



## Frank Arnott – Next Generation Explorers Award adapted for Université Laval curriculum

The Frank Arnott – Next Generation Explorers award (NGEA™) is currently underway with almost 100 students registered from around the globe, including countries such as Australia, Brazil, Canada, Chile, France, Germany, India, Peru, Switzerland, the United Kingdom and the United States. While the challenge has been limited to individual teams entering, that may soon be changing.

J. Christian Dupuis, a professor at Université Laval (Quebec, Canada) in the Department of Geology and Geological Engineering, has begun adapting the international competition to incorporate it into his curriculum for geophysics students this upcoming fall. We sat down with Professor Dupuis to inquire about his interest in the challenge.



### **What motivated you to enter student teams in the NGEA™?**

*Over the years I have had the opportunity to discuss with Ken Witherly (NGEA committee member) about what the Oil and Gas industry has coined 'the great shift change'. Through a number of circumstances, the mineral industry is now faced with a similar demographic challenge that is set to shape its future.*

*This challenge can easily be understood from a quick survey of the attendees at international geoscience conferences that focus on mining. For seasoned veterans, keen to make one last discovery before retirement, the prospect of finding young blood to follow in their footsteps is met by, what is perceived by many, as the lack of interest of academics in training exploration geoscientists. In my experience, this is not the case. It is simply a consequence of investment decisions of the past.*

*For many professors that teach geophysics to large undergraduate classes (30 -70 students), we have simply found ourselves priced out of commercial offerings. We use legacy instruments for our demonstrations and write our own scripts to process data. People could argue that this type of curriculum does not always constitute industry-relevant learning experience but for many, this is the best we can do given the resources we have. The brave geology undergraduate students in our classes are exposed to differential equations and scripting languages and they may even learn some geophysics along the way. Unfortunately for some, they remember the bumps in the road more than the destination. The take-home message for many who did not sign up for geology – because they loved mathematics and programming – is that geophysics is cool; at least I hope they do, but that it's best left to people that like that sort of thing.*

*The Frank Arnott – Next Generation Explorers Award is a way to drastically change how geophysics is taught in our undergraduate courses. Instead of focusing on the ‘how’ we can start focusing on the ‘why’. Instead of striving towards the goal to learn a number of geophysical methods and processing algorithms the students can strive to make the best interpretation of world-class datasets using industry standard software solutions. If the ‘why’ is clear, I think that the ‘how’ will follow. We can still show them differential equations and scripting languages, but they will be better equipped to integrate this new-found knowledge into the framework of their projects.*

*It will also provide the students with an opportunity to learn “how-to-learn”, a skill they will use throughout their professional careers. Learning driven by curiosity, necessity and discovery is likely much more powerful than simply learning concepts to pass those dreaded exams. I think that the students who love mathematics, physics and computer science will still be engaged and find innovative ways to contribute to their team’s effort. I think that, in the long run, this will allow more students to be drawn to geophysics and to use geophysical tools in their professional and academic projects. After all, we use what we know.*

#### **How do you plan to incorporate the NGEA™ into your curriculum?**

*COVID-19 is forcing us to adapt our curriculum this year. I will be introducing the flipped classroom concept for my applied geophysics course. Lectures that introduce important geophysical concepts will be pre-recorded and available to students at any time throughout the semester. Students will be invited to participate in weekly meetings to work on their projects and learn to use some of the tools that are available to them.*

*Their respective Frank Arnott dataset will be used throughout the term. It will be a large undertaking to get everyone up to speed, but I think it will be an engaging way for them to learn more about real geophysical problems. I usually have 30 to 45 students in this course. This means that we should be able to have a few submissions for each of the datasets this year. We could aim to have 11 teams of four.*

#### **What aspects of the NGEA™ excites you personally?**

*I am excited at the prospect of integrating commercial software solutions within my course and making geophysics more relevant for our students. Many in the industry agree that future deposits in stable geopolitical countries will likely be found at depth. I think that geophysics and petrophysics are two key elements to reduce the risk of these future endeavours at depth. The NGEA™ is a fantastic way for the students to gain skills that will help them in their future role in the mineral industry.*

#### **In what ways do you think the NGEA™ will benefit the mineral exploration industry?**

*Some may argue that the mineral exploration industry is faced with a significant demographic challenge. Young bright students are presented with an ever-increasing smorgasbord of opportunities. For many, mineral exploration is like one of the strange dishes at this smorgasbord that no one knows much about. The NGEA is the perfect opportunity for them to have a taste of the best our industry has to offer. After*

*all, the great 'shift change' can only occur if there is another shift. Otherwise, the current shift may have to turn out the lights.*

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The Frank Arnott – Next Generation Explorers award (NGEA™) is still accepting participants and is open to current undergrad, masters or PhD students and features cash prizes of at least \$10,000. Finalists will present live at the 2021 PDAC convention.

If you would like to get involved as a participant, mentor or sponsor, or are an educator interested in adapting the challenge for your classroom, please visit [www.frankarnottaward.com](http://www.frankarnottaward.com) or contact us at [nextgenerationexplorersaward@gmail.com](mailto:nextgenerationexplorersaward@gmail.com).