TOPIC: WORK-INTEGRATED AND JOB TRAINING OPPORTUNITIES

The Department of Mechanical Engineering at the University of Alberta leads novel, innovative, breakthrough research and technology development activities. In order to do this, it engages broadly with the international, national, and Alberta labor market. It offers work-integrated and job training opportunities through its Masters of Science, Doctoral, and Post-doctoral training programs, and Research Assistantships.

The COVID-19 pandemic has caused major disruption and uncertainty in the Alberta labor market. We understand the urgent need to get Albertans back to work, and want to do our part. The Department has opened up a number of paid positions for candidates in its Masters of Science, Doctoral, and Post-doctoral training programs for qualified engineers, engineers-in-training, and scientists. Research Assistantships may also be available.

In this package, we present a list of descriptions of open positions in our Department. To learn about our research programs, please visit https://www.ualberta.ca/mechanical-engineering/research. To learn more about our training programs, please visit us at https://www.ualberta.ca/mechanical-engineering/graduate-studies. We welcome expressions of interest from qualified candidates for our available positions.
PAID MASTER’S OF SCIENCE TRAINING OPPORTUNITIES
Research Assistant Position Available – Heat transfer in two-phase flow (towards a Master’s degree)

How to Apply

Interested candidates are asked to contact Morris Flynn by email at mrflynn@ualberta.ca to discuss their qualifications relative to project details and deliverables. To apply for this opportunity, please submit your resume and academic transcripts on or before May 1, 2020. A cover letter detailing how this research aligns with your background and future career goals is optional, but encouraged.

The Opportunity

Morris Flynn of the Department of Mechanical Engineering invites applications and queries for a full-time Master’s research assistant position in the area of heat transfer in two-phase flow. Project details are summarized below; information regarding Dr. Flynn’s research group can be found at https://sites.ualberta.ca/~mrflynn/research.html.

The Project

The proposed research project will blend theory and laboratory experiment to better understand how heat is transferred (via convection) in a two-phase air-water flow. Drawing examples from the biological world, we will explore the efficacy of bubbles as thermal insulators for a variety of flow regimes. Although this project is fundamental in nature, it has the potential to inform industrial design, particularly in the realm of lab-on-a-chip technologies.

Specialized Training & Skills Development

Training of undergraduate and graduate research assistants is paramount. The successful candidate will receive formal training in the following practical areas: i) surface preparation, ii) flow visualization and measurement, iii) data post-processing, and iv) mathematical modelling of biological and industrial systems. Opportunities to both collaborate with other U. Alberta researchers and to participate in national/international conferences will be provided, as appropriate.

Required Qualifications

- B.Sc. in Mechanical Engineering or a closely related discipline with a minimum Cumulative GPA of 3.0.
- Willingness to register in the University of Alberta’s MSc Program.
- Demonstrated interest and/or previous research, industrial or academic experience in heat transfer and fluid mechanics. A good working knowledge of MATLAB is desirable.
• Proven ability to work independently.
• Effective written and verbal communication skills; proficiency in English.

Compensation

External funding for the above project has been secured. The successful candidate will receive a stipend in the form of a research assistantship valued at $24,000/year for a maximum of 2 years. He/she will be encouraged to apply for external scholarships which would supplement the above financial compensation.

Start Date: September 2020
MSc Position Available – Germicidal Air Purification System

How to Apply

Interested candidates may contact Dr. Lexuan Zhong by email at lexuan.zhong@ualberta.ca to discuss their qualifications and details about the project. To apply for this position, please submit personal statement (future career plans), your resume and transcripts by 10 pm on May 15th.

The Position

Dr. L. Zhong of the Department of Mechanical Engineering at the University of Alberta invites applications and queries for a full-time Master’s research assistant position in the area of Germicidal Air Purification System.

The Project

The proposed research project will use ultraviolet irradiation combined with photocatalysis technology to develop a novel germicidal air purification system that can be used for microorganism inactivation to prevent the spread of airborne bioaerosol. One fundamental component of the project will focus on the efficiency quantification of the new system. Flow duct-chamber tests will also be conducted. The results from this project will actively protect the public against the COVID-19 pandemic.

Specialized Training & Skill Development

Training of undergraduate and graduate research assistants is a paramount duty for us. The selected candidate will receive formal training in the following practical areas: i) catalyst/coating preparation, ii) air-handling unit, iii) UV irradiation, iv) measurement and data acquisition, and v) health. The student will have opportunities to attend national and international conferences.

Required Qualifications

- Bachelor’s of Science (or Engineering) degree in Mechanical Engineering or Civil Engineering
- Keen interest and/or experience in research
- Minimum GPA of 3.2
- Proven ability to work independently
- Excellent written and verbal communication skills; proficiency in English

Desired Qualifications

- Experience in conducting literature reviews
- Completion of a Dean’s Research Award or Undergraduate Research Award
- Familiarity with building science principles and technologies

Start Date: September 1, 2020
Research Assistant Positions Available – Dental Biomaterials and/or Orthodontic Biomechanics (towards a MSc or PhD degree)

How to Apply

Interested candidates may contact Dr. Dan Romanyk by email at dromanyk@ualberta.ca to discuss their qualifications and the project. To apply for this opportunity, please submit a complete application package including a cover letter detailing your specific interest in this project, resume, and transcripts as soon as possible.

The Opportunity

Dr. Romanyk of the Department of Mechanical Engineering at the University of Alberta invites applications and queries for a full-time Masters or Doctoral research assistant position in the area of Dental Biomaterials or Orthodontic Biomechanics. As a member of Dr. Romanyk’s group, you will be exposed to an exciting interdisciplinary research environment focusing on the fundamental material response of an array of biomaterials and appliances. Experimental, analytical modeling, and numerical modeling approaches (e.g. FEA) are used to study materials such as cranial suture tissue, periodontal ligament tissue, dental ceramics (used for restorative crowns), and dental resin-based composite (used for cavity fillers) materials. Dr. Romanyk promotes a collaborative work environment with those in his group to foster innovative research that provides significant advancements to fundamental scientific and applied knowledge within his areas of focus.

Available Projects

Both biological and synthetic biomaterials, and their interactions, are of utmost importance in understanding the patient response to clinical interventions and performance of restorative materials. Oral appliances, namely orthodontic appliances, are of interest with respect to the loads they generate and how this alters patient response. Currently, Dr. Romanyk is primarily interested in the following areas of focus:

- **Periodontal ligament** is the soft tissue connecting a tooth to its surrounding bone structure and is integral in distributing applied loads within the oral environment. It also stimulates biological remodeling in response to load, as in orthodontic tooth movement. Research focuses on advanced experimental and modeling methods to understand ligament mechanics during tooth extraction and orthodontic treatment.

- **Cranial sutures** are soft tissue connecting bones in the skull, and are responsible for allowing growth and facilitating biological remodeling when exposed to applied loading. Research in this area is concerned with establishing the link between suture mechanical response to applied loading and the triggered biological response in surrounding bone.

- **Dental restorative materials** of interest are ceramics used for crowns in dental implants and and resin-based composite cavity fillers. Projects include understanding the performance of ceramic dental crowns manufactured through CAD-CAM methods and the polymerization behavior of composite filler materials.

- **Orthodontic appliances** apply loads directly to dental structures causing biological remodeling allowing for processes such as tooth movement. Dr. Romanyk’s group utilizes world-leading laboratory equipment to measure mechanical loads applied through orthodontic appliances, namely braces and new aligner systems.
Specialized Training & Skills Development

Training of undergraduate and graduate research assistants is paramount. Depending on the project of choice, candidates will be exposed to a range of equipment training including use of an Instron E3000 electrodynamic load frame, micro-hardness tester, highly specialized orthodontic treatment simulation devices, and advanced imaging characterization methods through the nanoFAB institute. Due to the complex nature of required testing, trainees must often design and manufacture their own experimental jigs and manufacture their own samples. As a result, trainees gain valuable experience in design and manufacturing. Modeling methods often require use of tools to implement both analytical (e.g. Matlab) and numerical approaches (ANSYS, ABAQUS, etc.). Finally, the highly interdisciplinary nature of Dr. Romanyk’s research exposes trainees to interactions with other engineers, biologists, and clinicians where they gain critical experience in communicating and working with a diverse team.

Required Qualifications

- Bachelors or Masters of Science (or Engineering) degree in Mechanical or Biomedical Engineering
- Willing to register in the University of Alberta’s MSc or PhD Program
- Keen interest and/or experience (coursework, research, and/or industrial) in: material characterization, experimental methods, advanced modeling techniques (e.g. finite element analysis), and use of MATLAB or other programming tools are assets
- Minimum GPA of 3.3
- Proven ability to work independently
- Effective written and verbal communication skills; proficiency in English
- Open to Canadian citizens, permanent residents of Canada, and foreign students

Start Date: September 2020 (earlier start dates may be considered)
MSc and PhD Positions Available –
Design of Next-Generation Add-On Armor for Vehicles

The Position
Dr. James Hogan of the Department of Mechanical Engineering at the University of Alberta, in collaboration with industry partners at General Dynamics and NP Aerospace and national lab partners at Defence Research and Development Canada, invite applications and queries for MSc and PhD positions in the area of **Design of Next-Generation Ceramics-Based Add-On Armor for Vehicles**, focusing on multi-scale **Experimental Mechanics and Computational Mechanics** approaches to studying material behavior. This position will be open to candidates who possess relevant degrees in Mechanical Engineering. Applicants with expertise and experience in computational mechanics, experimental mechanics, fracture mechanics, and materials science are highly encouraged to apply. The successful candidate(s) will be required to work independently and must communicate well in English. National and international travel will be required. This position is available to Canadian citizens, permanent residents of Canada, and international applicants. It is expected that the successful candidate will take up the position in Fall 2020 or Winter 2021. Interested candidates may wish to visit Hogan group website at [https://sites.ualberta.ca/~jdhogan/index.html](https://sites.ualberta.ca/~jdhogan/index.html).

The Project
The proposed research project seeks to develop a fundamental understanding of the failure of advanced materials used in ceramics-based add-on armor for vehicles, recognizing the importance of microstructure, stress state, and strain rate in these behaviors. The research knowledge will be transferred to government and industry partners to design and manufacture armor systems with increased performance. The selected candidate will make fundamental contributions to experimental mechanics and damage modelling, building on previous group work.

Training and Professional Development Opportunity
The selected candidate will receive training in the following areas: i) mechanical testing with use of advanced cameras and software, ii) computational and theoretical modelling of damage accumulation in materials, and iii) materials characterisation at nanoFAB. The successful candidate will have opportunities to participate in national and international conferences, and internships and workshops.

Application Procedure
Candidates are asked to submit complete applications, which include: i) a cover letter; ii) a detailed curriculum vitae highlighting career achievements, areas of research, a list of publications, awards and honours, and a list of three professional references; iii) a statement of research interest, expertise, and experience (maximum 1 page); and iv) up to 3 samples of the candidate's significant scholarly work.

Interested candidates should send their completed application packages and direct queries to Dr. James Hogan by email at jdhogan@ualberta.ca. The position(s) will remain open through August 2020.
Research Opportunities for Graduate Studies – Energy and Environmental Systems Engineering

How to Apply

Interested candidates may send in their application package to Dr. Amit Kumar by email at Amit.Kumar@ualberta.ca. To apply for this opportunity, please submit your resume, transcripts and names of 3 referees.

The Opportunity

Dr. Amit Kumar of the Department of Mechanical Engineering at the University of Alberta invites applications for graduate studies (MSc/PhD). The successful candidate will join an active group of researchers in the areas of energy and environmental systems engineering supported by industry and government. More details about research focus and the group can be found at http://www.ualbertaenergysystems.ca/. Due to the high volume of applicants, only those of interest will be contacted by our office.

Projects

1. Energy Forecasting & Planning

The aim of this project is to develop environmental footprints (e.g., greenhouse gas emissions) of energy demand and supply sectors for a particular jurisdiction.

2. Biomass and Bioenergy Systems Engineering

The project focusses on modelling biomass-based energy conversion systems, specifically in the conversion of forest-based biomass or biomass waste generated by the forest industry to fuels and chemicals.

Specialized Training & Skills Development

The student will have opportunities to participate in national and international conferences.

Required Qualifications

- Relevant background in any engineering stream
- Minimum GPA of 3.2
- Proven ability to work independently
- Effective written and verbal communication skills; proficiency in English
- Open to Canadian citizens, permanent residents of Canada, and foreign students
Compensation

Funding in the form of scholarships as well as teaching and research assistantships will be made available to qualified students. Students with scholarships will be considered for top-up funding.

**Start Date:** May/September 2020 or January 2021
PAID DOCTORAL TRAINING OPPORTUNITIES
Research Assistant Position Available – Ergonomics
(towards a Doctoral degree)

How to Apply

Interested candidates may contact Dr. Xinming Li by email at xinning.li@ualberta.ca to discuss their qualifications and the project. To apply for this opportunity, please submit your resume and transcripts by 10 pm on May 15th. A cover letter detailing how this research aligns with your future career plans is optional, but encouraged.

The Opportunity

Dr. Xinming Li of the Department of Mechanical Engineering at the University of Alberta invites applications and queries for a full-time doctoral research assistant position in the area of an ergonomic work design.

The Project

The proposed research project will continue improving an existing post-3D visualization “ErgoSystem” that was developed by the research group. This system is expected to automate ergonomic risk assessment and productivity analysis based on 3D modelling with the support of a user-friendly platform for rapid workplace design. This project study will involve collaboration with local manufacturing industry partners.

Specialized Training & Skills Development

Training of undergraduate and graduate research assistants is paramount. The selected candidate will receive formal training in the following practical areas: i) 3D modelling, ii) motion capture, iii) programming. The student will have opportunities to participate in national and international conferences.

Required Qualifications

- Master’s of Science degree in Mechanical Engineering, Industrial Engineering, Civil Engineering or Biomechanical Engineering;
- Bachelor’s of Engineering degree in Mechanical Engineering, Industrial Engineering, Civil Engineering or Biomechanical Engineering;
- Willing to register in the University of Alberta’s PhD Program;
- Strong programming skill in C#, Python, or/and Matlab;
- Minimum grade point average of 3.3 at the Master’s and 3.0 at the Bachelor’s levels;
- Knowledge and experiences in a) human factors and ergonomics, b) 3D human body modelling c) computer vision and VR, or d) biomechanical analysis.
- Proven ability to work independently
- Effective written and verbal communication skills; proficiency in English
Desired Qualifications

- GPA of 3.3 or higher (with preference for higher GPA)
- Publications in peer-review journals
- Research experience on ergonomics
- Industry experience or occupational health and safety related experience

Start Date: September 2020 or Jan 2021
Research Assistant Position Available – Development of Autonomous Cold Spray-Friction Stir Additive Manufacturing Repair System (PhD Student Opportunity)

The Position
Dr. André McDonald of the Department of Mechanical Engineering at the University of Alberta invites applications and queries for a doctoral (PhD) position in the area of **Development of a Cold Spray-Friction Stir Additive Manufacturing Repair System**. The position will be open to candidates who possess a Master’s of Science degree in either Mechanical Engineering or Materials Science. Applicants with expertise and experience in cold spraying, thermal spraying, materials science, or particulate-reinforced composite materials are highly encouraged to apply. The successful candidate will be required to work independently and must communicate well in English. The successful candidate will be financially supported. This position is available to Canadian citizens, permanent residents of Canada, and international applicants. It is expected that the successful candidate will take up the position anytime between September 2020 and May 2021. Interested candidates may wish to visit [https://sites.ualberta.ca/~andre2/](https://sites.ualberta.ca/~andre2/) to learn more about the Advanced Heat Transfer and Surface Technologies Laboratory.

The Project
The proposed research project seeks to develop a fundamental understanding of the materials development of cold-sprayed-friction stir processed additive manufacturing repair. The outcomes of the project will be to produce a high-performance wear resistant materials system and inform on the development of an autonomous localized in-field deposition system.

Training and Professional Development Opportunity
The training of research assistants is paramount. The selected candidate will receive formal training in the following practical areas: (i) surface preparation, (ii) high-quality overlay development, (iii) equipment handling, and (iv) safety. The PhD candidate will have opportunities to participate in national and international conferences and receive exposure to Dr. McDonald’s expansive professional network.

Application Procedure
Candidates are asked to submit complete applications, which include: (i) a cover letter; (ii) a detailed curriculum vitae highlighting career achievements, areas of research, a list of publications, awards and honours, and a list of three professional references; (iii) a statement of research interest, expertise, and experience (maximum 1 page); and (iv) three samples of the candidate’s most significant scholarly work. Additional documents may be requested upon submission of the aforementioned documents.

Interested candidates should send their completed application packages and direct queries to Dr. André McDonald at andre.mcdonald@ualberta.ca.
Research Assistant Positions Available – Dental Biomaterials and/or Orthodontic Biomechanics (towards a MSc or PhD degree)

How to Apply

Interested candidates may contact Dr. Dan Romanyk by email at dromanyk@ualberta.ca to discuss their qualifications and the project. To apply for this opportunity, please submit a complete application package including a cover letter detailing your specific interest in this project, resume, and transcripts as soon as possible.

The Opportunity

Dr. Romanyk of the Department of Mechanical Engineering at the University of Alberta invites applications and queries for a full-time Masters or Doctoral research assistant position in the area of Dental Biomaterials or Orthodontic Biomechanics. As a member of Dr. Romanyk’s group, you will be exposed to an exciting interdisciplinary research environment focusing on the fundamental material response of an array of biomaterials and appliances. Experimental, analytical modeling, and numerical modeling approaches (e.g. FEA) are used to study materials such as cranial suture tissue, periodontal ligament tissue, dental ceramics (used for restorative crowns), and dental resin-based composite (used for cavity fillers) materials. Dr. Romanyk promotes a collaborative work environment with those in his group to foster innovative research that provides significant advancements to fundamental scientific and applied knowledge within his areas of focus.

Available Projects

Both biological and synthetic biomaterials, and their interactions, are of utmost importance in understanding the patient response to clinical interventions and performance of restorative materials. Oral appliances, namely orthodontic appliances, are of interest with respect to the loads they generate and how this alters patient response. Currently, Dr. Romanyk is primarily interested in the following areas of focus:

- **Periodontal ligament** is the soft tissue connecting a tooth to its surrounding bone structure and is integral in distributing applied loads within the oral environment. It also stimulates biological remodeling in response to load, as in orthodontic tooth movement. Research focuses on advanced experimental and modeling methods to understand ligament mechanics during tooth extraction and orthodontic treatment.

- **Cranial sutures** are soft tissue connecting bones in the skull, and are responsible for allowing growth and facilitating biological remodeling when exposed to applied loading. Research in this area is concerned with establishing the link between suture mechanical response to applied loading and the triggered biological response in surrounding bone.

- **Dental restorative materials** of interest are ceramics used for crowns in dental implants and and resin-based composite cavity fillers. Projects include understanding the performance of ceramic dental crowns manufactured through CAD-CAM methods and the polymerization behavior of composite filler materials.

- **Orthodontic appliances** apply loads directly to dental structures causing biological remodeling allowing for processes such as tooth movement. Dr. Romanyk’s group utilizes world-leading laboratory equipment to measure mechanical loads applied through orthodontic appliances, namely braces and new aligner systems.
Specialized Training & Skills Development

Training of undergraduate and graduate research assistants is paramount. Depending on the project of choice, candidates will be exposed to a range of equipment training including use of an Instron E3000 electrodynamic load frame, micro-hardness tester, highly specialized orthodontic treatment simulation devices, and advanced imaging characterization methods through the nanoFAB institute. Due to the complex nature of required testing, trainees must often design and manufacture their own experimental jigs and manufacture their own samples. As a result, trainees gain valuable experience in design and manufacturing. Modeling methods often require use of tools to implement both analytical (e.g. Matlab) and numerical approaches (ANSYS, ABAQUS, etc.). Finally, the highly interdisciplinary nature of Dr. Romanyk’s research exposes trainees to interactions with other engineers, biologists, and clinicians where they gain critical experience in communicating and working with a diverse team.

Required Qualifications

- Bachelors or Masters of Science (or Engineering) degree in Mechanical or Biomedical Engineering
- Willing to register in the University of Alberta’s MSc or PhD Program
- Keen interest and/or experience (coursework, research, and/or industrial) in: material characterization, experimental methods, advanced modeling techniques (e.g. finite element analysis), and use of MATLAB or other programming tools are assets
- Minimum GPA of 3.3
- Proven ability to work independently
- Effective written and verbal communication skills; proficiency in English
- Open to Canadian citizens, permanent residents of Canada, and foreign students

Start Date: September 2020 (earlier start dates may be considered)
MSc and PhD Positions Available – Design of Next-Generation Add-On Armor for Vehicles

The Position
Dr. James Hogan of the Department of Mechanical Engineering at the University of Alberta, in collaboration with industry partners at General Dynamics and NP Aerospace and national lab partners at Defence Research and Development Canada, invite applications and queries for MSc and PhD positions in the area of Design of Next-Generation Ceramics-Based Add-On Armor for Vehicles, focusing on multi-scale Experimental Mechanics and Computational Mechanics approaches to studying material behavior. This position will be open to candidates who possess relevant degrees in Mechanical Engineering. Applicants with expertise and experience in computational mechanics, experimental mechanics, fracture mechanics, and materials science are highly encouraged to apply. The successful candidate(s) will be required to work independently and must communicate well in English. National and international travel will be required. This position is available to Canadian citizens, permanent residents of Canada, and international applicants. It is expected that the successful candidate will take up the position in Fall 2020 or Winter 2021. Interested candidates may wish to visit Hogan group website at https://sites.ualberta.ca/~jdhogan/index.html.

The Project
The proposed research project seeks to develop a fundamental understanding of the failure of advanced materials used in ceramics-based add-on armor for vehicles, recognizing the importance of microstructure, stress state, and strain rate in these behaviors. The research knowledge will be transferred to government and industry partners to design and manufacture armor systems with increased performance. The selected candidate will make fundamental contributions to experimental mechanics and damage modelling, building on previous group work.

Training and Professional Development Opportunity
The selected candidate will receive training in the following areas: i) mechanical testing with use of advanced cameras and software, ii) computational and theoretical modelling of damage accumulation in materials, and iii) materials characterisation at nanoFAB. The successful candidate will have opportunities to participate in national and international conferences, and internships and workshops.

Application Procedure
Candidates are asked to submit complete applications, which include: i) a cover letter; ii) a detailed curriculum vitae highlighting career achievements, areas of research, a list of publications, awards and honours, and a list of three professional references; iii) a statement of research interest, expertise, and experience (maximum 1 page); and iv) up to 3 samples of the candidate's significant scholarly work.

Interested candidates should send their completed application packages and direct queries to Dr. James Hogan by email at jdhogan@ualberta.ca. The position(s) will remain open through August 2020.
Research Opportunities for Graduate Studies – Energy and Environmental Systems Engineering

How to Apply

Interested candidates may send in their application package to Dr. Amit Kumar by email at Amit.Kumar@ualberta.ca. To apply for this opportunity, please submit your resume, transcripts and names of 3 referees.

The Opportunity

Dr. Amit Kumar of the Department of Mechanical Engineering at the University of Alberta invites applications for graduate studies (MSc/PhD). The successful candidate will join an active group of researchers in the areas of energy and environmental systems engineering supported by industry and government. More details about research focus and the group can be found at http://www.ualbertaenergysystems.ca/. Due to the high volume of applicants, only those of interest will be contacted by our office.

Projects

1. Energy Forecasting & Planning

   The aim of this project is to develop environmental footprints (e.g., greenhouse gas emissions) of energy demand and supply sectors for a particular jurisdiction.

2. Biomass and Bioenergy Systems Engineering

   The project focusses on modelling biomass-based energy conversion systems, specifically in the conversion of forest-based biomass or biomass waste generated by the forest industry to fuels and chemicals

Specialized Training & Skills Development

The student will have opportunities to participate in national and international conferences.

Required Qualifications

- Relevant background in any engineering stream
- Minimum GPA of 3.2
- Proven ability to work independently
- Effective written and verbal communication skills; proficiency in English
- Open to Canadian citizens, permanent residents of Canada, and foreign students
Compensation

Funding in the form of scholarships as well as teaching and research assistantships will be made available to qualified students. Students with scholarships will be considered for top-up funding.

Start Date: May/September 2020 or January 2021
PAID POST-DOCTORAL AND RESEARCH ASSISTANT OPPORTUNITIES
Postdoctoral Fellow/Research Associate Positions Available – Energy and Environmental Systems Engineering

How to Apply

Interested candidates may send in their application package to Dr. Amit Kumar by email at Amit.Kumar@ualberta.ca. To apply for this opportunity, please submit your resume and names of three referees to Dr. Kumar.

The Opportunity

Dr. Amit Kumar of the Department of Mechanical Engineering at the University of Alberta invites applications for a full-time Postdoctoral fellow/Research Associate position. The successful candidate will join an active group of researchers in the areas of energy and environmental systems engineering supported by industry and government. More details about research focus and the group can be found at http://www.ualbertaenergysystems.ca/. The position is initially for one year and has the possibility of being extended. The position is available immediately and the applications will be reviewed as received. Due to the high volume of applicants, only those of interest will be contacted by our office.

The Project

Biomass and Bioenergy Systems Engineering/Biorefinery

The project focuses on modelling biomass-based energy conversion systems, specifically in the conversion of forest-based biomass or biomass waste generated by the forest industry to fuels and chemicals. We are looking for individuals with research experience broadly in the area of energy and environmental systems engineering with a focus on biomass.

Specialized Training & Skills Development

The candidate will have opportunities to participate in national and international conferences. The candidate will also have an opportunity to develop and initiate new research activities in relevant areas and supervise junior researchers. The candidate will have an opportunity to teach relevant courses in engineering based on their background in the Department of Mechanical Engineering.

Required Qualifications

- PhD in a relevant engineering discipline with an emphasis on energy systems.
- Prior experience developing techno-economic models for the estimation of the viability of energy systems
- Some experience in modeling biomass conversion processes using relevant tools (e.g., Aspen Plus).
- Proven ability to work independently
- Effective written and verbal communication skills; proficiency in English
• Open to Canadian citizens, permanent residents of Canada, and foreign students

Compensation

The remuneration is commensurate with qualifications.

Start Date: Immediately.
Postdoctoral Fellow/Research Associate Positions Available – Energy and Environmental Systems Engineering

How to Apply

Interested candidates may send in their application package to Dr. Amit Kumar by email at Amit.Kumar@ualberta.ca. To apply for this opportunity, please submit your resume and names of three referees to Dr. Kumar.

The Opportunity

Dr. Amit Kumar of the Department of Mechanical Engineering at the University of Alberta invites applications for a full-time Postdoctoral fellow/Research Associate position. The successful candidate will join an active group of researchers in the areas of energy and environmental systems engineering supported by industry and government. More details about research focus and the group can be found at http://www.ualbertaenergysystems.ca/. The position is initially for one year and has the possibility of being extended. The position is available immediately and the applications will be reviewed as received. Due to the high volume of applicants, only those of interest will be contacted by our office.

The Project

Fossil fuel-based energy conversion systems

The project focusses on modeling fossil fuel-based energy conversion systems, specifically in the conversion and processing of oil, natural gas, and coal to other forms of energy. We are looking for an individual with research experience in the area of energy and environmental systems engineering. Individuals applying for this position should have an interest and research experience in modeling.

Specialized Training & Skills Development

The candidate will have opportunities to participate in national and international conferences. The candidate will also have an opportunity to develop and initiate new research activities in relevant areas and supervise junior researchers. The candidate will have an opportunity to teach relevant courses in engineering based on their background in the Department of Mechanical Engineering.

Required Qualifications

- PhD in a relevant engineering discipline with an emphasis on energy systems.
- Prior experience developing process models for the estimation of the viability of energy systems
- Some experience in modeling tools (e.g., Aspen Plus).
- Proven ability to work independently
- Effective written and verbal communication skills; proficiency in English
• Open to Canadian citizens, permanent residents of Canada, and foreign students

Compensation

The remuneration is commensurate with qualifications.

Start Date: Immediately.
DEPARTMENT OF MECHANICAL ENGINEERING

10-203 Donadeo Innovation Centre for Engineering
9211 116 Street NW
Edmonton, Alberta, Canada T6G 2H9
Tel: 780.492.3598
Fax: 780.492.2200
www.mece.engineering.ualberta.ca

Postdoctoral Fellow/Research Associate Positions Available –
Energy and Environmental Systems Engineering

How to Apply

Interested candidates may send in their application package to Dr. Amit Kumar by email at Amit.Kumar@ualberta.ca. To apply for this opportunity, please submit your resume and names of three referees to Dr. Kumar.

The Opportunity

Dr. Amit Kumar of the Department of Mechanical Engineering at the University of Alberta invites applications for a full-time Postdoctoral fellow/Research Associate position. The successful candidate will join an active group of researchers in the areas of energy and environmental systems engineering supported by industry and government. More details about research focus and the group can be found at http://www.ualbertaenergysystems.ca/. The position is initially for one year and has the possibility of being extended. The position is available immediately and the applications will be reviewed as received. Due to the high volume of applicants, only those of interest will be contacted by our office.

The Project

Energy Forecasting & Planning

The aim of this project is to develop environmental footprints (e.g., greenhouse gas emissions) of energy demand and supply sectors for a particular jurisdiction. We are looking for an individual with research experience broadly in the area of energy and environmental systems engineering. Individuals applying for this position should have an interest and some experience in integrated resource planning modelling focused on energy demand and supply.

Specialized Training & Skills Development

The candidate will have opportunities to participate in national and international conferences. The candidate will also have an opportunity to develop and initiate new research activities in relevant areas and supervise junior researchers. The candidate will have an opportunity to teach relevant courses in engineering based on their background in the Department of Mechanical Engineering.

Required Qualifications

- PhD in a relevant engineering discipline with an emphasis on energy systems.
- The individual should also have some experience working with relevant energy forecasting and planning models (e.g., LEAP, MARKAL).
- Proven ability to work independently
- Effective written and verbal communication skills; proficiency in English
- Open to Canadian citizens, permanent residents of Canada, and foreign students

**Compensation**

The remuneration is commensurate with qualifications.

**Start Date:** Immediately.