Strategic Plan
Faculty of Science
2017-2021
Excellent & Relevant
Contents

Foreword 3

Introduction 3

Chapter 1 Quality & Connection 5
Strategic choices, improvements and innovations resulting from Strategic Plan 2013-2017 6
The Faculty of Science in 2017 8
Current challenges and opportunities 8
Objective and strategy 9

Chapter 2 Education 11
In 2021 14

Chapter 3 Research & Impact 17
In 2021 20

Chapter 4 Committed & responsible organisation 23
In 2021 24
Foreword

I have the pleasure of presenting to you the *Strategic Plan 2017 – 2021: Excellent & Relevant*. In this plan, we look at the future of our faculty. We will continue to guarantee excellent education and research at the Faculty of Science. Our quality is key to maintaining our competitive position in the international academic community.

From this strong science base we aim at new solutions for the challenges faced by society in sustainability and life science. New dynamic interdisciplinary and transdisciplinary connections are stimulated, with added value for the study programmes and research activities, and with the aim of addressing societal issues.

The pursuit of excellent and relevant science in education and research is and will remain our core ambition.

*On behalf of the board of the Faculty of Science,*

*Gerrit van Meer*

*Dean*

Introduction

The Strategic Plan 2017-2021 of the Faculty of Science focuses on further strengthening the quality of the faculty’s education and research, reinforcing its profile and bringing specialist research fields together in multidisciplinary, interdisciplinary and transdisciplinary collaborations. This strategy further builds on the successful strategic line the faculty set out in its Strategic Plan 2013-2017. By continuing along this chosen path, the Faculty of Science aspires to strengthen and expand its international status of scientific excellence, while at the same time remaining relevant for all stakeholders as well as financially healthy.

The Faculty of Science is internationally recognised for its excellent academic staff and their scientific publications. It is the faculty’s ambition to attain and further extend its leading position in an internationally competitive academic community. Continued investments in the quality of scientific and teaching staff, as well as providing them with the facilities...
and infrastructure necessary to thrive academically, will ensure a solid foundation with scientific and societal impact. A solid disciplinary foundation is also essential for making dynamic interdisciplinary and multidisciplinary connections with scientific partners, both in academia and in industry, particularly in the strategic alliances with UMC Utrecht (Utrecht Life Sciences), Eindhoven University of Technology (TU Eindhoven), and the Netherlands Institute for Sea Research (NIOZ), and with other knowledge institutions on and off campus. By teaming up with industrial and social partners in selected fields of research and in education the faculty aspires to deliver alumni with the necessary skills and tools to excel both in academia, society and industry, as well as scientific publications relevant to society at large.

The chapters on Quality & Connection, Education, Research & Impact, and Committed & Responsible Organisation provide an outline of pre-existing qualities within the faculty followed by the faculty’s ambitions for 2021 in the form of a list of can-do statements, which concludes each chapter. Some of these can-do statements have already been realised and will be fortified whereas others will be realised during the period of this Strategic Plan. The concrete fulfilment of the strategy will be embedded in the faculty’s annual management agenda (‘bestuursagenda’) and in the annual agendas of the schools and institutes. Each year, the management agenda will be discussed with the Heads of Department, the Educational Advisory Council (OWAR), the Research Advisory Council (OZAR) and the Faculty Council.

Although the Faculty Strategic Plan follows the Strategic Plan 2016-2020 of Utrecht University in its structure and mission, it is even more so the product of its staff and students. Many students, members of staff, faculty council members and external partners were consulted during faculty meetings, meetings with Heads of Department, and directors of education and research. Mixed groups of students, academic staff and support staff further contributed specifically to the subjects education, research, social impact and organisation, and management and staff participation. Their contributions vary from conceptual prospects to concrete results and have proved invaluable.

UU Mission
The university’s mission: Utrecht University is working to contribute to a better world. Our graduates have the knowledge and skills to make a substantial contribution to society. Our research is ground-breaking and focused on solving major global issues. Our collaborative culture fosters innovation, new insights and societal impact. The core values of ambition, inspiration, commitment and independence form the basis of our university community.
Chapter 1 Quality & Connection
Over the period of the Strategic Plan 2013-2017, the faculty profile has become more cohesive and has been reinforced, both in content and in visibility. Currently, the Faculty of Science is home to the strong scientific disciplines Biology, Chemistry, Information & Computing Sciences, Mathematical Sciences, Pharmaceutical Sciences, and Physics. The Freudenthal Institute studies the science of education and the history and philosophy of Science. Within the faculty, scientists based in various specialist research programmes work together, both in research and education. The faculty also has strong ties to other faculties of the university. This is illustrated by the educational programmes, which are embedded in one undergraduate school and four graduate schools, two of which are shared with other faculties. In addition, the research of the faculty is organised in 11 research institutes and is embedded in the university’s interdisciplinary strategic themes and focus areas.

1. Quality & Connection

Over the period of the Strategic Plan 2013-2017, the faculty profile has become more cohesive and has been reinforced, both in content and in visibility. Currently, the Faculty of Science is home to the strong scientific disciplines Biology, Chemistry, Information & Computing Sciences, Mathematical Sciences, Pharmaceutical Sciences, and Physics. The Freudenthal Institute studies the science of education and the history and philosophy of Science. Within the faculty, scientists based in various specialist research programmes work together, both in research and education. The faculty also has strong ties to other faculties of the university. This is illustrated by the educational programmes, which are embedded in one undergraduate school and four graduate schools, two of which are shared with other faculties. In addition, the research of the faculty is organised in 11 research institutes and is embedded in the university’s interdisciplinary strategic themes and focus areas.

Developments in Education - The faculty has invested in educational innovation, and in improving the quality and effectiveness of its education. Developments such as blended learning, activating didactics, problem-based learning, concept-context course design, and digital testing have become integral parts of the teaching practice. Enrolment of talented Bachelor’s students in the honours programme has more than doubled during this period. Various curricula have been reviewed and improved, resulting in interesting new specialisation areas in pre-existing Bachelor’s and Master’s programmes. Bio-Inspired Innovation, a new Life Sciences Master’s programme of high societal relevance was developed and welcomed a first batch of freshmen in 2016. On the other hand, degree

See https://www.uu.nl/en/education/studying-at-uu/educational-organisation
See https://www.uu.nl/en/organisation/faculty-of-science/research/research-institutes
See https://www.uu.nl/en/research/profile
programmes with few enrolments, such as Astronomy, have been discontinued. Extra efforts in matching activities and student mentoring have resulted in a significant increase in student success rates in the Bachelor's phase, based on re-enrolment success and graduation percentages. Besides the ongoing efforts in quality and effectiveness of education, the faculty developed a teaching load model that provides detailed insight into the affordability of the course curriculum.

**Developments in Research** - Over the past few years, the faculty's research has been clustered into three themes: Foundations of Natural Sciences, Science for Life, and Science for Sustainability (Future Energy & Resources and Water, Climate & Ecosystems). As a consequence of this strategy, efforts in other research areas have been discontinued. Our current profile builds on the strong scientific fundamentals in the research institutes to work on various interdisciplinary societal challenges (see figure 1). This profile corresponds to the university-wide strategic themes and focus areas. The faculty has invested considerably in the focus areas of the university, especially those which the faculty coordinates: Bioinformatics, Complex Systems Studies, Future Food Utrecht and Game Research. The faculty also participates in the focus areas Education for Learning Societies, Future Deltas, History and Philosophy of the Sciences and the Humanities, and Neuroscience and Applied Data Science Utrecht. In the strategic themes and focus areas, strong connections have developed across the borders of the specialist fields. Excellent academics have been recruited within the strategic themes and focus areas who at the same time strengthen and expand the disciplinary scientific base in the institutes and the departments.

**Developments in finance and funding** - Despite a reduction of structural resources at the start of the previous strategic theme period, the faculty has managed to remain an attractive partner for external funding, and in some areas external funding has grown significantly. One exceptional success story is the allocation of the Gravity Programmes over the past few years in which the faculty plays a significant role. The unique infrastructure of the faculty has been significantly upgraded due to many successful grant applications both within the university and in (inter)national funding schemes.
The Faculty of Science in 2017

Current challenges and opportunities
National and international competition for motivated students, talented academics, and funding is ever increasing. It is a challenge for the faculty to increase (or even maintain) its national market share in student enrolments, successfully attract both young talented staff and excellent senior lecturers and scientists, and for those scientists to successfully obtain external research funds in a highly competitive playing field faced with decreasing funding opportunities. At the same time, competition is an opportunity; it motivates the departments and institutions, stimulates them to come up with new ideas, pay serious attention to the quality of teaching, measure what they do, seek (inter)disciplinary alliances with a variety of partners, and benchmark themselves against their peers.

Education - In the period between the academic years 2010 and 2016, the total student body in Dutch academia increased by 11%, with freshmen enrolments in Bachelor’s programmes increasing by 13% nationwide. The Faculty of Science saw a similar increase in its total student body but a marked additional increase in enrolments in its Bachelor’s programmes by 32%. Science is popular in the Netherlands. At the same time, more and more international students are successfully finding their way into the Master’s programmes, with one in four students coming from outside the Netherlands. Big themes such as sustainability, entrepreneurship and societal relevance are increasingly important to staff and students, who base their choice for Utrecht University at least in part on the university’s efforts in these areas and their visibility in the faculty’s course palette and research focus. With the advent of more, but especially different kinds of students with a variety of nationalities, interests and abilities, the educational landscape at the faculty will also have to innovate, and already is innovating, towards more digital and international classrooms as well as differentiated didactics and curricula.

Research - Demands for more societally relevant research, and the shifting resources

Highest scientific honour for Heck and Van Oudenaarden

Albert Heck and Alexander van Oudenaarden are considered leaders in their fields. Both are pioneers in the field of biomolecular research, and conduct their research within Utrecht Life Sciences. In 2017, both have been presented with an NWO Spinoza Prize, the highest scientific honour in the Netherlands. In total the Faculty of Science has now 6 Spinoza laureats among its researchers.

Albert Heck’s research focuses on identifying all of the proteins in the human body and the role they play in our cells. This provides entirely new insights for research into disease and health, and offers opportunities for the development of new and better pharmaceuticals.

Alexander van Oudenaarden studies how cells can develop into different types of cells, each with their own specific characteristics and functions. He paves the way in the development of new research methods, in which he combines techniques from developmental biology, molecular biology, physics, mathematics and computer science.
that are invested in it, can be seen in the demands from the National Science Agenda, the Top Sectors and in changes within the Netherlands Organisation for Scientific Research (NWO). The faculty has a solid body of excellent disciplinary and interdisciplinary scientists with academic impact and societal impact on shorter or longer time scales. Opportunities will arise when these scientists and their research can be connected into research collaborations and think tanks that are able to creatively work together in research areas of societal demand. Another important factor in the success of acquiring external funding is close cooperation with businesses, government and societal organisations. The faculty aims to seize the opportunity to reinforce these ties in strategic areas over the coming period.

**Finance** - An increase in financial resources is needed to steer towards the goals for the future. In addition, the faculty's current costs for infrastructure are significant and it will remain a challenge for the faculty to manage the needs of its staff for specialised research infrastructure. However, in the next few years the faculty's primary income will probably be stable at best. It will be essential to increase the faculty income by increased student enrolments and to secure additional revenue from government and non-government funding. These actions are rewarded in the new financial distribution model of the faculty, which conveys the relevant incentives of the university model. Proper governance by the faculty and its individual departments over the checks and balances in education and research, accompanied with strategic financial planning, will be key in realising a stable and balanced financial situation during the period of this strategic plan.

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**Powerful partnership in chemistry research for the future: ARC CBBC Research Centre**

“The world faces some major challenges, and we will need the right combination of scientific insight and innovation in order to find answers to them”, says Bert Weckhuysen, professor of Inorganic Chemistry and Catalysis and Distinguished Professor of the Faculty of Science.

ARC CBBC, which stands for Advanced Research Centre Chemical Building Block Consortium, is a nationwide virtual research centre, which aims to initiate long-term collaboration between the scientific and business communities. In addition to Utrecht University, the central location of the ARC CBBC, its founding partners include AkzoNobel, BASF, Shell, NWO, the Ministry of Economic Affairs, the Topsector Chemistry and the universities of Eindhoven and Groningen.

In the next 10 years ARC CBBC will use fundamental research to contribute to the solution of a wide range of societal issues, such as the circular economy, sustainable chemical processes and clean energy production. The centre has the potential to create breakthroughs in sustainability by means of chemistry-driven research.

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**Objective and strategy**

The objective of the Faculty of Science is to attain and further extend its leading position in an internationally competitive academic community by investing in excellent research and education. As the faculty's course curriculum ties into the expertise of our scientists, the faculty is attractive to both promising and already established talented academics. The faculty's research focuses on fundamental science in Biology, Chemistry, Information and Computing Sciences,
Mathematics, Pharmaceutical Sciences and Physics. From this strong scientific base we aim at new solutions for the challenges that society faces.

The strategy to achieve the ambitions builds on the course the faculty has set in the past, and focuses on two areas of activity:

- The faculty invests in the quality of its education and research by scouting, recruiting, mentoring and developing talent for both education and research. This draws a diverse, international and excellent group of students and helps the researchers in the acquisition of personal grants.
- The faculty invests in the connection of excellent academics and fields/disciplines in order to increase the societal impact of its education and research. New multidisciplinary, interdisciplinary and transdisciplinary partnerships are stimulated, with added value for the study programmes and research activities, and with the aim of addressing societal issues.

The Strategic Plan will be supported by the new financial distribution model of the faculty which has been adopted in 2017 and which is anticipated to have a positive effect on the faculty's finances.

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**Science for Life at its best**

Science for Life (S4L) is the collaboration between the four life sciences research institutes at the Faculty of Science: the Bijvoet Center for Biomolecular Research, the Institute of Biodynamics and Biocomplexity, the Institute of Environmental Biology and the Utrecht Institute for Pharmaceutical Sciences.

**Truly novel approaches**

S4L explores the fundamentals of life through high-level research in the biosciences, aiming at future solutions for health and environmental challenges. A comprehensive understanding of how biomolecules and cellular processes work in both healthy and diseased states is key to a better understanding of life and may foster entirely novel solutions, for major societal challenges, such as bio-inspired sustainability strategies or sustainable food production. It also allows scientists working in animal, plant, and medical science to eventually develop truly novel therapeutic approaches by inventing more effective medicines and early stage diagnostics strategies, or to revolutionise bio-based technology by creating plants with improved qualities and microbes that produce key materials.

**Young Investigators Forum**

Celia Berkers is Assistant Professor of Biomolecular Sciences and a member of the Science for Life Young Investigators Forum. “To me”, Berkers explains, “the Young Investigators Forum is Science for Life at its best: a fantastic platform to meet other young group leaders, to talk about working together and to share experiences. The existence of this umbrella network encompassing all of the different specialist fields is what makes Utrecht such an attractive place to do Life Sciences research.”

**State-of-the-art science and technology community**

In the next 5 to 10 years, S4L aims to create the scientific and technological base for methodologies that will allow us to bring structural chemistry and biology to cellular levels, to truly merge multiple ‘-omics’ technologies, to develop state-of-the-art computational and modelling approaches and to integrate the knowledge generated by all these technologies in a systems biology approach. This will provide the foundation for our increased understanding of biological processes in health and disease, which will in turn bring therapeutic strategies and bio-based technologies to a next level and facilitate the discovery of new leads that may contribute to future innovations in e.g. sustainable food production, use of ecosystem services or new drug therapies. The ultimate goal is to be a leading state-of-the-art science and technology community that develops and provides open access to advanced technologies for high-level research in fundamental life sciences.
Chapter 2 Education
2. Education

Utrecht University’s education is based on a teaching and learning vision built around a challenging learning climate and personal differentiation. The Utrecht education model consists of four key starting points: a clear distinction between the Bachelor’s and Master’s degree phases, freedom of choice and flexibility, personal and activating teaching methods, and teacher professionalization. The Faculty of Science organises its education based on these principles. An internal education quality assurance system (based on the Plan-Do-Check-Act-cycle) consisting of course and curriculum evaluations by students on the one hand, and active participation of staff and students in programme advisory committees, faculty and school boards, and the faculty council on the other hand, ensures continuous scrutiny of the quality of the education.

The ambition of the Faculty of Science is to be an international leader in the field of academic education in the exact sciences, in which the focus and the leading scientists behind the faculty’s research are visible in the curriculum. In addition to the visible investment in innovation and education, the faculty places a strong focus on the expertise of its lecturers, not only as experts in their field, but also as qualified teachers and classroom managers. The faculty has a wide array of professional development opportunities for lecturers: teacher training workshops with a focus on blended learning, digitalisation, demand-driven education, developing a concept-context course or providing personal feedback, as well as various opportunities for personal development courses for lecturers.

The faculty offers students a global context and a stimulating learning environment that is inspiring for both students and staff. Students are actively involved in the faculty’s education through student associations, education evaluations and student participation bodies, but also because they participate in research in the labs of their professors. As a result a strong community of students and staff arises, allowing all participants to provide a valuable

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**Simulated pharmacies to prepare for the real deal**

What makes a good community pharmacist? Besides professional knowledge, a pharmacist must also be able to interact with all kinds of people, handle prescriptions, provide pharmaceutical services to patients and contact physicians. This is exactly what first year Master’s students learn in the Pharmacy Practice course. The course provides simulated pharmacies – with actors as patients – that serve as assessment centers where students work together in a real life setting. All knowledge and skills developed earlier in the Master’s programme need to be integrated. The course prepares students well for their first clinical internship in a community pharmacy at the end of the first year.

Lenneke Minjon, Assistant Professor of Pharmaceutical Sciences and lecturer of the course: “This course is challenging for most students. During the course it is great to see how the students develop their skills, integrate all their knowledge and how their self-confidence grows. At the end of the course they are well prepared and ready for their first internship.”
contribution to the further optimization of the education. Our graduates are in demand; they are critical and innovative thinkers, with attention to the role their field of expertise plays in an increasingly complex society. The faculty achieves this by educating students to be flexible, experts in their field, and to think beyond the limits of their own expertise. The ambition is to deliver well-prepared young professionals who are capable of applying the knowledge they have gained in a socially relevant context.

A critical success factor in achieving our ambitions is the faculty’s ability to attract more Master’s students. To maintain a financially stable faculty the income from increased Master’s student enrolments will become essential. To enlarge the total Master’s student body we also have to attract more international students. For this, the faculty needs excellent education by inspiring teachers within stimulating communities. These factors are also very important in the decision-making process of prospective students when they consider Utrecht University for their study. A more international student community will also increase the quality of education and research.

“And: action!” Studios and blended learning environments in the Teaching & Learning Lab

Learning by gaming, designing a microscope in class, printing with a 3D printer or conducting experiments in a virtual lab environment: the digital possibilities for education are far from exhausted. Utrecht University invests considerable resources in blended learning, in which traditional forms of lectures and seminars are combined with an electronic learning environment, digital testing, knowledge clips and augmented reality.

The Teaching & Learning Lab (TLL), which was developed by the Freudenthal Institute and Educate-it, a university-wide teaching-innovation programme and opened in November 2016, has the goal of using IT techniques in education to provide an extra impulse, to test new forms of education and to study their effects.

The new education laboratory consists of a studio and several flexible classrooms. These spaces can be augmented with facilities such as a 360-degree camera, a 3D printer, a smart table and smartboards to accommodate the needs of a specific form of education. In the studio, lecturers can record video knowledge clips by giving a presentation in front of a lightboard or a green screen.

The TLL combines education and research and is also a place for secondary and higher education lecturers, students and companies to come together and share their experiences with new teaching resources.
In 2021 ......

... the curriculum is excellent, broad and interdisciplinary.
1. The faculty allows students to become competent professionals through a balanced curriculum of disciplinary and multi-disciplinary education in ratios that suit the various disciplines. Alumni of the Faculty of Science are to a degree T-shaped professionals, i.e. skilled disciplinary professionals with the ability to collaborate across disciplines with experts in other areas.
2. The faculty offers relevant education with the most suitable and quality-enhancing teaching methods. For this we use small classes, learning technology and blended learning.
3. Clear elective moments in the educational programmes facilitate a smooth flow throughout the course programme. Students are informed and facilitated in a clear and timely manner regarding the electives available within and outside the study programme.
4. Students experience a safe learning environment and good academic career guidance, with room to learn and experiment. Lecturers and support personnel work together to create this optimal learning and teaching environment for both students and lecturers alike.
5. The faculty’s financial distribution model that rewards education has led to optimal and efficient programmes.

... the faculty is a diverse and international community of students and staff.
1. The course selection meets the needs of the diverse student population.
2. English taught Bachelor’s programmes are offered in addition to the current curriculum.
3. Lecturers are both skilled and competent professional educators and mentors to groups from different disciplines and cultural backgrounds.
4. Both students and lecturers are encouraged to attend exchange programmes to gain international experience and build an academic network.

... the faculty has a visible appreciation for academic lecturers, and the education is appealing to the outside world.
1. The recruitment and development of academic staff is attuned to the goals both for research and education.
2. Staff members have career opportunities in teaching, with clear criteria.
3. Educational expertise is developed and encouraged further and education role models are more visible to students and staff.
4. The faculty visibly conducts research into its own teaching activities.

... graduates are highly sought-after for their contributions to society.
1. All study programmes (curricula) include instruction on relevant and current developments in important areas such as responsible conduct of science including scientific integrity, sustainability and (social) entrepreneurship.
2. All study programmes have coherent curricula with distinct study paths, in which students are trained in the competencies society needs.
3. Real-life cases are used in education as much as possible.
4. The Life Long Learning curriculum is custom-tailored to meet the needs of society. The curriculum is aimed at professionals who wish to acquire new skills and expertise.
5. More students graduate with a Master’s of Science in Education in a science subject in order to meet the demands of the Dutch secondary school system.

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Complex System Studies: interdisciplinary collaboration through educational initiatives

“Strengthening interdisciplinary collaboration through educational initiatives is one of our strategic priorities”, says Henk Stoof, Professor of Theoretical Physics and leader of the focus area Complex Systems Studies (CSS).

Since the start in 2014, CSS has developed a successful Summer School programme and a 30 EC Master’s profile. The latter is offered to students of several Graduate Schools across Utrecht University.

CSS has also begun offering complexity education to Bachelor’s students. A minor Complex Systems is being designed for Bachelor’s students. CSS educates students to look at complex societal issues from an interdisciplinary modelling perspective, preparing them to work in interdisciplinary teams in either research or the industry. “It’s fascinating to learn that students from other disciplines have a different perspective at complex systems”, is an often-heard comment from enthusiastic students.

By bringing together staff from different disciplines in teaching initiatives and in joint supervision of Master’s theses, several new collaborations have started and many more will follow.
First S.M.A.R.T. activities *(Specific, Measurable, Achievable, Relevant, Time-bound)*

- Apply for NVAO accreditation for the joint European Master’s Programme in Pharmacovigilance and Pharmacoepidemiology
- Start a multidisciplinary Master’s degree Applied Data Science in 2018/2019
- Start an international Bachelor’s degree Life Sciences in 2019/2020
- Further develop and implement the criteria for teaching career opportunities in the faculty
- Implement an ‘Expert Mentor’ system through which senior experts coach novice lecturers
- Centrally position the Teaching and Learning Lab in educational research into the faculty’s own teaching activities

**Indicators 2021** *(compared to academic reference year 2016/2017)*

- 10% of the Bachelor’s students participate in an Honour’s programme
- 10% of all students participate in a form of education in entrepreneurship
- 20% of the students in the Master’s programmes of the Graduate School of Life Sciences and 25% of the students in the Master’s programmes of the Graduate School of Natural Sciences are international
- In 2021 the student cohorts enrolled in a Master’s programme of the Graduate School of Natural Sciences have increased in size by 5%
Chapter 3 Research & impact
3. Research & Impact

The Faculty of Science wants to remain at the international forefront of science. It wants to develop into a thriving centre of world-class scientific discovery and innovation that is also renowned for its contributions to solving societal issues. For this, it needs to attract and foster talent, if possible the best from all over the world. In addition, the faculty needs to be competitive in acquiring funding both from within the university and on the external market.

The core of the research strategy is therefore to reinforce the research quality, to continue ground-breaking research and to connect disciplinary fields based on appealing and relevant research themes. Fundamental research in biology, chemistry, information and computing sciences, mathematics, pharmaceutical sciences, and physics will remain the foundation. Such disciplinary research will lead to new insights that will have societal impact mostly in the long term. In addition, the faculty constantly looks outwards to society at large, to remain sensitive of societal issues and needs. The research is conducted in close collaboration with businesses and societal organisations, which

Female talent with leadership potential: the Westerdijk Fellowship

To increase gender diversity among the scientific staff, Utrecht University has established the Westerdijk Fellowship. This special tenure track position is intended to attract outstanding female talent with leadership potential. The Faculty of Science recently appointed two assistant professors as Westerdijk fellows: Carolin Kreisbeck and Damaris Schindler.

“I’m excited to work as a Westerdijk fellow,” says Damaris Schindler. “The position comes with a good balance between research, teaching and other tasks at the department. I’m looking forward to being a part of this very active community in Utrecht.”

“The fact that the fellowship is an appointment especially for women is a very positive thing”, adds Carolin Kreisbeck, “but the main reason I chose to come to Utrecht is because of the good match between me and the institute. Here, I can benefit from a very active research environment, and my research adds some new aspects to the profile of the Mathematical Modelling group. I think this is just perfect for both parties.”
allows the results of fundamental research to be used in practical applications. The faculty operates within a network of (inter)national outstanding knowledge partners.

The complexity of societal issues requires multi-disciplinary approaches. The faculty holds a unique position as it is home to a wide range of fundamental and applied sciences that work together in dynamic partnerships. This diversity renders the organisation versatile when faced with new developments in the funding landscape, like the Netherlands Organisation for Scientific Research (NWO), governmental agencies or the EU, in the interface with industry such as the Top Sectors, or in questions from society as formulated in e.g. the National Science Agenda.

In multidisciplinary research themes scientists utilise their expertise in order to work in dynamic networks to increase their impact and visibility, and to connect with external parties. The faculty will invest in the university strategic (sub)themes Sustainability, Deep Decarbonisation of the Energy System, Future Food, Water, Climate & Future Deltas, Utrecht Life Sciences, Science for Life, and in the focus areas Bioinformatics, Complex Systems Studies, and Game Research. The themes have established new links between disciplines and created new communities, which has resulted in scientific innovations and new teaching programmes. The faculty will take on the challenge of enhancing the societal impact of research and offering tangible solutions for the future.

Our researchers will bring in research grants based on the excellence of their science. Attractive themes that appeal to innovative ambitions of partners will provide more impact and are expected to significantly increase the income from government funding allocated by the Netherlands Organisation for Scientific Research (NWO) and the Royal Netherlands Academy of Arts and Sciences (KNAW), from EU funding and from contract funding over the next period. The earning capacity of the faculty is boosted by the university via its financial distribution model that rewards external funding. In the new strategic plan period, 2017-2021, this incentive is passed on to the Science departments via the distribution model of the faculty.

Research infrastructures are crucial for innovations in science, and therefore key

### Utrecht Center for Game Research

Games play an increasingly important role in many societal areas. They allow players to practise, experiment, research, and learn in a safe and motivating environment. The Utrecht Center for Game Research performs interdisciplinary research on gaming and playful interaction with a focus on the domains Games for Learning, Games for Health, and Games for Change.

The interdisciplinary community Game Research brings together researchers from amongst others computer science, media studies and education and psychology.

Remco Veltkamp, Professor of Multimedia: “It is our mission to employ games to help solving large societal challenges. Games are pre-eminently suitable to inform, motivate, appeal to emotion, and influence behaviour. Games, as designed experiences, do that better than other types of media.”
factors in attracting talent and funding. The Faculty of Science has advanced and unique infrastructures, especially in (structural) biology, in material sciences and in complexity and IT-based research. It is essential that these can be operated, maintained, upgraded and eventually replaced. In consultation with the university, other stakeholders such as partner universities, and the Netherlands Organisation for Scientific Research (NWO), the faculty will devise sustainable strategies for the infrastructural platforms. Where possible, open access must be organised for institutional users. For industrial users, access should in principle be on a full-cost basis and should promote co-innovation between research and industrial communities. When financial accountability on the long term is uncertain, the faculty must decide whether to continue the facility.

In 2021 ......

... the faculty’s research is excellent, and the faculty ranks competitively in its chosen research fields.
1. New staff is recruited and professors are appointed with excellent qualities, including leadership, an outward orientation, vision and knowledge transfer.
2. The succession of academic positions upon scientists’ retirement or departure is no longer a matter of course. New positions are utilized strategically.
3. A structural approach is in place to scout, recruit, coach and develop talent.
4. The societal and scientific impact of the research has grown.

... the faculty’s expertise platforms with research infrastructure are up to date and sustainable.
1. A process of designing sustainable strategies for the research platforms leads to a roadmap with smart decisions about the future of these platforms. Where necessary, this is arranged at the national level.
2. Investments have been made in a selection of unique expertise platforms

World-class Life Sciences research: the Utrecht Bioinformatics Center (UBC)

Big data: no research can afford to ignore this new field. “That is why the UBC is working to help current and future generations of scientists develop the bioinformatics skills they need in the field of Life Sciences. Their efforts will help ensure that Utrecht Life Sciences research can maintain its position among the world’s best”, says Berend Snel, Professor of Bioinformatics.

In order to achieve this goal, the UBC has brought together all of the excellent bioinformatics groups and scientists our campus holds to create a bioinformatics community that is clearly visible to the outside world. Within this active community, new partnerships in the areas of education, research and IT-infrastructure have been built, with the Bioinformatics Master’s profile and the High Performance Computer as two excellent examples.
with research infrastructure that attracts talented graduate students, excellent researchers, partners and funding.

3. The cooperation within communities and the utilisation of facilities is optimized by clustering research within the faculty's buildings.

4. Research facilities have an open access structure and a fee structure depending on the user.

5. All groups work together with even more of the world's best international partners and scientists.

... the faculty is diverse and international.

1. The faculty is composed of a diverse academic community in the broadest sense of the word.

2. All scientific staff has spent relevant research or teaching time at a university abroad.

3. All services and facilities are available in Dutch and English.

4. The faculty is considered as an important LERU (League of European Research Universities) partner, visible by student exchange, joint degree programmes, joint research projects and shared interests.

... new interdisciplinary partnerships based on strong fields of expertise provide added value for science and society.

1. There are strong communities in the strategic subthemes Sustainability, Deep Decarbonisation of the Energy System, Future Food, Water, Climate & Future Deltas, Utrecht Life Sciences, Science for Life, and in the focus areas Bioinformatics, Complex Systems Studies, and Game Research.

2. New connections are created between research groups in order to meet the demands of society at large, e.g. in the area of data science.

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Researchers from all seven faculties working together: Future Food Utrecht

“By integrating fundamental research from different disciplines, we try to create pathways that lead to transformative changes in the global food system”, says Rens Voesenek, Professor of Plant Eco-Physiology.

Researchers from all seven faculties work together in the interdisciplinary community Future Food Utrecht. New, innovative solutions are created throughout the entire food chain by bringing together biologists, pharmacists, psychologists, urban geographers, (veterinary) physicians, linguist experts, economists, lawyers and public administration scholars.

Creating a transition towards a more sustainable global food system calls for an integrated food systems approach. That in turn requires thoughtful co-creative leaders in government, industry and universities. It is the ambition of the Future Food community to train future food academics by developing education that integrates different scientific approaches on food systems. Engaging with stakeholders from business and social organizations will enable Future Food to develop pathways towards a sustainable, healthy, acceptable and accessible food supply for future generations.
3. Researchers from a variety of fields (communities) work together in consortia with other universities, businesses, societal organisations and the government.

4. The societal and scientific impact of the research has grown.

5. All research institutes and focus areas have an approach to contribute to societal impact.

6. Staff is encouraged to contribute to social debate and to come into contact with society at large.

...financial resources of the faculty have increased

1. The introduction of the faculty's financial distribution model with incentives that reward external funding has led to an increased financial turnover.

2. External project revenues have increased.

First S.M.A.R.T. activities (Specific, Measurable, Achievable, Relevant, Time-bound)
- All tenure trackers will complete a development programme
- Based on the recommendations of the external research assessments all research institutes will make action plans
- The selection boards professionalize their selection procedure by using standard measuring instruments to interview and evaluate candidates and are aware of their biases. They will be trained on this subject
- An infrastructure road map will be drawn up
- Within the Science for Life and pathways to Sustainability hubs, groups from the faculty will participate and collaborate with the hub partners
- Each department will phrase an ambitious objective to enlarge the percentage of female assistant professors, associate professors and professors
- All research institutes will define their ambition and strategy pertaining to social impact prior to the mid-term review. These will then be discussed in annual meetings and evaluated during the mid-term and external audits.

Indicators 2021
- On quality all research institutes receive evaluations of 1 (excellent) in the next external research assessments
- On relevance and viability all research institutes receive evaluations of 1 (excellent) or 2 (very good) in the next external research assessment
- The faculty has at least 20% female professors
- The faculty's external funding has grown by at least 10%. This means that in 2021 the faculty will generate approx. 5 M€ more income from externally paid projects than in 2016
Chapter 4 Committed & Responsible Organisation
Strategic Plan | Faculty of Science 2017-2021

The Faculty of Science is a faculty of equal opportunity that aspires to offer an attractive working and learning environment for its staff and students. It is the faculty’s objective to create an inclusive environment in which staff and students are committed to the principles of professional behaviour and integrity. As a community of scholars and professionals, the faculty strives to embody the characteristics of responsibility, honesty, respect, fairness, and trust in professional lives. The faculty is also committed to fostering a working environment that encourages and supports unrestrained scientific inquiry and the free and open exchange of ideas that are the hallmarks of academic freedom. Consistent with these overriding and fundamental principles and commitments, the faculty seeks to create an environment in which members of the community are respectful of individuals and individual differences and in which everyone is committed to the Utrecht University Code of Conduct.

The Faculty of Science values input from its staff and students and actively encourages staff and student participation in official bodies such as the Faculty Council, Boards of Studies and Education Councils.

In 2021 ……

... staff and students are encouraged to reach their full potential.
1. Talented staff participates in the Leadership Programme for academic and support staff and talented students participate in various honours programmes.
2. All staff has ample opportunities for professional development tuned to their needs.
3. All future leaders have the opportunity to attend the ‘Support program for future leaders’.
4. To reflect on their own development, all tenured staff participates in the ‘Feedback for Professional Development Program’ every five years.
5. In addition to education and research, activities are geared towards a broader public; although not all staff projects have societal impact and entrepreneurship as their primary goal, these aspects are part of the general focus of the faculty.

Communicating in a global language

Scientific research and education takes place in an international context. This has long been an accepted fact in research, but it is becoming increasingly apparent that our educational activities should educate students to be citizens of the world, with a future in a global setting. The Master’s degree programmes offered are fully English taught and an increasing number of Bachelor’s courses within our faculty are offered in English.

We also have a bilingual news service, to serve both our Dutch and our international readers and the faculty newsletter is entirely in English. Furthermore, the employee participation body is open to the idea of introducing English as the lingua franca, so that non-Dutch speakers will be able to participate in the various councils and committees. In a faculty where people from many different nationalities work together, we consider it only natural to communicate in a global language.

4. Committed & Responsible Organisation

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The Faculty of Science values input from its staff and students and actively encourages staff and student participation in official
... staff and students make up a strong scientific community.
1. Staff and students are committed to the principles of professional behaviour and integrity as formulated in the Utrecht University Code of Conduct.
2. There are meeting rooms for students and staff to facilitate community building.
3. Student associations play a vital role in the community.
4. Staff and students are involved in various faculty projects, and the faculty communicates to all stakeholders and participants how their input has contributed.
5. The boards of student associations, student board members and student members of staff participation bodies work to increase student involvement in the faculty.
6. Teams of lecturers take responsibility for the curricula.
7. Alumni are actively involved in and part of the faculty community. In this way they actively contribute to the ongoing development of the faculty’s educational programmes and form a linking pin between industry and society and academic research.

**Working group IMPACT: From science to societal impact**

It’s one thing to make scientific discoveries and explore unknown areas to expand our knowledge, but it’s just as important to make it relevant to society. Society demands that investments in research and education contribute to our economy, our well-being and our planet. Therefore the working group IMPACT is such a great initiative.

IMPACT has been initiated by Guido van den Ackerveken, Professor of Translational Plant & Microbial Biology, to improve and expand the interaction with society. IMPACT aims to further increase societal impact by exchanging best practices between the 11 Faculty of Science research institutes, and by creating more awareness and skills. “Within the faculty there are already great examples of how research and education contribute to society — something we definitely need to showcase. Through IMPACT we can inspire each other to bring our discoveries a step further; from informing the general public to expanding collaborations with industry and other stakeholders. It would be great if this would also help to keep our fundamental research alive and kicking!” says Van den Ackerveken.

... staff and student representation is professional.
1. Staff and students are actively involved in the faculty’s decision-making process.
2. Representation is arranged at all levels of responsibility.
3. The representation subcommittees have a uniform work method, rights and duties within the faculty.
4. All members of representation bodies have the opportunity to complete a course on representation skills.
5. Representation bodies are asked for advice or approval in a timely manner, provided with full information and the board gives feedback on how their input has contributed.
... the faculty contributes to society.
1. Life-long learning courses are offered based on society’s needs. The course curricula are developed using input from society.
2. The faculty is more sustainable through climate neutral educational facilities and a paperless office and education policy.
3. Students and staff are aware how they can contribute to a more sustainable faculty and university.
4. The number of science-based start-ups has increased.

... the organisation is effective, efficient and flexible. As such it provides optimal support for research, education and valorisation.
1. The newly formed Faculty Institute for Interdisciplinary Education has been instated and is the organisational unit in which the interdisciplinary programmes are coordinated and financed.
2. In order to reduce administrative workload, staff members are asked to report on staff, financial and compliance requirements only when necessary.
3. All staff and students are critical about which information we share with one another, with whom we share the information and via which communication media, to reduce the administrative burden.
4. Student associations, student board members and students in representation bodies contribute to the faculty’s communication with students.
5. A suitable and affordable IT research infrastructure is in place to work with large data files and to facilitate sustainable data storage.
6. Multi-disciplinary operational support teams with expertise from a variety of services work together for optimal support for interdisciplinary education and research themes.
7. The faculty has a flexible pool of project managers or event managers.

First S.M.A.R.T. activities (Specific, Measurable, Achievable, Relevant, Time-bound)
• The Support program for future leaders will extend its programme with workshops on relevant themes on (academic) leadership
• A project will be initiated to standardise the work method for representation in subcommittees
• New employees will receive an informational package explaining the rules and procedures, with an invitation to an introductory meeting
• Internship opportunities for support staff are created in order to improve comprehensive and flexible support
• A pilot project on the use of contracts eliminating the need for leave time registration will be conducted, involving agreements with employees on results to be achieved

Indicators 2021
• At least 5% increase in staff satisfaction compared to 2016
• All positions for student and staff representation are filled (Faculty Council and the subcommittees, Study Programme Committees)
• Increase of 20% in the number of science-based start-ups compared to 2016
• At least 80% of the staff has had an Assessment and Development interview
Glossary

Educational Advisory Council = Onderwijs Adviesraad (OWAR)
Entrepreneurship = Ondernemerschap
Faculty Council = Faculteitsraad (FR)
Netherlands Institute for Sea Research = Koninklijk Nederlands Instituut voor Onderzoek der Zee (NIOZ)
Netherlands Organisation for Scientific Research = Nederlandse Organisatie voor Wetenschappelijk Onderzoek (NWO)
Representation = Medezeggenschap
Representation subcommittees = Onderdeelscommissie (ODC) en Onderwijs Advies Commissie (OAC)
Research Advisory Council = Onderzoek Adviesraad (OZAR)
Royal Netherlands Academy of Arts and Sciences = Koninklijke Nederlandse Akademie van Wetenschappen (KNAW)