CERTIFICATION COURSE
ON
NAVAL ARCHITECTURE & SHIPBUILDING

CURRICULUM

Duration: 24 Weeks

1. Basic Ship Theory – I — 96 Hrs
   - Introduction to ships, terminologies, principle of floatation, area, volume moment, integration rules, small angle stability hydrostatics, large angle stability, capacity plan, launching, damage stability.
2. Basic Ship Theory - II — 80 Hrs
   - Beam theory, ship structures, load, shear force, bending Moment, design of midship section.
   - Ship motion, sea keeping, rudder and steering.
3. Ship drawing & calculation — 112 Hrs
   - Lines plan, Bojeans and hydrostatic curves, cross curves of Stability, floodable length.
   - Bulkhead drawing, midship section, shell expansion, docking plan.
   - Drawing of rudder, shaft bracket stern tube, doors, hatches, Scuttles, etc.
4. Resistance, powering, propulsion — 64 Hrs
   - Type of Resistances, calculation and measurement of Resistances, law of comparison, model testing.
   - Estimation of power.
   - Screw propeller, wake and thrust, hull efficiency, other types of propellers.
   - Noise and cavitations.
5. Welding Technology — 64 Hrs
   - Physics of welding, metallurgy of welds, welding process and equipment, defects, distortion and residual stresses, Electrodes.
   - Special welding processes – TIG, MIG, submerged arc Welding, Weldment evaluation, weld design.
6. Practical ship construction — 96 Hrs
   - Lofting, prefabrication, construction on skid, erection, building berth, keel sighting, alignment, launching preparation and procedure.
   - Machinery installation, shaft alignment, engine girder, ‘A’

bracket installation, other equipment foundation.

- Introduction to ship repair procedures.

7. Marine engineering and machinery/system layout 96 Hrs
    - Prime movers, compressors, deck machinery, steering gear, parts of s tern gear, ship systems – fuel, L.O., salt and fresh water, bilge, ballast, fire fighting, ventilation, air conditioning and refrigeration.
    - Electrical system, generators, paralleling, emergency generation, navigation aids.
8. Elementary ship design 64 Hrs
    - Qualitative requirement, preliminary studies, principal dimensions, displacement, deadweight, estimation of power and engine selection, weight and space analysis, classification drawings and construction drawings, tests and trials.
9. Basic Industrial engineering 36 Hrs
    - Plant layout, material handling, estimation, inventory control.
    - Project planning, work measurement, forecasting, routing and scheduling, CPM and PERT, ergonomics and value engineering

Additional 16 Hrs

Above course material will be supplemented by specialist lectures on following items

a) Corrosion and paints
b) Classification regulations and their applications
c) Statutory regulations and international conventions
d) Computerized ship design