Norwegian University of Science and Technology
Trondheim, Norway

http://www.ntnu.no
Norwegian Universities and University Colleges

- University of Bergen
- Norwegian School of Economics and Business Administration
- University of Stavanger
- Norwegian University of Science and Technology
- University of Tromsø incl. the Norwegian College of Fishery Sciences
- Norwegian University of Sport and Physical Education
- Oslo School of Architecture
- Norwegian State Academy of Music
- University of Oslo
- Norwegian College of Veterinary Medicine
- Norwegian University of Life Sciences

University Courses at Svalbard (78° North)
NTNU Campus Photos
Organizational chart of NTNU
NTNU key figures

20 000 registered students
52 departments in 7 faculties
Over 50 000 student applications per year
  - of which 8500 have NTNU as their first choice
2800 B.Sc. and M.Sc. degrees awarded per year
220 PhD degrees awarded a year
4150 employees
Budget: NOK 3.5 billion
515 000 m² of buildings
NTNU’s history

1210 Schola Cathedralis Nidarosiensis
1757 The Mining Academy of Kongsberg
1760 Royal Norwegian Society of Sciences and Letters
1870 Trondheim Technical Vocational School
1910 Norwegian Institute of Technology (NTH)
1922 Norwegian Teacher Training College
1968 University of Trondheim
1973 Music Conservatory in Trondheim
1979 Trondheim Academy of Fine Art
1984 College of Arts and Science
1996 Norwegian University of Science and Technology (NTNU)
Curricula in Technology

- Chemistry and biotechnology
- Civil and environmental engineering
- Communication technology
- Computer science
- Electronics
- Engineering cybernetics
- Engineering design and production
- Engineering science and ICT
- Geophysics and petroleum engineering
- Industrial economics and industrial management
- Industrial design
- Marine sciences
- Marine technology
- Materials technology
- Physics and mathematics
Strategic research focus at NTNU

Six thematic strategic research areas

Three National Centres of Excellence

Three National Centres of Research-based Innovation

A strong program for Interdisciplinary Research

15 Gemini Centers at NTNU-SINTEF, examples:

- Marine Structures
- Materials and Energy
- MiNaLab (Center for Micro- and Nanotechnology)
- Petroleum Center
NTNU’s six strategic research areas

1. Energy and Petroleum
2. Medical Technology
3. Materials Technology
4. Marine and Maritime Technology
5. Information and Communication Technology
6. Globalization
Centres of Excellence

Nationally selected research groups at NTNU of high international standard that are governed by uniform management principles.

1. Center for Quantifiable Quality of Service in Communication Systems – Q2S

2. Center for the Biology of Memory – CBM

3. Center for Ships and Ocean Structures – CESOS

Duration: 2003–2013
Budget for each: NOK 30 million annually
Funded by the Research Council of Norway, NTNU and industry
Centres of Research-based Innovation

On 16 June, 2006 the first 14 Norwegian Centers for Research-based Innovation (CRIs) were announced. NTNU and SINTEF are partners in 10 of these and hosts for 6.

**NTNU is host for the following 3 centers:**

1. Center for Integrated Operations for the Petroleum Industry

2. Medical Imaging Laboratory for Innovative Future Healthcare

3. Structural Impact Laboratory

**Duration:** 2006–2014

**Budget for each:** NOK 30-40 million annually

**Funded by the Research Council of Norway, NTNU, SINTEF, IFE and industry**
Research (2005)

2200 academic publications in the Frida system
220 doctoral degrees awarded
1850 research projects (and 630 supporting projects)
46 projects in EU’s 5th & 6th Framework Programmes with NTNU participation
15 of the EU projects started in 2005
Hosted 226 guest researchers from abroad
231 NTNU researchers were on sabbaticals abroad
Cooperation with SINTEF

SINTEF is one of Europe’s largest independent research organizations
Turnover NOK 1.7 billion, 1850 staff (500 in Oslo)
Established in 1950 as the contract research organization of the Norwegian Inst. of Technology
Contract research in technology, natural sciences, medicine and social sciences
Cooperates with NTNU in terms of staff, equipment, laboratories and dissemination
15 Gemini Centres for joint NTNU/SINTEF R&D
Many NTNU staff are permanent SINTEF advisers
Many SINTEF staff are adjunct professors at NTNU
Petroleum Education and Research at The Norwegian University of Science and Technology Trondheim, Norway

http://www.petroleum.ntnu.no
Gløshaugen and Lerkendal Stadion in the middle, Petroleum Center (SINTEF & NTNU) at lower right
Brief statistics of petroleum education at Norwegian University of Science and Technology

• established in 1973
• first class graduated in 1974 (30-year jubilee in 2004)
• Near 2000 graduated sivilingeniørs and M.Sc.’s during 1974-2005
• 100 graduated Ph.D.’s candidates during 1977-2005
• around 80 M.Sc.’s graduate per year
• around 10 Ph.D.’s graduate per year
• currently around 90 full-time teachers, staff, researchers
• around 280 students enrolled at upper B.Sc. and M.Sc. levels
Professors in Petroleum Engineering and Petroleum Geoscience

Petroleum Engineering

- **Drilling**
  - E. Fjær
  - R. Holt
  - A. Rødland
  - S. Sangesland
  - P. Skalle

- **Production**
  - H. Asheim
  - M. Golan
  - J. Gudmundsson
  - H. Herfjord

- **Reservoir**
  - T. van Golf-Racht
  - O. S. Hustad
  - T. Aa. Jelmert
  - J. Kleppe
  - O. Torsæter
  - C. H. Whitson

Petroleum Geoscience

- **Geophysics**
  - L. Amundsen
  - C. Puigdefabregas
  - T. Eidesmo
  - S. Johansen
  - H. Langeland
  - M. Landroe
  - O. B. Lile
  - J. R. Skilbrei
  - E. Tjaaland
  - T. Torsvik
  - B. Ursin

- **Geology**
  - S. O. Johnsen
  - S. Lippard
  - M. B. E. Mørk
  - R. Sinding-Larsen
  - A. Mørk

1) emeritus
2) adjunct (20%)

*At Department of Geology and Mineral Resources Engineering*
International M.Sc. and Ph.D. Programs

• English Language Instruction
• 40% non-Norwegian Students in M.Sc. Program
• 50% non-Norwegians in Ph.D. Program
International Educational Collaboration

- Student exchange agreements with European universities
- Student exchange agreement with University of Texas, Texas A&M University, Colorado School of Mines
- Student exchange agreement with University of Campinas, Brazil
- Student exchange agreement with University of New South Wales
- NORAD-financed petroleum education for students from Asia and Afrika (12 per year)
- Government-financed petroleum education for students from Eastern Europe and developing countries (15 per year)
- Educational collaboration with Pomor University, Russia
  - 150 students trained during 1996-2004
- Training agreement with NIOC, Iran for education and research.
  - 50 Iranians will get M.Sc. degrees at NTNU 2000-2005
- Training agreements with Venezuela og Aserbaijan
- Discussion of collaboration with Angola, Iraq, Libya, Nigeria, Russia, Saudi Arabia,
A typical classroom in 2004

• 15-20 nationalities, languages, cultures...
Number of students admitted into M.Sc. level in Petroleum Engineering/Petroleum Geoscience at NTNU

- Norwegian
- non-Norwegian

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Non-Norwegian Students in the M.Sc. Programs in Petroleum Engineering/Geoscience at NTNU during 1993-2005/06
Modern Facilities

High Performance Visualization and Computing
Huge amounts of data and demanding computational tasks are typical for many of the petroleum disciplines. Through a close collaboration with Norsk Hydro, the department has been able to install a floor-to-ceiling Virtual Reality laboratory, with a dedicated 32-processor SGI computer. The laboratory is used primarily for visualization of seismic data and reservoir fluid flow. Other applications are under development. We have close collaboration with other departments at NTNU, such as medicine and computer science.
Industry-Sponsored Field Courses Integrated in M.Sc. Program

Geological Field Courses
Through close collaboration with Statoil, Norsk Hydro, BP, and Shell several new field courses for the M.Sc. students have been developed over the past few years. The courses take place at Svalbard, in England, in the Pyrenees and in Oman.
Multi-Disciplinary Groups

Group-based multidisciplinary learning processes

Considerable resources are invested in modern learning methods and technology over the past few years (PBL, multi-disciplinary groups, web-based learning). Through close collaboration with Norwegian oil companies, in particular with Statoil, large amounts of field data and realistic field problems have become freely available for education and research. In addition resources for investment in modern equipment and facilities for the development of inspiring and effective learning environments have been made available.
Research collaboration with industry

- Long-term collaboration agreement with Norsk Hydro
- Long-term collaboration agreement with Statoil
- Long-term collaboration agreement with Shell
- Long-term collaboration agreement with TOTAL
- Long-term collaboration agreement with Enterprise Oil (Shell)
- Long-term collaboration agreement with BP
- Long-term collaboration agreement with ConocoPhillips
- Long-term collaboration agreement with ENI
- Long-term collaboration agreement with IBM
- Long-term collaboration agreement with Aker Kværner
- Long-term collaboration agreement with FMC
- Long-term collaboration agreement with Kongsberg