TEACHING PORTFOLIO

For

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1 Biography

I completed all my academic degrees in the Department of Mathematics at the University of Bergen, beginning a bachelor's degree in mathematics in 2007 and defending my PhD thesis in 2016. Throughout my studies I served as a teaching assistant across a range of courses, initially in introductory mathematics and statistics, and later, as a PhD student, in master-level courses such as risk management and statistical inference, primarily supporting students in problem-solving sessions.

In 2016, I joined the Norwegian School of Economics (NHH) as an Assistant Professor. Since then, I have taught *MET4 Empirical Methods* 7 times as main course responsible and 4 times as co-instructor. MET4 is a 7.5-ECTS required course in NHH's bachelor's program in economics and administration, covering basic statistical inference, hypothesis testing, simple and multiple linear regression, panel and logistic regression, and introductory time-series analysis. In recent years, together with my colleague Geir Drage Berentsen, I have transformed the course into a modern learning experience built on a large catalogue of custom digital materials and varied student activities. For this work, we received the NHH Bachelor students' teaching award (The Bronze Sponge) twice, as well as NHH's first Inspirational Teaching Award.

In fall 2018, I co-developed the 2.5-ECTS seminar *BAN420 Introduction to R* with Ole-Petter Moe Hansen, which we later expanded into the full course *BAN400 R for Data Science*. We taught BAN420 5 times and BAN400 5 times, during which we actively experimented with teaching methods and assessment formats and developed extensive instructional materials from scratch.

Since 2022, I have also delivered annual sessions on applied statistics in one of NHH's executive programs; MØST.

In winter 2022–23, I led the initiative to establish a new international bachelor's program at NHH – the Bachelor of Business, Economics and Data Science (BEDS)– which, upon its launch in fall 2024, attracted 22 first-priority applicants per seat for 50 seats, the highest ratio among all higher-education programs in Norway that year. I served as academic director for BEDS until fall 2025.

During my time at NHH, I have supervised 26 master's theses involving 49 students. I was the primary PhD supervisor for Yue Shi, who defended her thesis in spring 2025, and co-supervisor for Xuan Li, who defended in spring 2024.

2 Teaching Philosophy

> *For sheep don't throw up the grass to show the shepherds how much they have eaten; but, inwardly digesting their food, they outwardly produce wool and milk.*
>
> — *Epictetus*

A large class of students is, in its own way, a room full of Karamazov brothers and sisters. Dostoevsky filled a single family with the sensualist Dmitri, the cold intellect Ivan, the gentle seeker Alyosha, and the shadowy Smerdyakov, each driven by utterly different passions and wounds, and yet bound together by circumstance. Scale that image up and you have something close to a lecture hall: two hundred people, say, carrying wildly different personalities, abilities, interests, learning styles, ambitions and anxieties into the same room at the same hour. Some arrive curious, others skeptical; some confident, others quietly terrified; some already fluent in the material, others meeting it for the first time. What I try to build is a situation where learning can happen for as many of them as possible. Not by leaving things to chance, and not by decree, but through designed emergence — skill growing through practice, guided by top-down clarity about our aim and about what counts as good work. I shape that environment with clear outcomes, considered challenges, and timely feedback, so that each student – each brother and sister – can take the next possible step from where they begin.

What does it mean to learn something new?

Simply put, learning leaves a trace in the brain. New nodes of knowledge form, the connections among them strengthen, and thought travels more quickly along these routes. We see this change as a passage from knowledge to skill, and from skill to professional competence. To support that passage, I join bottom-up practice with top-down guidance. From the bottom up, students attempt, compare, and revise; feedback shows what helps and what does not, so the useful remains. From the top down, I set clear goals, show examples of good work, and provide criteria that mark progress. Together these two forces steady effort and allow understanding to grow. That is, at least, what I aim for.

Because learning is change shaped by practice and guidance, teaching is more than a job. It is a complex, multi-dimensional act that, when it works, opens a channel from my understanding of the world to the student's developing mind. That channel depends not only on what *I* happen to know but on the whole setting we create together: the tone in the room, the pace of the work, the clarity of aims, and the chances to try and to revise. When students allow the situation to engage them, the course becomes a place for growth rather than mere coverage.

I keep returning to a scene from Thomas Mann that captures the image I aim for. In *The Magic Mountain*, the humanist Settembrini has been teaching young Hans Castorp to ski. One day he watches his pupil vanish into the white mist, calls a warning after him with his hands cupped around his mouth, and walks home, *pedagogically satisfied*. That small scene holds the whole arc of teaching as I understand it: you equip, you guide, you warn, and then you let go – and if the student disappears over the horizon on their own power, you have done your work. A colleague of mine expressed this same satisfaction in terms I immediately recognized. In a recent newspaper interview[1], he described the instant a student suddenly grasps something as a dopamine boost, and then spoke of sending others past him – doctoral students who grow more skilled than he is, a daughter who outruns him on a jog – and concluded: "Then I thought: Now she passed me. Now I've done what I'm supposed to do." To me, this describes the deepest satisfaction that teaching gives me. Success is not measured in my more or less quantifiable "performance" in the classroom, but in the release of my students into the world, better equipped, hopefully, than when I saw them for the first time.

There is, however, a less comfortable side to learning that deserves mention here. Learning is not only a passage toward competence; it is also a passage toward humility. The beginner, surrounded by fog in the same way as Hans Castorp in the German alps, may feel that the summit is close simply because nothing else is visible. But as knowledge grows and the fog lifts, the landscape reveals itself: further peaks, deeper valleys, paths branching in directions one had not imagined. The more we learn, the more we realize how much we do not know. This can be frustrating, even disheartening, and yet it is precisely the sign that real learning is taking place. The student who feels increasingly uncertain is often the one whose understanding is most genuinely expanding. A fuller picture of one's own ignorance is not a failure of education but one of its finest products: *To learn something new is to get a better view.*

With this *view* in mind, I write at a transition point in my career. In recent years I have designed, taught, and then handed on two courses and a seminar, and I am preparing for new responsibilities. The purpose here is practical as well as personal: to look closely at what I have done, understand why certain choices worked and others did not, and distill a few principles I can carry forward.

In that sense, this text is also a mirror. I hold it up to ask whether the practice I see matches the teacher I want to be, and, where it does not, how I intend to change it. What follows is a personal analysis of my practice so far, organized around the conditions that – in my humble opinion – most reliably turn effort into learning.

[1] Interview with Professor Trond Døskeland in *Os & Fusaposten*, 22 February 2026, `https://www.osogfusa.no/naering/denne-professoren-heiar-pa-folk-som-svarer-feil-og-stiller-dumme-sporsmal/493495`

The bottom-up is given – the top-down is design

To me, designing learning activities is about working with the multi-faceted, somewhat convoluted, sometimes chaotic conditions that make up a learning situation. I find it useful to regard certain things, like uneven motivation, differing prerequisites, existing mental models, common psychological effects, and formal and legal requirements, as more or less given up front, and to see my task as designing activities that work with these realities rather than fighting against what cannot be meaningfully changed within a single course.

Navigating this landscape of what can be changed, what can be nudged and what must simply be worked around is difficult, especially when we consider the forces that move a student to sit down and work: motivation, energy, grit, attention, focus, discipline, curiosity, and more. Take the advice of Steve Jobs, for example, who in 2005 addressed Stanford's graduating class with the following piece of advice[2]:

> *You've got to find what you love…. [T]he only way to do great work is to love what you do. If you haven't found it yet, keep looking, and don't settle.*

This is the passion hypothesis: the claim that pre-existing love for a field should come first and that great work follows from aligning work with that prior passion. The opposing view, what Newport (2016) calls the craftsman or skill-first model, reverses the order. It holds that passion is usually a by-product of mastery, not its precondition; that interest deepens as competence grows and that satisfaction comes from building rare and valuable skills through deliberate practice and then putting them to meaningful use. I adopt this second view. It lets me design to cultivate motivation through progress rather than presuppose it at the start: begin with steady, structured work, earn small wins, and let engagement grow with fluency. In short, hard work tends to produce passion, not the other way around.

This idea is not new. Nietzsche reminds us that mastery is fashioned, not given: not the mark of a rare gift, but the product of patient construction. As he puts it, one first "learns to construct the parts properly before [one] ventures to fashion a great whole". To me, this means that whatever great one creates, or whoever masterful one becomes, it is the result of hard work, of friction, of putting together the smaller parts into something bigger, and not the possession of some elusive gift bestowed upon us at birth, that, when discovered or extracted or even excavated, will somehow make the work do itself. Duckworth (2017) sharpens this intuition into arithmetic. In her account, talent multiplied by effort produces skill, and skill multiplied by effort produces achievement. Notice that effort enters the equation twice. By simple substitution, achievement equals talent times effort *squared*. The algebra is deliberately crude, but the point is crystal clear. Effort does not merely add to talent, it compounds and can lead to remarkable results. A student who shows up, struggles, revises, and shows up again is not compensating for a lack of gift; he or she is applying the single factor that matters most, and applying it twice over.

This insight also means that I have to accept the messy state of a real class, which is a place of mixed energies: curiosity and doubt, ambition and fatigue, confidence and fear of error. Attention rises and falls, while prior beliefs help the discussion along or stop it dead in its tracks. Let me present three angles from which I attend to such restless material: by way of positive emotions, the method of work, and the feedback mechanism.

The role of positive energy. I have written elsewhere[3] that we are all so very serious in our struggle to obtain scientific and academic recognition, and we obey all sorts of formal and administrative requirements in the daily operation of a modern school for higher education, but I don't see any reason why all this work should not be a pleasant experience for everyone involved. I take it as self-evident to treat everyone around me correctly and with respect, regardless of any attributes such as gender, age, ethnicity and so forth, and I think that it is particularly important to live by these rules in every encounter with students. My resulting «rules of engagement» are perhaps mundane: sit down, look them in the eyes, be polite, acknowledge every question as important and all expressions of stress and worry as real. This is not just about being a good person, whatever that means, but also about demolishing the academic hierarchy when teaching and learning, so that the students know that they can always approach me with any question, without fearing that I will

[2] https://www.youtube.com/watch?v=JV3OqaRmBk4

[3] My first teaching philosophy, written in 2019.

comment on their looks, their accent, make fun of them or be condescending in any way. I am convinced that the teacher and the student are equal partners in the learning situation: You can't really have one without the other (if anything, I would much prefer a world full of curious students over a bunch of teachers with nothing useful to do).

Cavanagh (2016) captures the mechanism succinctly:

> *[I]f you want to grab the attention of your students, mobilize their efforts, prolong their persistence, permanently change how they see the world, and maximize the chances that they will retain the material you're teaching them over the long term, then there is no better approach than to target their emotions.*

Working mostly with technical subjects, the practical "how" is not always obvious. I gathered crucial experience during the Global Colloquium on Student-Centered Learning at Harvard Business School in 2019. The seminar focuses on the case method, but what stayed with me was the care for class dynamics, the moment-to-moment management of attention, emotion, and participation. A central achievement of good "emotion management" is simple to name, but difficult to put into practice: make students care about the question at hand.

I have tried to adapt this in my own courses. It is demanding, but when it works, it is unmistakable. In one session, after the technical work of modeling claim risk for auto-insurance policyholders, I asked whether an insurer should be allowed to use gender as a predictor when setting prices. A small group with strong but opposing views engaged, and for a brief period the room had exactly the energy I seek: attentive, respectful, and intellectually alive. That episode has served as a personal benchmark ever since.

That benchmark points to a deeper principle: emotion can unlock reserve capacity. James (1907) describes the "second wind," the fresh energy that appears when we press a little beyond the first layer of resistance. In teaching, the aim is not exhaustion but design. A live question that matters, a clear sense of purpose, and a climate of belonging help students step over that first barrier. When those are in place, effort becomes easier and more sustained, and to achieve this, I tap into my understanding of effective work, and which methods we can use to make such a crossing routine.

The method of work. Emotion, then, can open the door to effort. But effort itself comes in different guises, and not all of them lead to learning. A persistent tension in higher education is the pull between the effortful work that builds mastery and the easy activities that breed mere familiarity. Much of what feels smooth in the moment, such as rereading, rewatching or following a worked example line by line, creates an illusion of competence. The harder moves, such as retrieval without notes, spacing practice over time, interleaving problem types or explaining a step before seeing it, feel effortful, yet they are the ones that change the mind. This is the practical lesson I take from *Make It Stick* by Brown, Roediger III, and McDaniel (2014): desirable difficulties are not a nuisance but a tool. When students experience productive strain, they are not failing; they are doing the part of learning that counts.

This confusion between ease and learning is not just a bad habit – it is a failure of self-knowledge. Novices often overestimate their understanding because fluency is mistaken for mastery. This is the flip side of the expanding horizon I described in the introduction: where a growing learner sees more of what remains unknown, the beginning learner may see almost nothing beyond the small circle of what has just been covered, and mistake that circle for the whole landscape. The phenomenon is sometimes described with reference to the Dunning–Kruger effect: with little knowledge, one lacks the very insight needed to judge how little one knows. As skill increases, judgment improves and confidence calibrates. My task is to design routines that make this calibration visible and safe. Looking back, however, and being perfectly honest, I am somewhat skeptical of my own record in this respect. In Reflection Note I (included in the Appendix), I describe work with Geir Drage Berentsen on the applied statistics course MET4, where a crucial element was producing a large library of technical videos covering most of the curriculum and making them available throughout the semester.

There is no doubt that our approach to digital teaching, especially during the Covid-19 pandemic, raised student satisfaction; evaluations and three teaching awards in quick succession point the same way. In Reflection Note II, however, where I model student ability using an item response theory (IRT) framework, I am unable to empirically detect a corresponding increased learning effect as the digital solutions were introduced[4]. I suspect the discrepancy reflects a familiar trade-off as discussed above: when the experience becomes too smooth, well-crafted videos, on-demand access, and easy activities, convenience creates an illusion of progress while inadvertently removing the very effort and friction that drive learning forward (and possibly drive student evaluations down). None of this is simply "bad", of course, as the digital design broadened access and stabilized learning in a difficult period. Furthermore, we had other avenues to safeguard academic integrity, for example through external grading. But it does mean that high satisfaction must be paired with structures that reintroduce productive difficulty, such as obligatory retrieval, spaced practice, cumulative tasks, and fast, usable feedback, which I will store in my repository of teaching methods going forward.

I had the opposite experience in my programming course, arriving at the same tension from a different direction. Where sound statistical practice rests on a solid theoretical base (Wild and Pfannkuch 1999), introductory programming in a business school is almost entirely skill and muscle memory, requiring the sort of effortful, repetitive work described by deliberate practice (Ericsson 2008). My teaching there was intensely hands-on and, as evaluations show, appreciated by the students. Yet a recurring theme emerged in a cohort with very uneven starting points: for many, the practice sets were simply too hard and became, in their words, demoralizing.

The solution was not, obviously, to remove all obstacles. After all, the struggle itself is the goal in this work. My teaching partner and I approached the problem with small, steady adjustments from year to year. We redesigned several problem sets to include optional guidance, from minimal cues to step-by-step scaffolds, so that students at different stages could choose how much help they needed and still reach the same learning target. An example of this format appears in Appendix C3.

The role of feedback. I have discussed effort and the emotions that sustain it. What remains is the question of direction, which is where feedback comes in. I sometimes think that learning has many things in common with Darwinian evolution. Progress results from trial, error and a solid dose of randomness; variation in work explores the space of opportunities (including the corners that are visited solely to learn that they do not work), while the feedback takes care of selecting what works and, hence, "survives". Other aspects of the learning process are slightly different[5], which, mercifully, includes the nature of the feedback mechanism. I subscribe to rather more constructive methods of reacting to insufficient work than "death before reproduction".

Going forward, I see evaluative expertise as an important thread for developing my teaching skills. Sadler (1989) puts the task plainly: students improve when they can do three things at once: First, they know the standard to aim for; second, they can compare their own work to that standard; and third, they know what action will close the gap. Courses that do not teach these abilities inadvertently build in ceilings on achievement. This matters most where performance is complex and cannot be judged as simply right or wrong.

We often treat feedback as information about the gap between the work and the standard handed down by the teacher (Ramaprasad 1983). The original, literal engineering sense of feedback is closer to what we need: the result of work is fed back into the process at once to adjust what happens next. In this view, feedback is information that is used to improve quality, not a verdict issued by a higher authority. Boud and Molloy (2013) analyze feedback mechanisms in more detail and distinguish two models. In Feedback Mark 1, the teacher provides comments and then checks whether the next piece of work has improved. This method has its place, especially when the cycle is repeated several times and students can try different approaches without the penalty of cumulative grading; yet it faces a problem of sustainability, since teacher capacity is limited, particularly in large classes.

[4] Although it must be pointed out that we do not have clean measurements from a classical course setup, so a formal comparison is difficult to make.

[5] For instance, unless one believes in *intelligent design*, that there is no end-goal that guides natural selection.

Feedback Mark 2 shifts more responsibility to students. They seek, generate, and use information about the gap through dialogue and inquiry: comparing their work with annotated exemplars, applying rubrics to their own and peers' submissions, making predictions and then revising, using quick checks and automated tests for fundamentals, and writing revision plans that state what will change and why. In this way, the students will take ownership of their own learning process, and thereby, hopefully, kindle the passion that we discussed above. The teacher still curates the standards and designs the opportunities, but the student completes the loop.

Returning to the main point made by Sadler, I will no longer consider evaluative skill as an optional extra; it will be a central part of the content of my courses moving forward. It is rarely possible to list and test every valuable move. Much of what matters is rather caught through guided experience rather than captured in boxes to be ticked. Hence, I will strive towards putting these ideas at the center of future development. I will make standards more visible with annotated exemplars, create routine moments for self-judgment during production of work, extend my use of regular peer review, be mindful to protect formative windows with drafts and resubmissions against high-stake grading, and, when operationally possible, ask for short action notes that explain how the next version will close the gap. In this way students learn not only to perform a task, but to judge and improve their own performance, which is a crucial skill, *the* crucial skill one might argue, to master in the long run.

From theory to practice – A bag of tricks

Theoretical models are all well and good. The challenge is to turn high-level insights into useful actions. I therefore conclude my teaching philosophy with concrete points to guide my work going forward.

Adjusting existing practice:

- **Flipped classroom:** I have amassed extensive experience creating digital learning materials, especially short teaching videos that deliver new content and largely replace the classical lecture. Together with colleagues, I have repurposed in-person time for exercise sessions, overview lectures, and office hours. As discussed above, this has brought real benefits, but for technical subjects the format should be refined to avoid the familiarity trap, where convenience is mistaken for mastery. I will introduce pre-class prediction prompts, in-class retrieval, brief post-class reflections as well as other practical techniques tied to the digital material so that viewing videos becomes a springboard for effortful practice rather than a simple replacement for physical delivery.
- **Adaptive problem sets:** Calibrating difficulty is a constant challenge, especially with wide variation in starting competence. I will continue toward *adaptivity*, as sketched above, by offering some problems in multiple versions with differing levels of guidance, so students can choose an entry point yet aim at the same target. Throughout my teaching I have invested heavily in exercises that address real problems [6], which I find strongly motivating. This is hard but rewarding work, and I will keep at it.
- **Class management:** In conjunction with further development of my use of flipped classroom, I will continue exploring the possibilities of creating constructive environments in physical classes, where productive discussions and arguments deepen the learning experience.
- **Accessibility:** I aim to be not only *available* to students in the strict calendar sense, but also *approachable* and *accessible* for any question. I proudly admit that even after years of teaching the basic elements of applied statistics, good student questions still put me on the spot, and I keep learning from them. I will continue this practice as long as I have this job.
- **Stay informed, be inspired:** My thoughts in this document are inspired by a relatively wide reading of the pedagogical and didactical literature as well as related topics within psychology, motivation, focus and personal development. Exposing myself to other people's thinking and allowing myself to become inspired and affected is a crucial part of my drive towards becoming better at what I do.

Developing new practice:

[6] Although, as Taleb (2012) dryly remarks, "only academics […] use the term 'real-world solution' instead of just 'solution'."

- **Teach how to learn**: I will make my pedagogical strategy explicit, at the course level and for individual activities. When a task is difficult, the difficulty is the feature, not a flaw; the goal is to practice the moves that make progress possible. By naming the strategy up front, what we are practicing, how we will practice it, and how we will know it worked, I aim to lower anxiety, focus attention, and help students stay with the work even when progress is slow.
- **Design for effort:** I will translate guidance from books like *Make It Stick* (Brown, Roediger III, and McDaniel 2014), *Small Teaching* (Lang 2021), and *What the Best College Teachers Do* (Bain 2004) into concrete routines such as short retrieval at the start of class, prediction before results, spaced and interleaved problem sets, and cumulative micro-quizzes with quick feedback.
- **Evaluative expertise:** I will continue to work on my understanding of how students in my courses can develop their own evaluative expertise, a preliminary version of which is laid out above. At this point I do not know exactly how this personal learning process will turn out, but I view this avenue as central to my own development as teacher.
- **The role of AI:** To say that generative AI is revolutionizing higher education has been a truism for a long time already. I am in the process of working out my own understanding of the implications of this technology, how we can exploit it to become better and what risks arise. This topic is simply too big to address within the boundaries of this text, but it is obvious that the dynamics of this paradigm shift will affect the nature of professional work, within education and elsewhere, and that no serious pedagogical development can take place without explicitly taking AI into account.

3 Teaching and assessment repertoire

See Table 1 for a list of courses that I have taught while employed at NHH.

As shown in the table, and as outlined in my teaching philosophy, I have advanced both of my main teaching tracks: statistics and programming. In the statistics course MET4, the key inflection point was the onset of the pandemic. Together with my colleague Geir Drage Berentsen, I undertook an extensive reform of the course. This work did not begin *because* of the pandemic; our first pilot with digital content launched just before the shutdown, and our aim was never to move learning out of the physical classroom. The pandemic arrived as we were developing these ideas and rather *accelerated* them, compelling us to build a substantial library of digital resources for long-term use. See Reflection Note I for a detailed account of these developments.

The programming track, BAN420 and BAN400, evolved more organically and incrementally, as I developed both courses from scratch with my colleague Ole Petter Moe-Hansen. We began with a one-week seminar (BAN420), later complemented by a full course (BAN400), and over time, BAN400 absorbed BAN420. Our guiding principle was constant: to combine hands-on programming tutorials with substantial assignments to build skill. As noted in my teaching philosophy, student evaluations frequently flagged difficulty as a concern. Part of this stemmed from our design and the steep learning curve it created, which challenged and often energized hard-working students, but it can become a problem when beginners cannot keep pace in an introductory course.

We addressed this through small, yearly adjustments, most notably by developing assignments with varying levels of guidance so students could choose an appropriate entry point while aiming at the same learning targets. An example appears in Appendix C3.

These courses also involved extensive experimentation with assessment. Over time we used home exams, in-person school exams, term papers with both self-chosen and assigned topics, group and individual submissions, and on two occasions an oral component. Each change was an attempt to improve how we measured learning so that performance could be judged fairly against the stated outcomes of the course.

In the later iterations, the widespread availability of generative AI via chat tools changed the landscape. To protect the integrity of core skills, we returned to a digital school exam without internet access. In our judgment, this provided a reliable measure of individual competence while keeping the assessment practical to administer.

Table 1: List of courses that I have taught at NHH.

Semester	Course code	Name	Teaching method	Assessment method
Spring 2017	MET4	Empiriske Metoder	Classical lectures	Group home exam + Individual school exam
Spring 2018	MET4	Empiriske Metoder	Classical lectures	Group home exam + Individual digital school exam
Fall 2018	BAN420	Introduction to R	One week intensive seminar with live programming tutorials and student working on problems	Group term paper on self-chosen topic.
Spring 2019	MET4	Empiriske Metoder	Classical lectures	Group home exam + Individual school exam
Fall 2019	BAN420	Introduction to R	One week intensive seminar with live programming tutorials and student working on problems	Group term paper on self-chosen (approved) topic + oral presentation
Spring 2020	MET4	Empiriske Metoder	Classical lectures + short instructional videos as the pandemic started	Group home exam + Individual school exam
Fall 2020	BAN420	Introduction to R	One week intensive seminar with live programming tutorials and student working on problems	Group term paper on self-chosen (approved) topic + oral presentation
Fall 2020	BAN400	R for Data Science	Digital lectures (due to the pandemic), weekly digital problem solving sessions	Group term paper on self-chosem (approved) topic
Spring 2021	MET4	Empiriske Metoder	Flipped classroom: Short instructional videos replaced classical lectures for content delivery, class time reserved for problem solving and overviews.	Group home exam + Individual school exam
Fall 2021	BAN420	Introduction to R	One week intensive seminar with live programming tutorials and student working on problems	Given individual home exam
Fall 2021	BAN400	R for Data Science	Weekly workshops and problem solving sessions, weekly assignments for course approval	Two-day home exam
Spring 2022	MET4	Empiriske Metoder	Flipped classroom: Short instructional videos replaced classical lectures for content delivery, class time reserved for problem solving and overviews.	Group home exam + Individual school exam
Fall 2022	BAN420	Introduction to R	One week intensive seminar with live programming tutorials and student working on problems	Given individual home exam
Fall 2022	BAN400	R for Data Science	Weekly workshops and problem solving sessions, weekly assignments for course approval	Two-day home exam
Spring 2023	MET4	Empiriske Metoder	Flipped classroom: Short instructional videos replaced classical lectures for content delivery, class time reserved for problem solving and overviews.	Group home exam + Individual school exam
Fall 2023	BAN400	R for Data Science	Weekly workshops and problem solving sessions, weekly assignments for course approval	Digital school exam
Fall 2024	BAN400	R for Data Science	Weekly workshops and problem solving sessions, weekly assignments for course approval	Digital school exam

In MET4 I have kept the formal assessment format constant throughout my tenure. What has changed is the design of the exam problems. I know that most students invest considerable time working through earlier exams when they prepare for their own. I have therefore devoted substantial effort to writing high-quality problems, so that time spent on past exams supports real learning as well as exam readiness, see Appendix C1 and C2 for two examples.

Note also that in 2018 I participated in an early project on digitalization of exams at NHH, and adapted the MET4 exam that year to the newly aquired digital platform Wiseflow.

4 Supervision

During my time at NHH, I have supervised 26 master's theses involving 49 students. I was the primary PhD supervisor for Yue Shi, who defended her thesis in spring 2025, and co-supervisor for Xuan Li, who defended in spring 2024.

Master's supervision is especially engaging at NHH, where students are highly motivated. On topic choice, I am convinced the final product is stronger when students write about something they genuinely care about. That is far more likely when they develop the topic and research questions themselves. The early phase can be messy, and I allow time for it: a brief period of productive uncertainty while they search for "something new" against the backdrop of an enormous literature. To make that search manageable, I offer two pieces of advice at the outset:

1. **Read widely, then dig deeply.** Read more than you think you need, and skim even more. Find an entry point into the literature near a broad area of interest and start tracing citation trails, backward and forward. Take notes and collect potential connections.
2. **Value connections over invention.** Many good projects come from linking existing ideas, data, or methods in a new way. Rather than trying to invent a wholly new "dot" in the vast knowledge network, look for two or three dots that have an interesting relationship and develop that relationship into a researchable question.

From there, I help students shape a feasible design, establish milestones, and adopt transparent, reproducible methods. My role is to challenge and support in equal measure: ask for clarity, press for evidence, and provide timely, practical feedback that moves the work forward.

PhD supervision is a larger undertaking. It spans years, aims at work on the scientific frontier, and feels less like a classic teacher–student arrangement than a professional collaboration. Indeed, in the Norwegian system, PhD candidates are employees, and the main supervisor is, for most practical purposes, their closest line manager. The role therefore combines scholarly mentorship with leadership and duty of care.

My vision for day-to-day research follows from that reality. I want a group that works like a team of equals, where senior and junior researchers tackle the problem at hand together. To make that possible, I work by the following principles:

1. **Free discussion is key**. There are no "stupid" questions. Issues, comments, half-formed ideas, and doubts are the raw material of good research.
2. **Equal partnership**. Formal roles differ, but the scientific work is shared. My primary principle is to treat the candidate as a full partner, and eventually the leader, with growing responsibility for framing questions, choosing methods, and defending decisions.

Practically, this means regular working meetings focused on concrete work (drafts, code, figures), clear milestones tied to potential publications, shared authorship plans from the outset where appropriate, and transparent expectations about data management, reproducibility, and research integrity. It also means I am available for feedback and for the unglamorous support that keeps long projects moving. The aim is simple: to help the candidate become an independent researcher while doing work we are both proud to sign.

5 Pedagogical material

I have created and co-created a substantial body of teaching materials at NHH. These include slides, lecture notes, assignments, problem sets, exam sets, instructional videos, and course webpages. A small sample is included in the appendices.

I place particular weight on the quality of examinations. Assessment quality and integrity are central to higher education, and it is also clear that students invest significant effort in preparing with past exams. We may wish they spread that effort more evenly across the term, but one pattern is reliable: in the weeks before the final, their focus sharpens and many spend hours working through last year's set. Rather than lament this, I build for it. If students insist on studying "the last war," then the old papers should indeed be worth studying. I therefore spend a lot of energy designing exams to be high-quality, relevant, and anchored in real data, so that preparation time yields genuine learning as well as readiness. I have included two such exam sets in the appendices; one from MET4 Empirical Methods, and one from BAN400 R Programming for Data Science.

Next, I have created many problem sets and assignments for the courses I teach. The general motive is the same as for exam sets: if students are going to invest time and energy, the material should promote real learning. There is also a specific problem to address. The exercises in standard textbooks—especially in business statistics—often feel contrived. They come with little context or motivation and function mainly as drills that encourage memorization and standardization. Such problems have a limited place, useful for first contact with a method, but they do little beyond that. I expect more of my students.

Statistics, to stay with that example, is not a mechanical procedure for applying formulas to small collections of numbers. It is a way of thinking about the world, and it cannot be learned without tackling problems that approach reality. I also find that a uniform list of exercises serves a diverse group poorly. Students begin at different points and progress at different rates. When I design new problems, I build differentiation into the task itself so that students can work at an appropriate level while aiming at the same outcomes. An example appears in the appendix: a weekly assignment in BAN400 where students choose among three levels of scaffolding.

Next, consider materials for the classroom. As outlined in Reflection Note I, the revision of MET4 used a flipped-classroom design. Short lecture videos handled general content delivery (discussed in the next paragraph), and classroom time was rather used to work with problems and exercises. Some in-person sessions, however, were reserved to work at a higher level. This countered the "atomization" that a flipped format can produce. The aim was not to re-teach details, but to provide context and show connections among concepts.

For several of these sessions, I prepared a detailed guiding note to shape the discussion and to stand on its own as a concise reference, giving students a sense of command over the material. One such note, on hypothesis testing, is included in the appendix. In the lecture, I worked through the document on my iPad, adding annotations and remarks and filling in a few blanks left deliberately open.

Finally, I include links to two public course sites that I maintain with colleagues, along with a series of instructional videos hosted there. The rationale for using a flipped format in MET4 is outlined in Reflection Note I. In developing that course, I produced more than 100 technical videos for sustained use, all of which, as far as I am aware, still serve as the backbone of the course several years after I left it. I adopted a similar approach in parts of BAN400, where short, targeted videos complemented the most introductory and technically dense segments of the lectures. The aim was twofold: to give students with stronger backgrounds a way to move faster than the live pace, and to give beginners a way to pause, rewind, and proceed at a speed that made learning feasible.

6 Teaching planning and contributions in own department and at NHH

I have developed the courses I teach from the ground up. Although I inherited MET4, I contributed to a comprehensive redesign of both form and content: we digitalized key elements, adopted a flipped-classroom structure, and modernized the syllabus. I also helped design the seminar BAN420 and its transformation into the full course BAN400, using a workshop format that supports collective learning. As noted in Table 1, I have employed a wide range of assessment methods across these courses to align evaluation with learning goals.

Mentoring is an integral part of my departmental contribution. I have previously served as a mentor in NHH's program for two colleagues, Isabel Hovdahl and Giacomo Benini. I am currently mentoring Lars Jaffke and Paloma Thomé de Lima.

I have also contributed to program development at the school level. I served as the department's representative in the reference group for the Norwegian-language bachelor program at NHH. In 2024/25, I was a member of two working groups exploring potential developments in NHH's master-level offerings. I am currently the department's representative in a working group designing a new master's program tailored for graduates of NHH's Bachelor of Business, Economics and Data Science.

7 Education leadership and management

I chaired the working group that developed NHH's new Bachelor of Business, Economics and Data Science (BEDS) in 2022–23, and then served as the program's academic director until August 2025. The working group's report is included as an appendix.

This work occupied a substantial share of my professional capacity for nearly three years and offered a broad apprenticeship in educational leadership. I led the full cycle of program development: shaping the vision, translating it into curriculum and learning outcomes, and coordinating implementation across the school. I worked closely with the Rectorate and the Board on strategy, governance, and approvals. During start-up I collaborated with essentially every academic and administrative unit at NHH to establish structures and processes: department heads and teaching responsibles, admissions, communications, student services, IT, exams, legal, and the Section for Educational Quality.

Recruitment was a core objective during this work. I contributed actively to national and international outreach, helped craft messaging, and met with prospective students and partners. When the program launched, I took an active director's role: working with and coordinating between faculty, responding to various student and administrative issues, and making sure that we would learn as much as possible from the first cohort in order to make quick improvements. I have, throughout this process, held countless seminars and presentations on this work, internally and externally, in order to spread the word and to collect feedback from stakeholders of all kinds.

I am now elected Head of Teaching and Exams at the Department of Business and Management Science for the period 2025–2029, a role that I will formally assume in 2026 due to my current sabbatical year.

8 Evidence of student learning

In the appendix I have included a link to all student evaluations from the courses I have taught while employed at NHH, as well as a collection of mid-semester feedback that I received from the student representatives during my first few years in MET4. The overall picture is that I receive good feedback on my teaching across years, courses, and teaching methods. I have summarised the most important numeric scores in Figure 1,

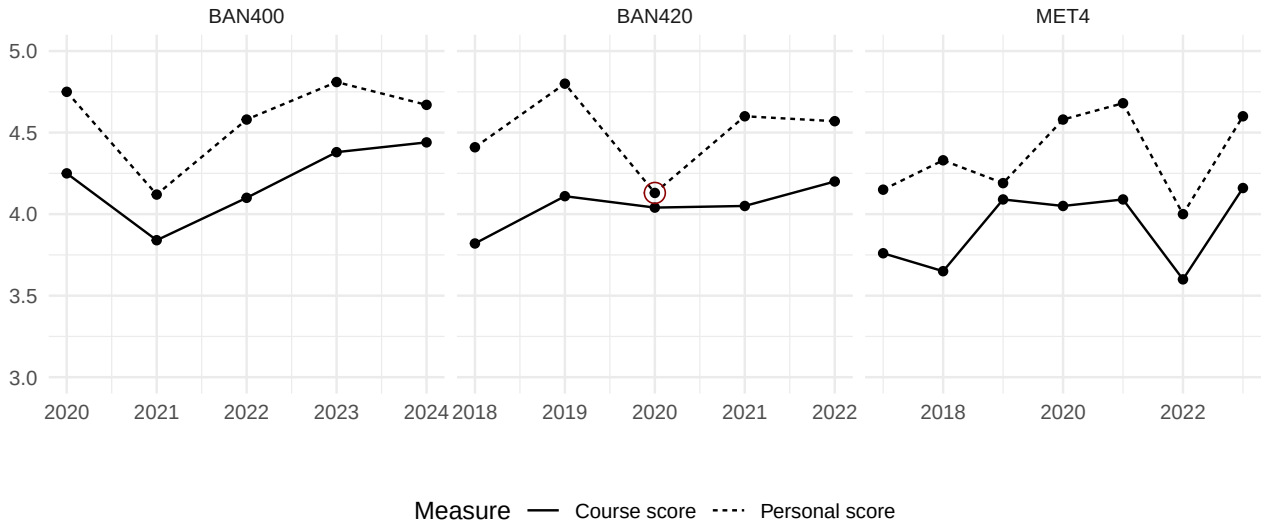

Figure 1: Average score on the scale from 1 to 5 on general satisfaction of the course, and the the personal score on my abilities as teacher. Note that one of the personal scores, marked with a red circle, is an average score for two lecturers combined, not just my personal numbers. MET4 refers to spring semesters, while BAN420 and BAN400 refer to fall semesters.

where I display the average score on the two questions on general satisfaction with the course, and the particular satisfaction with my abilities as teacher. My experience is that the former is always lower than the latter, which from discussions with colleages appear to be a fairly general pattern. Furthermore, I note that at no point has my personal average score dipped below 4, and that in 10 of 17 evaluations, I have achieved a score of more than 4.5, which, in addition, has happened several times in all of the courses that I have taught.

I have received three teaching awards for my work with MET4; The bachelor student's teaching award (The Bronze Sponge) twice, in 2020 and in 2022, as well as NHH's first Inspirational Teaching Award in 2022. All of these awards were shared with my colleague Geir Drage Berentsen.

One should not put too much emphasis on student *satisfaction* per se, as I discussed in some detail in my teaching philosophy. It can become tempting to conflate percieved satisfaction with easiness and lack of academic ambition from the teacher on behalf of the students; which may again be confused with the sensation of mastering the content. I have, however, spent some time every year analysing the evaluations for cues on how to improve. For instance, it was student feedback that guided the careful development of BAN420/BAN400 into something more managable for students with the least amount of prerequisites.

Student evaluations are a way to keep my ear to the ground and stay calibrated. They are not direct measures of student learning, although I do believe that there is a certain association between the two. In particular at NHH, home to some of the most ambitious students in the country, I quite simply do not think it is possible to keep them satisfied without substance. Measuring the causal effect of teaching on learning is notoriously difficult, however, without doing formal experiments. I therefore try to collect as much indications and evidence of student learning as I can; here are some channels that I have found useful:

- **Performance on controlled exams.** As noted above, I take great care to design high quality exam problems (two examples are included in the Appendix) that allow students to demonstrate more than mechanical and procedural skills; they must show that they are able to *think statistically* (in the case of the statistics course) or *write efficient programs* (in the case of the programming course), by solving problems that are guided by a real or highly realistic case. I try, to the best of my abilities, to avoid the opposite way of designing problems, where one first decide what to ask or test, and then start looking for a fitting story around it. When students solve and master these problems in a controlled and ideally

proctored exam setting, I am confident that they have learned something useful in my course.

- **Discussions with external graders.** I involve external examiners whenever possible. This secures an outside view of grading and gives me opportunities to discuss problem design, assessment methods, and to benchmark my practices against those at other institutions.
- **Grading at other schools.** I have graded extensively at HVL, NTNU, UiB, and BI, mostly in introductory statistics courses, but I have also graded more than 40 master theses in the Business Analytics profiles at NTNU over the past few years. These engagements help me compare performance levels and calibrate expectations.
- **Quantitative analysis of performance.** For several years I have experimented with Item Response Theory to estimate student ability while accounting for task difficulty and marker severity. The results appear in Reflection Note II, where I track ability over time under varying exam set difficulty and rater severity.

9 Dissemination

I have presented and written about teaching-related issues on several occations, for example:

- Presentation at "Statistikkundervisning: Fortid, Nåtid og fremtid", UiB, 29 November 2018: *Introduksjon til R: Erfaringer fra et intensivkurs.*
- Presentation at the ØA-Conference in Bodø, 27 April 2022: *Implemention of the GAISE recommendations in an undergraduate Statistics Course*; see Reflection Note I for the corresponding paper.
- Presentation at the NHH Alumni conference, Oslo, 18 October 2024: *Data Science: Et viktig bidrag til økonomifaget*
- Presentation at "Workshop on Actuarial Data Science Educations and Research", UiB, 15 May 2025: *Bachelor of Business, Economics and Data Science – A new study program at NHH*
- Working paper *Comparable Grading From Observational data: Many-Facet Modeling with Soft Anchors*; a quantitative analysis on fair grading, included in the appendix as Reflection Note II

10 Reflections on own educational development

In my teaching philosophy I argued that learning is a passage toward humility, that the more we learn, the more we realize how much we do not know, and that this expanding awareness is not a failure but a product of genuine growth. I ended that thought with the line: *to learn something new is to get a better view.* The same principle applies to the teacher. Every year I have taught has sharpened my sense of what I do not yet understand about teaching, and every significant change I have made grew from a moment where the view became clearer and the gap between my practice and my aspirations became harder to ignore. I do not expect, or want, to reach a point where I consider myself a finished teacher. The view keeps expanding, and the work continues.

How reflection has led to change

Let me trace three episodes where reflection on practice led to concrete changes, each of which taught me something I had not anticipated.

The first and most instructive was the digitalization of MET4. The results, by conventional measures, were excellent. Student satisfaction rose, we received three teaching awards, and the digital materials gave students flexible, on-demand access to the curriculum. But when I modelled student ability over time using an item response theory framework (see Reflection Note II), using a relatively novel idea for comparing ability between different cohorts, I could not detect a systematic improvement in learning over time, although the data that

I have available cannot be used to address this question rigorously. The experience led me, in any case, to the following realization: High satisfaction and genuine learning can come apart, and the very smoothness that students appreciate may be the thing that undermines depth. The well-crafted video, watched passively, potentially creates fluency without effort, and fluency is easily mistaken for mastery. This is the trap described by Brown, Roediger III, and McDaniel (2014), and I may have walked right into it. The lesson was not that the digital format was *wrong*, it broadened access and stabilized learning during a difficult period as mentioned in my teaching philosophy, but that convenience must be paired with structures that reintroduce productive difficulty. Going forward, I intend to build retrieval prompts, prediction tasks, and spaced practice directly into the digital workflow, so that watching a video becomes the *beginning* of the learning process rather than a comfortable substitute for it.

The second episode came from the opposite direction. In BAN400, the difficulty was never too low. If anything it was too high, and student evaluations said so in plain terms. The challenge of calibrating difficulty in a cohort with wildly uneven starting points forced us to think carefully about what it means to design for effort and not for despair. Over several iterations we developed assignments with multiple levels of guidance, all aiming at the same learning target. This work taught me that adaptivity is not a concession to weakness but a design principle. The struggle itself is valuable, but only when the student can actually engage with the struggle rather than being overwhelmed by it.

The third episode is more recent and still unfolding. The rise of generative AI forced us to rethink assessment in BAN400. When a chat tool can produce working code for many of the problems we assign, the question of what we are actually measuring becomes urgent. After experimenting with various formats, we returned to a controlled digital exam without internet access, not as a retreat to an older model, but because we judged it the most reliable way to measure individual competence in core skills. This sharpened my awareness that assessment is not separate from teaching but integral to the design. The problems I create shape how students prepare, and preparation *is* the learning to a large degree.

What I have learned

Looking across these episodes, several lessons stand out.

First, I have learned to distrust my own satisfaction. When evaluations are high and students seem happy, it is tempting to conclude that the design is working. But the MET4 experience taught me that satisfaction can be misleading, and that the harder question is always whether the students can *do* something something at the end of a course that they could not do before.

Second, I have learned that small, steady adjustments over time are more productive than dramatic redesigns. The BAN400 scaffolding format evolved through yearly iterations, each informed by the previous cohort's experience, and the result was better than anything we could have designed from scratch. This iterative approach mirrors the bottom-up process I describe in my teaching philosophy as the engine of student learning. It turns out to be the engine of my learning as a teacher learning as well.

Third, I have learned that the pedagogical literature is most useful when it names something I have already half-noticed. The research on desirable difficulties did not tell me something entirely new; it gave me a framework for understanding why certain things I had observed were happening, and it gave me confidence to act on that understanding. I intend to keep reading widely, not to accumulate theory for its own sake, but because the right concept at the right time can unlock a change in practice that experience alone would not produce.

Development ahead

I write this at a moment of transition. I am about to take on the role of Head of Teaching and Exams at my department, a position that will shift my perspective from individual courses to the broader architecture of teaching across a department. At the same time, I am developing two new courses due to run for the first

time in the fall of 2026, which is giving me the opportunity to test ideas that have been accumulating for some time.

The first is SKL400, a seminar in R programming that belongs to a new series of skill-seminars for the master program at NHH. The idea behind the series is to give students a common foundation in practical skills, so that instructors in subject-matter courses can assume these skills unconditionally rather than spending their own time covering basics. SKL400 will be fully digital and self-paced, produced in cooperation with NHH's studio facilities. This is a new experience for me and, in many ways, for the school. It forces me to confront the lessons of MET4 head-on. I know from experience that a polished digital product can create an illusion of learning if the student remains passive. The challenge, then, is to build the course so that engagement is not optional. I am designing for frequent, low-stakes retrieval embedded in the material itself, short coding tasks and questions after each lesson, and tasks that require the student to produce something rather than simply consume. In a sense, SKL400 is my chance to take the digital learning experience to the next level, keeping in mind my earlier sucesses and mistakes.

The second course is BEA529, a PhD-level course in probability and statistical inference. It will be unlike anything I have taught before. The class will be small, the students experienced and presumably motivated, and the material technically deep and demanding. Where SKL400 requires me to solve the problem of engagement at scale, BEA529 presents the opposite challenge. With a small group of advanced students, I do not need to worry too much about passivity, but I do need to create an atmosphere where genuinely hard problems can be approached collectively. My plan is to combine a structured progression through the theory with a more Socratic approach in the classroom, where we work through proofs and problems together rather than watching me present them. I want the feeling in the room to be that we are all in the same boat, cracking hard nuts by thinking out loud together, even if I happen to know more about what is inside the nuts, so to speak. This is the closest I will have come to the equal partnership I describe in my teaching philosophy, and I look forward to seeing what it teaches me.

These two courses sit at opposite ends of a spectrum. One is digital, large-scale, and self-paced; the other is intimate, theoretical, and conversational. Together they span the range of what I expect my teaching to involve in the years ahead, and I think of them, much as every important thing that I undertake in life, as a personal experiment. The threads from my teaching philosophy, evaluative expertise, desirable difficulty, the craftsman mindset, will be integrated into both, but in very different ways. I do not know in advance which decisions will prove right, and that is precisely the point. The development continues.

I return, then, to where I began. Each year of teaching has given me a clearer picture of what I do not yet know, and each episode of reflection has produced changes that I could not have planned in advance. I do not expect this process to reach a conclusion, nor do I want it to. The day I feel I have understood teaching well enough, I better be retired or in a very different career, because it would mean the fog has rolled back in and I have mistaken my immediate understanding for the whole landscape. For now, the view is good, and there is plenty of ground still to cover.

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