

## Certificate

# Naval Architecture and Marine Engineering Certificate

In order to provide the opportunity for practicing engineers to further their knowledge and to become more competent in the fields of Naval Architecture and Marine Engineering, the Department of Mechanical and Aerospace Engineering offers a non-degree graduate level certificate program in Naval Architecture and Marine Engineering. Admission to the program requires a Bachelor of Science degree (or equivalent) in Mechanical Engineering, Aerospace Engineering, Naval Architecture and Marine Engineering, or a related field. The students must complete four 3-credit graduate-level courses to earn a certificate. The certificate program credits will be transferable to the Master's degree programs in Mechanical and Aerospace Engineering. The certificate program offers two tracks:

1. Naval Architecture
2. Marine Engineering

## Curriculum Requirements

To meet the requirements of either track, students must complete a common required course, Engineering Mathematics or MAE 608 (<http://catalog.odu.edu/search/?P=MAE%20608>), Applied Mathematics for Engineers and three 3-credit courses described below.

### Naval Architecture Track

Required		
MAE 550	Principles of Naval Architecture	3
Select two of the following:		6
MAE 788	Computational Intelligence for Engineering Design Optimization Problems	
MAE 695	Topics in Mechanical and Aerospace Engineering (Numerical Marine Hydrodynamics)	
MAE 695	Topics in Mechanical and Aerospace Engineering (Ship Resistance and Propulsion)	
MAE 695	Topics in Mechanical and Aerospace Engineering (Dynamics of Marine Crafts)	
MAE 695	Topics in Mechanical and Aerospace Engineering (Marine Structures)	
Total Credit Hours		9

### Marine Engineering Track

Required		
MAE 511	Mechanical Engineering Power Systems Theory and Design	3
Select two of the following:		6
MAE 512	Environmental Control	
MAE 517	Propulsion Systems	
MAE 602	Fluid Dynamics and Aerodynamics	
Total Credit Hours		9