

### Pre-course requirements:

The MECO Level 3 course requires the completion of the MECO Boat & Yacht Electrical Level 1 and 2 courses prior to enrolling. This is to ensure that electrical knowledge is 100% before delving into the complex world of marine electronics. Note that most electronics issues stem from simple electrical faults.

### Additional Resources

In parallel to the Level 3 course, learners who do have access to a vessel are encouraged to read any available supporting documentation for their on board marine electronics; or for any planned additions. For learners without access to vessel, manuals and specifications can be downloaded based on a theoretical installation.

### Course Duration

The Level 3 course is around 3 times the size of the level 1 & 2 courses combined, and is written as such to be the last course you will ever need in marine electronics. As the industry changes, and grows, the course will follow and provide life long training in this area. Learners have access to the material for life, and a short online refresher exam must be completed every year for commercial users.

## Course Syllabus Overview:

### NMEA 0183

- Network Stack
- Physical Layer
- Data Link Layer
- Network Management
- Application Layer
- Fault Finding
- Compatibility
- Worksheets

### NMEA 2000

- Introduction
- CAN Technology
- Network Stack
- Bits Bytes Binary & Hex
- Physical Layer
- Data Link Layer

### Raymarine Sea Talk

- Transducers & Sensors
- Automatic Identification System
- On board CCTV systems
- The Multifunction Display

### Transducers & Senders

- Introduction
- Depth & Speed
- Wind and weather
- Heading
- Tank Levels
- Pressure

### High Speed Network

- High Speed Network Introduction
- Interfacing
- NMEA One Net

### Engine Electronics

- Engine Gateways
- Engine - NMEA 2000 Gateway
- J1708 - NMEA 2000 Gateway
- J1939 - NMEA 2000 Gateway

### Radio Waves

- Maritime Radio Frequency Spectrum
- RF Cables and Connectors
- Standing Wave Reflections
- Terrestrial Communications
- Satellite Communications
- VHF
- AIS
- HF / MF / SSB
- Global Navigation Satellite System
- Radar & Reflectors

### Multifunction Display

- Introduction
- Electronic Charts
- Installation checks

### Exams

Final Written exam. If the course is for personal use, a course completion certificate is provided, if however you wish to use this certification commercially you will need to complete the all the written exams, level 1, 2 and 3, and a refresher exam each year thereafter to stay up to date.