 Design and conduct scientific research that adds to the existing scientific knowledge.

2.2.7 Write a thesis and publish scientific articles/papers.

2.2.8 Evaluate risks imposed during cardiology clinical practice.

2.2.9 Plan for enhancement & improvement in cardiovascular practice.

2.2.10 Take decisions in various professional situations (including dilemmas & controversial issues).

2.2.11 Add to the cardiology specialty field through creativity & innovation.

2.2.12 Manage discussions on basis of evidence and proofs.

2.3 Professional and practical skills

Postgraduate attaining MD Degree in Cardiovascular Diseases should develop professional and practical skills that enable him/her to:

2.3.1 Examine the heart by inspection, palpation, percussion and auscultation to differentiate normal from abnormal and to determine the type of abnormality.

2.3.2 To evaluate and interpret the results of the cardiovascular investigations including ECG, x-ray, Echo-Doppler, Stress test modalities, Holter & blood pressure monitoring, tilt table test, cardiac catheterization and angiography.

2.3.3 Be competent in performing and interpreting all the basic and most of the advanced cardiovascular procedures.

2.3.4 Evaluate and improve methods and tools used in cardiology specialty.

2.3.5 Write and appraise CV clinical reports.

2.3.6 Use technology to improve his clinical practice.

2.3.7 Plan for professional courses to improve practice and enhance performance of juniors.

2.4 General and transferable skills.

Postgraduate attaining MD Degree in Cardiovascular Diseases should develop general and transferrable skills that enable him/her to:

2.4.1 Communicate effectively with others (patients & their relatives, colleagues and paramedical staff).

2.4.2 Be self-dependent during the learning process and seek for continuous learning.

2.4.3 Search through the different sources of information to acquire their knowledge & skills (e.g. text books, educational CDs, internet, attending the clinical activities in the department like ward rounds and non-invasive investigation).

2.4.4 Work in team and work as a team leader.

2.4.5 Manage time effectively.

2.4.6 Teach and evaluate others.

2.4.7 Practice self appraisal and determines his learning needs.

2.4.8 To improve their linguistic capabilities and use the information technology to improve his/her professional practice.

2.4.9 Share in determination of standards for evaluation of others (e.g.: subordinates/ trainees etc.).

2.4.10 Manage scientific meetings and appropriately utilize time.

2.5 Professional behaviour

Postgraduate attaining MD Degree in Cardiovascular Diseases should acquire the ethics and attitude that enables him/her to:

2.5.1 To respect the patient privacy.

2.5.2 To deal ethically with patients, colleagues, junior & senior staff.

2.5.3 To transfer bad news about the patient's clinical status to the patients or their authorized relatives.

2.5.4 To select the time when to listen, speak, comment, or reply to others.

3. Academic Standards: national academic reference standards (NARS) of the National Authority of Quality Assurance and Accreditation of Education (NAQAAE)

3.a Comparison of Provision (Educational Program) to External References

Program ILOs	***NARS***
Knowledge and Understanding	
2.1.1	2.1.1
2.1.2	2.1.1
2.1.3	2.1.1
2.1.4	2.1.1
2.1.5	2.1.1
2.1.6	2.1.1.
2.1.7	2.1.1
2.1.8	2.1.5
2.1.9	2.1.5
2.1.10	2.1.1
2.1.11	2.1.3
2.1.12	2.1.4
2.1.13	2.1.1
2.1.14	2.1.2
Intellectual Skills:	
2.2.1	2.2.1
2.2.2	2.2.1 - 2.2.7
2.2.3	2.2.1 - 2.2.7

2.2.4	2.2.1 - 2.2.7
2.2.5	2.2.2
2.2.6	2.2.3 - 2.2.8
2.2.7	2.2.4
2.2.8	2.2.5
2.2.9	2.2.6
2.2.10	2.2.7
2.2.11	2.2.8
2.2.12	2.2.9
Professional and practical skills:	
2.3.1	2.3.1
2.3.2	2.3.1 - 2.3.3
2.3.3	2.3.1
2.3.4	2.3.3
2.3.5	2.3.2
2.3.6	2.3.4
2.3.7	2.3.5
General and Transferable Skills:	
2.4.1	2.4.1
2.4.2	2.4.4
2.4.3	2.4.2 - 2.4.5
2.4.4	2.4.6
2.4.5	2.4.7
2.4.6	2.4.3
2.4.7	2.4.4
2.4.8	2.4.2
2.4.9	2.4.3
2.4.10	2.4.7
Professional behaviour:	
2.5.1	2.1.3 - 2.1.4
2.5.2	2.1.3 - 2.4.1

2.5.3	2.1.3 - 2.4.1
2.5.4	2.1.3 - 2.4.1- 2.4.7

4. Curriculum Structure and Contents

4.a. **Programme duration:** 2½ years

4.b. **Programme structure:**

No. of hours per week:

Lectures: 4 hrs. ***Seminar***: 4 hrs ***Clinical/Practical***: 12 hrs

Total: 20 hrs

5. Programme Courses: attached

5.1- Level/Year of Programme: (subjects 3-annex 1),

Code No.	Course Title	No. of hours /week		
		Lectures	Seminar	Clinical/Practical
	Cardiology	**4**	**4**	**12**

6. Programme Admission Requirements

According to the regulations and unified internal bylaws of Al-Azhar University's faculties of medicine.

مادة (55): (عدلت بناء على قرار شيخ الأزهر رقم 873 لسنة 1996)

يشترط فى قيد الطالب لدرجة العالمية (دكتوراه الطب) أن يكون حاصلاً على ماجستير الطب فى مادة التخصص أو إحدى المواد المتصلة بها بتقدير جيد على الأقل من جامعة الأزهر أو إحدى جامعات جمهورية مصر العربية أو على درجة معادلة لها من معهد علمى آخر معترف به من الجامعة على أن يكون ممارساً للتخصص وقت التقدم للقيد، ولمجالس الأقسام تحديد أى ضوابط أخرى تراها شرطاً للقيد على أن تعرض على مجلس الكلية للنظر فى إقرارها، وذلك مع مراعاة نظام الجامعة فى الدراسة والإمتحان للمواد الإسلامية المقررة لغير خريجى الأزهر.

7. Regulations for Progression and Programme Completion

According to the unified internal by- laws of Al-Azhar University's faculties of medicine.

مادة (56):

يشترط فى الطالب لنيل درجة العالمية (دكتوراه الطب) ما يلى:

1. أن يحضر المقررات الدراسية التى يقدمها مجلس القسم ويقرها مجلس الكلية.
2. أن يقوم ببحث مبتكر فى موضوع يقره مجلس الجامعة بعد موافقة مجلس الكلية لمدة سنتين على الأقل على الأقل من تاريخ القيد.
3. أن يقدم نتائج بحوثه رسالة تقبلها لجنة الحكم بعد مناقشته فيها مناقشة علنية.
4. أن يجتاز بنجاح الإختبارات المقررة وذلك طبقاً لما فى المادة (63) من هذه اللائحة.

مادة (57)

يجب أن تقدم الرسالة إلى القسم المختص بعد موافقة المشرف أو لجنة الإشراف قبل ميعاد الإمتحان بشهرين على الأقل وللطالب بعد موافقة مجلس الكلية على قرار لجنة الحكم بقبول الرسالة أن يقيد إسمه للإمتحان قبل موعده بشهر على الأقل.

مادة (58)

يشترط لنجاح الطالب فى إمتحان درجة العالمية (دكتوراه الطب) أن يحصل على 60% من النهاية العظمى فى جميع الإختبارات وفى حالة تعدد أوراق الإختبار يشترط حصوله على 40% على الأقل فى درجة كل ورقة على أن يكون مجموع درجات أوراق الإختبار الواحد لا تقل عن 60% وإذا رسب الطالب فى أحد الإختبارات المقررة أعاد الإمتحان فى جميع الإختبارات.

مادة (59) (عدلت بقرار شيخ الأزهر 665 لسنة 1998)

تنظم هذه المادة أعمال الإمتحان لدرجة العالمية (دكتوراه الطب) الذى يعقد فى نوفمبر وإبريل من كل عام على النحو التالى:

أولاً: لجنة وضع الأسئلة والتحريرى وتصحيح الإمتحان:

1) يشكل مجلس القسم على مستوى الأساتذة أول كل دور لجنة لوضع الأسئلى التحريرى تتكون من:
   - رئيس القسم

- إثنين من الأساتذة حسب الأقدمية المطلقة للأساتذة العاملين بالقسم
- أستاذ متفرغ بصفة دورية
- ويجوز أن يضم أحد الأساتذة ممن أمضوا خمس سنوات فى وظيفة أستاذ للجنة بصفة دورية

ويرأس هذه اللجنة رئيس القسم أو من ينوبه من الأساتذة العاملين ويجوز ضم أساتذة من الخارج من ذوى الأقدمية والخبرة للجنة. وعلى أن يتم إعداد الأسئلة صباح نفس يوم الإمتحان بالكلية.

2) تصحح الورقة التحريرى بواسطة عدد من الأساتذة الذين أمضوا خمس سنوات على الأقل فى وظيفة أستاذ كل على حدة وعلى أن توضع درجات كل منهم فى كشف خارجى على النموذج المعد لذلك ويسلم الكشف لرئيس القسم ويؤخذ المتوسط وعلى مجلس القسم تحديد العدد اللازم للتصحيح.

ثانياً: الإمتحانات الإكلينيكية والعملية والشفوية:

يقوم بإمتحان كل طالب إثنان من الممتحنين على الأقل وبحد أقصى ستة من الأساتذة الذين أمضوا ثلاث سنوات على الأقل فى وظيفة أستاذ.

ثالثاً: فى حالة تباين الدرجات فى اللجنة أو فى الورقة الواحدة عن الدرجة التى تليها بأكثر من 20% يقوم رئيس القسم بإعادة التصحيح بلجنة أخرى ممن يلوهم فى الأقدمية ويؤخذ متوسط الدرجات.

رابعاً: أحكام عامة

1) يتم إتباع الأسلوب المناسب فى إمتحان الدكتوراه حسب ما يقرره مجلس القسم على مستوى الأساتذة مع الإلتزام بما جاء باللائحة.

2) فى حالة عدم توافر العدد الكافى للأساتذة الذين ينطبق عليهم شرط الأقدمية الموضحة سالفاً يمكن للقسم إشراك الأساتذة حسب أقدميتهم وحسب الضوابط التى يقرها مجلس القسم.

3) يراعى أن يشترك كل ممتحن بالقسم فى بند واحد من بنود الإختبار الإكلينيكى أو العملى أو الشفهى لكل طالب فى نفس الدور وفى حالة عدم توافر العدد الكافى من الأساتذة يمكن إشراك الأستاذ فى أكثر من بند حسبما يقرره مجلس القسم.

4) ضرورة الإلتزام بدعوة ممتحن خارجى واحد على الأقل من ذوى الخبرة والأقدمية ويختار بواسطة مجلس القسم على مستوى الأساتذة للمشاركة فى أعمال الإمتحان.

مادة (60) (عدلت بناء على قرار شيخ الأزهر رقم 873 لسنة 1996 م)

لا يجوز للطالب أن يبقى مقيداً لدرجة العالمية (الدكتوراه) فى الطب أكثر من أربع سنوات دون قبول رسالة الدكتوراه من لجنة الحكم ويجوز لمجلس الكلية بناء على إقتراح المشرف وموافقة مجلس القسم أن يعطى الطالب مهلة أو أكثر لا يزيد مجموعها عن سنتين ومن يناقش الرسالة خلال المدة المذكورة تطلق فرصة دخول الإمتحان، وفى جميع الأحوال فى حالة بقاء قيد الطالب بعد 6 سنوات من القيد يلتزم بتسديد تكاليف إستمرار قيده طبقاً لما تقرره الجامعة.

مادة (61)

يبين فى شهادة درجة العالمية (دكتوراه الطب) موضوع الرسالة

مادة (62) تبين الجداول عدد الإختبارات المقررة لدرجة العالمية (دكتوراه الطب)
(دكتوراه الطب فى أمراض القلب والأوعية الدموية)

ستة إختبارات

1. إختبار تحريرى من ورقتين مدة كل منهما ثلاث ساعات فى أمراض القلب والأوعية الدموية.
2. إختبار تحريرى مدته ساعة ونصف لحالة يتولى الطالب شرحها وتشخيصها ووصف علاجها.
3. إختبار تحريرى مدته ثلاث ساعات فى علم الفسيولوجيا التطبيقى والتشريح التطبيقى فيما له علاقة بالتخصص.
4. إختبار شفوى فى الفسيولوجيا التطبيقية والتشريح التطبيقى فيما له علاقة بالتخصص.
5. إختبار إكلينيكى
6. إختبار شفوى وعملى

8. Evaluation of Programme Intended Learning Outcomes

Evaluator	Tool	Sample
1- Senior students	questionnaires	30 %
2- Alumni	questionnaires	30 %
3- Stakeholders (Employers)	Questionnaires	3 persons
4-External Evaluator(s)/External Examiner(s))	Report	1
5- Other (Peer staff from another university)	Report	1

Annex 1: Courses Specifications

Course Instructors: Prof. Mohamed Hesham
Dr. Mohamed Abo Mandour
Dr. Abd Al Mohsen Mostafa

Head of Department: Prof. Ali Mohamed Al Amin

Date of a Department Approval: 1/12/2014

University / Academy: Al-Azhar University
Faculty / Institute: Faculty of Medicine for boys
Department: Cardiovascular Medicine

Course Specification
(MD Cardiovascular Medicine)

1. Course Data		
Course Code: Card 1100	**Course Title:** Cardiovascular Medicine	**Academic Year/level:** MD
Specialization: Cardiology	**No. of Instructional Units:** (hrs/w) **Lectures/Seminar** 8 **Clinical/Practical** 12	

2. Course Aims	
	• Supply postgraduates with knowledge & understanding of cardiovascular disease from its all aspects of prevention and management laying stress on updates and evidence-based approach to be clinically fit for safe and effective cardiology practice. • Prepare postgraduates to be proficient in the basic and advanced clinical skills in the field of cardiovascular medicine. • Prepare postgraduate to be competent in performing and/or interpreting the results of the basic and advanced non-invasive and invasive diagnostic and interventional procedures pertinent to cardiovascular diseases. • Provide postgraduate students with the research skills. • Encourage postgraduates to pursue continued medical education and self learning. • Prepare postgraduate to have an active role in learning others and in keeping cardiovascular health for his/her community.

	• Encourage postgraduates to pursue professional attitudes and behavior based on appropriate medical ethics.
3. Intended Learning Outcome (ILOs)	
a. Knowledge and Understanding:	***Postgraduate attaining MD Degree in Cardiovascular Medicine should have sufficient understanding and knowledge that enable him/her to:***

1. Recognize the fundamentals and theories of cardiovascular physiology, including understanding and comprehension of:
   a. Pathophysiology of heart failure, atherosclerosis, thrombosis, cardiac edema, systemic and pulmonary hypertension.
   b. Platelet function and antiplatelet agents.
   c. Endothelial function
   d. Coagulation/anticoagulant system.
   e. Properties of cardiac muscle.
   f. Cardiac cycle including heart sound, arterial pulse and jugular venous pressure.
   g. Heart rate and its regulation.
   h. Cardiac output and its regulation.
   i. Cardiac energetic .
   j. Vascular system including arterial blood pressure, regulation of arteriolar diameter and control of local blood flow to tissues.
   k. Capillary, lymphatic, venous, coronary and pulmonary circulation.
   l. Effect of exercise on circulation.
   m. Effect of aging on cardiovascular system.
   n. Shock and its causes.
   o. Hypoxia and cyanosis.

2. Describe the detailed normal and abnormal anatomy of different parts of cardiovascular system including the surface and applied anatomy of:
   a. Mediastinum.
   b. Pericardium.
   c. Great veins (superior and inferior vena cava).
   d. Cardiac chambers (right and left atria/ right and left ventricles, interatrial and interventricular septa.
   e. Cardiac valves including atrioventricular valves (mitral valve apparatus - tricuspid valve) and semilunar valves (aorta - pulmonary valves).
   f. Fibrous cardiac skeleton.
   g. Great arteries: pulmonary and aorta including their

	branches h. Coronary circulation: right and left coronary arteries, their branches and coronary collateral circulation. i. Blood supply to different cardiac structures including the conduction system. j. Coronary veins and cardiac lymphatics. k. Cardiac conduction system. l. Cardiac innervations. 3. Determine the etiology and describe the pathophysiology of: a. Systemic and pulmonary hypertension. b. Dyslipidemia, atherosclerosis and thrombosis including their involvement in chronic ischemic heart disease, acute coronary syndrome, cardiogenic shock and other ischemic syndrome. c. Heart failure either with systolic dysfunction or preserved ejection fraction. d. Cardiomyopathies and myocarditis. e. Valvular heart disease, infective endocardities and rheumatic fever. f. Tachyarrhythmias and bradyarrhythmias. g. Sudden cardiac death. h. Vascular disease including disease of the aorta and its branches, peripheral vascular diseases and venous diseases. i. Pericardial diseases. j. Congenital heart diseases. k. Syncope. l. Cardiac tumors. 4. Describe symptoms, signs and complications of: a. Ischemic heart disease. b. Heart failure. c. Different types of cardiomyopathies. d. Myocarditis. e. Pericardial diseases. f. Valvular heart disease, infective endocardities and rheumatic fever. g. Tachyarrhythmias and bradyarrhythmias. h. Different types of vascular diseases (arterial and venous). i. Congenital heart diseases. j. Hypertension, hypotension and shock. k. Cardiac masses and its differential diagnosis. l. Cardiac involvement in other systemic diseases. 5. Define the indications, and contraindications of non-

	invasive cardiovascular investigations such as: a. Echo-Doppler techniques. b. Stress testing modalities. c. Nuclear imaging. d. Cardiac magnetic resonance imaging. e. Cardiac computed tomography. f. Holter monitoring g. Blood pressure monitoring. h. Signal averaged electrocardiogram i. Tilt table test. 6. Define indications, contraindications and complications of the following invasive cardiovascular diagnostic and therapeutic procedures and interpret their results: a. Coronary angiography and percutaneous coronary intervention. b. Right and left heart catheterization. c. Percutaneous transcatheter intervention for mitral valve, aortic valve, pulmonary valve, atrial and ventricular septal defects. d. Electrophysiological studies, pacing, antitachycardia devices and ablative procedures e. Cardiac resynchronization therapy. f. Left atrial appendage closure. g. Endomyocardial biopsy h. Intra-aortic balloon counterpulsation 7. Describe different treatment modalities and other recommended measures including the prophylactic measures for different cardiovascular diseases. 8. Determine the mutual relation between cardiology clinical practice and its effect on environment, relying on: a. Shifting burdens and epidemiologic transitions. b. Global trends in cardiovascular disease. c. Economic burden and cost-effective solutions with established cardiovascular disease management, risk assessment, policy and community interventions. 9. Identify risk factors for different cardiovascular diseases. 10. Recognize how to develop the environment and to maintain healthy environment, through comprehensive preventive aspects including smoking cessation, healthy diet and regular programmed exercise. 11. Recognize the recent advances in cardiovascular

	practice, recent guidelines and updates for different cardiovascular diseases. 12. Recognize the quality standards of cardiovascular practice. 13. Describe in details the scientific advances and updates in the management of CV disease. 14. Recognize the basics, the tools and the methodology as well as the ethical considerations in the different types of scientific research.
b. Intellectual Skills:	***Postgraduate attaining MD Degree in Cardiovascular Medicine should develop intellectual skills that enable him/her to:*** 1. Evaluate and analyze the clinical data of the cardiac patient and use it for deduction and comparison in another clinical situation. 2. Select the appropriate investigation for each patient. 3. Integrate data derived from different surroundings of the patient (e.g. his clinical status, financial and social status) to select the appropriate line of treatment and take the appropriate professional decisions in different professional situations. 4. Determine, analyze and prioritize cardiovascular problems. 5. Comment on and solve the majority of cardiovascular problems according to the available data (complete or incomplete). 6. Design and conduct scientific research that adds to the existing scientific knowledge. 7. Write a thesis and publish scientific articles/papers. 8. Evaluate risks imposed during cardiovascular clinical practice. 9. Plan for enhancement & improvement in cardiovascular practice. 10. Take decisions in various professional situations (including dilemmas & controversial issues). 11. Add to the cardiology specialty field through creativity & innovation. 12. Manage discussions on basis of evidence and proofs. 13. Recognize the details of ethical and legal aspects in cardiovascular practice through planning how to: a. Prevent and avoid harm to patients. b. Ensure informed consent and informed refusal. c. Handle medical errors. d. Address refusals of and requests for withdrawal of

	life-sustaining treatments. e. Foster advanced care arrangement. f. Ensure appropriate surrogate decision making. g. Address requests for interventions. h. Maintain patient confidentiality.
c. Professional Skills:	***Postgraduate attaining MD Degree in Cardiovascular Medicine should develop professional and practical skills that enable him/her to:*** 1. Examine the cardiovascular system to differentiate normal from abnormal findings and to determine the type of abnormality. 2. Evaluate and interpret the results of the different invasive and non-invasive cardiovascular investigations. 3. Be competent in performing and interpreting all the basic and some advanced cardiovascular procedures. 4. Write and appraise cardiovascular clinical reports. 5. Use technology to improve his/her clinical practice. 6. Plan for professional courses to improve practice and enhance performance of juniors.
d. General Skills:	***Postgraduate attaining MD Degree in Cardiovascular Medicine should develop general and transferrable skills that enable him/her to:*** 1. Communicate effectively with others (patients & their relatives, colleagues and paramedical staff). 2. Be self-dependent during the learning process and seek for continuous learning. 3. Search through the different sources of information to acquire knowledge & skills (e.g. text books, educational CDs, internet, attending the clinical activities in the department like ward rounds and non-invasive investigation). 4. Work in team and work as a team leader. 5. Manage time effectively. 6. Teach and evaluate others. 7. Prepare, present and run discussion on scientific articles. 8. Practice self appraisal and determines his learning needs. 9. Improve his/her linguistic capabilities and use the information technology to improve his/her professional practice. 10. Share in determination of standards for evaluation of others (e.g.: subordinates/ trainees etc.). 11. Manage scientific meetings and appropriately utilize

	time.

4. Course Content	**I. Fundamentals of Cardiovascular Diseases:** - Global Burden of Cardiovascular Disease. - Heart Disease in Varied Populations. - Ethics in Cardiovascular Medicine. - Clinical Decision Making in Cardiology. - Measurement and Improvement of Quality of Cardiovascular Care. - Design and Conduct of Clinical Trials. **II. Molecular Biology and Genetics:** - Principles of Cardiovascular Molecular Biology and Genetics. - Inherited Causes of Cardiovascular Disease. - Genetics of Cardiac Arrhythmias. - Principles of Drug Therapy. - Cardiovascular Regeneration and Tissue Engineering. **III. Evaluation of the Patient** - The History and Physical Examination: An Evidence-Based Approach. - Electrocardiography. - Exercise Stress Testing. - Echocardiography. - The Chest Radiograph in Cardiovascular Disease. - Nuclear Cardiology. - Cardiovascular Magnetic Resonance Imaging. - Cardiac Computed Tomography. - Cardiac Catheterization. - Coronary Arteriography. - Intravascular Ultrasound Imaging. - Molecular Imaging in Cardiovascular Disease. **IV. Heart Failure** - Mechanisms of Cardiac Contraction and Relaxation. - Pathophysiology of Heart Failure. - Clinical Assessment of Heart Failure. - Diagnosis and Management of Acute Heart Failure Syndromes. - Management of Heart Failure Patients with Reduced Ejection Fraction. - Devices for Monitoring and Managing Heart Failure. - Heart Failure with Normal Ejection Fraction. - Surgical Management of Heart Failure.

	- Assisted Circulation in the Treatment of Heart Failure. - Emerging Therapies and Strategies in the Treatment of Heart Failure. - Care of Patients with End-Stage Heart Disease. **V. Arrhythmias, Sudden Death, and Syncope** - Genesis of Cardiac Arrhythmias: Electrophysiologic Considerations. - Diagnosis of Cardiac Arrhythmias. - Therapy for Cardiac Arrhythmias. - Pacemakers and Implantable Cardioverter-Defibrillators. - Specific Arrhythmias: Diagnosis and Treatment. - Atrial Fibrillation: Clinical Features, Mechanisms, and Management. - Cardiac Arrest and Sudden Cardiac Death. - Hypotension and Syncope. **VI. Preventive Cardiology:** - The Vascular Biology of Atherosclerosis. - Risk Markers for Atherothrombotic Disease. - Systemic Hypertension: Mechanisms, Diagnosis and therapy. - Lipoprotein Disorders and Cardiovascular Disease. - Nutrition and Cardiovascular Disease. - Primary and Secondary Prevention of Coronary Heart Disease. - Exercise-Based, Comprehensive Cardiac Rehabilitation. - Complementary and Alternative Approaches to Management of Patients with Heart Disease. **VII. Atherosclerotic Cardiovascular Diasease:** - Coronary Blood Flow and Myocardial Ischemia. - Approach to the Patient with Chest Pain. - ST-Segment Elevation Myocardial Infarction: Pathology, Pathophysiology, Clinical Features and management. - Unstable Angina and Non–ST Elevation Myocardial Infarction. - Stable Ischemic Heart Disease. - Percutaneous Coronary Interventions. - Percutaneous Therapies for Structural Heart Disease in Adults. - Diseases of the Aorta - Peripheral Artery Diseases. - Prevention and Management of Stroke. - Endovascular Treatment of Noncoronary Obstructive

	Vascular Disease. - Diabetes and the Cardiovascular System. **VIII. Diseases of the Heart, Pericardium, and Pulmonary Vasculature Bed:** - Congenital Heart Disease. - Valvular Heart Disease. - Infective Endocarditis. - The Dilated, Restrictive, and Infiltrative Cardiomyopathies. - Hypertrophic Cardiomyopathy. - Myocarditis. - Chagas' Disease. - Cardiovascular Abnormalities in HIV-Infected Individuals. - Toxins and the Heart. - Primary Tumors of the Heart. - Pericardial Diseases. - Traumatic Heart Disease. - Pulmonary Embolism. - Pulmonary Hypertension. - Sleep Apnea and Cardiovascular Disease. **IX. Cardiovascular Disease in Special Populations:** - Cardiovascular Disease in the Elderly. - Cardiovascular Disease in Women. - Pregnancy and Heart Disease. - Exercise and Sports Cardiology. - Medical Management of the Patient Undergoing Cardiac Surgery. - Anesthesia and Noncardiac Surgery in Patients with Heart Disease. **X. Cardiovascular Disease and Disorders of Other Organs** - Endocrine Disorders and Cardiovascular Disease. - Hemostasis, Thrombosis, Fibrinolysis, and Cardiovascular Disease. - Rheumatic Fever. - Rheumatic Diseases and the Cardiovascular System. - The Cancer Patient and Cardiovascular Disease. - Psychiatric and Behavioral Aspects of Cardiovascular Disease. - Neurologic Disorders and Cardiovascular Disease. - Interface Between Renal Disease and Cardiovascular Illness

	- Cardiovascular Manifestations of Autonomic Disorders.

5. Teaching and Learning Methods	**I) Lectures/Seminar:** 1. Conventional (didactic) method 2. Problem solving (interactive discussion). 3. Journal club. **II) Clinical/Practical:** 4. Encourage postgraduates to attend the ward rounds and cardiac investigations (non-invasive and invasive procedures). 5. Patient contact during history taking, general and local cardiac examination. 6. Interactive discussion during case presentations. 7. Practical demonstration & allowing the postgraduates to share in reading and interpretation of ECGs, x-rays, Echo-Doppler tracings and clips, Stress test modalities, Nuclear imaging tracings, Holter monitoring, tilt table test, cardiac catheterization and angiography …..etc. 8. Encourage postgraduates to revise educational CDs, videos as well as websites on the internet.

6. Teaching and Learning Methods for Students with Special Needs	Not available.

7. Student Assessment:

a. Procedures used:	**Preparation of a thesis** during at least 2 years period. The thesis should be evaluated and accepted before applying to the final examination that includes: **I) Written examination** comprising: i. Two papers in cardiovascular diseases (Paper I and Paper II) to assess the level of achievement in acquiring knowledge and skills. The two papers will include long and short essay questions, problem solving and MCQs. Exam duration: 3 hours/paper. ii. Commentary (full comment on available data of a clinical case, providing a provisional diagnosis, differential diagnosis and strategy for management), to assess intellectual and professional skills. Exam duration: 90 minutes. iii. Applied anatomy and applied physiology written examination. Exam duration: 3 hours. **II) Clinical Examination** (one long and two short cases) to assess intellectual professional and general skills. **III) Practical examination** to assess the professional skills in interpretation of the results of noninvasive and invasive cardiac investigations (e.g. ECGs, x-rays, echo-Doppler tracings and clips, nuclear imaging, cardiac CT and MRI, cardiac catheterization and angiography…… etc). **IV) Oral examination** to assess the level of achievement in acquiring knowledge and understanding, and to assess intellectual and general skills.
b. Schedule:	Twice per year (April and November). Only postgraduates who pass the written examination are allowed to apply for clinical, practical and oral examinations.

c. Weighing of Assessment:	**Percentage and number of marks of the different exams of the MD Degree in Cardiovascular Medicine include:** a. Written exam: 44% (400 marks) distributed as follows: - Paper I & II: 200 marks (100 marks for each paper) - Commentary: 100 marks. - Applied anatomy and applied physiology: 100 marks (50 marks for each). b. Clinical, practical & oral examinations: 56% (500 marks) distributed as follows: - 200 marks for clinical examination (100 marks for the long case and 50 marks for each of the 2 short cases). - 100 marks for the practical examination (Tracings). - 100 marks for the oral cardiovascular examination. - 100 marks for oral examination of applied anatomy and applied physiology (50 for oral anatomy and 50 for oral physiology).
8. List of Textbooks and References:	
a. Course Notes	Not available (some CDs are available for postgraduates according to the presenting staff preference).
b. Required Books (Textbooks)	- Braunwald's Heart Disease A Textbook of Cardiovascular Medicine. 9th Edition, 2012 (Editors: Bonow R, Mann DL, Zipes D and Peter Libby). - Hurst's The Heart. 13th Edition, 2011 (Editors: Valentin Fuster, Richard Walsh and Robert Harrington). - Topol, Eric J: Textbook of cardiovascular medicine. 4th Edition, 2013, (Editors: Topol, Robert M. Califf, Jeffrey M. Isner, Eric N. Prystowsky and Judith Swain).
c. Recommended Books	- Mayo Clinic Cardiology: Concise Textbook, 4th Edition, 2013 (Editors: Joseph G. Murphy, Margaret A. Lloyd). - Handbook of cardiac anatomy, physiology, and devices. 2nd Edition, 2009, (Editor: Paul A. Iaizzo). - The ESC Textbook of Cardiovascular Imaging, 2010 (Editors: José Luis Zamorano, Jeroen J. Bax, Frank E. Rademakers and Juhani Knuuti). - Moss & Adams' Heart Disease in Infants, Children, and Adolescents: Including the Fetus and Young Adult. 8th edition, 2012 (Editors: Hugh D. Allen, David J. Driscoll, Robert E. Shaddy and Timothy F. Feltes). - The EAE Textbook of Echocardiography. 2011 (Editors: Leda Galiuto, Luigi Badano, Kevin Fox, Rosa Sicari and Jose Luis Zamorano).

d. Periodicals, Web Sites, …, etc.	▪ ***Periodicals*** - Circulation - Journal of the American College of Cardiology (JACC) - JACC Imaging - American Heart Journal - European Heart Journal - European Heart Journal Cardiovascular Imaging - European Journal of Heart Failure - Europace - British Journal of Cardiology - Heart ▪ ***Web sites*** - http://www.medscape.com/cardiology - http://www.cardiologyonline.com - http://heart.bmj.com/searchall - http://bjcardio.co.uk - http://www.cardiosource.com (website of the American College of Cardiology). - http://www.escardio.org/knowledge/guidelines (website of the European Society of Cardiology).

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