

The Association of Canadian Ergonomists - Atlantic Region  
Presents:

## Ergonomics In Our Community

Moncton, NB  
Faculty of Engineering, Université de Moncton  
November 16-17<sup>th</sup>, 2018



Registration now open at: [www.ace-ergocanada.ca](http://www.ace-ergocanada.ca) ► Events



ASSOCIATION OF CANADIAN ERGONOMISTS  
ASSOCIATION CANADIENNE D'ERGONOMIE  
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Ergonomics in Our Community

Ergonomie dans notre communauté

# Ergonomics in Our Community

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## Exhibitor

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## Ergonomics in Our Community

Rooms 147G2 & 148G2

Université de Moncton (Faculty of Engineering)

57 Notre-Dame-du-Sacré-Coeur Street, Moncton, NB E1A 3H6

November 17 & 18, 2018



UNIVERSITÉ DE MONCTON  
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### SOCIAL

Friday, November 16<sup>th</sup>, 2018 (7:00pm-9:00pm)

19 Antonine-Maillet Ave, Moncton, NB E1A 3E9

*Location: Le Coude Bar and Restaurant*

**Free & Open to the public!**



Association of Canadian Ergonomists  
Association Canadienne d'Ergonomie

### CONFERENCE & AGM:

Saturday, November 17<sup>th</sup>, 2018 (8:30am-4:30pm)

### *Ergonomics in Our Community*

The conference theme “Ergonomics in Our Community” emphasizes our dynamic guest speakers from the region, student posters and presentations including representatives from industry, academia, and administration.

During the lunch hour, on Saturday, November 17<sup>th</sup> ACE-Atlantic will hold its Annual General Meeting (AGM).

**Register on-line at: [www.ace-ergocanada.ca](http://www.ace-ergocanada.ca) ► Events**

## Events Schedule

Rooms 147G2 & 148G2  
Faculty of Engineering, University of Moncton, Moncton, NB

### ► SOCIAL GATHERING

### ► CONFERENCE

Friday, November 16<sup>th</sup>, 2016

Saturday, November 17<sup>th</sup>, 2016

Time	Description
7:00pm	<b>Social Gathering:</b> Le Coude Bar and Restaurant 19 Antonine-Maillet Ave, Moncton, NB E1A 3E9 (informal)

Time	Description
8:30am	Registration
9:00am	Welcome
9:15am	<b>Keynote Speaker 1 (English):</b> <i>Ergonomics in the World and in Our Own Backyards</i> Dr. Nancy Black Associate Professor - Université de Moncton
10:15am	Undergraduate Presentations (10 minutes each)
10:45am	<b>Keynote Speaker 2 (English):</b> <i>Translating Safety Research into Practice - Lessons Learned from 30 Years of Safety Culture Research.</i> Mark Fleming Professor – Saint Mary's University
11:45am	Lunch & Annual General Meeting (ACE - Atlantic)
1:15pm	<b>Keynote Speaker 3 (French with English Slides):</b> <i>La technologie de rupture dans l'analyse du mouvement humain (Disruptive technology in human movement analysis).</i> Grant Handrigan Associate Professor - Université de Moncton
2:15pm	Undergraduate Presentations (10 minutes each)
2:45pm	Graduate Oral Presentations (15 minutes each)
4:00pm	Award Presentations and Closing Remarks

**Please Note:**

- You may register for the ACE conference online [www.ace-ergocanada.ca](http://www.ace-ergocanada.ca)

- Click on [Events](#)

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## Conference Opening Keynote

### Dr. Nancy Black

Associate Professor  
Université de Moncton  
Moncton, NB

### *Ergonomics in the World and in Our Own Backyards*

Saturday, November 17<sup>th</sup>, 2018

Having represented the Association of Canadian Ergonomists at two recent council meetings of the International Ergonomics Association (IEA, 2016 Medellin Colombia; 2017 Singapore), and attended the triennial conference of the IEA in Florence, Italy, Nancy will share what is new and important in ergonomics around the world. The presentation will emphasize how Atlantic Canada region is reflected in the challenges and successes elsewhere in the world.

#### Biography

Nancy Black, PhD. P.Eng., is Associate professor in the Department of Mechanical Engineering at Université de Moncton and in 2018 is Past president of the Association of Canadian Ergonomists – l'Association canadienne d'ergonomie (ACE), having served as President in 2017. Her 3 engineering degrees focus on ergonomics: PhD Mechanical Engineering (biomechanics), M.A.Sc. Industrial Engineering (ergonomics) and B.A.Sc. in Systems Design Engineering. She is passionate about learning and using ergonomics everywhere she goes – from travel to classroom to office. Her research focusses on musculoskeletal disorders our ability to limit them through tool and workstation design.

Since 2008, her research has focused on sedentary computer-intensive environments and so called 'ergonomic' tools. She is co-inventor of a patented "Workstation having automated and powered height, depth and rotational adjusters". She enjoys her teaching role where she can sensitize engineering students to the importance of considering human factors in their designs.



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## Conference Keynote 2 (English)

### Dr. Mark Fleming

Professor Saint Mary's University  
Halifax, NS

### *Translating Safety Research Into Practice. Lessons Learned From 30 Years of Safety Culture Research*

Saturday, November 17<sup>th</sup>, 2018

Safety culture is an important construct in industrial safety management and could be described as one of the most important developments in industrial safety in recent history. In this presentation I will describe how safety culture research can provide important insight into translating research into practice. This research highlights the benefits of adopting a collaborative approach when conducting occupational health and safety research, while also identifying the challenges in working closely with stakeholders including government, industry and labor. Safety culture research has been conducted in response to industry interest in the concept. This industry interest has resulted in excellent knowledge translation, but also may have contributed to the fragmentation of the research area.

#### Biography

Dr. Fleming is a Professor in the department of psychology at Saint Mary's University. He has just completed a five year term as the CN professor of Safety Culture. Dr. Fleming is an applied psychologist with over 20 years of experience in industrial health and safety management in high hazard industries including the offshore oil and gas, nuclear power, petrochemical, power generation and construction. He is dedicated to developing practical and valid tools to assist organizations to prevent harm.

He holds degrees from the University of Aberdeen, and The Robert Gordon University.



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## Discours Programmé 3 (Français)

### Grant Handrigan

Professeur Agrégé  
Université de Moncton  
Moncton, NB

#### *La technologie de rupture dans l'analyse du mouvement humain*

Samedi, 17 Novembre, 2018

La technologie évolue rapidement et les nouvelles technologies peuvent transformer la pratique. Les techniques d'analyse des mouvements humains ont progressé au cours des cinquante dernières années grâce aux améliorations technologiques. Récemment, le coût des capteurs portables et des microcontrôleurs a diminué, entraînant ainsi la prolifération de ces dispositifs. Par exemple, l'utilisation de l'EMG était autrefois limitée aux milieux cliniques avancés et aux laboratoires de recherche. Cependant, une recherche rapide sur Internet donnera lieu à plusieurs exemples de la façon dont les amateurs et les bricoleurs utilisent ces outils dans une multitude de projets de bricolage. L'objectif de cette présentation est de donner un aperçu de ces capteurs et d'explorer leur utilisation possible dans les techniques d'analyse du mouvement humain.

#### Biographie



Grant Handrigan a obtenu une maîtrise en sciences en 2008 de la Memorial University, NL, Canada, sous la supervision du Professeur Fabien Basset en kinésiologie (physiologie de l'exercice et du travail). En 2013, il a obtenu son doctorat en kinésiologie (biomécanique et contrôle moteur) à l'Université Laval, au Québec, sous la supervision du Professeur Philippe Corbeil et du Professeur Martin Simoneau. Il est actuellement professeur agrégé à l'Université de Moncton, au Nouveau-Brunswick, à l'École de kinésiologie et de loisirs. Il est directeur du laboratoire BEAM à l'Université de Moncton et ses intérêts de recherche comprennent les domaines de la biomécanique, de l'ergonomie et de l'analyse du mouvement humain.

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## Conference Keynote 3 (French with English Slides)

### Grant Handrigan

Associate Professor  
Université de Moncton  
Moncton, NB

### *Disruptive Technology in Human Movement Analysis* Saturday, November 17<sup>th</sup>, 2018

Technology changes rapidly, and new technologies can transform practice. Human movement analyses techniques have progressed over the past half century due to improvements in technology. Recently, the cost of wearable sensors and microcontrollers has decreased, thus resulting in the proliferation of these devices. For example, EMG use was once restricted to clinical settings and research laboratories. However, a quick search on the internet will result in several examples of how hobbyists and tinkerers use these tools in a myriad of do-it-yourself projects. The objective of this presentation is to provide an overview of these sensors and explore their possible use in human movement analysis techniques.



#### Biography

Grant Handrigan received an MSc degree in 2008 from Memorial University, NL, Canada, under the supervision of Dr. Fabien Basset in kinesiology (exercise and work physiology). In 2013 he received his PhD in kinesiology (biomechanics and motor control) from Université Laval, QC, Canada, under the supervision of Dr. Philippe Corbeil and Dr. Martin Simoneau. He is currently an associate professor at the Université de Moncton, NB, Canada, in the school of kinesiology and leisure studies. He is director of the BEAM laboratory at the Université de Moncton and his research interests include the areas of biomechanics, ergonomics and human movement analysis.



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## Student Competitions

### 1. Undergraduate Student Poster Presentation Abstract

#### Effect of Environmental Factors on Productivity

**Author:** Adam Gray

Indoor environmental qualities (IEQs) can have an impact on the productivity of employees within a company. Companies have a financial incentive to minimize costs while maximizing revenue, so it is in their interests to take concern with their work environment, and specifically with individualized IEQ. This study used a quantitative, experimental method to find the relationship between the IEQs of noise, temperature, and brightness, and employee productivity in an office environment.

### 2. Undergraduate Student Poster Presentation Abstract

#### The Effects of the Canadian Forces Gen III Fragmentation Vest on Maximum Reach Envelope

**Dalhousie University, Department of Health and Human Performance**

**Authors:** Ben McKenna, Liam Gribbon

The Canadian Armed Forces' Gen III Body Armour system is issued to all members while on operations. The body armour, consisting of a ballistic vest, and ceramic plates, is designed to protect the soldier, sailor or aviator's torso from shrapnel, and bullets. Much of the existing research, including studies performed by Defence Research and Development Canada (DRDC), focussed on the ballistic performance, and the impact of the armour on lower body mobility. This led DRDC to approach Dr. Kozey (Professor of Kinesiology, Dalhousie School of Health and Human Performance) to study the armour's impact on a soldier's shoulder mobility based on feedback from troops.

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## Student Competitions

### 3. Undergraduate Student Poster Presentation Abstract

#### **The impact of various handle orientations during a pushing task for females University of New Brunswick, Occupational Performance Lab**

**Author:** Jacqueline Toner

Previous research (1) has shown significant shoulder strength differences between males and females, and that females could have as little as 1/10th the strength of the strongest males in the population. Furthermore, females pushing strength was found to be only 70% of what men were capable of pushing (2). In terms of handle design and its impacts on one person's pushing strength, there can be a significant difference of up to 9.5% pushing strength (2). Considering that the literature has concluded that female's strength is less than, it is crucial then that worker tools are maximized in their efficiency to compensate for potential deficits in a worker's physical strength.

**Purpose:** To examine the impact of handle orientation on the amount of push force exerted, and the muscle activity required of female workers. By finding the lowest combination of force needed and muscle activity we hope to limit the possibility of injury of the worker.

### 4. Undergraduate Student Poster Presentation Abstract

#### **Aircraft Cockpit Pilot Accommodation Dalhousie University, Department of Health and Human Performance**

**Author:** Andrew Schnare

Between 2008 and 2011, it was reported that up to 15% of trained air force pilots in the Royal Canadian Air Force (RCAF), are rejected from being suitable for flying aircraft due to anthropomorphic measures which make it more difficult to fit into a cockpit. Though the fit mapping procedure is rigorous, it is not free from error. **Purpose:** To determine if there is a more accurate solution with which to predict pilot suitability, including, reach, visual fields, and physical accommodation, for each aircraft cockpit. A pilot's suitability is determined by passing all three tests.

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## Student Competitions

### 1. Graduate Oral Presentation Abstract

#### **Range of Motion, Strength Differences and the Maximum Reach Envelope with Total Rotator Cuff Tears**

**Department of Industrial Engineering, Dalhousie University, Halifax, Canada**

**Authors:** Colleen Dewis, Heather Johnson, Dr. Janice Moreside, Dr. Ivan Wong, Dr. John Kozey

Reach envelope is the area (volume) in which a seated or standing human can reach (Konz & Goel 1969). The maximum reach envelope (MRE) is performed with the trunk stable and the upper limb fully extended, thus shoulder mobility and function are key determinates.

The objective of this paper is to compare clinical range of motion (ROM) and strength measures to the MRE between asymptomatic, age-matched to participants with full Rotator Cuff Tears (RCT).

### 2. Graduate Oral Presentation Abstract

#### **Can Seat Pan Design Mitigate Lower Limb Swelling and Back Pain?**

**Memorial University of Newfoundland**

**Division of Clinical Epidemiology, Discipline of Medicine, Faculty of Medicine**

**Authors:** Mona Frey, Matthew Barrett, Dr. Diana De Carvalho

Prolonged sitting has been shown to have very negative health consequences, including early death and cardiovascular disease, especially when not offset by physical activity 1 Further, there is evidence that prolonged sitting is related to increased rates of low back pain (LBP) 2 . For these reasons, increasing movement during the workday has been advocated for desk workers in office settings. One possible solution to this problem could be alternative chair designs: specifically, a design that permits movement of the low back, hips and lower limbs in seated posture. The purpose of this study was to examine the impact of an “active” multi-axis chair on lower limb swelling and perceived back pain over a prolonged sitting exposure.

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## Student Competitions

### 3. Graduate Oral Presentation Abstract

#### Comparative Evaluation of the Effectiveness of Orthosis in Improving Human Neck Flexion Angles

Department of Industrial Engineering, Dalhousie University, Halifax, Canada

**Authors:** Srikanth Kalyanasundaram, Fola Akpan, Dr. Janice Moreside and Dr. John Kozey

'Text Neck' is a neck ailment caused due to prolonged neck flexion that has been commonly observed in people who have a relatively high usage of smartphones in their daily routine. There are devices in the marketplace to counteract this problem by positioning the phone at the eye level of the user. This is a pilot study to test the effectiveness of this device by monitoring the neck angles (all 3 rotational degrees of freedom) of the user while performing a variety of smartphone uses. Opti-trak, a passive 3D motion capture system was used to monitor the relative movement of the neck with respect to the trunk. One participant was tested performing 5 smartphone activities (Texting, Video calling, Watching a video and Surfing internet) and 3 postures (Sitting, Standing and Supine) with and without the orthosis. Improvements in neck flexion angles indicate that the best posture and activity to use the Orthosis is 'Supine' and 'Watching a video', respectively. Even though the Orthosis seemed to improve the overall neck flexion angles in most cases, further extensive research testing with more sample population and constrained test methods could validate and statistically explain the inference of the retrieved set of results from this pilot study.

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### Continuing Education Credits

Continuing education credits may be available. Contact your professional association for details.

### Social Event

Those attending the ACE Conference are invited to a social gathering at Le Coude located at 19 Antonine-Maillet Ave in Moncton on Friday, November 16<sup>th</sup> at 7:00pm. This is a chance to socialize, network with colleagues and meet the council in an informal atmosphere over light refreshments.

### Conference Hotel

**Delta Hotels Beausejour**  
750 Main St., Moncton, NB, E1C 1E6

Special conference room rate of **\$136\*** for the *Traditional Guest Room* so students double-up and save!

*\*Please inform reservations that you are with the Association of Canadian Ergonomists.*

To confirm your room, reserve ASAP at **1.506.854.4344** [Delta Hotels Beausejour - Marriott](#)  
Rate guarantee ends **October 17<sup>th</sup>, 2018.**



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## Venue

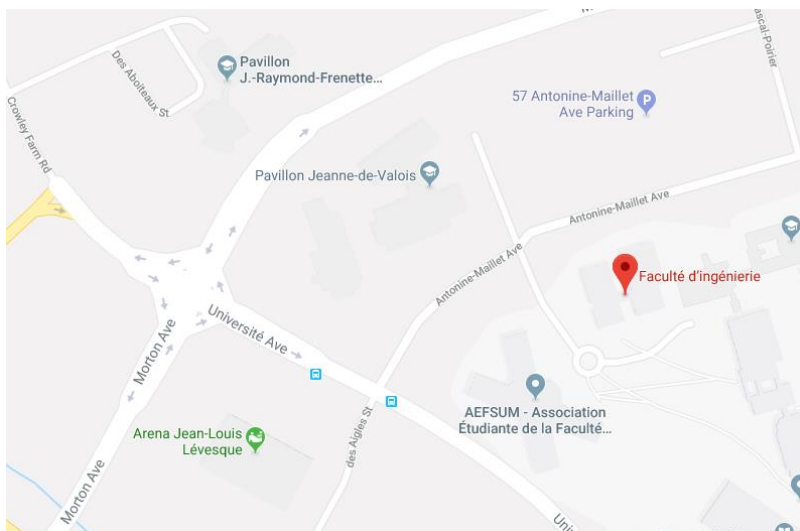
### Conference Venue

**Rooms 147G2 & 148G2**

**Faculty of Engineering, University of Moncton**

**57 Notre-Dame-du-Sacré-Coeur Street, Moncton, NB E1A 3H6**

**November 17<sup>th</sup>, 2018.**



### [Google Maps Location](#)

**Faculty of Engineering, University  
of Moncton**

**57 Notre-Dame-du-Sacré-Coeur  
Street**

**Moncton, NB E1A 3H6**

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## ACE – Atlantic Council

### ACE – Atlantic Council

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