

## 3-årig emneevaluering

Emne: ENERGI101

Semester og år for gjennomført emneevaluering: 2021-2024

Navn på emneansvarlig(e): **Mostafa Bakhoday Paskyabi**

### Innhold

Since 2021, the course has adopted an active learning methodology, complementing (and along with) the classical approach to teaching and learning. Mostafa Bakhoday Paskyabi serves as the sole lecturer for the course, supported by various master's students over the past few years (e.g. Jakob Stueland, Sofie Engler-Christensen for 2024)). Their assistance has facilitated better communication with students and more effective development of the course outcomes.

The course is thoughtfully designed to include inspirational lectures delivered by researchers and industry professionals. These guest speakers provide insights into a wide range of topics, including energy resources, industrial challenges, and scientific writing.

For instance:

- **Helge Drange** gave a compelling presentation on the climate change and its corresponding crisis.
- **Marte Godvik** from Equinor discussed offshore wind energy and the development of Hywind Tampen.
- **Kjersti Birkeland Daae from GFI** shared valuable insights into active learning methodologies.
- Experts from the library, including **Ingunn Rødland and Kjersti Halse Enerstvedt**, delivered lectures on the importance of scientific writing and its practices.

These contributions enrich the course content and provide students with diverse perspectives, bridging academic concepts with real-world applications. Given the students' strong interest and the benefits they have gained from this component of the course, I plan to invite researchers from various energy industries for the upcoming semester (usually around 3-4 inspirational lectures). This activity is scheduled to take place within the first six weeks of the semester. Please note that the topics covered in inspirational lectures are intended solely to enhance student engagement, promote interaction, and broaden knowledge. These lectures are not included in the final exam.

1. **Beskriv og begrunn pedagogiske valg i emnet, reflekter over studentens læring som følge av disse valgene.**

### General insight:

The pedagogical choices in the course are centered around active learning methodologies combined with traditional teaching techniques to enhance student engagement and

understanding. These include structured lectures with clear learning outcomes, interactive discussions, and practice sessions that reinforce key concepts. Group projects and weekly assignments are designed to foster collaboration, critical thinking, and practical application of theoretical knowledge, while supplementary materials, such as videos, provide additional support for challenging topics. Guest (3-4 inspirational) lectures from industry professionals offer real-world insights, making the content more relevant and inspiring for students. Feedback from students indicates that these strategies effectively align with the course's learning objectives, promoting deeper understanding, improved retention, and enhanced academic performance.

### **More details:**

The course primarily focuses on physical teaching, supplemented by group and individual activities, with four hours of weekly practical classes divided between two groups of students. During these sessions, the lecturer and assistants (Jakob Stueland, Sofie Engler-Christensen for 2024) review lecture material, solve (bi)weekly individual assignments, provide feedback on scientific writing using examples from previous semesters, explain the exam and evaluation criteria, and act as a communication bridge between the students and lecturer to ensure smooth navigation throughout the semester. To support the teaching assistants and ensure a sustainable and effective approach to the practical classes, the course coordinator designs and solves all assignments in advance and provides them to the assistants.

Classes are held in an active learning seminar room in the Informatics department, equipped with customized tables featuring whiteboards and TV screens. Groups of 5–7 students collaborate around each table, discussing and working on various topics as part of a blended and active learning approach.

Each lecture includes:

1. Explanation of the chapter's learning outcomes and specific objectives of the current session.
2. A brief recap of the previous lecture and a roadmap of the course progression.
3. Classical teaching interspersed with discussion breaks.
4. Solving computational problems, particularly those students find challenging.

To support learning, several instructional videos have been created in the last two years for complex topics requiring additional aids.

[https://studio.youtube.com/playlist/PLZ9OuowTv0wL5oIpzPhNL5xRN-Fbk96\\_\\_S/edit](https://studio.youtube.com/playlist/PLZ9OuowTv0wL5oIpzPhNL5xRN-Fbk96__S/edit)

While lecture notes serve as the primary syllabus, two reference books are also used for specific chapters, with students engaging in group discussions to explore concepts at a slower, more in-depth pace. The course coordinator, in alignment with the reference books, plans to provide additional videos for the upcoming semester. These videos will aim to cover key aspects of each chapter and include the solution of few computational examples to enhance student understanding.

Student evaluation is split into two components:

1. **Written Exam (70%):** This assesses individual knowledge and understanding of the course material.

2. **Group Work and In-Class Activities** (30%): This includes group projects, (bi)weekly assignments, and active participation.

At the beginning of the semester, students form groups of 4–7 members within the first 10 days. Group projects have two deliverables: a scientific report, an oral presentation, or a poster presentation (students choose between oral and poster formats).

To prepare for the final group project, students are assigned a short-term test project in the second week of semester, immediately after group formation. This involves writing a 1–2 page scientific report on assigned topics, evaluated based on a rubric available on **MittUiB**. Students receive comprehensive feedback on their reports, followed by oral presentations of their short-term projects.

Scientific writing skills are emphasized throughout the course, with dedicated lectures on using tools like **LaTeX** and **Overleaf**, along with practical guidance on writing and formatting a scientific report. Students receive all course materials, including lecture notes and project details, from day one of the semester in **MittUiB**, ensuring transparency and enabling early preparation.

Since 2021, the course has been taught by a solo lecturer, eliminating the challenges posed by multiple external lecturers, such as overlapping content and inconsistent communication. Students appreciate the physical teaching format, reflected in high attendance and positive feedback. Some lectures are recorded and made available through **MittUiB**, although occasional technical issues with recording have been noted.

The course features short-term industry one-day visit, such as the one-day trip to **Midfjellet Wind Park**. Initially held in October (2021), the trip was moved to mid-September in response to student feedback, as earlier scheduling made the experience more engaging and relevant.

While **MittUiB** serves as the primary communication channel for announcements, course updates, and discussions, some students fail to check it regularly. The lecturer and assistants continuously remind students to stay updated on the platform.

To further enhance course quality, the lecturer collaborates closely with the education department, conducting **TAP interviews** to gather mid-semester feedback. Since 2021, an education department expert (Robbert Kurts) visits the class in mid-October to interview students while the lecturer steps out. This feedback has proven invaluable for course optimization, and the lecturer intends to continue this collaboration.

**Emneevalueringer skal også minst omfatte:**

2. **Oppfølging av tidligere evalueringer**

**General insight:**

Students have been generally satisfied with the course over the past three years; however, the extensive content remains a challenge due to the course's nature, as it covers a wide range of energy resources, many of which differ significantly from one another. Efforts to address this

include consultations with the education department, improved layout and accessibility of materials on MittUiB, close communication with students, and effective use of reference books. While 2024 has shown clear improvements in almost all fronts, further refinements are planned by Mostafa Bakhoday Paskyabi.

### **More details:**

The course program for **Energi101**, implemented in 2021, is built upon previous experiences and student feedback while evolving continuously through active interaction with students, course assistants, and collaboration with the education department to enhance teaching and learning quality.

### **3. Studentevaluering og andre evalueringer som er relevante for emnet**

As mentioned earlier, this course incorporates various methods for collecting student feedback, which the lecturer is fully committed to studying, processing, and utilizing to enhance the course's effectiveness. However, the responses from the student evaluations largely align with the general feedback received during the course. To improve participation in future surveys, it is recommended that course instructors take a more active role in the survey process to encourage greater student engagement and response rates.

### **4. Erfaringer fra andre som bidrar i undervisningen på emnet, både studenter og ansatte**

In 2024, there was increased use of reference books in the course. However, there remains a need to identify a more comprehensive textbook and adapt the teaching approach accordingly. Additionally, assessing 4–5 students as a group, with a grade that contributes to the final evaluation, continues to present challenges. Suggestions have been made to change the group size, but this is particularly difficult to implement due to the large number of students enrolled.

Students have also noted that the course content feels quite broad, as it covers nearly all energy resources, many of which have fundamentally different formation principles. Although the lecturer provides a dynamic roadmap, updated at each lecture to clarify the course's progression, there is still room for improvement.

**MittUiB** serves as the primary digital communication channel, but student participation in discussions remains limited. While there has been some improvement, the lecturer is actively exploring ways to inspire greater engagement and encourage students to contribute more actively to these discussions.

Finally, students are assigned to read sections of the reference book for certain chapters. However, the majority appear not to prepare these materials in advance, which impacts the effectiveness of the active learning methodology and places additional pressure on the lecture sessions. For instance, reference book reading and discussion breaks are integrated into the class, offering valuable engagement opportunities. While students express strong interest in these breaks, the limited time and extensive course content make it challenging to incorporate them into every lecture. Efforts are underway to develop more effective and inspiring methods to address this issue and enhance student preparation.

#### 5. **Strykprosenten på emnet**

Over the past three years, the course has consistently enrolled approximately 50 students, many of whom have actively participated in both lectures and practical sessions while successfully completing weekly assignments and group projects. Notably, the failure rate last year was zero, which may be attributed to students' strong engagement in group projects, their commitment to delivering practical assignments, and the overall course structure that encourages active involvement.

**Rapport i Tableau:** [https://rapport-dv.uhad.no/#/views/SVP3Emnegjennomfring\\_1/Emnegjennomfringslister?:iid=2](https://rapport-dv.uhad.no/#/views/SVP3Emnegjennomfring_1/Emnegjennomfringslister?:iid=2)

#### 6. **Eventuell fagfelleevaluering**

**Vurdering av samsvar mellom emnets læringsutbyttebeskrivelse og undervisnings-, lærings- og vurderingsformer**

Student feedback and academic results indicate a strong alignment between the course's learning outcome descriptions, teaching methods, learning activities, and assessment strategies. The course has shown consistent improvement each semester, guided by feedback from students and assistants, the direct engagement and efforts of the course lecturer as well as insights from the **TAP interviews** conducted by the education department.

#### 7. **Vurdering av om framdrift og opplegg for emnet er i samsvar med de fastsatte målene for emne og program**

The progress and content of **Energi101** align well with the established objectives for the course and program (the course lecturer, who also serves currently as the leader of the energy program board, is highly meticulous and proactive in implementing alignments and improvements that positively impact the program.). Given the wide range of topics covered, significant effort has been made to segment the academic content and ensure a clear, predictable progression for each topic. This includes structured lectures, practice lessons, in-class discussion breaks, early exam preparation sessions, and supplementary videos for select topics.

Student feedback suggests that they find the content consistent with the expected learning outcomes and that the course progression is manageable, supporting their learning effectively.

#### 8. **I de tilfellene det er tilknyttet praksis eller arbeidsrelevans i emnet, skal det evalueres om ordningen fungerer tilfredsstillende.**

The course incorporates practical and group projects that emphasize both scientific writing and oral or poster presentations. Since 2021, students have reported high levels of satisfaction with this component, which, alongside individual assignment submissions, participation in practical sessions, and in-class activities, accounts for 30% of their final grade.