M.Sc Course (MAR 611)
Advanced Marine Structural Analysis

Ship structural design

- **Design modes of failure**
- **Types, causes and consequences of structural failure**
- **Different approaches of ship design**
- **Basic ship design parameters**
- **Main elements of ship structural design**
- **Rational design approach**

Flexural And Torsion Characteristics of Sections

1. **Geometrical properties of sections**
2. **Sections with attached plating**
3. **Rational shapes of sections**
4. **Deign of girders**
5. **Rational design of girders**
6. **Ship section flexural characteristics**
7. **Torsion characteristics of sections**
8. **Torsional characteristics of sections**

Ship Structure Idealization (Modeling)

1. **Ship structure elements**
2. **Main structure components and parameters**
3. **Span points & span length**
4. **Ship structure idealizations**
5. **3-D and 2D structure modeling**
6. **Finite element modeling**

Load Analysis

1. **Hull girder loading**
2. **Local loading**
3. **Cargo loading**
4. **Test loads**
5. **Design loads**
6. **Impact loads**

Hull girder response

1. **Principles of structural analysis**
2. **Stresses and deformations**
3. **Bending of beams**
4. **Effective breadth**
5. **Primary, secondary and tertiary stresses**
6. **Shear stresses in ships**
7. **Torsion stresses for multi-cell box girders**
8. **Compounding of stresses**
9. **Hull girder and local structure deformations**
10. **Hull girder stresses of damaged ships**