# FACULTY OF ENGINEERING

# DEPARTMENT OF NAVAL ARCHITECTURE, OCEAN AND MARINE ENGINEERING

# NAVAL ARCHITECTURE, OCEAN AND MARINE ENGINEERING

**Master of Engineering in Naval Architecture and Marine Engineering**
**Master of Engineering in Naval Architecture with Ocean Engineering**
**Master of Engineering in Naval Architecture with High Performance Marine Vehicles**
**Bachelor of Engineering with Honours in Naval Architecture and Marine Engineering**
**Bachelor of Engineering with Honours in Naval Architecture with Ocean Engineering**
**Bachelor of Engineering with Honours in Naval Architecture with High Performance Marine Vehicles**
**Bachelor of Engineering in Naval Architecture and Marine Engineering**
**Bachelor of Engineering in Naval Architecture with Ocean Engineering**
**Bachelor of Engineering in Naval Architecture with High Performance Marine Vehicles**
**Diploma of Higher Education in Naval Architecture and Marine Engineering**
**Certificate of Higher Education in Naval Architecture and Marine Engineering**

*These regulations are to be read in conjunction with General Academic Regulations – Undergraduate, Integrated Master and Professional Graduate Degree Programme Level.*

**Mode of Study**

1. The programmes are available by full-time study only.

**Curriculum**

2. **First Year -** All students shall undertake modules amounting to 120 credits as follows:

**Compulsory Modules**

| Module Code | Module Title | Level | Credits |
|---|---|---|---|
| 16132 | Engineering Mechanics1 | 1 | 20 |
| NM102 | Introduction to Naval Architecture and Marine Engineering | 1 | 20 |
| NM103 | Analysis Tools for Marine Design | 1 | 20 |
| MM111 | Mathematics 1B | 1 | 20 |
| MM112 | Mathematics 2B | 1 | 20 |
| | Elective Module(s) | | 20 |

3. **Second Year -** All students shall undertake modules amounting to 120 credits as follows:

**Compulsory Modules**

| Module Code | Module Title | Level | Credits |
|---|---|---|---|
| NM209 | Principles of Marine Design and Production | 2 | 20 |

| | | | |
|---|---|---|---|
| NM210 | Analysis and Design of Marine Structures 1 | 2 | 20 |
| NM211 | Engineering Applications for Naval Architects and Marine Engineers | 2 | 10 |
| NM212 | Hydrostatics and Stability of Marine Vehicles | 2 | 20 |
| NM213 | Marine Engineering Fundamentals | 2 | 20 |
| NM2xx | Fluid Mechanics in Naval Architecture, Ocean & Marine Engineering | 2 | 10 |
| MM211 | Mathematics 3B | 2 | 20 |

4. **Third Year -** All students shall undertake modules amounting to 120 credits as follows:

**Compulsory Modules**

| Module Code | Module Title | Level | Credits |
|---|---|---|---|
| NM312 | Analysis and Design of Marine Structures 2 | 3 | 20 |
| NM313 | Hydrodynamics, Resistance and Propulsion | 3 | 20 |
| NM314 | Marine Design | 3 | 20 |
| NM316 | Marine Engineering Systems and Control | 3 | 20 |
| NM335 | Business Concepts and International Merchant Shipping | 3 | 10 |
| NM323 | The Marine Environment | 3 | 10 |
| NM327 | Professional Development | 3 | 10 |

together with modules appropriate to the chosen programme:

**Naval Architecture and Marine Engineering**

**Compulsory Modules**

| Module Code | Module Title | Level | Credits |
|---|---|---|---|
| NM324 | Principles and Application of Marine Machinery | 3 | 10 |

**Naval Architecture with Ocean Engineering**

**Compulsory Module**

| Module Code | Module Title | Level | Credits |
|---|---|---|---|
| NM325 | Offshore Oil and Gas Production Systems | 3 | 10 |

**Naval Architecture with High Performance Marine Vehicles**

**Compulsory Module**

| Module Code | Module Title | Level | Credits |
|---|---|---|---|
| NM305 | Yacht and Powercraft Design | 3 | 10 |

5. **Fourth Year -** All students shall undertake modules amounting to 120 credits as follows:

**Compulsory Modules**

| Module Code | Module Title | Level | Credits |
|---|---|---|---|
| NM423 | Seakeeping and Manoeuvring | 4 | 20 |
| NM402 | Theory and Practice of Marine CFD | 4 | 10 |
| 21452 | Finite Element Analysis of Marine Structures | 4 | 10 |

together with modules appropriate to the chosen programme:

**Naval Architecture and Marine Engineering**

**Compulsory Modules**

| Module Code | Module Title | Level | Credits |
|---|---|---|---|
| NM421 | Marine Power and Electrical Systems | 4 | 20 |
| NM428 | Marine Engineering Project | 4 | 40 |
| NM415 | Marine Refrigeration and Air Conditioning | 4 | 10 |
| NM409 | Marine Transmission and Propulsion Systems | 4 | 10 |

**Naval Architecture with Ocean Engineering**

**Compulsory Modules**

| Module Code | Module Title | Level | Credits |
|---|---|---|---|
| NM430 | Ocean Engineering Project | 4 | 40 |
| NM404 | Ship Structural Dynamics | 4 | 10 |
| NM435 | Structural Reliability | 4 | 10 |
| NM436 | Dynamics of Offshore Structures | 4 | 20 |

**Naval Architecture with High Performance Marine Vehicles**

**Compulsory Modules**

| Module Code | Module Title | Level | Credits |
|---|---|---|---|
| NM439 | High Performance Sailing Yachts | 4 | 10 |
| NM437 | High Speed Ships | 4 | 10 |
| NM440 | High Performance Marine Vehicles Project | 4 | 40 |
| NM404 | Ship Structural Dynamics | 4 | 10 |
| NM443 | High Performance Marine Structures | 4 | 10 |

6. **Fifth Year -** All students shall undertake modules amounting to 120 credits as follows:

**Compulsory Modules**

| Module Code | Module Title | Level | Credits |
|---|---|---|---|
| NM502 | Group Design Project | 5 | 40 |
| 21551 | The Marine Regulatory Framework | 5 | 10 |
| NM527 | Advanced Marine Design | 5 | 10 |
| NM528 | Maritime Safety and Risk | 5 | 10 |

together with modules appropriate to the chosen programme:

**Naval Architecture and Marine Engineering**

| Module Code | Module Title | Level | Credits |
|---|---|---|---|
| 21525 | Advanced Marine Engineering | 5 | 10 |
| NM524 | On-board Energy Management and Environment Protection | 5 | 10 |

**Naval Architecture with Ocean Engineering**

| Module Code | Module Title | Level | Credits |
|---|---|---|---|
| NM513 | Design and Construction of FPSO's | 5 | 10 |
| NM 536 | Physical Testing of Offshore Renewable Energy Systems | 5 | 10 |

**Naval Architecture with High Performance Marine Vehicles**

| Module Code | Module Title | Level | Credits |
|---|---|---|---|
| NM529 | Ship Operability and Control | 5 | 10 |
| NM530 | Ship Powering in Service | 5 | 10 |

**Optional Modules**

No fewer than 30 credits chosen from:

| Module Code | Module Title | Level | Credits |
|---|---|---|---|
| NM522 | Renewable Marine Energy Systems | 5 | 10 |
| NM523 | Systems Availability and Maintenance | 5 | 10 |
| NM532 | Shipping Economics and Market Sector Analysis | 5 | 10 |

And depending on the degree:

**Naval Architecture and Marine Engineering**

| Module Code | Module Title | Level | Credits |
|---|---|---|---|
| 21526 | Marine Engineering Simulation & Modelling | 5 | 10 |
| NM533 | Autonomous Marine Vehicles Modelling and Digital Twin | 5 | 10 |

**Naval Architecture with Ocean Engineering**

| Module Code | Module Title | Level | Credits |
|---|---|---|---|
| NM531 | Marine Pipeline Integrity | 5 | 10 |
| NM5XX | OWT Dynamics II: Aero-Hydro-Servo-Elastic Coupled Dynamics with OpenFAST | 5 | 10 |

**Naval Architecture with High Performance Marine Vehicles**

| Module Code | Module Title | Level | Credits |
|---|---|---|---|
| 21518 | Computational Free Surface Hydrodynamics | 5 | 10 |
| NM537 | Dynamics of Fixed and Floating Offshore Structures | 5 | 10 |

Exceptionally, such other modules as may be approved by the Programme Director.

**Progress**

7. In order to progress to the second year of the General Academic Regulations – Undergraduate, Integrated Master and Professional Graduate Degree Programme Level shall apply.

8. In order to progress to the third year of the programme the General Academic Regulations – Undergraduate, Integrated Master and Professional Graduate Degree Programme Level shall apply.

9. In order to progress to the fourth year of the programme the General Academic Regulations – Undergraduate, Integrated Master and Professional Graduate Degree Programme Level shall apply.

10. In order to progress to the fifth year of the chosen programme in addition to satisfying the requirements of the General Academic Regulations – Undergraduate, Integrated Master and Professional Graduate Degree Programme Level a student must also gain passes in one of the following modules: NM428 Marine Engineering Project or NM430 Ocean Engineering Project or NM440 High Performance Marine Vehicles Project as appropriate.

**Final Assessment and Classification**

11. The final classification for the chosen programme will normally be based on the first assessed attempt at compulsory and specified optional modules taken in the third, fourth and fifth years.

**Award**

12. **MEng**: In order to qualify for the award of the degree of MEng in the chosen programme the General Academic Regulations – Undergraduate, Integrated Master and Professional Graduate Degree Programme Level shall apply and must include NM502 Group Design Project and either NM428 Marine Engineering Project or NM430 Ocean Engineering Project or NM440 High Performance Marine Vehicles Project as appropriate.

13. **BEng with Honours**: In order to qualify for the award of the degree of BEng with Honours in the chosen programme the General Academic Regulations – Undergraduate, Integrated Master and Professional Graduate Degree Programme Level shall apply and must NM428 Marine Engineering Project or NM430 Ocean Engineering Project or NM440 High Performance Marine Vehicles Project as appropriate.

14. **BEng**: In order to qualify for the award of the degree of BEng in the chosen programme the General Academic Regulations – Undergraduate, Integrated Master and Professional Graduate Degree Programme Level shall apply.

15. **Diploma of Higher Education**: In order to qualify for the award of a Diploma of Higher Education in Naval Architecture and Marine Engineering the General Academic Regulations – Undergraduate, Integrated Master and Professional Graduate Degree Programme Level shall apply.

16. **Certificate of Higher Education**: In order to qualify for the award of a Certificate of Higher Education in Naval Architecture and Marine Engineering the General Academic Regulations – Undergraduate, Integrated Master and Professional Graduate Degree Programme Level shall apply.