Systems Engineering Distance Learning Education Summit
8 June 2022
by
Dr. Wally Owen
Associate Chair for Distributed Programs & Outreach
Dr. Warren Vaneman
Dep Associate Chair for Marketing, Outreach & Engagement

Monterey, California
WWW.NPS.EDU
Welcome to the June Education Summit

- NPS Systems Engineering Program Overview
  - Degree Programs
  - Stackable Certificates
- Fall AY 2023 Program Offerings.
• For organizations with a strategic vision to provide world-class systems engineering, systems integration and systems engineering management services
• Recognized as a leader in field of distance learning (DL)
• Each DL course offer as one continuous (3) hour web-conferencing session one day per week (times/days vary)
• All web-conferencing sessions are recorded
• Typical certificate program offered as one course per quarter (4 total) consecutively over four quarters
• Typical degree program offered as two courses per quarter (16 total) over eight consecutive quarters or as four stackable certificates
• All SE and SEM programs accredited by WASC and MSSE degree also accredited by ABET
Distance Learning Implementation

• Collaborative Learning Environment
  – Sakai web-based courseware

• Multiple Teaching Types for DL Education
  – Synchronous/Asynchronous Web Browser Based
    • Zoom for Gov and/or MS Teams used for teaching synchronously
      – Video, Voice, Chat, Desktop Sharing
    • Sakai used for teaching asynchronously

• SE Computer Lab Available Worldwide

• NPS Library Resources Available Worldwide
  – Books, Journals, Databases all on-line
Degree Program Overview

- **311** – Master’s Degree in Systems Engineering with various technical focus
- **711** - Systems Engineering Management- Systems Integrated Development Master's Degree
- **721** - Joint Executive Systems Engineering Management (SEM-PD21) Masters Degree Program
- **722** - Systems Engineering Management Master’s Degree with a focus of System Program Management
- **582** - PhD in Systems Engineering
Stackable Certificate Overview

• The SE Department has partitioned its DL program offerings into stackable certificates

• Stackable certificates enhances the value proposition:
  – Sponsors can fund only those academic certificates for which they have an immediate need
  – Students will be able to earn a MS degree by stacking together academic certificates

• Supports Navy advanced education strategic plan and the new Engineering & Technical Management (ETM) functional area competency framework
  – Offers a customization approach to provide systems engineering and systems engineering management advanced education options for workforce development
  – Provides a graduate degree path for students that have earned certificates from other departments or schools
SE offers DL graduate certificates and degree programs that are tailorable to sponsors and their students.

Stackable certificates can meet master’s degree curricula requirements leading to MSSE, MSES or MSSEM degrees.

Certificates are identified by tiers and are typically taken in sequence but may vary by certificate.

Each tier certificate can be tailored dependent on the ultimate curricula (311 or 711) and degree desired.

<table>
<thead>
<tr>
<th>Tier I</th>
<th>Tier II</th>
<th>Tier III</th>
<th>Tier IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>SE Fund Cert</td>
<td>SE/SEM Core Cert</td>
<td>SE/SEM Domain Cert</td>
<td>SE/SEM Cap Cert</td>
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<tr>
<td>4 Courses</td>
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<td>4 Courses</td>
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</table>
SE Stackable Certificates

**Tier I**
- 282 Systems Engineering (Fundamentals)
  - Commences every AQ

**Fundamentals**

**Tier II**
- 131 Systems Capability & Design (SE Core)
  - Commences every AQ
- 171 Systems Integrated Development (SEM Core)
  - Commences Winter, Spring, Summer AQ

**SE/SEM Core**

**Tier IV**
- 130 SE Capstone
  - Commences every AQ
- 170 SEM Capstone
  - Summer 2023, Winter 2024, Summer 2024

**SE Advanced**
SE Stackable Certificates

- 132 System of Systems Engineering
  - Fall AY 2023, Winter 2023, Fall AQ 2024
- 133 Model-based Systems Engineering
  - Winter 2023, Summer 2023, Spring 2024
- 134 Aviation Systems
  - Spring 2023
- 135 Systems Test & Evaluation
  - Spring 2024
- 136 Directed Energy Systems
- 137 System Safety Engineering
  - Summer 2024
- 138 Digital Engineering
  - Summer 2023
- 172 Systems Technology & Advancement
  - Summer 2023, Winter 2024, Summer 2024
- 173 System Program Management (in approval process)
  - Winter 2023, Fall AY 2024
- 174 Systems Engineering and Integration for Naval Weapon Systems
  - Winter 2024
- 232 Lead Systems Integration
- 242 Reliability & Maintainability Engineering
  - Summer AQ 2024
Systems Engineering Non-Resident Master’s Degree, System of Systems Focus

Commencing Tuesday, 27 September 2022

Program Delivered via Distance Learning

Sponsor Code: Open Enrollment (311-231O)

Application Deadline: 5 July 2022

<table>
<thead>
<tr>
<th>Qtr</th>
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<tbody>
<tr>
<td>1</td>
<td>AY23/Fall</td>
<td>SE3100 Fundamentals of Systems Engineering</td>
<td>OS3180 Probability &amp; Statistics for SE</td>
</tr>
<tr>
<td>2</td>
<td>AY23/Winter</td>
<td>SI3400 Fundamentals of Engineering Project Mgmt</td>
<td>SE3250 Capability Engineering</td>
</tr>
<tr>
<td>3</td>
<td>AY23/Spring</td>
<td>SE3302 System Suitability</td>
<td>SE3011 Engineering Economics &amp; Cost Estimation</td>
</tr>
<tr>
<td>4</td>
<td>AY23/Summer</td>
<td>SE4012 Mgmt of Advanced System Engineering</td>
<td>SE4150 Systems Architecting &amp; Design</td>
</tr>
<tr>
<td>5</td>
<td>AY24/Fall</td>
<td>SE3411 SoS Program Def &amp; Concept Development</td>
<td>SE4151 System Integration &amp; Development</td>
</tr>
<tr>
<td>6</td>
<td>AY24/Winter</td>
<td>SE3910 System Evolution &amp; Technology Assessment</td>
<td>SE3201 Engineering Systems Conceptualization</td>
</tr>
<tr>
<td>7</td>
<td>AY24/Spring</td>
<td>SE4930 Model-Based Systems Engineering</td>
<td>SE3202 Engineering Systems Design</td>
</tr>
<tr>
<td>8</td>
<td>AY24/Summer</td>
<td>SE4950 System of Systems Engineering</td>
<td>SE3203 Eng Systems Implementation &amp; Operation</td>
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</tbody>
</table>
Systems and Program Management Master's Degree Commencing Tuesday, 27 September 2022
Program Delivered via Distance Learning
Sponsor Code: Open Enrollment (722-231P)

<table>
<thead>
<tr>
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<th>Course Title</th>
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<tr>
<td>1</td>
<td>SE3100 Fundamentals of Systems Engineering</td>
<td>OS311 Probability &amp; Statistics for HSI</td>
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<tr>
<td>2</td>
<td>SI3400 Fundamentals of Engineering Project Mgmt</td>
<td>SE3050 Intro to Digital Engineering</td>
</tr>
<tr>
<td>3</td>
<td>SE3302 Systems Suitability</td>
<td>SE3011 Engineering Econ &amp; Cost Est</td>
</tr>
<tr>
<td>4</td>
<td>SE4012 Mgmt of Advanced System Engineering</td>
<td>SE3351 Human Factors in Systems Design</td>
</tr>
<tr>
<td>5</td>
<td>SE3910 Systems Evolution &amp; Technology Assessment</td>
<td>MN 3303 Contracting</td>
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<tr>
<td>6</td>
<td>SE4420 Modeling &amp; Simulation in Acquisition</td>
<td>CY3201- Foundations of Cyberspace Operations</td>
</tr>
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<td>7</td>
<td>SE4520 System Manufacturing, Dev &amp; Production</td>
<td>SE3211- SE Management Capstone I</td>
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<tr>
<td>8</td>
<td>SE4354 Verification and Validation</td>
<td>SE3212- SE Management Capstone II</td>
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</table>

Application Deadline: 5 July 2022
SEM-PD21 2022-2024 CLASS (COHORT 721-231O)

Naval Postgraduate School

ANNOUNCEMENT FOR APPLICATIONS
FOR SEPTEMBER 2022-2024 CLASS (COHORT 721-231O)

Joint Executive Systems Engineering Management (SEM)

An Executive Graduate Education Program for Defense
Offered in partnership with MIT’s “Educational Consortium for Product Development Leadership in the 21st Century” (PD21)

Application Deadline: 5 July 2022
On-Campus Orientation Commences: 12 September 2022
# Systems Engineering Certificate with Advanced Systems Engineering Focus

**Commencing Tuesday, 27 September 2022**

*Program Delivered via Distance Learning*

Sponsor Code: Open Enrollment (282-231O)

## Course Lineup

<table>
<thead>
<tr>
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<th>Year/Quarter</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>AY23/Fall</td>
<td>SE3100 Fundamentals of Systems Engineering (3-2)</td>
</tr>
<tr>
<td>2</td>
<td>AY23/Winter</td>
<td>SI3400 Fundamentals of Engineering Project Management (3-2)</td>
</tr>
<tr>
<td>3</td>
<td>AY23/Spring</td>
<td>SE3302 System Suitability (3-2)</td>
</tr>
<tr>
<td>4</td>
<td>AY23/Summer</td>
<td>SE4012 Management of Advanced Systems Engineering (3-0)</td>
</tr>
</tbody>
</table>

Application Deadline: 5 July 2022
# Systems Capability and Design Certificate

**Commencing Thursday, 29 September 2022**

*Program Delivered via Distance Learning*

**Sponsor Code:** OPEN Enrollment (131-231O)

## Course Lineup

<table>
<thead>
<tr>
<th>Qtr</th>
<th>Year/Quarter</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>1</td>
<td>AY23/Fall</td>
<td>OS3180 Probability and Statistics for Systems Engineering (4-1)</td>
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<tr>
<td>2</td>
<td>AY23/Winter</td>
<td>SE3250 Capability Engineering (3-2)</td>
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<tr>
<td>3</td>
<td>AY23/Spring</td>
<td>SE3011 Engineering Economics and Cost Estimation (3-0)</td>
</tr>
<tr>
<td>4</td>
<td>AY23/Summer</td>
<td>SE4150 System Architecture and Design (3-2)</td>
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</table>

**Application Deadline: 5 July 2022**
Systems of Systems Engineering Certificate
Commencing Tuesday, 27 September 2022
Program Delivered via Distance Learning
Sponsor Code: OPEN Enrollment (132-231O)

<table>
<thead>
<tr>
<th>Qtr</th>
<th>Year/Quarter</th>
<th>Course Title</th>
<th>Prerequisite: SE certificate (282) or equivalent</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>AY23/Fall</td>
<td>SE3411 SoS Program Definition &amp; Concept Development (3-2)</td>
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</tr>
<tr>
<td>2</td>
<td>AY23/Winter</td>
<td>SE3910 Systems Evolution &amp; Technology Development (4-0)</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>AY23/Spring</td>
<td>SE4930 Model-Based Systems Engineering (3-2)</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>AY23/Summer</td>
<td>SE4950 Systems of Systems Engineering (4-0)</td>
<td></td>
</tr>
</tbody>
</table>

Application Deadline: 5 July 2022
Systems Engineering Capstone Certificate
Commencing Thursday, 29 September 2022
Program Delivered via Distance Learning
Sponsor Code: OPEN Enrollment (130-231O)

Course Lineup

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<tr>
<th>Qtr</th>
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<th>Course Title</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>AY23/Fall</td>
<td>SE4151 Systems Development &amp; Integration (3-2)</td>
</tr>
<tr>
<td>2</td>
<td>AY23/Winter</td>
<td>SE3201 Engineering Systems Conceptualization (2-4)</td>
</tr>
<tr>
<td>3</td>
<td>AY23/Spring</td>
<td>SE3202 Engineering Systems Design (2-4)</td>
</tr>
<tr>
<td>4</td>
<td>AY23/Summer</td>
<td>SE3203 Engineering Systems Implementation &amp; Operations (2-4)</td>
</tr>
</tbody>
</table>

Application Deadline: 5 July 2022
Looking Ahead to Winter 2023

• **Degree Programs**
  – **311-232O** – Master’s Degree in Systems Engineering with a focus on Systems Engineering Integration of Naval Weapon Systems or System Program Management
  – **711-232P** - Systems Engineering Management Master’s Degree with a focus of System Program Management

• **Certificate Programs**
  – **282-232O** - Systems Engineering Certificate with Combat Systems Focus
  – **131-232O** - Systems Capability and Design Certificate
  – **171-232P** – Systems Integrated Development
  – **133-232O** – Model-Based Systems Engineering
  – **173-232P** – Systems Program Management Certificate
  – **130-231O** - Systems Engineering Capstone Certificate

**Winter Application Deadline: 26 September 2022**
**Winter Classes Commence during the Week of 2 January 2023**
Open enrollment rate: AY23 open enrollment tuition rate is $2,750 per student per course w/o books. If NPS is expected to provide books then add $250 fixed fee per course for the duration of program. Tuition rate applies to all SE certificate, master’s degree and PhD programs. Tuition is required for any student enrolled in a course as of the first day of class.

Full sponsorship tiered fixed-price rate: Two tiered fixed-price options are offered to sponsors who make significant enrollment commitments. These options are offered as a result of reduced direct and variable costs associated with the commitments.

Cohort Pricing: The rate is $2,200 per student per course w/o books. Organization commits to sponsor and fund an entire cohort of a minimum of 25 seats (not to exceed 30 per cohort) in a DL program and agrees to assume student attrition below the fixed-price floor of $55K. It is recommended that commands start with more than 25 students to minimize impacts of student attrition. If student enrollment drops to 24 or below, the price remains fixed at $55K per course for the cohort for duration of the program.

Partner Pricing: The rate is $2,200 per student per course w/o books. Organization commits to sponsor and fund 50 or more seats across all DL programs. It is recommended that commands closely monitor the overall quarterly enrollment numbers to keep them at or above 50 seats. Should the student enrollment drop to 49 or below in any particular quarter, tuition will be fixed at the 50 seat rate. The command can then opt to revert back to open enrollment pricing or sponsor additional DL students in upcoming programs.

Short Courses: Various 1-3 day SE subject short courses are available not for graduate credit. The fixed price with book or handouts for 1-day is $15K, 2-day is $25K and 3-day is $30K for up to 25 seats. Special arrangements: NPS prides itself on being responsive to the needs of the Department of Defense. Any organization requesting additional program features or other special arrangements should contact the Associate Chair DPO to negotiate pricing.
People to Know

• Chair, SE Department: Oleg Yakimenko – oayakime@nps.edu
  – 831-656-2826
• Associate Chair DPO: Wally Owen - wowen@nps.edu
  – Distance Learning, Director of Programs and Business
  – 831-402-6086
• Dep Assoc Chair MOE: Warren Vaneman - wvaneman@nps.edu
  – Distance Learning, Program Manager
  – 571-364-5126
• Education Technician: Heather Hahn - hlhahn@nps.edu
  – Academic administrative support for students and sponsors
  – 831-915-9581
• GEAC Student Support: - GEACStudCoord@nps.edu
  – Program support for students
  – 831-656-3579

What to Expect from Us: Availability, Help, Advice, Action
## Stackable Certificate 311 Design

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>1</td>
<td></td>
<td>Fundamentals of Systems Engineering</td>
<td>Probability and Statistics for SE Capability Engineering</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>System Suitability</td>
<td>Systems Architecture and Design</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>SE CERT Focus Course and/or SE CERT Focus Course and/or</td>
<td>Systems Integration and Development</td>
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<tr>
<td>5</td>
<td></td>
<td>SE Domain Specialty Track</td>
<td>SE Capstone Project - I</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>SE Domain Specialty Track</td>
<td>SE Capstone Project - II</td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>SE Domain Specialty Track</td>
<td>SE Capstone Project - III</td>
</tr>
<tr>
<td>8</td>
<td></td>
<td>SE Domain Specialty Track</td>
<td></td>
</tr>
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</table>

### Tier I
- SE Certificate

### Tier II
- SE Core Certificate

### Tier III
- SE Domain Certificate

### Tier IV
- SE Capstone
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<td>Fundamentals of Systems Engineering</td>
<td>Intro to Digital Engineering with Model-Based Systems Engineering</td>
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<td>Probability and Statistics for HSI</td>
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<td>Engineering Economics and Cost Estimation</td>
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<td>SE CERT Focus Course and/or</td>
<td>Human Factors in Systems Design</td>
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<td>5</td>
<td></td>
<td>SEM Domain Specialty Track</td>
<td>Risk Analysis &amp; Management of Engineering Systems</td>
</tr>
<tr>
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<td></td>
<td>SEM Domain Specialty Track</td>
<td>Modeling &amp; Simulation in Acquisition</td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>SEM Domain Specialty Track</td>
<td>SEM Capstone Project- I</td>
</tr>
<tr>
<td>8</td>
<td></td>
<td>SEM Domain Specialty Track</td>
<td>SEM Capstone Project- II</td>
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Tier I
- SE Certificate
- Tier II
- SEM Core Certificate
- Tier III
- SEM Domain Certificate
- Tier IV
- SEM Capstone