

Curriculum Vitae - James Frankenfield

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Tbilisi, Georgia

(+995) 557 34 44 05; (+1) 877 604 0166

james_frankenfield@alum.rpi.edu

Summary

An experienced engineer, scientist and educator. M.Sc. degrees in Physics (Seasonal Snow and Avalanches) and Mathematics (Dynamical Systems) from Utah State University and a B.Sc. degree in Electrical, Computer and Systems Engineering (Semiconductor physics; Systems analysis) from Rensselaer Polytechnic Institute. Trained, skilled and experienced in mountain safety and rescue, risk management, and mountaineering.

Citizen of the United States of America, permanent resident of Georgia.

Education

Degrees:

M.Sc. Mathematics, Utah State, 1990, 3.9/4.0 (Dynamical Systems, Higher Education)
M.Sc. Physics, Utah State University, 1989, 3.9/4.0 (Seasonal Snow and Avalanches)
B.Sc. Computer and Systems Engineering, RPI, 1983 (3.3/4.0)

Additional Graduate Education:

Oregon State University, 1993, (Unsaturated Fluid Flow in Porous Media)
Oceanography, Oregon State University, 1994 (Physical Oceanography)
Civil Engineering, Oregon Institute of Technology, 2009-2013 (Part Time, non-degree)

Standard Exam Scores

(Taken one time, no special preparation or study)

SAT: 760/590 Math/Verbal

GRE: 790/760/610 Quantitative/Analytical/Verbal

Select Additional Training and Certifications

Registered Engineering Intern, Oregon (First Professional Exam passed 2012)
Wilderness First Responder Certification (Certification currently lapsed)
Professional Mountain Rescue Training
Canadian Avalanche Association Technical Schools – Resource and Transportation Level 1
Canadian Avalanche Association Technical Schools – Avalanche Terrain Hazard Mapping
Canadian Avalanche Association Professional Development – Avalanche Forecasting

Administrative and Leadership Background

Eagle Scout with several Palms
1.5 years in Army ROTC, including leadership courses and labs
Graduate Coursework in Public Administration
President of the Board of Directors, Utah Avalanche Center - 1992-1995
Founder and Executive Director of the CSAC Avalanche Center, est. 1994

Experience

Higher Education Experience

University of Georgia, 2017-Present

School of Law Invited Lecturer – Legal English

San Diego State University – Georgia, 2016-2019

Calculus and Pre-Calculus for STEM students

“Help Desk” organizer and coordinator

Exam integrity, general quality, and various other tasks

Oregon Institute of Technology, 2008-2013

Adjunct – Departments of Mathematics and Mechanical Engineering

Course Assistant – Department of Civil Engineering

University of Maryland European Division, 1990-1991

Lecturer – Mathematics, Physics, Computer Science

Utah State University, 1986-1989

Teaching Assistant, Physics and Mathematics

Graduate Engineering Course Developer/Instructor

Rensselaer Polytechnic Institute, 1981-1983

Teaching Assistant, Department of Computer and Systems Engineering

University Courses Taught

RPI = Rensselaer Polytechnic Institute, <http://www.rpi.edu/>

USU = Utah State University, <http://usu.edu/>

UMD = University of Maryland, European Division, <http://www.europe.umuc.edu/>

OIT = Oregon Institute of Technology, <http://www.oit.edu/>

SDSU = San Diego State University, Georgia, <https://georgia.sdsu.edu/>

UG = University of Georgia, <https://www.ug.edu.ge/>

Introductory College Physics - Calculus Based for Engineers (USU)

College and Pre-College Algebra (USU, UMD, OIT)

Modeling and Analysis of Dynamic Systems (RPI, OIT)

Computer Organization and Logic Design (RPI)

Semiconductor Layout and Fabrication – Graduate EE (USU)

Introduction to Chaotic Dynamical Systems – Graduate Engineering (USU)

Basic Computer Skills (UMD)

Engineering Senior Project (OIT)

Closed Conduit Fluid Systems - Water/Sewer/Storm Systems (OIT)

Calculus I and Pre-Calculus (SDSU-Georgia)

Legal English (UG)

Grades 6-12 Teaching Experience

Tbilisi, Georgia, 2013-2020, Various Schools and Programs

September 2013 – December 2013: Chagler International School, GCSE curriculum.
(This school was later closed by the Ministry of Education.)

Taught physics for grades 9 through 12 and SAT preparation.

September 2013 – February 2016: Queen Victoria British International School, GCSE curriculum. (This school ultimately failed for business/administrative reasons but had been promising academically.) Served as Assistant Director responsible for all academic non-business functions. Taught middle school science, grade 9-10 math and physics, grade 9 chemistry, and for a short time history.

September 2016 – June 2017: American Academy in Tbilisi (GZAAT), Standard American curriculum. Taught grade 12 math and grade 11 physics. Gained experience with the Harkness method, including limitations and challenges.

References from former students and colleagues are available on request.

Additional experience: In 2016 I began a program called “Caucasus Snow School”. Due to limited time and funding so far this was offered on a trial basis for one public school and one private before the pandemic. It has been successful and popular and is generating requests from more schools.

Since 2013 I have conducted private lessons, primarily for English but also for science and for SAT and GED preparation.

Industry Experience

IBM, 1981-1983, Cooperative Education / Internship (3 terms, 1 year total)
Computer Design, Process Yield Forecasting

Tested and corrected diagnostic microcode and designed logic for a mainframe disk controller in Tucson, Arizona. Developed a forecasting model to predict yields of future larger integrated circuits based on current yields at the time in East Fishkill, NY.

Intel, 1984-1985, Process Engineer, Lithography
Microelectronics Fabrication

Resolved process related problems and identified design related problems. Provided oversight of all lithography related processes in the Chandler, Arizona fabrication plant on second shift. Processes covered included printing, developing, and etching.

Morton Thiokol, 1985-1986, Plant Engineering, Special Projects
Rocket Motor Manufacturing

Identified and evaluated potential robotic approaches to quality control for space shuttle propellant. The number of launches was increasing rapidly and after being mixed each batch had to be FTIR analyzed within a short time before being added to the motor casting. Also responsible for simple general facilities projects – cost estimating, parts specifications, supervision and documentation. This was a safety-critical environment with very large quantities of highly explosive materials.

Self-Employment Experience, 1994-Present

AlpenPro (www.AlpenPro.com) - Under this business name consulting services on snow avalanche risk mitigation are provided. Services offered have included site-specific technical reports for use in structural engineering, insurance dispute reports, developer due diligence studies, and more.

Mountain Guiding (www.mountain-guiding.com) - Offering private and independent mountain guiding services for alpine climbing and ski touring. This includes education as well as traditional guiding on ascents and trips.

Snow and Avalanche Center (www.avalanche-center.org) - One of the first internet sites in 1994, initially on a gopher server before moving to the web. The site is authoritative and global on snow avalanches and remains active. The underlying organization operates as a 501c3 non-profit. The current emphasis of the avalanche website is online education using open source software.

Snow School in Georgia – A new initiative to introduce an experiential science education program from the US to schools in Georgia. Still in an unfunded start-up phase.

Research Experience

Unsaturated Porous Media – Oregon State University, 1993-1994

Cloud and Fog Physics – Utah State University Meteorology, 1994

BJT Transistor Physics/Fabrication – Rensselaer Polytechnic Institute, 1984

Publications and Presentations

Professional Publications

Applied Chaotic Dynamics: An Introduction

USU Thesis and Graduate Engineering Text, 1989

Snow and Avalanche Physics

USU Thesis 1989

Fluid Interfacial Geometry at the Pore Scale and its Effects on Characteristic Curves

Proceedings of the 14th Annual Hydrology Days, Colorado State University, 1994

Building Community Support and Diversifying Funding for Avalanche Forecasting

International Snow Science Workshop - Snowbird UT, 1994

Volumes and areas of pendular rings with non-zero contact angles

Accepted by Water Resources Research but self-published on web

Pore Space Characterization of Wet Snow in the Pendular Regime

Proceedings of the International Snow Science Workshop in Banff, 1996

Snow Avalanche Engineering, An Overview

Presentation to the Southern Oregon Chapter of ASCE, 2013

Issues of Enguri Arch Dam Bottom Outlet Structures

Mirian Kalabegishvili, Davit Chikovani, James Frankenfield

IBSU Journal of Technical Science and Technologies; Vol 4, No 2 (2015)

Public and General Interest Publications

Storm Warning: Avalanche!

Discovery Channel, 1994 (Interviewed in Episode)

Snow Stability and Avalanches

The Wasatch Mountain Club "Rambler", Utah

(Later incorporated into a MOOC created at UBC with permission)

Avalanche Awareness for Snowmobilers

Snowmobiling Online (now defunct)

Select Technical Reports

Engineering Report: Avalanche and Design Parameters
Lot #16, Tract 2, Aspendell - Inyo County California
Numerous similar design reports in Aspendell since 2005

2008: Pre-purchase Due Diligence Avalanche Report - Snowpine Lodge, Alta, Utah
Prepared for Cafritz Interests

2009: Avalanche Mitigation Review - Chubb Insurance
Re: 6 Cliffhanger Loop, Taos Ski Valley, NM
Claim 040508001954

Select Conferences Attended

** - Paper presented*

14th Annual Hydrology Days, Colorado State University, 1994 *

International Glaciological Society Snow and Avalanche Conferences:

- 1997, Chamonix, France
- 2000, Innsbruck, Austria

International Snow Science Workshops:

- 1994, Snowbird, Utah, USA *
- 1996, Banff, Alberta, Canada *
- 1998, Sunriver, Oregon, USA *
- 2000, Big Sky, Montana, USA
- 2002, Penticton, British Columbia, Canada
- 2004, Teton Village, Wyoming, USA

Snow Engineering International:

- 2004, Davos, Switzerland
- 2008, Whistler, British Columbia, Canada

European Avalanche Forecasting Centers Meeting:

- 2005, Davos, Switzerland
- 2009, Innsbruck, Austria

IFMGA / German Speaking Avalanche Centers Coordination Meetings: 2004, 2005

Avalanche Winter 1999, Lessons and Progress: 2009 (Galtur, Austria)