Ottawa-Carleton Institute for Electrical Engineering

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The Institute

Director of the Institute: G.M. Karam

Established in 1983, the Institute combines the research strengths and resources of the Departments of Electronics and of Systems and Computer Engineering at Carleton University and the Department of Electrical Engineering at the University of Ottawa. Programs leading to master's and Ph.D. degrees are available through the Institute in a wide range of fields of electrical engineering. Graduate students may pursue their research on either university campus, depending upon the choice of supervisor. Registration will be at the university most appropriate to the student's program of studies and research.

Requests for information and applications for admission should be sent to the Director of the Institute.

Members of the Institute

The home department of each member is indicated by (OE) for the Department of Electrical Engineering, University of Ottawa; (CE) for the Department of Electronics, Carleton University; (SCE) for the Department of Systems and Computer Engineering, Carleton University.

T.A. Aboulnasr, *Digital Signal Processing, Applications in Communications* (OE)

N.U. Ahmed, Systems Theory, Optimal Control, Filtering and Identification with Applications to Spacecraft, Optical Networks and Artifical Hearts (OE)

S.A.H. Aly,* Signal Processing, Digital Transmission (SCE)

Prakash Bhartia,* *Microwaves, Antennas, Instrumentation* (OE)

A.R. Boothroyd,* *Solid State Devices, ICs, CAD* (CE)

R.J.A. Buhr, Software Design, Real-Time and Distributed Systems, Object-Oriented Design (SCE) G.D. Boudreau,* Digital Communications, Efficient Coding,

Spread

Spec-

* Adjunct Professor, Adjunct Research Professor

trum Communication (OE) R.J.C. Bultitude,* Digital Radio, Propagation, Mobile and Portable Radio Systems (SCE), C.H. Chan, VLSI Circuits, Systems (CE) J.W. Chinneck, Computer Modelling, Operations Research, Applied Optimization (SCE) J.-Y. Chouinard, Mobile Communications, Wireless and Mobile Communications, Modulation and Coding, Cryptography (OE) Jacek Chrostowski,* Photonics, Sensors (OE) D.C. Coll, Telecommunications and Computers, Image Processing (SCE) M.A. Copeland, ICs, Analog Signal Processing, CAD, Digital Radio (CE) G.I. Costache, Electromagnetic Interference and Compatibility (OE) S.R. Das, Digital Circuits, Fault-Tolerant Computing (OE) N.W. Dawes,* Artificial Intelligence, Pattern Recognition, Diagnosis (SCE) M.S. El-Tanany, Mobile and Portable Communications, Digital Signal Processing, Synchronization (SCE) D.D. Falconer, Digital Communications, Signal Processing, Mobile and Portable Digital Communications (SCE) P.A. Galko, Digital Communications, Optical Communications (OE) N.D. Georganas, Multimedia Communications, Computer Communications (OE) D.T. Gibbons, Digital and Biomedical Electronics, *Computer Engineering* (OE) K.R. Goheen, Controls, CAD/CAM/CIM (SCE) M.C. Goldberg,* Image Processing, Image Communications (OE) R.A. Goubran, Audio Signal Processing, Digital Systems Design, Adaptive Systems (SCE) T.A. Gulliver, Communications, Spread Spectrum, Digital Algebraic Coding Theory (SCE) H.M. Hafez, Wireless Communications, Neural Networks (SCE) R.G. Harrison, Microwaves, Non-linear Processes (CE) W.J.R. Hoefer,* CAD/CAM of Microwave and Millimeter-Wave Circuits, Numerical Methods, Electromagnetic Modelling (OE) Dan Ionescu, Computers, Artificial Intelligence, Image Processing, Discrete Event and Real-Time Systems (OE) G.M. Karam, Software Engineering, Concurrent Systems, Logic Programing (SCE)

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Ahmed Karmouch, *Multimedia Communications*, *Multimedia Real-Time Distributed Information Systems and Databases* (OE)

Satish Kashiap,* *Electromagnetic Compatibility, Electromagnetic Pulse, High Power Microwaves, Electromagnetic Analysis* (OE)

Mohsen Kavehrad, Digital Communications, Optical Communications and Networking, Mobile and Portable Communications (OE)

A.R. Kaye, Broadband ISDN, Computer Networks, High-Speed Networks, Network Management (SCE) J.P. Knight, Logic Design, Computer-Aided IC Design, VLSI Testing (CE)

Moshe Krieger, Real-Time System Design, Microprocessor-Based Systems, Software Engineering, Computer Architecture (OE)

T.A. Kwasniewski, Digital and Analog Signal Processing, Microprocessors (CE)

Ioannis Lambadaris, *Computer Networks* (SCE) M.C. Lefebvre, *Computer-Aided I.C. Design*, *VLSI Design* (CE)

J.H. Lodge,* *Mobile Communications, Modulation, Channel Coding, Multiple Access* (OE)

S.A. Mahmoud, *Mobile and Portable Communication Systems, Communication Network Protocol* (SCE)

Shikaresh Majumdar, Parallel and Distributed Systems, Operating Systems, Performance Evaluation (SCE) L.S. Marshall,* Software Engineering, Software Validation and Formal Specification Tools (SCE) W.F. McGee,* Communications, Circuits, Digital Signal Processing (OE)

J.W. Miernik,* *Telecommunications Traffic Engineering, Simulation and Modelling of Traffic* (SCE)

L.R. Morris, DSP, Microcomputers, Speech and Image Processing, Computer Architecture(SCE) H.T. Mouftah,* Computer Communications (OE)

M.S. Nakhla, Computer-Aided Engineering, Simulation and Optimization (CE)

M.M. Ney, *Electromagnetic Engineering*, *Microwaves*, *Numerical Modelling* (OE)

R.J-F. Normandin,* *Photonics* (CE) Abdellatif Obaid,* *Specification, Design and*

Verfication of Communication Protocols (SCE) M.D. O'Riain,* Biomedical Engineering (OE)

L. Orozco-Barbosa,* *Computer Architecture, Communication Networks and Performance Evaluation* (OE)

Bernard Pagurek, *Network Fault Management, Artifical Intelligence, Diagnosis* (SCE) Sethuraman Panchanathan, *Computer Engineering,*

Video Compression, Image Processing, Parallel Processing (OE) Panayota Papantoni-Kozakas, Communication Theory, Computer Communication Networks,

Neural Networks, Statistical Interference (OE)

R.D. Peacock,* *Artifical Intelligence* (SCE) D.C. Petriu, *Performance Evaluation, Software*

Engineering, Database Systems (SCE)

E.M. Petriu, *Robotics, Sensing and Perception, Neural Networks* (OE)

Calvin Plett, Analog I.C. Design (CE)

J.S. Riordon, *Mobile Communication Systems*, *Distributed Databases* (SCE)

J.A. Rolia, Software Performance, Queuing Networks, Petri-Nets, Performability (SCE)

H.M. Schwartz, Robotics, Controls (SCE)

A.U.H. Sheikh, Universal Telecommunications Systems, Data Communication, Digital Signal Processing (SCE)

T.J. Smy, Semiconductor Devices and Transducers, IC Technology (CE)

W.M. Snelgrove, Analog Signal Processing, VLSI (CE) W.J.D. Steenaart,* Digital Communications, Digital Signal Processing, Array Realization and

Application (OE)

P.C. Strickland,* Antennas, Microwaves (CE) S.S. Stuchly,* Microwaves, Antennas, Instrumenta-

tion (OE) B.A. Syrett, Microwave Integrated Circuits, Optical

Interconnects (CE)

N.G. Tarr, Solid State Devices, IC Fabrication (CE) R.E. Thomas,* Solid State Technology, Solar Energy (CE)

P.D. van der Puije, *Circuit Synthesis, Biomedical Engineering* (CE)

D.J. Walkey, Simulation and Modelling of Submicron MOS and Bipolar VLSI Devices (CE)

J.S. Wight, Radar, Spread Spectrum and Navigation Systems, Microwave Circuits, Antennas,

Synchronizers, Phase-Locked Circuits (CE)

C.M. Woodside, Computer Performance, Queuing, Distributed System Design (SCE)

O.W. Yang, Computer Communications, Broadband Networks, Performance Evaluation, Network Interconnection, Queuing Theory (OE)

Tet Yeap, Neural Networks, Parallel Computer Architectures, VLSI, Digital Systems and Control (OE)

Abbas Yongaçoglu, Digital Communications Coding and Modulation, Spread Spectrum Systems (OE) Q.J. Zhang, CAD for VLSI, Optimization (CE)

Master's Degree

Admission Requirements

The normal requirement for admission to a master's program is a bachelor's degree with at least high

honours standing in electrical engineering or a related discipline.

Program Requirements

The requirements for course work are specified in terms of credits: one credit = one hour/week for one term. Subject to the approval of the departmental chair, a student may take up to half of the course credits in the program in other disciplines (e.g., Mathematics, Computer Science, Physics). At the University of Ottawa, master's programs with a thesis earn the Master of Applied Science degree, while other master's programs earn the Master of Engineering degree. At Carleton University, all master's programs earn the Master of Engineering degree.

Master's Degree by Thesis

- eighteen course credits plus thesis
- Master's Degree by Course Work
- twenty seven course credits plus a project (nominally six credits)

*Cooperative Master's Degree by Thesis*eighteen course credits plus a thesis

Cooperative Master's Degree by Course Work

• twenty four course credits plus two projects (each conducted in one work term)

Participation in the cooperative master's program is subject to acceptance by a suitable sponsoring organization.

Doctor of Philosophy

Admission Requirements

The normal requirements for admission into the Ph.D. program is a master's degree with thesis in electrical engineering or a related discipline.

Program Requirements

The requirements for course work are specified in terms of credits: one credit = one hour/week for one term. Subject to the approval of the advisory committee, a student may take up to half of the course credits in the program in other disciplines (e.g., Mathematics, Computer Science, Physics).

- A minimum of fourteen course credits
- A comprehensive examination involving written and oral examinations and a written thesis proposal, to take place before the end of the fourth term of registration
- A thesis which must be defended at an oral examination

Graduate Courses

In all programs, the student may choose graduate courses from either university with the approval of the adviser or advisory committee. Course descriptions may be found in the departmental section of the calendar. All courses are of one term duration. Only a selection of courses listed is given in a particular academic year. The following codes identify the department offering the course.

Carleton University

94	Department of Systems and Computer
	Engineering

97 Department of Electronics

University of Ottawa

92 Department of Electrical Engineering The CSI designation refers to the Department of Computer Science at the University of Ottawa. The ELG designation refers to the Department of Electrical Engineering at the University of Ottawa.