IIMS Wooden hulls and FRP December 2026

Course timetable

Overview:

- *Day 1* *Introductions and wooden hulls and adhesives*
- *Day 2* *Wooden hulls and issues*
- *Day 3* *Fibre reinforced plastics*
- *Day 4* *Fibre reinforced plastics and repairs*
- *Day 5* *Fibre reinforced plastics, faults and close*

Day 1 – Monday 07/12/26	Introductions and wooden hulls
09:00	Introductions: • Welcome to the school, formalities, and housekeeping • Tour of facilities
09:30	Aims and overview of the course timetable
09:45	Wooden boatbuilding methods – traditional and modern: • Clinker and carvel • Glued clinker/clinker ply, glued carvel, cold moulding, strip-planking/sheathing, strip-planking/moulding and stitch and tape
10:30	Tea break
11:00	Aims and overview of course timetable Wooden boatbuilding methods – traditional and modern continued: • Terminology, specific terms particular to wooden boats • Approaches to set-up and building • Standards in construction (Lloyds, BSS, RCD etc.)
13:00	Lunch break
14:00	Boatbuilding timbers: • Range of common species • Considerations when selecting timber for boat building • Manufactured boards (BS1088 and plywood standards – bond and durability classes) • Defects in timber including manufactured boards • Visit to machine shop
15:30	Tea break
16:00	Adhesives used in boatbuilding: • Urea formaldehyde (one-shot), phenol formaldehyde, resorcinol formaldehyde, aliphatic resins, polyurethane glue (liquid/gel), polyester resins • Epoxy resins (different systems and mix ratios) and commonly used fillers • The right adhesive for the job and limitations of adhesives • Demonstration of adhesives – bond test pieces; these will be inspected on day 2
17:15	Review of day and Q & A
17:30	Close

IIMS Wooden hulls and FRP December 2026

Course timetable

Day 2 – Tuesday 08/12/26	Wooden hulls and faults and issues
08:30	Review day 1 with Q&A followed by an overview of the day ahead
08:45	Joints commonly seen in wooden boat building: • Lengthening joints - feather, lipped, plain and hooked scarf, butt strapped • Widening joints - butt, tongue and groove, loose tongue • Deck beam joints • Where and why certain joints are used and issues which arise • Stopwaters in joints, when and where and the correct way to install
10:30	Tea break
11:00	Issues with wooden hulls, faults typical to wooden hulls: • Common areas for rot – bilges, on deck where water sits or becomes trapped, plank ends, through deck fittings, centreline, around fastenings, scuppers, sole boards, gaps in joints, etc. • Wet and dry rot • Marine borers • Nail sickness, cause, and corrective measures • Loose fastenings resulting from movement in timber or working of fastening on fittings under stress/strain • Galvanic corrosion in wooden hulls • Hogging • Broken ribs/frames, how to repair, if previously repaired might see doubled up ribs/frames • Over caulking (cotton or oakum forced through the seams) • Damage to sheathing leading to water ingress, including decks (glass, Cascover, canvas etc.) • Keel bolts • Paint hides a multitude of sins – corrosion, moisture damage • Use of moisture meters to determine moisture content of timber and timber components ▪ Pin and pinless ▪ Correct use, adjustments required with pinless for species • Limitations of each
13:00	Lunch break
14:00	Repairs seen in wooden hulls which lead to additional problems: • Poor selection of timber • Incorrect installation of components, poor shaping, and related issues • FRP sheathing in lieu of proper planking repairs – encapsulated moisture and rot • Caulking in clinker seams – plank splits • Splines in carvel hulls to replace caulking • Excessive filler – moisture encapsulation or rot, using the wrong fillers such as car body filler • Bitumen/tar coating
15:30	Tea break
16:00	Revisit adhesive samples from day 1 and discuss results.
16:30	Review of two days with Q&A
17:30	Close

IIMS Wooden hulls and FRP December 2026

Course timetable

Day 3 – Wednesday 09/12/26	Fibre reinforced plastics
08:30	Introduction to FRP and outline the objectives for the next three days
09:00	Classroom session on cloths and resins used in FRP • Cloths: CSM, woven, unidirectional, multiaxial, and combination matt • Materials used: glass, carbon, aramid, flax • Resins: polyester resin, vinyl ester, epoxy • Additives and fillers • Pros and cons of different systems • Health and safety
10:00	Visit to FRP cabin • Introduction to facilities, tools and resins
10:30	Tea break
11:00	Practical activities in the FRP workshop • Prepare two moulds for practical activities • Apply release agents • Demonstration of gelcoat application by tutor • Students apply gelcoat to moulds • Tutor demonstrates hand lay-up of resin and reinforcement to moulds
13:00	Lunch break
14:00	Practical activities in FRP workshop • Students apply resin and reinforcement to their moulds
14:45	Classroom session on stiffening, reinforcing and bulkheads bonding: • Added and integral • Simple methods with glass and resin (additional glass, L, T and Z sections) • Using additional materials, foam, timber to form top hats etc. • Hollow formers • Bonding in bulkheads • Stress and hull deflection
15:30	Tea break
16:00	Practical activities in the FRP workshop: • Demonstration of applying stiffening to test panels • Students apply stiffening to test panels
17:15	Review of day and Q&A
17:30	Close

IIMS Wooden hulls and FRP December 2026

Course timetable

Day 4 – Thursday 10/12/26	Fibre reinforced plastics and practical activities
08:30	Recap day 3 FRP with Q&A followed by an overview of the day ahead
09:00	Practical activities in the FRP workshop: • Release mouldings from moulds
09:30	Classroom session on repairs in FRP • Typical damage to FRP hulls (gel scratches, punctures, major hull damage, structural repairs) • Methods of repair, outside to in, inside to out or both, repairs to sandwich construction • Spotting previous repairs ▪ Externally: deflections, pigment mismatch, change in surface finish ▪ Change in hull thickness, sound/ultrasound ▪ Internally, visible patches, unpigmented areas • Colour matching gelcoats • Options, polyester, or epoxy
10:30	Tea break
11:00	Practical session on repairs to FRP components: • Repairing FRP panels, from inside out and outside in • Demonstration by tutor • Use of angle grinders, cutting and grinding with flap discs and diamond cutting blades • Students cut/grind/sand repair areas
13:00	Lunch break
14:00	Practical session on repairs to FRP components: • Continue practical activities in FRP workshop • Apply patches to repair areas
15:30	Tea break
16:00	Sandwich construction and core materials • Core materials (wood, honeycombs, PVC, PET, PU, SAN) • Use and application of core materials, pros, cons, and limitations • Repairs to sandwich cores
17:15	Review of day and Q&A
17:30	Close

IIMS Wooden hulls and FRP December 2026

Course timetable

Day 5 – Friday 11/12/26	Fibre reinforced plastics practical and faults
08:30	Review day 4 with Q&A followed by an overview of the day ahead
09:00	Practical activities in the FRP workshop • Tutor demonstrates sandwich lay-up using a vacuum bag • Students continue to work on their repairs
10:30	Tea break
11:00	Faults in FRP • Faults that occur during lay-up (thin gel, under cure, exotherm, dry spots, pin-holing, and voids etc.) • Faults from poor handling (gel coat cracks and star crazing, gel scratches) • Faults resulting from structural issues, inherent weakness and hard spots • Damage that occurs during use (impact damage, crush, penetration, delamination of structural elements, stress cracks, compression around fittings etc.) • Issues with core materials • Osmosis – cause of, indicators and repair methods
12:15	Practical demonstration: • Demonstration of epoxy resin • Demonstration by tutor of sheathing wooden hulls, e.g., plywood and strip planking.
13:00	Lunch break
14:00	Practical activities in FRP workshop • Complete repair activities • Polishing gelcoats
15:30	Tea break
16:00	Additional lay-up techniques (wet and dry) • Spray • Recap vacuum • Infusion • Pre impregnated cloth (high and low temp)
16:45	Review of GRP subject material and Q&A
17:30	Close