Ladies and gentlemen, students and colleagues:
Welcome to this new academic year at our university.
It’s exciting to see such a full hall.
More than 2,000 freshmen have joined us today.
Another record for our university.

It’s also great to have such an international presence.
Again we have a high number of foreign students.
We’re proud and delighted that so many have chosen to pursue their dreams and follow their academic education here in Eindhoven.

We all have our own dreams. Dreams that we would like to come true.
So it is fitting that the student committee which organized this event should have come up with the theme: Dream, Dare, Do.
The whole anniversary year is dedicated to the theme, Dream and Dare.
Today we add the Do component.
Because we, as a community, are determined to transform our dreams into practice and contribute to society.

Today we have the great pleasure and honor to welcome three outstanding speakers all of whom make their own significant contributions to society: Henk Kamp, Hans Clevers and Marjan van Loon. They will share their thoughts and experiences with us today from very different perspectives: politics, science and industry. We are most grateful to them for giving us the benefits of their insights.

I would like to talk about our own dreams, and how we dare and do. In terms of the main mission of our university, which is to serve society by educating students and advancing knowledge in science and engineering, and by pursuing the transfer of our know-how to society. Or turning our dreams into reality.

Dreams are important for pushing the boundaries of science. Dreams, fantasy, imagination… all great scientists have emphasized their importance.

Albert Einstein once said:
“Imagination is more important than knowledge.”
Knowledge is limited, but imagination encircles the world.”

**Dream and dare.**

When I enrolled at our university as a student it was out of curiosity for engineering and science. Science, because it had something magical to it. Just like many of our freshmen, I didn’t have a specific area in mind.

Some of the courses that I took I found really interesting and challenging, while others well...they didn’t quite grab my attention. But I gradually learned to carve out my own path.

It was exposure to the enthusiasm and rigor of individual scientists that slowly shaped my scientific interests.

I still very much recall the thrill in the research group that I joined during my master. They were working on a new theory, and I gradually became part of this exploration. Together with my fellow graduate students.
As a graduate student I was fascinated by solid mechanics, and during my tenure at Philips Research I became passionate about the flow of complex fluids.

Science is dynamic, and curiosity never ends. At the turn of the century, we were given a unique opportunity to enter a new research field at the interface between engineering and biology. Engineering of living heart valves and blood vessels. A mesmerizing challenge. In the beginning we had only a vague idea how to move forward, all we had was our imagination.

Yet, today, the first clinical use of our technology is a fact. Many have contributed, and many things have happened along the way, including starting a company, but first and foremost, the basis was the commitment of a team of incredibly talented students and scientists, who shared a common dream, and dared to explore yet unknown territory.

Apart from the research results themselves, much of what we have learned has percolated into the curriculum we teach today.

Why am I telling you this story?
Although it is personal, it is probably not very different from yours; 
it’s reminiscent of the experiences that develop at our university 
every day. Each based on similar building blocks. 
We are all different, we all have our own interests and dreams that 
develop over time. There’s no one size fits all. But we share our 
passion for teaching, science and engineering.

Dear students, during your study, courses are important, but are only 
part of the story. It is the enthusiasm of individual researchers that 
makes a difference. It is the personal attention that you get, and the 
interaction with fellow students that matters. Face-to-face time. You 
learn so much, so quickly, when you are engaged. Being involved in 
research is a wonderful way to achieve this.

It teaches you to cope with uncertainties, to answer questions that 
do not have an answer yet, dare to move into unknown territory and 
push the boundaries of our knowledge. Step-by-step.

It also teaches you to master complexity. The complexity of many of 
the problems that we address today require multidisciplinary 
collaboration. After all, the development of the next generation of 
waffer steppers cannot be done alone.
At this university we are very good at collaboration, both internal and external, and we foster it. It is symbolized by the walkways that connect our buildings. We like to team up. Share knowledge, share labs. Together we are much stronger that the sum of the individuals.

As engineers, we don’t just want to know. We also want to use our knowledge, and make things work. We design objects, systems, services, materials, etc.

A beautiful example of this can be seen when our student teams take on a challenge to design and make something that sets new standards, or breaks records.

These teams always start out with ideas and ambitions that they can never fully deliver on. But they dare to begin. Many problems that seemed to be overwhelming at first later turn out to be immaterial. They are continuously making choices and taking decisions. All-in-all, very similar to the approach we take in research.

Our student teams have had unprecedented success: the iGEM team won a gold medal for Best Innovation in Medicine,
STELLA-lux won the World Solar Challenge, 
the first drone-café of Blue Jay went viral, 
recently United Tech again won the world championship RoboCup, 
Storm is out on an 80-day electric motorcycle challenge, 
and the Sensus international biosensor competition will have its final 
showdown next Saturday, here in the Auditorium.

Implicitly, the unique achievements of our student teams reflect the 
ambitions and abilities of our university. 
These ambitions have been formulated in our leading principles, and 
may be summarized as follows: 
We educate world-class engineers that are aware and take account 
of the societal relevance and impact of their work. 
We provide our students with a personal, on-campus educational 
experience, in which we combine the magic of exploration, discovery 
and design, with rigorous engineering education. 
Together, we form a caring, collaborative academic community. 
We strive for excellence in education, science and research, but 
always with dignity and respect for each other.

What is the challenge that we are facing?
It is exciting that so many young people enroll at our university to pursue a career in engineering. They are right: It’s fascinating to be in engineering, more than ever before. And engineers have a huge impact on society.

We expect the number of students to double in a decade: from 7,000 in 2010 to 14,000 in 2020. Yet the budget will only increase by 20 percent.

This creates tension. We literally run out of space and time. We all feel it.

Our way to educate top-notch engineers requires individual mentoring and supervision. This is possible only if our student staff ratio is sufficiently small. Without intervention, our student staff ratio will grow to 25 in 2020, far above the OECD average of 15, while our international engineering competitors are typically at a ratio of about 10. So we need to think this through, and discuss what our priorities and limits are.

Do we have the courage to draw the line?
Can we make the necessary choices to maintain our “leading principles”? 

I am convinced that, at the current funding level, our students, staff and society will benefit if we put growth in quality before further growth in quantity.

At the same time, engineering is more important than ever before, and offers compelling solutions to societal challenges. Engineering is at the core of the fourth industrial revolution that is unfolding today. Driven by the convergence of digital, physical, material and biological sciences, the fourth industrial revolution will have profound implications for our future economy, job market and society in general. If we don’t act swiftly, we will be faced with the consequences of this revolution, but we will not truly benefit from it: we might lose the worldwide competition for jobs.

Therefore, our government needs to reconsider its resources.
Brainport is a world-class high-tech eco-system with exceptional innovation capabilities. A unique asset to the country. Is has by far the highest *private* investments in R&D in our country. This eco-system would gain incredible momentum, competitiveness, and economic value if *public* investments would be increased to match, if not exceed, those of competing areas in Europe, and indeed the world. Specific investment in public-private partnerships, such as in our very successful Impuls program, would be one way forward. We need to choose *engineering* unequivocally as a source of economic growth and prosperity.

We need to choose *engineering* unequivocally as a source of economic growth and innovation.

Digital technologies play a pivotal role in the fourth industrial revolution.

The digital revolution is touching everyone,
and it’s a revolution we need to join.

This is why today Eindhoven University of Technology and all other universities in the Netherlands, in collaboration with the private sector, are launching a joint plan for the “Digital Society.”

It is our dream to make Dutch universities, together with their partners (governments and businesses),
leaders in the new digital technologies.

The digital society is a catalyst for many research projects at our university and indeed in this region. Digital technologies will be deeply integrated in future systems, products and services: smart industries, smart automotive systems, smart health systems, smart cities, smart energy systems, to name but a few. These are all topics of research at our university.

Implemented in a responsible way, such joint investments and efforts will serve the Dutch economy and society.

This brings me to the third part of the catch-phrase Dream-Dare-Do: the Do part.

Educating world-class engineers may well be the most important way we can serve society. Because our students, and in particular our graduate students, participate in our research, this is also a very effective way to transfer our generic know-how, but also specific know-how when we collaborate directly with one of our partners.
But we should go beyond this.

Our discoveries should not just end up in theses or high impact papers, but they should also be turned into true innovations for the benefit of our society.

Together with external partners, we need to develop successful mechanisms to stimulate and accelerate this.

Creating spin-offs is an attractive but not the only way to move forward.

If we really want to be the place where innovation starts, we need to encourage our graduates and staff to take initiatives, and support them long-term.

Brainport is one of the leading high-tech regions in the world, with a huge amount of R&D and business creation expertise.

Together we should be able to create a sparkling eco-system, in which one innovation after the other is turned into a success.

Together, we can make dreams come true.

Dear Colleagues,

It will be a particularly challenging year for all of us.

We’ll continue to innovate our teaching,

there will be substantial challenges in the area of research,
and there are some tough choices to be made. 
So we will need to be active, enterprising, and collegial.

Meanwhile, to you – our students:
Do have your *dreams*!
*Dare* to make them happen, 
and *contribute* to society. 
Challenge yourself, use your imagination, 
and let’s make this an exciting year together.

Thank you.