Day 1

08:30 – 09:00 **Lecture: Image optimisation 2D measurement and colour flow imaging – how to ensure quality and accuracy, By Dr Nick Fletcher**

09:00 – 10:30 Session 1 **Extended FICE Views, (30 mins = 8 min per candidate)**

* 1.1 Parasternal (LA: FICE + RV inflow, RV outflow, SA: FICE + apical, basal, AV)
* 1.2 Apical and subcostal (FICE + 5ch, 2ch, 3ch)
* 1.3 Full scan
* 1.1 Parasternal (LA: FICE + RV inflow, RV outflow, SA: FICE + apical, basal, AV)
* 1.2 Apical and subcostal (FICE + 5ch, 2ch, 3ch)
* 1.3 Full scan

10:45 – 12:15 Session 2 **2D Measurements and M Mode (30 mins = 8 min per candidate)**

* 2.1 Left heart measurements (IVSd, LVEDd, PWd, LVESd, FS, LVOTd, LV FAC, LVEDA, LVESA, , LAa)
* 2.2 Right heart measurements (RVEDd, RVEDa, RVFAC, LVEDa:RVEDa, RAa, TAPSE)
* 2.3 Simulator or Laptop (all measurements)
* 2.1 Left heart measurements (IVSd, LVEDd, PWd, LVESd, FS, LVOTd, LV FAC, LVEDA, LVESA, , LAa)
* 2.2 Right heart measurements (RVEDd, RVEDa, RVFAC, LVEDa:RVEDa, RAa, TAPSE)
* 2.3 Simulator or Laptop (all measurements)

12:45 – 14:15 **– Session 3 Colour Flow Imaging (30 mins = 8 min per candidate)**

* 3.1 Left heart (AV)
* 3.2 Right Heart (TV, PV)
* 3.3 Left heart (MV)
* 3.1 Left heart (AV)
* 3.2 Right Heart (TV, PV)
* 3.3 Left Heart (MV)

14:30 – 17:30 Session 4- **Putting it together (40 mins = 8 min per candidate)**

* 4.1 Common Pathologies on laptop (including mitral valve, aortic valve, LVOT outflow etc)
* 4.2 Full scan/ full scan (split each group into two)
* 4.3 Simulator pathologies
* 4.1 Common Pathologies on laptop (including mitral valve, aortic valve, LVOT outflow etc)
* 4.2 Full scan / full scan (split each group into two)
* 4.3 Simulator pathologies

Day 1:

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| Station | Faculty | Topic |
| Lecture: Quality and accuracy and how to avoid mistakes by Nick Fletcher 08:30 -09:00 |
| Session 1 (rotate through each station does all three sessions in order) 09:00 – 10:30 (30 min rotations) |
| 1 | JA, ND | Extended views (2D) ALL |
| 2 | JPT, PN | Extended views (2D) ALL |
| 3 | RF, SO | Extended views (2D) ALL |
| 4 | EMPTY | Sim NO SESSION |
| 5 | GZ, HC | Extended views (2D) ALL |
| 6 | OM, FS | Extended views (2D) ALL |
| 7 | SW, MA | Extended views (2D) ALL |
| 8 | EMPTY | Sim NO SESSION |
| Session 2 (each station teaches one session only) 10:45:12:15 (30 min rotations) |
| 1 | JA, SO | 2.1 Left heart measurements |
| 2 | JPT, ND | 2.2 Right heart measurements |
| 3 | EMPTY | NO SESSION |
| 4 | RF, PN | 2.3 Simulator (all) |
| 5 | GZ, MA | 2.1 Left heart measurements |
| 6 | OM, HC | 2.2 Right heart measurements |
| 7 | EMPTY | NO SESSION |
| 8 | SW, FS | 2.3 Simulator (all) 12:45 – 14:15 |
| Session 3 Colour Flow Imaging 12:45 -14:15 (30 min rotations) |
| 1 | JA, PN | 3.1 Left heart (AV) |
| 2 | JPT, SO | 3.2 Right heart (TV, PV) |
| 3 | RF, ND | 3.3 Left heart (MV) |
| 4 | EMPTY | SIM NO SESSION |
| 5 | GZ, FS | 3.1 Left heart (AV) |
| 6 | OM, MA | 3.2 Right heart (TV, PV) |
| 7 | SW, HC | 3.3 Left heart (MV) |
| 8 | EMPTY | Sim – NO SESSION |
| Session 4 – Putting it together 14:30 – 17:30 (40 min rotations) |
| 1 | JA, ND | 4.1 Common pathologies (laptop) |
| 2 | JPT, PN | 4.2 Full scan (split group in two) |
| 3 | SO | 4.2 Full scan  |
| 4 | RF | 4.3 Simulator – pathologies/case studies |
| 5 | GZ | 4.1 Common pathologies (laptop) |
| 6 | OM, MA | 4.2 Full scan (split group in two) |
| 7 | HC | 4.2 Full scan  |
| 8 | SW, FS | 4.3 Simulator – pathologies/case studies |
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Day 2

08:00 – 08:30 **Lecture: Cardiac cycle, pressure, velocity and flow measurement By Dr Richard Fisher**

08:30– 10:30 Session 1 - **Spectral measurements (40 mins = 10 min per candidate)**

* 1.1 LVOT VTI
* 1.2 TR, Mitral inflow (E/A)
* 1.3 TDI (E’ and S’) and interpretation
* 1.1 LVOT VTI
* 1.2 TR, Mitral inflow (E/A)
* 1.3 TDI (E’ and S’) and interpretation

10:30 – 10:50 Coffee

10:50 – 12:50 – Session 2 - **Haemodynamic assessment (40 mins = 10 min per candidate)**

* 2.1 Static markers of fluid responsiveness/contraindications to fluid administration (2D appearances, M mode, IVC, LVEDa)
* 2.2 Dynamic assessment (challenge) SLR (can be used hands on)
* 2.3 Simulator or laptop cases
* 2.1 Static markers of fluid responsiveness/contraindications to fluid administrations (2D appearances, M mode, IVC, LVEDa)
* 2.2 Dynamic assessment (challenge) SLR (can be used hands on)
* 2.3 Simulator or laptop cases

12:50 – 13:30 Lunch

13:30 – 16:50 Session 3 - **Hands on (40 mins each session = 12 mins/candidate)**

* 3.1 Clinical decision making
* 3.2 Full scan (split group into two)
* 3.2 Full scan
* 3.3 Simulator pathologies
* 3.1 Clinical decision making
* 3.2 Full scan (split group into two)
* 3.2 Full scan
* 3.3 Simulator pathologies

14:50 -15:10 Coffee

16:40 – 17:10 **Lecture: advanced accreditation options**

Day 2

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| Station | Faculty | Topic |
| Lecture: Cardiac cycle, Pressure, velocity and flow measurement, By Richard Fisher 08:00 -08:30 |
| Session 1 Spectral analysis 08:300 – 10:30 (40 min rotations) |
| 1 | JA, | 1.1 LVOT VTI  |
| 2 | JPT, SO | 1.2 TR, Mitral inflow (E/A) |
| 3 | RF, JAz | 1.3 TDI (E’ and S’) |
| 4 | EMPTY | Sim NO SESSION |
| 5 | GZ, FS | 1.1 LVOT VTI  |
| 6 | OM, ND | 1.2 TR, Mitral inflow (E/A) |
| 7 | HC, DM | 1.3 TDI (E’ and S’) |
| 8 | EMPTY | Sim NO SESSION |
| Session 2 Haemodynamic assessment 10:50 – 12:50 (40 min rotations) |
| 1 | RF | 2.1 Static markers of fluid responsiveness  |
| 2 | JPT, JAz | 2.2 Dynamic assessment (challenge) SLR |
| 3 | EMPTY | NO SESSION |
| 4 | JA, SO | 2.3 Laptop Cases |
| 5 | HC, FS | 2.1 Static markers of fluid responsiveness  |
| 6 | OM, ND | 2.2 Dynamic assessment (challenge) SLR |
| 7 | EMPTY | NO SESSION |
| 8 | GZ, DM | 2.3 Laptop cases |
| Session 3 Hands on 13:30 – 16:50 (45 min rotations) |
| 1 | JA | 3.1 Clinical decisions/laptop cases  |
| 2 | RF, JAz | 3.2 Full scan (split group in two) |
| 3 | SO,  | 3.1 Full scan |
| 4 | JPT | 3.3 Simulation |
| 5 | GZ, DM | 3.1 Clinical decisions/laptop cases  |
| 6 | HC | 3.2 Full scan (split group in two) |
| 7 | ND | 3.1 Full scan |
| 8 | OM | 3.3 Simulation |
| Lecture: Advanced accreditation options by 16:40 -17:00 |



Day 3 **TOE**

08:30 – 09:00 **Lecture – the technology and how to use it (including probe handling, basic views, complications)**

09:10 – 10:15 **Session 1 - The Views (3 per group, 20 minutes person)**

* Basic views
* Basic views
* Basic views
* Basic views
* Basic views

10:15 – 10:30 **Tea/Coffee**

10:30 – 13:00 Session 2 - **Basic measurements (3 per group 30min per session)**

* 2.1 LV Assessment using ME views
* 2.2 LV Assessment using TG/dTG views
* 2.3 RV assessment
* 2.4 Basic valve assessment using 2D
* 2.5 Aorta and LA/RA assessment

13:00 – 14:00 **Lunch**

14:00 – 14:15 **Lecture: Introduction to Doppler**

14:15 – 16:45 Session 3 - **Doppler Assessment (3 per group 30min per session) – Tea/Coffee**

* 3.1 SV/CO assessment
* 3.2 Fluid responsiveness
* 3.3 Basic Diastolic function and RVSP
* 3.4 Basic Valve Pathology MV, AV
* 3.5 Acute Aortic Syndrome

16:45 – 17:05 **Lecture: When to use TOE in the ICU, TTE vs TOE**

Day 3

**Faculty**

1. Dr Richard Fisher, Consultant ICM, Kings College Hospital
2. Dr Jonathan Aron, Consultant ICM in GICU/CTICU & Consultant Anaesthetist, St George’s Hospital
3. Dr Gabor Zilahi Consultant ICM in CTICU & Consultant Cardiac Anaesthetist, St George’s Hospital
4. Dr Nick Fletcher Consultant ICM in CTICU & Consultant Cardiac Anaesthetist, St George’s Hospital
5. Dr Francisca Caetano Senior Critical Care Fellow, Royal Brompton and Harefield Hospital
6. Dr Ester Avagliano Consultant Cardiac Anaesthetist, St George’s Hospital

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| Station | Faculty | Topic |
| Lecture: The technology and how to use it By Gabor Zilahi 08:30 -09:00 |
| Session 1 Basic Views 09:10 – 10:15 (60 min session, no rotation) GZ rotates |
| 1 | FC | UE/ME Great Vessel, ME4CV, ME2CV, ME LAX, MEAV SAX, ME RV Inflow- Outflow, ME Bicaval, TG SAX, TG LAX, dTG, Aorta |
| 2 | JA |
| 3 | NF |
| 4 | RF |
| 5 | EA |
| Session 2 Basic measurements 10:30 – 13:00 (30 min rotations) GZ rotates |
| 1 | EA | 2.1 LV Assessment using ME views |
| 2 | NF | 2.2 LV Assessment using TG/dTG views |
| 3 | JA | 2.3 RV assessment  |
| 4 | RF | 2.4 Basic valve assessment using 2D |
| 5 | FC | 2.5 Aorta and LA/RA assessment |
| Lecture: Introduction to Doppler By Richard Fisher 14:00 -14:15 |
| Session 3 Doppler Assessment 14:15 – 16:45 (30 min rotations) |
| 1 | RF | 3.1 SV/CO assessment |
| 2 | JA | 3.2 Fluid responsiveness |
| 3 | GZ | 3.3 Basic Diastolic function and RVSP |
| 4 | FC | 3.4 Basic Valve Pathology MV, AV |
| 5 | EA | 3.5 Acute Aortic Syndrome |
| Lecture: When to use TOE in the ICU, TTE vs TOE By Nick Fletcher 16:45 – 17:05 |