# Francis H. M. Jones, M.Sc., P.Eng.

## Curriculum Vitae, January 15, 2007

PERSONAL DETAILS

**Surname**: Jones **Given names**: Francis Hugh Melvill
**Born** June 10, 1957; Dual Canadian and British citizenship; Married with two sons born 1988 & 1993.
**Languages**: English, some French.

PRESENT EMPLOYMENT Since Sept. 1996

**Faculty Lecturer** 55% FTE, and **Research Scientist** 45% FTE,
Department of Earth and Ocean Sciences,
University of British Columbia.

POST-SECONDARY EDUCATION

1. **Degrees**

| University or Institution | Degree | Subject Area | Dates |
|---|---|---|---|
| University of British Columbia | M.Sc. | Geophysics (Glaciology) | 1987 |
| McGill University, Montreal, Quebec | B.Eng. | Electrical Engineering | 1981 |

2. **Other formal qualifications**
   a. Certificate in Teaching and Learning in Higher Education, UBC, 2002.
   b. Registered Professional Engineer, British Columbia, Canada.

EMPLOYMENT HISTORY

| Employment position | Dates |
|---|---|
| **Faculty lecturer**, 55% FTE, Department of Earth and Ocean Sciences (EOS), University of British Columbia (UBC), Vancouver. | 1996 - present |
| **Research Scientist**, 45% FTE Outreach coordinator for the Geophysical inversion Facility, EOS, UBC, directed by Prof. D.W. Oldenburg. | 1996 - present, except 9mths. |
| **Principal investigator**, BC-Campus Online Learning Objects project. Supervision of one full time technician & one workstudy student. | Apr-Dec, 2004 |
| **On contract to APEGBC** (Association of Professional Engineers and Geoscientists of British Columbia): Set and mark bi-annual geophysics exams for accreditation as Professional Engineer (P.Eng.) and Professional Geoscientist (P.Geo.). | 1999 - present |
| **Sessional lecturer**, Dep't of Geophysics & Astronomy, UBC., Vancouver. | 1995 - 1996 |
| **One-third owner MIDAAS Corp. (Canada) and MIDAAS Inc. (Nevada):** Services our company provided included development of advanced geophysical instrumentation, and delivery of geophysical services for the mineral exploration industry. Supervision of 3-5 field crew for various contracts in BC, Nevada, and Mexico. | 1992 - 1996 |
| **Consulting Geophysicist** provided geophysical field and data analysis services to the glaciology, mining, engineering, and environmental industries. | 1991 - 1996 |
| **Senior Geophysicist**, Stewart-EA Consulting Ltd., Vancouver, B.C. Geophysical data acquisition and data analysis, interpretation, and report writing, mainly for geotechnical applications. Supervision of field crew (1-3 technicians). | 1991 |

| Employment position | Dates |
|---|---|
| **R.& D. Engineer and Geophysicist**, White Geophysical Inc., Richmond, BC. Design, development, construction and field testing of hardware and software for a PC-based data acquisition instrument for DC resistivity and Induced Polarization surveys. | 1988 - 1990 |
| **Research Assistant**, Dep't of Geophysics & Astronomy, UBC., in the Geophysical Instrumentation Group & Glaciology group. | 1987 |
| **Graduate student**, Dep't of Geophysics & Astronomy, UBC., Vancouver. Qualifying student, then M.Sc. student, in Geophysics and Glaciology. **Thesis title**: *Digital Impulse Radar for Glaciology: Instrumentation, Modelling and Field Studies,* supervised by Prof. Garry K.C. Clarke. | 1983 - 1987 |
| **Oil/gas Open Hole Well-logging Engineer**, Computalog Gearhart Ltd., Calgary, Alberta. Field engineer, responsible for open-hole well logging services in Alberta and Saskatchewan. Supervision of a 3-man field crew. | 1981 - 1983 |

## TEACHING EXPERIENCE

| UBC Session | UBC Course Number *(Course descriptions follow the table.) | Scheduled Hours | Class Size | Hours Taught Lectures | Tutorials | Labs |
|---|---|---|---|---|---|---|
| 06W (fall/winter) | Eosc350 | 65 | 42 | 39 | | 26 |
| | Eosc351 | 65 | 5 | 39 | | 26 |
| | Eosc114 Sec 101/202 | 65 | ~500 | 12 | | |
| | Eosc452 | Supervised one student to fulfill curricular needs after Eosc451/452 were replaced by a new course, Eosc454. | | | | |
| 05W (fall/winter) | Eosc451 | 65 | 12 | 26 | | 39 |
| | Eosc351 | 65 | 15 | 26 | 13 | 26 |
| | Eosc114 Sec 101/202 | 65 | 583 | 12 | | |
| 04W (fall/winter) | Eosc452 | 65 | 8 | 26 | | 39 |
| | Eosc351 | 65 | 9 | 26 | 13 | 26 |
| | Eosc114 Sec 101/202 | 65 | ~500 | 12 | | |
| | Eosc449 | Supported and assessed an undergraduate thesis on application of geophysics to an hydrogeology problem. | | | | |
| 03W (fall/winter) | Eosc451 | 65 | 12 | 26 | | 39 |
| | Eosc351 | 65 | 6 | 26 | 13 | 26 |
| | Eosc114 Sec 101/202 | 65 | ~500 | 12 | | |
| 02W (fall/winter) | Eosc451 | 65 | 12 | 26 | | 39 |
| | Eosc351 | 65 | 6 | 26 | 13 | 26 |
| | Eosc114 Sec 101/202 | 65 | ~500 | 12 | | |
| | Eosc114 Sec 201/202 | 130 | ~420 | 12 | | |
| 01W (fall/winter) | Eosc452 | 65 | 15 | 26 | | 39 |
| | Eosc350 | 65 | 40 | | | 39 |
| | Eosc351 | 65 | 20 | 26 | 13 | 26 |
| | Eosc114 Sec 101 | 65 | ~200 | 6 | Lecture & labs: prep. of one module. | |
| | Eosc114 Sec 201/202 | 130 | ~400 | 12 | | |
| 00W (fall/winter) | Eosc451 | 65 | 15 | 26 | | 39 |
| | Eosc350 | 65 | 40 | | | 39 |
| | Eosc351 | 65 | 20 | 26 | 13 | 26 |
| | Eosc448 | | 2 | Directed Study to the phasing in of alternate years for Eosc451/452. | | |
| 99W (fall/winter) | Geop421 | 65 | 11 | 26 | | 78 |
| | Geop422 | 65 | 19 | 26 | | 52 |
| | Geop300 | 65 | 44 | | | 26 |
| | Geop301 | 65 | 11 | | | 78 |

| UBC Session | UBC Course Number *(Course descriptions follow the table.) | Scheduled Hours | Class Size | Hours Taught Lectures | Tutorials | Labs |
|---|---|---|---|---|---|---|
| 98W (fall/winter) | Geop421 | 130 | 6 | 52 | | 52 |
| | Geop300 | 65 | 50 | | | 26 |
| | Geop301 | 65 | 24 | 26 | 13 | 78 |
| 97W (fall/winter) | Geop421 | 130 | 9 | 52 | | 52 |
| | Geop300 | 65 | 40 | | | 26 |
| | Geop301 | 65 | 16 | | | 78 |
| 96W (fall/winter) | Geop421 | 130 | 5 | 52 | | 52 |
| | Geop300 | 65 | 35 | | | 26 |
| | Geop301 | 65 | 20 | | | |
| 95W (fall/winter) | Geop421 | 130 | 3 | 52 | | |
| | Geop300 | 65 | 35 | | | |
| | Geop301 | 65 | 15 | | | |

*Course descriptions for the table above:

Eosc350: *Environmental, Geotechnical, and Exploration Geophysics I*. Applied geophysics for non-geophysics students. Required course for professional registration as Professional Geoscientist in BC.
Eosc351: *Environmental, Geotechnical, and Exploration Geophysics II.* Additional applied geophysics for non-geophysics students.
Eosc114: *The Catastrophic Earth - Natural Disasters.* First year science course for any UBC student (800-1000 students per year).
Eosc452: *Applied Electromagnetic Geophysics.* Required for B.Sc. Honours students in Geophysics.
Eosc451: *Applied Geophysics; Borehole and Potential Fields Methods.* Required for B.Sc. Honours students in Geophysics.
Geop421: *Equivalent to Eosc451.*
Geop422: *Equivalent to Eosc452.*
Geop300: *Equivalent to Eosc350.*
Geop301: *Equivalent to Eosc351.*

## TEACHING AND LEARNING INITIATIVES

1. Contributions at Teaching and Learning Conferences; see **Publications and Presentations** below.

2. Development and application of educational technology.

| Description | Dates |
|---|---|
| Contributed to **introduction of "clickers"** into the lectures for Eosc114 (see above*). | 2006 |
| Completion of an **interactive multimedia resource** about applying geophysics, with the assistance of media production specialists. | 2006 |
| **Distance Education** (DE): completion of online content and assessments for the Earthquakes portion of the new DE version of EOS course on natural disasters, eosc114, for delivery via WebCT. | 2005 |
| Designed and produced the suite of **online learning objects** called AGLO (Applied Geophysics Learning Objects), with financial support from the British Columbia BCCampus initiative. Supervised one technical assistant. This collection of resources is accessible to all post secondary institutions across British Columbia under the "Creative Commons" Licensing scheme. Initiating, carrying out and completing this project involved improving my project management skills, and learning about many aspects of interactive online learning. | 2004-2006 |
| **Co-author of the CD-ROM** called Inversion for Applied Geophysics (IAG), with Prof. D. Oldenburg. This new teaching and learning resource is a CD-ROM "text book" on geophysical inversion, incorporating software, data sets, and modelling / inversion activities, in addition to textual and interactive images for learning about this important immerging discipline. | 2003-2007 |

3. Initiatives for applied geophysics courses.

| Description | Dates |
|---|---|
| Supported development of a **new applied geophysics course**, eosc454, to be taught by Prof. D.W. Oldenburg. | 2006 |
| Incorporate **Team-Based Learning** into Eosc350 (course descriptions above*), a class of 40-50 engineers, geologists and others. Results of student feedback were presented at a Teaching and Learning conference (see Publications and Presentations). | 2005-2006 |
| Refined the four applied geophysics courses, including introduction of the use of **reflective learning journals**. | 2003-2004 |
| (1) Introduced aspects of **problem-based learning** (PBL) into two courses. However, these changes were dropped after obtaining student feedback. (2) Development of **geophysics field exercises** at the UBC senior geology field school locations. | 2001-2002 |
| Implemented **internet and WebCT technology** for four courses (Eosc451, Eosc452, Eosc350, Eosc351) for improved content delivery, student involvement and active learning. Also trained other faculty in the use of these teaching tools. | 2000 |
| Upgraded field and lab exercises, **incorporating research results** from the UBC-Geophysical Inversion Facility, into all four applied geophysics courses, including several exercises aimed at improving professional communications skills. | 1997-2000 |
| **Developed all laboratory exercises** for two new applied geophysics courses for non-geophysics students, Eosc350 and Eosc351. | 1995-1996 |

4. Initiatives for the Department of Earth and Ocean Sciences, and 1st year science courses.

| Description | Dates |
|---|---|
| Contributing member in the **EOS CWSEI Teaching Initiative Committee** which prepared our Department's successful proposal for the UBC Carl Weiman Science Education Initiative (CWSEI). | 2006 |
| With Prof. K. Orians, attended the **Canadian Environmental Programs meeting**, Victoria, BC. as part of preparation for our Department to take over direction of the UBC Environmental Sciences Program. | 2006 |
| **Developed content about earthquakes** for the new DE version of Eosc114. | 2005 |
| (1) Upgraded the **earthquake section** of Eosc114. (2) **Initiated** the development of an online distance education version of Eosc114. (3) Supported a Science1 project involving **gravimetry** (Prof. M. Halpern was immediate supervisor for this student's project). | 2004 |
| **Developed hands-on and web-based lab exercises, and lecture content**, for the module on earthquakes for Eosc114, a new course (with labs) on natural disasters, offered to 1st year science and arts students. Subsequently the exercises became part of the first year laboratory course, Eosc111. | 2002-2003 |

5. Professional development activities undertaken to enhance my teaching and learning expertise:

| Description | Dates |
|---|---|
| **Presenter and delegate** at the 28th Annual McGraw-Hill Ryerson National Conference; see *Publications and Presentations* below.<br>**Attendance** at UBC ISoTL seminars: (i) Engaging students outside of class as a tool for enhanced learning, and (ii) Inquiry into effective teaching with one hand tied behind your back; Facilitator: Dr. Daniel Bernstein.<br>**Attendance** at TAG workshop: Digital tools for feedback and assessment.<br>**Attendance** at CWSEI introduction meetings | 2006 |
| **Attendance** at the ISoTL (International Society for the Scholarship of Teaching and Learning) conference, Vancouver, BC, October 14, 15, 16, 2005.<br>**Contributor**, 1-day Workshop: What is Team-Based Learning (TBL), and how has it been used at UBC?<br>**Participant**: TBL preparation and debriefing meetings (July and December) with Jim Sibley of Applied Sciences, UBC.<br>**Attendance** at the mentoring seminar: how to publish your teaching/learning research", St. John's College Lounge, - Garry Poole | 2005 |
| **Participant** at Effective Strategies for Developing and Working with Interactive Learning Objects. (BCcampus full-day workshop);<br>**Participant**: Assessing Educational Outcomes (TAG workshop); | 2004 |
| **Presenter**: *Balancing the diverse goals of a large team-taught first year science course: A case study in course development*, see Publications and Presentations below.<br>**Participant**: workshops and seminars at the STLHE annual conference.<br>**Participant** at TAG workshop: "No Place to Learn: Why Canadian Universities Don't Work" | 2003 |
| **Completion** of **UBC faculty certificate program** on teaching and learning in higher education.<br>**Participant**: TAG workshop on the influence of "Grades" on effectiveness of teaching and learning. | 2002 |
| **Participant**: Think tank on "We Teach Who We Are", facilitated by Garry Poole of TAG.<br>**Participant**: PBL for large classes (UBC TAG workshop).<br>**Participant**: Concept mapping (UBC TAG workshop). | 2001 |
| **Participant**: at TAG Retreat - UBC Teaching and Learning Kaleidoscope.<br>**Participant**: Electronic publishing workshop.<br>**Participant**: The Design of User Interfaces workshop (UBC TAG).<br>**Participant**: Using Creativity to Light the Fire of Learning workshop (UBC TAG). | 200 |
| **Participant**: at Workshop on Incorporating Research Data into Teaching: Programming Excel 95 with Visual Basic. (UBC TAG)<br>**Participant**: WebCT workshop (UBC TAG) | 1998 |
| **Participant** at Fostering Critical Thinking workshop (UBC TAG)<br>**Participant**: Steps in Course Design (UBC TAG). Cooperative Learning workshop (UBC, TAG) | 1997 |
| **Contributing delegate** at the Workshop on Training and Teaching in Environmental Geophysics, at the Symposium on Application of Geophysics to Environmental and Engineering Problems (SAGEEP), Keystone, Colorado. | 1996 |
| **Completion** of UBC TAG's 3-day **Instructional Skills Workshop**. | 1995 |

RESEARCH and ADMINISTRATION

- Since 1997 I have held a 45% FTE Research Scientist position, supported by the UBC Geophysical Inversion Facility (UBC-GIF), (Director: Prof. D.W. Oldenburg).
- The Lectureship and Research Scientist positions are synergistic. Students benefit from direct interaction with recent and current research activities and outcomes, while research, and outreach to industry and professionals, benefits from experience gained in techniques and ideas directly related to education.
- My background, with experience in engineering, academe, consulting, instrumentation, resource exploration and education, is uniquely suited to this position. Responsibilities fall into three categories:

1. Research support:
   a. Development of interactive workflow facilities for (i) learning about geophysical inversion and modelling software and (ii) presenting corresponding reference documentation.
   b. Writing and maintaining software and tutorial documentation.
   c. Providing recommendations about user interfaces and packaging for software.
   d. Contributing towards development of functionality and GUI interfaces.

2. Technology transfer activities:
   a. Co-author with D.W. Oldenburg of *Inversion for Applied Geophysics*, an **interactive CD-ROM** about applied geophysical inversion. Content, software, exercises and data sets have been gathered and developed over the previous 5 years.
   b. Development and presentation of **workshops** and course material (undergraduate and graduate levels) on applied geophysics & geophysical inversion.
      **Full-day workshops** developed and presented for academic and professional audiences include:
      i. **Understanding Geophysical Inversions for Mineral Exploration**, at the Vancouver 2003 - GAC, MAC, SEG convention, with D.W. Oldenburg, May 2003.
      ii. **SEG2000 Workshop on Inversion of DC Resistivity IP and Magnetic Data**, Annual Meeting of the Society of Exploration Geophysicists, with D.W. Oldenburg and Yaoguo Li (of the Colorado School of Mines), August 2000.
      iii. **A Workshop on 3D Inversion of Geophysical Magnetic Data**, Vancouver, BC, for professionals in the mineral exploration and engineering industries, with D.W. Oldenburg, July 1999.
      iv. ***A Workshop on 2D Inversion of DC Resistivity and IP Data***, Vancouver, BC, for professionals in the mineral exploration and engineering industries, with D.W. Oldenburg, July 1998.
   c. Development of textual, presentation, online, and interactive material for communicating technical research outcomes. Targeted readers include research sponsors, commercial and academic users, and students.

3. Administrative support:
   a. Support of grant applications, mostly to NSERC.
   b. Support development of academic and commercial licensing schemes for UBC-GIF software codes, and interact with the UBC Industry Liaison Office (UILO).
   c. Liaison with academic users and commercial distributors of UBC-GIF codes.
   d. Managing licensing of inversion codes to academic groups.
   e. Communications with sponsors related to research and use of delivered software.
   f. Organization of annual Sponsor's meetings.
   g. Management of the UBC-GIF website, used for training, software licensing, software and documentation delivery, and research communication (publications, case histories, etc.).
   h. General promotion of GIF to the academic community and the outside world (booths at industry trade shows and other efforts).

SERVICE ACTIVITIES

1. Memberships on Department Committees
   a. *2006-2007*: (1) Teaching Initiative committee; (2) EOS web content committee; (3) Public & Internal Relations and Museum committee (4) Time-tabling committee. (5) Participant, EOS Environmental Science Program workshop.
   b. *2004-2005*: (1) EOS web content committee; (2) Public & Internal Relations and Museum committee (3) time-tabling committee.
   c. *2003-2004*: (1) Chair, EOS web content committee; (2) teaching / learning committee; (3) time-tabling committee.
   d. *2002-2003*: (1) Chair, EOS web content committee; (2) teaching / learning committee; (3) time-tabling committee.
   e. *2001 - 2002*: (1) Chair, EOS web content committee (overseeing the rebuilding of the Department's web site); (2) EOS safety committee; (3) time-tabling committee.
   f. *1997 - 2001*: (1) EOS safety committee; (2) time-tabling committee.

2. Other services at UBC
   a. *March 2005*: **presentation** "Technology and the Earth Sciences" for UBC Focus days. This is a UBC recruitment initiative directed at grade 11 and 12 high school students.
   b. *2002-2003*: (1) **volunteer** at the EOS careers fair (2) **volunteer** at "beyond first year" (3) **volunteer coordinator** of career information for geophysics undergraduates.
   c. *July 2002*: **Physics outreach volunteer**: Initiated, prepared and facilitated a 1-day segment on Earth's magnetic field for the UBC Physics & Astronomy Outreach "Phenomenal Physics: Geophysics and Astrobiology" 1 week summer camp for teenagers.

3. Reviewer
   a. *August 2005*: **Reviewed** one chapter for a new natural hazards text book, for the publisher Pearson Education Canada.
   b. *June 2004*: **Reviewed** one article about the use of geophysics for a geotechnical application for the *Canadian Geotechnical Journal*.

4. Other service to the community
   a. *2004*: **Outreach to schools**: (1) Taught a module on earthquakes to grade 9 students in the local high school. (2) Taught an interactive, active learning module on resource exploration to grade 5 students.
   b. *2002*: Developed and taught a **one-day module on earth's magnetic field** at the day-camp for young teenagers run as part of the outreach program of the UBC Department of Physics and Astronomy
   c. *2000 - 2003*: **Volunteer judge** at the annual Greater Vancouver Regional Science Fair.
   d. *2002*: Supported development of geophysics **field exercises for a new field school for prospectors** offered by the BC and Yukon Chamber of Mines at the UBC Geology Field School location.
   e. *1999*: **Outreach to schools**: Taught an interactive, active learning module on resource exploration to grade 5 students.
   f. *Periodically*: **Board member** (secretary, member at large, vice president) at daycare societies and sports clubs in which my two children participate.

5. Memberships in professional and scholarly societies: APEGBC, SEG, IEEE, EEGS, SoTL.

PUBLICATIONS and PRESENTATIONS

1. *Refereed Contributions*

2006 **Teaching technical subjects to diverse student groups: Challenges, solutions and an example**, presentation at The 28th Annual McGraw-Hill Ryerson National Conference - Exemplary Teaching: Inspiring Learner Engagement and Success, Saskatoon, SK., November 2006.

2003 **Balancing the diverse goals of a large team-taught first year science course: A case study in course development***;* poster selected for presentation at the STLHE (Society for Teaching and Learning in Higher Education): F. Jones, Dr. R. Stull and J. Caulkins, Vancouver, June, 2003.

1999 **Geophysical Inversion: New Ways of Seeing the Earth's Subsurface**, Francis Jones and Doug Oldenburg, article in INNOVATION, the Journal of the Association of Professional Engineers and Geoscientists of BC, October, 1999. Also reprinted in the PEGG - Vol. 28, No. 3, of the Association of Professional Engineers, Geologists and Geophysicists of Alberta.

1989 **Design and operation of a Portable, Digital Impulse Radar**, F.H.M. Jones, B.B. Narod, and G.K.C. Clarke. Journal of Glaciology, Vol. 35, No.119.

1987 **A Back-portable, Microprocessor-based Impulse Radar System**, Annals of Glaciology, Vol. 9.

2. *Other presentations and seminars*

2005 **- Invited Demonstration**: *Applied Geophysics Learning Objects*, a demonstration of our BCcampus funded online learning project to the Honourable Ida Chong, Minister of Advanced Education, and others, at the launch of the next phase of BCCampus funding, April, 2005
**- Invited Lecture**: *Natural Disasters - Earthquakes*. One of 5 lectures for senior citizens, as part of a course on Natural Disasters organized by UBC Continuing Studies, June, 2005.
**- Seminar:** *Experiences in the Use of Online Learning Objects for Traditional & Non-Traditional Learning* at UBC's annual eStrategy TownHall meeting, June, 2005.

2002 **Invited lecture**: *Geophysical Inversion: Current State-of-the-Art & Future directions*, Francis Jones and Doug Oldenburg, at the KEGS (Canadian Exploration Geophysics Society) 50th Anniversary Symposium, Toronto, March 8, 2003.

1997 **Presentation**: *Using Digitized Time-Domain Resistivity and IP Waveforms,* with Prof. D. Oldenburg, UBC-GIF Sponsor's meeting, February 1997.

1995 **Seminar**: *Full-Waveform, Multichannel DC Resistivity and IP for Mineral Exploration,* presented as part the Departmental seminar series, Department of Geophysics and Astronomy, UBC.

1993 **Presentation**: *A New Multichannel, Full-Waveform, PC-based DC Resistivity and Induced Polarization Instrument; System Description and Field Examples*, with Dr. D. Woods, at the annual Northwest Mining Association Convention, Spokan, Washington.

1988 **Presentation**: *Results of Digital Impulse Radar Experiments in the St. Elias Mountains, Yukon Territory*, F. Jones, 1988, at the Ground Penetrating Radar Workshop, Geological Survey of Canada, in Ottawa, May 1988.

1987 **M.Sc. Thesis**: *Digital Impulse Radar for Glaciology: Instrumentation, Modelling and Field Studies,* Department of Geophysics and Astronomy, UBC, supervised by Prof. Garry K.C. Clarke.