

Electrical Engineering Signals & Systems

MSc Programme



Electronics are increasingly being integrated into everyday items and everyday life. Chips, sensors and antennas can be found in consumer electronics products, communication devices and sophisticated equipment for science and industry. These include portable audio players, mobile phones, home appliances and cars, radar systems, and medical systems. Electrical engineers who specialise in signals & systems design and develop electronic systems over a wide range of applications.

Degree	Master of Science
Starts	September
Type	full-time
Credits	120 ECTS, 24 months
Language	English
Application deadline	1 April (International BSc degree) 1 July (Bridging programme*) 1 September (Dutch BSc degree)
Tuition fee	€ 18.750 (non-EU) € 2.168 (EU)
Scholarships	scholarships.tudelft.nl

Signal analysis and processing plays an important role in integrated electronic systems, being crucial to the acquisition of signals and the extraction and interpretation of the information that the signals are presumed to carry.

Signal processing is also used to interpret the nature of physical processes based on the observation of either a signal or the manner in which the process alters the characteristics of a signal.

Programme

In the MSc track Signals and Systems, you will be trained to develop and apply theory and algorithms in the broad field of signal processing and system design. The programme offers you the possibility to specialise more specifically in any of several particular aspects of signal processing, including multimedia, communications, biomedical, remote sensing & radar systems and for control systems. The programme starts by providing you with a solid foundation and in the second semester you will learn about parameter estimation and detection.

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First Year (60 EC)			
1 st quarter	2 nd quarter	3 rd quarter	4 th quarter
Profile Orientation & Academic Skills		Systems Engineering	
Core courses (common core and track specific core)	Core courses	Core courses	Core courses
		Specialisation courses	Specialisation courses
Specialisation courses	Specialisation courses	Free elective courses	Free elective courses
Second Year (60 EC)			
1 st quarter	2 nd quarter	3 rd quarter	4 th quarter
Specialisation courses	Graduation project (45 EC)		
Free elective courses			

For more information on all courses, please visit: www.studyguide.tudelft.nl

Specialisations

When selecting courses and a graduation project, you can choose out of the following specialisations.

Audio and Acoustic Signal Processing

focuses on such topics as multimedia data compression, audio/speech processing, distributed signal processing, and signal processing for sensor networks. The research and coursework cover a broad scope of theory and algorithms in signal processing and information theory.

Signal Processing for Communications

focuses on such topics as statistical signal processing, array processing and distributed signal processing. It provides a wide range of computational tools and algorithms. Applications are related to wireless communications, underwater communication and sensor networks, as well as to large sensor arrays for radio astronomy and geophysics.

Biomedical Signal Processing focuses on signal processing for the acquisition, modelling, analysis and processing of biomedical signals. These can be natural signals from the body – as with signals measured in the heart or brain (EEG, ECG) – or multichannel signals from imaging systems (e.g. ultrasound, MRI or photoacoustic imaging).

Signal Processing for Remote

Sensing and Radar Systems focuses on microwave system design, analogue and

digital processing of microwave signals, signal processing for typical remote sensing applications (antenna array pattern synthesis; space-time adaptive signal processing in ultra-wideband arrays; detection and feature extraction; tracking and navigation; classification, and imaging) that are performed at either a single node or at a distributed sensing.

Systems and Control focuses on the development of mathematical models of complex dynamic systems, as well as on the use of these models to optimise/control their behaviour in feed-forward and feedback configurations. The strength of feedback control rests in its capacity for dealing with uncertainty. This makes it possible to design low complexity controllers for achieving high performance in controlled complex systems.

Master's Thesis

Graduation work can be done either at Delft University, or in industry and other (international) universities. Some examples of graduation projects are:

- Speech enhancement for improving speech intelligibility for hearing impaired people
- Detection and tracking of multiple targets in a distributed active sensor system
- ECoG signal analysis for the early detection and prevention of an epileptic insult
- Distributed control of the next generation of Extreme Large Telescopes

Career perspective



Companies

Philips, ASML, NXP, TNO, ASTRON, Ericsson, Siemens



Positions

Excellent foundation for careers in research, development and consultancy, as well as for commercial and management positions