



10 YEARS
UARctic 2001-2011



Thematic Network in Arctic Engineering and Science

presented by
Hannele Zubeck
University of Alaska Anchorage




www.uarctic.org

10 YEARS
UARctic 2001-2011

Thematic Networks

Groups of UArctic members working together on subjects of shared interest to create learning experiences for students, faculty and communities.



www.uarctic.org

10
YEARS
UArctic 2001-2011

Thematic Networks

Arctic Coastal and Marine Issues	Global Change
Arctic Engineering and Science	Health and well-being in the Arctic
Arctic Law	Indigenous Arts and Crafts
Arctic Sustainable Arts & Design	Local and Regional Development in the North
Business Management in the North	Northern Food Security
Digital Media and Media Arts	Northern Governance
Distance Education and e-Learning	Northern Tourism
Energy in New Time	Polar Ice, Climate and Land Dynamics
Environmental Impact Assessment of Industry Contaminated Areas	Social Work
Environmental Training and Education for Sustainable Development of the Arctic (NETESDA)	The Verdde Program
Geopolitics and Security	World Images of Indigenous Peoples of the North



www.uarctic.org

10
YEARS
UArctic 2001-2011

TN AES

- Established June 2008
- Co-leads:
 - University of Alaska Anchorage (UAA), U.S.
 - Rovaniemi University of Applied Sciences (RAMK), Finland
- Active members:
 - ARTEK (Centre of Arctic Technology), Greenland/Denmark;
 - Luleå University of Technology (LTU), Sweden



www.uarctic.org

10 YEARS
UArctic 2001-2011

TN AES

- Other members:
 - University of Oulu, Finland; (original founding member, and a new connection via Riitta Kamula)
 - Arkhangelsk State Technical University, Russia; (wanted to join in Edmonton Council Meeting but lost connection)

UArctic www.uarctic.org

10 YEARS
UArctic 2001-2011

Focus

- TN AES focuses on development of sustainable technologies through engineering and science
 - That improve the quality of life and
 - Allow for natural resource development in the north
 - While preserving the environment
 - Including climate change adaptation strategies

UArctic www.uarctic.org

10
YEARS
UArctic 2001-2011

Collaborative activities

- Research cooperation
- Development of joint education programs
 - northTREX faculty exchange and
 - north2north student exchange
 - distance education via e-learning
 - curriculum development
- Knowledge sharing
- Teacher training and
- Outreach



10
YEARS
UArctic 2001-2011

Current Programs

- Online courses in Arctic Engineering, University of Alaska Anchorage, UAA
- Arctic Camps, Luleå Technical University, LTU
- International Semester in Sisimiut, Greenland, ARTEK, Danish Technical University, DTU
- Shared curriculum development



www.uarctic.org

10
YEARS
UArctic 2001-2011

UAA Online Arctic Engineering Program

- Master of Science Program entirely in on-line environment
- Uses Blackboard Education System
- Courses in
 - Introduction to Arctic Engineering
 - Frozen Ground Engineering
 - Arctic Utilities
 - Arctic Hydrology and Hydraulic Engineering
 - Snow and Ice Engineering
 - Arctic Heat Transfer
 - Pavement Engineering, etc.



www.uarctic.org

10
YEARS
UArctic 2001-2011

Winter Camps

- Luleå University of Technology, Sweden



www.uarctic.org

10
YEARS
UArctic 2001-2011

Practical experience

- Many students are coming from regions where there is a shortage of "good winters"
- How to dress and behave?
- If you can take care of yourself in cold regions you will be able to do it in other regions.



www.uarctic.org

10
YEARS
UArctic 2001-2011

International Semester in Greenland

- Spring semester in Sisimiut open for international students, taught in English.
- Topics in civil, environmental and energy engineering.
- Increase international awareness on the Arctic and its challenges.
- Create an international study environment in Sisimiut to support Arctic Engineering students.
- Bring knowledge and competences into Greenland



www.uarctic.org

10
YEARS
UArctic 2001-2011

Past activities

- Conference papers:
 - Zubeck, H., Knutsson, S. Jensen P.E. and Nielsen, M.H. (2010). "Introduction to University of the Arctic's Thematic Network on Arctic Engineering and Science." *Proc. of the 9th International Symposium on Cold Regions Development*, The Ministry of Science and Vocational Education of the Sakha, Yakutsk, Russia.
 - Zubeck, H., Knutsson, S. Jensen P.E. and Nielsen, M.H. (2009). "University of the Arctic's Thematic Network on Arctic Engineering and Science." *Proc. 14th Intl. Conf. on Cold Regions Engineering*, ASCE, Reston, VA.



www.uarctic.org

10
YEARS
UArctic 2001-2011

The University of the Arctic Magazine

SHARED VOICES

2009

19 <<<

Text: Hannele Zubeck, University of Alaska Anchorage, US

Arctic Engineering and Science Survivors

UArctic's Thematic Network on Arctic Engineering and Science was only established in June 2008, but it already offers an online Masters program in Arctic Engineering and is busy bringing students out into the ice and across where the real work is done.

Professor Sven Knutsson from Luleå University of Technology (LTU) is a true campaigner for snow and ice as the material for engineering experiments. He doesn't leave the learning in the laboratory, but has blazed a trail for holding camps in the wild during the coldest time of the year.

The students who participated in these arctic camps described their experience as "unforgettable". They are extremely proud of their achievement as survivors, and highly respected by their peers. The LTU is currently cooperating with the University of Oulu, Finland in co-teaching such courses in Arctic Engineering.

Online courses in the field of Arctic Engineering are also available through the University of Alaska Anchorage (UAA). Students can earn a Masters of Science in Arctic Engineering in an online environment – from the comfort of their offices or homes.

Professor Hannele Zubeck from the UAA likes to brag about Sergei Baranof, who graduated after two years of taking courses from Russia, the United Kingdom and Texas, U.S.A. – literally around the world.

Baranof, now a senior engineer, said that "UAA's Arctic Engineering courses helped me to develop my expertise week by week, allowing me to find better technical solutions and cut the costs of projects that I was coordinating."

Hannele says that UAA hopes to have more students like Sergei taking the entire program or a even few courses through the University of the Arctic.

Another interesting cooperation project is the International Semester in Greenland (ISG) to be hosted by ARTEK, the Arctic Technology Centre of the Technical University of Denmark (DTU). The ISG is open to university students from around the world and offers learning opportunities in sustainable technologies and engineering in extreme environments. Lectures, exercises, project work, and work in the field are all part of the student experience. Teaching will be done by faculty members and scientists from DTU, and collaborating institutions within the University of the Arctic.

Much more is in the works for this young thematic network. Please contact Hannele Zubeck at ahz@uaa.alaska.edu with any questions and ideas.



www.uarctic.org

10
YEARS
UArctic 2001-2011

Past activities

- News article: URS Arctic Engineering Graduate Fellowship awarded to Ben Still
 - University of Alaska Anchorage (UAA) Arctic Engineering graduate student Ben Still is the recipient of the URS Arctic Engineering Graduate Fellowship for the 2010-11 and the 2011-2012 academic years. The total of \$50,000 fellowship enables Ben to



<http://www.uarctic.org/members.aspx?m=825&amid=12710>



www.uarctic.org

10
YEARS
UArctic 2001-2011

Thematic Network Funding

- TN AES receives 2000 € for seed funding
 - Aids in funding the Nordic Countries' delegation to 2013 meeting
 - Assumes a proposal will be submitted
 - Channeled via RAMK



www.uarctic.org

10
YEARS
UArctic 2001-2011

Workplan 2013

Summary of Implementation Indicators for Thematic Network on Arctic Engineering and Science

Indicator	Explanation	2013
Number of institutions engaged	LTU, UAA, ARTEK, RAMK	4
Number of joint international publications produced	Joint paper about Mining in Arctic Regions	1
Number of educational programs developed (for Undergraduate and Graduate strategic areas)	New shared learning modules	2
Number of exchanges (students and teachers)	Goal	1
Number of joint projects between Thematic Networks and other Arctic research, development, and governmental organizations.	The Northern Periphery Programme 2007-2013; Roadex IV; Arctic Mining; Snow Drifting; Renewable Energy in Arctic	3



www.uarctic.org

10
YEARS
UArctic 2001-2011

Future plans

- Online curriculum sharing (RAMK – Snow Engineering, UAA – any of the existing online Arctic Engineering courses, others), joint Ph.D. program.
- Student exchange
- Potential research projects:
 - Renewable energy
 - Snow drifting
 - Mining
 - Road preservation
- Next meeting in Rovaniemi, Finland or Sisimiut, Greenland



www.uarctic.org