University of Victoria
Posting for CUPE 4163 Specialist Instructional (TA) – Fall 2024

Department: **Mechanical Engineering**

Term of appointment: **TAs are expected to be available from the beginning of the semester (Sep 4, 2024) and available to assist with marking the final examination (exam period is Dec 7-20).**

Hourly Rate: **$31.80**

BME 200 - Molecular and Cellular Physiology   Instructor: **K. Valente**

Special Skills or Other Requirements:
- Responsible for grading assignments, holding office hours online, and running tutorials online that relate analyzing cells at a molecular level using engineering principles.
- Responsible for running oral online exams together with the instructor.
- Position will include running labs (face-to-face or online - still to be confirmed). Labs require a certain level of expertise on microfluidics, PCR and cell culture, in addition to WHMIS and Biosafety certificates from OHSE UVic.

BME 410/510/MECH 580 A01 - Bio Printing: 3D Printing Body Parts   Instructor: **K. Valente**

Special Skills or Other Requirements:
- Expertise in serving as a teaching assistant in an online course
- Previously TAed this course preferred
- Expertise in 3D Bioprinting using the Allevi, Cellink, or Aspect systems

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ENGR 110/112 - Design and Communication I   Instructor: **F. Firmani**

Special Skills or Other Requirements:
- Primary duty is interacting with student teams online during labs advising students on their design exercises and projects, marking, student feedback. Also time during lecture hour on team learning activities.
- You must be outgoing, enjoy interacting with students, and able to communicate clearly and effectively in spoken and written English.
- Background in practical engineering design (concept generation/selection/refinement) and teamwork (conflict management, expectation setting) is essential

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MECH 200 - Engineering Drawing   Instructor: **V. Ahsani**

Special Skills or Other Requirements:
- Excellent interpersonal and communication skills
- Proficiency with SolidWorks
- Solid background in Engineering Drawing and descriptive geometry
- Being familiar with the Engineering Design Process
- Available to supervise SolidWorks labs/tutorials remotely

MECH 240 - Thermodynamics   Instructor: **H. Struchtrup**

Special Skills or Other Requirements:
- Strong background and knowledge in thermodynamics
- Excellent interpersonal and communication skills
- Must be able to take initiative and be flexible

MECH 242 - Dynamics   Instructor**:**   **TBD**
Special Skills or Other Requirements:
- Knowledge of rigid body dynamics and related mathematical background (vector algebra, matrix algebra, coordinate representation of vector equations using matrix notation).
- Experience with Matlab and Simulink (for consulting with students on numerical implementations of solutions to problem sets and marking the project).

MECH 330 - Intro to Mechanical Vibrations   Instructor: **B. Nadler**
Special Skills or Other Requirements:
- Solid knowledge of rigid body dynamics, multi-degree of freedom vibrations, and relevant mathematical background (ODES, Laplace transformations, Fourier analysis, vector and matrix algebra).
- Proficiency with Matlab and Simulink software.
- Duties include: 1. preparing solutions to, consulting with students on, and marking assignments, including Matlab/Simulink component; 2. running lab sessions and marking lab reports; 3. assisting in the marking of midterm and final exams

MECH 345 – Mechanics of Fluids   Instructor**:**   **S. Gharehkhani**
Special Skills or Other Requirements:
- Candidates should have a strong background in fluid mechanics.
- Previous experience in running labs is an asset
- Previous experience teaching Thermofluidic courses is an asset

MECH 360 - Design of Mechanical Elements   Instructor**:**   **F. Firmani**
Special Skills or Other Requirements:
- Experience with mechanical design and machine elements
- Good interpersonal and communication skills for partial supervision of the MECH 360 Design Project
- Experience with Gear Train Design, shafts, bearings and fasteners

MECH 380 - Automatic Control Engineering   Instructor: **H. Najjaran**
Special Skills or Other Requirements:
- Solid knowledge of control theory and related mathematical background (Laplace transformations, matrix algebra and analysis, complex variable theory; transfer-function based analysis and design; frequency-characteristics based analysis design; state-space analysis and design).
- Proficiency with Simulink software. Duties include consulting with students on Simulink applications and correction/evaluation of three students' projects.

MECH 395 - Heat Transfer   Instructor: **S. Gharehkhani**
Special Skills or Other Requirements:
- Explaining concepts & methods for heat conduction, convection & radiation calculation
- Helping students to apply these methods to energy systems, bio systems & manufacturing
- Guiding students to recognize examples of HT in daily life (e.g. the kitchen, HVAC)

MECH 400A – Capstone Design Proposal   Instructor: **C. Bradley**
Special Skills or Other Requirements:
- Experience with Engineering Design
- Experience with machine shop manufacturing, software and electronics
- Previous experience setting design criteria/specifications
- Excellent communication – verbal and written
- The ability to understand various complex problems.
- The ability to interact with and guide students to provide project direction for students.

MECH 410/520 - Computer-Aided Design and Engineering   Instructor: **Siang (Steven) Liu**
Special Skills or Other Requirements:
- Previously taken MECH 410/520 or equivalent course required
- Knowledge of Siemens NX CAD/CAE (FEA/CFD) required
- Knowledge of Solidworks desirable

MECH 443/541 – Advanced Thermodynamics   Instructor: **H. Struchtrup**
Special Skills or Other Requirements:
- Good knowledge of Thermodynamics
- Ideal candidate will have previously taken course or similar experience

MECH 449 – Fuel Cell Technology   Instructor: **J. Lee**
Special Skills or Other Requirements:
- Excellent interpersonal and communication skills
- Being familiar with thermodynamics and chemistry. Knowledge in electrochemistry is an asset
- Available to attend and moderate one or two online lecture(s) as needed
- Ability to guide students to provide project direction.

MECH 450A/550 – Materials Selection for Sustainable development   Instructor: **B. Yu**
Special Skills or Other Requirements:
- Solid knowledge of advanced control theory and related mathematical background (State-space model, controllability/observability, stability analysis, and so on)
- Proficiency with Matlab/Simulink software.

MECH 450B – Fluid Mechanics II   Instructor: **H. Najjaran**
Special Skills or Other Requirements:
- Familiarity with Advanced Control Systems
- Linear Algebra
- Basic Mechanical Systems Modeling
- Basic Electrical Systems Modeling
- MATLAB and SIMULINK

MECH 450C/580 A03 – Energy Conversion & Storage   Instructor: **A. Rowe**
Special Skills or Other Requirements:
- Knowledgeable in Thermofluids – thermodynamics, heat transfer, fluid mechanics

MECH 450D/580 – Engineering Optimization   Instructor: **A. Suleman**

Special Skills or Other Requirements:
- Ideal candidate will have previously taken course or similar experience
- Excellent interpersonal and communication skills
- Must be able to take initiative and be flexible

MECH 458/554 - Mechatronics   Instructor: **H. Najjaran**

Special Skills or Other Requirements:
- Hands-on experience with Atmel microprocessor programming
- Previously taken MECH 458/554

MECH 473 - Ferrous and Nonferrous metal   Instructor: **S. Ferguson**

Special Skills or Other Requirements:
- Previously taken materials science or materials engineering course (eg. Mech 285) required.
- Ideal candidate will have previously taken course or similar experience

MECH 487 – Sensors and Actuators   Instructor: **N. Dechev**

Special Skills or Other Requirements:
- Excellent interpersonal and communication skills
- Must be able to take initiative and be flexible

MECH 601 – Engineering Analysis   Instructor: **B. Nadler**

Special Skills or Other Requirements:
- Thorough understanding of applied engineering mathematics

MECH 594/595/695 - Seminar   Instructor: **K.Ahmadi**

Special Skills or Other Requirements:
- Candidate will coordinate seminars, introduce speakers, collect feedback, prepare the next term's schedule, and maintain attendance spreadsheet