

EDUCATIONAL SKILL REQUIREMENTS (ESR)
380 - APPLIED MATHEMATICS
Subspecialty Code: 4100P

The value of graduate education in mathematics lies in the vast breadth of its applicability. The officer with advanced education in mathematics possesses skills in problem solving, modeling, abstraction, optimization, and analysis that are sufficiently general that they apply in many arenas and never lose their currency in the face of changing technology and yet-to-be-identified needs. Graduate education in mathematics is a career-long enabler. Students in the Applied Mathematics curriculum will receive a solid mathematical foundation as they transition into graduate curricula emphasizing relevant and modern advanced mathematical techniques. Students will be encouraged to develop and utilize skills in analysis, reasoning, creativity, and exposition as they acquire knowledge of mathematics and its applications.

1. **FUNDAMENTAL AREAS:** The officer will complete courses in the following fundamental areas of Mathematics, developing sufficient mastery to qualify for teaching Mathematics at the undergraduate level.
 - Single, Multivariate, and Vector Calculus
 - Linear Algebra and Algebraic Structures
 - Probability, Statistics, Data Analysis, and Optimization
 - Logic and Discrete Mathematics
 - Real and Complex Analysis
 - Modern Applied Algebra and Number Theory
 - Numerical Analysis
 - Mathematical Modeling in Applied Mathematics
 - Ordinary and Partial Differential Equations
2. **APPLICATIONS:** The officer will become well-versed in the applications of mathematics to real world problems of interest to the military, enhancing performance in post-graduate operational billets and policy making positions.
3. **COMPUTER SKILLS:** The officer will acquire the ability to use higher-level structured computer languages on current workstations.
4. **COMMUNICATION AND RESEARCH SKILLS:** The officer will perform independent research in an area of Mathematics, develop written and oral presentation skills, and gain instructional experience.
5. **JOINT PROFESSIONAL MILITARY EDUCATION:** Graduates will complete the Navy Joint Professional Military Education Phase I requirements.