

Establishment Educational Skill Requirements
Systems Engineering Analysis
Subspecialty 6501
Curriculum 308 Track 51A

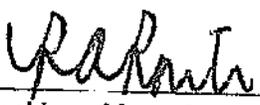
1. Curriculum Number: 308 Track 51A
2. Institutions: Naval Post Graduate School
3. Funding: Students are fully funded through the Advanced Education Quota Plan
4. Curriculum length in months: 24
5. Month(s) the program starts: Variable
6. Academic Profile Code (APC) Required: N/A
7. Billet Coding: Community Managers have agreed to allow billets to be coded for Requirements Management (6511) and officers to be educated for this curriculum.

| Designator | OCM | Contact Information | Approval Date |
|------------|-------------------------|---------------------|---------------|
| 11XX | CDR D. Michael Ray | | |
| 13XX | CDR Patrick Hansen | | |
| 15XX | CAPT Steven Milinkovich | | |
| 18XX | CAPT James Scarcelli | | |
| | | | |
| | | | |
| | | | |

8. Budget Submitting Offices have agreed to allow billets to be coded for Requirements Management and are listed in enclosure (4).
9. Specific Educational Skill Requirements for 51A curriculum (Systems Engineering Analysis): This curriculum teaches U S Navy Unrestricted Line Officers how the Navy builds and operates large combat systems of systems. The primary objective is to prepare them to serve afloat by giving them the technological and analytical understanding to fight in the fleet today and in the future. The emphasis is on integration of complex warfare systems with compatible tactics. In addition, graduates with experience afloat will be prepared to serve ashore as program managers and in technical/analytical billets on headquarters staffs.

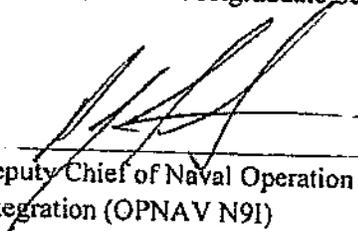
- a. ESR-1: BASICS - Introduction to the mathematics, physics, and computer skills needed to understand the technical aspects of combat, information, and decision systems.
- b. ESR-2: SYSTEMS ENGINEERING - Understand the systems engineering process and how to perform systems engineering studies, to include a knowledge of system design, development, and deployment; technical and cost trade-offs; human-in-the-loop issues and project management. Be able to integrate relevant technological disciplines that bear on weapons, sensor and information systems. Understand responsiveness to realistic military requirements, specifications and cost limitations. Study the linkage between strategic planning, requirements, project organization, and technology.
- c. ESR-3: OPERATIONS ANALYSIS - Learn to apply advanced management and operations research ideas to defense problems, including cost-benefit and cost-effectiveness analysis. Understand uncertainty and risk and their impact on military planning, decision making and operations. Become familiar with complexity and the modeling of competitive systems. Gain a basic knowledge of modeling, simulation and gaming. Learn how Operations Research techniques, including experimental design, are applied to operational test and evaluation; planning and analyzing fleet battle experiments; and to military decision making.
- d. ESR-4: SENSOR AND WEAPON SYSTEMS - Gain a solid understanding of the scientific, mathematical and engineering principles behind existing and future military systems. Understand the elements that impact sensor system performance. Understand the principles behind existing and emerging sensor technologies, including radar, sonar, electro-optical sensors, and other sensors. Understand the technologies underlying weapons systems, and the principles that guide successful integration of weapons and sensors with platforms.
- e. ESR-5: INFORMATION SYSTEMS TECHNOLOGY: Develop knowledge of information systems technology including computer systems; computer networks and communications systems; software engineering; and data base management. Demonstrate awareness of the capabilities, limitations, design and operation, and vulnerabilities of information systems to include cyber interface integration. Understand the concepts of defensive and offensive Information Warfare.
- f. ESR-6: INDEPENDENT STUDY: Each student must demonstrate the ability to conduct independent and team oriented research and analysis on problems that link technical solutions to tactical problems, and to present the results in writing and oral briefings. A substantive project report or thesis will be required of all students.

g. ESR-7: DEPARTMENT OF DEFENSE RESOURCE ALLOCATION: Develop a working knowledge of resource allocation within the Department of Defense including the PPBE, JCIDS, and Acquisition processes. It is imperative that students understand the key issues regarding the scheduling of budget delivery to, and the related interface with Congress, as well as the critical milestones involved in development of the President's Budget. In addition, a working knowledge of the interfaces between PPBE, JCIDS and Acquisition is necessary to gain an appreciation for the synergies and disconnects between these three processes - and in particular to understanding the manner in which they impact warfighting acquisition programs.

Approved: 

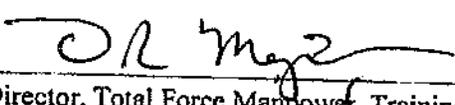
President, Naval Postgraduate School

20 Jan 2017
Date

Approved: 

Deputy Chief of Naval Operation for Warfare
Integration (OPNAV N9I)

11 JAN 17
Date

Approved: 

Director, Total Force Manpower, Training, and
Education Requirements (OPNAV N12)

31 JAN 2017
Date