DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING

NOTICE RE: PROJECTED GRADUATE ASSISTANT (GA) POSITIONS FOR

WINTER TERM 2027

In accordance with Article 13:01 of the CUPE_4580_collective_agreement, the Department of Electrical and Computer Engineering invites applications for the following projected GA positions for Winter term 2027.

Projected positions and hours are subject to change and contingent on sufficient enrolment and final budgetary approval. The duration of all positions is from January 4, 2027, to April 30, 2027.

Course # and course name	Course Description	E = Essential Qualifications P = Preferred Qualifications	Projected # of GAs & # of hours per position
GENG 1201: Cornerstone Desing Dr. Muscedere	The engineering design process: problem formulation, functional requirements and constraints, competitive evaluation and areas of improvement, conceptual design through ideation sketches, selection of design, communication of the design solution, prototype construction, testing, iteration, reporting. Includes group work to develop personal, teamwork, leadership, and task completion skills as part of the design process. (Prerequisite: GENG- 1102. Open only to Engineering students.) (4.5 hours weekly.)	E - Background in Arduino and C++ programming E – GA's must have previously taken GENG-1201 – Cornerstone Design or have experience with Arduino programming, writing instructions and reports, and making presentations, in English). GA's must be proficient in comprehending and composing written English as well as communicating orally in English. Must be available during class labs/tutorials, to help with the hands-on activity and assessment of projects. P - knowledge to maintain and repair the ELEGOO Smart Robot Car Kits	1 GA for 140 hrs
GENG 1202: Introductory Electrical and Computer Engineering Dr. Emadi	This course introduces the fundamentals of electrical and computer engineering, including introductory selected topics on circuit elements and analysis, semiconductor devices, optical devices, sensors, electric motors, operational amplifiers, and logic gates. (Open only to students in Engineering)	E - Familiar with all electrical instruments and equipment in a circuit lab E - Familiar with electrical components such as charge storing elements, photoresistors, op-amps, transistors, diodes, sensors, and DC motors Has prior knowledge of circuit analysis E - must be familiar with all circuit lab equipment and tools and all electrical components. This includes but not limited to Oscilloscopes, DC power supplies, function generators, Multimeters, Resistors, Capacitors, OpAmps and instrumentational amplifiers, DC motors, Sensors, RF systems, Solar cells, etc. E - must be available and physically in Windsor, ON, Canada for the entire duration of the semester from beginning of January till end of April. P – Previously taken or GA'd the course	14 GA for 140 hrs each
GENG 8010: Engineering Mathematics TBA	The course will cover topics in advanced modern engineering mathematics not addressed in earlier courses and considered to be crucial for more advanced engineering courses at the graduate level. These topics include matrix and numerical analysis, advanced topics in calculus and their application to engineering design problems, and optimization. In particular tools for computer-based system modelling, analysis and engineering design will addressed. (Open to Masters of Engineering students, excluding students in the MEng Auto Program. Open to engineering MaSc/PhD students on permission	E - Strong background in mathematics. Mainly differential equations and linear algebra. P - Previously taken or GA'd the course P - Familiar with Brigtspace	1 GA for 70 hrs

	of the department/faculty as a qualifying course only. Will not count for credit towards MASc/PhD degree.)		
GENG 8030: Computational Methods & Modeling for Engineering Applications TBA	This course covers the basics of computational analysis for real-world engineering applications. Students will learn the fundamentals of programming and modeling with MATLAB. Topics include: Computational Methods, Model Building, for Engineering Projects, Hardware for Real-time Testing, Data Acquisition from Sensors. Students will complete a real-world project in the areas of their interests.	P - Previously taken or GA'd the course	1 GA for 70 hrs
ELEC 2170: Digital Logic Design TBA	Boolean algebra and logic gates; simplification of Boolean functions; arithmetic operations; analysis and design of combinatorial logic circuits with SSI, MSI, and LSI; sequential logic components; registers; counters and memory units; analysis and synthesis of sequential synchronous and asynchronous networks. (Co-requisites: MATH-2780 and MATH-2790) (3 lecture, 2 Laboratory/tutorial hours or equivalent a week.)	P - Previously taken or GA'd the course	5 GA for 140 hrs each
ELEC 2200: Circuit Analysis II Dr. C. Chen	Sinusoidal steady-state analysis; complex power in single and three-phase systems; magnetically coupled circuits; circuit analysis in the s-domain; frequency response; two-port networks; and computer-aided analysis and design. (3 lecture, 3.0 laboratory/tutorial hours a week.) (Prerequisite: ELEC-2140.)	P - Previously taken or GA'd the course	5 GA for 140 hrs each
ELEC 2260: Electronics I TBA	Classification of signals; introduction to diodes; rectifier circuits, Zener diode, limiting and clamping circuits; Op amp amplifier configurations, Op amp distortion, non ideal op amp performance; active filters, Tow-Thomas Biquad; Introduction to data converters; oscillators; super-diodes; pulse generation. (Prerequisites: MATH-2780 and MATH-2790) (3 lecture, 1.5 laboratory hours and 1.5 tutorial hours a week.)	E - Strong understanding of Electronics E- Capable of analog testing and measurement, understanding instrumentation and measurement equipment limitation, and expertise in troubleshooting analog circuits E - Circuit Assembly and Testing: Ability to build and test circuits using breadboards, diodes, opamps, resistors, capacitors, and other components. E - Proficiency with Lab Equipment: Competence in using multimeters, oscilloscopes, signal generators, and power supplies to measure voltage, current, and other parameters. E - Understanding of Circuit Theory: Solid grasp of basic electronics theory, including the behaviour of circuit elements in different configurations (e.g., rectifiers, clippers, clamping circuits) and operational amplifiers (e.g., inverting, non-inverting amplifiers). E - Troubleshooting Skills: Ability to diagnose and resolve issues in lab experiments, such as incorrect wiring, faulty components, or unexpected measurement results. E - Knowledge of Simulation Tools: Familiarity with circuit simulation software (e.g., LTSpice, Multisim) to assist students in verifying theoretical designs and predicting circuit behaviour. E - Safety Awareness: Knowledge of lab safety protocols, especially concerning the handling of electrical equipment and power supplies and	5 GA for 140 hrs each

		preventing short circuits. E - Effective Communication: Explaining concepts clearly to students and providing guidance during lab sessions. E - Patience and Attention to Detail: Precision in setting up experiments and guiding students through detailed steps, ensuring that they understand	
ELEC 2280: Electromagnetic Fields Dr. Rashidzadeh	Static electric fields; Coulomb's law, Gauss's law and its applications; electric potential; dielectrics; boundary conditions; capacitance; resistance; steady electric currents, current density, boundary condition for current density, equation of continuity and Kirchhoff's law; power dissipation; static magnetic fields; Biot-Savart's law, Ampere's law; vector magnetic potential; magnetic dipole; magnetic circuits; boundary conditions for magnetic fields; magnetic forces and torque; induction current. (Prerequisites: MATH-2780 and MATH-2790) (3 lecture, 2 laboratory/tutorial hours or equivalent a week.)	P - Previously taken or GA'd the course	5 GA for 140 hrs each
ELEC 2320: Software Fundamentals TBA	This course covers basics of programming with C++and topics include: Introduction to C++ Programming, Control Statements, Functions, Recursion, Arrays and Vectors, Pointers, Object-Oriented Programming, Classes, Operator Overloading, Templates, Inheritance, Polymorphism and File Processing (3 lecture, 2 lab/tutorial hours a week).	P - Previously taken or GA'd the course	5 GA for 140 hrs each
ELEC 4000A: Capstone Design Project Dr. Muscedere	Team based design project satisfying the "CAPSTONE DESIGN PROJECT REQUIREMENTS", available from the Department of Electrical and Computer Engineering. Gives the student significant design experience and builds on the knowledge and skills acquired in earlier course work. Provides an exposure to teamwork so as to emulate a typical professional design environment. Computers are to be used both in the execution of the design methodology and the management of the design project. (Prerequisites: completion of all Electrical Engineering courses from 1st year, 2nd year and 3rd year.) (2 lecture/4 laboratory hours per week; that must be completed over two consecutive winter and summer terms.) 2 semester course. Topics on ethics for engineers will be covered in the winter term, and topics on laws for engineers will be covered in the summer term during lectures. (This is an experiential learning course.)	P - Previously taken or GA'd the course	4 GA for 140 hrs each
ELEC 4310: Control Systems II Dr. X. Chen	Stability and performance analysis in frequency domain; lead-lag control design in frequency domain; elementary observer and control design in state space; z- transformation and z-plane analysis; direct and indirect discrete-time control design; implementation of digital	E-rich experience with Matlab/Simulink and Quanser Inverted Pendulum Equipment P - Good knowledge of Undergraduate Control Coure P - Previously taken or GA'd the course	4 GA for 140 hrs each

	control. (Prerequisites: completion of all Electrical Engineering courses from 1st year, 2nd year and 3rd year.) (3 lecture, 1.5 laboratory hours and 1.5 tutorial hours a week.)		
ELEC 4350: Microelectromechanical Systems (Cross-listed with ELEC 8900-43) Dr. Chowdhury	MicroElectroMechanical System (MEMS) technology overview and design process; microfabrication and process integration; lumped element modeling; 3-D finite element modeling; energy conserving transducers (electrostatics); linear and nonlinear system dynamics; elasticity, stress, strain, material properties; structure analysis, beams, plates; MEMS sensing and actuation; material case studies; MEMS design methodology; device modeling. (Prerequisites: completion of all Electrical Engineering courses from 1st year, 2nd year and 3rd year.) (3 lecture, 2 laboratory/tutorial hours or equivalent a week.)	E - Requires skills on 3D finite element analysis P - Previously taken or GA'd the course	1 GA for 70 hrs
ELEC 4360: Computer Communications Dr. H. Wu	Protocols and architecture; data transmission; data encoding; interfacing; data link control; multiplexing, ISO reference model; wide-area networks; circuit switching; packet switching; ATM and frame relay; LAN technology and systems; internet protocols; inter-network operation; transport protocols; network security. (Prerequisites: completion of all Electrical Engineering courses from 1st year, 2nd year and 3rd year.) (3 lecture, 2 laboratory/tutorial hours or equivalent a week.)	P - Previously taken or GA'd the course	1 GA for 140 hrs
ELEC 4440: Analog integrated Circuit (Cross-listed with ELEC 8900-89) Dr. C. Chen	Bipolar and Metal-Oxide-Semiconductor Field-Effect Transistors (MOSFET) technology; device characterization; analog circuit modelling; current sinks, sources, and mirrors; differential pairs; current and voltage amplifiers; differential amplifiers; comparators; operational amplifiers; A/D and D/A converters; Integrated Circuit (IC) implementation with Electronic Design Automation (EDA) tools. (Prerequisites: completion of all Electrical Engineering courses from 1st year, 2nd year and 3rd year.) (3 lecture, 3 laboratory/tutorial hours or equivalent a week.)	P - Previously taken or GA'd the course	1 GA for 70 hrs
ELEC 4450: Power Electronics (New) TBA	Power diodes; thyristors; power Metal-Oxide-Semiconductor Field-Effect Transistors (MOSFET); Insulated-Gate Bipolar Transistors (IGBT); controlled rectifiers; DC-DC converters; inverters; AC-AC converters; gate drive circuits; motor drives; r computer simulation of power electronics and motor drives. (Prerequisites: completion of all Electrical Engineering courses from 1st year, 2nd year and 3rd year.) (3 lecture, 2 laboratory/tutorial hours or equivalent a week.)	P - Previously taken or GA'd the course	1 GA for 70 hrs
ELEC 4480: Digital Computer Architecture (New) TBA	Computer Organization and architecture (32 bit); computer abstraction; reduced instruction set; high level to assembler level language translation; pipelinable instruction set	P - Previously taken or GA'd the course	1 GA for 70 hrs

	architectures; speculation and branch prediction; instruction level parallelism; memory hierarchies, and virtual memory; secondary storage and I/O; multithreading, multicore, multiple CPU, and clustering; Graphics Processing Unit (GPU). (Prerequisites: completion of all Electrical Engineering courses from 1st year, 2nd year and 3rd year.) (3 lecture, 3 laboratory/tutorial hours a week.)		
ELEC 4500: Power Systems I (Cross-listed with ELEC 8900-52) Dr. Azzouz	Principles of operation, modeling and analysis of electric power systems; complex power, phasors and per-unit system; three-phase circuits; power transformer and generator modeling; transmission line parameters; steady-state operation of transmission lines; network matrices and power flow analysis; introduction to alternative energy sources. (Prerequisites: completion of all Electrical Engineering courses from 1st year, 2nd year and 3rd year) (3 lecture, 2 laboratory/tutorial hours or equivalent a week.)	P - Previously taken or GA'd the course	3 GA for 140 hrs each
ELEC 4570: Fundamentals of Digital Signal Processing Dr. Abdel-Raheem	Discrete time signals and systems models and analysis; Z-transform; discrete Fourier transform (DFT); FFT algorithms; FIR filter design; IIR filter design; stability; realization; hardware and software implementations; digital signal processing applications. (Prerequisites: completion of all Electrical Engineering courses from 1st year, 2nd year and 3rd year.) (3 lecture, 2 laboratory/tutorial hours or equivalent a week.)	E - Previous experience in Digital Signal Processing P - Previously taken or GA'd the course	4 GA for 140 hrs each
ELEC 8250: 2-Dimenstional Digital Signal Processing Dr. Ahmadi	Fundamentals of 2-D Signals and Transforms; Z, Fourier, discrete Fourier, etc., 2-D FFT, Design Techniques for 2-D FIR and IIR Digital Filters using Transformation and Optimization Techniques. Stability and Stabilization of 2-D Filters, Homomorphic Filtering, Reconstruction of Signals from their Projections. Prerequisite: Graduate Student Status. (3 lecture hours a week.)	P - Previously taken or GA'd the course	1 GA for 70 hrs
ELEC 8510: Advanced Digital Signal Processing Dr. Ahmadi	Review of discrete-time systems and digital filters. Multirate systems including decimatots, interpolators, polyphase decomposition, Nyquist filters, two-channel, and M-channel filter banks. Adaptive equalization including equalization techniques for digital receivers, linear and non-linear equalizers, adaptive algorithms, and blind equalization. Analysis of finite wordlength effects including coefficient quantization, arithmetic round-off errors, dynamic range scaling, and low-sensitivity digital filter structures. (3 lecture hours per week.). Prerequisite: Graduate Student Status.	P - Previously taken or GA'd the course	1 GA for 70 hrs
ELEC 8520: Advanced Topics in Microelectromechanical Systems (MEMS) Dr. Chowdhury	Review of advanced topics related to the theory and modeling of MEMS design and fabrication techniques. Topics to be covered include: advanced micromachining techniques, smart	P - Previously taken or GA'd the course	1 GA for 70 hrs

	microelectromechanical sensing and actuation techniques, microfluidics, photonic MEMS, advanced materials, device modeling, MEMS design case studies, system integration, micropackaging, MEMS design methodology, and reliability issues related to MEMS devices. Emphasis is on theory, lumped element modeling, 3-D multi-domain finite element analysis, static and dynamic device behavior study using industry standard MEMS modeling tools, simulation of fabrication processes using actual fabrication process parameters, and design verification. Prerequisite: Graduate Student Status. (3 lecture hours per week.)		
ELEC 8660: Data Security and Cryptography Dr. H. Wu	This is an introductory course on the techniques, algorithms, architectures and tools of data security and cryptography. Firstly, the theoretical aspects of data security and cryptographic algorithms and protocols are reviewed. Then we show how these techniques can be integrated to provide solutions to particular data and communication security problems. This course contents are of use to computer and communication engineers who are interested in embedding security services into an information system, and thus, providing integrity, confidentiality and authenticity of the data and the communicating parties. Main contents: classical cryptography techniques; mathematical foundations; secret key cryptography; public key cryptography; authentication and digital signature; network cryptographic protocols. Prerequisite: Graduate Student Status. (3 lecture hours a week.) (Credit cannot be obtained for both 88-565 and if taken as a Special Topics course.)	P - Have Taken the course and received grade of 77% or higher Good in mathematics and Programming P - Previously taken or GA'd the course	1 GA for 70 hrs
ELEC 8900-83: Robust and Optimal Control Dr. X. Chen		P - Previously taken or GA'd the course	1 GA for 70 hrs

Refer to the timetable (www.uwindsor.ca/registrar/timetable-information) for class and exam hours and location.

EXPECTED GA DUTIES:

Projected duties are in accordance with article 15:03.

Assistants cannot commence their GA/TA duties until email confirmation of the approval of their Job Offer is received from Human Resources (email titled "Authorization to Commence GA/TA Duties", article 13:05).

GA employees are expected to make themselves available to report for all assigned duties, **both in-person/on-campus and remote/online duties**. Most classes across the University are held face-to-face on campus, and even online classes may require on-campus face-to-face duties.

ELIGIBILITY REQUIREMENTS:

Successful applicants must be available to attend at the specified time of the course/lab/exams as well as to report for all assigned duties, which may include both in-person/on-campus and remote/online duties.

GA appointments will be offered to qualified applicants in accordance with the CUPE4580 Collective Agreement.
To be eligible for employment as a Graduate Assistant in the term of support you must be a **registered fulltime graduate student**:

- must be registered for the term of work at the time of hiring
- must maintain **fulltime** registration throughout the term and must be in good standing in the degree program
- must be legally eligible to work in Canada on campus with a valid social insurance number. International students must hold a valid study permit and meet all IRCC regulations to accept employment on campus.

GA appointments cannot exceed **140 hours total for the Fall term period (Jan. 4tht to Apr. 30th).** Refer to Articles 13, 14, and 15 of the CUPE 4580 Collective Agreement for eligibility details.

Note: graduate students who have received a Graduate Assistantship Offer ("*An offer of employment as a Graduate Assistant with a commitment of future terms of support under Article 14:01 (a) and (b).")* **must apply each term** until they have received all terms of support specified under Article 14:01 (a) or 14:01 (b).

Refer to Article 14 of the CUPE 4580 Collective Agreement for details and eligibility. Failure to meet the eligibility conditions in the CUPE 4580 Collective Agreement will result in the forfeiture of the term(s) of support.

> **Article 14:02**:*" Financial support, as outlined in 14:01, shall continue, if the Graduate Assistant:*
> *a) maintains full-time registration in good standing in the degree program; and*
> *b) applies for posted positions; and*
> *c) is satisfactorily performing the duties required.*
>
> *Failure to meet these eligibility conditions will result in the forfeiture of the term(s) of support."*

REQUIRED ESSENTIAL QUALIFICATIONS:

Successful applicants must meet all essential qualifications identified in the course table above.

Applicants must also be geographically available to visit regularly the University of Windsor campus in person throughout the entire duration of the GA appointment (January 4 until April 30). All GA appointments are expected to have in-person duties that require regular on campus attendance.

How to apply:
Application forms are available from the following webpage: Assistantship | Electrical and Computer Engineering (ECE)

Completed applications must be submitted to: Danielle Haskell, Graduate Secretary at gradece@uwindsor.ca
For any questions please contact: gradece@uwindsor.ca

Deadline for receiving applications: Monday, November 16th at 8:30am

The university is committed to equity and supports diversity in its teaching, learning, and work environments. In pursuit of the University's Employment Equity Plan, members from the designated groups (Women, Aboriginal Peoples, Visible Minorities, Persons with Disabilities, and Sexual Minorities) are encouraged to apply and to self-identify.

If you need an accommodation for any part of the application and hiring process, please notify the Recruitment & Workforce Coordinator (employment@uwindsor.ca). Should you require further information on accommodation, please visit the website of the Office of Human Rights, Conflict Resolution and Mediation (OHCRM).

Date posted: Monday November 2nd, 2026