



## APL's Role in Education: Guest Editor's Introduction

James L. Teesdale

**M**ost issues of the *Johns Hopkins APL Technical Digest* are devoted to technical articles describing the engineering, research, and development work of the Laboratory. As a departure, this issue focuses on the three major components of APL's important role in education. First, as a division of The Johns Hopkins University, one element of APL's purpose is to support the education mission of the academic divisions. Through a long-standing partnership with the Whiting School of Engineering, APL contributes significantly to its graduate engineering programs. Second, from the time the Laboratory was established, it was recognized that in order to attract high-quality staff members and to ensure their continued ability to solve complex technical problems, a strong system of educational programs was essential. Third, in keeping with APL's commitment to public service, it is dedicated to encouraging students to pursue careers in science and engineering. The articles in this issue of the *Digest* describe the programs that address each of these components of APL's role in education.

In the first article, Dr. Nicholas Jones, Dean of the Whiting School, provides his vision for the school and how collaborations such as the partnerships with APL contribute to achieving the school's mission.

Next, Dr. John Sommerer, APL's Director for Science and Technology and Chief Technology Officer, and Dr. Marc Donohue, Associate Dean for Research at the Whiting School, discuss some of the more recent collaborations between the two divisions, including research initiatives and joint appointments.

The most significant collaborative activity between the Whiting School and APL is through the Engineering and Applied Science Programs for Professionals (EPP), which provides graduate programs for working scientists and engineers and is one of the largest such programs in the nation. Eight of the master's degree programs offered are managed by APL staff members who are appointed by the Dean of Engineering. The article by Dr. Allan Bjerkaas, Associate Dean for EPP, provides an overview of these programs, a description of the Whiting School/APL partnership, and the strategic plan and goals for the future. The next article describes the APL Education Center, which is the embodiment of the Laboratory's 40+ years of collaboration with the University's academic divisions.

The following six articles describe the eight EPP master's degree programs based at APL, including their history, curricula, faculty, students, and trends:

- Applied Biomedical Engineering, by Program Chair Dr. Russell McCally. This program complements the research and development activities of APL that are conducted in collaboration with the JHU School of Medicine and the Whiting School.
- Applied and Computational Mathematics, by Program Chair Dr. James Spall. Beginning as the Numerical Science program in 1966, this program has undergone significant changes during the past 6 years, focusing on mathematical and computational techniques of fundamental importance and practical relevance.
- Applied Physics, by Program Chair Dr. Harry Charles. Dating back to the mid-1960s, this cross-disciplinary program has continued to evolve in response to the needs of students and their employers.
- Computer Science and Information Systems and Technology, by Dr. Ralph Semmel, Program Chair; Dr. Robert Grossman, Program Vice Chair; John Piorkowski, Coordinator for Information Systems and Technology; and Dr. Eleanor Chlan, Special Student Advisor. Since the early 1970s, the Computer Science program has attracted the largest enrollments of the EPP offerings. To address the needs of a broader range of students requiring a more applied program, the Information Systems and Technology degree was introduced in 1997.
- Electrical and Computer Engineering, by Program Chair Dr. M. Lee Edwards and Vice Chair Dr. Dexter Smith. As the first program offered through the APL Education Center beginning in 1964, this has remained one of the most popular. It includes a rich spectrum of courses and many areas in which students can concentrate their studies.
- Technical Management and Systems Engineering, by Program Chair Dr. Alexander Kossiakoff and Vice Chair Dr. Samuel Seymour. The Technical Management program was conceived and created under the leadership of Dr. Kossiakoff (deceased, August 2005), the former Director of APL. More recently, Systems Engineering, which had been a concentration area, emerged as a stand-alone degree program.

The next series of articles focuses on APL staff and community educational development activities. The first two discuss programs designed to meet the needs of Laboratory staff members. B. Kenneth Estabrook, Supervisor of APL's Training and Development function, describes the Laboratory's programs designed to ensure that APL staff members have the knowledge, skills, and experiences needed to meet the Laboratory's business objectives.

Mentoring programs have been recognized as valuable in maintaining an environment that encourages staff development, innovation, and productivity. The article by Timothy Fry and Karen Shaffer Penny describes the implementation of these programs at APL, including the general framework of the programs, how they have been customized to meet the needs of specific APL departments, and their impact to date.

APL's culture of public service carries over to serving the community by offering programs and activities to promote interest in science and engineering. It has been well documented that our country faces a crisis as a result of the increasing demand for technically educated people and the declining number of students pursuing such careers. The following articles describe some of the APL initiatives to combat this crisis: "Diversity Focuses on the Future" by Gwendolyn Boyd, "Mentoring at APL" by M. Constance Finney, and "From the Sun to Pluto: Inspiring the Next Generation of Explorers" by Kerri Beisser.

One of the longest-standing educational activities at the Laboratory is the APL Colloquium, which started in 1947. This weekly lecture series covers an eclectic range of topics and is open to the public. Dr. David Silver's article highlights the history of the series and provides detailed information on the lectures presented over the past 17 years.

The Laboratory has been very successful in addressing the three components of its role in education as illustrated by the articles included in this publication. The challenge for continued success is great, but with the strong leadership of the University and the talent and dedication of the APL staff, the future is bright.

## THE AUTHOR

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