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Operations Analysis - Energy Specialty

OPERATIONS ANALYSIS – ENERGY SPECIALTY

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Brief Overview

Operations Analysis (OA) is the development and application of mathematical models, statistical analyses, simulations, analytical reasoning, and common sense to the improvement of real-world operations. Practitioners are called on to advise military and civilian decision makers on the allocation of scarce resources, the selection of new equipment and processes, and the optimal deployment of given resources to achieve required missions. The OA curriculum was founded by the Navy in 1951, in order to retain, develop, and promulgate the methods that were used so successfully in World War II.

The Energy Option applies targeted education in Energy technology and policy with the discipline of OA to enable the graduate to focus on Energy related analysis concerning such issues as:

- Development and implementation of cost-effective energy technology programs throughout DON and DOD
- Strengths and weaknesses as well as cost and logistics implications of new energy technical proposals, and the analysis of alternatives which recognize the potential impact on DOD/DON programs and objectives
- Risk assessment and impact analysis for platforms, systems and equipment that produce or consume energy
- Energy systems in operations and logistics problem solving, and cost analysis efforts specifically as they relate to existing and proposed DON/DOD Energy programs
- Evaluating the utility of Energy systems, technology, and programs currently employed by DON/DOD

Mathematics, probability, statistics, economics, human factors, and optimization supply the theoretical background for analyzing alternative choices in tactical and strategic warfare, and in planning, budgeting, and procurement of systems and forces. The student learns computational methods and develops skills to identify relevant information, formulate decision criteria, and select alternatives. This education enhances performance in all duties throughout a military career including operational billets, technical management assignments, and policy-making positions.

Requirements for Entry
A baccalaureate degree with above-average grades is required. Completion of mathematics through single variable differential and integral calculus with above-average grades is considered minimal preparation. Students without these quantitative prerequisites will be accepted in cases where their undergraduate records indicate that they are exceptional students and there are other indicators of potential. An academic profile code (APC) of 325 is required. Waivers may be obtained

with a one-quarter refresher.

Entry Date
Operations Analysis (Energy Option) is a seven-quarter course of study (eight quarters including JPME) with an entry date in September. If required, students attend a one-quarter mathematics “refresher” prior to entering the OA curriculum. This refresher sequence begins in July for the September start dates. If further information is needed, contact the Academic Associate or the Program Officer for this curriculum.

Degree
Requirements for the Master of Science degree are met en route to satisfying the Educational Skill Requirements of the curricular program as well as Service Intermediate-level PME and Phase I Joint PME credit.

Master of Science in Operations Research – Energy Specialty

The Master of Science in Operations Research – Energy Specialty degree requires:

- Completion of a minimum of 40 quarter-hours of graduate-level courses with:
  - At least 20 quarter-hours of 4000 level courses, of which at least 16 are OA.
  - An elective sequence approved by the Chairman, Department of Operations Research.
- Submission of an acceptable energy-related thesis on a subject previously approved by the Chairman, Department of Operations Research.

Subspecialty

Completion of this curriculum qualifies an officer as an Operations Analysis Subspecialist with a subspecialty code of 3213P and JPME Phase I education certification for students whose orders include the extra quarter for JPME. The community manager for the OA subspecialty and major area sponsor of the curriculum is the Director of the Chief of Naval Operations, Assessment Division (OPNAV N81). The subject matter expert for the Energy Option is OPNAV N45, the Director of the Chief of Naval Operations Energy and Environmental Readiness Division.

Typical Course of Study (Energy Option)

Quarter 0 (Refresher)

MA1113	(4-0)	Single Variable Calculus
MA1114	(4-0)	Single Variable Calculus II
MA1025	(4-0)	Introduction to Mathematical Reasoning
OA1600	(2-2)	Introduction to Operations Analysis I
EN3000	(2-0)	Defense Energy Seminar

Quarter 1

MA3042	(4-0)	Linear Algebra
MA1118	(4-0)	Multivariable Calculus
OA3101	(4-1)	Probability
OA2801	(4-1)	Computational Methods for Operations Research
EN3000	(2-0)	Defense Energy Seminar

Quarter 2

OA3201	(4-0)	Linear Programming
OA3102	(4-2)	Statistics
OA3301	(4-0)	Stochastic Models I
PHXXXX	(V-V)	Energy S&T Basics
EN3000	(2-0)	Defense Energy Seminar

Quarter 3

OA4202	(4-0)	Network Flows and Graphs
OA3103	(4.1)	Data Analysis
OA3302	(4-0)	Simulation Modeling
GBXXXX	(V-V)	Energy Economics
EN3000	(2-0)	Defense Energy Seminar

Quarter 4

OA4201	(4-0)	Nonlinear Programming
OA4106	(3-1)	Advanced Data Analysis
OA4333	(4-0)	Simulation Analysis
OS3007	(4-0)	Energy Analysis
EN3000	(2-0)	Defense Energy Seminar

Quarter 5

OA4655	(4-0)	Introduction to Joint Combat Modeling
OA4801	(3-2)	Spreadsheet Modeling for Operations Research
OA3900	(2-0)	OA Energy Experience Tour (3 weeks)
NSXXXX	(V-V)	Energy Strategy & Policy
EN3000	(2-0)	Defense Energy Seminar

Quarter 6

OA3304	(4-0)	Decision Theory
OA4702	(4-0)	Cost Estimation
	(V-V)	JPME
OA0810	(0-8)	Energy Thesis Research
EN3000	(2-0)	Defense Energy Seminar

Quarter 7

	(V-V)	JPME
	(V-V)	JPME
OA4301	(4-0)	Stochastic Models II

OA0810	(0-8)	Energy Thesis Research
EN3000	(2-0)	Defense Energy Seminar

Quarter 8

OA4602	(4-0)	Joint Campaign Analysis
OA4656	(4-0) (V-V)	Advanced Combat Modeling JPME
OA0810	(0-8)	Energy Thesis Research
EN3000	(2-0)	Defense Energy Seminar

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