Marine Engineers and Naval Architects

SOC: 17-2121 • Career Profile Report

■ Key Facts

$105,670	8,500	+6.0%
Median Salary	Employment	Growth Rate

■ Requirements & Salary Range

Education: Bachelor's degree

■ Automation Risk Assessment

Low Risk - 17.0% probability of being automated in the next 10-20 years.

This job is relatively safe from automation due to its creative, social, or complex problem-solving requirements.

■■ Work-Life Balance

7.2/10 - Good work-life balance

■ Personality Fit (RIASEC)

Higher scores indicate better personality fit for this career type.

Realistic	8.2/10	**Investigative**	8.8/10
Artistic	6.4/10	**Social**	5.2/10
Enterprising	5.8/10	**Conventional**	6.6/10

■ Top Skills Required

Attention to detail, Communication skills, Critical-thinking skills, Interpersonal skills, Math skills, Problem-solving skills

✓ Strengths

- High Demand
- Flexible Work
- Continuous Learning

■ Challenges

- Burnout Risk
- Rapid Technological Change

■ What They Do

Marine Engineers and Naval Architects design, develop, and maintain ships, boats, and other marine vessels and structures. **They ensure vessels are safe, efficient, and seaworthy while meeting performance, environmental, and regulatory requirements**. Their work is critical in shipbuilding, offshore engineering, and maritime transportation.

This career is well suited for individuals who enjoy engineering, design, and problem-solving in complex, technical systems.

What Do Marine Engineers and Naval Architects Do?

These professionals plan, design, and supervise the construction and maintenance of marine vessels and structures.

Common responsibilities include:

- Analyzing ship and vessel specifications and requirements
- Designing hulls, propulsion systems, and onboard systems
- Conducting stability, hydrodynamic, and structural analyses
- Overseeing construction and repair in shipyards or offshore facilities
- Testing prototypes and evaluating vessel performance
- Ensuring compliance with safety, environmental, and regulatory standards
- Collaborating with naval officers, architects, and other engineers

Key Areas of Marine Engineering and Naval Architecture

Professionals may focus on specific areas:

- Ship Design: Developing hull forms, layouts, and overall vessel configuration
- Propulsion and Power Systems: Designing engines, fuel systems, and energy efficiency solutions
- Structural and Safety Engineering: Ensuring integrity of hulls, decks, and critical components
- Offshore Engineering: Designing oil rigs, research platforms, and floating structures
- Environmental Compliance: Reducing emissions and meeting maritime regulations

Skills and Abilities Needed

These engineers combine technical knowledge with analytical and design skills.

Core Professional Skills

Personal Qualities That Matter

Education and Career Pathway

This role typically requires formal education and engineering training:

- Bachelor’s Degree (common): Marine engineering, naval architecture, or mechanical engineering
- Internships or Co-ops: Hands-on experience with shipyards or marine projects
- Professional Licenses (optional): Engineering or naval certifications
- Continuous Learning: Staying current with design software, maritime technology, and regulations

Where Do Marine Engineers and Naval Architects Work?

They are employed across industries that design and maintain marine vessels:

- Shipbuilding and Repair Facilities
- Offshore Oil and Gas Companies
- Maritime Research and Design Organizations
- Naval and Defense Contractors
- Ports and Shipping Companies

Work environments may include offices, shipyards, offshore platforms, and research labs.

Is This Career Difficult?

This career is technically demanding and requires precision in design and analysis. Engineers must solve complex problems while adhering to safety, environmental, and performance standards. Success requires advanced engineering knowledge, attention to detail, and strong project management skills.

Who Should Consider This Career?

This career may be a strong fit if you:

- Enjoy engineering and design
- Are skilled in mathematics, physics, and problem-solving
- Have interest in ships, marine systems, and offshore structures
- Pay close attention to detail and safety
- Want a career that blends technical expertise with innovation

How to Prepare Early

- Take advanced math, physics, and computer science courses in high school
- Explore engineering or naval architecture programs at universities
- Participate in marine-related internships, co-ops, or projects
- Learn CAD and modeling software
- Stay informed on maritime regulations and emerging technologies

Marine engineers and naval architects design the vessels and structures that navigate and protect our waters, ensuring efficiency, safety, and innovation in the maritime industry.
