

Systems and Information Engineering at U.Va.

Highly interdisciplinary in nature, systems and information engineering is aimed at improving the performance of systems formed of multiple, heterogeneous components. Through the proper identification and modeling of problems and deficiencies — followed by the careful implementation of solutions — systems engineers **improve the performance of complex systems**. In so doing, systems engineers use methodologies from the fields of operations research, statistical modeling and data mining, human computer interaction and risk analysis. Their work is **applicable to a wide variety of disciplines**, including industrial sectors, such as transportation, telecommunications, energy, finance and aerospace, as well as government initiatives, such as homeland security, national defense, health care and the environment.

Part of the University of Virginia School of Engineering and Applied Science, the Department of Systems and Information Engineering is one of the finest programs of its kind in the U.S., as determined by the Accreditation Board for Engineering and Technology (ABET), which awarded the department an Engineering Program Innovation Award. Named as an outstanding educator by the Boeing Company in 2001 for its potential to **“develop leaders prepared to shape the future,”** the department frequently engages in K–12 outreach activities in addition to meeting the high demand for its undergraduate and graduate programs. The department offers Bachelor of Science, Master of Science, Master of Engineering and Ph.D. degrees in systems and information engineering, with an Accelerated Master’s Program available to working professionals. Students throughout the University may also earn a minor in systems and information engineering through the department.

Snapshot

At the U.Va. Department of Systems and Information Engineering ...

- Nearly 300 undergraduate students are majoring in systems and information engineering
- Approximately 85 graduate students are earning master’s and Ph.D. degrees in systems and information engineering
- More than 20 faculty members teach, yielding an undergraduate student:faculty ratio of approximately 15:1

THORNTON HALL



UNIVERSITY of VIRGINIA
ENGINEERING

Department of Systems and Information Engineering
School of Engineering and Applied Science
University of Virginia
P.O. Box 400747
Charlottesville, VA 22904-4747

www.sys.virginia.edu
www.seas.virginia.edu
434.924.5393
siedept@virginia.edu

Department of

Systems and Information Engineering
at the U.Va. School of Engineering and Applied Science



Educating
Leaders



In the U.Va. Systems and Information Engineering Department, we bring people and technology together to enhance the productivity and effectiveness of organizations and processes.

Our Students

At the U.Va. Department of Systems and Information Engineering, our students are exposed to a wide range of topics within the field, including the economic, environmental, managerial, technical and political aspects of large-scale systems design and implementation. Our **flexible academic curricula and hands-on research opportunities** prepare our undergraduate and graduate students for successful careers in a multitude of disciplines.

Our undergraduate curriculum prepares our students to be **well-rounded leaders in society**. In addition to their core systems coursework, students pursue a specific focus of their choosing among biomedical systems, communication systems, control systems, economic systems, energy and environmental systems, financial systems, human factors, intelligent transportation systems, management systems and mathematical systems. In addition, students may choose among several technical and unrestricted electives within and outside of the department. Our fourth-year capstone design experience provides students with the opportunity to synthesize their knowledge through a two-semester real-world project.

Our graduate students benefit from a **comprehensive systems engineering curriculum**, which entails fundamental and advanced courses, independent research,



participation in systems engineering colloquia and involvement in the intellectual life of the University. Graduate students seeking Master of Science, Master of Engineering and Ph.D. degrees focus their research in one of five intersecting research groups in the department, namely: computational statistics and simulation, human factors, optimization and control, risk analysis and systems integration. Designed specifically for technical professionals and managers, the Accelerated Master's Degree in systems and information engineering places dual emphasis on **engineering and business skills** and is earned in just 11 months; degree candidates attend courses every other Friday and Saturday with no career interruption.

Our Research

Our faculty and students are completing **innovative and collaborative research**. Through renowned research programs such as the U.Va. Center for Risk Management of Engineering Systems and the Wireless Internet Center for Advanced Technology, they complete research in the following specific areas and more:

Mobile ad hoc networks, data mining, integrated watershed management, crime analysis,
geographic information systems and remote sensing applications,
health care delivery, stochastic control,
infrastructure systems in developing countries,
spatial-temporal data analysis and pattern recognition,
manufacturing, synthetic vision displays,
decentralized algorithms for large-scale system optimization,
economic regulations of network industries,
transportation systems,
safety-critical systems,
wireless communications,
game theory
and artificial intelligence-based automation

