Master Mariner Syllabus

The Master Mariner competition is the pinnacle of individual seamanship skills for young people in Scouting. This competition is designed to challenge participants to develop new knowledge and show a high command of nautical skills. You are unlikely to have all the knowledge, but it's a great opportunity to develop your skills.

The competition is a mixture of theory and practical skills and will be examined by Master Mariners, professional seafarers and experienced Scouters, supported and in collaboration with the local boating network and communities.
Competitors must be of correct age on the day of competition.
Ventures (15, 16, 17)
Rovers (18, 19, 20, 21, 22, 23, 24, 25)
Any competitor enrolled in a full-time course of maritime study or who makes their living at sea must declare this to the event coordinator in advance of the competition.

Venture Scouts

A. Practical Boating
B. x2 Core Modules
C. x1 Advanced Module

rover scouts

A. Practical Boating
B. x2 Core Modules
C. x1 Research Topic

Practical Boating (Ventures & Rovers)

Scouts will take command of a vessel and conduct its crew around a set of buoys and tasks. Competitors may be asked to demonstrate;

i. Casting-off and tie-up safely alongside a pontoon, pier or marina in a variety of circumstances.
ii. Correct VHF radio operations and etiquette.
iii. Tie-up to a mooring.
iv. Take control of a simulated emergency.
v. Know the importance of checking gear and equipment before going afloat.
vi. Assess weather conditions and determine appropriate and safe activity area to operate.
vii. Identify a hazard and determine a suitable control measure.

Core Modules (Ventures & Rovers)

1. **Safety**
    a. Water Safety & Risk Assessment
        i. Understand why it is important to tell someone you are going afloat.
        ii. What information might you present at a safety briefing before going afloat.
        iii. Know the differences between a buoyancy-aid and a lifejacket, when each should be worn and how they should be tested/ cared for.
        iv. Have an understanding of PFD buoyancy and an example where each may be used; (50N, 100N, 150N, 275N).
        v. Have a good knowledge of the safety inventory for a day trip afloat.
        vi. Be able to conduct a risk assessment and describe some suitable controls for a planned activity /or being given a scenario suggest suitable control measures to reduce risk.

    b. Emergency Procedures & Preparedness
        i. Describe what emergency action to take in the event that your vessel has been holed by a submerged object and sinking rapidly.
        ii. Describe what emergency action you might take should your vessel be in danger due to fire, crew injury, steerage failure or running aground.
        iii. Detail the steps to take in the event of a capsize.
        iv. Understand the symptoms and treatment of cold water immersion and hypothermia.
        v. Describe what to do in the event of a man-over scenario.
        vi. Detail a list of methods & equipment that could be employed to recover a persons from the water.

    c. Legislation & Bye-Laws
        i. Have a good understanding of the correct use of PFDs afloat.
        Refer to who must wear them, on what type/ size vessel, if there are any exceptions.
        ii. Know what age restrictions exist with regards to use of a powered-craft.
        iii. Define the definition of a ‘fast-craft’.
        iv. What regulations exist with regards to ships radio & licensing.
        v. Describe what permits may be required and who is the managing body of Irish inland waters.
        vi. Where would one find any further information on boating rules & regulation in Ireland.
        vii. Detail the age restrictions for operation of powered-craft.
        viii. Identify a source where one could find further detail of relevant boating law and practice.
        ix. Identify the definition of a Bye-Law and give a relevant example of one in your area.

2. Sea Traditions

a. Nautical Terms

Be familiar with the following terms;

i. Port
ii. Starboard
iii. Bow
iv. Stern
v. For'ard
vi. Aft
vii. On the Bow
viii. On the Quarter
viii. Aloft
ix. Amidships
x. Abeam
xi. Adrift
xii. Aweigh
xiii. Draft
xiv. Freeboard

b. Flag Etiquette

i. Know and understand the difference between;
   1. Ensign
   2. Pennant
   3. Burgee
   4. Courtesy Flag
   5. House Flag
   6. Jack

ii. Know the priority of hoists on a land based nautical flagpole with a gaff and yardarm.

iii. Know where the above flags may be flown onboard a sailing vessel.

iv. Know the main parts of a flag.

v. Be able to describe and identify each of the following;
   1. Irish Ensign
   2. Sea Scout Ensign (Blue Ensign)
   3. Sea Scout Pennant
   4. Irish Naval Jack

c. Signal & Code Flags

i. Be able to identify and describe the following signal flags;
   1. Letter flag
   2. Number flag
   3. Substitute flag
   4. Diver-down flag signal

ii. For sailing and racing operations, be able to identify or describe the following;
   1. Class flag
   2. General recall flag
   3. Postponement flag
   4. Race Abandonment flag
   5. Preparatory flag
   6. Shortened-Course flag

3. Ropework

b. Knots

Be able to correctly demonstrate each of the following and know their uses;

i. Clove Hitch
ii. Sheet Bend
iii. A Stopper Knot
iv. Stevedore Knot
v. Fisherman's Bend
vi. Bowline on the Bight
vii. Fireman's Chair Knot
viii. Reef Knot
ix. Double Sheet Bend
x. Round Turn and Two Half Hitches
xi. Common Bowline
xii. Sheep Shank
xiii. Rolling Hitch

c. Whipping

Scouts must be able to demonstrate each of the following. The scout will be asked to complete only one at the examiners discretion.

i. Common Whipping
ii. Sail maker's whipping

d. Splicing

Scouts must be able to identify each of the following. The scout will be asked to complete an eye-splice with thimble.

i. 3-stranded eye-splice
ii. 3-stranded short-splice
iii. 3-stranded back-splice

4. Parts of Craft & Sail Rigging

a. Be able to identify the boat parts below;

i. Strake
ii. Garboard strake
iii. Sheer Strake
iv. Gunwale
v. Oar/row lock
vi. Keel
vii. Keelson
viii. Hog
ix. Mast Step
x. Stem post
xi. Apron
xii. Thwart
xiii. Stretcher
xiv. Ribs
xv. Risings
xvi. Knees
xvii. Breast Plate
xviii. Transom
xix. Pintle
xx. Gudgeon
xxi. Rudder
xxii. Tiller

b. Rigging

Be able to identify the main parts of a sailing rig below;

i. Foot
ii. Luff
iii. Leech
iv. Tack
v. Head
vi. Clew
vii. Peak
viii. Mast
ix. Boom
x. Gaff
xi. Cringle
xii. Goose Neck
xiii. Ramshorn
xiv. Halyard
xv. Sheets
xvi. Forestay
xvii. Shrouds
xviii. Spreader

c. Sail Theory

Understand and be able to explain the following;

i. Reach
ii. Broad Reach
iii. Beating
iv. Running
v. Tacking
vi. Gybing
vii. Going About
viii. Reefing
ix. Jury Rig
x. Port and Starboard Tack
xi. Heave to
xii. No-Go-Zone

5. Anchoring

a. Anchors & Mooring

1. Be able to identify the following anchors and parts;
    i. Admiralty/ Fisherman's
    ii. Plough/ CQR
    iii. Bruce
    iv. Grapnel
    v. Danforth
    vi. Delta
2. Know the difference between anchoring and mooring + be able to describe how a mooring may be made and laid up.
3. Have a good knowledge of berthing and correct use of lines.

b. Anchorage

i. Be able to determine a suitable location to anchor and know what to look for.
ii. Know how to increase the efficiency of an anchor.
iii. Know what size anchor to carry appropriate for the size of your vessel.
iv. Know the determinants for the amount of cable to let out when lying to anchor.
v. Suggest an advantage, disadvantage and purpose for following anchoring methods;
    1. Two anchors off the bow at 45°
    2. Two anchors; one bow + one stern 180°
vi. Describe an appropriate plan of action for anchoring under strong winds.
vii. Describe both of the following anchor retrieval tools;
    1. Tripping Line
    2. Retrieval Ring

c(1). Sea Anchors

i. Describe the role and purpose of a sea anchor.
ii. Describe the role and purpose of a drogue.
iii. Detail the setup, securing and launching procedure of one of the above.
iv. Using materials provided, be able to jury rig a sea anchor in an emergency.

or
(competitors choice)

c(2). Mark-Laying

i. Suggest suitable line-management practices to prevent entanglements and hazards while onboard.
ii. Describe how to correctly deploy and anchor a large inflatable mark ensuring it stays upright.
iii. Know what it means and how to stream a buoy.
iv. Using a GPS, be able to find the position of your 'racing-buoy' with a bearing from a reference point ('committee boat').
v. Know how to further develop mark-laying skills to support activities.

6. Boat Maintenance and Care

a. Wood Care & Repair

i. Describe the annual routine care and maintenance of a clinker-built wooden boat;

1. Storage
2. Scraping
3. Sanding
4. Repairing
5. Preparing
6. Priming
7. Painting
8. Varnishing

ii. Know the basic difference between primer, undercoat and top coat paints.

iii. Know the safety precautions that should be taken when using, applying and storing paints and the use of relevant tools.

iv. Understand the use and purpose of antifouling paint, how to apply it and the precautions that should be taken when using it.

v. Be able to demonstrate/ describe how to repair a hole or crack in a wooden boat.

b(1). Fibreglass Repair

i. Demonstrate/ describe the complete process of how to repair a small hole on a fibreglass boat.

ii. Know the safety precautions to be taken when using fibreglass products.

iii. Describe how to create a thickened epoxy in the repair process and detail its use.

iv. Know what gelcoat is and how you would repair this.

v. Describe the cut, polish, wax method for restoring & protecting fibreglass finish.

or
(competitors choice)

b(2). Engine Maintenance

i. Identify and discuss the main engine components of the following systems;

1. Fuel System
2. Cooling System
3. Electrical System

ii. Know how to conduct annual maintenance on the above systems and be able to reference; spark-plugs, engine oil, gearbox oil, impeller, water/ fuel separator.

iii. Demonstrate/ discuss how to change an outboard propeller.

iv. Detail safe pre-engine start procedure and highlight common engine faults.

7. Communications

a. VHF

i. Identify the following VHF channels;

1. Dublin Coastguard
2. Malin Head Coastguard
3. Valentia Coastguard
5. Ch.16
6. Ch.12
7. Ch. 37

ii. Know and understand the following terms;

1. Mayday
2. Pan-Pan
3. Sécurité
4. MMSI
5. 'capture' effect
6. Dual Watch
7. Squelch
8. Over/ Out
9. MRSC

iii. Demonstrate the correct radio etiquette and procedure when using a VHF radio.

iv. Detail x3 'do-not' actions when using a VHF radio.

v. Know what times shipping forecasts are broadcast via Coastguard working channels.

vi. Be able to interpret and understand a marine forecast over VHF/ radio.

b. Emergencies

i. Be able to identify at least x6 distress signals as laid out in Annex 1 of the 1972 regulations for the prevention of collisions at sea recognised distress signals.

ii. Know the correct procedure to raise the alarm if you see a recognised distress signal from the shore.

iii. Have an understanding of what DSC is.

iv. Be able to identify and discuss the following emergency inventory;

1. EPIRB
2. Flares
3. AIS

c. Signals & International Code Flags

i. Know A-Z of the phonetic alphabet

ii. Be able to identify and describe the following signal flags;

1. Letter flag
2. Number flag
3. Substitute flag
4. Diver-down flag

8. Steering

a. Steering Rules & Shapes

i. Be able to detail and explain Col Regs - Rule 5.

ii. Know what action to take in each of the following situations;

1. Two power driven vessels meeting head-on
2. Two power driven vessels crossing
3. Two power driven vessels, one overtaking the other
4. Power vessel overtaking a sailing vessel
5. Two sailing vessels crossing, wind on the same side
6. Two sailing vessels crossing, wind on opposite sides
7. Two sailing vessels crossing where you cannot determine which tack the other is on
8. Sailing vessel overtaking a power driven vessel
9. Sailing vessel and power driven vessel crossing
10. Sailing vessel crossing fishing vessel
11. When navigating in a narrow channel
12. When crossing a fairway/ channel

iii. Know the day-shape displayed by;

1. a vessel proceeding under sail and power
2. a vessel at anchor
3. a vessel not under command
4. a vessel aground
5. a vessel constraint by draught
6. a vessel restricted in its ability to manoeuvre
7. diving operations
8. a fishing vessel

b. Steering Lights & Sounds

i. Know the lights to be exhibited by the following;

1. Vessel underway (less than 7m)
2. Sailing vessel underway (less than 20m)
3. Power vessel underway (less than 50m)
4. Power vessel underway (larger than 50m)
5. Vessel at anchor (less than 50m)
6. Vessel at anchor (larger than 50m)
7. Vessel fishing (not trawling)
8. Vessel trawling
9. Power vessel restricted in its ability to manoeuvre
10. Vessel constraint by draught
11. Vessel not under command
12. Vessel aground
13. Vessel towing w/ tow less than 200m
14. Vessel towing w/tow greater than 200m
15. Pilot boat

ii. Sounds
    1. I am altering course to port
    2. I am altering course to starboard
    3. I am going astern
    4. Unclear of your intensions
    5. I intend to overtake you on your port side
    6. I intend to overtake you on your starboard side
    7. I acknowledge action
    8. Sailing vessel underway in fog
    9. Power vessel underway in fog

c. Buoyage
    i. Be able to identify the colour, shape, light and action to take of the following;
        1. Cardinal Marks
        2. Lateral mark
        3. Isolated danger mark
        4. Safe Water mark
        5. Special mark
    ii. Know the general direction of buoyage around the Irish coast and when entering and leaving harbours and what the nodal point is.
    iii. Know the different light characteristics;
        1. Fixed
        2. Group Flashing
        3. Single Flashing
        4. Isophase
        5. Occulting

9. Meteorology

a. Weather Charts

i. Be able to read, understand, predict weather conditions from a synoptic chart.

1. Warm front
2. Cold front
3. Occluded front
4. Precipitation
5. Wind strength
6. Wind direction
7. Temperature

ii. Be able to interpret and understand a marine forecast over VHF/ radio.

iii. Have an understanding of the Meteorological buoy network around the Irish Coast.

b. Meteorological Terms

Explain the following terms;

i. Backing
ii. Veering
iii. Small Craft Warning
iv. Gale
v. Gulf Stream
vi. Sea Breeze
vii. Squall
viii. Prevailing Wind
ix. Onshore
x. Offshore
xi. Cyclone
xii. Anti-Cyclone
xii. Visibility
xiii. Atmospheric pressure
xiv. Beaufort Scale

c. Clouds

Be able to identify and describe the following main types of cloud formations and the weather associated with each;

1. Cirrus
2. Stratus
3. Cumulus
4. Nimbus

10. Navigation

a. Compass Work

i. Be able to box the compass in points (32).

ii. Understand the causes and characteristics of deviation and variation and know how to apply them.

iii. Know the difference between and how to calculate true & magnetic bearings.

iv. Know how to use a hand-bearing compass.

v. Know what a danger bearing is and be able to plot one on a chart.

b. Chart

i. Understand soundings and contours on a coastal chart.

ii. Be able to identify the following symbols from cards or on a chart;

1. A wreck which dries
2. Submerged wreck w/ masts
3. A light house
4. Separation Zone
5. Radio reporting point
6. Submerged pipes/ cables
7. Land features (trees, spot heights, towers, urban area, airport)
8. A bridge with low clearance
9. Seabed characteristics
10. Buoyage & beacons
11. Foreshore features (coastline, beaches, cliffs, hills, dunes)
12. Tide stream

c. Plotting & Passage

i. Accurately calculate the distance between two points.

ii. Be able to plot latitude and longitude coordinates.

iii. Be able to calculate tidal direction and rates of flow.

iv. Be able to plot a course to steer.

v. Demonstrate how to calculate a dead reckoning position.

vi. Know how to find your position using a 3-point fix.

vii. Given a start point and an end point, be able to suggest a suitable pilotage plan and discuss possible hazards and points of interest along route.

Advanced Modules (Ventures Only)

Each year x1 of the following topics will be examined. Participants will be given a brief in advance of the competition and will be expected to study the brief and do some of their own research.

1. **Modern developments in Aids to Navigation**
2. **SOLAS – Life Saving Appliances**
3. **Passage Planning**
4. **Activity Risk Assessment**
5. **Leave No Trace – Coastal Ecosystems**
6. **Tidal Heights**

Research Topics (Rovers Only)

Candidates must pick a ***research topic***. Candidates will be expected to discuss with the examiner their chosen research topic for around 10-15 minutes. If candidates are having difficulty choosing a research topic, they can discuss it with the event coordinator and together it will be possible to find a suitable topic.

1. **Development of the National Marine Planning Framework.**
2. **Opportunities to enhance Search and Rescue at Sea in Ireland.**
3. **A new national sail training vessel for Ireland – a luxury or necessity?**
4. **Fuelling the blue economy – how might the education system prepare young people to lead the sustainable stewardship of marine resources?**
5. **Diversity in the professional marine and recreational boating sectors – a long way to go?**
6. **Bringing America's Cup to Ireland.**
7. **The barriers for young people to access recreational water sports in Ireland and how to overcome these.**
8. **Preventing drowning in the developing world – do developed countries have an obligation to provide support.**
9. **The potential for the development of Sea Scouting into additional communities.**
10. **The characteristics of a good leader afloat.**

1. Safety
- a. Water Safety & Risk Assessment
- b. Emergency Procedures & Preparedness
- c. Legislation & Bye-Laws

2. Sea Traditions
- a. Nautical Terminology
- b. Flag Etiquette
- c. Code Flags

3. Ropework
- a. Knots
- b. Whipping
- c. Splicing

4. Parts of Craft, Rigging, Sails
- a. Parts of Boat
- b. Parts of Sail
- c. Sail Theory

5. Anchoring
- a. Anchors
- b. Anchorage
- c(1). Sea Anchors
- c(2). Mark-Laying

6. Boat Maintenance
- a. Wood Repair
- b(1). Fibreglass Repair
- b(2). Engine Maintenance

7. Communications
- a. VHF
- b. Emergencies
- c. Signals & Code Flags

8. Steering
- a. Rules & Shapes
- b. Lights & Sounds
- c. Buoyage

9. Meteorology
- a. Weather Charts
- b. Meteorological Terms
- c. Clouds

10. Navigation
- a. Compass
- b. Chart
- c. Plotting & Passage