**SUBJECT 1 MEDI90049**
PRINCIPLES OF ULTRASOUND AND IHEARTSCAN™
This subject will outline the physics related to medical ultrasound use; an introduction to transthoracic echocardiography using the focused assessment technique and iHeartScan™ (Haemodynamic Echocardiography Assessment in Real Time).

**TUTORIALS:**
1. Principles of Ultrasound
2. Generating Ultrasound Image
3. Basic Modes of Ultrasound
4. Operation of the Ultrasound Machine
5. Transthoracic Echocardiography
6. Transoesophageal Echocardiography Examination
7. Anatomy of the Heart and Coronary Arteries
8. Anatomy of the Valves
9. Basic Haemodynamic State Assessment
10. iHeartScan™ View, Valves and Pericardium
11. iHeartScan™ Case Studies
12. Artefact Generation
13. Basic TOE Case Studies 1–10 (Optional)

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**SUBJECT 2 MEDI90054**
ULTRASOUND GUIDED PROCEDURES
This subject will outline the technique of using ultrasound to guide percutaneous procedures. Procedures will include vessel access, nerve blocks, and trauma related procedures. There will be an elective of either “Anaesthesia” or “ICU”.

**TUTORIALS:**
**CORE**
1. Ultrasound Guided Vascular Access
2. Lung Ultrasound Diagnosis
3. Lung Ultrasound Procedures and Case Studies
4. FAST
5. Basic TOE Case Studies 11–20 (Optional)

**MODULE 1 – ANAESTHESIA**
1. Nerve Blocks Upper Limb
2. Nerve Blocks Lower Limb
3. Nerve Blocks Peripheral Nerves
4. Ultrasound Guided Abdominal and Thoracic Blocks
5. Ultrasound Guided Peripheral Nerve Block Catheters

**MODULE 2 – ICU**
1. Carotid Ultrasound
2. Diagnostic Dilemmas in Perioperative Medicine
3. Diagnostic Dilemmas in ICU
4. Ultrasound Assessment of Deep venous thrombosis

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**SUBJECT 3 MEDI90050**
DOPPLER ECHOCARDIOGRAPHY
This subject will introduce Doppler echocardiography to complement basic transthoracic echocardiography imaging.

**TUTORIALS:**
1. How to Use ProSolv - Introduction Guide
2. Principles of Blood Flow
3. Principles of Doppler, and Optimising Image
4. Basic Doppler Measurement Technique
5. Colour Flow Doppler
6. Doppler Assessment of Systolic Function
7. Using Doppler to Help Grade Valve Lesions
8. Limited TTE Studies with Doppler Measurements
9. Basic TOE Case Studies 21–35 (Optional)

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**SUBJECT 4 MEDI90051**
VENTRICULAR FUNCTION
This subject will expand the knowledge of transthoracic echocardiography by learning pathophysiology and assessment of ventricular function, including diastolic function.

**TUTORIALS:**
1. The Cardiac Cycle
2. Left Ventricular Systolic Function Pathophysiology
3. Evaluation of Left Ventricular Function
4. Right Ventricular Systolic Function
5. Right Ventricular Function Evaluation
6. Atrial Function and Pressure Estimation
7. Diastolic Function Pathophysiology
8. Assessment of Diastolic Function
9. Management of Diastolic Function
10. Basic Congenital Heart Disease Studies
11. Ventricular Function Case Studies
12. Basic TOE Case Studies 36–50 (Optional)

*The Basic TOE case studies are optional, and are not an assessable component of the course.*
SUBJECT 5 MEDI90056
ADVANCED ANATOMY AND DOPPLER ANALYSIS
This subject will provide additional advanced material on anatomy and Doppler analysis, which will not have been covered at the Certificate level.

TUTORIALS:
1. Role of Echocardiography in Perioperative and Critical Care Environments
2. Safety and Complications of Ultrasound and TOE
3. Cleaning and Disinfection of Ultrasound Probes
4. Additional TOE Views and Anatomical Variants
5. Anatomy - Other Structures
6. Introduction of 3D Transoesophageal Echocardiography
7. Introduction to 3D Transthoracic Echocardiography
8. Calculations Workshop
9. Principles of PISA Evaluation of Regurgitant Areas
10. Principles of Echocardiography Reporting
11. Use of Echocardiography Reporting Database
12. TTE & TOE Case Studies

SUBJECT 6 MEDI90057
ADVANCED VALVE AND AORTIC PATHOLOGY
This subject will provide advanced knowledge of valvular and aortic pathology and echocardiography assessment.

TUTORIALS:
1. Mitral Regurgitation
2. Perioperative Assessment of Mitral Valve Regurgitation
3. Mitral Stenosis
4. The Aortic Valve - Aortic Stenosis
5. The Aortic Valve - Aortic Regurgitation
6. The Tricuspid Valve
7. Aortic Disease
8. Prosthetic Valve Assessment
9. The Pulmonary Valve and Miscellaneous Conditions
10. Miscellaneous Congenital Cardiac Disorders
11. Comprehensive Case Studies

SUBJECT 7 MEDI90058
APPLICATIONS OF ECHOCARDIOGRAPHY
This subject will identify the role of ultrasound in specific clinical situations relevant to perioperative and critical care practice.

TUTORIALS:
1. Clinical Applications - Persistent Hypotension
2. Clinical Applications - Acute Pulmonary Oedema
3. High-Speed Deceleration Injury
4. Unexplained Sepsis
5. Stroke
6. Pericardial Tamponade
7. Epiatrial Echocardiography
8. Applications of Echocardiography in Perioperative and Critical Care Medicine Case Studies

SUBJECT 8 MEDI90059
ADVANCED ECHOCARDIOGRAPHY INTERPRETATION
This subject will outline how to formally report diagnostic echocardiography studies, using a custom designed database reporting system. There will be 50 case studies to be reported.

TUTORIALS:
1. Aortic Valve Pathology Case Studies
2. Mitral Valve Pathology Case Studies
3. Right Heart Pathology Case Studies
4. Left Ventricular Pathology Case Studies
5. Medical Conditions, Tumours and Aortic Pathology Case Studies
SUBJECT 9 MEDI90046
3D ECHOCARDIOGRAPHY AND NEW TECHNOLOGIES
This subject will provide advanced knowledge for the performance and interpretation of 3D echocardiography, as well as introducing new technologies and novel applications of clinical ultrasound.

TUTORIALS:
1. 3D Echocardiography Acquisition and Display
2. 3D Echocardiography of the Ventricles
3. 3D Quantification of the Valves
4. 3D Echocardiography of the Atria, Pulmonary Veins and Thoracic Aorta
5. Transoesophageal Lung Ultrasound
6. Diagnostic Algorithms in the ED
7. Examination of Joints
8. TOE Use During Endoluminal Graft Placement
9. Echocardiography Use In Electrophysiology Procedures
10. Intracardiac Echocardiography
11. 25 Case Studies

SUBJECT 10 MEDI90083
RESEARCH METHODS AND ULTRASOUND LITERATURE
This subject will work through research methods applicable to understanding echocardiography and clinical ultrasound literature. Learning will be reinforced by completing a series of assignments focused on evaluating echocardiography and clinical ultrasound publications.

TUTORIALS:
1. The Research Question
2. Literature Review
3. Basic Research Methods and Analytical Techniques
4. Analysis of Agreement
5. Is the Sample Size Correct
6. Bias in Research
7. Using Templates in Research
8. How to Write a Paper
9. Assignment 1
10. Assignment 2

SUBJECT 11 MEDI90047
CONGENITAL, OBSTETRIC AND MEDICAL CONDITIONS
This subject will provide advanced knowledge for echocardiography interpretation in patients with adult congenital, obstetric, and unusual medical conditions.

TUTORIALS:
1. Dilated (Non-Ischaemic) Cardiomyopathies
2. Hypertrophic and Infiltrative Cardiomyopathies
3. Cardiac Tumours
4. Constrictive Pericardial Disease
5. Cardiac Pathology Associated with Systemic Disease Part 1
6. Cardiac Pathology Associated with Systemic Disease Part 2
7. Echocardiography Features of the Transplanted Heart
8. Basic Approach to Congenital Heart Disease
9. Adult ASD/VSD Evaluation
10. TTE in Pre-eclampsia
11. TTE in Healthy Pregnant Women
12. Echocardiography in Post Delivery Cardiovascular Emergencies
13. 25 Cases of Adult Congenital or Obstetric Pathologies

SUBJECT 12 MEDI90048
ADVANCED CASE STUDIES AND PRACTICUM
Students are required to complete 50 Clinical Ultrasound Cases in the workplace, and submit a logbook of the cases. In addition, 50 Advanced Clinical Ultrasound Cases will be provided for interpretation and reporting to provide a range of rare cases that are unlikely to be encountered in normal daily practice.

TUTORIALS:
1. 50 Case Studies
2. 50 Log Books