FREQUENTLY ASKED QUESTIONS

HOW DOES THIS CERTIFICATE PROGRAM HELP ME?

Completion of the Signal Processing (SP) Certificate Program provides you with the skills and tools needed to analyze and process digital information in domains such as communications, networking, video, imaging, underwater, and audio applications.

WHAT ARE THE PREREQUISITES?

- Acceptance by the ECE Department. Process requires a sufficient background in mathematics and technical undergraduate studies. Applicants with a BSEE degree will usually satisfy the requirements.

- Command/Company Endorsement.

IS THERE A SERVICE COMMITMENT?

There is no service commitment associated with the SP Certificate Program.

WHO IS ELIGIBLE?

Applicants with a US government affiliation, government laboratory engineers, active or reserve military personnel, Navy civilians, current NPS resident students, and a limited number of contractors sponsored by Department of Defense (DOD) organizations.

CONTACT INFORMATION

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For more information on the ECE department, go to:

www.nps.edu/ece

For more information on other NPS DL programs, go to:

www.nps.edu/dl

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Center for Educational
Design, Development, and Distribution
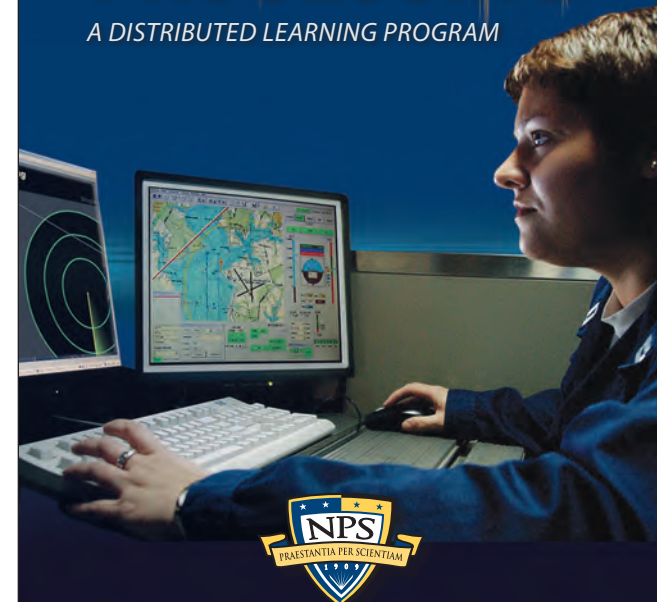*411 Dyer Rd., Knox 120, Monterey, CA 93943*

DEPARTMENT OF
ELECTRICAL and COMPUTER ENGINEERING

GRADUATE CERTIFICATE PROGRAM IN

SIGNAL PROCESSING

A DISTRIBUTED LEARNING PROGRAM

NPS
PRAESTANTIA PER SCIENTIAM

NAVAL POSTGRADUATE SCHOOL

SIGNAL PROCESSING GRADUATE CERTIFICATE

THE PROGRAM

The Naval Postgraduate School (NPS) offers a 4-graduate-course certificate program in Signal Processing (SP).

THE SP CERTIFICATE PROGRAM:

- Provides a solid engineering foundation covering concepts needed to analyze and process digital information via a mixture of instruction and computer-based experiments.

- Exposes students to current practices and standards, emerging trends and developments integral to modern SP-based applications.

Credits from courses completed through the SP Certificate Program can be applied towards a Masters Degree in the ECE Department at NPS.

Time Frequency Music Signal Characteristics
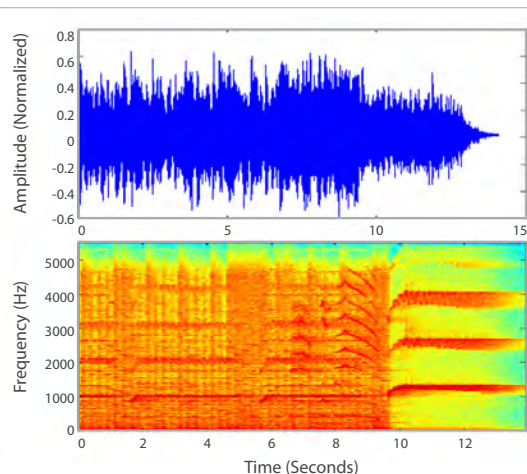
THE CURRICULUM

EC3400 Digital Signal Processing (3-1)
Topics include spectral estimation using FFT, fast convolution, signal compression by DCT, filter design and implementation, multirate signal processing. Computer-based projects consider applications to audio signals and communications.

EC3410 Discrete Time Random Signals (3-2)
Fundamentals of random processes are developed and illustrated with applications in areas such as communications, system identification, equalization, image recognition. Parameter estimation concepts are introduced, and impact of uncertainty in parameter evaluation are presented. Wiener and matched filters are introduced.

EC4440 Statistical Digital Signal Processing (3-2)
Methods are developed for processing random signals through statistical data analysis and modeling. Techniques presented are applied to various engineering problems such as communications, system identification, forecasting, and equalization.

EC SP Specialization Course (variable hours)
Take one of the following list of SP applications courses: Machine Learning for Signal Analytics (EC3460), Special Topics in Signal Processing (EC3940), Multimedia Information & Communications (EC4430), Sonar Systems Engineering (EC4450), Image Processing & Recognition (EC4480), DSP for Wireless Applications (EC4910), Advanced Topics in Signal Processing (EC4400).

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THE OUTCOMES

Upon completion of the Signal Processing Certificate Program, students will have the cognitive skills and abilities required to:

- Analyze a signal in the frequency domain using FFT algorithms and spectral information.

- Analyze and design FIR and IIR filters using computer aided techniques.

- Create efficient multirate implementations for real-time applications.

- Analyze and design Weiner optimal filters and matched filters and apply them in applications involving detection, estimation, prediction, channel equalization and system identification.

- Design and implement basic LMS and RLS adaptive filtering schemes and apply them to communications and estimation problems.

- Analyze signals using autoregressive and moving average (AR, MA, ARMA) models.

- Apply signal processing concepts to one of the following areas: sonar, video/audio/data communications, networking, image processing, wireless systems, machine learning, or other current SP related topics of interest to the engineering community.

Chebyshev Type II Lowpass Filter Response