

# SYLLABUS

## COURSE OUTLINE

### Maritime Biosecurity

#### Overview:

- What is marine biosecurity?
- The scope of potential threat: the 'latitudinal commonality' and global warming
- Methodologies of contamination: international trade and the movement of people/ animals and related products
- Economic cost/damage: speed of identification and containment
- The importance of containment strategies and control measures
- The role of training and awareness of personnel
- Risks and impact assessment

#### Some relevant legislation

- The Biosecurity Act 2015 (Australia)
- MPSEAS (IMO – Marine Environment Protection of the South-East Asian Seas)
- The EU Marine Strategy Framework Directive
- The Craft Risk Management Standard (CRMS-BIOFOUL) (New Zealand)
- The IMO Guidelines for the control and management of ship's biofouling
- The BWM Convention (The International Convention for the Control and Management of Ship's Ballast Water and Sediments (2004) (effective 8/9/17) <https://www.youtube.com/watch?v=G18mkpVfzlg>)
- **Case Study:** The Aberdeen Harbour Expansion Plan

#### The potential scope of damage from invasive/exotic species

- [www.qld.gov.au/environment/coasts-waterways/marine-pests](http://www.qld.gov.au/environment/coasts-waterways/marine-pests)
- Local species becoming prey
- Depletion of biodiversity
- Impact on local habitat
- Ecosystem damage
- Economic damage -fuel and maintenance costs
- Social impact on communities and way of life
- Some examples of invasive marine pests and their impacts

#### Biofouling

- The 3 critical choices: prevent, control, destroy
- Some aspects of biofouling: damage, cost, time for removal and repair
- Some examples of biofouling: ballast water and sediments/hull fouling
- Towing and translocation of structures (decommissioning impacts?)
- Methodologies of establishment: spawning, detachment, fragmentation, translocation of entire colony/community
- **Case study:** Arctic E&P operations – a disaster waiting to happen?

#### Biosecurity Planning

- Why biosecurity planning is important
- Case Study: Blocking the Suez Canal – the 'Ever Given'
- Infrastructure/location assessment and consideration
- Time-limited planning (i.e., marine construction

projects)

- Scoping possible vectors of contamination
- Scoping possible sources of contamination
- Understanding and planning for potential constraints
- Contingency planning
- Creating a monitoring and control system for surveillance/compliance
- Does a vessel or a structure comply with marine license/operational conditions?
- Assessment of activities
- Complexity and control challenges: the 'Compulsory' vs. 'Voluntary' problem
- Infrastructure for handling/ transportation/ interim storage
- On-site capability-inspection/resources/ physical response
- Assessment of supply chain requirements/ capabilities
- **Class exercise:** creating a biosecurity plan

#### Surveying for invasive/exotic species:

- Analysing 'movement' (point of origin to point of destination)
- Journey length
- Number of port calls and transitions in cargo handling
- Port congestion and delays
- The 'Proximity Factor' – ships at anchor (layup events) – Planktonic and Nektonic 'Bio-movement'
- Assessing seasonality issues

#### Stakeholder engagement

- The problem with Stakeholder agendas
- Stakeholder power and influence – a shifting dynamic?
- Stakeholder identification and assessment or 'stakeholder mapping'
- Class exercise – stakeholder mapping
- Establishing/re-establishing constructive engagement with stakeholder groupings
- Strategies for minimising the potential for environmental damage
- Environmental impact assessments (EIA's)
- Class exercise: EIA's

#### Biosecurity and Corporate Social Responsibility (CSR)

- Tangible and intangible factors of consideration: damage to reputation, fines for non-compliance, and other potential financial loss
- Establishment of clear long-term goals and strategies
- Optimisation of resources
- Creating sustainability
- Responsibility and Ethics

#### Cyber-Biosecurity:

- Origin of 'cyber-biosecurity'
- Data security – the key issue?
- The relevance of SMART information criteria
- The value of information in decision-making processes
- Integrity management – prevention of theft or destruction/damage to intellectual property
- The importance of knowledge management
- The concept of 'shelf-life' – how important is it to understand this?
- The threat of being 'behind the curve' –

technological obsolescence

#### Digitalisation and Cyber-biosecurity

- Assessing the organisation's capabilities – a due diligence process
- Class exercise: Constructing scenario's
- 'Digital disruption' – What does this mean for your existing supply chain?
- Removing fragmentation from the SC
- Streamlining and optimisation strategies
- Understanding feedback mechanisms: positive self-amplifying and negative regulatory 'loops'
- Dealing with emergent opportunities
- Managing the digital interface security (physical and cyber; organisational/ societal resilience; economic impact)