



Faculty of Medicine

Student Guide Semester 2 Year 1

**COURSE CODE:
BMM 10405**

Session 2020/2021

COURSE 4: Cardiovascular System

**DATE OF COURSE: (ONLINE TEACHING)
11th JULY – 12th AUG. 2021**

Prepared by:



..... Date: **07/07/2021**

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FACULTY OF MEDICINE

VISION

Faculty of Medicine aspires to be an excellent institution in producing high quality health professionals, research, and community services.

MISSION

Faculty of Medicine shall provide dynamic curricula guided by excellent educators in conducive environment, nurture sustainable research culture and inculcate community-focused activities.

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COURSE 4: Cardiovascular System

Course Coordinator: AP Dr. Marwan Saad Azzubaidi

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CONTENT SYNOPSIS:

Being composed of the heart and the blood vessels, the cardiovascular system circulates blood to the all organs in the body in order to provide nutritional and oxygen requirements throughout the day. Knowledge on heart as well as the blood vessels anatomy, physiology, pathology, pharmacology and their clinical relevance is the main feature of this module. Learning activities in this module focus on the thoracic cage, mediastinum, pericardium, pleural cavities and costo-diaphragmatic recess.

Thorough understanding of anatomy of heart, its chambers, valves and conducting system is fundamental in understanding the physiologic responses and pathological features of diseases affecting this system and effect of pharmacologic agents acting on the heart. Special emphasis of blood supply to the heart, presence of end arteries and their relation to diseases of the heart will be stressed together with the relevant investigation.

COURSE AND PROGRAM LEARNING OUTCOMES AND THEIR DELIVERY METHODS:

CLO#	Description	PLO	Tax	MQF	Weight (100%)	Delivery
CLO1	Demonstrate how the structures, functions, disease mechanisms and drug actions are inter-related in the cardiovascular system.	PLO1(C3)	A3	MQF1 - Knowledge and Understanding	75	Interactive learning, SGD, PBL, e-learning
CLO2	Perform basic medical examinations and procedures to identify structures and functions of the cardiovascular system.	PLO3(P4)	P4	MQF3a - Practical Skills	15	Practical, ECE
CLO3	Demonstrate effective communication with peers during collaborative learning	PLO5(A4)	A3	MQF3c - Communication Skills	5	PBL, SGD
CLO4	Demonstrate good teamwork with peers during collaborative learning	PLO8(A3)	A3	MQF3f - Leadership, autonomy and responsibility	5	PBL, SGD

COURSE LEARNING OUTCOMES AND THEIR ASESSMENT TOOLS

CLO1 (C3)	MQF1: Knowledge and Understanding		75
Category Title	Tool	Examination Format	Weight (%)
Final Exam	MCQ	Final Assessment	30
Final Exam	Structured Essay	Final Assessment	20
Quiz	MCQ	Continuous Assessment	25
CLO2 (P4)	MQF3a: Practical Skills		15
Category Title	Tool	Examination Format	Weight (%)
Final Exam	OSPE	Final Assessment	10
Practical assessment	Supervisor report	Continuous Assessment	5
CLO3 (A3)	MQF3c: Communication Skills		5
Category Title	Tool	Examination Format	Weight (%)
Group work assessment	Supervisor report	Continuous Assessment	5
CLO4 (A3)	MQF3f: Leadership, autonomy and responsibility		5
Category Title	Tool	Examination Format	Weight (%)
Group work assessment	Supervisor report	Continuous Assessment	5

Outline of Course Content (lectures)

Lecture	Lecturer	Title	Learning Outcomes
Introduction to course	MSAA	Introduction to CVS	<ul style="list-style-type: none"> General introduction to CVS course.
Anatomy 1	NFCL	Thoracic Cage and Mediastinum	<ul style="list-style-type: none"> Describe the structure & walls of thoracic cage and the mediastinum. State the boundaries and the contents of thoracic cage. Explain the different divisions of the mediastinum. List the contents of the mediastinum. Explain the clinical applications of the thoracic cage and mediastinum.
Anatomy 2	TFM	Pericardium and heart	<ul style="list-style-type: none"> Describe the surface marking of heart Describe pericardium and its sinuses Explain the external features of heart Name the structures passing through the various grooves of the heart. Describe the internal features of the chambers of heart. State important structures in right atrium and right ventricle. Name the embryological remnants of the heart. Explain the clinical applications of pericardium (pericardial effusion) and heart (hypertrophy).
Anatomy 3	TFM	Coronary circulation and innervations of heart	<ul style="list-style-type: none"> Describe origin, course, branches, area of supply and dominance of coronary arteries. Discuss the venous drainage of heart. Discuss the clinical importance of the coronary circulation. Describe the innervations of the heart (sympathetic and parasympathetic). Describe the conducting system of the heart.
Anatomy 4	AH	Embryology of the heart	<ul style="list-style-type: none"> Describe the process of development of a single tube into a four chambered heart. Discuss the development of the inter-atrial and inter-ventricular septae.
Anatomy 5	NM	Congenital anomalies of CVS and foetal circulation	<ul style="list-style-type: none"> List all the congenital anomalies of heart. Discuss tetralogy of Fallot. Explain atrial septal defect, ventricular septal defect, patent ductus arteriosus and transposition of great arteries. List all the congenital anomalies of blood vessels.

			<ul style="list-style-type: none"> • Define foetal circulation. • Describe salient features of foetal circulation. • Explain the differences between foetal and adult circulations. • Describe the changes taking place after birth. • State the clinical conditions persisting in adult life due to congenital defects.
Anatomy 6	AH	Histology of blood vessels	<ul style="list-style-type: none"> • Describe the layers of the heart and blood vessels. • Distinguish between arteries and veins at the histological level. • Describe the types of capillaries and their microscopic features. • Describe the microscopic features of the lymphatic vessels.
Anatomy SGD	NFCL/ TFM/ NM	Applied anatomy of CVS	<ul style="list-style-type: none"> • Apply the knowledge of the anatomy of coronary circulation / pericardium in a case scenario (IHD, effusion).
e-Learning	NFCL	Major blood vessels	<ul style="list-style-type: none"> • Describe the great vessels that are directly related to the heart. • Name the parts and branches of the aorta. • Describe the major veins in the body. • State the major arteries and veins of the limbs. • Discuss the major arteries and veins e.g. pulmonary artery and veins, superior vena cava, inferior vena cava, carotid arteries, iliac and femoral vessels.
Radiology	Nor hasiza	Radiological anatomy of the CVS	<ul style="list-style-type: none"> • Identify the normal cardiovascular anatomy on the CXR and CT thorax. • List the basic radiographic views of CXR in an assessment of the heart.
Physiology 1	SAM	The heart and the circulatory system	<ul style="list-style-type: none"> • Describe the functional structures of the heart. • Describe the components of vascular tree, their role and their key differences. • Explain the differences between the pulmonary and systemic circulation.
Physiology 2	MMT	The electrical properties of cardiac muscle	<ul style="list-style-type: none"> • Describe the electrical properties of the nodal & myocardial tissues of the heart. • Explain the ionic basis of the above and explain their differences. • Explain the significance of prolonged myocardial excitation to its contraction.

			<ul style="list-style-type: none"> • Explain the significance of the AV nodal delay. • Describe the factors affecting the electrical properties of the heart – neural and chemical substances. • Explain the consequences of electrical abnormalities in the heart – e.g. conduction blocks and arrhythmias.
Physiology 3	MMT	The mechanical properties of cardiac muscle	<ul style="list-style-type: none"> • Describe the mechanical properties of cardiac muscle. • Explain the relationship between myocardial excitation and contraction. • Explain the role of calcium in cardiac contraction. • Explain the Frank-Starling law of the heart. • Describe the factors affecting the mechanical properties of the heart – neural and chemical substances. • Explain the consequences of diseases of the heart muscle on the mechanical properties of the heart – e.g. various types of cardiomyopathies
Physiology 4	SAM	The electrocardiogram	<ul style="list-style-type: none"> • Describe the basis of the electrocardiogram (ECG) recordings. • Describe the different ECG leads. • Describe the correspondence between ECG waveforms and the electrical event of the heart. • Describe the characteristics of the ECG waves. • Define the mean electrical axis and its importance. • Explain the consequences of abnormalities in electrical properties of the heart on the ECG recordings. • Describe changes in ECG recordings produced by altered cardiac functions.

Physiology 5	NAS	*The cardiac cycle (1.5 hour) –	<ul style="list-style-type: none"> • Describe the electrical and mechanical events in the heart during a cardiac cycle. • Describe the changes in pressures and volumes in the heart chambers. • Describe the corresponding pressure changes in the aorta. • Describe the corresponding ECG waves and heart sounds in the cycle. • Describe the corresponding events in the right chambers of the heart. • Illustrate the sequence of events describe above in a pressure-time graph and pressure-volume graph. • Describe the jugular venous pulse during the cardiac cycle. • Explain the consequence of heart valves abnormalities to the pressure-time graph of the cardiac cycle. • Explain the pathophysiology of abnormal heart sounds e.g. in stenosis and incompetence of heart valves.
Physiology 6	MMT	Conducting system of the heart and cardiac rhythm	<ul style="list-style-type: none"> • Describe the structure and functions of the conducting system of the heart • Explain the spread of cardiac excitation • Describe the normal cardiac rhythm • State the common cardiac arrhythmias • Describe the processes that produce common cardiac arrhythmias
Physiology 7	NAS	Cardiac output	<ul style="list-style-type: none"> • Define the cardiac output. • Explain the factors that govern cardiac output. • Describe the concept of preload and afterload. • Explain how cardiac output can be compromised. • Describe the mechanisms by which cardiac output can be changed to meet the demands of physical exercises.
Physiology 8	NAS	Cardiovascular haemodynamics	<ul style="list-style-type: none"> • Explain the relationship between blood flow, pressure and resistance. • Describe the factors that affect vascular resistance. • Explain the difference between the blood flow and velocity of flow. • Explain the difference between capacitance and resistance vessels. • Explain the consequence of abnormalities in cardiovascular hemodynamics.
			<ul style="list-style-type: none"> • Define blood pressures and their measurements.

Physiology 9	MNMN	Blood pressures and its regulation	<ul style="list-style-type: none"> • Explain the importance of maintained blood pressures. • Explain the factors affecting blood pressures. • Explain the physiological mechanism of minute to minute regulation of blood pressures. • Explain the consequence of abnormalities in blood pressures - hypotension and hypertension. • Describe the long-term regulation of blood pressure.
SGD-1-	MMT/ MNMN/ NAS/ SAM	Blood pressure	<ul style="list-style-type: none"> • Apply the physiological concept of BP regulation in a case scenario (hypertension / hypotension / shock). • Hypotension and shock • Heart failure
SGD-2-	MMT/ MNMN/ NAS/ SAM	ECG and cardiac abnormalities	<ul style="list-style-type: none"> • Apply the physiological basis of ECG in ischaemic heart disease and cardiac arrhythmias
Biochemistry 1	AAB	Cholesterol synthesis & its regulation	<ul style="list-style-type: none"> • Describe the chemistry and functions of cholesterol. • State the precursors and site of cholesterol synthesis. • Describe the steps, enzymes, coenzymes and regulation involved in cholesterol synthesis. • State the action of cholesterol lowering drugs in cholesterol metabolism.
Biochemistry 2	NSMS	Lipoproteins	<ul style="list-style-type: none"> • State the types, composition and function of lipoproteins. • Describe the metabolism of lipoproteins in plasma lipid transportation.
Biochemistry 3	USMR	Metabolism of compound lipids	<ul style="list-style-type: none"> • Classify and state the composition and functions of compound lipids. • Overview of compound lipids metabolism • List the lipid storage disorders and their defects.
Biochemistry 4	MH	Eicosanoid metabolism	<p>State the types of eicosanoid lipids ($\omega 3$ & $\omega 6$) – prostanoids, leukotrienes, resolvins and protectins.</p> <ul style="list-style-type: none"> • Describe their function in inflammation, coagulation and target for therapy. • Briefly explain the synthesis, catabolism and regulation of prostanoids and leukotrienes.

Biochemistry 5	MH	Cardiac markers	<ul style="list-style-type: none"> List the classical and recent markers used in the diagnosis of coronary artery disease. Relate the markers to their function. Explain iso-enzymes. Explain use of markers in the diagnosis and follow-up of myocardial infarction.
Biochemistry SGD	USMR/MH/SS/AAB	SGD	<ul style="list-style-type: none"> Apply biochemical principles of lipoprotein metabolism in a case scenario.
Microbiology 1	SIS	Infective Endocarditis	<ul style="list-style-type: none"> Define infective endocarditis (IE). List the causative organisms of IE. Describe the pathogenesis, pathophysiology, clinical findings and complications of IE. Explain the microbiological investigation of IE. State the antimicrobial treatment and prophylaxis of IE.
Microbiology 2	NIAR	Rheumatic Fever	<ul style="list-style-type: none"> Define rheumatic fever (RF). Describe the immuno-pathogenesis of RF. Describe the clinical findings and complications of RF. Explain the microbiological investigation of RF. State briefly the management and prevention of recurrence of RF.
Pathology 1	NHAB	Valvular heart disease	<ul style="list-style-type: none"> List the diseases affecting cardiac valves. Describe the aetiopathogenesis of common valvular heart diseases. Explain the clinical and pathologic features of common valvular disease and their pathophysiologic consequences. Compare the pathologic features of the different valvular heart diseases.
Pathology 2	TZ	Atherosclerosis and arteriosclerosis	<ul style="list-style-type: none"> Outline atherosclerosis and arteriosclerosis. Describe the pathogenesis of atherosclerosis. Describe the initial and complicated lesions of atherosclerosis. Describe the risk factors for atherosclerosis.

			<ul style="list-style-type: none"> • Outline the complications of atherosclerosis in coronary, cerebral, abdominal and leg vessels. • Describe benign arteriosclerosis.
Pathology 3	TZ	Ischaemic heart diseases	<ul style="list-style-type: none"> • Outline ischaemic heart disease (IHD). • List the causes of impaired oxygen supply to heart and conditions of increased oxygen demand. • Describe the four types of IHD (angina pectoris, myocardial infarction [MI], chronic ischemic heart disease, sudden death). • Outline macroscopic and microscopic characteristics of MI. • Describe the clinical features of MI, including the complications.
Pathology 4	NHAB	Pathophysiology of Heart failure	<ul style="list-style-type: none"> • Discuss the heart as a pumping organ. • List the causes of heart failure. • Describe the pathophysiology of heart failure in relation to Frank-Starling law, hypertrophy, increased blood volume and pressure overload. • Describe the morphology of heart in chronic congestive failure. • Describe the lung and liver changes in heart failure.
Pathology 5	TZ	Hypertension	<ul style="list-style-type: none"> • Describe the aetiology, types, risk factors, clinical manifestations and consequences of hypertension including the malignant hypertension. • Compare and contrast the mechanisms of essential and secondary hypertension. • Describe the vascular pathology in hypertension. • Compare and contrast the features and morphology of systemic and pulmonary hypertensive heart diseases.
Pathology 6 e-Learning	NHAB	Aneurysm & Vasculitis	<ul style="list-style-type: none"> • Describe aneurysms with its different pathological features and locations. • Describe abdominal aneurysms and aortic dissection. • Outline vasculitis and its classification. • Describe the vasculitis regarding to the pathogenesis, pathology, and clinical features.
Pathology SGD		Case discussion	<ul style="list-style-type: none"> • Apply knowledge of CVS pathology to explain a clinical case problem.

Pharmacology 1	SHN	Agents used in heart failure	<ul style="list-style-type: none"> • Classify drugs used for heart failure treatment. • Describe the mechanisms of action of anti-failure drugs. • Describe pharmacokinetics, therapeutic uses and side effects of these agents.
Pharmacology 2	MSAA	Anti-anginal agents	<ul style="list-style-type: none"> • Classify anti-anginal agents. • Explain the mechanism of action of anti-anginal agents. • Describe pharmacokinetics, basic uses and side effects of anti-anginal agents and the important drug interactions.
Pharmacology 3	SDA	Anti-hypertensive agents	<ul style="list-style-type: none"> • Classify anti-hypertensive agents. • Explain the mechanism of action of anti-hypertensive agents. • Describe pharmacokinetics, basic uses and side effects of anti-hypertensive agents.
Pharmacology 4	MSAA	Anti-arrhythmic drugs	<ul style="list-style-type: none"> • Classify anti-arrhythmic agents. • Explain the mechanism of action of anti-arrhythmic agents. • Describe pharmacokinetics, basic uses and side effects of anti-arrhythmic agents.
Pharmacology 5	SYNJ	Lipid lowering agents	<ul style="list-style-type: none"> • Classify lipid lowering agents. • Explain the mechanism of action of lipid lowering agents. • Describe pharmacokinetics, basic uses and side effects of lipid lowering agents.
Pharmacology SGD	MSAA/SDA/SYNJ/SHN	Treatment of HF/HT/ IHD.	<ul style="list-style-type: none"> • Justify the use of drugs affecting the CVS and their pharmacological principles in different diseases presented as case scenarios.

Outline of Course Content (Practical, PBL and PPD)

Topic	Lecturer	Title	Learning Outcome
Practical Anatomy 1	NFCL, TFM	Thoracic cage, Mediastinum, Pericardium, the heart and its coronary circulation	<ul style="list-style-type: none"> • Identify the surface marking of heart. • Identify the boundaries and contents of thoracic cage. • Trace the mediastinum and its divisions. • Identify the contents of the mediastinum. • Explain the external features of the heart.

			<ul style="list-style-type: none"> • Identify the important blood vessels of the heart. • Identify the great vessels connected to the heart. • Identify the salient features of the chambers of the heart. Identify the embryonic remnants of interior of the heart.
Practical Histology 1	AH	Artery and Vein	<ul style="list-style-type: none"> • Identify the histological features of the epicardium, myocardium and endocardium. • Identify the tunica intima, tunica media and tunica adventitia in arteries and veins. • Identify the arteriole, muscular artery and elastic artery. • Identify venule and vein.
Practical Physiology 1	SAM	Electrocardiogram and heart rate (ECG recorders)	<ul style="list-style-type: none"> • Outline the 'leads' connection and recording of electrocardiogram (ECG). • Relate a normal ECG and its components – different waves, segments and intervals and their timings. • Discuss the causes of the above and their physiological significance. • Obtain the mean electrical axis from own ECG records. • Carry out the pulse rate recording and explain the factors affecting the rate.

Practical Physiology 2	MMT	Evaluation of physical fitness index (stopwatch, stepper, metronome, computer, video projector)	<ul style="list-style-type: none"> • Describe the Harvard step test. • Assess the recovery of heart rate after a standard exercise and explain their significance in relation to subject's fitness. • Comment on the compiled class recovery heart rates. • Discuss factors involved in the control of heart rate.
Dry Lab Practical Biochemistry	MH	Interpretation of lipid profile	<ul style="list-style-type: none"> • Perform the lab procedure for total cholesterol estimation. • Interpret the results. • Relate the results with possible/existing clinical conditions.
Practical Pathology	TZ	Atherosclerosis, and myocardial infarction	<ul style="list-style-type: none"> • Describe gross and microscopic features of atherosclerosis • Study the microscopic pictures of myocardial infarction provided and • identify the period of infarction. • Name the artery affected by observing the extent of myocardial infarction. • Draw the cross section of coronary artery in a case of angina and infarction.
Practical Microbiology	SIS, NIAR	Laboratory Diagnosis of CVS Infections	<ul style="list-style-type: none"> • Briefly explain the procedure for taking blood cultures, sample processing and reporting of result. • Interpret blood culture results.

			<ul style="list-style-type: none"> • Identify the causative organisms of infective endocarditis. • Describe the microscopic appearance and colony morphology of the causative organisms. • Interpret ASOT result.
ECE -1	Dr. FAEZ	Common symptomatology of CVS	PENDING
ECE -2	Dr. NUAIM	Blood pressure and Pulse rate	<p>Demonstrate the steps of measuring:</p> <ul style="list-style-type: none"> • Blood pressure • Pulse rate • Listen to your heart.
ECE -3	Dr. IZUDEEN	Auscultation of the heart sounds	<ul style="list-style-type: none"> • Demonstrate proper technique of using stethoscope in examining CVS • Identify the normal and abnormal heart sounds • Describe the physiologic characteristics of the different heart sounds • Interpret the clinical significance of the different heart sounds
PPD-6-	Prof. Dr. Nordin Simbak	Respect to others (teachers, colleagues, patients & deceased)	<ul style="list-style-type: none"> • Explain the general concept of respect to others. • List the importance of respect to teachers, colleague, patients and deceased. • Describe and practice how to respect teachers, colleague, patients and deceased.
PPD-7-	Prof. Dr. Nordin Simbak	Effective leadership	<ul style="list-style-type: none"> • Describe meaning of leadership and recognize the leadership potential in themselves • Identify the primary reasons for leadership derailment and the new paradigm skills that can help avoid it • Recognize the traditional functions of management and the fundamental differences between leadership and management

			<ul style="list-style-type: none"> Discuss the crucial importance of providing direction, alignment, relationships, personal qualities, and outcomes
PPD-8-	Dr. Nik Ahmad Shaifuddin bin Nik Him	Group dynamic & teamwork	<ul style="list-style-type: none"> Recognize the elements of group dynamic. Define leadership and teamwork. Discuss and appreciate the important of leadership and teamwork in medical profession <p>Perform teamwork in the class: game/role play; appreciate the group dynamic within the game</p>
Clinical Lecture	To be decided	Circulatory shock	<ul style="list-style-type: none"> To be determined
PBL Case 1	SYNJ, NAS, MNMN, SAM, NB, UYH	Chest pain	IHD
PBL Case 2	SHN, SAM, NSMS, NAS, NB, NM	Shortness of breath	Heart failure
PBL Case 3	NM, NSMS, AH, UYH, SDA, NB	Palpitation	Cardiac arrhythmias

References:

Anatomy

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2. Katzung & Trevor (2010). Pharmacology Examination & Board Review , McGraw Hill, 9th ed. Pp189-284
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BACHELOR OF MEDICINE & BACHELOR OF SURGERY (MBBS) PROGRAMME
Semester 2, Year 1
Academic Session 2020/2021

WEEK 1		COURSE-4-: CARDIOVASCULAR SYSTEM						Module Coordinator: PM Dr. Marwan Azzubaidi	
DAY/ TIME	8.30 – 9.30	9.30 – 10.00	10:00-11:00 AM	11:00 – 11:30	11:30 AM – 12:30 PM	12:30 – 2:30 PM	2.30 – 3.30	3.30 – 4.30	4:30 – 5:30
SUNDAY 11.7.2021	Introduction to CVS MSAA		Thoracic cage and Mediastinum NFCL		The pericardium and the heart TFM		The heart & the circulatory system SAM	SELF-STUDY	
MONDAY 12.7.2021	Coronary circulation & Innervation of heart TFM		Cholesterol synthesis & its regulation AAB		The electrical properties of the cardiac muscles MMT		The mechanical properties of cardiac muscle MMT	SELF-STUDY	
TUESDAY 13.7.2021	Histology of blood vessels AH		Lipoproteins NSMS		The electro-cardiogram SAM		Practical Gross Anatomy Thoracic cage, mediastinum, Heart , pericardium and the coronary circulation NFCL, TFM		
WEDNESDAY 14.7.2021	Conducting system of the heart and cardiac rhythm MMT		Embryology of the heart AH		The cardiac cycle NAS		The Cardiac output NAS	Extra-Curricular Activities SISKOR	
THURSDAY 15.7.2021	The Cardiovascular haemodynamics NAS		Blood pressures and its regulation MNMN		The cardiac markers MH		Practical Histology Arteries and veins AH		

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Semester 2, Year 1
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WEEK 2		COURSE-4-: CARDIOVASCULAR SYSTEM						Module Coordinator: PM Dr. Marwan Azzubaidi	
DAY/ TIME	8:30 – 9:30 AM	9:30 – 10:0	10:00 – 11:00	11:00 – 11:30	11:30 – 12:30 PM	12:30 – 2:30	2.30 – 3.30	3.30 – 4.30	4.30 - 5.00
SUNDAY 18.7.2021	Ischaemic heart diseases TZ		PBL-1- session-1- “stabbed without a knife” SYNJ, NAS, MNMN, SAM, NB, UYH					Practical Physiology 1 The Electrocardiogram SAM	
MONDAY 19.7.2021	HARI ARAFAH								
TUESDAY 20.7.2021	HARI RAYA HAJI								
WEDNESDAY 21.7.2021	HARI RAYA HAJI								
THURSDAY 22.7.2021	Metabolism of compound lipids USMR		Atherosclerosis and arteriosclerosis TZ		ECE-1- Common symptoms of CVS disease Dr. Faez			CASE-1 Intermediate PBL session among students	

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WEEK 3		COURSE-4-: CARDIOVASCULAR SYSTEM					Module Coordinator: PM Dr. Marwan Azzubaidi	
DAY/ TIME	8.30 – 9.30	9.30 – 10.00	10:00-11:00 AM	11:00 – 11:30	11:30 AM – 12:30 PM	12:30 – 2:30 PM	2:30 – 4:30 PM	4.30 – 5.30
SUNDAY 25.7.2021	Hypertension TZ		PBL case-1- session-2- SYNJ, NAS, MNMN, SAM, NB, UYH				Practical Physiology 2 Ev aluation of Physical Fitness Index MMT	SELF-STUDY
MONDAY 26.7.2021	Radiological anatomy of CVS Norhasiza		Interpretation of lipid profile Dry Lab MH				PBL case-2- session-1- SHN, SAM, NSMS, NAS, NB, NM	SELF-STUDY
TUESDAY 27.7.2021		ECE-2- Blood pressure and Pulse rate Dr. Nuaim			Congenital anomalies of CVS and the foetal circulation NM		PPD-6- Respect to others (teachers, colleagues, patients & deceased) Prof. Dr . Nordin Simbak (2 hours)	
WEDNESD AY 28.7.2021	SGD Anatomy NFCL/ TFM/ NM		Rheumatic fever NIAR		Eicosanoid metabolism MH		SELF-STUDY	Extra-Curricular Activities SISKOR
THURSDAY 29.7.2021	Infective endocarditis SIS		SGD-1- Physiology Blood pressure MMT, SAM, NAS, MNMN		Pathophysiology of heart failure NHAB		CASE-2- Intermediate PBL session among students	SELF-STUDY

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Semester 2, Year 1
Academic Session 2020/2021

WEEK 4		COURSE-4-: CARDIOVASCULAR SYSTEM					Module Coordinator: PM Dr. Marwan Azzubaidi	
DAY/ TIME	8.30 – 9.30	9.30 – 10.00	10:00-11:00 AM	11:00 – 11:30	11:30 AM – 12:30 PM	12:30 – 2:30 PM	2.30 – 4.30 PM	4.30 - 5.00
SUNDAY 1.8.2021	ECE-3-Auscultation of the heart sounds Dr. Izudeen			Valvular heart disease NHAB			Practical Microbiology Laboratory diagnosis of CVS infections SIS, NIAR	SELF-STUDY
MONDAY 2.8.2021	Drugs for treatment of heart failure SHN		PBL case-2- session-2- SHN, SAM, NSMS, NAS, NB, NM				Practical Pathology Atherosclerosis, aneurysms & myocardial infarction TZ, NHAB	SELF-STUDY
TUESDAY 3.8.2021	SGD Biochemistry USMR/MH/AAB/NSMS		PBL case-3- session-1- NM, NSMS, AH, UYH, SDA, NB				e-Learning Pathology Aneurysm & Vasculitis NHAB	SELF-STUDY
WEDNESDAY 4.8.2021	SGD-2- Physiology ECG & cardiac rhythm MMT, SAM, NAS/MNMN		SGD Pathology TZ, NHAB		Anitanginal drugs MSAA		Extra-Curricular Activities SISKOR	SELF-STUDY
THURSDAY 5.8.2021	Antihypertensive agents SDA		PPD-7- Effective leadership Prof. Dr . Nordin Simbak (3 hours)				CASE-3- Intermediate PBL session among students	SELF-STUDY

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WEEK 5		COURSE-4-: CARDIOVASCULAR SYSTEM					Module Coordinator: PM Dr. Marwan Azzubaidi	
DAY/ TIME	8.30 – 9.30	9.30 – 10.00	10:00-11:00 AM	11:00 – 11:30	11:30 AM – 12:30 PM	12:30 – 2:30 PM	2:30 – 3:30 PM	3:30 – 4:30 PM
SUNDAY 8.8.2021	Lipid Lowering Agents SYNJ		Antiarrhythmic drugs MSAA		Self-Study		Online QUIZ ANATOMY	
MONDAY 9.8.2021	Circulatory shock Clinical Lecture		PPD-8- Group dynamic & teamwork Dr. Nik Ahmad Shaifuddin bin Nik Him (3 hours)				Online QUIZ PHYSIOLOGY	
TUESDAY 10.08.2021	AWAL MUHARRAM							
WEDNESDAY 11.8.2021		PBL case-3- session-2- NM, NSMS, AH, UYH, SDA, NB		SGD Pharmacology			Online QUIZ BIOCHEMISTRY	
Thursday 12.8.2021	ONLINE QUIZ Pharmacology			Online QUIZ PATHOLOGY+ MICROBIOLOGY				



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