March 24, 2022

FACULTY OF ENGINEERING
MECHANICAL, AUTOMOTIVE & MATERIALS ENGINEERING

NOTICE RE GRADUATE ASSISTANT (GA) POSITIONS AVAILABLE
FOR Summer 2022

In accordance with Article 12:01 of the CUPE 4580 Collective Agreement, the Department of Mechanical, Automotive & Materials Engineering invites applications for GA positions for the Summer 2022 term. The total number of Graduate Assistantships allocated to MAME for 2022-2023 (S22, F22, W23) is 200. It is anticipated that 60 GA positions for 140 hours each will be required for Summer 2022, subject to final budgetary approval and sufficient enrolment.

List of courses that may utilize Graduate Assistants for Summer 2022 which will run from May 9, 2022 – August 31, 2022:
Students CANNOT serve as the GA for a course they are also registered in.

Expected GA duties

It is expected that all Courses in the Faculty of Engineering will be held face-to-face on campus. GA employees must be available to report for all assigned duties both remote and face-to-face on-campus duties. The University of Windsor health and safety protocols and public health and safety regulations that are in place will be observed. Please refer to the University's Return to campus webpage (www.uwindsor.ca/returntocampus) for details about the policies that are in effect.

Students cannot commence their GA/TA duties until email confirmation of the approval of their contract is received from Human Resources.

Course # and Name	Course Description	Essential Required Skills	Projected # of GAs
ELEC-4490-60/ Sensors and Visions Systems			0.5
GENG-1190-01/ Technical Communications	The Technical Communications course focuses on teaching Engineering students effective oral and written communication techniques and approaches to improve their clarity and comprehensiveness when communicating to a variety of audiences.	Fluent in English both written and oral communication is required. Must have previously taken the course, or similar, with a minimum GPA of 80%. Will be expected to attend classes, proctor, marking and provide feedback to students	0.5
GENG-1200-01/ Engineering Thermofluids	Introductory thermodynamics, fluid mechanics, and heat transfer. Terminology and units; sources of and types of energy and their interchange; types of fluid flow and heat transfer; physical and thermal properties of fluids. Solution of basic problems using laws of thermofluids; exploration of common thermofluid systems. Includes demonstrations and laboratory-based experiments. (Prior knowledge from GENG-1110 or PHYS-1400 is recommended.) (3 lecture, 2 tutorial/laboratory hours per week)	Strong academic ability in the thermofluids (fluid mechanics, thermodynamics, and heat transfer) areas. Ability to describe complex concepts to students in tutorial setting. Ability to be consistent grader. Previously taken or been a GA for the course is a strong asset. Access to computer with microphone and camera and familiar with Blackboard Collaborate required.	0.5
GENG-4210-01/ Engineering & Society	The technology-society relationship in a historical context; the nature of technological change and its consequences; the engineer's role in the control of technology and sustainable development; the responsibility of engineers for health and safety in the workplace, including OHSA, WHMIS. The development of the engineering profession; professional registration and the code of ethics; the duties and responsibilities of engineers; the engineer and the law. (Restricted to fourth-year students.) (3 lecture hours a week.)	Previously taken or GA'd the course as well as familiarity with Canadian law and Ontario Professional Engineer licensing requirements is preferred	5
GENG-4600-60/ Introduction to Robotics			0.5
GENG-8050-40/ Data Analytics and Decision Making			0.5

Course # and Name	Course Description	Essential Required Skills	Projected # of GAs
INDE-8360-01/MECH-8290-09 Computer-Aided Design (CAD)	This course will focus on computer-aided methods and applications. The lectures present basic and generic principles and tools, supplemented with significant hands-on practice and engineering applications. Various topics are studied and practiced using CAD/CAE software, such as Engineering design and the role of CAD, geometric modelling systems, representation of curves and surfaces, surface modelling, solid modelling and applications, parametric representations, assembly modelling, computer-aided engineering (CAE) and applications, distributed collaborative design, and digital mock-up. (Prerequisite: 91-311 or equivalent.) (2 lecture hours a week and 2 laboratory hours a week.)	Familiar with CAD software such as Solid works or NX required.	0.5
INDE-8360-02/MECH-8290-90 Computer-Aided Design (CAD)	This course will focus on computer-aided methods and applications. The lectures present basic and generic principles and tools, supplemented with significant hands-on practice and engineering applications. Various topics are studied and practiced using CAD/CAE software, such as Engineering design and the role of CAD, geometric modelling systems, representation of curves and surfaces, surface modelling, solid modelling and applications, parametric representations, assembly modelling, computer-aided engineering (CAE) and applications, distributed collaborative design, and digital mock-up. (Prerequisite: 91-311 or equivalent.) (2 lecture hours a week and 2 laboratory hours a week.)	Familiar with CAD software such as Solid works or NX required.	0.5
INDE-8900-01/MECH-8290-01 Robotics Fundamentals and Programming	Robotics Fundamentals & Programing is one of two courses that will be offered (intermediate and advanced). The purpose of this course is to introduce you to basics of modeling, design, planning, and control of robot systems. Topics include coordinate frames and transformations, forward and inverse kinematic solutions to open and closed chain manipulators, the Jacobian, dynamics and control, sensors and actuators. In addition, Global Robotic specifications (GRS) will be introduced at high level 1): Communication control signals device-net safety/ tooling, 2): Robot rules of process processes and limits, rough cycle time rules. 3): Robot Integration and Programming, interference zones. 4): Payload data analysis, Robot duty cycle (joint's servomotor life), in addition students will learn to develop multi robots work-cell construction as an introduction to DM using the Sate of art of true DM work-cell design, Tecnomatix (PS, V13.1a; SIEMENS SW) is used. (MECH-8290-01)	Robotics and industrial automation experiences required. Must be able to attend the Lab, solving problems.	0.5
INDE-8900-30/MECH-8290-74 Production Analysis	Analysis and control of production systems. Demand forecasting. Deterministic and stochastic inventory systems. Aggregate planning and master scheduling. Material requirement planning. Operations sequencing and balancing. Job shop scheduling and control systems. Introduction to group technology and flexible manufacturing systems.	Previously taken or GA'd the course is preferred	1
INDE-8900-33/MECH-8290-83 Product, Mfg Process and Business Integration	The course is aimed towards graduate students, preferably with industrial experience, who want to enhance their strategic leadership skills suitable for needs of global manufacturing enterprises, in particular in their future roles as a system engineer making effective decisions in the product development, manufacturing and market launch. Students will work in diverse teams on term-long projects, which take them through the full product development, manufacturing and business/marketing cycle in the global context. (Cross Listed with 692-590-83= MECH-8290-83)	Previously taken or GA'd the course is preferred	1.5

Course # and Name	Course Description	Essential Required Skills	Projected # of GAs
INDE-8900-34/MECH 8290-34 Lean Manufacturing and Process Improvement	This course looks at the evolution of manufacturing and looks at lean manufacturing and process improvement (including the use of tools to improve quality process using Six Sigma). (692-590-34= MECH-8290-34)	Good understanding of process improvement basics, Lean and Six Sigma as well as Microsoft office/google suit is required. Previously has taken or GA'd this course including working knowledge of Blackboard Management system is preferred.	1.5
INDE-8900-49/MECH-8290-89 Product, Mfg Process and Business Integration	The course is aimed towards graduate students, preferably with industrial experience, who want to enhance their strategic leadership skills suitable for needs of global manufacturing enterprises, in particular in their future roles as a system engineer making effective decisions in the product development, manufacturing and market launch		0.5
INDE-8900-80/MECH-8290-80 Statistical Quality Control	Quality has become one of the most important consumer decision factors in the selection among competing products and services. Understanding and improving quality are key factors leading to business success, growth, and enhanced competitiveness. This course provides comprehensive coverage of the use of modern statistical techniques for quality control and improvement. Statistical techniques are emphasized throughout the course with a strong engineering and management orientation. This course will give special focus on the design of statistical process control systems, acceptance sampling, and process improvement.	Proficient in MiniTab and excel with Sound & working knowledge of basic statistics required. Previously taken the course preferred	1.5
MATL-8802-01/ Phase Transformations	Phenomenological treatment of transformation processes; diffusion controlled and diffusionless (martensitic) transformations; application of thermodynamic and phenomenological rate laws to transformations: nucleation, recrystallization, precipitation, spinoidal decomposition, ordering, eutectoid decomposition, etc. (3 lecture hours a week.)	Previously taken or GA'd the course is preferred	0.5
MATL-8813-01/MECH-4840-08 Tribology: Materials and Manufacturing Aspects	This course will prepare students to perform experimental and analytical work on the materials and manufacturing aspects of tribology. Fundamental equations of wear, wear testing methods; micromechanisms of wear, modeling of surface contacts, frictional heating during sliding contact; tribology of internal combustion engines, friction and wear during machining operations; wear control via surface coatings, coatings for cutting tools. (3 lecture hours a week.)	Previously taken or GA'd the course is preferred	0.5
MATL-8890-06/MECH-8290-06 Failure Analysis	This course is aimed at students who are interested in gaining a basic background in fracture mechanics for mechanical design and material selection. The course starts with an introduction to linear elastic fracture mechanics methods and explain energy and stress intensity-based fracture theories. Stress corrosion cracking and fatigue will be studied. Sub-critical crack growth will be examined and application of fracture mechanics to slow crack growth will be described. Lifetime estimations and damage tolerant design concepts will be covered.	previously taken or GA'd the course is preferred	0.5
MECH-2210-01/ Dynamics	Review of kinetics and kinematics of particles; work-energy and impulse-momentum methods; moments of inertia of areas and masses; kinematics of rigid bodies; plane motion; forces and accelerations for rigid bodies, energy and momentum methods for rigid bodies in plane motion. (Prerequisite: GENG-1110 or PHYS-1400) (3 lecture, 2 tutorial hours a week.)	previously taken/GA'd the course. Studying, at the graduate level, within the Solid Mechanics field	0.5
MECH-3217-01/ Applied Thermodynamics	Ideal gas mixtures and psychrometrics. Reacting mixtures and combustion. Power cycles, refrigeration and heat pump cycles.	Previously taken or GA'd the course is preferred.	3.5

Course # and Name	Course Description	Essential Required Skills	Projected # of GAs
MECH-3220-01/ Fluid Mechanics II	Navier-Stokes equations and some exact solutions, external flows boundary layer over a flat plate, drag forces; turbulent flows in pipes and mixing length theory, flow measurement, compressible flows and introduction to potential flows. (Prerequisite: MECH-3233.) (3 lecture, 2 laboratory/tutorial hours a week.)	Previously taken a course in Fluid Mechanics, Experience working in the lab, running experiments and equipment and gGood communication skills are required	3.5
MECH-3221-01/ Control Theory I	Control system concepts, linear modelling and analysis of response and stability of physical systems, complex variables and Laplace transforms, frequency, and transient response analysis and performance specifications. (Prerequisites: MATH-2780 and MATH-2790.) (3 lecture hours, 1 tutorial hour a week.)	familiarity with electrical, mechanical, fluid dynamics and kinematics modeling; • Familiarity with control theory concepts (state-space systems, Laplace transform, bode plots, PID controllers, stability, accuracy, vibration), familiarity with MATLAB and SIMULIN required. Previously taken or GA's this course or similar course preferred	1.5
MECH-3224-01/ Engineering Measurements	Basic concepts in instrumentation; error analysis; instrumentation and measurement systems including sensors, transducer, signal conditioning and display; microcomputer-based data acquisition and analysis. (Prerequisite: GENG-2220 or STAT-2910.) (3 lecture, 1.5 laboratory/tutorial hours a week.)	Previously taken or GA'd the course is preferred	4
MECH-3228-01/ Heat Transfer	Introduction to the three heat transfer modes: conduction, convection, and radiation. Application of heat exchange equipment.	A Strong background in Heat Transfer, proficiency with the three modes of heat transfer: conduction, convection, and radiation and must be familiar with COMSOL Multiphysics is required.	3
MECH-3430-01/ Automotive Engineering Fundamentals	Overview of primary automotive systems. Engine types and configurations, combustion, emission control, vehicle performance. Powertrain, suspension, frame and chassis. Materials and fabrication issues. Engine and vehicle dissection laboratory. Identification of industry issues and trends. (Prerequisite: Automotive Option students only and Semester 6 or higher standing.) (2 lecture, 3 laboratory hours a week.)	Strong hands on skills and previous experience with engine/machinery disassembly . Ability to be a consistent grader (ideally knowledge of automotive engineering, but not required). Previously taken or been a GA for the course is strong asset.	1
MECH-3670-01/ Aerospace Engineering Fundamentals	History of flight and aircraft evolution. Aircraft operating principles. Airfoil and wing aerodynamics. Aerospace propulsion systems (turbojets, turbofans, turboprops, and rockets). Lab on performance estimation and measurement for a turbojet engine. Aircraft design. Weight estimation. Aircraft systems. Aircraft materials and structures. Governance of aviation in North America. Design studies of aircraft or spacecraft and/or components thereof. (Prerequisites: MATH-2780, MATH-2790, semester 6 or higher standing; and Aerospace option students or permission of instructor.) (Co-requisites: MECH-3217, MECH-3220.)	experience in aerodynamics at the graduate level preferred; strong background in undergraduate aerodynamics and thermodynamics required	0.5
MECH-3830-01/ Materials & Their Properties	The relationship of the engineering properties of materials to their atomic structure, bonding, crystal structure, imperfections and microstructure. The processing of materials to produce required structure and properties. Includes consideration of crystal structure determination, phase diagrams, diffusion, phase transformations, solidification, heat treatment and deformation. The laboratory is a term-long project designed to familiarize students with the use of materials-related equipment commonly found in industrial and research laboratories. (Prerequisite: GENG-2190 and Semester 6 or higher standing.) (3 lecture, 2 laboratory hours a week.)	Graduate students in Materials Engineering Program with background in Metallography sample preparation and familiar with OM, SEM and XRD techniques preferred	0.5

Course # and Name	Course Description	Essential Required Skills	Projected # of GAs
MECH-3831-01/ Thermodynamics and Kinetics of Materials	Thermodynamics: review of First and Second Laws, gas laws, humidity, thermochemistry, entropy, reversible and irreversible processes, equilibrium criteria, Gibbs free energy, activity and activity coefficient, solution thermodynamics, Raoult's and Henry's Laws, Gibbs-Duhem equation, alloy phase equilibria, free energy-composition diagrams, Ellingham diagrams. Kinetics: empirical treatment for homogeneous reaction rates, reaction order and specific rate constant, activation energy, Arrhenius' Law, energy distribution in reacting systems, heterogeneous reactions. Selected problems in materials processing to illustrate theory. (Prerequisites: MECH-3212 and Semester 7 or higher standing.) (3 lecture, 2 laboratory hours a week.)	strong knowledge and background of thermodynamics in materials processing, and practical skills of alloy casting and solidification required.	0.5
MECH-4200-01/ Mechanical Capstone Design	Student design teams, operating within a "company" environment, utilize the broad range of their undergraduate experience in interdisciplinary projects selected to promote interaction between the mechanical, automotive, and materials programs. Design methodologies and team interaction simulate future professional practice. Project milestones include: a design proposal with cost analysis and scheduling, construction and commissioning of the designed appartus, and a final report and presentation having both global and detail completeness. (Prerequisite: Semester 7 or higher standing.) (2 semester course.)	Previously taken or GA'd the course is preferred	4
MECH-4212-01/ Mechatronics	Review of electromechanical components. Practical application of microcontrollers in electromechanical systems. Use of infrared sensors, photoresistors, operational amplifiers, timers, servomotors, and analog/digital converters in mechatronics systems. A hands-on, laboratory-based course.(Prerequisite: Semester 7 or 8 standing for Mechanical Engineering students; other students require instructor approval.) (2 lecture, 3 laboratory/tutorial hours a week.)	Familiar with sensors, actuators and microcontroller programming required. Previously taken or GA'd this course preferred.	1
MECH-4221-01/ Machine Design II	Gearing and gear trains: spur, helical, worm, and bevel gears. Clutches, brakes, couplings, flywheels. Chain and belt drives. Design of shafting. Student-developed software to support mechanical design. (Prerequisite: MECH-3223 and MECH-3211.) (3 lecture, 3 laboratory hours a week.)	Knowledge, skills and design experience (preferrably in the private sector) with brakes, clutches, bearings, flat belts, v-belts, timing chains, roller chains, extension springs, compression springs, spur gears, helica gears, worm gears bevel gears and planetary gear trains, require. All grading is expected to be completed within 48hrs of assignment.	0.5
MECH-4240-07/ Fundamentals of Electromechanical Systems			0.5
MECH-4240-60/ Biomedical Signal Processing			0.5
MECH-4240-61/ Biomedical Instrumentation			0.5
MECH-4255-01/ Environmental Effects/Control of Noise	Physical properties of sound and noise, measurement of noise, noise control, hearing characteristics and environmental effects of noise. (Prerequisite: Semester 7 or higher standing.) (3 lecture, 1 tutorial/laboratory hours a week.)	Must have taken this course, or a graduate course in acoustics, and/or have practical experience measuring noise data using a Bruel & Kjaer acquisition system is essential as it is needed for the lab	1
MECH-4259-01/ Computer Aided Engineering - CAE	Three-dimensional graphics; fundamentals of finite element methods for problem solving in heat transfer, solids, and trusses using finite element computer programs. (Prerequisite: MECH-3211.) (2 lecture, 3 laboratory/tutorial hours a week.)	Proficient with CATIA software is essential. Previously taken the course preferred.	6.5

Course # and Name	Course Description	Essential Required Skills	Projected # of GAs
MECH-4467-01/ Vehicle Thermal Management	A study of controlled passenger compartment environment, and automotive thermal management hardware: radiator, heater core, air-conditioning components. Topics include the thermal comfort model of occupants in a vehicle, determination of heating and cooling loads, the practical application of refrigeration in automotive air-conditioning followed by design of equipment and HVAC system, description and design of engine cooling system. (Prerequisites: MECH-3217, MECH-3228, MECH-3233.) (3 lecture, 1 laboratory hours a week.)	Extensive experience in programming with FlowMaster software and Substantial knowledge in Radiator and A/C design and analysis projects required. Previous experience in course - either taken or GA'd MECH-4467 / MECH-8067 is preferred	1.5
MECH-4469-01/ Diesel Engine Fundamentals	Theory and practice of modern diesel engines. Diesel combustion cycle. Engine design aspects including fuel injection, turbocharging, and intercooling. Measurement and control of engine emissions. Engine performance testing. Future and advanced technologies including exhaust aftertreatment. (Prerequisites: MECH-3217 and Semester 6 or higher standing.)	knowledge of IC engines, demonstrating control and measurement in engine control system, operating control equipment, running engine test, setting up experiments requirements. Previously taken or GA'd the course preferred.	0.5
MECH-4670-01/ Aerospace propulsion	Application of gas dynamics and thermodynamics to aerospace engines. Analysis of engine cycles. Theory and design of propellers; turboprop engine analysis, Internal combustion and gas turbine engines. Component design for compressors, combustors, afterburners, exhaust nozzles. (Pre-requisites: MECH-3217, MECH-3220, MECH-3670, and semester 7 or higher standing.)	Experience with air-breathing and/or rocket propulsion modelling, analysis, and design. Previous experience GAing this course is an asset	0.5
MECH-8000-03/ Hybrid Power Train	MENG-AUTO - Environmental concerns due to fossil fuel combustion and an alarming depletion of fossil fuel reserves are the two primary reasons that have encouraged the development of hybrid electric vehicles (HEVs). HEVs typically integrate an internal combustion engine with an electric motor and a power source to significantly reduce fuel consumption and harmful emissions, partly due to their regenerative capability which can provide a 20% improvement in fuel efficiency. The present commercial success of HEVs due to these advantages is a strong indicator that HEVs are here to stay. The high---voltage electrical system in HEVs plays an important role on the efficiency and performance of these vehicles. The hybrid vehicle electric power system consists of an electric motor, a power electronic converter driven by a control algorithm and a source of electrical energy.		0.5
MECH-8000-05/ Controls of Electric Vehicle	MENG-AUTO - This course covers the principals of Battery Management Systems (BMS) for monitoring, diagnosis, and control of batteries in Hybrid Electric Vehicles (HEVs) and Battery Electric Vehicles (BEVs). The course is targeted towards systems engineers, research scientists, and academics who want to gain a fundamental understanding of battery modeling, analysis, state of charge, and state of health estimation. Topics include introduction to battery systems, battery equivalent circuit-based modeling, battery electrochemical modeling, cell balancing, thermal management, state of charge, and state of health estimation. Concepts such as parameters estimation, system identification, optimization, filtering, and control theory will be applied to battery systems. The techniques covered in this course are mostly related to Li-ion cells and packs as used in automotive applications. These can however also be applied to other battery chemistries		0.5

Course # and Name	Course Description	Essential Required Skills	Projected # of GAs
MECH-8011-01/ Bluff Body Aerodynamics	MENG-AUTO - Atmospheric boundary layers. Flow around bluff bodies, separation and wakes. Lift and drag, pressure and force coefficients. Streamlined bodies, bluff bodies. Flow over flat plates and walls, rectangular prismatic shapes, circular cylinders. Fluctuating forces and pressures on bluff bodies. Wind tunnel testing, similarity requirements, wind tunnel techniques. Vehicle aerodynamics, drag and lift of passenger cars, cross wind stability, wind tunnel and road testing. Architectural aerodynamics, design wind speed, flow in and around building, wind-induced response of low-rise buildings, tall buildings, and large roof and sports stadium. Aerodynamics of Wind Turbines.	Knowledge in the STARCCM+ required. Background in fluid mechanics and CFD	0.5
MECH-8067-01/ Vehicle Thermal Management	MENG-AUTO - A study of controlled passenger compartment environment, and automotive thermal management hardware: radiator, heater core, air-conditioning components. Topics include the thermal comfort model of occupants in a vehicle, determination of heating and cooling loads, the practical application of refrigeration in automotive air---conditioning followed by design of equipment and HVAC system, description and design of engine cooling system.	Previously taken MECH-4467 or GA'd Thermal Management course preferred and/or Thermal Fluid Major	0.5
MECH-8234-01/ Intro to Computational Fluid Dynamics	This course is intended to provide basic knowledge required to initiate research or applications in computational fluid dynamics. Topics include: numerical methods for model hyperbolic, parabolic and elliptic equations; analysis of difference schemes; numerical stability; explicit and implicit methods; artificial viscosity; linearization techniques; approximate factorization; preconditioning, iterative solutions, successive over-relaxation (SOR), successive line over-relaxation (SLOR), alternating direction implicit (ADI); two-dimensional structured grid generation; introduction to finite volume method. (3 lecture hours a week.)	Previously taken or GA'd the course is preferred	0.5
MECH-8240-01/ Applied Finite Element Analysis	This course focuses on the modeling aspects of the finite element method using three well known commercial Finite Element Analysis (FEA) software packages known as DYNA, IDEAS and ANSYS. A variety of stress analysis problems in two and three dimensions are studied and the accuracy of the simulations are assessed through comparison with available theoretical and experimental results. Both static and dynamic situations are covered. The students are expected to prepare a final report summarizing their work and an oral presentation. (Antirequisite: MECH-8290, section 3.) (3 lecture hours a week.)	Previously taken or GA'd the course is preferred	0.5
MECH-8290-27/ Advanced Body Structure	MENG-AUTO - This course will focus on the fundamentals of automotive body structure design and analysis. Functional requirements for durability, NVH and crash safety will be translated to measurable structural design targets. Basic mechanics---based analysis procedures will be used to assess the body structure performance for global bending, torsion, modal frequency, and crashworthiness targets.	must have taken graduate course on finite element methods; familiar with HyperMesh and ABAQUS	0.5
MECH-8290-37/ Industrial Fluid Power	Fluid power encompasses most applications that use liquids or gases to transmit power in the form of mechanical work, pressure, and/or volume in a system. This definition includes all systems that rely on pumps or compressors to transmit specific volumes and pressures of liquids or gases within a closed system	Previously taken or GA'd the course is preferred	0.5

Course # and Name	Course Description	Essential Required Skills	Projected # of GAs
MECH-8290-67/ Advanced Vehicle Thermal Management	A study of controlled passenger compartment environment, and automotive thermal management hardware: radiator, heater core, air-conditioning components. Topics include the thermal comfort model of occupants in a vehicle, determination of heating and cooling loads, the practical application of refrigeration in automotive air---conditioning followed by design of equipment and HVAC system, description and design of engine cooling system.	Extensive experience in programming with FlowMaster software and Substantial knowledge in Radiator and A/C design and analysis projects required. Previous experience in course - either taken or GA'd MECH-4467 / MECH-8067 is preferred	0.5
MECH-8290-69/ Boiler and Pressure Vessels		Previously taken or GA'd the course is preferred	0.5
MMCE-8820-01/ MMCE-Introduction to Materials Engineering and Chemistry	An introduction to topics in materials science and solid-state chemistry are discussed with an emphasis on the relationship between the material structure and its physical, optical, and electrical properties. The topics covered include solid-state materials, crystalline materials, amorphous materials, metals, magnetic materials, polymers, semiconductors, microelectronics, and nanomaterials. The use of these materials in applications is discussed (3 lecture hours/week.) (Enrolment restricted to MMC&E students)		0.5

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

Eligibility requirements:
GA appointments shall be offered in accordance with the criteria specified in Article 12:03 of the Collective Agreement. Note that the number of G.A. positions for each course is determined by the enrolment in the course, instructor requests and laboratory requirements. In addition, previous experience of applicants in courses posted will be taken into consideration. Students must maintain fulltime registration throughout the term and must be in good standing in the degree program in order to hold a Graduate Assistantship. Students who meet the Phase I tuition refund deadline are therefore not eligible to hold a GA. A full graduate assistantship requires an average of 10 hours per week for a maximum of 140 hours per semester. Refer to Articles 12, 13, and 14 of the Collective Agreement for eligibility details.

All Graduate Assistants must meet the specific requirements related to the duties listed with the course(s) above.

"With respect to those students who have applied for and been accepted for Assistantships, the Assistant will not be paid for any shortfall of hours at the end of their respective program, provided the University has satisfied its obligation to post available positions each term in writing and on the AAU website and to offer the minimum terms of support in accordance with Article 13:01 (a) & (b) and provided that the Assistant has applied in writing or via e-mail by the application deadline for each term until they have received the minimum terms of support in accordance with Article 13:01 (a) & (b)."

In pursuit of the University of Windsor's Employment Equity Plan, members from the designated groups (Women, Aboriginal Peoples, Visible Minorities, Persons with Disabilities, and Members of Sexual Minorities) are encouraged to apply.

Online applications, submitted through Qualtrics link - https://uwindsor.ca1.qualtrics.com/jfe/form/SV_eeCdm5nCgXjNt1I

Ms. A. Haskell,
MAME Department, Room 2166 CEI

Deadline for completing the online application – 4:00pm Thursday, March 31, 2022

Dr. Minaker
Head