



Master of Cardiovascular Diseases - Program Specification

University: Al-Azhar University

Faculty: Faculty of Medicine for boys

Programme Specification

A- Basic Information

1- Programme Title: Master of Cardiovascular Diseases Code: Card 900-1000

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

3- Department (s):

- i. Cardiology
- ii. Physiology
- iii. Biochemistry
- iv. Pathology
- v. Pharmacology
- vi. Internal Medicine

4- Coordinator: Prof. Mohamed Hesham

5- External Evaluator (s): Prof. (*not yet defined*)

6- Last date of programme specifications approval: 30/11/2014

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.



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- Prepare postgraduates to be proficient in the cardiology clinical skills and cardiology problem solving skills.
 - Prepare postgraduate to be competent in performing and interpreting the results of the commonly used noninvasive diagnostic procedures pertinent to cardiovascular diseases and to perform some advanced diagnostic techniques and interpret and analyze the results of the more advanced diagnostic and interventional cardiovascular procedures.
 - 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)

a. *Knowledge and Understanding:*

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

- a.1 Recognize the fundamental and theories of cardiovascular (CV) pathology, physiology, biochemistry and pharmacology.
- a.2 Describe the etiology, pathophysiology of and management of the common problems of internal medicine.
- a.3 Recognize the etiology and pathophysiology of the cardiovascular (CV) diseases.
- a.4 Describe symptoms and signs of the CV diseases.
- a.5 Define the indications, and contraindications of noninvasive cardiovascular investigations.



- a.6 Define the indications, contraindications and complications of invasive cardiovascular procedures.
- a.7 Describe different treatment modalities and other recommended measures including prophylactic measures for each CV disease.
- a.8 Determine the mutual relation between cardiology clinical practice and its effect on the environment.
- a.9 Recognize the fundamentals of ethical and legal aspects of cardiovascular practice.
- a.10 Recognize the quality standards of cardiovascular practice.
- a.11 Recognize the main scientific advances in management of CV disease.
- a.12 Recognize the basics and ethics of scientific research.

b. Intellectual Skills:

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

- b.1 Evaluate, interpret and analyze the patient symptoms and signs to reach a diagnosis of the cardiovascular disease.
- b.2 Evaluate, interpret and analyze patient's data to diagnose and solve common medical problems.
- b.3 Select the appropriate investigation for each patient.
- b.4 Determine, analyze and prioritize cardiovascular problems.
- b.5 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.
- b.6 Solve some cardiovascular problems that do not conform to classic data (incomplete data).



- b.7 Evaluate risks imposed during cardiology clinical practice.
- b.8 Plan for CV professional improvement.
- b.9 Conduct a scientific research and present it in a thesis, and/or write scientific systematic essay tackling or dealing with a research topic.

c. Professional and practical skills:

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

- c.1 Be competent in examining the heart by inspection, palpation, percussion and auscultation to differentiate normal from abnormal and to determine the type of abnormality.
- c.2 Be competent in examining the chest, abdomen and nervous system to manage encountered common medical problems.
- c.3 Examine and interpret pathological specimens related to cardiovascular diseases.
- c.4 Evaluate and interpret the results of the cardiovascular investigations including ECG, x-ray, Echo-Doppler, Stress test modalities, Holter and blood pressure monitoring, cardiac catheterization and angiography.
- c.5 Be competent in performing basic and some of the advanced cardiovascular procedures.
- c.6 Write and appraise cardiovascular clinical reports.

d. General and transferrable skills:

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

- d.1 Communicate effectively with others (patients & their relatives, colleagues and paramedical staff).
- d.2 Be self-dependent during the learning process and seek for continuous learning.



- d.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).
- d.4 Work in team and work as a team leader in different professional situations.
- d.5 Manage time effectively.
- d.6 Practice self appraisal and determines his/her learning needs.
- d.7 Improve their linguistic capabilities and use the information technology to improve his/her professional practice.
- d.8 Share in determination of standards for evaluation of others (e.g.: subordinates/ trainees etc.).

e. Professional behaviour

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

- e.1 Respect the patient privacy.
- e.2 Deal ethically with patients, colleagues, junior & senior staff.
- e.3 Transfer bad news about the patient's clinical status to the patients or their authorized relatives.
- e.4 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

<i>Program ILOs</i>	<i>NARS</i>
<i>Knowledge and Understanding</i>	
a.1	2.1.1
a.2	2.1.1



a.3	2.1.1
a.4	2.1.1
a.5	2.1.1 - 2.1.3
a.6	2.1.1 - 2.1.3
a.7	2.1.1
a.8	2.1.2
a.9	2.1.4
a.10	2.1.5
a.11	2.1.3
a.12	2.1.6
<i>Intellectual Skills:</i>	
b.1	2.2.1
b.2	2.2.1
b.3	2.2.1
b.4	2.2.1
b.5	2.2.3 - 2.2.7
b.6	2.2.2
b.7	2.2.5
b.8	2.2.6
b.9	2.2.4
<i>Professional and practical skills:</i>	
c.1	2.3.1
c.2	2.3.1
c.3	2.3.1 - 2.3.3
c.4	2.3.1 - 2.3.3
c.5	2.3.1
c.6	2.3.2
<i>General and Transferable Skills:</i>	
d.1	2.4.1
d.2	2.4.8



d.3	2.4.2 - 2.4.4 - 2.4.8
d.4	2.4.6
d.5	2.4.7
d.6	2.4.3
d.7	2.4.2
d.8	2.4.5
Professional behaviour:	
e.1	2.1.4 - 2.1.5
e.2	2.1.4 - 2.4.1
e.3	2.1.4 - 2.4.1
e.4	2.1.4 - 2.4.1

4. Curriculum Structure and Contents

4.a **Programme duration:** 2 years (first part: 6 months, second part: 18 months)

4.b **Programme structure:**

No. of hours per week:

	<i>Lectures</i>	<i>Clinical/Practical</i>	<i>Total</i>
<i>First part</i>	14	4	18
<i>Second part</i>	8	10	18

5. Programme Courses:

5.1- **Level/Year of Programme: First part** (subjects: 5 - annex 1),

<i>Code No.</i>	<i>Course Title</i>	<i>No. of hours /week</i>		<i>Program ILOs Covered (by No.)</i>
		<i>Lectures</i>	<i>Practical/Clinical</i>	
	Basic Cardiology	2	-	a.1 - a.5 - a.6 -
	Physiology	2	-	a.1



	Biochemistry	2	-	a.1
	Pathology	4	4	a.1 - c.3
	Pharma	4	-	a.1 - b.7

5.2- Level/Year of Programme: Second part (subjects 3 - annex 2),

Code No.	Course Title	No. of hours /week		Program ILOs Covered (by No.)
		Lectures	Clinical/Practical	
	Cardiology	12	18	a.3 - a.4 - a.6 - a.7 - a.8:a.12 - b.1 - b.3:b.9 - c.1 - c.6 - d.1:d.8 - e.1:e.4
	Cardiac investigations	1	2	a.5 - a.6 - b.3 - c.4 - c.5
	Internal Medicine	2	9	a.2 - b.2 - c.2

6. Programme Admission Requirements

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

مادة (40): (عدلت بناء على قرار شيخ الأزهر رقم 873 لسنة 1996)

مدة الدراية لنيل درجة التخصص (الماجستير) □نتان وتكون على جزئين:
الجزء الأول: مدته 6 شهور من شهر أكتوبر
الجزء الثاني: مدته 18 شهر تبدأ في شهر مايو أو أكتوبر

مادة (41): (عدلت بناء على قرار شيخ الأزهر رقم 873 لسنة 1996)

يشترط في قيد الطالب للحصول على درجة التخصص (الماجستير):

- أن يكون حاصلاً على درجة الإجازة العالية (البكالوريوس) في الطب والجراحة من جامعة الأزهر أو إحدى الجامعات المصرية أو على درجة معادلة لها من معهد آخر معترف به من الجامعة
- ب- ألا يقل تقدير الطالب عن جيد في الإجازة العالية (البكالوريوس) أو أن يكون الطالب حاصلاً على درجة الإجازة العالية (البكالوريوس) بتقدير مقبول بشرط الحصول على دبلوم في مجال التخصص بتقدير عام جيد على الأقل
- ج- أن يكون قد قضى السنة التدريبية (الإمتياز)



د- أن يكون متفرغاً للدراسة لمدة ١٠ سنة على الأقل

مع مراعاة نظام الجامعة في الدراسة و الإمتحانات للمواد الإلزامية المقررة لغير خريجي الأزهر

مادة (42)

يكون القيد لهذه الدرجة في شهر أكتوبر وتبدأ الدراسة في شهر نوفمبر من كل عام

مادة (43)

يشكل مجلس الكلية لجنة لكل تخصص تتولى وضع المحتوى العلمي للمقررات في حدود الساعات الواردة في اللائحة على أن تشمل هذه الساعات محاضرات ودراس عملية وتدريب إكلينيكي وتعرض على مجلس الكلية لإقرارها.

7. Regulations for Progression and Programme Completion

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

مادة (44):

يشترط لنيل درجة التخصص (الماجستير):

- أ- حضور المقررات الدراسية والتدريبات الإكلينيكية والعملية بصفة مرضية على ألا تقل نسبة الحضور عن 75 %
- ب- أن يقوم بالعمل كطبيب مقيم أصلي أو زائر لمدة ١٠ سنة على الأقل في قسم التخصص
- ج- أن يقوم بإعداد بحث في موضوع يقره مجلس الجامعة بعد موافقة مجلس الكلية ينتهي بإعداد رسالة تقبلها لجنة الحكم قبل التقدم للإمتحان الثاني بشهر على الأقل
- د- أن ينجح في إمتحان القسمين الأول والثاني.

الإختبارات للقسم الأول:

1. إختبار تحريري مدته ثلاث ساعات في الفسيولوجيا والكيمياء الحيوية + إختبار شفوي.
2. إختبار تحريري مدته ثلاث ساعات في الفارماكولوجيا + إختبار شفوي



3. إختبار تحريري مدته ثلاث ساعات في الباثالوجا + إختبار عملي + إختبار شفوي

4. إختبار تحريري مدته ثلاث ساعات في أس أمراض القلب.

الإختبارات للقسم الثاني:

1. إختباران تحريريان مدة كل منهما ثلاث ساعات في أمراض القلب والدورة الدموية وطرق التشخيص الكهربائية والديناميكية والإشعاعية للقلب.
2. إختبار إكلينيكي.
3. إختبار شفوي.
4. إختبار عملي في طرق التشخيص الكهربائية والديناميكية والإشعاعية للقلب (يضاف إلى إكلينيكي أمراض القلب).
5. إختبار تحريري مدته ثلاث ساعات في أمراض الباطنة العامة + إختبار إكلينيكي + إختبار شفوي.

مادة (46)

توزع درجات التقدير النهائي لدرجة التخصص (الماجستير) على الوجه التالي:

1. 30% منها لإمتحان القسم الأول
2. تقبل الرقابة بدون تقدير
3. 70% منها لإمتحان القسم الثاني

مادة (47) (عدلت بناء على قرار شيخ الأزهر رقم 873 لسنة 1996)

تعد إمتحانات القسم الأول للماجستير في شهر إبريل ومن يرقب يعيد الإمتحان في شهر
بتمبر وتعد إمتحانات القسم الثاني في دورى نوفمبر وإبريل من كل عام ولا تبدأ الدراسة
بالجزء الثاني إلا بعد النجاح في القسم الأول

مادة (48) (عدلت بناء على قرار شيخ الأزهر رقم 873 لسنة 1996)

بعد نجاح الطالب في الجزء الأول لا يجوز للطالب أن يبقى مقيداً للدراسة للجزء الأول
لدرجة التخصص (الماجستير) أكثر من 4 نوات من بدء القيد وفي حالة عدم إنتهاء
الرقابة خلال أربع نوات يمكن لمجلس الكلية الموافقة على مدها عام خامس و عام سادس
وذلك للإنتهاء من إعداد الرقابة ومناقشتها للتقدم لإمتحان القسم الثاني وإذا لم ينته الطالب
الحاصل على القسم الأول من إعداد الرقابة ومناقشتها خلال فترة الست نوات يلغى



تسجيله نهائياً وفي حالة إعداد الرقابة ومناقشتها تطلق فرص التقدم لإمتحان القسم الثانى
وفى جميع الأحوال فى حالة بقاء الطالب بعد ضعف مدة القيد (4 نوات) يلزم بتسديد
تكاليف □ تمرار قيده طبقاً لما تقرره الجامعة.

مادة (50) تحسب تقديرات النجاح والرسوب فى إمتحانات درجة التخصص (الماجستير)
على الوجه التالى:

ممتاز:	85 % فأكثر
جيد جداً:	من 75 % إلى أقل من 85 %
جيد:	من 65 % إلى أقل من 75 %
مقبول:	من 60 % إلى أقل من 65 %
ضعيف:	من 30 % إلى أقل من 60 %
ضعيف جداً:	أقل من 30 %

ويكون النجاح فى المواد الإسلامية طبقاً للقواعد المتبعة فى الجامعة.

8. Evaluation of Programme Intended Learning Outcomes (not yet done)

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

Annex 1: Courses' Specifications (for first part)

Annex 2: Courses' Specifications (for second part)

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
(Master of Cardiovascular Medicine/Biochemistry)

1. Course Data		
Course Code: Card-900	Course Title: Biochemistry	Academic Year / level First part Master
Specialization: Cardiovascular Medicine	No. of Instructional Units: (hrs/w)	
	Lectures <input type="text" value="2"/>	Practical <input type="text" value="-"/>

2. Course Aims	<ul style="list-style-type: none"> - Provides the post graduate student with the knowledge and understanding of fundamentals of biochemistry related to cardiovascular system diseases - Provides postgraduate student with the essentials of Biochemical reactions and its clinical applications. - Supply the postgraduate student with basic biochemical knowledge needed for understanding cardiovascular disease prevention
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3. Intended Learning Outcome (ILOs):

a. Knowledge and Understanding:	<p><i>Postgraduate attaining first part of Master Degree in Cardiovascular Medicine should have sufficient understanding and knowledge that enable him/her to:</i></p> <ol style="list-style-type: none"> 1. Explain the fundamentals of biochemistry related to cardiovascular medicine 2. Determine the different biomarkers released in various cardiovascular illness 3. Recognize facts and pathways to emphasize how the underlying biochemistry is related to the body's overall physiological functions.
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	<ol style="list-style-type: none"> 4. Review updated information on clinical chemistry and molecular biology. 5. Identify the chemistry behind the biological structure and reactions occurring in living systems. 6. Discuss Carbohydrate metabolism including Digestion and absorption, glucose oxidation, glycolysis, oxidation decarboxylation, citric acid cycle, Glycogen, Galactose and Fructose metabolim 7. Recognize protein metabolism and identify essential amino acid, types of protein, its digestion and absorption processes, types of amino acid. 8. Explain the role of immunoglobulins in cardiovascular disorders 9. Discuss lipid metabolism, digestion and absorption, types of body lipids, phospholipids, glycolipids and ketone bodies 10. Describe lipogenesis, lipolysis, fatty acid synthesis, fatty acid oxidation, B oxidation and alpha oxidation. 11. Explain the cholesterol metabolism and plasma lipoproteins and its clinical implication. 12. Evaluate starvation effect and well fed state 13. Identify Oncogenes- tumor suppressor genes- tumor markers, apoptosis 14. Explain biochemistry of hormones and heam metabolism. 15. Discuss biochemistry of vitamins and minerals: calcium, iron, cupper, Na and K. 16. Identify enzymes of cardiovascular clinical importance, and biomarkers of coronary artery disease.
<p>b. Intellectual Skills:</p>	<p><i>Postgraduate attaining first part of Master Degree in Cardiovascular Medicine should develop intellectual skills that enable him/her to:</i></p> <ol style="list-style-type: none"> 1. Evaluate the implications of different biochemical/metabolic cycles on the related cardiovascular disease. 2. Explain the relationship between biochemistry and cardiovascular clinical problems.



<p>c. Professional Skills:</p>	<p><i>Postgraduate attaining first part of Master Degree in Cardiovascular Medicine should develop practical skills that enable him/her to:</i></p> <ol style="list-style-type: none"> 1. Illustrate various biochemical pathways and different metabolic cycles. 2. Relates events at the cellular level to physiological processes in the human diseases derived from aberrant biochemical processes. 3. Explain different biochemical reactions and identify its application in the cardiovascular clinical field. 4. Identify the important chemical biomarkers pertinent to diagnosis of acute coronary syndrome. 5. Be proficient in selecting the biomarker assay according to the patient presentation.
<p>d. General Skills:</p>	<p><i>Postgraduate attaining first part of Master Degree in Cardiovascular Medicine should develop general and transferrable skills that enable him/her to:</i></p> <ol style="list-style-type: none"> 1. Be self-dependent during the learning process, adopt the principles of lifelong learning and seek for continuous professional development. 2. Use technology and search through the different sources of information (e.g. text books, educational CDs and internet) to remain up-to-date in knowledge and practice. 3. Practice self appraisal and determines his/her learning needs. 4. Improve his/her linguistic capabilities and use the information technology to improve his/her scientific level.
<p>4. Course Content:</p>	<p>1. Carbohydrate metabolism</p> <ul style="list-style-type: none"> - Digestion and absorption, glucose oxidation: glycolysis, oxidation decarboxylation, citric acid cycle, hexose monophosphate pathway, glucuronic acid pathway - Glycogen metabolism, glycogenesis - Galactose metabolism - Fructose metabolism



	<ul style="list-style-type: none">- Blood glucose, hypoglycemia, DM, glycosuria, oral glucose tolerance test <p>2. Protein metabolism:</p> <ul style="list-style-type: none">- Essential amino acid, protein folding (structure and misfolding of protein)- Types of protein, digestion and absorption- Transamination, deamination and oxidation deamination- Ammonia, urea formation- Ketogenic and glycolytic amino acid- Individual amino acid: glycine, phenyl alanine and tyrosine, methionine, glutamic acid- Immunoglobulins <p>3. Lipid metabolism:</p> <ul style="list-style-type: none">- Digestion and absorption, types of body lipids, lipogenesis, lipolysis, fatty acid synthesis- Fatty acid oxidation: β oxidation α oxidation.- Eicosanoids- Phospholipids and glycolipids, ketone bodies- Cholesterol metabolism and plasma lipoproteins <p>4. Starvation and well fed state</p> <p>5. Oncogenes- tumor suppressor genes- tumor markers, apoptosis</p> <p>6. Nucleotide metabolism.</p> <p>7. Hormones</p> <p>8. Hem metabolism</p> <p>9. Vitamins (fat and water soluble)</p> <p>10. Minerals: Calcium, Iron, Copper, Na and K.</p> <p>11. Enzymes of clinical importance:</p> <ul style="list-style-type: none">- CK total and CK-MB- Cardiac troponin- LDH- AST- Tyrosine <p>12. Biochemical markers of myocardial infarction and coronary artery disease</p>
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	<p>13. Plasma lipoproteins, liver function test</p> <p>14. Cholesterol atherosclerosis and vascular disease</p>
5. Teaching and Learning Methods	<p>1. Lectures: Conventional (didactic) method.</p> <p>2. Interactive discussion.</p>
6. Teaching and Learning Methods for Students with Special Needs	N/A
7. Student Assessment:	
a. Procedures used:	<p>I) Written examination</p> <p>II) Oral examination</p>
b. Schedule:	Twice per year (April and September). Only postgraduates who pass the written examination are allowed to apply for oral examination.
c. Weighing of Assessment:	<p>I) Written exam: 50% (25 marks).</p> <p>II) Oral examination: 50% (25 marks).</p>
8. List of Textbooks and References:	
a. Course Notes	Lectures Notes
b. Required Books (Textbooks)	Textbook of Biochemistry for Medical Students. 6 th Edition, 2010 (Editors: D. M. Vasudevan, M.D., Dm Vasudevan)
c. Recommended Books	Marks' Basic Medical Biochemistry, 4 th Edition, 2012 (Editors: Alisa Peet, Michael A. Lieberman, Allan Marks)
d. Periodicals, Web Sites, ..., etc.	http://biochemistryquestions.wordpress.com/

Course Instructors: Prof. Mohamed Hesham
Dr. Mohamed Abo Mandour Dr. Abd Al Mohsen Mostafa
Head of Department: Prof. Ali Mohamed Al Amin
Date ofa Department Approval: 1/12/2014



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

Course Specification
(Master of Cardiovascular Medicine/Pathology)

9. Course Data		
Course Code: Card-900	Course Title: Pathology	Academic Year / level First part Master
Specialization: Cardiovascular Medicine	No. of Instructional Units: (hrs/w) Lectures <input type="text" value="4"/> Practical <input type="text" value="4"/>	

10. Course Aims	<ol style="list-style-type: none"> 1. Provides the post graduate student with the knowledge and understanding of pathology of cardiovascular system and related systems laying stress on updates to be fit for cardiology practice. 2. Prepare postgraduates to be proficient in the basic and advanced practical cardiovascular pathology skills. 3. Prepare postgraduate to be competent in interpreting the results of the microscopic and macroscopic pathology for different cardiovascular diseases.
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11. Intended Learning Outcome (ILOs)	
e. Knowledge and Understanding:	<p><i>Postgraduate attaining first part of Master Degree in Cardio-vascular Medicine should have sufficient understanding and knowledge that enable him/her to:</i></p> <ol style="list-style-type: none"> 1. Recognize the fundamentals of general pathology. 2. Recognize the fundamentals of pathology of cardiovascular system.



	<ol style="list-style-type: none">3. Describe the macroscopic and microscopic pathologic features of various diseases of cardiovascular system including:<ol style="list-style-type: none">a. Systemic and pulmonary hypertension.b. Dyslipidemia, atherosclerosis and thrombosis including their involvement in coronary syndrome.c. Heart failure.d. Cardiomyopathies and myocarditis.e. Valvular heart disease,f. Infective endocarditiesg. Rheumatic fever.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. Cardiac tumors.4. Address and review the recent advances that have led to new concepts in cardiovascular pathology and pathophysiology.5. Describe the macroscopic and microscopic pathologic features of various diseases of respiratory system, kidney and liver diseases that may influence or interact with cardiovascular diseases.6. Understand the pathology of diseases of endocrine system that is related to cardiovascular system.7. Understand the pathologic features of various diseases of blood and lymphatic system that may affect cardiovascular system.8. Recognize the basics, the tools and the methodology as well as the ethical considerations in handling the cardiovascular pathological specimens.
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<p>f. Intellectual Skills:</p>	<p><i>Postgraduate attaining first part of Master Degree in Cardio-vascular Medicine should develop intellectual skills that enable him/her to:</i></p> <ol style="list-style-type: none"> 1. Determine, analyze and prioritize the basic pathologic mechanisms of disease. 2. Differentiate the various pathologic features of cardiovascular diseases. 3. Outlines expectations and limitations of pathologic assessment of cardiovascular diseases.
<p>g. Professional Skills:</p>	<p><i>Postgraduate attaining first part of Master Degree in Cardio-vascular Medicine should develop practical skills that enable him/her to:</i></p> <ol style="list-style-type: none"> 1. Examine the cardiovascular pathological specimens and differentiate the gross appearance of cardiovascular pathology. 2. Evaluate and interpret the microscopic features of various cardiovascular diseases. 3. Identify a wide range of cardiovascular conditions rapidly and accurately in both the diagnostic and autopsy work. 4. Appraise approaches to autopsy devices, as well as biopsies of cardiovascular system 5. Evaluate transplant, excised valves, heart tumors and vasculitis specimens. 6. Determine the gross pathology of other non-cardiovascular diseases. 7. Write and appraise cardiovascular pathological reports.
<p>h. General Skills:</p>	<p><i>Postgraduate attaining first part of Master Degree in Cardio-vascular Medicine should develop general and transferrable skills that enable him/her to:</i></p> <ol style="list-style-type: none"> 1. Be self-dependent during the learning process, adopt the principles of lifelong learning and seek for continuous professional development. 2. Use technology and search through the different sources of information (e.g. text books, educational CDs and internet) to remain up-to-date in knowledge and practice. 3. Practice self appraisal and determines his/her



	<p>learning needs.</p> <p>4. Improve his/her linguistic capabilities and use the information technology to improve his/her scientific level.</p>
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<p>12. Course Content</p>	<p>I. General pathology.</p> <ul style="list-style-type: none"> - Cellular reaction to injury. - Inflammation. - Healing. - Neoplasia. - Metabolic diseases. - Immune mechanisms. <p>II. Systemic Pathology:</p> <p>A. Cardiovascular system:</p> <ul style="list-style-type: none"> - Rheumatic heart disease. - Infective endocarditis. - Valvular heart disease. - Hypertension. - Atherosclerosis. - Aneurysm. - Myocardial infarction. - Heart failure. <p>B. Respiratory system:</p> <ul style="list-style-type: none"> - Chronic obstructive airway disease. - Bronchial asthma. <p>C. Liver disease:</p> <ul style="list-style-type: none"> - Acute hepatitis. - Chronic hepatitis. <p>D. Renal System:</p> <ul style="list-style-type: none"> - Nephritic and Nephrotic syndromes. <p>E. Endocrine system:</p> <ul style="list-style-type: none"> - Diabetes mellitus. - Thyroid diseases <p>F. Blood and lymphatic system.</p>
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<p>13. Teaching and Learning Methods</p>	<p>I. Lectures: 3. Conventional (didactic) method 4. Interactive discussion.</p> <p>II. Practical: to identify and recognize various microscopic and macroscopic pathologic specimens.</p>
<p>14. Teaching and Learning Methods for Students with Special Needs</p>	<p>Not available.</p>
<p>15. Student Assessment:</p>	
<p>a. Procedures used:</p>	<p>III) Written examination: One paper comprising short and long essay questions to assess the level of achievement in acquiring knowledge and skills. (3 hrs).</p> <p>IV) Oral examination: to assess the level of achievement in acquiring knowledge and understanding, intellectual and general skills.</p> <p>V) Practical examination: Specimen identification to assess the practical skills in interpreting microscopic and macroscopic pathology.</p>
<p>b. Schedule:</p>	<p>Twice per year (April and September). Only postgraduates who pass the written examination are allowed to attend oral and practical examination.</p>
<p>c. Weighing of Assessment:</p>	<p>III) Written exam: 40% (80 marks). IV) Oral examination: 30% (60 marks). V) Practical examination: 30% (60 marks).</p>
<p>16. List of Textbooks and References:</p>	
<p>a. Course Notes</p>	<p>- Lectures Notes</p>
<p>b. Required Books (Textbooks)</p>	<p>- Practical Cardiovascular Pathology, 2nd Edition, 2011 (Editor: Mary Sheppard) - Cardiovascular Pathology 2nd Edition, 2001 (Editors: Renu Virmani, Allen Burke, Andrew Farb, James B. Atkinson, Andrew Farb)</p>



c. Recommended Books	<ul style="list-style-type: none">- Department Book (Pathology Department, Faculty of Medicine for girls, Al-Azhar University).- Practical Cardiovascular Pathology. 2nd Edition, 2010 (Editors: Allen P. Burke, Fabio Tavora)
d. Periodicals, Web Sites ..., etc.	<p>http://www.e-heart.org/ http://library.med.utah.edu/WebPath/CVHTML/CVIDX.html http://www.cdc.gov/heartdisease/index.htm http://www.cdc.gov/heartdisease/educational_materials.htm http://emedicine.medscape.com/pathology http://emedicine.medscape.com/pathology#cardiovascular</p>

Course Instructors: Prof. Mohamed Hesham

Dr. Mohamed Abo Mandour

Dr. Abd Al Mohsen Mostafa

Head of Department: Prof. Ali Mohamed Al Amin

Date of Department Approval: 1/12/2014



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

**Course Specification
(Master of Cardiovascular Medicine/Physiology)**

17. Course Data		
Course Code: Card-900	Course Title: Physiology	Academic Year / level First part Master
Specialization: Cardiovascular Medicine	No. of Instructional Units: (hrs/w) Lectures <input type="text" value="2"/> Practical <input type="text" value="-"/>	

18. Course Aims	<ul style="list-style-type: none">- Provides the post graduate student with the basic sciences needed to understand the cardiovascular physiology.- Encourage postgraduates to pursue continued self learning.
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19. Intended Learning Outcome (ILOs):
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<p>i. Knowledge and Understanding:</p>	<p><i>Postgraduate attaining first part of Master Degree in Cardiovascular Medicine should have sufficient understanding and knowledge that enable him/her to:</i></p> <ol style="list-style-type: none">1. Recognize the fundamental theories of cardiovascular physiology, including understanding & comprehension of:<ol style="list-style-type: none">a. Properties of cardiac muscle.b. Cardiac cycle including heart sound, arterial pulse and jugular venous pressure.c. Heart rate and its regulation.d. Cardiac output and its regulation.e. Cardiac energetic .f. Vascular system including arterial blood pressure, regulation of arteriolar diameter and control of local blood flow to tissues.g. Capillary, lymphatic, venous, coronary & pulmonary circulation.h. Effect of exercise on circulation.i. Effect of aging on cardiovascular system.j. Shock and its causes.k. Hypoxia and cyanosis.l. Pain sensation.2. Recognize the series and parallel arrangement of the cardiac chambers, pulmonary circulation, and major organs of the systemic circulation.3. Describe the pathways for the flow of blood through the heart chambers and large vessels related to the heart.4. Describe the primary functions of the heart and vasculature.5. Explain how the autonomic nerves and kidneys serve as a negative feedback system for the control of arterial blood pressure.6. Describe the mechanism of water & electrolyte balance and the acid base balance.7. Explain the clotting & anticoagulant mechanisms.8. Recognize the mechanism of gas exchange & regulation of respiration
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<p>j. Intellectual Skills:</p>	<p><i>Postgraduate attaining first part of Master Degree in Cardiovascular Medicine should develop intellectual skills that enable him/her to:</i></p> <ol style="list-style-type: none"> 4. Determine the physiologic correlates of the different components of cardiac cycle. 9. Evaluate the implications of different physiologic facts on cardiovascular disease related pathophysiology including: <ol style="list-style-type: none"> a. Systemic and pulmonary hypertension. b. Atherosclerosis and thrombosis including their involvement in ischemic syndrome. c. Heart failure. d. Valvular heart disease. e. Infective endocarditis and rheumatic fever. f. Tachyarrhythmias and bradyarrhythmias. g. Sudden cardiac death. h. Vascular disease including diseases of the aorta and venous diseases. i. Syncope.
<p>k. Professional Skills:</p>	<p><i>Postgraduate attaining first part of Master Degree in Cardiovascular Medicine should develop practical skills that enable him/her to:</i></p> <ol style="list-style-type: none"> 1. Measure competently the arterial blood pressure using the sphygmomanometer. 2. Recognize the physiologic basis of ECG and ABG.
<p>l. General Skills:</p>	<p><i>Postgraduate attaining first part of Master Degree in Cardiovascular Medicine should develop general and transferrable skills that enable him/her to:</i></p> <ol style="list-style-type: none"> 5. Be self-dependent during the learning process and seek for continuous learning. 6. Search through the different sources of information to acquire knowledge (e.g. text books, educational CDs and internet). 7. Practice self appraisal and determines his/her learning needs. 8. Improve his/her linguistic capabilities and use the information technology to improve his/her scientific level.



<p>20. Course Content:</p>	<ol style="list-style-type: none"> 1. Properties of cardiac muscle. 2. Cardiac cycle. 3. Heart sounds. 4. Arterial pulse. 5. Jugular venous pulse. 6. Electrocardiogram. 7. Heart rate & its regulation. 8. Cardiac output & its regulation. 9. Arterial blood pressure and regulation of arteriolar diameter. 10. Capillary circulation, tissue fluid and edema, venous circulation, coronary circulation, pulmonary circulation. 11. Cardiac energetic. 12. Effect of exercise on circulation. 13. Effect of aging on the heart. 14. Hemorrhage and shock. 15. Water & electrolyte balance, acid base balance. 16. Pain sensation. 17. Clotting & anticoagulant mechanisms. 18. Gas exchange & regulation of respiration.
<p>21. Teaching and Learning Methods</p>	<ol style="list-style-type: none"> 5. Lectures: Conventional (didactic) method. 6. Interactive discussion. 7. Demonstration for blood pressure measurement, ECG and ABG.
<p>22. Teaching and Learning Methods for Students with Special Needs</p>	<p>Not available.</p>
<p>23. Student Assessment:</p>	
<p>a. Procedures used:</p>	<p>VI) Written examination VII) Oral examination</p>
<p>b. Schedule:</p>	<p>Twice per year (April and September). Only postgraduates who pass the written examination are allowed to apply for oral examination.</p>



c. Weighing of Assessment:	VI) Written exam: 50% (50 marks). VII) Oral examination: 50% (50 marks).
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24. List of Textbooks and References:	
a. Course Notes	Lectures notes
b. Required Books (Textbooks)	Heart physiology and pathophysiology. 4th Edition, 2001, (Editors: Jun-ichi Abe JI, Abriel H and Accili EA)
c. Recommended Books	Handbook of cardiac anatomy, physiology, and devices. 2nd Edition, 2009, (Editor: Paul A. Iaizzo).
d. Periodicals, Web Sites, ..., etc.	http://www.cvphysiology.com/

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
(Master of Cardiovascular Medicine/Pharmacology)

25. Course Data	
Course Code: Card-900	Course Title: Pharmacology
Academic Year / level First part Master	
Specialization: Cardiovascular Medicine	No. of Instructional Units: (hrs/w) Lectures <input type="text" value="4"/> Practical <input type="text" value="-"/>
26. Course Aims	<ol style="list-style-type: none"> 1. Provides the post graduate student with the knowledge and understanding of the pharmacology of drugs used for management of patients with different cardiovascular diseases. 2. Prepare postgraduate to be competent in prescribing medications to various cardiovascular diseases. 3. Provides the post graduate students with the knowledge and understanding of common drug adverse effect and their interaction. 4. Help the post graduate students in proper selection of the drug depending on the patient presentation and co- morbid conditions.
27. Intended Learning Outcome (ILOs)	
m. Knowledge and Understanding:	<p><i>Postgraduate attaining first part of Master Degree in Cardiovascular Medicine should have sufficient understanding and knowledge that enable him/her to:</i></p> <ol style="list-style-type: none"> 1. Recognize the fundamentals of general pharmacology, drug pharmacokinetics, drug interaction and drug toxicity. 2. Define drugs which act on autonomic nervous system.



	<ol style="list-style-type: none">3. Identify the mode of action, uses and adverse effects of autocoids.4. Identify CNS drugs related to cardiovascular problems.5. Describe pharmacology of drugs used for management of different cardiovascular diseases.6. Classify antihypertensive medications, their mode of action and recognize their adverse effect.7. Identify different types of antiarrhythmic drugs, their mode of action and common adverse effects.8. Recognize antianginal medications, their mode of action and common side effects.9. Define drugs used in management of different types of heart failure, mode of action and their adverse effects.10. Describe management of shock.11. Identify therapy of anemia, drugs used in coagulation disorders (anticoagulants, fibrinolytics and antiplatelets)12. Recognize the mode of action, uses and adverse effects of different antidyslipidemic drugs.13. Describe the mechanism of action, uses and adverse effects of different types of diuretics14. Understand the respiratory system pharmacology and drug therapy of chronic obstructive airway diseases.15. Identify drugs used for peptic ulcer, GERD, and antiemetics.16. Define the use of different hormones and drug therapy of DM.17. Understand use of antimicrobial and drugs used for immune system.
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<p>n. Intellectual Skills:</p>	<p><i>Postgraduate attaining first part of Master Degree in Cardiovascular Medicine should develop intellectual skills that enable him/her to:</i></p> <ol style="list-style-type: none"> 1. Discover risks and adverse effect from using some cardiovascular drugs. 2. Identify drug/drug interaction. 3. Choose suitable drugs for specific cardiac problem. 4. Prioritize cardiovascular problem and be able to pick problem related to drug effect. 5. Describe the impact of preventive pharmacology on promoting health promotion and disease prevention.
<p>o. Professional Skills:</p>	<p><i>Postgraduate attaining first part of Master Degree in Cardiovascular Medicine should develop professional skills that enable him/her to:</i></p> <ol style="list-style-type: none"> 1. Be proficient in evaluating and interpreting the effect of using different drugs on the cardiovascular system. 2. Be proficient in selection of the proper and safe drug and plan for drug regimen based on patient's data and clinical status. 3. Respect ethics related to drug usage and patients' rights to share in drug selection based on his/her financial status and cultural beliefs. 4. Identify drugs that are liable to produce addiction or abuse.
<p>p. General Skills:</p>	<p><i>Postgraduate attaining first part of Master Degree in Cardiovascular Medicine should develop general and transferrable skills that enable him/her to:</i></p> <ol style="list-style-type: none"> 1. Be self-dependent during the learning process, adopt the principles of lifelong learning and seek for continuous professional development. 2. Use technology and search through the different sources of information (e.g. text books, educational CDs and internet) to remain up-to-date in knowledge and practice. 3. Practice self appraisal and determines his/her learning needs.



	4. Improve his/her linguistic capabilities and use the information technology to improve his/her scientific level.
28. Course Content:	<ul style="list-style-type: none"> - General pharmacology: pharmacokinetics, pharmacodynamics, drug interactions, and drug toxicity. - Autonomic nervous system. - Autacoids. - CNS pharmacology: analgesics, anxiolytics and hypnotics, antidepressants. - Cardiovascular pharmacology: antihypertensives, antiarrhythmics, heart failure, antianginal drugs, drug therapy of shock, fluid therapy and blood transfusion, - Blood pharmacology: therapy of anemia, drugs used in coagulation disorder (anticoagulants, fibrinolytics & antiplatelets), and hypolipidemic drugs. - Kidney pharmacology: diuretics. - Respiratory pharmacology: oxygen therapy, cough therapy and drug therapy of bronchial asthma. - GIT pharmacology: peptic ulcer, GERD, and anti-emetics. - Hormones: drug therapy of DM, corticosteroids, calcium metabolism, hyper and hypothyroidism. - Anti-microbial. - Immunomodulators.
29. Teaching and Learning Methods	Lectures: <ul style="list-style-type: none"> 8. Conventional (didactic) method 9. Interactive discussion.
30. Teaching and Learning Methods for Students with Special Needs	N/A
31. Student Assessment	
d. Procedures used:	VIII) Written examination: One paper comprising long and short essay questions to assess the level of



	achievement in acquiring knowledge and skills. (3 hrs) IX) Oral examination: to assess the level of achievement in acquiring knowledge and understanding, intellectual and general skills.
e. Schedule:	Twice per year (April and September). Only postgraduates who pass the written examination are allowed to attend oral examination.
f. Weighing of Assessment:%	VIII) Written exam: 50% (75 marks). IX) Oral examination: 50% (75 marks).
32. List of Textbooks and References:	
e. Course Notes	- Lecture Notes.
f. Required Books (Textbooks)	- The Hands-on Guide to Clinical Pharmacology. 2 nd Edition, 2005 (Editors: Christopher Tofield, Alexander Milson, Sukhdev Chatu). - Basic and Clinical Pharmacology 12th Edition, 2011 (Editor: Bertram Katzung, Susan Masters, Anthony Trevor).
g. Recommended Books	- Pharmacology, 2001 (Editor: Abdel-Fattah Hassan Marrie) - Cardiac drug therapy. 7th Edition, 2007 (Editor: M. Gabriel Khan)
h. Periodicals, Web Sites, ..., etc.	http://www.cvpharmacology.com/

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
(Master of Cardiovascular Medicine-second part)**

33. Course Data		
Course Code: Card-1000	Course Title: Cardiovascular Medicine	Academic Year / level Second part Master
Specialization: Cardiovascular Medicine	No. of Instructional Units: (hrs/w)	
	Lectures/Seminar <input type="text" value="8"/>	Clinical/Practical <input type="text" value="10"/>

34. Course Aims	<ol style="list-style-type: none"> 1. Provide postgraduate students with knowledge to understanding of the essentials of management and prevention of cardiovascular diseases. 2. Prepare postgraduates to be proficient in the cardiology clinical skills and cardiology problem solving skills. 3. Prepare postgraduate to be competent in performing and/or interpreting the results of the commonly used noninvasive and invasive diagnostic and therapeutic procedures pertinent to cardiovascular diseases. 4. Prepare the postgraduate to have role in promoting and keeping cardiovascular health in community. 5. Provide postgraduate students with the research skills. 6. Encourage postgraduates to pursue continued medical education and self learning, and to help in learning others. 7. Encourage postgraduates to pursue professional attitudes and behavior based on appropriate medical ethics.
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35. Intended Learning Outcome (ILOs):

q. Knowledge and Understanding:

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

1. Recognize the etiology, pathophysiology, symptoms and signs of cardiovascular (CV) diseases including:
 - a. Ischemic heart disease,
 - b. Valvular Heart Disease, infective endocarditis and rheumatic fever.
 - c. Heart failure
 - d. Congenital heart disease.
 - e. Cardiomyopathy and Myocarditis.
 - f. Pericardial diseases.
 - g. Tachyarrhythmia and bradyarrhythmia.
 - h. Systemic hypertension.
 - i. Pulmonary hypertension.
 - j. Circulatory collapse.
 - k. Pericardial diseases.
2. Define the indications, and contraindications of noninvasive cardiovascular investigations including:
 - a. Echo-Doppler techniques.
 - b. Stress testing modalities.
 - c. Myocardial perfusion imaging (MPI).
 - d. Cardiac magnetic resonance imaging.
 - e. Cardiac computed tomography.
 - f. Holter monitoring
 - g. Blood pressure monitoring.
 - h. Signal averaged electrocardiogram
 - i. Tilt table test.
3. Define the indications, contraindications and complications of invasive cardiovascular procedures including:
 - 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.



	<ul style="list-style-type: none"> f. Left atrial appendage closure. g. Endomyocardial biopsy h. Intra-aortic balloon counterpulsation <p>4. Describe different treatment modalities and other recommended measures including prophylactic measures for each CV disease.</p> <p>5. Recognize the effects of cardiology clinical practice on the environment and seek for environment protection.</p> <p>6. Recognize the fundamentals of ethical and legal aspects of cardiovascular practice.</p>
<p>r. Intellectual Skills:</p>	<p><i>Postgraduate attaining Master Degree in Cardiovascular Medicine should develop intellectual skills that enable him/her to:</i></p> <ul style="list-style-type: none"> 1. Interpret, analyze and evaluate patient symptoms and signs to reach a diagnosis of the cardiovascular disease. 2. Select the appropriate investigation for each CV disease. 3. Prioritize cardiovascular problems. 4. Integrate data derived from different surroundings of the patient (e.g. his clinical status, financial and social status) to take professional decisions and select the appropriate line of treatment. 5. Solve common cardiovascular problems effectively and safely. 6. Evaluate risks imposed during professional cardiovascular practice. 7. Analytically read scientific researches and articles in the field of Cardiology.
<p>s. Professional Skills:</p>	<p><i>Postgraduate attaining Master Degree in Cardiovascular Medicine should develop professional and practical skills that enable him/her to:</i></p> <ul style="list-style-type: none"> 1. Be competent in examining the heart by inspection, palpation, percussion and auscultation to differentiate normal from abnormal and to determine the type of abnormality. 2. Evaluate and interpret the results of the cardiovascular investigations including ECG, x-ray, Echo-Doppler, Stress test, Holter and blood



	<p>pressure monitoring, MPI, cardiac catheterization and angiography.</p> <p>3. Write and appraise cardiovascular clinical reports.</p>
t. General Skills:	<p><i>Postgraduate attaining Master Degree in Cardiovascular Medicine should develop general and transferrable skills that enable him/her to:</i></p> <p>9. Communicate effectively with others (patients & their relatives, colleagues and paramedical staff).</p> <p>10. Be self-dependent during the learning process and seek for continuous learning.</p> <p>11. 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).</p> <p>12. Work in team.</p> <p>13. Manage time effectively.</p> <p>14. Help in teaching other juniors.</p> <p>15. Prepare and present scientific articles/clinical cases.</p> <p>16. Practice self appraisal and determines his learning needs.</p> <p>17. Improve his/her linguistic capabilities and use the information technology to improve his/her professional practice.</p>

7. Course Content	<p>I. Ischemic Heart Disease:</p> <ul style="list-style-type: none"> - ST elevation myocardial infarction. - Unstable angina and Non ST-elevation myocardial infarction. - Complication of myocardial infarction. - Cardiogenic shock complicating myocardial infarction. - Post myocardial infarction risk stratification. - Stable angina. <p>II. Heart Failure:</p> <ul style="list-style-type: none"> - Heart failure with systolic dysfunction. - Heart failure with preserved ejection fraction. <p>III. Cardiomyopathies and Myocarditis:</p> <ul style="list-style-type: none"> - Dilated cardiomyopathy. - Restrictive cardiomyopathy. - Infiltrative cardiomyopathy. - Hypertrophic cardiomyopathy. - Myocarditis.
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	<p>IV. Valvular Heart Disease:</p> <ul style="list-style-type: none">- Aortic valve disease.- Mitral valve disease.- Pulmonary valve disease.- Tricuspid valve disease.- Infective endocarditis.- Prosthetic heart valve. <p>V. Arrhythmias, Sudden Death and Syncope:</p> <ul style="list-style-type: none">- Tachyarrhythmia.- Bradyarrhythmia.- Specific arrhythmia.- Atrial fibrillation.- Sudden cardiac death.- Hypotension and Syncope. <p>VI. Congenital Heart Disease.</p> <ul style="list-style-type: none">- Congenital acyanotic heart disease- Congenital cyanotic heart disease <p>VII. Systemic Hypertension.</p> <p>VIII. Pulmonary Hypertension and Pulmonary Embolism.</p> <p>IX. Pericardial Disease.</p> <p>X. Preventive Cardiology:</p> <ul style="list-style-type: none">- Dyslipidemia- Diabetes mellitus.- Non lipid cardiovascular risk factors <p>XI. Non Invasive Assessment of Heart Disease:</p> <ul style="list-style-type: none">- Echocardiography- Exercise ECG- Stress echocardiography- Nuclear cardiac imaging/Myocardial perfusion imaging (MPI)- Cardiac MRI- Cardiovascular CT <p>XII. Invasive Cardiac Assessment</p> <ul style="list-style-type: none">- Coronary angiography and PCI- EPS- Endomyocardial biopsy
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	<ul style="list-style-type: none"> - Right and left heart catheterization <p>XIII. Common Cardiology Procedures:</p> <p>XIV. CVD and Systemic Diseases</p> <ul style="list-style-type: none"> - Endocrine disorders. - Rheumatic fever. - Rheumatic diseases. - Neurological disorders - Renal diseases. <p>XV. CVD and Special Population</p> <ul style="list-style-type: none"> - Cardiovascular disease in the elderly. - Cardiovascular disease in women. - Pregnancy and heart disease. - Medical management of the patient undergoing cardiac surgery. - Anesthesia and noncardiac surgery in patients with heart disease.
<p>8. Teaching and Learning Methods</p>	<p>I) Lectures/Seminar:</p> <ol style="list-style-type: none"> 10. Conventional (didactic) method 11. Problem solving (interactive discussion). 12. Journal club. <p>II) Clinical/Practical:</p> <ol style="list-style-type: none"> 1. Attending the clinical ward rounds and cardiac investigations including non-invasive and invasive procedures. 2. Patient contact during history taking, general and local cardiac examination. 3. Interactive discussion during case presentations. 4. Practical demonstration and allowing the postgraduates to share in reading and interpretation of ECGs, x-rays, Echo-Doppler tracings and clips, Stress test modalities, Holter monitoring, MPI, cardiac catheterization and angiographyetc. 5. Encourage postgraduates to revise educational CDs, videos as well as websites on the internet.



<p>9. Teaching and Learning Methods for Students with Special Needs</p>	<p>Not available</p>
<p>10. Student Assessment:</p>	
<p>g. Procedures used:</p>	<p>Preparation of a thesis during at least 6 months period. The thesis should be evaluated and accepted before applying to the final examination that includes:</p> <p>X) Written examination comprising 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.</p> <p>XI) Clinical Examination (one long and two short cases) to assess the intellectual, professional and general skills.</p> <p>XII) Practical examination to assess the professional skills in interpreting cardiac investigations (e.g. ECGs, x-rays, echo-Doppler tracings and clips, MPI, cardiac catheterization and angiography..... etc).</p> <p>XIII) Oral Examination to assess the level of achievement in acquiring knowledge and understanding, and to assess intellectual and general skills.</p>
<p>h. Schedule:</p>	<p>Twice per year (April and November). Only postgraduates who pass the written examination are allowed to apply for clinical, practical and oral examinations.</p>
<p>i. Weighing of Assessment:</p>	<p>Percentage and number of marks of the different exams of the Master Degree in Cardiovascular Medicine include:</p> <p>a. Written exam: 40% (400 marks) distributed as follows:</p> <ul style="list-style-type: none"> - Paper I: 200 marks - Paper II: 200 marks <p>b. Clinical, practical & oral examinations: 60% (600 marks) distributed as follows:</p> <ul style="list-style-type: none"> - 300 marks for clinical examination (150 marks for the long case and 75 marks for each of the 2 short cases). - 100 marks for the practical examination (Tracings).



	- 200 marks for the oral examination.
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11. List of Textbooks and References:	
i. Course Notes	Not available (some CDs are available for postgraduates according to the presenting staff preference).
j. Required Books (Textbooks)	<ul style="list-style-type: none"> - 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: Textbook of cardiovascular medicine. 4th Edition, 2013, (Editors: Eric J. Topol, Robert M. Califf, Jeffrey M. Isner, Eric N. Prystowsky and Judith Swain).
k. Recommended Books	<ul style="list-style-type: none"> - Mayo Clinic Cardiology: Concise Textbook, 4th Edition, 2013 (Editors: Joseph G. Murphy, Margaret A. Lloyd). - The EAE Textbook of Echocardiography. 2011 (Editors: Leda Galiuto, Luigi Badano, Kevin Fox, Rosa Sicari and Jose Luis Zamorano). - 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).
l. Periodicals, Web Sites, ..., etc.	<ul style="list-style-type: none"> ▪ Periodicals <ul style="list-style-type: none"> - Circulation - Journal of the American College of Cardiology (JACC) - European Heart Journal - American Heart Journal ▪ Web sites <ul style="list-style-type: none"> - http://www.medscape.com/cardiology - http://www.cardiologyonline.com - http://heart.bmj.com/searchall - http://bjcardio.co.uk - http://ecg.utah.edu - http://www.ecglibrary.com/ecghome.html - http://folk.ntnu.no/stoylen/strainrate/Ultrasound/index.html - http://www.echocardiology.org/index.html - 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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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

(Master of Cardiovascular Medicine/Internal Medicine)

36. Course Data		
Course Code: Card-1000	Course Title: Internal Medicine	Academic Year / level Second part Master
Specialization: Cardiovascular Medicine	No. of Instructional Units: (hrs/w)	
	Lectures <input type="text" value="2"/>	Practical <input type="text" value="6"/>

37. Course Aims	<p>8. Provide postgraduate students with knowledge to understanding of the essentials of management and prevention of common medical diseases.</p> <p>9. Prepare postgraduates to be proficient in the clinical skills and problem solving skills in the field of internal medicine.</p> <p>10. Prepare postgraduate to be competent in interpreting the results of the commonly used diagnostic and therapeutic procedures pertinent to general medicine.</p> <p>11. Prepare the postgraduate to have role in promoting and keeping community health.</p> <p>12. Encourage postgraduates to pursue continued medical education and self learning.</p> <p>13. Encourage postgraduates to pursue professional attitudes and behavior based on appropriate medical ethics.</p>
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38. Intended Learning Outcome (ILOs):

u. Knowledge and Understanding:

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

- 1- Describe the etiology, pathophysiology of and management of the common problems of internal medicine including:
 - a. Common nervous system diseases
 - b. Respiratory diseases
 - c. Gastroenterology diseases.
 - d. Endocrinal system problems.
 - e. Renal disorders
 - f. Connective tissue disorders
 - g. Hematologic disorders
 - h. Nutritional diseases
- 2- Recognize the basics of the common investigation (laboratory, non invasive & invasive procedures) used in diagnosis of various internal medicine disorders.
- 3- Recognize the effects of internal medicine clinical practice on the environment and seek for environment protection.
- 4- Recognize the fundamentals of ethical and legal aspects of internal medicine practice.

v. Intellectual Skills:

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

1. Select the appropriate investigation for diagnosis of various internal medicine disorders.
2. Evaluate, interpret and analyze patient's data to diagnose and solve common medical problem.
3. Analyze and prioritize internal medicine problems and differentiate medical disorders from each other.
4. 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.



	<ol style="list-style-type: none"> 5. Classify different medical disorders 6. Evaluate risks imposed during clinical practice and plan for improvement of community health.
w. Professional Skills:	<p><i>Postgraduate attaining Master Degree in Cardiovascular Medicine should develop professional skills that enable him/her to:</i></p> <ol style="list-style-type: none"> 1. Be competent in history taking and evaluation of the patient symptoms. 2. Be proficient in examining the different systems (nervous, gastroenterology, chest and endocrinal systems) and interpretation of the findings to reach the proper diagnosis. 3. Interpret the results of laboratory investigation and imaging procedures to obtain proper diagnosis. 4. Assess multi-system disease. 5. Manage safely and efficiently the common medical problems.
x. General Skills:	<p><i>Postgraduate attaining Master Degree in Cardiovascular Medicine should develop general and transferrable skills that enable him/her to:</i></p> <ol style="list-style-type: none"> 1. Communicate effectively with others (patients & their relatives, colleagues and paramedical staff). 2. Be self-dependent during the learning process, adopt the principles of lifelong learning and seek for continuous professional development. 3. Use technology and search through the different sources of information (e.g. text books, educational CDs and internet) to remain up-to-date in knowledge and practice. 4. Manage time effectively. 5. Practice self appraisal and determines his/her learning needs. 6. Improve his/her linguistic capabilities and use the information technology to improve his/her scientific level.



<p>39. Course Content:</p>	<ul style="list-style-type: none"> - Neurology. - Gastroenterology. - Pulmonology - Nephrology. - Rheumatology. - Endocrinology. - Nutritional, vitamins and minerals
<p>40. Teaching and Learning Methods</p>	<p>III) Lectures/Seminar:</p> <ul style="list-style-type: none"> 13. Conventional (didactic) method 14. Problem solving (interactive discussion). 15. Seminar. <p>IV) Clinical/Practical:</p> <ul style="list-style-type: none"> 6. Attending clinical ward rounds, taking history, and examine patients. 7. Demonstration of medical diagnostic procedures and investigations (x-rays, ultrasonography.....etc.). 8. Interactive discussion during case presentations. 9. Encourage postgraduates to revise educational CDs, as well as websites on the internet.
<p>41. Teaching and Learning Methods for Students with Special Needs</p>	<p>N/A</p>
<p>42. Student Assessment:</p>	
<p>j. Procedures used:</p>	<ul style="list-style-type: none"> I) Written examination comprising one paper in internal medicine to assess the level of achievement in acquiring knowledge and skills. It includes long and short essay questions, problem solving. Exam duration: 3 hours. II) Clinical Examination (one long and two short cases) to assess the intellectual, professional and general skills.



	III) Oral Examination to assess the level of achievement in acquiring knowledge & understanding, and to assess intellectual and general skills.
k. Schedule:	Twice per year (April and November). Only postgraduates who pass the written examination are allowed to apply for clinical and oral examinations
l. Weighing of Assessment:	<p>I. Written examination: 50% (200 marks).</p> <p>II. Clinical Examination: 25% (100 marks).</p> <p>III. Oral Examination: 25% (100 marks).</p>

43. List of Textbooks and References:	
m. Course Notes	- Lecture notes
n. Required Books (Textbooks)	<p>- Harrison's Principles of Internal Medicine. 18th Edition, 2011 (Editors: Dan Longo, Anthony Fauci, Dennis Kasper, Stephen Hauser, J. Jameson, Joseph Loscalzo)</p> <p>- Davidson's Principles and Practice of Medicine. 21st Edition, 2010 (Editors: Nicki R. Colledge , Brian R. Walker, Stuart H. Ralston).</p>
o. Recommended Books	- Conn's Current Therapy 2013. 1st Edition (Editors: Edward T. Bope and Rick D. Kellerman).
p. Periodicals, Web Sites, ..., etc.	<p>http://emedicine.medscape.com/</p> <p>http://emedicine.medscape.com/specialties</p> <p>http://www.medscape.com/</p>

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 (Master of Cardiovascular Medicine/ Basic Cardiology)

44. Course Data		
Course Code: Card-900	Course Title: Basic Cardiology	Academic Year / level First part Master
Specialization: Cardiovascular Medicine	No. of Instructional Units: (hrs/w) Lectures <input type="text" value="2"/> Practic <input type="text" value="-"/>	

45. Course Aims	<ul style="list-style-type: none"> - To provide postgraduate students with knowledge and comprehension of the basics of the normal cardiovascular physiology. - To provide postgraduate students with knowledge and comprehension of the basics of the clinical findings obtained during cardiovascular clinical examination. - To provide postgraduate students with the clinical skills to elicit physical findings and clinical signs during cardiovascular examination. - To provide postgraduate students with knowledge and comprehension of the basics of the normal cardiovascular investigations. - To provide postgraduate students with the professional skills needed to read and interpret the results of cardiovascular investigations.
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46.Intended Learning Outcome (ILOs):

<p>y. Knowledge and Understanding:</p>	<p><i>Postgraduate attaining the first part of the Master Degree in Cardiovascular Medicine should have sufficient understanding and knowledge that enable him/her to:</i></p> <ol style="list-style-type: none"> 1. Recognize the normal physiology of myocardial relaxation – contraction coupling 2. Describe factors regulating cardiac performance 3. Recognize the determinants of myocardial O₂ consumption 4. Determine factors controlling coronary blood flow. 5. Discuss the Differential diagnosis of cardiac symptoms. 6. Determine the grading of severity of cardiac disabling symptoms 7. Describes different methods to measure blood pressure 8. Recognize the basics of generation of different heart sounds and murmurs 9. List causes of abnormal heart sound and murmurs 10. List the indications of the noninvasive and invasive cardiac diagnostic procedures including ECG, echo-Doppler, stress testing modalities, Holter and blood pressure monitoring, myocardial perfusion imaging (MPI), cardiac catheterization and coronary angiography. 11. List the contraindications and identify the hazards of the cardiac diagnostic procedures such as stress testing modalities, radiological and nuclear examination / myocardial perfusion imaging (MPI), cardiac catheterization and coronary angiography. 12. Describe the normal and abnormal ECG waves, and identify the causes of abnormal waves. 13. Identify the normal and abnormal findings in the chest x-ray 14. Recognize the basic principles of the echo and Doppler techniques 15. Describe the normal findings in the different echo views and different echo-Doppler modalities. 16. Identify the normal measures of the different cardiac structures obtained during echo examination.
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	<p>17. Identify echo-Doppler parameters that assess both systolic and diastolic ventricular performance.</p> <p>18. Describe the different stress testing modalities.</p> <p>19. Describe the hemodynamic data obtained during cardiac catheterization and identify the normal measures of the cardiac chamber pressures and O₂ saturations.</p>
z. Intellectual Skills:	<p><i>Postgraduate attaining the first part of the Master Degree in Cardiovascular Medicine should develop intellectual skills that enable him/her to:</i></p> <ol style="list-style-type: none"> 1. Analyze and evaluate patient symptoms and signs to reach a provisional diagnosis or to determine the cardiac lesion. 2. Determine the effects of physical & pharmacological maneuvers on cardiac auscultatory findings. 3. Select the appropriate investigation according to patient's symptoms and physical findings.
aa. Professional Skills:	<p><i>Postgraduate attaining the first part of the Master Degree in Cardiovascular Medicine should develop professional skills that enable him/her to:</i></p> <ol style="list-style-type: none"> 1. Be competent in reading the ECG and identify ECG abnormalities. 2. Report on chest x-ray and describe any abnormal radiological findings. 3. Comment on different echocardiographic views and evaluate echo-Doppler findings. 4. Measure the blood pressure by the commonly used methods.
bb. General Skills:	<p><i>Postgraduate attaining the first part of the Master Degree in Cardiovascular Medicine should develop general & transferrable skills that enable him/her to:</i></p> <ol style="list-style-type: none"> 1. Communicate effectively with others. 2. Be self-dependent during the learning process and seek for continuous learning. 3. Search through the different sources of information to acquire knowledge (e.g. text books, educational CDs and internet). 4. Practice self appraisal and determines his/her learning needs. 5. Improve his/her linguistic capabilities and use the information technology to improve scientific



	level.
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<p>47.Course Content</p>	<ul style="list-style-type: none"> ● Normal Physiology of Cardiovascular System <ul style="list-style-type: none"> - Myocardial relaxation – contraction coupling. - Factors regulating cardiac performance (preload, afterload, contractility & heart rate; and factors controlling them. - Determinants of myocardial O₂ consumption (myocardial mass, contractility, heart rate and wall stress). - Factors controlling coronary blood flow: physical, metabolic, humoral and neurologic factors. ● Clinical Cardiology <ul style="list-style-type: none"> - Differential diagnosis of cardiac symptoms. - Grading of the severity of cardiac disabling symptoms. - How to measure blood pressure. - Heart sounds. <ul style="list-style-type: none"> ▪ Normal heart sounds ▪ Abnormal / additional heart sounds ▪ Causes and differential diagnosis of abnormal heart sounds ▪ Cardiac murmurs. ▪ Systolic murmurs ▪ Diastolic murmurs ▪ Continuous murmurs ▪ Causes and differential diagnosis of cardiac murmurs ▪ Dynamic auscultation. ● Cardiac Investigations <ul style="list-style-type: none"> - ECG: <ul style="list-style-type: none"> ▪ Normal and abnormal ECG waves ▪ Chamber enlargement ▪ Arrhythmia and conduction defects ▪ Ischemia and infarction - Chest X-ray: <ul style="list-style-type: none"> ▪ Diagnosis of chamber enlargement ▪ Abnormal patterns of pulmonary vasculature
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	<ul style="list-style-type: none">▪ Characteristic pattern of Fallot’s tetralogy, pericardial effusion, coarctation- Echocardiography:<ul style="list-style-type: none">▪ Basic principles of echocardiography and Doppler.<ul style="list-style-type: none">○ Physics: simplified approach.○ Examination procedure.○ Standard views: acquisition and sectional planes.○ Echocardiographic modes (M-mode, 2D).○ Doppler modes (PWD, CWD, TD).▪ Normal cardiac structures identification by echo.<ul style="list-style-type: none">○ Chamber identification by echo.○ Valve characteristics in the different echo modes.▪ Doppler characteristics of normal and abnormal flow across cardiac valves (mitral, aortic, tricuspid and pulmonary valves).▪ Echo-Doppler evaluation of LV function (systolic and diastolic function).▪ RV function and Pulmonary artery pressure evaluation by echo-Doppler.- Stress testing:<ul style="list-style-type: none">▪ Indications.▪ Contraindications.▪ Technique, protocols and stress modes (physical & pharmacologic stressors).▪ Interpretation of stress test.- Myocardial perfusion imaging:<ul style="list-style-type: none">▪ Indications and precautions.▪ Projections and normal study images.▪ Interpretation of abnormal perfusion images.- Holter monitoring:<ul style="list-style-type: none">▪ Indications.▪ Monitored parameters.▪ Basics of heart rate variability.- Ambulatory blood pressure monitoring:<ul style="list-style-type: none">▪ Indications.
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	<ul style="list-style-type: none"> ▪ Normal circadian changes in BP. ▪ Interpretation of results. <p>- Cardiac catheterization and hemodynamics:</p> <ul style="list-style-type: none"> ▪ Normal pressures and O₂ saturation in the different cardiac chambers. ▪ Measurement of cardiac output. ▪ Measurement of valve area. ▪ Measurement of shunt volume. ▪ Indications of coronary angiography.
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48. Teaching and Learning Methods	<ul style="list-style-type: none"> - Lectures. - Interactive discussion.
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49. Teaching and Learning Methods for Students with Special Needs	Not available
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50. Student Assessment:	
a. Procedures used:	Written examination
b. Schedule:	Twice per year in April and September
c. Weighing of Assessment:	Written examination: 100% (100 marks)

51. List of Textbooks and References:	
a. Course Notes	Not available (some CDs are available for postgraduates according to the presenting staff preference).



<p>b. Required Books (Textbooks)</p>	<ul style="list-style-type: none"> - 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). - Manual of cardiovascular medicine 3rd edition, 2009 (Editors: Brian P. Griffin and Eric J. Topol).
<p>c. Recommended Books</p>	<ul style="list-style-type: none"> - The Only EKG Book You'll Ever Need. 7th Edition, 2012 (Editor: Malcolm S. Thaler). - 150 Practice ECGs: Interpretation and Review. 3rd Edition, 2005 (Editor: George J. Taylor). - Echo Made Easy. 2nd Edition, 2009 (Editor: Sam Kaddoura).
<p>d. Periodicals, Web Sites, ..., etc.</p>	<ul style="list-style-type: none"> ▪ Periodicals <ul style="list-style-type: none"> - Circulation - Journal of the American College of Cardiology (JACC) - European Heart Journal ▪ Web sites <ul style="list-style-type: none"> - http://emedicine.medscape.com - http://ecg.utah.edu - http://www.ecglibrary.com/ecghome.html - http://folk.ntnu.no/stoylen/strainrate/Ultrasound/index.html - http://www.echocardiology.org/index.html - http://www.e-heart.org/

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